

Responsible Use of Chemicals

The following three-stage process should be built into your management systems to protect the health and safety of those using workplace chemicals.

Stage 1 List all the chemicals used in your workplace and find out as much as you can about them from the label and the Material Safety Data Sheet (MSDS).

Stage 2 Evaluate the exposure and other risks by observing the work process and control systems in place.

Stage 3 Assess the extent of health and safety risks arising from the use and storage of the chemicals and bring in controls that will reduce the risks to acceptable levels.



CHEMICAL SUBSTANCE INVENTORY

Chemical Name	Supplier	Used in the process of	Material Safety Data Sheet	Comments

Hazardous Substances Risk Assessment

Work location

Task

Substance(s) used

Employees exposed

Assessment team

Date of assessment

Ticks in the shaded box indicate that all is not well and action needs to be taken. If you are unsure or there is disagreement, then tick the shaded box.

Has the team read the MSDS and the label?

Yes

No

Do this before you continue.

1 Substances

1.1 Can you do without using this substance?

Yes

No

If it is not necessary to use the substance, then don't.

1.2 Is there a safer alternative?

Yes

No

If a non-hazardous, or less hazardous alternative exists, then use it.

If you answered YES to either of the first two questions then make the changes before going any further.

1.3 Is this hazardous substance in a form that can become airborne? (eg fine powder, aerosol or fumes)

Yes

No

Hazardous substances may be supplied in several forms. Some forms will become airborne more readily than others. Aerosols, mists, dusts, gases, powders and vapours are examples of physical forms that can contaminate the air. Try to avoid spraying if possible as this makes substances airborne.

1.4 Can the hazardous substance be breathed in?

Yes

No

The most significant route for hazardous substances to gain entry into the body is through the respiratory system. There is no detoxification of the hazardous substance, they are absorbed directly into the blood stream. This is in contrast to substances which are ingested. Digestive juices and the liver may detoxify the substance before it reaches general blood circulation. There are legal exposure limits for atmospheric contaminants that are hazardous to health. (See Occupational Health, Safety & Welfare Regulations)

1.5 Is there a potential for skin contact with the substance?

Yes

No

Hazardous substances can be absorbed through the skin into the blood stream. Substances that are water based may be less likely to be absorbed, than fat dissolving solvent based substances that pass readily through the skin.

1.6 Is there a potential for eye contact with the substance?

Yes

No

The eyes can rapidly absorb some substances and are extremely sensitive to corrosives.

1.7 Attach a note to describe any action that has already been taken to reduce exposure to this substance.

Include all actions for exposure control – supply of gloves, respirators, extraction fans etc.



1.8 Are these actions (controls) effective?

Yes

No

All controls should be reviewed periodically to ensure that they are effective in minimising exposure or contact with hazardous substances. It is a legal requirement that controls are implemented in consultation with employees.

1.9 Is there ready access to the relevant MSDS?

Yes

No

It is a legal requirement for employers to obtain MSDS for each hazardous substance that they use and for suppliers to provide MSDS for the substances that they supply.

1.10 Is there ready access to recommended antidote(s)?

Yes

No

*If the MSDS suggests antidotes, then these should be held in case of emergency. Also keep the poisons information number at hand **131126**.*

1.11 Are all substances correctly labelled?

Yes

No

Hazardous substances legislation requires that all hazardous substances are labelled correctly, that is in accordance with the labelling code. If a substance is found without a label, then it must not be used until it is identified and labelled. If the substance is poured into another container, then that container must also be labelled unless it has been washed clean of the substance. It is not good enough to assume that everybody knows what is kept in the old cordial container under the bench. It must be labelled.

1.12 Are partially used substances returned to a designated place after use?

Yes

No

Unused material in the original container should be capped and returned to the chemical store or placed in a temporary holding area to await further use or disposal. Unused substance that has been removed from the original container should be labelled and treated the same way. It should not be returned to the original container because of the risk of contamination and further exposure.

1.13 Is there a risk of accidental mixing or contamination?

Yes

No

It is necessary to remove the potential for accidental mixing. Unknown chemical reactions could take place if lids are accidentally swapped or containers are dumped together for clean up later.

2 Process (job)

2.1 Can you identify particular actions or circumstances where it is likely that the substance can be breathed in?

Yes	No
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Observation and analysis of the task or process might indicate particular actions that lead to hazardous substances being breathed in. For example, dry sweeping of work and floor surfaces, or shaking empty bags.

