WorkSafe VICTORIA

A guide for employers

Managing cytotoxic medicines and related waste

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VICTORIA State Government

Contents

1. Introduction to cytotoxic medicines

Who is this guidance for?

This guidance provides advice to employers on how to prevent exposure to cytotoxic medicines and related waste.

It may also be useful for

- related service providers engaged by the employer, such as linen providers or waste collectors
- other duty holders including manufacturers and suppliers
- employees.

It is not intended as an operational manual.

In this guidance, 'managing' cytotoxic medicines includes:

- handling
- preparing
- transporting
- administering
- storing
- disposing of related waste
- managing spills.

WorkSafe recommends that cytotoxic medicines are managed as hazardous substances. To determine any exceptions to this, employers must always refer to the:

- product information including the relevant Safety Data Sheet (SDS)
- Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

For more information, see:

- Chapter 2: 'Legal requirements for managing cytotoxic medicines'
- WorkSafe, *Compliance code: Hazardous substances*.

What are cytotoxic medicines?

Cytotoxic medicines contain chemicals that can damage or kill cells, mainly through how they affect cell reproduction.

Once inside the body, they are known to be highly toxic to non-target cells. Their effect is:

- greatest on cells that reproduce/divide most rapidly
- dose-specific.

This is why cytotoxic medicines are commonly used to treat cancer.

1. Introduction to cytotoxic medicines

Many cytotoxic medicines are:

- **carcinogenic**, which means they can cause cancer
- **mutagenic**, which means they can cause mutations to DNA that may be transmitted to future generations
- **teratogenic**, which means they can cause birth defects and fetal malformation, or halt a pregnancy
- **genotoxic**, which means they can damage the genetic material of a cell.

In lower doses, cytotoxic medicines are also used to treat other medical conditions such as:

- rheumatoid arthritis
- ectopic pregnancies
- multiple sclerosis
- auto-immune disorders.

This guidance does not cover all types of cancer treatments as not all are cytotoxic. For example, the Bacillus of Calmette and Guerin Strain of Mycobacterium bovis (BCG). To ensure safe handling, it is best practice to:

- check the SDS
- do a risk assessment.

The toxicity of cytotoxic medicines means they can present significant risk to those who manage them. This includes from:

- handling any waste, such as the bodily substances of a patient who has received cytotoxic medicine
- touching equipment used to prepare or administer the cytotoxic medicine.

Exposure to cytotoxic medicines

Exposure to cytotoxic medicines may occur in the following settings:

- hospitals
- pharmacies – hospital and community
- analytical or research laboratories
- doctors' surgeries and medical practice rooms
- domiciliary ambulatory clinics
- patient homes
- nursing homes and hostels
- veterinary clinics
- ambulance vehicles and other transport services
- pharmacy and pathology courier services
- waste collection and disposal facilities
- warehousing and distribution
- mortuaries.

After cytotoxic medicine is administered, all the patient's bodily fluids can be contaminated with either:

- the unchanged drug
- active drug metabolites.

The period during which bodily fluids and waste may be contaminated with cytotoxic medicines will differ for individual drugs and patients.

The Cancer Institute NSW (eviQ) recommends cytotoxic precautions are taken with all patients for a standard period of seven days from administration, although care should be taken to identify drugs with extended excretion.

1. Introduction to cytotoxic medicines

The medicine's SDS or product information will confirm if there is an excretion time beyond seven days. If so, there will need to be cytotoxic precautions in place for this extended period.

Workplace exposure to cytotoxic medicines can occur if:

- there are no control measures for preparing, administering, storing and handling the medicines and related waste
- control measures are inadequate
- control measures are not properly followed
- control measures fail
- accidents occur, such as spills or breakages.

Cytotoxic medicines can create a risk to the health of employees through:

- **Inhalation**: breathing in the substance as aerosols, powder or droplets.
- **Ingestion**: swallowing contaminated food/drinks or other hand-to-mouth contact.
- **Absorption** through the skin or eyes from:
  - direct contact, including a cytotoxic spill
  - contaminated surfaces, clothing or handling bodily waste products.
- **Injection** into the body by contaminated sharp objects or needlestick injury.

Activities that might expose people to cytotoxic medicines can include:

- preparing, administering, transporting or storing medication
- managing spills or contaminated body fluids
- contact with equipment or surfaces where cytotoxic medicines are prepared or administered
- handling biological waste from people treated with cytotoxic medicines – this can include soiled dressings and used continence aids
- contact with contaminated linen
- handling, transporting and disposing of cytotoxic waste.

It is important to consider all people at the workplace who may perform these activities, such as:

- pharmacists and pharmacy technicians
- nurses and medical officers
- laboratory employees
- cleaning, maintenance and waste disposal employees
- laundry employees
- patient care assistants
- carers
- veterinary employees
- ambulance officers and drivers
- allied health employees
- manufacturers of cytotoxic medicines and employees in the drug supply chain
- researchers
- couriers and delivery drivers.

1. Introduction to cytotoxic medicines

Potential health effects

Exposure to cytotoxic medicines, such as preparing medicines without proper risk controls or managing a spill without appropriate personal protective equipment (PPE), may have serious health effects. These can include:

- abnormal formation of cells and genetic mutation
- changes to normal blood cell count
- abdominal pain, hair loss, nasal sores and vomiting
- liver damage
- contact dermatitis, or local toxic or allergic reaction
- foetal loss or malformations
- fertility changes in males and females.

Refer to the relevant SDS for further information. If exposure does occur, seek medical advice.

Employers must take all reasonably practicable steps to eliminate the risks of exposure to cytotoxic medicines. Where appropriate risk control measures are followed, the risks to health are greatly reduced.

Employees may elect not to manage cytotoxic medicines when they are:

- planning parenthood
- pregnant
- breastfeeding.

Employers should support requests from these employees that will further reduce their exposure.

2. Legal requirements for managing cytotoxic medicines

Occupational health and safety laws

Under the *Occupational Health and Safety Act 2004* (OHS Act), employers have a duty to provide and maintain a working environment that is safe and without risks to health. This includes protecting the health and safety of people who manage cytotoxic medicines, such as:

- employees
- independent contractors
- employees of independent contractors. This may include manufacturers and suppliers who have agreements to provide services related to cytotoxic medicines.

Employers must do this so far as is reasonably practicable.

Employer obligations under the OHS Act extend to protecting the health and safety of people affected by the administration of cytotoxic medicines. This applies so far as is reasonably practicable and may include:

- patients
- family members or other care-givers
- animal owners.

When managing cytotoxic medicines, employees also have duties to take reasonable care of:

- their own health and safety
- the health and safety of others who may be affected by the employee's acts or omissions at the workplace.

Under the OHS Act, manufacturers must provide information on the safe handling of all substances that are supplied to a workplace. This includes cytotoxic medicines. All employees who work with cytotoxic medicines have a right to receive information on safe handling of specific medicines on request.

The Occupational Health and Safety Regulations 2017 are another set of laws. Known as the OHS Regulations, they build on the OHS Act. They set out how to fulfil duties, obligations and processes that support the OHS Act.

Cytotoxic medicines as hazardous substances

Most cytotoxic medicines:

- are classified as hazardous by Part 3 (Health Hazards) of the GHS
- fall under the definition of 'hazardous substances' in the OHS Regulations.

The medicines are regulated by Part 4.1 (Hazardous Substances) of the OHS Regulations where:

- this definition of 'hazardous substances' applies
- their use is related to a work activity and does not otherwise fall within an exception to Part 4.1.

This is distinct from the personal use of a cytotoxic medicine by a patient at home without the aid of a carer or nurse.

The aim of Part 4.1 is to create safe working environments for employees who handle hazardous substances that can harm their health.

2. Legal requirements for managing cytotoxic medicines

All manufacturers and importing suppliers who supply hazardous substances to workplaces must:

- Determine if a substance meets the definition of a hazardous substance before it is first supplied to a workplace.
- Prepare and provide an SDS for hazardous substances.
- Update the SDS:
  - at least every five years
  - when there is any new information for the product
  - when the product changes.
- Correctly label any container containing a hazardous substance before it is supplied to the workplace.

Employers must:

- Obtain an SDS for each hazardous substance supplied for use in the workplace.
- Prepare a register of hazardous substances.
- Be able to identify hazards associated with the hazardous substances. For example, by looking at the SDS.
- Ensure hazardous substances are appropriately labelled.

WorkSafe's *Compliance code: Hazardous substances* gives practical guidance for duty holders on how to comply with the OHS Regulations.

Cytotoxic medicines as dangerous goods

Some cytotoxic medicines are classified as dangerous goods. For example, cyclophosphamide monohydrate. Where these medicines are managed, the following legislation applies:

- *Dangerous Goods Act 1985*
- Dangerous Goods (Storage and Handling) Regulations 2022.

Other relevant sources

See Chapter 12 for references to other information on managing cytotoxic medicines and related waste. This includes a comprehensive list of:

- relevant standards
- codes
- guidance notes
- websites.

Find more information about employer and employee duties on the WorkSafe website, **worksafe.vic.gov.au**. You can also call the WorkSafe Advisory Service on 1800 136 089.

2. Legal requirements for managing cytotoxic medicines

Health monitoring

Health monitoring checks for changes in the health of an employee who has been exposed to hazardous substances in the workplace. It can let the employer know if:

- control measures are not effective
- someone's health is being affected by exposure to hazardous substances.

Health monitoring is not a substitute for effective control measures.

When health monitoring is required

Under section 22(1)(a) of the OHS Act, employers must monitor the health of employees so far as is reasonably practicable. It is the employer's obligation to determine if health monitoring is required.

