This former code of practice under the OHS legislation is provided for the purpose of guidance only. Readers should not rely on statements in this document to ascertain requirements under the *Work Health and Safety Regulation 2011*. The information in this document should be used only as guidance on practical processes and controls to manage risks to health or safety.
What is an approved industry code of practice?

An approved industry code of practice is a practical guide to employers and others who have duties under the *Occupational Health and Safety Act 2000* (the OHS Act) and the *Occupational Health and Safety Regulation 2001* (OHS Regulation) with respect to occupational health, safety and welfare.

An industry code of practice is approved by the Minister administering the OHS Act. It comes into force on the day specified in the code or, if no day is specified, on the day it is published in the NSW Government Gazette. An approved industry code of practice may be amended from time to time (or it may be revoked) by publication in the Gazette.

An approved industry code of practice should be observed unless an alternative course of action that achieves the same or a better level of health, safety and welfare at work is being followed.

An approved industry code of practice is intended to be used in conjunction with the requirements of the OHS Act and the OHS Regulation but does not have the same legal force. An approved industry code of practice is advisory rather than mandatory. However, in legal proceedings under the OHS Act or OHS Regulation, failure to observe a relevant approved industry code of practice is admissible in evidence concerning an offence under the OHS Act or OHS Regulation.

A WorkCover Authority inspector can draw attention to an approved industry code of practice in an improvement or prohibition notice as a way of indicating the measures that could be taken to remedy an alleged contravention or non-compliance with the OHS Act or OHS regulation. Failure to comply with an improvement or prohibition notice without reasonable excuse is an offence.

**In summary an approved industry code of practice**

- Gives practical guidance on how health, safety and welfare at work can be achieved.
- Should be observed unless an alternative course of action that achieves the same or a better level of health, safety and welfare in the workplace is being followed.
- Can be referred to in support of the preventive enforcement provisions of the OHS Act or OHS Regulation.
- Can be used as evidence to support a prosecution for failing to comply with or contravening the OHS Act or OHS Regulation.
PREFACE

This code of practice, in its second edition, is based on documents that were declared by the National Occupational Health and Safety Commission, and incorporates the advice contained in the National Code of Practice for the Control of Workplace Hazardous Substances, including Part 2 – Scheduled Carcinogenic Substances. These documents were developed after considerable tripartite consultation and review. This NSW Code of practice is substantially uniform with the requirements of other Australian states, territories and Commonwealth employment.

This code of practice provides guidance on hazard identification, risk assessment and control as required by the Occupational Health and Safety Regulation 2001, in relation to those substances classified as hazardous to health. Note that the physical safety hazards of those substances classified as dangerous goods are not covered in this code of practice – the Code of practice for the storage and handling of dangerous goods may also need to be consulted.

It will assist employers and self-employed persons meet their obligations to provide adequate health and safety information to users of hazardous substances.

This 2006 edition (the second edition) has minor changes reflecting recent changes to legislation.

An informative appendix has been added to assist the identification and assessment of hazardous substances by describing the physical forms substances may take.
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CHAPTER 1 – ESTABLISHMENT

1.1 Title

This is the Code of practice for the control of workplace hazardous substances.

1.2 Purpose

This code of practice provides a practical guide on how to comply with the Occupational Health and Safety Regulation 2001 so as to minimise the health risks of disease and injury due to exposure to hazardous substances in the workplace. It will assist users establish safe systems of working with hazardous substances.

1.3 Scope

1.3.1 Matters included

This code of practice extends to hazardous substances, as defined by the OHS Regulation, and extends to all New South Wales workplaces in which hazardous substances are used, generated or produced and to all persons with potential for exposure to hazardous substances in those workplaces.

Note that in this code of practice, references to an employer extend to a self-employed person to the extent they have obligations under the OHS Act and OHS Regulation to ensure the health and safety of others in the workplace.

1.3.2 Matters excluded

This code of practice does not apply to hazardous substances that are also classified as dangerous goods when they are transported in accordance with the relevant dangerous goods legislation.

A limited number of substances are exempt where their use is not related to a work activity, as follows:

(a) Food consumed at a workplace is exempt from this code if its use is not related to the work activity. However, food items which are handled, processed or produced at a workplace are covered if they meet the definition of a hazardous substance, because their use is related to the work activity of food production.

(b) Therapeutic agents, cosmetics, toiletries and toilet products brought into the workplace by employees for their own personal use, for example, moisturising creams, are exempt from this code because their use is not related to the work activity. Skin creams provided at the workplace for the purpose of decontamination, for example to remove grease or other chemicals from the skin, are covered because their use is related to the work activity in which the skin contamination occurs.

(c) Tobacco and tobacco products brought into the workplace by employees for their own personal use are exempt from this code because their use is not related to the work activity.

This code of practice does not apply to radioactive substances or infectious substances of biological origin. Radioactive substances are covered by the Radiation Control Act 1990 and the Radiation Control Regulation 2003.
1.3.3 Other substance specific industry codes of practice that may be applicable

There are also specific approved industry codes of practice for the following substances:

- Safe handling of timber preservatives and treated timber
- Safe use of vinyl chloride
- Safe use of synthetic mineral fibres
- Safe handling and storage of enzymatic detergent powders and liquids
- Safe use and storage of chemicals (including pesticides and herbicides) in agriculture
- Safe use of pesticides including herbicides in non-agricultural workplaces

In relation to the physical and chemical risks of those substances that are classified as dangerous goods consult the Code of practice for the storage and handling of dangerous goods.

1.4 Commencement

This amended code of practice commences on 31 March 2006. It amends the Code of practice for the control of workplace hazardous substances that commenced on 12 July 1996.

1.5 Authority

This second edition is an amendment of the first edition, as provided by section 45 of the Occupational Health and Safety Act 2000, approved by the Minister under section 43.

1.6 Definitions

Definitions are provided in Chapter 15. Most of these come from the OHS Act or the OHS Regulation.

1.7 Interpretation

1.7.1 Legal requirements

In this code, the words “must” and “ensure” indicate a legal requirement. It is essential that employers or other persons responsible comply with these requirements.

