Clinical and Related Waste Management Policy

Foreword

In recent years, Western Australia has experienced rapid population growth and seen the introduction of new legislation and agreements by Government to national waste avoidance and reduction policies. The Department of Health and others have implemented significant changes to health care practices. These and other activities such as changes within the waste management industry have placed requirements on the health care sector to develop and implement new protocols for the management of wastes generated across the sector.

The Department of Health embarked on processes to consider the implications of these changed policy directions to establish an overarching policy which addresses all aspects of clinical and related waste management. This policy establishes the minimum requirements for all government health-related services that generate relevant waste: the Department of Health, Metropolitan Health Services, Peel Health Service and WA Country Health Service (collectively referred to as WA Health). The waste streams comprising clinical and related wastes are defined and management processes for their segregation, storage, transport and disposal in or from health care settings are described.

The waste streams comprising clinical and related wastes are defined and management processes for their segregation, storage, transport and disposal in or from health care settings are described.

1. Introduction

Waste is anything discarded by an individual, household or organisation. As a result waste is a complex mixture of different substances, only some of which are intrinsically hazardous to health. The generation, transport and disposal of wastes may present threats to the environment and public health, but potential impacts depend on the types of waste management options chosen and their implementation.

The health care sector has a “duty of care” to protect public health and the environment in relation to wastes. It is important that the sector ensures that there are no adverse health and environmental consequences of activities associated with waste handling, treatment, and disposal.

General waste constitutes the bulk of waste generated by the provision of healthcare and is no more of a public health or environmental risk or concern
than domestic or household waste. This policy does not address general waste although some aspects may also be appropriate for their management.

Certain components of clinical and related wastes require special disposal. Some categories of waste produced through healthcare (such as cytotoxic, radioactive or laboratory waste) can undoubtedly be hazardous to health and the environment in certain circumstances.

However, the risks associated with clinical waste are often overstated and are based more often on public perception, the visual offence some components may cause or evidence from poor management practices. For example, the main risk of clinical waste is the danger of sharps injury resulting in infection. However international research has shown that general household waste contains large numbers of microorganisms that exceed the levels found in hospital clinical waste\textsuperscript{1,2,3,4,5}.

The risks from clinical and related wastes are dependent on the potential for exposure. Properly segregated and managed the components of these waste streams should provide few opportunities for exposure and present minimal risk to those involved in their management and disposal.

Anyone associated with the generation, segregation, containment, storage, transportation and final disposal processes should be appropriately informed about safe management practices for clinical and related wastes. Similarly, these practices should be employed to ensure that safe work systems protect everyone involved in all aspects of the waste management process.

2. Definitions

The definitions adopted by the WA Health are those described in the Australian / New Zealand Standard AS/NZS 3816:1998 Management of clinical and related wastes and any subsequent revisions.

2.1 Clinical Waste

These are wastes that have the potential to cause disease, sharps injury or public offence including sharps, human tissue waste, laboratory waste and animal waste resulting from medical or veterinary research or treatment or any other waste as specified by the WA Health facility. Clinical waste is further categorised into:

- **Animal waste**: waste arising from the whole or any part of an animal, or excreta.
- **Sharps waste**: objects or devices having sharp points or protuberances or cutting edges capable of causing a penetrating injury to humans.
- **Human tissue waste**: body tissue, organs, limbs and any free-flowing liquid body substance e.g. blood; Excludes teeth, hair and nails.
• **Laboratory waste**: a specimen or culture 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.

2.2 Related Waste

Other wastes generated within health care settings which are contaminated with cytotoxic drugs or other pharmaceuticals, chemicals and radioactive materials and can be further categorised into:

• **Chemical waste**: waste material generated from the use of chemicals in medical, dental, veterinary, laboratory, ancillary and disposal procedures

• **Cytotoxic waste**: waste material, including sharps, contaminated with a cytotoxic drug.

• **Pharmaceutical waste**: may be generated by various means including, but not limited to:
  - Expired pharmaceutical products
  - Pharmaceutical products discarded due to being in a substandard state (e.g. non-compliant storage, damaged or contaminated packaging, failed quality control specifications during manufacture)
  - Pharmaceutical products returned by patients, discarded by the public, no longer required by the public or no longer required by a healthcare facility
  - Waste generated by the manufacture or via the administration of pharmaceutical products
  - Preparations of drugs added to an intravenous solution
  - Other waste contaminated with pharmaceuticals.

Pharmaceutical wastes exclude:

• Pharmaceutical drugs and their metabolic by-products excreted by patients undergoing therapy
• Empty bottles (containing no liquid), empty pill bottles or strip packages where all tablets/capsules have been removed or other similar uncontaminated packaging
• Materials with trace quantities of pharmaceutical products (with the exception of cytotoxic drugs) such as used syringes and used intravenous sets (although they may be classed as clinical waste including sharps). Empty glass ampoules are classed as sharps and should be disposed of accordingly.
• Simple intravenous solutions such as saline or dextrose, liquid nutrient preparations and electrolyte solutions. These may disposed of as normal liquids through the sewage system.

• **Radioactive waste**: Waste material, including sharps, contaminated with a radioisotope which arises from the medical or research use of radionuclide, e.g. during nuclear
medicine, radioimmunoassay and bacteriological procedures, which may be of solid, liquid or gaseous form, and which emit a level of radiation above the level set by regulatory authorities as exempt.