The OHS Regulations require an employer to provide health monitoring for employees when:

- they are exposed to any hazardous substance listed in Schedule 9 of the OHS Regulations
- it is reasonably likely that an employee's health will be adversely affected by the exposure under the conditions of work at the workplace.

For cytotoxic medicines, this means that health monitoring may need to be provided where:

- an employee is exposed to cytotoxic medicines
- this exposure is reasonably likely to have an adverse effect on their health.

Situations where the employer may be required to provide health monitoring include:

- Symptoms have been reported that are likely to be related to exposure to cytotoxic medicines.
- Incidents (such as spillages) have occurred, and employees have not been protected from exposure to cytotoxic medicines by adequate control measures.
- Where an employee is preparing cytotoxic medicines and the risk to health is primarily controlled by lower level control measures. For example, the use of PPE or administrative controls.

  See 'Hierarchy of control for cytotoxic medicines' in Chapter 5 for more information.

Employers should consult with a medical practitioner to see if a health monitoring program is needed in their workplace. The practitioner should be qualified and experienced in occupational medicine. This should consider:

- the cytotoxic medicines being used
- the method of use
- the routes of exposure
- current controls
- any employee health and safety concerns
- the scope of any health monitoring program.

A risk assessment will help to identify employees who may require a health monitoring program. This should consider:

- if they routinely manage cytotoxic medicines as part of their job
- the conditions in which they manage the cytotoxic medicines.

2. Legal requirements for managing cytotoxic medicines

Considerations of a health monitoring program

To develop a health monitoring program, employers need to consult with:

- the medical practitioner
- employees
- any HSRs.

Where health monitoring is required, employers need to ensure that:

- It is carried out under the supervision of a registered medical practitioner who is appropriately trained in occupational medicine.
- Acceptable arrangements are made for employees to participate. For example, employees should not have to travel long distances.
- The registered medical practitioner prepares a report. Copies are given to the employer and relevant employee.
- Employees are aware that monitoring reports are kept confidential.

Employers may also consider:

- giving prospective employees information about the risks of working with cytotoxic medicines and the process of health monitoring
- doing pre-employment or baseline health monitoring, where applicable
- establishing appropriate governance and file storage systems
- developing internal procedures.

The medical practitioner should inform any employer review of risk controls to ensure they remain effective. Recommendations from the medical practitioner should be applied. Employers must consult any HSRs in this process.

For further information see:

- SA Health, *Cytotoxic drugs and related waste: A risk management guide for South Australian health services*
- Workplace Health and Safety Queensland, *Guide for handling cytotoxic drugs and related waste*
- WorkSafe, *Compliance code: Hazardous substances*
- WorkSafe, *Health monitoring* guidance.

Biological monitoring

Biological monitoring is a way to identify a person's exposure to a chemical:

- The exposed person produces a biological sample. For example, urine, blood or breath.
- The sample is measured for the chemical or its breakdown products.

There is currently no internationally recognised form of biological monitoring or health assessment technique to predict the effect of exposure to cytotoxic medicines. Research is continuing in this area.

Employers should be aware of and apply developments for monitoring the health of employees who manage cytotoxic medicines. Safe Work Australia's guidance may help when considering the benefits and inclusions of a health monitoring program:

- *Health monitoring for registered medical practitioners guide*
- *Health monitoring when you work with hazardous chemicals*
- *Health monitoring: Guide for cyclophosphamide*.

Access the guides at **safeworkaustralia.gov.au**.

3. Labelling of cytotoxic medicines

Symbols

There are two symbols used to identify cytotoxic medicines and waste products.

Figure 1: In healthcare, cytotoxic materials are identified by a purple symbol representing a cell in late telophase.

Figure 2: The GHS pictogram for health hazards used on the labelling of cytotoxic medicines.

Figure 1 shows the universally recognised symbol for cytotoxic medicines and their waste products. This symbol represents a cell in the final stage of cell division (telophase).

This symbol is commonly used to identify where cytotoxic precautions are required. It is present on:

- medication packaging
- commercially available cytotoxic waste disposal products such as purple bins and bags.

Figure 2 shows the pictogram the GHS uses for health hazards. This includes cytotoxic medicines.

The manufacturer or importing supplier of cytotoxic medicines to the workplace must use this image when labelling a container of cytotoxic medicine.

Safety data sheets

For any cytotoxic medicine, the manufacturer or importing supplier must:

- prepare current advice on safe handling such as an SDS
- provide the SDS when supplying cytotoxic medicine.

The SDS must include the:

- health risks
- first aid requirements
- recommended controls for storing and handling cytotoxic medicines.

The employer must obtain a current SDS on or before the first supply of a hazardous substance to the workplace.

For specific guidance and advice on labelling and SDS requirements, see WorkSafe's *Compliance code: Hazardous substances*.

4. Information, instruction, training and supervision

Duty to employees

Employers must give employees the information, instruction, training or supervision they need to work safely. This is a duty under section 21 of the OHS Act.

This means you must provide information, instruction, training and supervision so employees can competently handle cytotoxic medicines and related waste. This may include ongoing assessment of an employee's competency, based on their roles and responsibilities.

Employee training should occur:

- at induction
- before starting duties that involve cytotoxic medicines and related waste
- when new cytotoxic medicines are introduced into the workplace
- when new equipment is introduced or procedures change
- when an incident occurs
- on an ongoing basis.

Who should be trained?

Employees should be trained if their work activities mean they may have contact with:

- cytotoxic medicines
- waste
- patient waste.

Employees includes:

- independent contractors
- employees of independent contractors.

Employers should do a risk assessment to identify employees who need training. This may include:

- pharmacy employees
- nursing, midwifery and other care employees
- medical employees
- laboratory employees
- veterinary surgeons and veterinary nurses
- ambulance officers
- supervisors and managers
- maintenance personnel
- stores personnel
- cleaners
- on-site waste transporters
- couriers and porters who transport medicines from:
  - warehouses to pharmacies
  - pharmacies to wards
- waste-handlers
- waste generators.

4. Information, instruction, training and supervision

Training requirements

Information, instruction, training and supervision needs to cover the hazards associated with cytotoxic medicines. This may include:

- How to properly use and maintain risk control measures.
- Ongoing assessment of competency. An employee must be technically proficient based on their role and responsibilities.

Training and information for handling cytotoxic medicines and related waste should cover:

- legislative requirements for:
  - health and safety
  - waste management
- the risk management process
- how to locate and use an SDS
- information in an SDS
- information on labels of containers of cytotoxic medicines and how they identify the health risk
- hazards and potential risks that employees may be exposed to when handling cytotoxic medicines
- risk control measures – including how to put in place, use and maintain them
- appropriate work practices and procedures to follow when using cytotoxic medicines – this includes handling, storage, administration and disposal
- storing, transporting, treating and disposing of cytotoxic waste, including biological waste
- how to use and maintain equipment
- how to choose, use, clean, put on, take off and dispose of PPE
- what to do after an accident, injury or spill, including for an evacuation or special decontamination
- where to find first aid resources
- any health monitoring and reporting
- risks from exposure while planning pregnancy, and during pregnancy and breastfeeding
- privacy and confidentiality
- the role of direct line managers in health and safety matters
- written standard operating procedures.

As an employer, you should:

- Develop policies and procedures for handling cytotoxic medicines.
- Keep training records to show who has been trained and when.
- Review training regularly to ensure information is current. The available medical and scientific advice is constantly changing.

5. Managing the risks from handling cytotoxic medicines

The risk management process

A hazard is something that can cause harm. A risk is the chance of a hazard causing harm. Harm includes injury, illness and death. Like other industries, handling cytotoxic medicines has a wide range of hazards and risks. The risks must be controlled by duty holders, so far as is reasonably practicable.

A safe and healthy workplace requires an organised approach to finding and controlling hazards and risks. This approach is known as the risk management process.

The risk management process follows a series of steps:

1. **Identify** hazards.
2. **Assess** the risks those hazards create.
3. **Control** risks. Do this by eliminating the risk. If it's not reasonably practicable to eliminate risks, reduce them as far as is reasonably practicable.
4. **Review and revise** risk control methods.

The importance of consultation

A successful risk management process involves consultation between employers and employees, as well as any Health and Safety Representatives (HSRs). Consultation is a requirement under Part 4 of the OHS Act.

Consultation draws on the experience and knowledge of employees and HSRs. It must, so far as is reasonably practicable, happen at each stage of the risk management process. For example:

- When **identifying** hazards and risks arising from cytotoxic medicines. This includes:
  - before changing systems of work that are likely to change the risk of managing cytotoxic medicines
  - when a registered medical practitioner has identified adverse health effects through health monitoring
  - when following up any adverse incident involving managing cytotoxic medicines
  - where risk control measures do not adequately control risks
  - on request from an HSR.
- When determining which **control** strategies to apply to eliminate or reduce risks from the handling of cytotoxic medicines.
- When **reviewing** the effectiveness of control measures.
- After an incident occurs that is notifiable under Part 5 of the OHS Act (notifiable incident) and involves cytotoxic medicines.

5. Managing the risks from handling cytotoxic medicines

Consultation should take place as early as possible:

- when planning to introduce new cytotoxic medicines into the workplace
- if an SDS is updated.

Consulting employees and HSRs at each step of the risk management process encourages everyone to:

- identify hazards and risks associated with the storage and handling of cytotoxic medicines
- put in place effective control measures.

Ways to consult with employees include:

- direct discussion
- staff meetings
- health and safety committee meetings
- health and safety inspections
- special working parties
- any combination of the above.

