



Government of **Western Australia**
Department of **Health**

Code of Practice for Clinical and Related Waste Management

Public Health Act 2016

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1. Introduction

WA Health facilities are responsible for the handling and management of all their waste, including clinical and related waste, from the point of generation until the final point of safe disposal regardless of who may be contracted to provide that service.

The Code of Practice for Clinical and Related Waste Management (Code) describes the minimum requirements to be adhered to by WA Health to ensure clinical and related waste is segregated, stored, transported and disposed of in a manner that minimises the risk of public exposure to potentially contaminated material and minimises environmental impact. It applies to healthcare that is provided both within a facility and through healthcare at home programs.

The Code has been revised:

- to incorporate relevant elements from the superseded WA Health waste policies (ODs 0651/16, 0258/09, 0259/09, 0260/09, 0261/09) to create a single code outlining the health facility requirements for managing clinical and related waste; and
- to allow the use of new technologies and processes for waste management, including maceration/autoclave treatment, instead of incineration, of contaminated sharps, and the interstate transport of clinical waste for the purpose of incineration.

The principal legislation regulating waste management in WA is the *Environmental Protection Act 1986* and related Regulations. WA Health facilities must also comply with the requirements of the *Environmental Protection Controlled Waste Regulations (2004)*, which set standards for transportation and disposal of controlled waste. In addition, specific legislation applies to the management of radiological and pharmaceutical wastes. These are covered by the *Radiation Safety Act 1975* and the *Medicines and Poisons Act 2014* respectively.

Under the *Environmental Protection Controlled Waste Regulations (2004)*, WA Health facilities are considered to be both 'generators' and 'holders' of clinical and related waste. Each WA Health facility is responsible for the handling and management of all their waste, including clinical and related waste, from the point of generation until the final point of safe disposal regardless of who may be contracted to provide that service.

2. Scope

This Code applies specifically to all contractors and persons employed in WA Health, which incorporates the following entities:

- Department of Health.
- Metropolitan Health Services.
- WA Country Health Service.
- Health Service Providers.

The Code applies more generally to persons who may handle, transport or dispose of clinical and related waste in accordance with the 'General public health duty' pursuant to section 34

Each WA Health facility is to manage clinical and related wastes in accordance with the requirements of this Code. Each WA Health facility is to have an auditable management structure and procedures to deal with all aspects of clinical and related waste, including but not limited to:

- Roles and responsibilities of management and staff.
- Segregation and handling of specific waste streams.
- Strategies for waste reduction and recycling.
- Tracking and measuring quantities of various waste categories.
- Documentation and proof of proper and safe handling, transport and disposal of wastes.

3. Definitions

Health care waste includes all the waste generated by health care establishments, research facilities, and laboratories. It also includes the waste originating from minor or scattered sources, such as that produced in the course of home-based health care (dialysis, insulin injections, etc.).

The specific definitions of categories of healthcare waste adopted by WA Health are taken from Standards New Zealand (NZS) 4304:2002. Management of Healthcare Waste.

Clinical Waste	Clinical waste is waste that has the potential to cause disease, sharps injury or public offence and includes sharps, human tissue waste, laboratory waste, animal waste, and any other relevant waste specific to an establishment.
Related Waste	Related waste includes cytotoxic waste, pharmaceutical waste, chemical waste and radioactive waste.
Cytotoxic Waste	Cytotoxic waste includes material that is, or may be, contaminated with a cytotoxic drug during the preparation, transport or administration of cytotoxic therapy.
Pharmaceutical Waste	Pharmaceutical waste includes waste material that may arise from pharmaceutical products that have passed their recommended shelf life, discarded pharmaceuticals due to off-specification batches or contaminated packaging, drugs returned by patients or discarded by the public, drugs that are no longer required by the establishment and drug components generated during manufacture of pharmaceuticals. This excludes pharmaceutical drugs and their metabolic by-products excreted by patients undergoing therapy, uncontaminated packaging material including empty pill bottles and strip packages, used syringes and intravenous giving sets (unless contaminated with cytotoxic drugs), simple intravenous solutions such as saline or glucose without added drugs. Used syringes and intravenous giving sets may be classed as Clinical waste – sharps and therefore need to be disposed of accordingly.
Chemical Waste	Chemical waste includes waste material generated from the