2.3 General Waste

This waste stream comprises any waste material which is not otherwise specified in the above definitions.

2.4 Recyclable Waste

Are those products, packages or element thereof that can be diverted from the waste stream and through existing processes, be collected, processed and returned to use in the form of raw materials or products.

This policy refers specifically to Clinical and Related Wastes. The majority of waste generated from a WA Health facility can be classified as general or recyclable waste. Classification of commonly produced healthcare waste is described in Appendix 1. The list is not definitive and WA Health facilities are advised to clarify correct classification and disposal options for unlisted items.

3. Aim and Objectives

Aims
The aims of this policy are to:
- raise awareness of the environmental and health impacts from clinical and related wastes
- establish protocols for the management of clinical and related wastes in WA
- meet Government requirements under current waste management policy

Objectives
The objectives of this policy are to:
- define the identified risks from exposure to clinical and related wastes
- raise awareness among workers in health care and waste management industries of the requirements for appropriate clinical and related waste management
- define processes for the development and implementation of waste management protocols within health care settings
- ensure appropriate enforcement of clinical and related waste management processes
- ensure that the agreed policy is responsive to local and regional needs

4. WA Waste Policy and Legislation

WA Health must adhere to Government policy and legislation with respect to the generation and management of wastes through its activities. National and State legislation and policies place responsibility for waste management on the generators of wastes. WA Health must ensure that its practices include
taking responsibility for management of its wastes from generation through to final disposal.

4.1 Waste legislation

4.1.1 Environment

The principle legislation for general waste management in WA is the Environmental Protection Act 1986. This is administered by the Department of Environment and Conservation (DEC) which has regulatory powers to manage and protect the environment including managing the transport of hazardous wastes and developing and implementing policies and strategies to avoid and minimise waste.

The passage of the Waste Avoidance and Resource Recovery Act 2007 (WARR Act) in December 2007 led to the establishment of the Waste Authority. The primary objectives of the WARR Act are to protect human health and the environment and establish a waste-free society.

The DEC provides executive, administrative and contract management support to the Authority. The DEC also coordinates project-specific activities on behalf of the Authority and has regulates the management of hazardous wastes.

The DEC is also responsible for administration of the Environmental Protection (Controlled Waste) Regulations 2004 to regulate the transportation of wastes that may cause environmental or health risks. The Regulations provide for the licensing of Carriers, Drivers and Vehicles involved in the transportation of controlled waste on public roads including ensuring the safe transportation of controlled waste to an approved location. These regulations meet WA’s obligations under the National Environmental Protection Measure for the Movement of Controlled Wastes between States and Territories.

4.1.2 Public Health

Specific health legislation applies to the management of radiological and pharmaceutical wastes: the Radiation Safety Act 1975 and Poisons Act 1964 respectively.

In Western Australia the responsibility for the safe use of radiation lies with the Radiological Council, an independent statutory authority appointed under the Radiation Safety Act. Included in the act is the requirement for Radiological Council authorisation for disposal of radioactive wastes.

The Pharmaceutical Services Branch of the WA Health provides advice, develops policy and administers regulatory controls for medicines including drugs of dependence (S8 medicines), therapeutic goods and poisons in Western Australia under the Poisons Act. Most WA Health facility products classified as poisons that require special attention for disposal are prescription and over-the-counter medicines.
Other policy and legislative initiatives at the state and national level require health care sector responses for clinical and related wastes in Western Australia. These include, but are not limited to the:

- DEC’s Extended Producer Responsibility Policy Statement\(^8\). This approach seeks to ensure that producers and suppliers are responsible for the waste created during their products’ lifecycles, including the post-consumer management of their products.
- Environment Protection and Heritage Council’s National Packaging Covenant which is the voluntary component of a co-regulatory agreement between the packaging supply chain and all spheres of government. It is designed to minimise the environmental impacts arising from the disposal of used packaging; conserve resources through better design and production processes; and facilitate the re-use and recycling of used packaging materials.
- Return (and Disposal) of Unused Medicines (RUM) program provides for the collection at pharmacies across Australia and State (or Territory) - based disposal through incineration of unwanted and out-of-date medicines from consumers across Australia. The RUM Project is funded by the Commonwealth Department of Health & Ageing.

4.1.3 Other Sectors

Various Local Government authorities have responsibility for local management of wastes and work in collaboration with the Waste Authority, the DEC and WA Health. These authorities are the:
- WA Local Government Association (WALGA)
- Municipal Waste Advisory Council (MWAC) which has delegated authority to represent WALGA in all matters relating to waste management and is formed through collaboration with Regional Waste Management Councils.
- Regional Councils
- Each Local Government

4.2 Other Policy

4.2.1 State of the Environment Report 2007

The WA State of the Environment Report (2007) sets the basis for State and local governments, peak industry and business bodies, and peak environmental groups to progress the understanding that our economic and social wellbeing is strongly linked to the health of the environment.

5. Health and environmental impacts

The generation of wastes may present threats to the environment and public health, but this depends on the type of waste management option and the way it is controlled. Waste is a complex mixture of different substances, only some of which are intrinsically hazardous to health.
5.1 Potential health impacts
Disease or injury may result from inappropriate exposure to:
- infectious agents
- sharps
- toxic or hazardous chemicals or pharmaceuticals
- radioactive substances

For further information on specific clinical wastes, refer to Health impacts of health-care waste (World Health Organisation, 1999).