You must make relevant and accurate safety information available to employees and their HSRs. This may include:

- the SDS
- any other information relevant to the storage and handling of cytotoxic medicines and their waste.

HSRs need to be given time to:

- meet with employees
- meaningfully consider options
- propose ideas to employers.

It is important to consider the needs of employees and HSRs from non-English-speaking backgrounds. As an employer, you have a duty to provide information, instruction and training to employees in a language they can understand. This is so they can do their work safely and without risks to their health.

Learn more about how to communicate OHS across languages.

5. Managing the risks from handling cytotoxic medicines

Step 1: Identify hazards

The following example shows how to identify cytotoxic medicines in the workplace.

Identify which cytotoxic medicines are used and stored in the workplace

Action	Method
Ways to identify a cytotoxic medicine: • Obtain a copy of the manufacturer's or importing supplier's SDS. • See the manufacturer's label. • Contact the manufacturer or importing supplier.	• Review the SDS or product information, looking for key information linking it to a cytotoxic medicine. Look for terms including mutagenic, teratogenic, genotoxic and carcinogenic. • Check the labelling on the container, looking for the GHS health hazard pictogram or purple cytotoxic symbol. • Contact the manufacturer or importing supplier to check if the substance is cytotoxic.
Ensure all containers of cytotoxic medicines are labelled with the manufacturer or importing supplier label (see Chapter 3, 'Labelling of cytotoxic medicines').	• Check all containers for labels. • If it is necessary to decant the cytotoxic medicine into another container(s), clearly label these containers with the name of the product and state that the contents are cytotoxic. Decanted containers should be labelled with the symbol in Figure 1 or Figure 2 (see Chapter 3).
Set up or have access to a hazardous substances register. This must list all the hazardous substances supplied to the workplace, so it should include all cytotoxic medicines in the workplace. Maintain the register so it is up to date.	• List the product names of all cytotoxic medicines used at the workplace in the hazardous substances register. • Make sure there is information from the manufacturer on safe handling such as an SDS for each cytotoxic medicine used at the workplace. • If information for safe handling such as an SDS is not available, contact the manufacturer or importing supplier for the most recent version.

5. Managing the risks from handling cytotoxic medicines

Step 2: Assess risks

This stage determines whether there is a risk to employees' health from cytotoxic medicines. The following step-by-step procedure may help employers with the risk assessment process.

1. Decide who will carry out the risk assessment

Action	Method
Select a competent person or team made up of: • employees • HSRs • supervisors and managers. Seek expert external advice if required – for example, from an occupational hygienist or a medical practitioner.	Look for: • appropriate skills, knowledge and experience to evaluate the risks • a practical understanding of work being undertaken at the workplace • an understanding of health and safety legislation • the ability to deal with the complexity of the assessment process or the work being assessed.

2. Obtain and review information about cytotoxic medicines used at the workplace

Action	Outcome
Identify the routes of exposure (the SDS may help with this).	Depending on the medicine/s in the workplace, routes may include: • inhalation of aerosols, particulates and droplets • skin or eye contact • ingestion after incidental contact – for example, with contaminated body fluids, contaminated surfaces or dressings • accidental injection due to injuries from sharps • accidents or breakages.
Determine the form of the substance (the SDS may help with this).	This may include: • liquid • powder • solid tablet, including coated tablets • creams, ointments and lotions for topical application.

2. Obtain and review information about cytotoxic medicines used at the workplace *(continued)*	
Action	**Outcome**
Find out the potential harmful effects (refer to the SDS).	These may include: • carcinogenic, mutagenic, genotoxic or teratogenic effects • alterations to normal blood cell count • foetal loss, congenital malformations • abdominal pain, hair loss, nasal sores, vomiting • liver damage • contact dermatitis, local toxic or allergic reaction, irritation to the skin.
Find out the properties and hazards associated with the substance (refer to the SDS or other available information for each medicine).	This may include: • health hazard information • first-aid information • precautions for use • safe handling information.

3. Evaluate the nature of the work involving cytotoxic medicines	
Action	**Method**
Determine where cytotoxic medicines are handled at the workplace.	For example: • receiving medicines to the pharmacy store • preparing medication in the pharmacy • administering medication in the ward, daycare centre or home • handling, transporting and disposing of cytotoxic medicines and waste on the premises • patient care after administration.

5. Managing the risks from handling cytotoxic medicines

3. Evaluate the nature of the work involving cytotoxic medicines *(continued)*	
Action	**Method**
Examine work practices and conditions. Involve employees and HSRs who are working with the cytotoxic medicines.	Look for: • how cytotoxic medicines are handled in specific tasks, such as during preparation and administration • the quantities used and doses given • frequency and duration of exposure • who may be exposed • level of potential exposure • risk control measures already in place and their effectiveness • handling and disposal of biological waste.
Review information about near misses, incidents or symptoms of exposure.	• Review incident records. • Identify any problems associated with storage and transport of cytotoxic medicines. • Determine whether employees have suffered any harm. • Find out if there have been any spills. • Determine whether incidents have been reported and followed up.

5. Managing the risks from handling cytotoxic medicines

4. Evaluate the risks	
Conclusion	
Reduced or minimal likelihood of injury or illness This means that employers have a high degree of confidence that existing work practices are sound and employees are protected.	It may be reasonable to reach this conclusion where risks have been eliminated or reduced by using all reasonably practicable controls, such as: • medication packaging with in-built breakage prevention systems • compounding cytotoxic medicines in an enclosed area, such as an operational cleanroom with a laminar-flow cytotoxic drug safety cabinet (CDSC) • needle-less drug administration systems or retractable needles • use of a closed system drug transport system for administration • evidence-based clinical practice guidelines and procedures • employee training and competency • Closed System Transfer Devices (CSTDs) for preparation and administration.
Likelihood of injury or illness This means work practices need improvement.	It may be reasonable to reach this conclusion where, for example: • medication is not prepared in an operational cleanroom with a laminar-flow CDSC where appropriate • medication is not administered using needle-less systems where appropriate • housekeeping is poor • there is no spill management system • PPE such as gloves and skin covering is not worn during activities that could involve skin contact • the workforce has not received appropriate training • control measures are not maintained or serviced.

4. Evaluate the risks *(continued)*	
Conclusion	
Likelihood of injury or illness is uncertain This means employers are not sure if: • the substances are cytotoxic • work practices are adequate to protect employees.	It may be reasonable to reach this conclusion where employers are not sure if there is a risk to health from cytotoxic medicines in the workplace. Employers may need to do more work, for example: • Engaging a suitably competent person such as an occupational hygienist to do a workplace assessment. This may include atmospheric monitoring or wipe testing. • Reviewing and revising when they receive new information on hazards, risks and controls.

Step 3: Control risks

Risks must be eliminated, so far as is reasonably practicable. If risks cannot be eliminated, they must be reduced so far as is reasonably practicable.

Controlling risks requires the use of risk control measures. Risk control measures are also known as risk controls or controls. Deciding on appropriate risk controls involves the following:

- Identifying the options for risk controls. A risk control option may be a single control or it may be made up of multiple controls. Together, the controls provide protection against a risk.
- Considering risk control options and selecting suitable options. A suitable option is one that most effectively eliminates or reduces risk in the circumstances. Reducing the risk might require multiple risk controls, not just one.
- Implementing all controls that are reasonably practicable. For example, using both:
  - a CDSC where drugs are prepared
  - needle-less drug administration.
- The ways of controlling risks can be ranked from the highest level of protection and reliability to the lowest. This ranking is known as the hierarchy of risk control. The following guidance explains the **hierarchy of risk control**. Always start at the most effective control – Level 1, eliminate the hazard – and work down the hierarchy.

5. Managing the risks from handling cytotoxic medicines

Hierarchy of control for cytotoxic medicines

This is an example of a hierarchy of control that may help employers control risks from cytotoxic medicines in the workplace. You may not be able to eliminate the use of cytotoxic medicines, but redesigning processes may eliminate risk for some employees.

Level 1: Eliminate the risk

Control	Examples
Eliminate the risk – most effective	It is rarely possible to eliminate the need for cytotoxic medicines for treatment. A first-level risk control measure may be to identify an alternative supply for cytotoxic drugs, including: • Buying cytotoxic medicines in ready-to-administer (RTA) preparations. This eliminates the risk for those who prepare medicines (like pharmacy employees). • Establishing supply arrangements with a company or healthcare institution that specialises in preparing cytotoxic medicines.

Level 2: Reduce the risk

Control	Examples
Substitution Substitution involves using a less hazardous substance or a substance in a less hazardous form.	• It is rarely possible to provide alternative treatments where cytotoxic drugs are required.
Isolation Isolation involves separating people from the substance by distance or barriers to prevent or reduce exposure.	Using the following control measures together: • adopting closed-system transfer devices • isolating employees from cytotoxic medicines in a fit-for-purpose secure cleanroom, with a suitable drug preparation cabinet such as a CDSC • placing dispensed medication in impermeable packaging for delivery to administration areas • using the back priming technique to administer intravenous preparations.

Level 2: Reduce the risk *(continued)*	
Control	**Examples**
Engineering controls Engineering controls are physical controls or processes that: • reduce the generation of substances • suppress or contain substances • limit the area of contamination in the event of spills and leaks.	Prepare cytotoxic medicines in a purpose-designed clean room that comprises: • A primary barrier to provide drug containment and aseptic handling. For example, a CDSC with high efficiency particulate air (HEPA) filters. • A secondary barrier to prevent contamination of the outside environment. This should supply HEPA-filtered air to the cleanroom that is at a lower pressure than air outside the cleanroom. Use: • wide-bore needles to transfer, reconstitute and draw up cytotoxic medicines • CSTDs • needle-less injection sets for drug administration. Incorporate secure storage facilities.