2.2 Is there (at any time) visible smoke, dust, fume or mist in the air or a strong to overpowering smell?

Yes	No
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Visible dusts, mists, fumes and aerosols suggest that there may be a ventilation problem. Long term exposure to low concentrations of some hazardous substances can lead to ill health. Smell is not a good indicator of exposure but it is a useful subjective scale for the efficacy of ventilation.

2.3 Do you know if the atmospheric exposure limits for the substance are being exceeded?

Yes	No
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The legislative requirement is to keep exposure below the published NOHSC standards. However, occupational hygienists suggest that action should be taken to reduce exposure when half the limit is reached.

2.4 Can you identify particular actions or circumstances where it is likely that the substance can contact the skin?

Yes	No
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Observe the process and note any action where there is an increased potential for skin contact with the substance.

2.5 Can you identify particular actions or circumstances where it is likely that the substance can contact the eye?

Yes	No
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Observe the process and note any action where there is an increased potential for eye contact with the substance.

2.6 Is the substance ever transferred to another container?

Yes	No
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If there is a need to transfer the substance then the new container must be clean, made of a material that will not react with the substance and should be labelled the same as the parent container. Food containers must not be used for hazardous substances.

2.7 Are the containers of an appropriate size?

Yes	No
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Buying in bulk may be initially cheaper but there are costs associated with storage, handling and transferring to smaller containers.

2.8 Is the design of the container appropriate for its intended use?

Yes	No
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Some suppliers provide well designed containers for their products, others provide packaging that almost guarantees that you will be covered in the contents when you open the package. If necessary change your supplier to access safe packaging.

2.8 Is the method of dispensing the substance appropriate?

Yes	No
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Some substances are dispensed in a manner that increases the potential for health risk. The use of atomiser bottles and pressure packs should be questioned.

If it is not necessary to atomise the substance then these containers should not be used. Why do we need to use aerosol polishes, bleaches and surface cleaners if application of a liquid from a cloth is equally effective and less of a health risk?

2.9 Is there adequate disposal of empty containers?

Yes	No
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If at all possible, triple rinse the container and return it to the supplier. If this is not possible ensure that the container is as clean and free of the hazardous substance as possible before disposing of it.

3 Work Environment

3.1 Is there any natural ventilation?

Yes	No
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Natural ventilation flows through open doors and windows. Under normal circumstances this is not sufficient to clear workplaces of airborne contaminants. However, there are circumstances where well ventilated areas are sufficient to allow the use of particular hazardous substances.

3.2 Is there any air conditioning?

Yes	No
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Air conditioning provides an air flow, some of which is recycled 'inside' air. It is not efficient in extracting hazardous substance contaminants. Air conditioning dilutes and circulates airborne hazardous substances rather than totally removing them.

3.3 Are there any blocked or dirty vents or dust pre-filters in the ventilation system?

Yes	No
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Blocked or dirty vents indicate that the ventilation system is not being maintained to an appropriate standard.

3.4 Is there any exhaust ventilation? (fume extraction)

Yes	No
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Exhaust ventilation is specifically designed to extract airborne hazardous substances. It has to be designed to deal with the emissions, used as per instruction and well maintained.

3.5 Are suitable washing facilities available?

Yes	No
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It is important that facilities are provided to encourage good personal hygiene. Cleaning the skin with warm soapy water after working with hazardous substances will reduce the risk of skin disease and the potential of transferring hazardous substances from hand and nail contamination to food, drink, cigarettes and other parts of the body.

3.6 Are storage areas generally appropriate?

Yes	No
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Security – to prevent interference
Access – for ease of movement and good ergonomic practice
Safety – fire and spillage control
Compatibility – some substances react together

See the pamphlet on 'Storage of Chemicals'.

3.7 Is there adequate labelling and placarding of storage areas?

Yes	No
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Labels and placarding on cupboards and doors is of value to ensure systematic storage and ensure that items are replaced where they came from. Placarding and stock manifests are also helpful to ensure that visitors and emergency personnel are aware of possible risks. In some cases placarding is a legislative requirement.

See the pamphlet on 'Storage of Chemicals'.

3.8 Are fire extinguishers readily available?

Yes

No

In case a fire starts it is necessary to have an adequate number of well placed and manageable fire extinguishers to deal with the emergency.

3.9 Are fire extinguishers of the correct type?

Yes

No

Check that the extinguishers are of the correct type and they comply with Australian Standards. They should have a tag on them to this effect. If the extinguishers are too big for staff to handle or they are poorly located, then they will be of little use.