5.1.1 Infectious Agents

WA Health facility waste may contain any of a great variety of pathogenic micro-organisms that can enter the human body by a number of routes. The primary routes of infection include:
- through a puncture, abrasion, or cut in the skin
- through the mucous membranes’
- by inhalation
- by ingestion.

With the exception of waste containing pathogenic cultures or excreta of infected patients, the microbial load of health-care wastes is generally not very high. Furthermore, health care wastes do not seem to provide favourable media for the survival of pathogens. This may be due to the presence of antiseptics and the environmental conditions.

Pathogenic microorganisms have limited ability to survive in the environment as they have little resistance to conditions such as temperature variances, humidity, ultraviolet irradiation and the availability of necessary organic substrate materials. However, pathogenic microorganisms in WA Health facility waste streams that are of concern include blood-borne viruses, bacteria resistant to antibiotics and chemical disinfectants (that may be transferred to indigenous bacteria via the waste disposal system – especially from laboratory strains), pathogenic bacteria, prions and agents of degenerative neurological diseases.

Certain blood-born viruses are a concern in WA Health facility wastes. The Hepatitis B virus is very persistent in dry air and can survive for several weeks on a surface, brief exposure to boiling water and to some antiseptics, including 70% ethanol. An infective dose of hepatitis B or C virus can survive for up to a week in a blood droplet trapped inside a hypodermic needle. It should be recognised that survival times and the risk of transmission taking place is affected by a range of factors including viral load, exposure of the needle to the elements, humidity, and the amount of blood involved.

Also the role of vectors such as rodents and insects should be considered when evaluating the survival or spread of pathogens in WA Health facility wastes. This applies to management of health-care wastes both within and outside health-care establishments. Vectors such as rats, flies and cockroaches, which feed or breed on organic waste are well known passive
carriers of microbial pathogens and should be included in any waste management plan.

5.1.2 Sharps

Concentrated cultures of pathogens and contaminated sharps (particularly hypodermic needles) are the waste items that represent the most acute potential hazards to health and are considered as a very hazardous waste class. Sharps may not only cause cuts and punctures but also infect wounds through pathogen contamination.

5.1.3 Pharmaceutical and cytotoxic wastes

Pharmaceutical and cytotoxic wastes can present hazards to members of the public, waste management workers and the environment. Inappropriate storage of medicines in the home can be a source of poisonings of children and confusion for other consumers, particularly the elderly.

Disposal of pharmaceutical waste at landfill sites may result in medicines being available for both misuse and abuse by consumers.

Pharmaceutical substances do not readily break down and can remain biologically active for years; contamination of wastewater with pharmaceuticals in levels exceeding predicted no-effect concentrations has been documented. Leaching of pharmaceutical substances from landfill has also occurred.

Potential environmental risks associated the inappropriate disposal of pharmaceutical and cytotoxic wastes include direct toxicity, hormonal disorders and mutations.

Incineration at high temperatures eliminates the risks from these substances.

5.1.4 Radioactive substances

Radioactive wastes may present a range of external radiation hazards depending on their activities and emissions and may, if ingested or inhaled, present a variety of internal radiation hazards to the human body dependent upon the nuclide and its chemical and physical forms.

5.2 Groups potentially at risk

Exposure to hazardous clinical and related wastes may occur at any stage from generation to final disposal and could affect those living near a waste disposal site or influence the occupational health of the workforce involved in waste management. The groups potentially at risk include:

- medical and other health care sector personnel, including maintenance and other staff at facilities
- patients in health-care facilities or receiving home care;
- visitors to health-care establishments;
• workers in support services allied to WA Health facility, such as laundries, waste handling, and transportation;
• workers in waste disposal facilities (such as landfill or incinerators), including scavengers\textsuperscript{11}.

Other health-related activities such as home-based health care (e.g. dialysis) and that generated by illicit drug use (usually intravenous) can also generate hazardous wastes. The handling of used needle and syringes in waste facilities from illicit drug use is covered in Appendix 3.

6. Waste management options

The main waste management options are:
• \textbf{Recycling} – the recovery of materials from products after they have been used by consumers.
• \textbf{Composting} – an aerobic, biological process of degradation of biodegradable organic matter
• \textbf{Sewage treatment} – a process of treating raw sewage to produce a non-toxic liquid effluent, which is discharged into the sea, reused for irrigation purposes, or formation of a semi-solid sludge which is used as a soil amendment on land, incinerated or disposed of in landfill.
• \textbf{Incineration} – a process of combustion designed to recover energy and reduce the volume of waste for disposal.
• \textbf{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.

Other technologies are emerging to treat wastes through risk reduction methodologies which result in products appropriate for disposal to landfill or for other uses.

Consideration of each of these options should be given when developing waste management plans for waste streams.

7. WA Health Waste Management Requirements

All WA Health facilities are required to develop and implement an auditable WA Health Waste Management Policy and Plans for their activities which demonstrate implementation of the following Operational Directives.

Each Operational Directive specifies the management requirements for the clinical and related waste streams identified in this Policy. However, these Operational Directives should not be implemented in isolation but be considered in the context of this Policy and the other Operational Directives where relevant.