Level 3: Use administrative controls	
Administrative controls There may still be a risk even after higher levels of control have been used. Administrative controls such as systems of work and work procedures may further reduce the risk. Administrative controls are ways of working that reduce employee exposure to cytotoxic medicines and related waste. For administrative controls to be effective, employees need to fully cooperate. It is important to consult as controls are developed. Adequate supervision and training are crucial for these new work practices.	• Allocate responsibilities for health and safety. This may be an area manager or delegated to an employee. • Reallocate jobs for specific risk groups (such as pregnant employees) based on risk assessment. • Keep containers of cytotoxic medicines secure when not in use. • Use cytotoxic signs and labels to clearly identify all cytotoxic medicines and waste. • Store cytotoxic waste in specific, clearly identified areas, separate from other waste. • Develop and use standard work procedures for all activities. • Set cleaning schedules and clean work areas regularly. • Develop emergency procedures to deal with spills. • Ban eating and drinking in work areas. • Ban wearing of jewelry and cosmetics in preparation areas.

5. Managing the risks from handling cytotoxic medicines

Level 4: Use PPE	
Personal Protective Equipment PPE is something worn that provides a barrier between the person and the hazard. It is one of the controls required for employees who handle cytotoxic medicines or waste. Employers must ensure that all employees know how to fit and use PPE. Look for guidance from: • suppliers of cytotoxic medicines • suppliers of PPE • published technical standards. Make sure PPE is: • properly selected for the individual and task • readily available • clean and functional • correctly used when needed • maintained by appropriately trained employees, in keeping with relevant standards. See Chapter 6 for more information on PPE.	PPE needs to meet approved standards for use with cytotoxic medicines. For example, American Society for Testing and Materials International (ASTM) standards. PPE can include: • coveralls • gowns • head coverings • closed footwear • overshoes • nitrile gloves • safety glasses • respiratory protective equipment (for example, P2/N95).

Step 4: Review and revise risk controls

Employers must review risk controls to make sure they are working as planned:

- Before changing any system of work in a way that could alter the risk associated with the handling of cytotoxic medicine. This could be, for example, when introducing a new cytotoxic medicine.
- If a registered medical practitioner advises that health monitoring has identified adverse health effects.
- If the risk control measures do not adequately control the risks. For example, employees are unable to identify patients who require cytotoxic precautions.
- After a notifiable incident involving cytotoxic medicines at the workplace.
- After receiving a request for review from an HSR. An HSR can make a request if they believe, on reasonable grounds, that:
  - any of the circumstances listed in step 4 exist
  - the employer has failed to properly review the risk controls
  - in conducting a review of, or revising, the risk controls, the employer has failed to consider any of the circumstances listed in step 4. For example, the employer has failed to consider a change to a work system that may lead to an increase in risks.

It is also good practice to review risk controls periodically.

5. Managing the risks from handling cytotoxic medicines

Employers can review the effectiveness of risk controls by, for example:

- conducting regular safety inspections
- asking for feedback from employees who use the risk controls.

Review control measures

Action	Example
Look at how control measures are working in practice, to ensure they perform as intended and continue to provide adequate control.	Reviewing control measures may include: • frequent inspections • visual checks to ensure controls are being properly applied in the workplace • testing equipment • preventative maintenance • remedial work • consulting with employees and HSRs • monitoring where relevant standards exist; for example, using commercially available wipe-testing kits to check surfaces for cytotoxic medicines.

5. Managing the risks from handling cytotoxic medicines

Risk assessment template for cytotoxic medicines

This risk assessment template will help employers to document the process and any outcomes. You should consider processes or cytotoxic medicines that may need individual assessments.

Describe the process			
Cytotoxic medicine(s) used			
Person performing assessment		Date	
1. Possible health effect			
Routes of exposure			
Current control measures			
Are extra control measures needed? If yes, state what and the reason			
Actions, including consultation			
2. Possible health effect			
Routes of exposure			
Current control measures			
Are extra control measures needed? If yes, state what and the reason			
Actions, including consultation			
3. Possible health effect			
Routes of exposure			
Current control measures			
Are extra control measures needed? If yes, state what and the reason			
Actions, including consultation			
4. Possible health effect			
Routes of exposure			
Current control measures			
Are extra control measures needed? If yes, state what and the reason			
Actions, including consultation			
5. Possible health effect			
Routes of exposure			
Current control measures			
Are extra control measures needed? If yes, state what and the reason			
Actions, including consultation			

6. Personal protective equipment for handling cytotoxic medicines

Duty to employees

Employers should provide fit-for-purpose personal protective equipment (PPE) to employees who handle cytotoxic medicines and related waste. Do a risk assessment to identify the appropriate PPE for each stage of the cytotoxic medicine and related waste management pathway.

Use PPE in conjunction with other risk control measures. In most circumstances, PPE is not a sufficient risk control when used as the only control measure. See Chapter 5 for more information on the risk assessment process and how to control risks.

PPE should be:

- clean
- functional
- readily available for employees to access.

Employers must give employees the information, instruction, training or supervision they need to work safely. For example, employees need to be trained to correctly apply and remove PPE, especially when handling cytotoxic medicines and contaminated waste.

If PPE becomes contaminated:

- Affected employees should safely remove it as soon as possible. See Chapter 10, 'Managing cytotoxic medicine spills'.
- It should be properly laundered or disposed of. See 'Laundering non-disposable PPE and linen'.

Types of PPE

The type of PPE that is reasonably practicable depends on the:

- work activity undertaken
- risk of exposure it presents.

Examples of PPE may include:

- impermeable gowns or coveralls with elasticised cuffs, long sleeves and closed fronts
- nitrile or polyvinyl chloride (PVC) industrial gloves that are long enough to cover the cuff of the gown/coverall when the arm is bent or stretched – consider a double layer of gloves
- suitable safety footwear for the environment
- impermeable overshoes
- safety glasses or goggles
- respiratory protective equipment (P2/N95 face-fitting respirator)
- face shield.

6. Personal protective equipment for handling cytotoxic medicines

Respiratory protective equipment where there is an inhalation risk

Respiratory protective equipment (RPE) is a type of PPE designed to protect the wearer from airborne contaminants. These can be generated:

- in the preparation of cytotoxic medicines where exposure to dust/powder may occur
- when managing a spill.

If there is a risk of an employee inhaling cytotoxic dusts, mists or vapours, a P2 or N95 is recommended. A surgical mask should not be used.

Where RPE is required to protect employees from airborne hazards, employers should have a respiratory protection program in place. The program should include:

- Information on suitable respirators for the task. For example, when a P2 or N95 may be required where an inhalation risk exists.
- Fit-testing at defined intervals.
- Fit-checking at each use.
- Donning and doffing.
- Limitations, such as facial hair or glasses.

RPE and its selection, use and maintenance should meet:

- *AS/NZS 1716:2012 Respiratory Protective Device or its equivalent*
- *AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment or its equivalent.*

For more information on the most suitable type of respiratory protection for a task, check with:

- The manufacturer or supplier of the respirator.
- A person with skills and knowledge in respiratory protective devices. For example, an occupational hygienist.

Laundering non-disposable PPE and linen

Precautions are needed when laundering non-disposable PPE (gowns) that may be contaminated with cytotoxic medicines. Follow the requirements of the manufacturer or supplier of the PPE. Systems should be established to:

- Safely store contaminated PPE/linen before it is collected.
- Protect laundry employees from cytotoxic medicine residue or waste, including biological waste. Laundry employees may need to wear PPE.
- Dispose of heavily contaminated PPE instead of laundering.
- Ensure PPE is decontaminated prior to reuse.

There are specialised companies who can provide and launder cytotoxic-contaminated non-disposable PPE.

In services where there is limited requirement for PPE, disposable items may be most practical.

If an independent business collects or launders linen, employers should:

- tell them that the linen is contaminated with cytotoxic medicines or related waste
- work with them to develop decontamination strategies where appropriate.

Employees should use the following PPE when handling soiled linen that is likely to be contaminated with cytotoxic medicines:

- impermeable gown or coveralls with elasticised cuffs
- nitrile gloves – consider a double layer of gloves
- RPE, such as a P2/N95 face-fitting respirator.

7. Storing, preparing and transporting cytotoxic medicines

All employees involved with storing, preparing and transporting cytotoxic medicines must be given the information, instruction, training or supervision they need to work safely. See Chapter 4 for more information.

Storing cytotoxic medicines

Any cytotoxic medicines must be clearly recognisable to all employees. They should be stored:

- in dedicated separate, clearly marked storage areas, including refrigerated areas where required
- in a manner that will protect the drug container from leakage if breakage occurs.

Storage in pharmacy departments, satellite pharmacies, wards and clinics should be as recommended on the SDS. Avoid overcrowding of storage areas. For example, do not stack prepared solutions on a refrigerator shelf.

Preparing cytotoxic medicines

Preparing includes:

- Handling cytotoxic medicines until they are ready to administer.
- Preparing a patient-specific single-dose unit. For example, drawing up cytotoxic medicines from a vial into a syringe and diluting ready for administration.

Dispensing is providing medicines that are ready to administer.

Employers must develop systems and procedures to ensure the safe preparation of cytotoxic medicines. This may include:

- cleanrooms
- suitable drug cabinet with air filtration, such as a CDSC or Compounding Aseptic Containment Isolator (CACI) with negative pressure ventilation
- closed system transfer devices
- secure storage facilities
- other specially designed equipment.