	use of chemicals in medical, dental, veterinary, laboratory, ancillary and disposal procedures; specimens and cultures are separately classified as Laboratory waste. Some chemical wastes may also be classed as hazardous substances and/or dangerous goods.
Radioactive Waste	Radioactive waste includes solid, liquid, and gaseous radioactive waste materials which are no longer suitable for designated health care purposes but may have other uses.
Laboratory Waste	Laboratory waste includes specimens or cultures discarded in the course of medical, dental or veterinary practice or research, including genetically manipulated material and imported biological material or any material grossly contaminated thereby. It is to be managed in accordance with AS/NZS 2243.1, 2243.2, 2243.3 and AS 2243.4 (Int).
Domiciliary Waste	An increasing amount of healthcare is now provided in the home setting by a range of healthcare facilities and organisations. The majority of waste generated from provision of these services is classified as general waste, but all domiciliary waste should be segregated from clinical wastes, bagged and sealed within the home setting to minimise further handling. Clinical waste is to be transported in sealed containers back to a central facility for final disposal.

4. Roles and Responsibilities

Each WA Health facility is to implement a documented Waste Management Policy or Plan for the handling of clinical and related waste. This Plan is to outline the accountabilities and responsibilities of management of all employees and contracted services in order to ensure the safe management and disposal of clinical and related wastes. This is to ensure that waste is dealt with in an environmentally sound manner that minimises any risk to the community and staff. The Waste Management Policy/Plan is to also include appropriate contingency plans to cover situations where treatment or disposal options are unavailable for a significant period of time.

WA Health facilities are responsible for ensuring all employees are provided with education and training to minimise the risk of injury associated with the handling of clinical and related waste. Education and training programs should focus on an understanding of approved work practices, and procedures for use of appropriate technology and equipment, waste minimisation, segregation, labelling, containment, transport and disposal. They are to ensure that staff practise the correct use of personal protective equipment (PPE) and undertake hand hygiene procedures. They should also take into account immunisation requirements (such as hepatitis B vaccination) and first aid and medical management in the event of injury or exposure to a potentially hazardous component of the clinical and related waste.

Education and training is to be provided to employees at the time of induction to the WA Health facility, and also when new equipment is introduced or when technological change occurs. Education programs must include specific reference to first aid and medical management in the event of a sharps injury or mucous membrane exposure to blood or body fluid.

5. Specific guidelines for handling and disposal of health care waste

5.1 Segregation and Handling

Clinical and related wastes are to be effectively segregated from general and recyclable waste at the time and place of generation; the waste products are to be bagged, packaged or placed in containers as appropriate. Segregation is required to ensure subsequent safe management and must be maintained during handling, interim transport, storage and through to transportation to a site for final disposal. A single stage segregation, where the clinical waste stays in the same bag or container for storage, transport and disposal, is preferred, but it is recognised that this may not be appropriate for all clinical and related waste streams.

Manual handling of clinical waste must be in accordance with standard safe work practices, and personal contact must be minimised through appropriate containment. Plastic bags containing waste should never be compacted by hand. If manual handling is required, the items are to be held away from the body. Once containerised in the WA Health facility, no further direct handling of clinical waste is to occur by any person involved in the transport and disposal process.

Management of pharmaceutical and chemical waste must prevent access by unauthorised persons during handling, interim transport, storage, and transportation to final disposal.

5.2 Waste Labelling

Appropriately colour coded and labelled containers in accordance with AS/NZS 3816 are to be used for containment of all healthcare waste. Similar coloured bin liners are to be matched and used with each container (e.g. yellow bin liner with yellow bin; purple bin liner with purple bin).