Each waste stream has specific management requirements that need to be addressed within each WA Health Waste Management Policy and Plan.
The Waste Management Policy and Plan should also include appropriate contingency plans should treatment and/or disposal options not be available for any period of time.

7.1 **OperationalDirective OD 0258/09**
Clinical and Related Waste Management: General Requirements

7.2 **Operational Circular OP 1961/05:**
Safe Handling of Cytotoxic Drugs

7.3 **OperationalDirective OD 0259/09:**
Clinical and Related Waste Management: Clinical Wastes

7.4 **OperationalDirective OD 0260/09:**
Clinical and Related Waste Management: Pharmaceutical Wastes

7.5 **OperationalDirective OD 0261/09**
Clinical and Related Waste Management: Radioactive Waste Management

8. **Off-site Responsibilities**

WA Health as a generator of hazardous wastes should take responsibility for the management of wastes it generates. The sustainability of the options chosen for management of the wastes is a key consideration and assessment of environmental, economic and social issues should be appropriately balanced.

WA Health has a responsibility to ensure that public health and the environment are protected including when delegated activities such as off-site transport, treatment and disposal components are carried out by third parties. These responsibilities should ensure that the above conditions are met as well as ensuring:

- Risks to the public and personnel employed by external organisations dealing with these waste streams are minimised.
- Delegated third party organisations demonstrate the existence and application of appropriate management systems for these waste streams and protection of personnel.

Appendices 2 and 3 provide management information for third party waste organisations about clinical and related wastes and occupational health issues. Appendix 4 provides an overview of current Needle and Syringe Programs in Western Australia.

WA Health Waste Management Plans should include how to ensure that third party organisations contracted to their facility meet WA Health requirements for treatment and disposal of clinical and related wastes throughout the duration of contracts.
# Waste Descriptors

## General

Waste that is not capable of being recycled, reprocessed or reused.

- General waste will include:
  - Dressings not saturated with blood/body fluids
  - Sanitary napkins
  - Disposable nappies
  - Incontinence pads
  - Colostomy bags
  - Drained urine bags
  - Drained dialysis waste (including tubing, bags, dialyser)
  - Gowns, gloves, masks
  - IV flasks and tubing without sharps
  - Oxygen tubing / masks / nebulisers
  - Suction tubing
  - Disposable kidney dishes / bowls / receptacles
  - Emesis bags
  - Enteral feeding bags and tubing

General waste can be disposed of into clear / opaque or black plastic bags. No regulated labelling however bins shall clearly state they are for general waste.

Option: Landfill

## Clinical

Clinical waste includes:

- Human Tissue
- Placenta
- Liquid blood / body fluid
- Dressings saturated with blood / body fluids
- Any tubing containing blood
- Anatomical waste (body parts)
- Sealed suction canisters containing blood / body fluids

All clinical waste is to be disposed of into designated Clinical Waste bins that meet the labelling and colour coding requirements of AS / NZ 3816. Plastic liners are to conform to colour coding.

Option: Refer OD Clinical Wastes

## Sharps

Any object or device that has sharp points or protuberances or cutting edges capable of causing a penetrating injury to humans.

The User of the sharp is responsible for immediate and safe disposal into a dedicated sharps container that meets Australian Standards.

Option: Refer OD Clinical Wastes

## Laboratory

- Microbiological cultures
  
  For remote areas only, where autoclaves not available

Bag and place in yellow bins for incineration. Autoclave prior to disposal in Yellow bins for incineration. Microwave prior to removal off site.

Option: Incineration

## Tissue Samples

As per clinical waste

The examples in Appendix 1 include items that are commonly produced in WA Health facilities, but are not exhaustive of all items that may be encountered. For any unlisted items WA Health facilities are advised to clarify correct classification and disposal options.
Appendix 2

Occupational Safety and Health Guide for the Waste Industry

Control of work-related exposure to hazards to health for workers in waste treatment and landfill disposal sites

1. Introduction

The incidence of occupational accidents in waste workers has been found to be higher than in the general workforce. There is a range of activities or situations which may increase the risk to workers of occupationally related illness or disease. Waste workers may be required to undertake repetitive lifting of heavy containers as well as other manual handling activities that increase the risk of musculoskeletal problems. The presence of unknown biological materials and other hazards, close contact or handling activity may place workers at risk of disease. In addition to airborne hazards such as volatile organic compounds (VOCs) and bio-aerosols, dust levels have been found to be high at refuse transfer stations and incinerators. Increased exposure to bio-aerosols and volatile compounds may lead to elevated incidence of work-related respiratory, gastrointestinal and skin problems in waste workers compared to the general workforce.

2. Health Hazards

Ill health from potentially hazardous substances can occur via four routes:

- **Skin Contact**, especially through cuts and abrasions or through contact with the eye’s mucus-membrane;
- **Injection** through sharps injuries;
- **Ingestion** through hand-to-mouth contact (eating, drinking or smoking); and
- **Inhalation** through the lungs.