7. Storing, preparing and transporting cytotoxic medicines

Use available controls

Available controls to eliminate or reduce the risks of exposure while preparing cytotoxic medicines for a workplace include:

- outsourcing the preparation of cytotoxic medicines to specialist companies
- buying cytotoxic medicines in a ready-to-use form, such as pre-filled syringes
- buying cytotoxic medicines in the safest form available
- using facilities and techniques that meet recommended technical and safety standards.

Where outsourcing is not possible, consider:

- reviewing health and safety information about cytotoxic medicines before deciding to buy them
- assessing if available controls will adequately manage the risks
- designing and laying out the work area according to recommended standards
- adopting closed-system operations.

For more information, see:

- Australasian Health Infrastructure Alliance, *Australasian Health Facility Guidelines: Part B – Health Facility Briefing and Planning 0560 – Pharmacy Unit, 2021*
- Pharmacy Board of Australia
- Society of Hospital Pharmacists of Australia (SHPA)
- Victorian Pharmacy Authority, *Victorian Pharmacy Authority Guidelines*, 2023.

Establish a cytotoxic preparation facility

Cytotoxic medicines should be prepared in purpose-designed facilities with:

- A cytotoxic cleanroom that houses either a CDSC or CACI. This provides a primary barrier for drug containment and aseptic handling.
- Access to the clean room only through an anteroom and pass-through hatch.
- A secondary barrier to prevent contamination of the outside environment. HEPA filters should supply filtered air to the cleanroom that is at a lower pressure than that of the anteroom (outside of the clean room).

HEPA filters that supply filtered air to the cleanroom and the anteroom should be used in addition with other controls, not in isolation.

For more information, see 'Hierarchy of control for cytotoxic medicines' in Chapter 5.

7. Storing, preparing and transporting cytotoxic medicines

The following technical standards describe available risk controls for cytotoxic preparation facilities and their installation:

- *AS 2252.6-2011 Controlled environments, Part 6: Clean workstations – Design, installation and use*
- *AS 2252.5:2017 Controlled environments, Part 5: Cytotoxic drug safety cabinets (CDSC) – Design, construction, installation, testing and use*
- *AS/NZS ISO 14644.4:2002 Cleanrooms and associated controlled environments, Part 4: Design, construction and start-up*
- *AS ISO 14644.3:2021 Cleanrooms and associated controlled environments, Part 3: Test methods*
- *AS/NZS ISO 14644.5:2006 Cleanrooms and associated controlled environments, Part 5: Operations*
- *AS ISO 14644.1:2017 Cleanrooms and associated controlled environments, Part 1: Classification of air cleanliness by particle concentration*
- *AS 1807:2021 Separative devices – Biological and cytotoxic drug safety cabinets, clean workstations and pharmaceutical isolators – Methods of test*
- *AS 4273-1999 Design, installation and use of pharmaceutical isolators.*

You can access these standards on the Standards Australia website.

Workplace layout and design

When organising workplace and equipment, and setting up work practices, employers should consider:

- comfort
- functionality
- safety.

This will make it:

- easier for employees to do their work safely
- less likely that they will make mistakes.

You must also consult with any HSRs.

Factors to consider in work layout and design include:

- the level of concentration and visual control required
- precision of movements needed
- the placement of accessible safety shower and eyewash stations
- design of equipment and availability of adjustable furniture such as chairs, stools and footrests
- storage requirements
- potential noise sources
- lighting.

7. Storing, preparing and transporting cytotoxic medicines

When designing and setting up a cleanroom and anteroom, employers should also do the following:

- Provide access for cleaning.
- Use smooth and durable work surfaces and furniture.
- Install recessed lights.
- Limit the number of surfaces and shelves. This will minimise particle shedding or the accumulation of particulate matter.
- Install an accessible emergency shower outside the anteroom.
- Maintain an effective airlock between the cytotoxic suite and external environment.
- Ensure all equipment used is dedicated to the cytotoxic cleanroom.
- Ensure the anteroom provides:
  - the only access to the cleanroom
  - access to only one cleanroom.
- Provide change room facilities for changing into PPE.
- Ensure the pass-through hatch has:
  - no direct access to the external environment unless a HEPA filter is used to control emissions
  - interlocking doors and it is supplied with HEPA-filtered air.
- Provide a means of communication between the cleanroom and other areas.
- Install a manometer to:
  - monitor the pressure differential within the cytotoxic suite
  - record daily differential pressure readings.
- Install a manometer alarm in case of inadequate pressure differentials.
- Install a system that reverses the airflow. In the event of a spill, this will minimise contamination to the external environment, with lower pressure environments in the cleanroom.

Use appropriate equipment and techniques

Preparing cytotoxic medicines requires specific handling techniques and procedures. This should include equipment designed to reduce the risk of exposure.

Equipment used to prepare drugs needs to:

- have a closed system transfer device where practicable
- reduce the potential for generating high pressure.

Specific controls to reduce the risk of exposure include using:

- Luer Lock syringes and fittings to keep connections together.
- Syringe-to-syringe connectors when transferring solutions from one syringe to another.
- Wide-bore needles to reconstitute and draw up cytotoxic medicines.
- Filter needles only when the cytotoxic medicine has been removed from a glass ampoule or if particulate matter is visible. For example, if coring of a vial rubber has occurred. Disc filters can be used when large volumes are involved.

7. Storing, preparing and transporting cytotoxic medicines

Follow standard work procedures

Employers should ensure that standard work procedures for preparing cytotoxic medicines clearly detail:

- handling techniques
- instructions for using equipment.

This will help to minimise the risk of exposure for employees undertaking the tasks.

The standard work procedures should state how all employees must do all preparations. For example, in a CDSC or CACI.

Standard work procedures for **parenteral preparations** should also include instructions on:

- Avoiding the use of cytotoxic medicines supplied in glass ampoules. If glass ampoules must be used, open with an ampoule breaker or a low-lint swab.
- Containing excess drug solutions and air when priming.
- Using techniques that avoid generating pressure differentials.

Specific additional information for **non-parenteral preparations** should include:

- using purpose-dedicated equipment
- making mixtures by dispersing tablets in water
- not crushing tablets in an open mortar
- not counting tablets or capsules by machine
- cleaning equipment immediately after use with a strong alkaline detergent with pH>10.

Packaging and transporting cytotoxic medicines

Cytotoxic medicines should always be packaged and transported in a way that:

- Provides adequate physical and chemical protection for the medicine.
- Protects handlers if a spill occurs. This includes risk control measures such as PPE for the person transporting.
- Protects other equipment or medicines if a spill occurs.

Also see:

- Chapter 3, 'Labelling of cytotoxic medicines'
- 'How to safely transport patients' in Chapter 8.

7. Storing, preparing and transporting cytotoxic medicines

Maintaining equipment

Employers should have a planned maintenance schedule for equipment used to prepare cytotoxic medicines. This includes air-handling facilities.

Performance-testing and equipment maintenance

A suitably qualified person should assess laminar-flow CDSC or CACI and suitable filters. In most cases, an external provider would be required.

Information about the basic requirements for the design, construction, installation, testing and use of CDSC is in:

- *AS2252.5:2017 Controlled environments, Part 5: Cytotoxic drug safety cabinets (CDSC) – Design, construction, installation, testing and use.*

An effective equipment maintenance schedule should involve:

- inspecting CDSC, CACI and HEPA filters
  - at regular intervals
  - after relocation or mechanical/electrical maintenance
- keeping test records and a summary of results in a place accessible to employees
- not using a cabinet that has failed, until the fault has been fixed and the cabinet recertified.

Cleaning cytotoxic medicine preparation facilities

The standard operating procedure should include cleaning instructions for cytotoxic medicine preparation facilities. This should cover:

- daily cleaning and record-keeping
- using a dedicated mop and bucket
- treating all equipment as potentially contaminated
- providing, wearing, removing and disposing of PPE.

8. Administering cytotoxic medicines and caring for patients

How to set up an area for administration and patient care

Employers must take precautions to keep safe those employees who administer cytotoxic medicines to patients. After administration, patients mainly eliminate cytotoxic medicines in their urine or bile. But all bodily substances can be contaminated with either the:

- unchanged drug
- active drug metabolites.

How long bodily substances are contaminated with cytotoxic medicines will differ for individual drugs and patients. Cancer Institute NSW (eviQ) recommends following cytotoxic precautions for a standard period of seven days from administration, although care should be taken to identify drugs with extended excretion.

Exposure to cytotoxic medicines can occur through:

- handling cytotoxic medicines or related waste
- handling bodily substances from people treated with cytotoxic medicines
- managing spills of cytotoxic medicines or contaminated body fluids
- splashes to the skin or eyes
- inhaling airborne contaminants, which can be generated when air is expelled from a drug-filled syringe
- sharps injuries.

To ensure that cytotoxic medicines are provided safely, employers should consider:

- workplace design
- specialist equipment
- safe work practices, including education, training, supervised practice and competency assessment as required
- PPE.

Workplace procedures should be available for all areas where:

- cytotoxic medicines are administered
- patients receiving cytotoxic medicines are cared for.

Use available controls

When designing and setting up an area to administer cytotoxic medicine and care for patients in a healthcare setting, employers should consider the following controls:

- Developing a process to identify which patients have had cytotoxic medicines and if cytotoxic precautions are needed.
- Ensuring that:
  - there is sufficient room to move in the area
  - flooring is liquid-resistant, rather than carpet or mats, and can be hygienically cleaned.
- Providing:
  - washable chairs and other furnishings
  - hand-washing facilities
  - a spill kit
  - a toilet with a lid
  - an emergency shower
  - secure storage of cytotoxic waste and sharps containers
  - secure storage for cytotoxic waste ready for disposal.