3.10 Are fire extinguishers regularly maintained?

Yes

No

Fire extinguisher maintenance is important. They should be regularly checked in accordance with AS 1851. There are several companies who specialise in this maintenance.

3.11 Are emergency exits accessible and well signed?

Yes

No

It is not uncommon to find fire exits blocked by stored items such as boxes and excess furniture. This must not be allowed to happen. Emergency exits must be well signed and kept clear at all times.

3.12 Are staff free from risk associated with hazardous substance residues left on work surfaces?

Yes

No

Work surfaces and equipment should be regularly washed down to remove hazardous substance residues. Care should be taken by those wearing contaminated gloves not to spread hazardous substances onto door handles etc. touched by others.

3.13 Are work areas designed so that tasks can be carried out efficiently and safely?

Yes

No

Hazardous substances should not be poured above shoulder height and it is unsafe to use them in restricted areas where free movement is difficult. Pay attention to ergonomic design.

4 Individual Characteristics

4.1 Do people complain of headaches, sore eyes, skin irritation or breathing problems?

Yes

No

Acute exposure to some hazardous substances can cause watery eyes, shortness of breath, coughing or headaches. Some people, because of body weight or state of health, may be more affected by the substances.

4.2 Do the staff know the potential health risks of the substances they are using?

Yes

No

Staff must be given knowledge of the potential health effects of the substances that they are exposed to at work. If it is necessary to explain the content of an MSDS to ensure that the staff have this knowledge, then it should be incorporated into a training program.

4.3 Are staff aware of symptoms of acute exposure to substances and the recommended response?

Yes

No

It is necessary to train staff to look for symptoms such as dermatitis, asthma or nausea and provide information on actions that must be taken on noting these symptoms.

4.4 Is the operator aware of safe operating procedures?

Yes

No

Procedures should be written to ensure that exposure to hazardous substances is eliminated or minimised. To give an operator a book of procedures is not good enough. Employees should be consulted when the procedures are being drawn up. These procedures should then be posted and staff trained and supervised to ensure that procedures are followed.

4.5 Does the operator always follow procedures?

Yes

No

Staff who continually refuse to comply with a safe operating procedure should be questioned as to the reason for non-compliance. Unless there is good reason why the procedure should be amended, the employee should be warned that they are in breach of employment terms and in breach of the OHS&W Act. A consequence of the first could be dismissal and for the second, court action and a possible fine.

4.6 Are staff aware of the symptoms of acute exposure to the substance being used and the immediate response (MSDS) eg. do not induce vomiting, remove to fresh air etc?

Yes

No

When using hazardous substances, all employees should be aware of action that should be taken in an emergency. Knowing what to do before hand could save essential time during an emergency.

4.7 Are staff aware of the consequences of mixing substances that they are using together with others?

Yes

No

Even common cleaning chemicals may release toxic gases if mixed. Some substances such as oxidising agents may cause fire or explosion if mixed with combustible materials.

4.8 Are staff aware of the risks associated with emissions in the workplace, for example vehicle exhausts, dusts containing crystalline silica and welding fumes?

Yes

No

Emissions are often overlooked when conducting hazardous substances risk assessments. If there are processes taking place that produce toxic emissions they must be assessed in the same manner as other hazardous substances.

5 Management

5.1 Are dilution and extraction ventilation systems adequate for their purpose and regularly maintained?

Yes

No

Capturing fumes, vapours and particulates is not just a matter of installing a fan. Capture velocities and air flow rates are particularly important and must be matched to the airborne contaminant for efficient removal or dilution.

5.2 Is water available for washing hazardous substances off the skin?

Yes

No

It is not uncommon to dry wipe hazardous substances spilt onto the skin. This could result in spreading the substance. Water should be readily available wherever hazardous substances are used for example, when spot spraying weeds in a remote location.

5.3 Is the workplace clean and is constant clean-up part of the task?

Yes

No

Constant clean-up should be part of the job. Clean-up should not be left until the end of the day. Removing unused material and regular cleaning of work surfaces and equipment reduces the risk of unnecessary exposure to hazardous substances.

5.4 Is appropriate personal protective equipment (PPE) matched to the task available?

Yes

No

Personal protective equipment comes in many styles and materials. It is important that the style and material is matched to the process and the substances being used. If a glove is too thin it may tear or if it is not matched to the hazardous substance it may not provide an efficient barrier. Respiratory protection must also be appropriate, for example, dust masks are useless for protection from vapours.