Cytotoxic wastes must be contained in appropriately colour coded and labelled containers in accordance with Standards New Zealand (NZS) 4304:2002 as shown in Table 1.

Waste category	Colour code for container	Marking	Sign
Cytotoxic	Purple	White telophase	

Table 1: Cytotoxic Waste Labelling

Clinical and other pharmaceutical waste: Clinical waste, including sharps, is to be labelled as shown in Table 2. There is no specific symbol for pharmaceutical waste.

Waste category	Colour code for container	Marking	Sign
Clinical	Yellow	Black biological hazard	

Table 2: Clinical Waste Labelling

Domiciliary waste: Any high-risk waste, such as contaminated sharps generated in homes, are to be appropriately packaged as per Tables 1 and 2, and returned to the associated health care facility for appropriate disposal.

Containers for disposal of waste

Plastic bags used for the collection and storage of clinical waste, other than sharps, must be strong enough to safely contain the waste they are designed to hold, and must be labelled according to the colour coding shown above. They are not be filled to more than two-thirds of their capacity, in order to allow for secure final closure. They must not be secured with closure devices having sharp protuberances, such as metal staples. If they are to be used for moist heat sterilisation, the material from which they are made must be suitable for that purpose. Non-PVC plastic liners are be used for containers which are destined for incineration.

Cytotoxic waste must be contained in labelled, sealed, impervious containers that are strong enough to protect from spillage, leakage or breakage during transport. The container must be protected by secondary containment for capture of spills during transit. Reusable containers must not be used for the collection of cytotoxic waste.

Pharmaceutical waste must be collected in containers that are non-reactive, tamper-proof, designed to resist impact rupture, capture spills, and prevent the removal of waste, once it has reached the point of disposal.

Domiciliary waste: Transport of clinical waste from a home to a central facility must occur in a rigid and leak proof container that must be clearly labelled as specified above. The container must be carried in a load compartment of the car that is physically separated from the driver’s area, and the container must be restrained in the load compartment to prevent accidental spillage during transport. Finally, the vehicle must be equipped with personal protective equipment, spill kit and alcohol based hand rub, and the load compartment must be lined with impervious surfaces that can be easily cleaned. Vehicles used for the transport of pharmaceutical or cytotoxic waste must be securely locked when unattended. Where cytotoxic waste is involved, an appropriate spill kit is be fitted and staff trained in use of the kit. Waste to be transported to the collection point as soon as practicable, preferably on the same day that the waste is collected.

Sharps containers: Sharps are to be placed in rigid-walled containers that comply with AS 4031 and AS/NZS 4261. The emptying, cleaning and disinfection of reusable sharps containers must be in accordance with AS/NZS 4478. Single use sharps containers must never be emptied, cleaned or reused.

Other rigid-walled containers: Reusable rigid wall containers, such as mobile garbage bins, are to be resistant to leakage, impact rupture and corrosion, and must be washable. These containers are to be appropriately colour coded and must only be used for the collection of clinical waste. Internal surfaces must be smooth and impervious and must be cleaned regularly and whenever the internal area has been accidentally contaminated by unsealed clinical waste.

Transport and Storage

Waste transport and storage methods are to ensure that the health of staff and the public is protected at all times. The following standards are to be followed:

Transport and storage within a health care facility: Trolleys used for transport of clinical waste contained in plastic bags or non-mobile rigid containers are to be of a construction that will contain accidental leakage and be dedicated for that use and cleaned on a regular basis. Storage must be in a dedicated clinical waste storage area that maintains segregation, and the storage area must be labelled so it is readily apparent what type of waste is stored within. The storage area is to have impervious flooring and be able to contain any spillage. If there is the potential for putrefaction to occur, the storage area is to ensure that there is no public health risk and no impact on the work environment. Access to the storage area must be restricted and the area must be lockable. The area is to be kept clean, tidy and vermin-proof and there is to be access to necessary clean up equipment, spill kits, PPE and hand washing facilities.