8. Administering cytotoxic medicines and caring for patients

- Storing equipment for disposal of cytotoxic waste near the patient care area, including:
  - a purple cytotoxic waste disposal bin appropriate for sharps
  - a cytotoxic waste bin for safe disposal of body waste such as dressing materials, colostomy or urostomy bags, and incontinence aids such as nappies
  - bags to safely manage contaminated laundry
  - a hot pan flusher.
- Using closed systems where possible for handling body fluids. For example, if the patient has an indwelling catheter, use a sealed bag and weigh content for measurement.
- Keeping health and safety information, such as an SDS, in a place accessible to employees.
- Labelling any specimens of body fluid to be sent to pathology with the pictogram shown in Figure 1 (see Chapter 3).
- Having PPE available near the patient care area.

For patients who need cytotoxic precautions at home, these controls should be in place where reasonably practicable. Patients should be given information on what controls they could consider and how to follow them at home. This may depend on the individual circumstances. Also see the following sections:

- 'Administration in the home'
- 'When patients leave a treating facility'.

How to administer cytotoxic medicines safely

All employees involved with administering cytotoxic medicines must be given the information, instruction, training or supervision they need to work safely. See Chapter 4 for more information.

For all routes

Provide drug administration equipment

Equipment that helps to administer cytotoxic medicines can greatly reduce the risk of exposure. This equipment can include:

- needle-less administration systems
- closed administration systems
- Luer Lock syringes
- solid injection trays to contain and carry medicines to the patient
- plastic-backed absorbent sheets or pads to capture any potential spill associated at the injection site
- portable trolleys to store administration equipment and allow movement from patient to patient
- plastic, rigid-walled, wide-necked cytotoxic waste containers with a securable lid that are readily accessible to all operators
- spill kits (see Chapter 10)
- PPE (see Chapter 6).

8. Administering cytotoxic medicines and caring for patients

Follow standard work procedures

As an employer, you should ensure that standard work procedures for administering cytotoxic medicines clearly detail how to:

- Follow the recommended procedures from suppliers and the pharmacy to administer specific cytotoxic medicines.
- Protect employee safety during administration. For example, using back-priming techniques and connecting bags at waist level where possible.
- Determine and manage for how long a patient requires cytotoxic precautions. For example, avoiding contact with all bodily fluids after administration.
- Manage extravasation incidents promptly.
- Appropriately dispose of cytotoxic waste. For example, not recapping needles, disposing of the administration set as a closed system.
- Use and dispose of appropriate PPE.

For intravesical administration

The intravesical route is used to treat bladder cancer. The chemotherapy drugs are administered via a urinary catheter, which is inserted into the bladder via the urethra. There are specific risk control measures to consider when this treatment is offered. These include:

- Monitoring and limiting leakage from the site of insertion of the urinary catheter. This may include work procedures for catheter insertion and removal.
- Limiting environmental contamination and spills of fluid from the bladder. This may include:
  - educating patients about urinating after treatment
  - ensuring there is extra cleaning of toilets used.
- Ensuring the personal hygiene of the patient.

For topical cytotoxic agents

Topical cytotoxic agents may be in the form of ointments, lotions or eyedrops. Control measures when administering topical agents include:

- avoiding unnecessary contact with topical cytotoxic agents
- applying ointments and lotions as a film, using a disposable spatula and wearing gloves
- educating patients on the correct way to apply medication
- minimising contact with clothing by wearing appropriate PPE, such as gloves
- disposing of all contaminated equipment and PPE as cytotoxic waste.

For oral cytotoxic medicines

Oral cytotoxic medicines are generally given as tablets and capsules. Control measures when administering oral medicines include:

- transferring tablets and capsules from their container into a disposable medication cup, to avoid direct handling
- returning tablets and capsules to the pharmacy when loose powder is observed
- contacting the pharmacy if it is necessary to produce a cytotoxic medicine mixture
- discarding used medication cups as cytotoxic waste.

Oral dose forms should only be manipulated if a pharmacist recommends it. This includes tablets and capsules. Manipulation may be needed when a patient is:

- nasogastric-fed
- fed by PEG.

Crushing or breaking should only happen:

- in a specifically designed workplace
- using special equipment and safe work practices.

8. Administering cytotoxic medicines and caring for patients

Pharmacy can advise on other forms or dosing strategies (including dissolution). This will help to minimise chances of exposure and environmental contamination.

For more information, see:

- 'Preparing cytotoxic medicines' in Chapter 7
- Society of Hospital Pharmacists of Australia, *Don't rush to crush*, 4th edition.

Administration in the home

Employees may sometimes administer cytotoxic medicines in a patient's home. To minimise the risk of clinical employees and others being exposed to cytotoxic medicines and waste, consider:

- Storing medicines such as tablets, capsules or injections in a safe and secure place.
- Disposing of needles, syringes and other administration equipment in the purple cytotoxic waste bin. This should be returned to the hospital or pharmacy for safe disposal.
- Returning any unused medicine to the hospital or pharmacy for safe disposal.
- Setting up an administration area that can be thoroughly cleaned if there is a cytotoxic spill. For example, a wipeable chair positioned on a liquid-resistant surface (not carpet) close to a wash basin.

Spills in home and community care settings

Patients treated at home or in a community care setting should be given the means to help them safely deal with a cytotoxic spill for up to seven days after treatment, unless the administered drug has extended expiry. This should include:

- equipment including:
  - disposable gloves
  - absorbent material such as paper towel
  - disposable cloths
  - sturdy plastic bags that can be sealed or tied
- a list of contents
- easy-to-read instructions on how to manage the spill, including how to replace and dispose of used items.

Spill containment instructions for the home setting may be as follows:

- Wear disposable gloves and use paper towel to soak up spill.
- Use disposable cloths and soapy water to wash down surfaces the spill is on.
- Wipe dry with paper towel.
- Place used paper towel, cloths and gloves in the plastic bag, tie it securely and dispose in the general waste bin.
- Where linen is involved, use gloves to place in washing machine. Wash them on their own on the longest cycle in either hot or cold water with detergent. Run the full wash cycle a second time. Dry the washed items outside if possible. The items can then be used as normal.

8. Administering cytotoxic medicines and caring for patients

How to safely care for patients

Exposure to cytotoxic waste can occur through:

- Handling any bodily fluid from a patient treated with cytotoxic medicines. For example:
  - vomitus
  - saliva
  - blood
  - excreta
  - sweat/thioepa
  - fluid drained from body cavities.

  This includes handling any vessel used to receive bodily fluids, such as:
  - bedpans or urinals
  - emptying catheter, colostomy or urostomy bags
  - vomitus bowls.
- Handling bed linen or clothing soiled with patient waste.
- Handling bed linen or clothing potentially contaminated with unchanged drug or active metabolites.
- Cleaning spills.

Identifying patients who need cytotoxic precautions

Whenever cytotoxic medicine is administered, employees should note:

- its name
- its route of administration
- the time it was administered
- if it is continuously administered – for example, by ambulatory pump/IV infusion.

This formal process will help employees to work out if any body fluids from the patient may be contaminated, requiring cytotoxic-specific precautions.

When patients leave a treating facility

When patients leave a treatment facility, they often still need cytotoxic-specific precautions. This includes for their body fluids. Treating facilities should explain to patients and their carers:

- which drugs they have been given
- special care requirements while they may excrete the drug
- the time frame for these precautions.

It is important that the treating facility:

- appropriately packages and labels any cytotoxic medicines the patient is taking with them
- makes available to the patient any equipment needed to manage cytotoxic waste, including a spill kit (see Chapter 10)
- gives written instruction to patients or carers.

If a patient is being transferred to another ward or facility after receiving cytotoxic medicines, the treating facility should ensure:

- availability of required facilities, equipment and appropriately trained employees
- necessary information is passed on to the receiving ward or facility.

8. Administering cytotoxic medicines and caring for patients

The treating facility should develop procedures for:

- avoiding skin contact with patient body substances
- preventing the generation of aerosols when handling patients' body waste
- managing contaminated linen
- disposing of waste such as
  - urine
  - faeces
  - vomitus
  - the contents of colostomy/urostomy bags
  - incontinence aids such as disposable nappies or stoma bags
- containing waste generated from drug administration in a dedicated sharps container
- keeping waste containers secure and appropriately labelled
- cleaning up spills immediately
- providing written instructions on how to manage a spill in home or community settings.

How to safely transport patients

When moving a patient to another area within a hospital or treating centre, employers need to ensure the following control measures are in place:

- constant clinical supervision of the patient during the relocation if cytotoxic medicine administration is in progress
- immediate access to equipment and required help in the event of a spill of cytotoxic medicine or waste (a spill kit)
- appropriate PPE
- handover and communication.

Employers must give employees the information, instruction, training or supervision they need to work safely. For example, employees at the patient's new destination should be:

- trained in cytotoxic medicine safety
- made aware of the patient's cytotoxic status.

The same requirements apply to transport by ambulance if required.

See also 'Packaging and transporting cytotoxic medicines' in Chapter 7.

9. Managing cytotoxic waste

What is cytotoxic waste?

Cytotoxic waste includes any residual cytotoxic medicine that remains following patient treatment. It also includes any materials or equipment that may be contaminated with cytotoxic medicines, such as:

- unused cytotoxic pharmaceuticals
- sharps and syringes
- intravenous infusion sets and containers
- ampoules and vials
- PPE and clothing
- dressings and bandages
- stoma bags/equipment, incontinence aids (such as pads, nappies) and other biological waste such as vomitus
- linen.