1.7.2 Recommended practices

In this code, the word “should” indicates a recommended course of action.

Words such as “consider” or “may” indicate matters, which may be chosen from options.

While this Code of practice provides recommendations, employers or other responsible persons can choose an alternative method of achieving the same or a higher standard of health, safety and welfare.
CHAPTER 2 – CONSULTATION

2.1 Purpose of consultation

Employers must consult their employees about issues that may affect their health, safety and welfare at work, including work with hazardous substances.

Consultation involves sharing information with employees, giving them the opportunity to express their views before decisions are made, valuing their views and taking them into account.

Consultation is based on a recognition that employee input and participation improves decision-making about health and safety matters. Consultation will assist in developing safe systems of work based on the identification of hazards that may be present and the assessment of the risks arising from these hazards.

Although the responsibility for health and safety decisions rests with the employer, consultation provides the opportunity for employees to contribute to the decision-making process in resolving health and safety problems.

2.2 How consultation should take place

Consultation between employers, employees and employee representatives should take place during the implementation of the OHS Regulation and its subsequent application in the workplace. Employee representatives must have access to all information relating to hazardous substances that is available to employees.

Consultation must occur in the following circumstances:

- when changes that may affect health, safety or welfare are proposed to the following:
  - work premises
  - systems or methods of work
  - plant or substances used for work
- when risks to health and safety arising from work are assessed
- when decisions are made about the measures to be taken to eliminate or control those risks
- when introducing or altering the procedures for monitoring those risks
- when decisions are made about the adequacy of facilities for employee welfare
- when decisions are made about the procedures for consultation.

Employers must establish an OHS consultation mechanism and need to consult employees about setting up suitable consultation arrangements. This is particularly important for a dispersed workforce.

For further advice refer to WorkCover’s Code of Practice: Occupational Health and Safety Consultation.

2.3 What consultation should address

Consultation should address the general implementation of this code of practice, and the following in particular:

- any supply of a new hazardous substance to the workplace
- the assessment of the risks arising from the use of hazardous substances
• how to control exposure to hazardous substances
• practicable ways of providing access to information (see 2.4 below), including MSDS, risk assessment reports and data such as that arising from monitoring or a summary of health surveillance results.
• the requirements for health surveillance, including the choice of medical practitioner
• the induction and training required.

2.4 Information that should be available

The requirements for information are detailed in various sections of this Code of practice. The following information must be readily accessible to employees and employee representatives for all hazardous substances present in the workplace:
• the register of hazardous substances (see section 5.12)
• appropriate material safety data sheets (MSDS) (see section 5.5, preferably compiled in accordance with the approved Code of practice for the preparation of material safety data sheets)
• appropriate labels on containers (see section 5.10 of this code of practice, preferably in accordance with the approved Code of practice for the labelling of workplace substances)
• reports prepared as a result of workplace risk assessments (see chapter 8)
• the results of monitoring
• the results of health surveillance programs, provided that medical confidentiality is maintained
• any other relevant information.

This information could be accessed from off-site databases, if appropriate and practicable.
CHAPTER 3 – CLASSIFICATION OF HAZARDOUS SUBSTANCES – DUTIES OF MANUFACTURERS AND IMPORTERS, AND IDENTIFICATION BY EMPLOYERS

3.1 Responsibility for classification by manufacturers and importers

Manufacturers of substances supplied for use at work are required by the OHS Regulation (clause 149) to determine whether the substances are hazardous. This includes mixtures (see section 3.3). The OHS Regulation in clause 148 provides that importers must ensure that the manufacturer’s duties are met for hazardous substances.

The Regulation requires that the List of Designated Hazardous Substances and the Approved Criteria for Classifying Hazardous Substances be used for this purpose. These are published by the Commonwealth of Australia and are available on the web site www.ascc.gov.au.

Note that manufacturers are also required to determine whether substances or articles are classified as dangerous goods (OHS Regulation clause 174G) and that importers must ensure this responsibility is met (OHS Regulation clause 174F).

The List of Designated Hazardous Substances is a comprehensive list of hazardous substances. This list is maintained, reviewed and revised regularly. This information is now available online in the Hazardous Substances Information System (HSIS) on the web site www.ascc.gov.au. The list is intended to be an aid to the classification of substances and should always be checked first. If a substance is on the list, it is a hazardous substance for the purpose of the OHS Regulation if above the relevant concentration. Some substances are only classified as hazardous when in a particular form such as a dust or vapour (eg some metals).

It should be noted that the list is not exhaustive. Therefore, if a particular substance or its ingredients are not listed, the OHS Regulation requires the application of the Approved Criteria for Classifying Hazardous Substances by the manufacturer or importer. These criteria are the same as those used in the European Community.

The criteria are used for determining whether a substance is very toxic, toxic, harmful, irritant, corrosive, sensitising, carcinogenic, mutagenic, teratogenic or has reproductive effects. The approved criteria also include concentration cut-offs to be applied to determine whether a mixture is hazardous on the basis of the amount of a hazardous ingredient that it contains. The risk and safety phrases that must be used on labels and material safety data sheets (MSDS) are determined from the criteria document and are indicated in the list.

The OHS Regulation (clauses 150 and 151) requires that all hazardous substances supplied for use at work must have an MSDS, produced by the manufacturer or importer. This MSDS should indicate that the substance has been determined to be hazardous according to the list and/or approved criteria.

The classification of hazardous substances overlaps with that of dangerous goods. Manufacturers must identify dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail, and assign the appropriate UN Number, Class, Subsidiary Risk and Packing Group (OHS Regulation clause 174G). OHS information relevant to the dangerous goods classification must also be provided in MSDS.
3.2 Classification of chemical entities

The OHS Regulation (clause 149) requires that a substance that consists of a single chemical entity (i.e., has one ingredient), is determined as hazardous if:

- the substance is listed in the List of Designated Hazardous Substances, or
- the substance meets any of the health effects criteria in the Approved Criteria For Classifying Hazardous Substances.