Hazards to health may be encountered in the sorting of waste and recyclables and commonly includes;

- Faeces present in nappies, incontinence pads and stoma bags
- Animal waste (including dog/cat/bird faeces and straw/hay) produced from litter trays, hutches and pens from domestic pets;
- Dead animal carcasses;
- Rodent infestations;
- Hazardous liquids such as paint, varnishes and cleaning products;
- Car batteries, asbestos and other declared hazardous or toxic substances
- energy efficient light bulbs (mercury and other toxic chemicals)
- Blood-borne infectious material within used needles and syringes and drug/sex waste
- Broken glass and other sharp items

3. OSH Legislation

The waste management industry is subject to the requirements of the Occupational Safety and Health Act 1984 and the Occupational Safety and Health Regulations 1996. This legislation places a duty of care on both employers and employees to manage risks that may lead to injury, illness or death. Below is guidance material
that follows a risk management framework to assist employers and employees to
minimise and to provide practical control measures that aim to improve the working
environment and health of Western Australians working within the waste
management industry.

3.1 Hazard Identification, Risk Assessment and Risk Control.

Under the OSH Act employers have a duty to ensure as far as practicable that
employees are not exposed to hazards at work. The OSH Regulations require
employers to identify hazards, assess the risks and control the risk of injury or harm.

The three main steps are:

(a) Identification of Hazards

The first step involves recognising hazards that may cause injury or harm to
the health of a person.

(b) Assessing the Risks

A risk assessment of the hazards identified in the first step should result in a
list of potential injuries or harm and the likelihood of these occurring. If
hazards are listed, they should be in order of the most to the least serious,
e.g. from extreme through to low risk.

(c) Controlling the risk of injury or harm

The final step in risk assessment is to determine the control measures that
need to be taken to eliminate or reduce the risk of a person being injured or
harmed and the ongoing review of those measures. Risk control involves
introducing measures; identified from a hierarchy or preferred order of control
measures ranging from the most effective to the least effective.

The order in which controls should be considered is:

<table>
<thead>
<tr>
<th>Elimination</th>
<th>change the system of work, the most effective way to make the workplace safe is to get rid of the hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substitution</td>
<td>use a safer alternative</td>
</tr>
<tr>
<td>Isolation</td>
<td>separate workers from the hazard</td>
</tr>
<tr>
<td>Engineering control</td>
<td>use engineering solutions such as replacing humans with technology where exposure to a major health hazard is imminent, alarm systems, security, building layout and safer machinery options</td>
</tr>
<tr>
<td>Administrative control</td>
<td>training workers in appropriate systems of work such as handling used NS, blood &amp; body wastes, chemicals</td>
</tr>
<tr>
<td>Personal protective equipment (PPE)</td>
<td>this includes equipment such as gloves, goggles and sharp resistant clothing for workers</td>
</tr>
</tbody>
</table>

Where legislation and/or regulations require specific methods to control the risk,
these must be complied with e.g. use of PPE when handling asbestos [Health (asbestos) Regulations 1992]. More than one control can be used at a time to reduce
risk to an acceptable level.
3.2 Risk Management

Risk management is an ongoing process. It is important to regularly review the steps especially if there are changes in the work environment or standards are changed. Appendix 3 identifies some of the most common health hazards found in Resource Recovery Centres and Landfill sites and provides a risk management framework as a guide for employers.

3.3 Risk Control

You should prevent or eliminate exposure to hazardous substances. Where this is not reasonably practicable, exposure should be adequately controlled. For instance, in Resource Recovery and Recycling Centres the hierarchy for controlling hazardous substances should use engineering controls where possible first, then work processes and systems of working in addition to or instead of, just relying on personal protective equipment. These issues should be considered in the planning and design stages.

Control measures should be supported by:
- Clear instructions for the task;
- Training for all staff (including casual and agency staff) in operation of those control measures;
- Information to make others aware of potential dangers; and
- Regular checks and monitoring to ensure the system is working as planned and is followed.

3.4 Control measures

Along with government agency initiatives the employers can also do a number of things to manage the risk of ill health in their own workplaces –

- Work with other agencies to reduce the risk at source, e.g. needle return schemes, guidance for Local Government (LG) on how householders can better present waste and recyclables, dog/cat/bird faeces and hazardous waste or hazardous waste return schemes.

- Employers and/or operators must take all reasonably practicable steps to provide supervision necessary to ensure the health, safety and welfare of employees at work.

- 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 should be educated regarding the contents of the plan, and their responsibilities within the plan.

- Employers and/or operators should make available for the use of their employees in an easily accessible place, copies of any policies, relevant Codes of Practice and any safety risk assessment or review reports. All work must be performed in accordance with the relevant policies, codes, risk assessments and health, safety and environmental policies. The employer must make available the above material in a language that is understood by the employee.

- Provide appropriate equipment for the task, e.g. litter picking tongs, shovels, ventilation equipment, sharps boxes, containers and lighting.
• Provide and use appropriate protective clothing, e.g. gloves, safety boots and cut-resistant trousers.

• Make sure operators and their managers understand the risks involved through proper information, instruction, infection control training and supervision. It is also important that all waste workers have a comprehensive induction program. Ongoing education regarding exposure to health hazards in waste and appropriate infection control practices should also be considered.

• Promote good personal hygiene. It is essential that workers wash and clean their hands before - eating, drinking, smoking, using the phone, taking medication, inserting contact lenses, wearing gloves, using the toilet, or after becoming contaminated with infected material.

• Make sure workers know what to do if there is a spillage, if they become contaminated or if they handle contaminated material. Workers should also know what the reporting arrangements are, should they be potentially exposed to a hazardous substance.

• Receptionists, cleaners and ground staff in waste facilities (incl. transport agencies) should be given specialist training or education as required e.g. receptionists should receive training in how to handle an exposure to toxic chemicals and emergency procedures relating to medical attention.

