A guide to managing hazardous substances in the workplace

SPOT THE HAZARD
ASSESS THE RISK
FIX THE PROBLEM
EVALUATE RESULTS

WORKPLACE SAFE
It's working
DISCLAIMER

This information is for guidance only and is not to be taken as an expression of the law. It should be read in conjunction with the Workplace Health and Safety Act 1995, the Workplace Health and Safety Regulations 1998 and any other relevant legislation. Copies of the legislation can be purchased from the Printing Authority of Tasmania Bookshop: call (03) 6233 3289 or freecall 1800 030 940. It is also available on the Internet at www.thelaw.tas.gov.au
Introduction
Each year in Tasmania around 200 workers suffer injuries from exposure to chemicals and hazardous substances. Statistics show that these injuries do not just happen to those working in large, industrial workplaces.
Most workplaces use chemicals in some form. Glue, varnish, chlorine, petrol, methylated spirits, weedkillers and detergent are hazardous substances that have injured Tasmanian workers.
This guide can help you manage hazardous substances in your workplace, and reduce the risk of injury and illness.

What are hazardous substances?
Hazardous substances are chemicals and other substances that can affect the health of anyone in the workplace, causing illness or disease.
Hazardous substances will often be industrial chemicals. They can also be pesticides, oven cleaners, paints, bleaches or even food products. In fact, they are many substances that may be hazardous to health and are used or produced in a work activity.
Hazardous substances more commonly associated with injuries and illnesses at work are:
- glues
- disinfectants, detergents and other cleaning agents
- paint and varnish
- chlorine
- fuels such as petrol, diesel, kerosene, paraffin and methylated spirits
- industrial gases and fumes
- fungicides, fertilisers, weedkillers, crop sprayers and defoliants
- caustic soda, ammonia and other alkalis
- acids.

How can hazardous substances make you sick?
A range of different health problems can be caused by exposure to hazardous substances. They can be:
- very toxic — capable of causing death or very serious health problems after relatively small exposures
- toxic — capable of causing death or serious health problems after exposure
- harmful — capable of causing health problems after exposure to large amounts of a substance or exposure over a long period
- carcinogenic — capable of causing cancer
- mutagenic — capable of causing damage to genes

Hazardous substances may be found anywhere in the workplace. Even apparently safe areas may have chemicals in use: for example tea-rooms and photocopy rooms.
The presence of hazardous substances may not be obvious. They may be colourless or odourless. They may not be obvious enough to cause concern in your workplace. They may take the form of mist, vapour, gas, smoke, dust, aerosol or fumes.
- **teratogenic** — capable of causing birth defects
- **corrosive** — capable of destroying materials or living tissue (such as skin) on contact
- **irritating** — capable of irritating or inflaming the skin, eyes or respiratory system (for example, dermatitis)
- **sensitising** — capable of causing allergic reactions, to even minute quantities of the substance (for example, asthma).

Chronic health effects may not become obvious for many years — they are hard to predict in advance and when they do occur it may be hard to identify what caused them. In some cases disease can develop after long-term exposure that had no short-term effects or discomfort.

A common health problem associated with hazardous substances in the workplace is skin irritation (or dermatitis). Other problems include occupational asthma, chemical poisoning, chemical burns from corrosives and long-term diseases such as cancer. The type of health effects will depend on the particular hazardous substance.

During the 2005–06 financial year in Tasmania, the most common type of workplace injuries caused by exposure to or contact with chemicals were burns (55 reported incidents), contact dermatitis (36), poisoning (30) and foreign bodies in the eye, ear or nose (22).

Of the 179 claims associated with chemicals, 158 of the injuries reported resulted from a single contact with chemicals or chemical products. Twenty-one injuries were caused by long-term contact with chemicals or hazardous substances.

The eye was the most common body part affected by contact with chemicals (with 59 reported incidents) followed by hand, fingers and thumbs (28) and lungs, trachea and bronchus (25).

Whether illness or disease actually occurs will depend on the amount of exposure, the way substances get into your body, and how poisonous the substance is. Other factors may increase the substance’s health effects: for example, your own sensitivity to the substance and whether you are exposed to other hazardous substances.

The two most common ways that a hazardous substance gets into the body are by breathing the substance or contact with the skin. Some hazardous substances can be absorbed through the skin or be accidentally swallowed (for example by eating or smoking with contaminated hands). Accidental injection through the skin is also possible but is less common in the workplace.

**Remember:** Sickness from hazardous substances is not like a cut or other wound — there may be no blood or immediate pain.
Managing hazardous substances in the workplace

In Tasmania, workplaces are required by law to have a system to manage hazardous substances present in the workplace. Everyone in the workplace has the right to know about any chemicals they are working with, and what the health effects are.

Under the Tasmanian Workplace Health and Safety Regulations 1998 Part 77 (1) and (2), an accountable person must keep and maintain a register for all hazardous substances used or produced at the workplace. The accountable person must also make the register readily accessible to any employee who may be exposed to a hazardous substance at work. The register must contain the material safety data sheets (MSDS) for all the hazardous substances used or produced at the workplace.