Note that these are updated from time to time. For current information consult the Chemical Gazette, published by the Commonwealth, or the web site www.nicnas.gov.au.

3.3 Classification of chemical mixtures and formulations

The OHS Regulation (clause 149) requires that a substance which consists of two or more ingredients, is determined as hazardous if:

(a) the whole substance is listed in the List of Designated Hazardous Substances, for example, ‘oil of turpentine’, or

(b) the mixture has been tested as a whole and it satisfies any of the health effects criteria in the Approved Criteria for Classifying Hazardous Substances, or

(c) any of the ingredients of the mixture:

   (i) is included in the List of Designated Hazardous Substances, or
   (ii) meets any of the health effects criteria; and
   (iii) it is present in the mixture at a concentration, which exceeds the relevant cut-off level specified for the hazard classification in the Approved Criteria for Classifying Hazardous Substances.

A mixture may also be hazardous if any of its ingredients meet the health effects criteria but are not present at a level that exceeds the relevant concentration cut-off level. The Approved Criteria for Classifying Hazardous Substances provides formulae for considering the additive effects of such ingredients.

3.4 Identification of hazardous substances used in the workplace – employer duties

An employer must take reasonable care to identify hazards arising from:

- hazardous substances, including the production, handling, use, storage, transport or disposal of hazardous substances (OHS Regulation, clause 9(2)(d))
- the presence of asbestos installed in a place of work (OHS Regulation, clause 9(2)(e))
- dangerous goods (including the storage or handling of dangerous goods) (OHS Regulation, clause 9(2)(c1)).

This is the hazard identification phase, which is the first step in risk assessment, and necessary for forming the register of hazardous substances in the workplace.

An employer must ensure that effective procedures are in place, and are implemented, to identify hazards in the following circumstances:

- before hazardous substances are introduced into a place of work
- immediately prior to using premises for the first time as a place of work
- before and during the installation, erection, commissioning or alteration of plant in a place of work
• before changes to work practices and systems of work are introduced
• while work is being carried out
• when new or additional information from an authoritative source relevant to the health or safety of the employees of the employer becomes available.

In addition, an employer must ensure that no person at a place of work is exposed to an airborne concentration of an atmospheric contaminant that exceeds the exposure standards determined in clause 51 of the OHS Regulation (see section 9.2 for more information).

For substances supplied to the workplace, identification is by reference to the MSDS or label for the hazardous substance.

For substances generated or produced in the workplace the employer should refer to the List of Designated Hazardous Substances and/or the Approval Criteria for Classifying Hazardous Substances (see OHS Regulation clause 9 and definition of a hazardous substance in clause 3). This information is available online by searching the Hazardous Substances Information System (HSIS) on the web site www.ascc.gov.au. Airborne contaminants are included in the list.

Substances generated or produced in the workplace include all dusts, fugitive emissions, wastes and intermediates. These can be in the form of mists, vapours, smoke, fumes, or gases produced by work processes. Appendix 4 provides advice on the forms of hazardous substances that may be present in workplaces. Further advice is provided in section 8.3.

If carcinogens listed under clause 158 of the OHS Regulation are used (see section 6.3 and appendix 5) then WorkCover must be notified as required by clause 345(1)(a) of the OHS Regulation (see the WorkCover publications Guidelines for the Notification of the Use of Listed Carcinogens).
CHAPTER 4 – PROVISION OF INFORMATION – DUTIES OF MANUFACTURERS, IMPORTERS AND SUPPLIERS

Note that the OHS Regulation (clause 8) provides that where more than one person has a particular responsibility, the responsibility is to be discharged in a coordinated manner. Consequently those in the supply chain should make suitable arrangements to ensure information, such as MSDS, is passed on to end users.

4.1 Material safety data sheets (MSDS)

The purpose of material safety data sheets (MSDS) is to provide the information needed to allow the safe handling of hazardous substances used at work. The MSDS for a substance describes its identity, relevant health and safety hazard information, precautions for use and safe handling information. This should be relevant to the intended use of the substance as supplied, and other relevant factors such as the pack size. The MSDS should contain sufficient information to assist users with their risk assessment.

4.2 Preparation of MSDS

Manufacturers are required by the OHS Regulation (clause 150) to prepare MSDS for all hazardous substances that they supply for use at work. Importers must ensure that this responsibility is met. Import includes movement across the state border from other states or territories. MSDS are also required for dangerous goods (OHS Regulation clause 174J). Where the hazardous substance is also a dangerous goods the relevant information must be on the same document from 1 September 2006.

The National Code of practice for the preparation of material safety data sheets provides practical guidance on meeting the requirements for MSDS under the OHS Regulation and advises on suitable formats. Suitable MSDS formats include those of the National Code of Practice, the European Community and the International Labour Office, as described in the code of practice. Any overseas MSDS provided in Australia should include the relevant Australian information, for example, supplier contact details and any relevant exposure standard.

Articles, which give rise to hazardous substances during their use, for example, welding rods, should also be accompanied by MSDS or other equivalent information.

The OHS Regulation specifies the following content of each MSDS for each hazardous substance (sub-clause 150(2)):

- clear identification
- recommended uses
- chemical and physical properties
- ingredients (with some provisions for confidentiality)
- health hazard information
- precautions for safe use and handling
- name, address and telephone number of importer or manufacturer in Australia (including an emergency number)
- date of review, or if not yet reviewed, its date of preparation.
This is a minimum – the National Code of practice for the preparation of material safety data sheets provides guidance on a full set of information. Sub-clauses 150(3) to (5) of the OHS Regulation provide for some generic names of ingredients.

MSDS should be user friendly and must be in plain English. Health and safety information should include Australian exposure standards where assigned. The MSDS should have recommendations on storage, including chemical compatibilities, and the dangerous goods classification (if any) is required. OHS information relevant to the physical and chemical hazards characterised by dangerous goods classification must also be provided in MSDS (OHS Regulation clause 174J). Health hazard information should be consistent with the risk and safety phrases determined from the criteria document and indicated in the list – see section 3.1.