• Workers dealing with waste and hazardous material should be trained and educated in the emergency procedures in the event of a significant spillage which could result in a multi-casualty event. Procedures should align with Health Care Facilities Disaster Plans.

4. Communication

One objective of the OSH Act is to foster co-operation and consultation between employers and employees. Employers are required to consult and co-operate with safety and health representatives, where they exist in the workplace, and with other employees on occupational safety and health matters. Consultation and co-operation between employers and employees is the key to providing and maintaining a safe and healthy workplace. Participation of employees is important, as they are most likely to know about risks associated with their work. Safety and health representatives, where they exist, have an important role in this consultation. Employer and employee involvement in identifying hazards, assessing the risks and controlling the risk of injury or harm will help ensure employees have a commitment to this process and any changes that result.

While the emphasis is on consultation and cooperation, problems may still arise when there are disagreements between employers and/or operators and employees on health and safety issues. Workplace issues are best resolved between the employer and employees either individually or through workplace occupational safety and health representatives. However, a WorkSafe inspector may be notified where issues remain unresolved.
5. Injury Notification

The OSH Act requires that an employer report injuries, and provide first aid facilities and procedures. It is also recommended that employers keep a record of all workplace injuries. The following injuries and diseases must be reported to WorkSafe as soon as possible:

- all serious injuries, for example, fractures, loss of sight and so on
- any injury which in the opinion of a medical practitioner is likely to prevent the worker being able to work for 10 consecutive days
- specific infectious diseases including viral hepatitis and HIV which could have been contracted during work
### Infections Diseases

- Bacteria and Viruses can infect the body if they are inhaled, swallowed, or penetrate the skin if it is punctured with contaminated sharps or broken glass.
- They can also cause allergic reactions. Potentially vulnerable workers can include loaders handling waste and recyclables and pickers hand-sorting at conveyor belts or MRFs.
- Drivers and crew discharging loads at sorting stations or tips and staff employed at and working close to discharging vehicles may be exposed to high levels of dust that might contain microorganisms.

<table>
<thead>
<tr>
<th>Level of Risk</th>
<th>Examples Of Risk Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme</td>
<td>Adequate ventilation, smooth impervious and easily cleanable and chemical resistant work surfaces (floors, walls, ceilings and wash areas) to be considered during planning and construction stages.</td>
</tr>
<tr>
<td></td>
<td>Good personal hygiene &amp; hand washing facilities installed in appropriate work areas.</td>
</tr>
<tr>
<td></td>
<td>Consider installing proper filtration in collection vehicle cabs to provide good air quality for drivers and crew.</td>
</tr>
<tr>
<td></td>
<td>Make sure filters are changed in accordance with the manufacturer's instructions.</td>
</tr>
<tr>
<td></td>
<td>Sprinkler systems around the tip can reduce dust emissions during tipping operations.</td>
</tr>
<tr>
<td></td>
<td>The area around pits should be kept clean (taking into account the nature of the material and activity).</td>
</tr>
<tr>
<td></td>
<td>Avoid dry brushing by using vacuum cleaners to remove dust accumulation from floors and ledges.</td>
</tr>
<tr>
<td></td>
<td>Use of PPE</td>
</tr>
</tbody>
</table>

### Tetanus

- Tetanus can be caused by sharp objects, such as wood shards, nails, metal etc penetrating tissue.
- Symptoms include exaggerated reflexes, muscle rigidity and uncontrolled muscle spasms.
- Immunisation is available from GPs regardless of workplace risk.

<table>
<thead>
<tr>
<th>Level of Risk</th>
<th>Examples Of Risk Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme</td>
<td>Remove nails from timber and avoid walking on waste or recyclable loads and piles.</td>
</tr>
<tr>
<td></td>
<td>Wear protective shoes, boots or clothing.</td>
</tr>
<tr>
<td></td>
<td>Encourage workers to keep vaccinations up to date, i.e. by periodic reminders with pay notifications.</td>
</tr>
<tr>
<td></td>
<td>Use of PPE</td>
</tr>
<tr>
<td>Condition</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Leptospirosis| - Leptospirosis is a water-borne infection associated with rats.  
- Symptoms include fever, headache, vomiting and muscle pain – it can lead to jaundice, meningitis and kidney failure  
- Wear suitable protective gloves, shoes, boots, trousers, and/or clothing.  
- Avoid handling bags and other receptacles accessible to rats without hand and forearm protection.  
- Wash hands after handling any contaminated clothing or material and always before eating, drinking and smoking or taking medicines.  
- Use of PPE |                                                                                                                                                                                                                   |
| Toxoplasmosis| - Toxoplasmosis is a parasite infection that is transmitted through cat faeces.  
- It does not usually cause illness, however can cause harm to an unborn baby if the mother is infected during pregnancy and severe illness when a persons immune system is seriously damaged such as by HIV.  
- High hygiene standards required.  
- Training in handling of animal wastes.  
- Wash hands after handling any contaminated material (i.e. kitty litter tray wastes) and always before eating, drinking and smoking or taking medicines.  
- Care taken with contaminated clothing when taken home for washing.  
- Use of PPE |                                                                                                                                                                                                                   |
| Q Fever      | - *Coxiella burnetii* is highly infectious and very hardy – it can survive in dust or soil for a year or more, and can travel in dust for long distances in the wind.  
- Animals that breathe the dust become infected – cattle, sheep, goats (particularly feral or wild goats), as well as domestic dogs, cats and native animals including kangaroos and bandicoots.  
- Animals shed the bacteria through their faeces, urine, milk, and blood.  
- Humans can pick up the bacteria when they come into contact with these materials (or something contaminated by them like straw, wool, hair or hides).  
- Humans may breathe in the bacteria in droplets, dust or dried matter in the air, or via ingestion.  
- *Q* fever can also cause a form of pneumonia or hepatitis.  
- Vaccination is available.  
- Training in the handling of dead animals and animal wastes.  
- Washing hands after handling contaminated materials and always before eating drinking and smoking.  
- Use of PPE |                                                                                                                                                                                                                   |