5.5 Is personal protective equipment used when required?

Yes

No

One problem with using PPE as a primary source of protection is getting staff to use it. If PPE is essential as a control, then it may be necessary to write a policy on PPE and insist on compliance. Staff can be fined under OHS&W legislation for non-compliance.

5.6 Is personal protective equipment stored in an appropriate manner?

Yes

No

PPE should be stored correctly to maintain its efficiency as a barrier. Small tears in gloves and aprons render them useless. Scratched visors and glasses make them difficult to see through. Respiratory cartridges continue to absorb vapours when sitting in a contaminated atmosphere.

5.7 Have safe operating procedures (designed to eliminate or reduce exposure) been introduced?

Yes

No

For some activities and most emergencies, it is essential to have a set of procedures in place. An unforeseen high risk situation might always lead to injury, but for a 'lucky' set of circumstances or actions. The purpose of a safe operating procedure is to replace the 'lucky' set of actions with a 'planned' set of actions.

5.8 Are procedures determined and periodically reviewed through staff consultation?

Yes

No

People who do the job are the people who know the most about a job. They may be able to give information on short cuts, locally accepted deviation from standard practice or periods of excessive hazardous substances exposure. It is essential that these people are consulted when drawing up safe operating procedures. This is both a regulatory requirement and one that makes good sense. Safe operating procedures should be based on up to date information and reviewed periodically through consultation. Review of procedures is necessary if substance, knowledge, or desired outcomes are to change.

5.9 Are there controls in place to prevent unauthorised access to hazardous substances?

Yes

No

All hazardous substances should be stored in a manner that pays heed to safety. See the pamphlet on 'Storage of Chemicals' for more information.

5.10 Are substances frequently stored in temporary locations?

Yes

No

If substances are taken from the main storage area and left in various temporary locations around the workplace, then there is an increased risk of injury and loss. Thought should be given to the temporary location. If it is necessary to work in this manner, the temporary location should have similar safety characteristics to the main storage area.

5.11 Is storage in accordance with the requirements on the label and MSDS?

Yes

No

The MSDS or label might give special storage requirements, for example, temperature limitations, expiry date, compatibility, keep out of reach of children etc. If the substances are also dangerous substances (diamonds on the label) then they will have to be stored in accordance with dangerous substances legislation. See the pamphlet on 'Storage of Chemicals' for more information.

5.12 Are emergency facilities for first aid adequate?

Yes

No

A first aid kit containing any necessary antidote should be readily accessible. The contents of a basic first aid kit is listed in the SA Approved Code of Practice for Occupational Health and First Aid in the Workplace.

5.13 Are procedures for dealing with emergencies, spills or disposal of waste discussed and practised regularly?

Yes

No

Emergency procedures should be discussed and practised regularly. The purpose is to train a reaction so that staff can cope with an emergency, rather than stand bewildered or run around in panic. These procedures, if correctly planned, can be of enormous benefit to an organisation or individual in the event of an emergency.

5.14 Is hazardous substances training provided to all staff?

Yes

No

Hazardous substances training is an essential requirement for ensuring a safe workplace. See the NOHSC Core Training Elements for Hazardous Substances.

5.15 Is the register of MSDS available to all staff?

Yes

No

A collection of MSDS that is readily available to staff is a legislative requirement. This collection along with a listing of all hazardous substances on site constitutes a Hazardous Substances Register.

5.16 Has it been necessary to measure atmospheric contaminants or to test the health of workers?

Yes

No

If exposure has been such that monitoring of the environment or health surveillance has taken place, then those records should be kept together with 'this' check sheet for a period of thirty years.

5.17 Now that you have completed this 'Hazardous Substance Risk Assessment' are you going to put it in the register with the MSDS?

Yes

No

This risk assessment should be kept with other information records in the Hazardous Substances Register.

RECORD OF ASSESSMENT

This sheet should be filed (preferably in the Hazardous Substance Register) with all the information relating to the assessment. This may include MSDS, the risk assessment check sheet, relevant observations and exposure evaluation.

Section A

After an evaluation of the exposure to

.....

in the process of

an assessment reveals that the potential risk to health from the use of the substance is negligible.

Signed and dated

Section B

After an evaluation of the exposure to

.....

in the process of

an assessment reveals that the potential risk to health from the use of the substance is significant. However, controls are in place that reduce this risk to acceptable levels. See the attached Control Plan.