It is suggested that for products sold only for end use (ie not used for further reformulation, such as paint or glue) that the MSDS be brief and focus on health and safety matters in relation to both use and storage.

MSDS may be provided in an electronic form to customers, who should be given a choice. However, a paper form at least must be available.

4.3 Provision of MSDS on first supply

Manufacturers (or importers) must provide MSDS to suppliers, and also directly to any person who claims to be associated with the use of the substance at work (OHS Regulation clause 151). MSDS must also be provided to any medical or health practitioner for the purpose of emergency treatment.

The supplier is required to pass on a current MSDS, to each person who purchases the hazardous substance from the supplier on or before the first occasion that a hazardous substance is supplied (OHS Regulation sub-clause 155(1)(a)). There is no need to include a MSDS with every delivery. However, when the MSDS has been revised, a copy of the revised MSDS must be sent out to each purchaser of the substance.

Suppliers are not required to provide a MSDS on the first supply to retailers and retail warehouse operators for consumer packages which are intended for retail sale, will not be opened on their premises and hold less than 30 kilograms or 30 litres (OHS Regulation sub-clause 155(2)).

4.4 Provision of MSDS on request by supplier

Suppliers must provide MSDS on request to purchasers and any other person who claims to be associated with the use of the substance at work (OHS Regulation clause 155).

To assist planning, MSDS should also be provided to prospective purchasers on request.

4.5 Provision of MSDS – purchases from retailers

Retailers are not required to provide MSDS to people who purchase hazardous substances in the form of consumer packages from retail outlets (OHS Regulation sub-clause 155(2)). This is because the retailer does not know that the substance is for use at work. However, retailers may choose to act by arrangement with suppliers to distribute MSDS.

This exemption does not apply to trade sales. MSDS must be provided if the substance is intended by the manufacturer or supplier for use at work, such as a substance not usually sold as a consumer product.
Where a person purchases a hazardous substance for use at work from a retailer and the MSDS is not available, the purchaser can obtain on request a copy of the MSDS from an upstream supplier, for example the manufacturer or importer (see section 4.4 above).

4.6 Labels

The purpose of labelling is to ensure that the contents of a container can be readily identified by product name, and to draw the attention of a person who is handling or using a hazardous substance to the significant hazards involved, and suitable precautions.

4.7 Labelling of containers of substances

Suppliers are responsible for the correct labelling of hazardous substances, which they supply to others for use at work (OHS Regulation, clause 156). Supply includes importing across the state border.

Recommendations on the details of labelling of hazardous substances are given in the Code of practice for the labelling of workplace substances.

Some products when labelled in accordance with other legislation, for example, the Agricultural and Veterinary Chemicals Act 1994 (Cwlth), are usually appropriately labelled under provisions equivalent to the Code of practice for the labelling of workplace substances and separate labelling is not usually required.

Hazardous substances imported into Australia, and not otherwise required to be labelled in accordance with any of the dangerous goods transportation codes such as the ADG Code, do not have to be labelled until such time as the importer has taken possession of them.

For hazardous substances, the minimum requirement is for suppliers to provide labels that contain the following information:

(a) clearly identify the hazardous substance;
(b) set out the name, Australian address and telephone numbers of the supplier;
(c) disclose information on ingredients;
(d) provide basic health and safety information including risk and safety phrases.

Risk and safety phrases are determined from the criteria document used for classifying hazardous substances and are indicated in the list of designated hazardous substances – see section 3.1.

Small labels must show at least (a) and (b) above. Ingredients must be disclosed, but there are some provisions for confidentiality for both labels and MSDS in the OHS Regulation.

Bulk containers are exempt from these particular requirements, but there may be dangerous goods placarding requirements. “Bulk” has the same definition as in the ADG Code – individual containers of solids or liquids exceeding either 450 L capacity or 400 kg in weight, and individual containers of gases exceeding 500 L.

Sample labels for hazardous substances are provided in Appendix 3.
4.8 Articles – MSDS and Labelling

Articles are not included in the definition of a hazardous substance. However, articles that give rise to hazardous substances during their use, such as welding rods, should also be appropriately labelled indicating the conditions of use that can lead to the generation of hazardous substances.

The supplier’s duties for hazardous substances under the OHS Regulation do not apply to articles, or substances that are part of an article. However, this restriction does not apply to the OHS Act. Section 11 of the OHS Act requires suppliers to provide adequate information to ensure safe use of plant or substances.

An article is an item, which is deliberately formed to a specific shape or design during production or manufacture.

A solid article intended for further limited processing to form a new shape is still an article. Examples are where the article is intended to be pressed, bent or cut. However, if the material is to be pulverised, melted, or pelletised, or in other words the formed shape is destroyed, then it is classified as a substance. Polymer blocks, sheets, films and filaments are articles.

Substances involved in a surface reaction are also part of an article. Examples are the emulsion on photographic film and the adhesive on window tinting film.

Articles may undergo chemical change as an intrinsic part of end use. Examples are matches, flares, and ammunition, where the chemical change is intrinsic to the intended use.

Fluids (including gases) and particles are not normally classified as articles. Particles are any solid substance or mixture in discrete aggregations of unspecified size, which may take the form of dust, powders, dispersions, granules, lumps or flakes.

However, if included in items where it is intended that the fluid or particle is contained during normal use, and they serve as a part of intrinsic end use of the item, the fluids or particles are considered to be integral parts of the article. Thus, lubricant in the engine of a vehicle, or other piece of mechanical equipment, is part of an article. Other examples of substances that are part of articles are: the dielectric inside an electrical capacitor, components of an electrical battery and pesticide in treated timber.

In some cases a substance is released as a part of end use. If the normal use involves the release of a fluid in a controlled and non-dispersive manner, the fluids or particles are considered to be part of the article. Examples are ball point pens, ink in an inked stamp pad, typewriter ribbons, and carbon paper. In such cases the substances involved are classified as part of the article.