You can use the four SAFE steps of hazard management to help you manage hazardous substances in your workplace, and help reduce the risk of injury or illness — Spot the hazard, Assess the risk, Fix the problem, Evaluate results.

Spot the hazard

Hazardous substances are just one example of a hazard. A hazard is anything that has the potential to cause injury, illness or damage to your health. Identifying hazards is the first step in ensuring a safe workplace.

You can identify hazardous substances in your workplace by:

- listing substances used or present in your workplace
- checking how substances are stored, used and moved from one place to another
- checking whether any substances are stored in inappropriate containers. Storing hazardous substances in food or drink containers is illegal
- checking if there are MSDS from the supplier or manufacturer for all substances in use. The MSDS should say if a substance is hazardous and should describe any health effects (see Material safety data sheets on page 6)
- checking that containers are appropriately labelled (see Labelling requirements on page 6)
- checking the supplier’s label — look for signal words such as ‘warning’, ‘poison’, ‘dangerous poison’, ‘hazardous’ and other risk phrases that indicate that the substance is hazardous
- checking that systems are in place to ensure that workers are not exposed to unsafe levels of substances present in your workplace
- reviewing your company’s injury records. Have there been any accidents or ‘near misses’ relating to hazardous substances?
- asking those who work with hazardous substances if they have noticed any hazards or have any concerns relating to substances used
- recording any work procedures that require hazardous substances to be used or produced in enclosed spaces
- checking whether methods of storing hazardous substances pose a manual handling risk.

Make a list of all the hazards you find. The list will form the basis of the following steps in the hazard management process. You should also use this list when you do future hazard management checks.
ASSESS THE RISK

A risk is the likelihood of a hazard causing injury, illness or damage to your health. Your list of hazards may be surprisingly long, with some hazards posing more safety risks than others. That’s why you need to work out which hazards are more serious than others, so you can start dealing with those ones first.

To assess the risk associated with each hazard, ask these questions:

What is the potential impact of the hazard?
• How severe could an injury or illness be?
• What is the worst possible damage the hazard could cause to someone’s health?
• Would it require simple first aid only? Or cause permanent ill health or disability? Or could it kill?

How likely is the hazard to cause someone harm?
• Could it happen at any time or would it be a rare event?
• How long or frequently are workers exposed to the hazard? Increased exposure time may significantly increase the risk (see Exposure standards on page 6).

You should also consider how many people are exposed to the hazards, and remember that everyone is different. A hazard may pose more risk to some people than others because of differences in physical strength, experience and training.

Doing an MSDS provides valuable information in assessing the risk that a hazardous substance poses (see Material data safety sheets on page 6).

FIX THE PROBLEM

Once you’ve spotted the hazards and assessed their risk, you need to develop ways to fix them. You should use the hierarchy of controls (below) to help you decide which is the most appropriate and effective solution for your workplace. You should always aim to remove a hazard completely from your workplace. Where this isn’t practical, you should work through the other alternatives systematically.

Remember:
• some solutions are more effective than others. Use the hierarchy of controls on the next page to help you decide which is the most appropriate for your workplace. It starts with the most effective control method
• make sure your solution does not introduce new hazards.

Remember: A substance should always be assumed to be hazardous unless there is information to show that it is not.

1. Eliminate the hazard

Eliminating a hazard from the workplace is always the preferred and most effective solution. Perhaps steam cleaning to degrease equipment could eliminate the need for a hazardous cleaning solvent, or you might outsource a process to a company specifically designed to perform the task. If you eliminate the need for a chemical in your workplace, safely dispose of any leftovers immediately.

If this is not practical, then:
2. Substitute the hazard
If the chemical cannot be eliminated from the workplace but there is an alternative product or work method that is less hazardous, then replace it. For example, using the substance in a paste, liquid or pellet form is safer than using a dusty powder or spray.

If this is not practical, then:

3. Isolate the hazard
The third preferred option is isolating or separating the hazard from the people not involved in the work or from the general work areas. This could mean installing screens or barriers or marking off hazardous areas.

If this is not practical, then:

4. Use engineering controls
If the hazard cannot be eliminated, substituted or isolated, then the next best option is to adapt tools or equipment to reduce the risk. For example, installing an appropriate exhaust ventilation system may remove fumes or dust particles from the air.

If this is not practical, then:

5. Use administrative controls
Administrative controls refer to work practices and rules that reduce risk. They could include changing the way that people do the job, having procedures about how to do the job safely or restricting access to hazardous areas.

If this is not practical, then:

6. Use personal protective equipment
Personal protective equipment should only be considered when all other control measures are not practical or when it is necessary to increase protection, for example, during maintenance or emergency operations.

Remember: personal protective equipment should be used only when other control measures are not practical or where extra protection is needed.

Evaluate results
Hazard management is not a one-off event — it’s an ongoing process.

Evaluation is an important step. After you think you’ve fixed the problem, find out whether the changes have been effective:

- talk to the people involved. Get feedback from those affected by the changes and include them in any modifications to their workplace or work routines
- look at your accident records.