Pharmaceutical waste awaiting disposal must be stored in such a manner that access by unauthorised persons is prohibited in the same way as would be required when the pharmaceuticals were 'in use'. Schedule 8 (drugs of addiction) medicines have special restrictions on their handling and their destruction may only be performed by certain persons as described in *Poisons Regulations 2016* (s145). There are also legislated requirements for documentation of the destruction of Schedule 8 medicines. Schedule 8 drugs awaiting destruction must be stored in a safe or in a locked cupboard on a hospital ward that is staffed continuously.

Returned medicines awaiting collection for incineration must be stored securely but in an area separated from 'in use' pharmaceutical stock.

All pharmaceutical and cytotoxic waste must be stored in a way to prevent contamination of food and to preclude access by unauthorised persons.

Transport to a disposal site: Clinical and related waste requiring transport to an appropriate disposal site is to be properly packaged and labelled. If the disposal facility is located away from the health care facility, the transportation is to be in accordance with the Environmental Protection (Controlled Waste) Regulations 2004 (WA), the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG) Code, Guidance Notes for the Transport of Class 6.2 (Infectious Substances) Dangerous Goods and other legislation that may be relevant to the specific class of waste being

transported, such as the Radiation Safety (Transport of Radioactive Substances) Regulations 2002.

The WA Health facility has a responsibility to ensure clinical waste is prepared appropriately for safe transport, and that licensed carriers (as stipulated in the Controlled Waste Regulations) are contracted to transport and track their waste to the disposal site in accordance with the Regulations.

WA Health facilities and organisations transporting small volumes of clinical waste in non-dedicated vehicles can apply for an exemption to a 'carrier licence' (refer Part 4 Controlled Waste Regulations; Part 4; Clause 49 (1)). However, transportation of clinical waste in these circumstances must occur in a rigid, leak proof container that must be clearly labelled as detailed below in this document.

All waste holders have the responsibility to ensure contracted carriers are licensed carriers and comply with the requirements of the Department of Water and Environmental Regulation (DWER) WA. Obligations of the waste holders are listed in Part 3 Division 1 of the *Environmental Protection (Controlled Waste) Regulations 2004*. During contract management, waste holders should be aware that any waste transported intrastate must comply with specific licence requirements of the DWER, and any interstate movements will require a Consignment Authority. More on controlled waste is available at <https://www.der.wa.gov.au/our-work/controlled-waste> or by contacting DWER (tel:6364 7000 email: info@dwer.wa.gov.au).

Methods for treatment and final disposal of waste

The aims of waste treatment are to render the waste as safe as possible for staff and the public, to minimise environmental impact, to reduce the volume of the waste, and to change the physical nature of the waste to render it non-recognisable. The treatment process must be equipped with automated process controls, including continuous monitoring, recording, and shut down mechanisms.

Treatment processes that are suitable for clinical waste treatment are:

- **Recycling** – the recovery of non-contaminated materials from products after they have been used by consumers.
- **Composting** – an aerobic, biological process of degradation of biodegradable organic matter.
- **Sewage treatment** – a process of treating raw sewage to produce a non-toxic liquid effluent, which is discharged into the sea, reused for irrigational purposes, or formed into a semi-solid sludge which is used as a soil amendment on land, incinerated or disposed of in land fill.
- **Incineration** – a process of combustion of waste materials at high temperature to produce an inert ash, carbon dioxide, water and minimal pollutants.
- **Autoclave / maceration** – autoclaving is the process of steam sterilisation. Maceration involves breaking up of the waste into smaller pieces.
- **Landfill** – the deposition of waste in a specially designated area, which in modern sites consists of a pre-constructed 'cell' lined with an impermeable layer (man-made or natural) that has controls to minimize emissions

WA Health facilities are encouraged to evaluate new technologies that may contribute to minimising the environmental and health impacts associated with waste disposal.

WA Health facilities must ensure that treatment options selected are approved for use in accordance with the Occupational Safety and Health guidelines of WA Health, and the Controlled Waste guidelines of DWER.