Even if a product is classified as an article under the OHS Regulation, a supplier may still have a duty to provide information on a substance under section 11 of the OHS Act. You should also check if the article is classified as a dangerous good and apply that labelling. As examples, some lead/acid batteries are dangerous goods of Class 8, nickel/cadmium batteries are dangerous goods of Class 9.

4.9 Other relevant information

The OHS Regulation (clause 157) makes suppliers responsible for providing, on request, any further information that they may have regarding the safe use of hazardous substances they supply. This information must include any summary report produced under the Industrial Chemicals (Notification and Assessment) Act 1989 (Cwlth), and any other relevant information, such as conditions for safe use. The summary reports are published in the Chemical Gazette, which is produced monthly and can be seen on the web site www.nicnas.gov.au.
4.10 Ingredient disclosure

4.10.1 Hazardous substances

The ingredients contained in hazardous substances are classified into three types. Definitions of ‘Type I’, ‘Type II’ and ‘Type III’ ingredients are included in the definitions in chapter 15 of this Code of practice. The OHS Regulation requires that MSDS and labels disclose the following information about Type I and Type II ingredients, and that MSDS disclose the following information about Type III ingredients of hazardous substances:

(a) For ‘Type I’ ingredients the chemical name must be disclosed.

(b) For ‘Type II’ ingredients the chemical name must be disclosed. However, if the ingredient is ‘commercially confidential’ its ‘generic name’ can be used. A ‘generic name’ is a name that describes the category or group of chemicals to which the substance belongs, such as azo dyes or halogenated aromatic amines.

(c) For ‘Type III’ ingredients either the chemical or generic name must be disclosed. However, if a ‘Type III’ ingredient is not hazardous and the supplier considers that disclosing either its chemical or generic name would not provide sufficient commercial protection, the phrase ‘OTHER INGREDIENTS DETERMINED NOT TO BE HAZARDOUS’ may be used. This phrase cannot be used for a ‘Type III’ ingredient, which has a known synergistic effect or which is itself a hazardous substance.

Where a MSDS or label does not provide the chemical name of an ingredient of a hazardous substance the manufacturer or importer of the substance must disclose the chemical identity of the ingredient to any medical practitioner or ambulance officer who applies for the information for the purpose of emergency medical treatment (clause 152). After supplying this information the manufacturer or importer may require the medical practitioner to sign an undertaking that the information disclosed will only be used for the purposes of medical treatment.

A manufacturer or importer must also disclose the name of an ingredient to any employer, employee or to WorkCover when an application is made for disclosure of the ingredient in order to protect the health of persons who may be exposed to the hazardous substance through its use at work (clause 153).

The manufacturer or importer may require that such application for disclosure be made in writing and may also require the applicant to submit a written undertaking that the information disclosed will only be used for the purposes for which it is provided. A response to the application must be made within 30 days after receipt of the application.

A manufacturer or importer may reject an application for the disclosure of ingredient information if it is not for the purpose of protecting health. However, when an application is rejected, the manufacturer or importer must provide the applicant with written reasons for the rejection and any other necessary information to satisfy the aim of the original request, without disclosing the chemical identity of the ingredient.

4.10.2 Dangerous goods

A dangerous goods is classified as a whole and not in terms of its ingredients. Identification of ingredients is necessary only to the extent required by the ADG code in relation to the correct shipping name.

If the dangerous goods contains a hazardous substance, identification is necessary as explained in 4.10.1 above.
4.11 Listed carcinogens

Carcinogens listed under clause 158 of the OHS Regulation (see section 6.3 and appendix 5) cannot be supplied unless the recipient shows evidence of notification to WorkCover. Suppliers of notifiable or prohibited carcinogens must keep a record of the name of the person to whom the carcinogen is supplied and the name and quantity of the carcinogen supplied. This record must be kept for at least five years.

Prohibited carcinogens (see section 6.3) can only be supplied for laboratory use – that is for the purpose of research or analysis. For further advice see the WorkCover publications Guidelines for the Notification of the Use of Listed Carcinogens and clauses 158 to 160 of the OHS Regulation.
CHAPTER 5 – PROVISION OF INFORMATION – EMPLOYERS’ DUTIES

Note that the OHS Regulation places employer duties on self-employed persons, to the extent relevant (see the definition of employer in clause 3 of the OHS Regulation).

5.1 Material safety data sheets (MSDS)

Material Safety Data Sheets (abbreviated MSDS) provide essential information needed to allow the safe handling of hazardous substances used at work. The MSDS plays an important role in assessing risks. The MSDS provides information on the control measures, which should be used.

Employers are required by the OHS Regulation (clause 162(1)) to ensure that all employees have ready access to MSDS. Employers should encourage employees to read MSDS for those hazardous substances, which they may be exposed to in their work.

5.2 Obtaining MSDS

Employers are required by the OHS Regulation (clause 162(1)) to obtain a MSDS from the supplier of the hazardous substance or dangerous goods (clause 174ZG) either before, or on the first occasion, on which the substance is supplied. This mirrors the supplier’s duty to provide MSDS. These MSDS may be transmitted in electronic form.

Where an MSDS has not been provided, it may be requested from the manufacturer or importer. The MSDS of a hazardous substance will assist risk assessment of the use of the hazardous substance (or dangerous goods) and any necessary controls to be established in the workplace.

Retailers are not required to provide MSDS for consumer packages (clause 162(2)). This exemption does not apply to trade sales, such as substances or articles solely for workplace use.

MSDS are not required for substances produced and used in the workplace, such as emissions, if they are not supplied to other workplaces.

An MSDS produced by a third party (who is not the actual supplier) is not suitable. Although these are often available in electronic form, there is no guarantee of their accuracy.

5.3 If the employer is an importer

Where an employer imports a hazardous substance to be used in the workplace, a MSDS set out in accordance with the Code of practice for the preparation of material safety data sheets may not be immediately available. Where an overseas MSDS does not contain the information described in the code of practice, the employer may, after consultation with employees and employee representatives, arrange for the overseas MSDS to be made available as an interim measure, pending the production by the employer of an appropriate MSDS.