Cytotoxic waste is hazardous to human health and the environment. Cytotoxic substances are:

- prescribed as a form of reportable priority waste
- subject to strict regulation by the Environment Protection Authority Victoria (EPA Victoria).

A key element of any waste management strategy is to create policies and systems to avoid and minimise waste.

Establishing a cytotoxic waste management strategy

Employers should develop and periodically review a strategy to safely manage cytotoxic waste. To help with this process, employers should:

- audit what cytotoxic waste is generated or potentially generated
- identify the chain of responsibility and which employees should manage cytotoxic waste.

Employers can use the following guidance to help develop a strategy:

- EPA Victoria: *Clinical and Related Waste – Operational Guidance* (IWRG612). See more at **epa.vic.gov.au**.
- Department of Health: *Clinical and Related Waste Guidance: Supplement for Healthcare Staff*. See more at **health.vic.gov.au**.
- Biohazard Waste Industry Australia and New Zealand (BWI): *Industry Code of Practice for the Management of Clinical and Related Wastes*. See more at **wmrr.asn.au**.

Key elements of a cytotoxic waste strategy

Your cytotoxic waste strategy should have the following key elements:

- A designated person who is responsible for ensuring an efficient waste disposal system:
  - is maintained
  - controls any risk
  - complies with legal requirements.

9. Managing cytotoxic waste

- Systems to avoid and minimise waste in consultation with:
  - HSRs
  - the areas that are generating the waste
  - waste-handlers
  - waste disposal employees.
- A procedure to identify, segregate, package, store, transport, administer and dispose of cytotoxic waste.
- A system to manage cytotoxic waste generated. This includes outpatients and domiciliary services under the direction of a hospital.
- An internal and external transport and disposal flowchart from the waste generator to the disposal site.

Employers must, so far as is reasonably practicable, consult with employees and any HSRs when creating strategies, systems and procedures for cytotoxic waste control.

Identifying, containing, segregating and storing cytotoxic waste

Identifying waste

Cytotoxic medicines and their waste products are universally identified by the purple symbol in Figure 1 (see Chapter 3). Waste containers should be identified with the words 'CYTOTOXIC WASTE' on at least two sides.

Containing waste

The requirements for packaging and transporting cytotoxic waste are set out in the Environmental Protection Regulations 2021. See more at **epa.vic.gov.au**.

Employers should use the following control measures:

- Bag the waste and put into the appropriate cytotoxic hazard waste bin for transport to the waste disposal facility. To minimise exposure, cytotoxic waste bins with a foot-opening mechanism are recommended.
- Where cytotoxic medicines are used outside a workplace, such as at home, a leak-proof plastic bag may be sufficient. The workplace should provide advice to the patient being treated at home on appropriate waste packaging and any labelling requirements. Also see Chapter 8:
  - 'Spills in home and community care settings'
  - 'When patients leave a treating facility'.
- Store sharps in a rigid-walled container according to *AS 23907:2023 Sharps injury protection – Requirements and test methods*.

Segregating waste

Cytotoxic waste should be segregated from other waste streams through the following control measures:

- Segregate waste at the point of generation and at the earliest possible stage.
- Keep cytotoxic waste separate from the rest of the waste stream during internal transport and storage.
- Minimise time between waste creation and waste disposal.
- Minimise human contact with waste.
- Ensure that non-rigid receptacles are placed in a rigid-walled container for transport to the collection area. For example, a wheelie bin of the appropriate colour and labelling.
- Keep labelled bins secured with mobile or fixed stands.

Develop procedures in consultation with:

- employees who work in areas that produce cytotoxic waste
- any HSRs
- those responsible for providing support services.

9. Managing cytotoxic waste

Storing waste

Employers should use the following control measures when storing cytotoxic waste:

- Store cytotoxic waste in a dedicated, identified and secure storage area. This should have adequate lighting and ventilation.
- Locate storage away from areas that may affect others and the environment, such as drains.
- Ensure storage areas are easy to clean and decontaminate (as per the SDS).
- Seal cytotoxic waste bins before collection and do not open or reprocess on site.
- Place sealed bins or bagged material in specially designed large receptacles while awaiting collection for off-site transport.
- Refrigerate waste that is stored for more than 72 hours before disposal. This is particularly important where it is mostly organic and can decompose.
- Appropriately label designated waste areas and containers.

Transporting waste

Waste producers such as healthcare facilities have legal obligations for the cytotoxic waste they generate.

On-site waste transport

Employers should use the following control measures when transporting waste within the site:

- Train employees who manage cytotoxic waste.
- Maintain equipment used for transporting waste. For example, trolleys or wheelie bins.
- Collect waste frequently so it does not accumulate and cause housekeeping hazards at user sites.
- Manage spills that occur during on-site transport.
- Do not transport cytotoxic waste in waste disposal chutes. These are likely to cause breakages.

Off-site waste transport

EPA Victoria regulates the proper transport of cytotoxic waste in Victoria. The transport of reportable priority waste, which includes cytotoxic substances, is covered by the:

- *Environment Protection Act 2017*
- Environment Protection Regulations 2021.

Related information

Further information about managing cytotoxic waste is available at:

- Department of Health: *Clinical and Related Waste Guidance: Supplement for Healthcare Staff*
- Biohazard Waste Industry Australia and New Zealand (BWI): *Industry Code of Practice for the Management of Clinical and Related Wastes*
- Environment Protection Regulations 2021.

10. Managing cytotoxic medicine spills

Spills

Spills of cytotoxic medicines and related waste must be dealt with immediately as they pose a health risk to those exposed. Spills may occur in all areas where cytotoxic medicines or related waste are:

- prepared
- administered
- handled
- stored
- transported
- disposed of.

A risk assessment should identify all areas where there is a risk of cytotoxic spill.

Types of spills

Spills may involve:

- cytotoxic medicines in all forms:
  - liquid
  - powder
  - broken tablets/open capsules
  - creams
- packaged drugs spilling (or leaking) as they are prepared, stored or transported
- drugs spilling or leaking as they are administered
- drugs spilling while a patient is being moved
- cytotoxic-contaminated body substances
- cytotoxic-contaminated waste.

Spills may lead to the contamination of:

- floors
- work surfaces
- equipment
- PPE
- vehicles
- bedding
- clothing.

Spill kits

To help manage a cytotoxic spill as soon as it happens, a spill kit with the necessary equipment should be available in all areas where a spill is likely to occur. This includes vehicles.

A risk assessment of the area will help you to work out what to put in your spill kit. Contents may include:

- Instructions for use. For example, procedures for managing a cytotoxic spill.
- Signs to identify and isolate the spill area.
- PPE for two employees, including:
  - disposable impermeable gowns, coveralls with elasticised cuffs or industrial coveralls
  - nitrile or polyvinyl chloride (PVC) industrial gloves, long enough to cover the cuffs of the gown or coverall (consider a double layer of gloves)
  - disposable impermeable overshoes
  - safety glasses or goggles
  - respiratory protective equipment (P2/N95 face-fitting respirator)
  - face shield
  - hairnet or head cover.

10. Managing cytotoxic medicine spills

- Adequate quantities of absorbent materials, such as:
  - swabs
  - absorbent towels
  - spill pillows
  - chemical absorbent pads
  - protective mats (bluey or 'chemo mat').
- Wash bowl and detergent (with pH>10).
- A small scoop to collect any glass fragments.
- Two purple plastic waste bags, clearly identified as cytotoxic.
- Incident report forms.

Review spill kits regularly to ensure supplies are:

- adequate
- in good condition
- in date.

Single-use commercially prepared cytotoxic spill kits are also available.

How to deal with a spill

Procedures for preparing and administering cytotoxic medicines should cover how to manage spills. Employers should provide training to all employees who are likely to deal with spills. Training should cover:

- ways to prevent cytotoxic spills
- spill containment and decontamination procedures
- ways to report cytotoxic spills.
- where to access spill kits
- how to replace spill kits.

Where exposure occurs involving any person (employee/patient/visitor), immediately:

- remove any affected clothing
- thoroughly wash affected area under water.

Seek medical advice and attention where necessary. See the SDS for specific information.

When managing any spills in the workplace:

- Stay calm. Alert everyone in the immediate vicinity that a spill has occurred. Keep the area clear of people. Do not leave the cytotoxic spill unattended.
- Allocate responsibility for managing the cytotoxic spill clean-up to an employee who has:
  - not been contaminated
  - received appropriate training.
- Open cytotoxic spill kit and display signs.
- Don the respirator first, followed by other appropriate PPE. Do this at a distance from the spill to ensure the PPE does not become contaminated while donning.
- For liquid spills:
  - wait a few seconds for aerosols to settle
  - cover the spill using absorbent material from spill kit (a spill pillow may be required for a large spill).

10. Managing cytotoxic medicine spills

- For powder spills:
  - carefully cover with a mat, ensuring no dust is produced
  - carefully wet the mat so the powder dissolves and is absorbed by the mat.
- Gather absorbed material, including broken glass if applicable. Place in cytotoxic waste bags or cytotoxic sharps waste container.
- Clean contaminated area several times with detergent. Work from the outer aspect of the spill inwards.
- Clean the area thoroughly with water. Continue until area is completely cleaned.
- Dry the affected area with absorbent towel.
- Discard contaminated cleaning waste into a cytotoxic waste bag.
- Discard outer gloves into cytotoxic plastic waste bag. Seal this bag and place in second cytotoxic plastic waste bag.
- Discard other PPE into the outer bag.
- Place cytotoxic waste bags containing all related waste into a cytotoxic waste disposal bin.
- Wash hands with soap and water.
- Reopen the area.
- Ensure cytotoxic spill kit is replenished and maintained.
- Report incident.