- HIV, hepatitis B, hepatitis C are                                    - Develop a policy for blood
<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
<th>Precautions and Recommendations</th>
</tr>
</thead>
</table>
| HIV and Hepatitis B \ Hepatitis C | Blood-borne viruses acquired by the transfer of body fluids from an infected person to the body fluids of the recipient i.e. by contaminated sharps (needle stick injury) or through mucosal contact with infected blood (i.e. splashing of blood or body fluids into eyes, nose, mouth or broken skin of a waste worker). | Extreme borne viruses that are to include –  
  • Training in handling used N&S, use of PPE and the Principles of Standard Precautions, spills and infection control.  
  • What to do in the event of exposure and options available i.e. immediate first aid response, medical assessment, prophylaxis treatment, counselling, testing, monitoring and informed consent, record keeping and notification.  
  • Provide sharps boxes and pincer tools, litter pickers, tweezers or a dust-pan and hand brush for picking up needles. Use receptacles with lids.  
  • Use of PPE |
| Hepatitis A | Hepatitis A is transferred by ingestion of infected faecal material. | High  
  • Provide hygiene facilities, information and training.  
  • Personal hygiene is essential, including washing hands before eating, drinking, smoking and before/after using toilets.  
  • Immunisation can be offered.  
  • Encourage householders to securely wrap faecal matter (pet waste and litter) before placing it in domestic wastes.  
  • Consider running awareness campaigns among householders to raise these issues.  
  • Use of PPE |
| Fungi and moulds | Fungi and moulds are likely to be found in damp areas, on organic matter or naturally occurring soil. They are widely found in the environment and can cause infection and allergy, such as farmers lung and even Legionnaires disease if aerosols are breathed in. | High  
  • Provide gloves, face masks and appropriate ventilation for workers. Good hygiene is also required and regular hand washing is important.  
  • Middle aged, fit and health males that are heavy drinkers of alcohol and smokers are more at risk of becoming infected with Legionnaires disease  
  • Use of PPE |
| Salmonellosis | Salmonellosis can be caused by various species of the bacteria salmonella and is | High  
  • Provide hand-washing facilities.  
  • Good personal hygiene is |

Superseded by: OD: 0651/16
<table>
<thead>
<tr>
<th>Category</th>
<th>Risk Description</th>
<th>Severity</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrotal cancer</td>
<td>In the UK, Scrotal cancer is a high risk for waste workers. This has been attributed to mineral oils, typically used engine oil, coming into contact with the worker’s scrotum via soiled hands and impregnated clothing.</td>
<td>Medium</td>
<td>Provide clean clothing and washing facilities for soiled work clothing. Good personal hygiene is essential and workers should wash their hands before and after using the toilet. Dry hands thoroughly prior to using gloves. Use of PPE.</td>
</tr>
<tr>
<td>Used Needles and Syringes &amp; other sharps</td>
<td>Risks include blood-borne diseases, puncture wounds, localized infections and diseases such as Tetanus. Also anxiety of the worker and family members may be enhanced in regards to blood-borne disease transmission. Any broken skin provides an avenue for transmission of microbial pathogens.</td>
<td>Extreme</td>
<td>Have a policy, train staff in handling used needles and syringes. Identify a true picture of the problem, identify the most likely places/locations where the risks are highest, and where additional precautions and controls may be required. All sharp injuries require immediate medical attention. See Appendix 4 for more details on control measures specifically for needle and syringe injuries. Use of PPE.</td>
</tr>
<tr>
<td>Metals surgically implanted in the body and body piercings</td>
<td>Many sorting facilities use very strong magnetic fields to attract all metals (incl. aluminium) for further processing. Workers should be made aware that the magnets can displace metal in the body including body piercings. Body piercings (and jewellery) should be removed prior to working in a waste facility.</td>
<td>High</td>
<td>Ensure workers are aware of the risk associated in working in magnetic sorting areas. Have a policy regarding the removal of all jewellery. Use of PPE.</td>
</tr>
<tr>
<td>Chemicals and Harmful substances</td>
<td>Workers may come across chemicals, metals and other toxic or corrosive substances. Examples include – o Pesticides o Acids, o Solvents o Cleaners, o Paint, o Asbestos, o Wood Dust Some chemicals and harmful substance listed above can cause allergic reactions, such</td>
<td>High</td>
<td>Training in where common harmful household substances may be found (i.e. mercury in energy saving light bulbs, car batteries), policies on how to handle toxic substances and appropriate first aid measures such as wash down areas, showers. A hazardous substances register is compiled and MSDS are made available for employee reference.</td>
</tr>
</tbody>
</table>
| **Asbestos** | • Asbestos is most likely to be found in demolition rubble.  
• It is when it is in broken pieces that it presents a risk due to the fibres being exposed to abrasion and becoming airborne.  
• Asbestos can cause disease many years from initial exposure due to damage or continual scarring of the lung tissue and surrounding organs from asbestos fibres that penetrate deep into the lungs. | High | • Training in the building materials asbestos is commonly found in and what it is likely to look like is essential.  
• Wearing PPE such as a P2 face mask is essential to stop the fibres from entering the lungs.  
• Wetting down the material, wrapping in building plastic and isolation is required with appropriate disposal to a landfill site licensed to take asbestos. |
| **Dermatitis and skin diseases** | • Transmission of pathogenic bacteria or viruses due to direct contact with broken skin.  
• Causes of dermatitis and skin disease include wet work and contact with chemicals or dust, which produces an abrasive effect on the skin or removes the skin's natural oils, allowing the skin surface to dry and crack, especially on hands, wrists, elbows and forearms.  
• Fingers and the webs between the fingers are the most commonly affected parts of the body.  
• Symptoms include itching, rough or dry skin and redness. | High | • Contact with wet material is often unavoidable; protect hands by wearing barrier cream then gloves.  
• Hands should be thoroughly dried after washing and before pulling on gloves.  
• Any broken skin should be covered with a waterproof barrier, or worker removed from work area until the problem clears up.  
• Use of PPE |
| **Manual handling** | • Waste workers undertaking jobs involving physical stress or repetitive movements are most at risk of manual handling injuries.  
• The Commission for OSH Code of Practice for Manual Handling is an important guide, which includes strategies to help employers find or design solutions for lifting hazards. | High | • Training and manuals covering the Code.  
• Look at alternative ways of lifting or carrying waste if necessary. |
| **Outdoor Work Protection** | • Outdoor workers can be subject to Overheating and UV sunlight | High | PPE:  
• **Sun protection glasses** which comply with AS1337 (1992) and AS1067 (1990) as appropriate.  
• **Sunscreen cream** registered under Australian Standards and be a minimum SPF 15+ Broad Spectrum type.  
• **Hats and protective clothing** Wherever |
practicable, the Ultra-violet Protection Factor (UPF) of clothing fabric which should be 20UPF or better supplied for outdoor workers.