Make sure your solution does not introduce new hazards. Maybe you and your workers can even see ways to make further improvements.
Material safety data sheets (MSDS)

To assess the risk to health that a chemical may pose, you need information on the hazardous nature of the substance. Material safety data sheets (MSDS) are designed to provide this information.

An MSDS is an information document prepared by the manufacturer or importer of a hazardous substance. It lists important details including its chemical and physical properties, possible health hazards, precautions for use and safe handling, and information on first aid procedures.

Without an MSDS, users may be unaware of the hazards associated with a substance, how it could affect their health and what to do in the case of an emergency.

The supplier of a hazardous substance, other than a retailer, must provide an MSDS. Employers in Tasmania have a legal obligation to obtain an MSDS on or before the first supply of the hazardous substance. This MSDS must be made readily available to all who use the substance or have reasonable need for requesting the information.

Labelling requirements

In Tasmania, the law requires any container holding a chemical substance in a workplace to be appropriately labelled.

A label is a set of information on a container that identifies the substance in the container and whether the substance is hazardous. It provides basic information about the safe use and handling of the substance. The label is the first place to look for basic health and safety information.

Suppliers of hazardous substances have a legal obligation to ensure that any container that holds a hazardous substance is appropriately labelled. If a substance is being produced in-house and placed in containers, then the employer must ensure those containers are appropriately labelled — in this case, the employer takes on the manufacturer’s responsibility. This includes producing a written MSDS.

If a hazardous substance is transferred into a smaller container to measure quantities or to be used at a third point (for example, a piece of machinery, a photocopier), the container does not need to be labelled if it is cleaned immediately afterwards. If the substance is to be stored in the new container it must be labelled without delay.

Disposing of chemicals

When any chemicals are no longer required they should be disposed of safely and as soon as possible. For information on disposal, check the relevant MSDS or contact the Department of Tourism, Arts and Environment (Environment Division) on (03) 6233 6518.

Exposure standards

Australian exposure standards have been set for some hazardous substances. These standards refer to maximum concentrations of substances such as dust, fumes or gas in the workplace air which — according to current knowledge — should neither impair the health of nor cause undue discomfort to workers. The level of the hazardous substance in the air (usually over an eight hour working shift), when monitored for an appropriate time period must not exceed the relevant exposure standard.

Adequate control of hazardous substances means controlling exposure to the lowest level that is reasonably practical to minimise the health risk. If it is possible and practical to control exposure to a level below the exposure standard, then this should be done.

An important reason for keeping exposure as low as reasonably practical is the possibility of workers being exposed to one or more different substances at the same time. The combined effects of chemicals in mixtures can be more hazardous to health than the individual substances.
About 700 of the more common hazardous substances have exposure standards. Exposure standards are listed in the guidance note *The Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment* at the Australian Safety and Compensation Council website (www.ascc.gov.au). They should also be stated in the MSDS.

**Remember:** Exposure standards only measure exposure by inhalation of the hazardous substance. They don’t take into account the dose received by absorption through the skin, contact with eyes or by swallowing the substance.

### Training

Tasmanian law requires employers to ensure that all workers who could be exposed to hazardous substances at work are provided with appropriate induction and safety training.

This includes:
- all workers who could be exposed to hazardous substances at work
- workers who supervise others who work with hazardous substances.

The information you gathered in the step “assess the risk” should provide you with guidance on the training needs of your workers and the extent of training they require.

A hazardous substances induction and training program should include information about:
- understanding container labels
- accessing and understanding MSDS
- the hazardous substances used and present in your workplace, including the health effects, the risk involved in particular work tasks, exposure levels and how the hazardous substances can get into the body
- the four SAFE steps of hazard management, and how workers can participate in this
- work procedures and practices for the safe storing, handling, using, processing, transporting, clean-up or disposal of hazardous substances
- the correct use and maintenance of chemical hazard control measures
• the proper use and fitting of personal protective equipment
• emergency first aid procedures, general first aid and incident reporting
• monitoring hazardous substances in the workplace — what is needed, why it is needed and access to the results
• health surveillance in the workplace — what is needed, why it is needed, access to results, and workers' rights and obligations
• the legal obligations of employers, workers and suppliers of hazardous substances under the Tasmanian Workplace Health and Safety Act 1995.

More information

For more information about hazardous substances, try these guides from the Australian Safety and Compensation Council (ASCC):
  List of Designated Hazardous Substances [NOHSC:10005(1999)]
  Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]
  National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]
  Guidance Note for the Assessment of Health Risks Arising from the Use of Hazardous Substances [NOHSC:3017(1994)]

For more information go to www.ascc.gov.au
1300 366 322  www.workcover.tas.gov.au

For more information contact
Workplace Standards Tasmania
Phone: 1300 366 322 (within Tasmania)
(03) 6233 7647 (outside Tasmania)
Fax:  (03) 6233 8338
Email: wstinfo@justice.tas.gov.au