The **highest risk category** of clinical waste includes cytotoxic drugs, pharmaceuticals, and recognisable body parts. All of these categories must be disposed of by high temperature **incineration**. Incineration must occur at an authorised controlled waste facility. Where high temperature incineration is required, consideration can be given to the interstate transport of these wastes. Compliance with all conditions as outlined in the 'Transport to a Disposal site' section in this document will be required at all times.

In the case of contaminated and uncontaminated sharps, general clinical waste, and human tissue, a number of disposal methods are effective, including maceration/ autoclave technology.

Chemical wastes constitute a special case. For chemical wastes, which are also hazardous substances, information on disposal requirements is available from Worksafe (Department of Commerce) and for chemical wastes, which are also dangerous goods information on storage, transport and disposal is available from Resources Safety (Department of Mines and Petroleum). Generally, disposal of chemical wastes into the sewerage system is unacceptable due to the risk of explosion, generation of toxic gases and disruption of biodegradation processes. Where it is technically and economically feasible, the reclamation and recycling of chemical wastes should be supported.

Particular attention must be given to the disposal of chemical wastes containing significant concentrations of heavy metals including mercury and mercury amalgam. The Material Safety Data Sheet (MSDS) provides details of suitable disposal methods.

Radioactive waste management considerations are not to be distinguishable from conventional management of radioactive materials and is subject to specific legislative requirements in WA. The Radiological Council of WA is responsible for the administration of this legislation. Further information on specific definitions and other requirements are available, in the first instance, from the WA Health facility's Radiation Safety Officer (RSO), or by contacting the Radiological Council on 08 9388 4999 or by email at radiation.health@health.wa.gov.au

Blood and body fluids may be flushed into the sewer if this can be done in a way that poses no occupational safety or health risk to personnel involved in the disposal. Medical laboratory waste products (such as microbiological cultures) must be assessed to determine if they require sterilisation prior to leaving the laboratory, in accordance with relevant Australian / New Zealand Standards.

Any WA Health facility providing domiciliary services must ensure the client has written documentation for managing waste generated after completion of treatment (e.g. dialysis waste).

WA Health facilities are encouraged to seek information from waste treatment/disposal contractors and the regulatory authorities regarding the contractors' ability to manage their clinical waste stream in an appropriate manner to render the waste non-harmful.

6. Emergency Response/ Contingency Plans

Organisations involved with the storage, removal, transport or disposal of waste must have a detailed Emergency Procedures plan on how to manage accidental or deliberate spillages. Staff within these organisations must understand the elements of the plan and have knowledge of their own responsibilities within the plan.

7. Monitoring and Evaluation

All WA Health facilities are responsible for the monitoring and evaluation of waste management programs to ensure compliance with this Code and to encourage continuous improvement in waste management. Monitoring and evaluation programs are to include (as appropriate) regular or periodic audits of waste streams based on type of disposal option and volume/weights generated, monitoring of waste audit reports, maintenance of records for evaluation purposes and management practices.

The Information, Management and Reporting Directorate is to establish and provide appropriate templates for reporting purposes, which are to be adopted for use by Waste Management Committees at each WA Health facility.

8. References

8.1 Documents

Waste Management Association of Australia. *Industry Code of Practice for the Management of Biohazardous Waste (Including Clinical and Related Wastes)* 7th edition, July 2014

8.2 Legislation (available at: www.slp.wa.gov.au)

Public Health Act 2016

Environmental Protection Act 1986

Environmental Protection (Controlled Waste) Regulations 2004

Medicines and Poisons Act 2014

Poisons Regulations 2016

Radiation Safety Act 1975

Radiation Safety (General) Regulations 1983

Radiation Safety (Qualifications) Regulations 1980

Radiation Safety (Transport of Radioactive Substances) Regulations 2002

Occupational Safety and Health Act 1984

Occupational Safety and Health Regulations 1996

Further Information

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