- **Overheating and Shade**
  - Rescheduling of particularly heavy work outdoors between the periods 10:00am to 2:00pm. Where necessary the erecting of a shade structures.

- **Water and Sanitary Facilities**
  - Access to adequate supplies of drinking water and sanitary facilities with hand wash basins are necessary.
Appendix 4

Needle and Syringe Programs (NSP) are an important public health measure. Evidence clearly indicates that these programs have prevented people from sharing injecting equipment and have therefore prevented the spread of HIV and hepatitis C among people who inject drugs and to the wider community. According to the Australian Government Department of Health and Ageing (2009) Australian Governments invested $243 million in NSPs between 2000 and 2009, with a return of estimated savings to the healthcare system of $1.28 billion in averted costs of HIV and hepatitis C treatment. Over this time period, NSP have resulted in the prevention of an estimated 32,050 cases of HIV and 96,667 cases of hepatitis C12.

Needle and Syringe Programs (NSP) in Western Australia

Needle and syringe programs (NSP) have operated formally in Western Australia since 1987. The Poisons Act 1964 allows approved organisations to provide sterile injecting equipment to people who inject drugs. Any organisation that operates an NSP must meet be approved and meet specific requirements as stated in the Poisons Regulations 1965.

There are three main service models for NSP in Western Australia:

- **Needle and syringe exchange programs (NSEP)**
  NSEP are run by non-government organisations (WA Substance Users’ Association and WA AIDS Council) and they supply free sterile needles and syringes conditional upon the return of used items. NSEP also provide education, health information and referral to drug treatment and medical services. NSEP currently account for around 56% of needles and syringes distributed in WA. In 2008, NSEP distributed over 2 million NS and consistently over the past 5 years have experienced a 97% return rate of used equipment.

- **Pharmacies**
  In WA there are approximately 500 pharmacies and the majority operate NSP. Pharmacies can retail a range of injecting equipment in pre-packaged products including Fitpacks® and Sterafits™. These products provide a safe disposal container for used needles and syringes. Pharmacies currently account for around 33% of needles and syringes distributed in WA, distributing over a 1 million needles and syringes in 2008.

- **Health-service based NSP**
  Health-service based NSP are run out of hospitals, community health centres and other related health services. They currently account for around 10% of needle and syringe distribution in WA. In 2008 they distributed over 300,000 needles and syringes. Some hospital services make needles and syringes available through vending machines.

Needle and Syringe Disposal and Community Safety

Community safety is a high priority for needle and syringe programs. Current harm reduction strategies and health policies encourage safe disposal of used needles and syringes by return to NSEP, disposal into special purpose needle and syringe disposal bins, or into domestic waste. The primary reason for managing used needles and syringes in this way is to protect the public from exposure to needles and syringes that may have otherwise been discarded in public places.
References

9. World Health Organisation. Safe Management of Wastes from Health-Care Activities 1999 Chapter 3
11. World Health Organisation. Safe Management of Wastes from Health-Care Activities 1999 Chapter 3

Bibliography