5.4 If the employer is a manufacturer

Where the employer manufactures a hazardous substance, the OHS Regulation requires the employer to produce a MSDS for that hazardous substance if it is to be supplied to another workplace – see sections 4.2 to 4.4 of this Code of practice.
While it is not a requirement to produce a MSDS for hazardous substances produced and used within the workplace, such as reaction intermediates or fugitive emissions, it is good practice. For by-products and wastes that are classifiable as hazardous or dangerous and which leave the premises to be handled by other persons at work, a MSDS is required.

5.5 Access to MSDS

At each workplace, workers (including employees) must have ready access to MSDS for the hazardous substances used (OHS Regulation, clause 162(1)(b)). Practical ways of doing this should be discussed in consultation (see chapter 3). The Regulation requires that copies of MSDS must be readily accessible to employees who are required to use or handle the hazardous substance. Employees who are supervising others working with the hazardous substance should also have ready access to MSDS.

Access to MSDS may be provided in a number of ways including the following:

- paper copy collections of MSDS
- microfiche copy collections of MSDS with microfiche readers open to use by all employees
- computerised MSDS databases, such as cd rom or on line.

Depending on the needs of the workplace, any of the above methods may be used. In each case, the employer should ensure the following:

- the current MSDS are available
- any storage or retrieval equipment is kept in good working order
- employees are trained in how to access the information
- where information is displayed on a screen, there are means of obtaining a paper copy of that information.

5.6 Alteration of MSDS

A MSDS obtained from a supplier must not be altered, except where the MSDS is provided from overseas and is not available in one of the appropriate formats (OHS Regulation, clause 162(1)(c). Formats are described in the National Code of Practice for the Preparation of Material Safety Data Sheets.

If an employer wishes to add additional information to the supplier’s MSDS, it should be appended to the MSDS. However, it should be clearly marked to indicate that the appended information is not part of the original MSDS. Specific workplace information may be added in this manner and is not considered to be an alteration to the MSDS.

5.7 MSDS requirements in laboratories and pharmacies

MSDS must be provided by suppliers of hazardous laboratory reagents and pharmaceuticals as outlined in sections 5.1 to 5.6 above. MSDS are not required for subsequent preparations, laboratory samples or reaction intermediates used within the workplace.
5.8 If the employer is a retailer or retail warehouse operator

Retailers and retail warehouse operators, in their capacity as employers, are exempt from the MSDS provisions outlined in sections 5.1 to 5.6 above, for consumer packages intended for retail sale (OHS Regulation, clause 162(2)). The exemption applies to consumer packages held on their premises, which hold less than 30 kilograms or 30 litres and which are handled in an unopened state. However, if the container is opened (for example for repacking) then an MSDS must be obtained and made available to employees.

5.9 Labels

Labelling is a key element of establishing a safe method of work in workplaces by providing information. The objective is to allow the substances to be used safely and without risk to health.

The OHS Regulation (clauses 163, 174H) requires that all containers of hazardous substances and dangerous goods supplied to, used in, or handled in the workplace must be appropriately labelled. This includes wastes. The employer must ensure that the label is not removed, defaced or altered.

The label must clearly identify the substance and provides basic health and safety information including the relevant risk and safety phrases. Full advice on labelling is provided in the Code of practice for the labelling of workplace substances.

Normally the containers supplied to the workplace will be correctly labelled and additional labelling will not be necessary. However, employers must also consider the labelling of substances transferred to other containers, and of substances produced and used within the workplace (see advice in section 5.10 below). The identification of hazardous substances is the first step in risk assessment (see chapter 8) and an opportunity to ensure all are properly labelled.

Consumer products used occasionally in the workplace will not require additional labelling, since they should be labelled according to the SUSDP (Standard for the Uniform Scheduling of Drugs and Poisons) by the supplier. However, if consumer products are frequently used then the employer should examine the need for additional OHS information.

5.10 Labelling of containers and of decanted substances

Where a substance is decanted at work, the type of labelling required will depend on whether the substance is consumed immediately, or over a twelve hour period or over a longer period of time (OHS Regulation, clauses 163(3), 174H).

- A container into which a hazardous substance or dangerous goods is decanted for immediate use need not be labelled, providing it is cleaned immediately after it has been emptied.
- A container into which a hazardous substance or dangerous goods is decanted for use within the next twelve hours need only be labelled with the product name and any relevant risk and safety phrases.
- Where a decanted substance is not consumed immediately or within the next twelve hours, the container into which the substance is transferred must carry a label that clearly identifies the hazardous substance, or dangerous goods, and carries basic health and safety information, including any relevant risk and safety phrases (the dangerous goods “diamond” symbol can be used as a risk phrase) – see section 5.9.
The objective of cleaning following immediate use is to ensure that there is no residue, which could still present a risk to health or safety, and so a label is not necessary. Among the risks to be considered is that of a flammable atmosphere inside the container. Methods of cleaning include chemical neutralisation, curing or deactivation to the extent necessary to ensure there is no risk to health or safety.

The *Code of practice for the labelling of workplace substances* provides further detailed guidance on how to do this labelling. The risk and safety phrases are provided in the *List of Designated Hazardous Substances* and the *Approved Criteria Classifying Hazardous Substances*. This information is available online by searching the Hazardous Substances Information System (HSIS) on the web site [www.ascc.gov.au](http://www.ascc.gov.au).

Where labelling is required but the container into which the substance is decanted is very small, for example, a laboratory test tube, a practicable method for labelling should be established. For example, the label may be attached to supporting apparatus, such as a test tube rack. Alternatively, a tag may be used to enable the required information to be provided. A fixed or moveable sign could be placed adjacent to the work area. This could include a key or code to indicate the contents of the small containers.

When diluted some substances will no longer be classified as hazardous. However, labelling should still be maintained in case of hazards, which may arise during actual use of the substance. For example, if a spray is released, exposure standards could be exceeded.

### 5.11 Unlabelled containers

If an employer finds a container that does not have a label or is improperly labelled, action should be taken to correctly label the container in accordance with the requirements outlined above.