See also ‘Spills in home and community care settings’ in Chapter 8.

Reporting procedures

Employers should have a system in place for employees to report spills internally as soon as possible. An internal report should include:

- The type of spill.
- Action taken to manage the spill and address unprotected employee exposure. For example, rapid washing of skin exposed to a cytotoxic splash without any PPE.
- The names of employees who managed the spill.
- Any employee exposure to the spill and information about control measures in place.
- Action taken to prevent future occurrences.

11. Handling cytotoxic medicines in veterinary practice

Exposure to cytotoxic medicines in veterinary care

When treating and caring for animals, cytotoxic medicines and related waste might be handled by:

- veterinarians
- veterinary nurses
- animal attendants
- cleaners
- animal owners.

In veterinary practice, exposure to cytotoxic medicines can occur when:

- preparing drugs
- administering drugs
- caring for treated animals.

Exposure can occur through:

- skin contact with cytotoxic medicines or animal waste
- spills of cytotoxic medicines or animal waste
- inhalation of aerosols
- contact with sharps.

To ensure that cytotoxic medicines and related waste is safely handled, employers should consider workplace design as a high-order control option. This includes the use of:

- cleanrooms
- drug safety cabinets
- other specially designed equipment.

Employers must provide information, education, training and supervision to ensure that control measures and safe work practices are:

- developed
- understood
- used
- maintained.

Employers should also consider the following controls as a priority:

- buying cytotoxic medicines in a ready-to-use form to eliminate drug preparation work
- referring animals who need cytotoxic medicine treatment and care to a veterinary practice equipped to provide the service
- using a diluted form of cytotoxic medicines where possible
- buying cytotoxic medicines in the safest form available
- reviewing health and safety information about cytotoxic medicines before deciding to buy them.

Standard work procedures for administering cytotoxic medicines in veterinary practice should include:

- administering parenteral or oral cytotoxic medicines under the supervision of a registered veterinary practitioner
- using signs to identify animals receiving cytotoxic medicine treatment.

11. Handling cytotoxic medicines in veterinary practice

Caring for animals receiving cytotoxic medicines

Employers should prevent environmental contamination. It is harder to contain contaminated animal excrement than waste from human patients.

Setting up an animal care area

When setting up an animal care area, it is important to:

- allocate a secure area that only authorised employees can access
- allow enough room for employees to move
- provide secure waste storage
- establish a system for obtaining and keeping health and safety information, such as an SDS, in a place accessible to employees.

Suitable equipment for animal care

Employers should provide the following equipment where possible:

- animal cages designed to contain and flush excreta directly into the sewerage system
- sealable, labelled bags to contain waste products (see Chapter 9 for more information)
- a spill kit (see Chapter 10 for more information)
- absorbent pads for cleaning.

How to safely handle cytotoxic medicines in veterinary practice

Employers should develop procedures for safely handling cytotoxic medicines in the workplace. They should include the following controls as appropriate:

- place a sign that says 'Receiving cytotoxic medicine therapy' on an animal's cage when the animal:
  - is being treated with cytotoxic medicine
  - could be excreting cytotoxic residues
- use proper equipment, including PPE
- clean equipment immediately after use with a strong alkaline detergent with pH>10
- avoid skin contact with animal excreta and body fluids
- keep animal cages clean
- use cleaning techniques that:
  - avoid skin contact
  - contain waste
  - prevent the generation of aerosols
- immediately wash down animals if they become contaminated, being careful not to generate aerosols
- dispose of cytotoxic waste.

11. Handling cytotoxic medicines in veterinary practice

Information for animal owners

An animal's owner might:

- administer cytotoxic medicines at home
- care for animals receiving cytotoxic medicine.

Treating facilities should give the following written information to home carers:

- why it is necessary to be careful when handling cytotoxic medicines and related waste
- precautions to take when the treated animal interacts with people in the home, especially:
  - small children
  - the aged
  - women who are pregnant or breastfeeding
- equipment they might need to care for the animal at home
- the route of excretion of drugs and how to dispose of body waste
- how long the animal might excrete cytotoxic residues after drug administration
- how to store cytotoxic medicines at home
- how to dispose of cytotoxic medicines that are no longer needed
- spills and procedures for cleaning up
- laundering contaminated bedding
- emergency procedures for accidental exposure to or ingestion of cytotoxic medicines.

12. Information sources

See Chapter 2 for information on how occupational health and safety laws apply to the handling of cytotoxic medicines and related waste.

Duty holders also need to consider other regulations and standards, including the following.

Other Acts and regulations

- *Dangerous Goods Act 1985*
- Dangerous Goods (Storage and Handling) Regulations 2022
- Dangerous Goods (Transport by Road or Rail) Regulations 2018
- *Drugs, Poisons and Controlled Substances Act 1981*
- Drugs, Poisons and Controlled Substances Regulations 2017
- *Environment Protection Act 2017*
- Environment Protection Regulations 2021
- *Therapeutic Goods Act 1989* (Cth)
- Therapeutic Goods Regulations 1990 (Cth)
- Therapeutic Goods (Medical Devices) Regulations 2002 (Cth)
- *Therapeutic Goods (Charges) Act 1989* (Cth)
- Therapeutic Goods (Charges) Regulations 2018 (Cth)
- *Therapeutic Goods (Victoria) Act 2010*

Australian Standards

- AS 2252.6-2011 Controlled environments, Part 6: Clean workstations – Design, installation and use
- AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment
- AS ISO 16900.11:2015 Respiratory protective devices – Methods of test and test equipment, Part 11: Determination of field of vision
- AS/NZS 1716:2012 Respiratory protective devices
- AS 2243.1:2021 Safety in laboratories, Part 1: Planning and operational aspects
- AS 2243.2:2021 Safety in laboratories, Part 2: Chemical aspects and storage
- AS/NZS 2243.3:2022 Safety in laboratories, Part 3: Microbiological safety and containment
- AS/NZS 2243.4:2018 Safety in laboratories, Part 4: Ionizing radiations
- AS/NZS 2243.5:2004 Safety in laboratories, Part 5: Non-ionizing radiations – Electromagnetic, sound and ultrasound
- AS/NZS 2243.6:2010 Safety in laboratories, Part 6: Plant and equipment aspects
- AS/NZS 2243.8:2014 Safety in laboratories, Part 8: Fume cupboards
- AS/NZS 2243.9:2009 Safety in laboratories, Part 9: Recirculating fume cabinets
- AS 2252.5:2017 Controlled environments, Part 5: Cytotoxic drug safety cabinets (CDSC) – Design, construction, installation, testing and use
- AS 23907:2023 Sharps injury protection– Requirements and test methods – Sharps containers (ISO 23907-2:2019, MOD)
- AS 4273-1999 Design, installation and use of pharmaceutical isolators
- AS 4273-1999/Amdt1-2000 Guidelines for the design, installation and use of pharmaceutical isolators

12. Information sources

Codes of practice

- National Transport Commission, Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code), edition 7.8 (2022)
- WorkSafe Victoria Code of practice: *The storage and handling of dangerous goods* (2022)
- WorkSafe Victoria *Compliance code: First aid in the workplace* (2021)
- WorkSafe Victoria *Compliance code: Hazardous substances* (2019)
- WorkSafe Victoria *Compliance code: Hazardous manual handling* (2019)
- WorkSafe Victoria *Compliance code: Workplace facilities and the working environment* (2023)

Other guidance

- Australasian Health Infrastructure Alliance, *Australasian Health Facility Guidelines: Part B – Health Facility Briefing and Planning 0560 – Pharmacy Unit*, 2021
- *Globally Harmonized System of Classification and Labelling of Chemicals* (GHS), Seventh revised edition, administered by the United Nations
- *Journal of Occupational Medicine and Toxicology 17(1)*, 'A simple approach to assess the cancer risk of occupational exposure to genotoxic drugs in healthcare settings', April 2022.
- SA Health, *Cytotoxic drugs and related waste: A risk management guide for South Australian health services*, 2015
- Society of Hospital Pharmacists of Australia, *Don't rush to crush*, 4th edition.
- Victorian Pharmacy Authority, *Victorian Pharmacy Authority Guidelines*, 2023.
- Workplace Health and Safety Queensland, *Guide for handling cytotoxic drugs and related waste*

12. Information sources

Useful websites

- American Society for Testing and Materials International: **astm.org**
- Biohazard Waste Industry Australia and New Zealand: **wmrr.asn.au**
- Cancer Council: **cancer.org.au**
- Cancer Institute NSW: **cancer.nsw.gov.au**
- Environment Protection Authority Victoria: **epa.vic.gov.au**
- International Society of Oncology Pharmacy Practitioners: **isopp.org**
- Pharmacy Board of Australia: **pharmacyboard.gov.au**
- Safe Work Australia: **safeworkaustralia.gov.au**
- Society of Hospital Pharmacists of Australia: **shpa.org.au**
- Standards Australia: **standards.org.au**
- Therapeutic Goods Administration: **tga.gov.au**
- United Nations: **unece.org**
- Victorian Department of Health: **health.vic.gov.au**
- Victorian Legislation: **legislation.vic.gov.au**
- WorkSafe Victoria: **worksafe.vic.gov.au**

Notes

WorkSafe Victoria

WorkSafe Agents
Agent contact details are all available at
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Information in your language
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