Signed and dated

Section C

After an evaluation of the exposure to

.....

in the process of

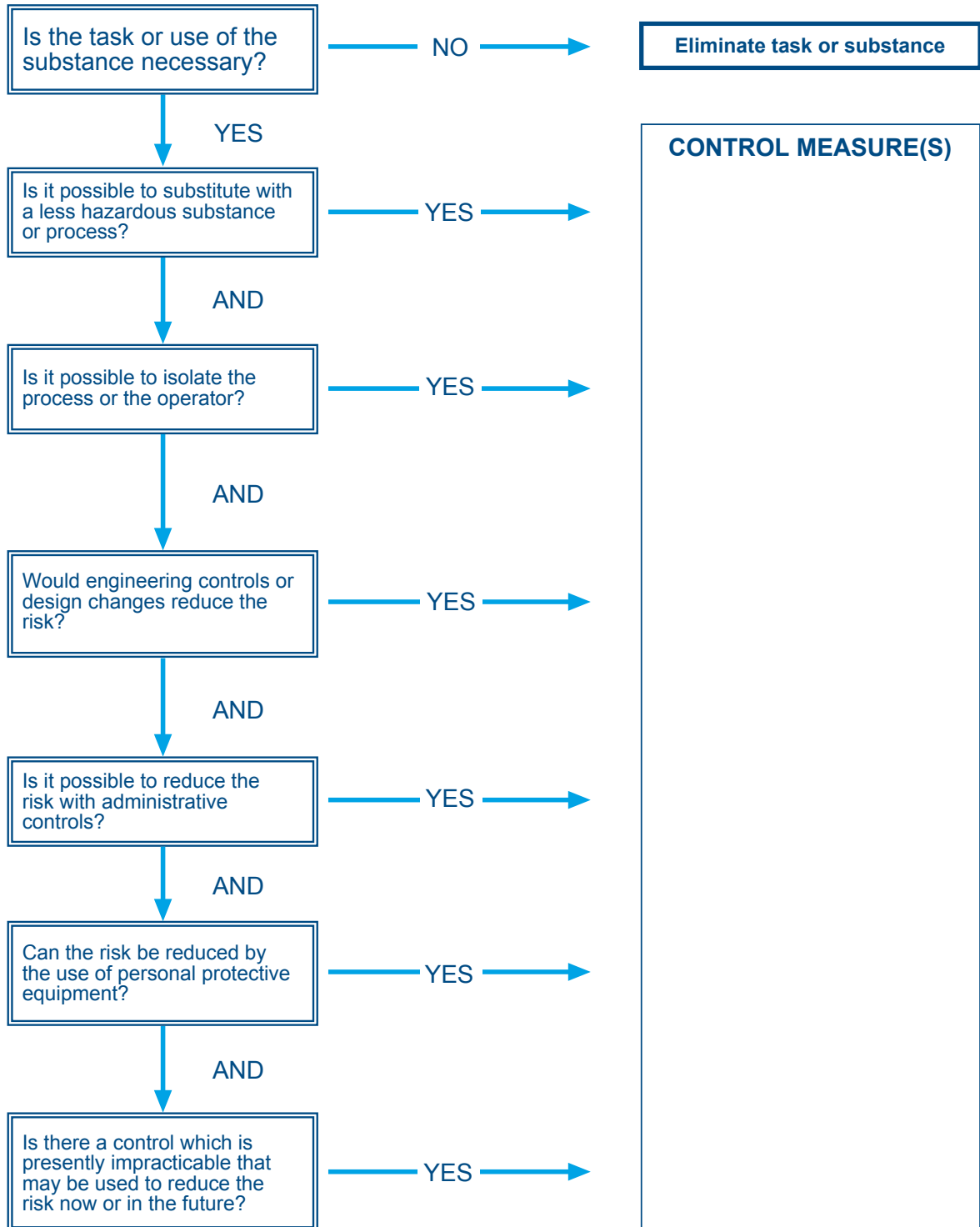
an assessment reveals that the potential risk to health from the use of the substance is significant. However, interim controls are in place until more adequate long term controls can be determined and implemented. See attached Control Plan.

Signed and dated

CONTROL PLAN

Substance **Task or Job**

If the answer to the first question is yes, then follow through each option in turn and record the actions to be taken. It may be best to use a combination of control measures. Provide adequate training where required.



Signed and Dated _____