If the contents of the container are not known, this should be clearly marked on the container, for example, ‘Caution do not use: unknown substance’. Such a container should be stored in isolation until its contents can be identified and properly labelled if dangerous or hazardous. If the contents cannot be identified, they should be disposed of in an acceptable manner in consultation with the relevant waste management authority.

If an employee finds a container that does not have a label, the employer should be advised immediately.

### 5.12 Registers of substances in the workplace

A register provides a listing of all hazardous substances, which are used or produced in the workplace (OHS Regulation clause 167). Employers and employees should use the register as a source of information and as a tool to manage substances used at work. Dangerous Goods may also be listed and identified on the register (OHS Regulation, clause 174ZW(5)).

On construction sites (where the value of the work is over $250,000), or where a demolition or asbestos removal licence is required, the principal contractor must keep a register of all hazardous substances on the site. Sub-contractors on construction sites must provide the principal contractor with relevant information held by the sub-contractor. Records of risk assessments, and any atmospheric monitoring or health surveillance must also be kept by the Principal contractor (OHS Regulation clause 228).
5.13  Information needed in a register

The following information must be included in a register:

- a list of all hazardous substances present in the workplace
- the MSDS for all hazardous substances for which an MSDS is required under the Regulation (ie the supplied substances).

Include all substances, even those such as emissions and dusts generated, since the risks arising from these must be assessed (see appendix 4 for advice on forms of hazardous substances). Emissions and dusts will not have a supplier's MSDS (unless the dust itself will be supplied to other workplaces).

If dangerous goods are used in the workplace these could also be listed in the register if this is a convenient way of dealing with the requirement to keep a dangerous goods register. If a substance is both a dangerous goods and a hazardous substance, this should be indicated on the register.

The completion of simple and obvious risk assessments should also be noted in the register (see section 8.4 of this code of practice).

5.14  Keeping the register up to date

The register must contain entries for all hazardous substances currently used or produced in the workplace. Make sure that the current MSDS is also in the register. MSDS expire after five years, so check that they are up to date.

The register should be updated as new hazardous substances are introduced to the workplace and the use or production of existing hazardous substances is discontinued.

5.15  Access to the register

Employers are required to ensure that employees with potential for exposure to hazardous substances have ready access to the register (OHS Regulation clause 167(3)). Employee representatives, and relevant public authorities should also have ready access. Practical ways of doing this should be discussed in consultation (see chapter 3). The register can either be located centrally or kept in the workplace to which it pertains. It may be in electronic form, but this must be accessible to relevant employees. For example, screen based equipment must be accessible, or paper printouts made available.

5.16  If the employer is a retailer or retail warehouse operator

Retailers and retail warehouse operators are exempt from the register and MSDS provisions of the OHS Regulation (clause 162 (2)) for consumer packages intended for retail sale. The exemption applies to consumer packages held on their premises, which hold less than 30 kilograms or 30 litres and which are handled in an unopened state. This exemption does not apply to trade sales.

5.17  Identification of hazardous substances in enclosed systems

A hazardous substance or a dangerous goods contained in an enclosed system, such as a pipe or piping system, or a process or reactor vessel must be notified to persons who may be exposed to the contents (OHS Regulation clauses 173, 174ZV).
Suitable means of identification include colour coding in conforming to Australian Standard AS 1319 Safety Signs for the Occupational Environment, or Australian Standard AS 1345 Identification of the Contents of Piping, Conduits and Ducts. Identification such as this should be used in conjunction with suitable work practices. These may include permit to work systems for enclosed systems and confined spaces.

Where the contents of a reaction vessel undergo chemical changes during the manufacturing process, it is not possible to accurately label the vessel. In such cases the employer should establish a system for providing relevant information. This could be in the form of batch sheets or written instructions. These should outline the feedstock ingredients and any information regarding the reaction intermediates that arise, in order to provide information about the hazards and risks that may arise during the process.

Bulk process vessels and storage vessels containing dangerous goods must be placarded to indicate the hazards arising from the contents (for advice see the Code of practice for the storage and handling of dangerous goods).

The contents of vessels used in electroplating must be labelled with the name of the substance, regardless of classification or concentration (OHS Regulation clause 193).

5.18 Additional information about hazardous substances

Employers should make other relevant information regarding hazardous substances available to employees and employee representatives. This will be necessary for hazardous substances produced in the workplace for which a MSDS is not required. Information should be obtained about health effects, precautions for use and safe handling.

5.19 Information about equipment used with hazardous substances

Employers should provide relevant information to employees and employee representatives on equipment used with a hazardous substance such as exhaust ventilation systems. The employer should make available information about the use for which the equipment is designed and the conditions necessary for its safe use. Health and safety information provided by the supplier should be passed on to employees.

5.20 NICNAS summary reports

Where they have been produced for substances relevant to the workplace, summary reports produced under the Industrial Chemicals (Notification and Assessment) Act 1989 (Cwlth) should be made available on request to employees and employee representatives.

5.21 Placarding of tanks and bulk stores

The OHS Regulation should be checked as placarding requirements apply to tanks and bulk stores that contain dangerous goods. Details are provided in the Code of practice for the storage and handling of dangerous goods.

5.22 Enclosed and confined spaces

Any area where there is a risk of exposure to atmospheric contaminants or unsafe level of oxygen must be isolated and appropriate warning signs must be provided (OHS Regulation clause 54). Confined spaces must be identified and entry of unauthorised persons prevented (clauses 68 and 69).
CHAPTER 6 – PROHIBITION OF SUBSTANCES FOR SPECIFIED PURPOSES

6.1 Restrictions on specified substances

Certain uses of some hazardous substances are prohibited by the OHS Regulation (clause 164). These prohibitions are detailed in the tables below.

The employer has an obligation to ensure that these hazardous substances are not used for any purpose specified in the right hand column (unless an exemption has been granted by WorkCover under clause 348 of the OHS Regulation).

6.2 Prohibited uses

<table>
<thead>
<tr>
<th>Hazardous substance</th>
<th>Prohibited use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic or its compounds</td>
<td>Spray painting</td>
</tr>
</tbody>
</table>
| Asbestos in the form of chrysotile (white asbestos) | All purposes, including the purpose of replacing an item including chrysotile with another item including chrysotile, but not for the purposes of:  
  • research or analysis  
  • being removed or disposed of, or being handled for storage or stored awaiting disposal  
  • a historical or educational display of an item consisting of or including chrysotile  
  • where encountered in non-asbestos mining. |
| Asbestos in the form of crocidolite, amosite, fibrous anthophyllite, tremolite or actinolite | All uses, except for the purpose of sampling or analysis, maintenance, removal, disposal, encapsulation or enclosure. |
| Benzene (benzol) if the substance contains more than 1% by volume | Spray painting |
| Carbon Disulphide (carbon bisulphide) | Spray painting |
| Methanol (methyl alcohol) if the substance contains more than 1% by volume | Spray painting |
| Silicon Dioxide, crystalline (free silica) or any substance containing silicon dioxide such as sand. | An abrasive in abrasive blasting; an constituent of steel casting moulds when sufficient quantities of suitable alternative non-siliceous materials are available; a constituent in parting powders and facing powders used in foundry work; a constituent in paints used on the surface of moulds or cores. |
| Tetrachloroethane | Spray painting |
| Tetrachloromethane (carbon tetrachloride) | Spray painting |

Note that for asbestos removal or demolition, notification of the work to WorkCover is required, a permit may be required in some cases, and licence may be required (see chapter 11 of the OHS Regulation).
6.3 Prohibited carcinogenic substances

The use and supply of the following substances is prohibited, except for research and analysis (OHS Regulation, clauses 158 and 159). This use must be notified to WorkCover. Their use has been prohibited because of their health risks, and because their use is either not essential or that suitable alternatives can be used.

- 2-Actetylanomflourene
- Aflatoxins – except in foods where specifically permitted under the Food Act 1989
- 4-Aminodiphenyl
- Amosite (brown asbestos) – except for removal, disposal, maintenance, encapsulation and enclosure purposes and situations where amosite occurs naturally and not used in any new application
- Benzidine and its salts (including benzidine dihydrochloride)
- bis Chloromethyl ether
- Chloromethyl ether (technical grade which contains bis (Chloromethyl) ether)
- Chrysotile (white asbestos) – except when: used for the purposes of being removed or disposed of, stored awaiting disposal, used for the purposes of a historical or educational display, or encountered during non-asbestos mining
- Crocidolite (blue asbestos) – except for removal, disposal, maintenance, encapsulation and enclosure purposes and situations where crocidolite occurs naturally and not used in any new application
- 4-Dimethylaminoazobenzene
- 2-Napthylamine and its salts
- 4-Nitrophenyl.

The reference above to the forms of asbestos includes a reference to an item that contains the form of asbestos.
CHAPTER 7 – INDUCTION AND TRAINING

7.1 Employer responsibilities

Employers are required by the OHS Regulation (clause 13) to induct and train employees in workplace procedures, including covering the following:

• the management of occupational health and safety
• reporting hazards
• health and safety procedures including the use and maintenance of control measures
• how to access health and safety information.

The training provided must be commensurate with the associated risks as identified in the risk assessment process. Each employee must be informed of the risks and provided with information, instruction and training necessary to ensure their health and safety.

7.2 Those employees needing induction and training

Relevant induction and training must be provided to those employees whose work potentially exposes them to hazardous substances. Relevant training should also be provided to those employees who are supervising others using hazardous substances at work.

7.3 Elements of an induction and training program

An induction and training program should incorporate the following elements:

(a) The labelling of containers of hazardous substances, the information that each part of the label provides and why the information is being provided.

(b) The availability of MSDS for hazardous substances, how to access the MSDS, and the information that each part of the MSDS provides.

(c) Information about hazardous substances to which employees are or may be exposed in the course of their work. Information should include the nature of the hazards, risks to health arising from exposure, the degree of exposure and routes of entry of the hazardous substances into the body. This includes information on the forms of hazardous substances including dusts, fumes and other atmospheric contaminants.

(d) The risk assessment process and how the employee can contribute.

(e) The work practices and procedures to be followed in the use, handling, processing, storage, transportation, cleaning up and disposal of hazardous substances.

(f) The measures used to control exposure to hazardous substances, including any information that the employee requires for the correct use and maintenance of control measures.

(g) The proper use and fitting of personal protective equipment.

(h) The procedures to be followed in case of an emergency involving hazardous substances or dangerous goods, including any special decontamination procedures to be followed.

(i) First aid and incident reporting procedures to be followed in case of injury or illness.

(j) The nature of, and reasons for, any monitoring required and access to the results of monitoring.
(k) The nature of, and reasons for, any health surveillance required in order to detect the effects of exposure to a hazardous substance.

(l) The employees’ rights to be advised of the intention to use a new hazardous substance where they are likely to be exposed in the course of their work and the right to be consulted in the process of risk assessment of a hazardous substance.

(m) Employees’ rights and obligations in relation to health surveillance.

(n) Duties under the OHS Regulation of suppliers, employers and employees.

The amount of detail and extent of training required will depend on the nature of the hazard associated with the work activity and the complexity of the work procedures and control measures required to minimise the risk of exposure. In this regard, the risk assessment process provides important guidance.

7.4 Training methods

In general, induction and training programs should be designed to draw on and build on employees’ current knowledge and previous experience, taking age and maturity into account. Language and literacy factors should be taken into account in determining the most suitable training methods. If the literacy level is low, then verbal or visual methods should be used. If the employees are of a non-English speaking background, training should be provided in the languages used by the employees in the workplace. The training provided should be practical and, where this is relevant, include hands-on sessions, for example, on the proper use and fitting of personal protective equipment and routine and emergency procedures.

Training should be evaluated to ensure that employees have an adequate understanding of the matters covered.

7.5 Review of induction and training

Employers should review their induction, refresher and other training programs each time there is a change in the hazard information available, work practices or control measures, in order to ensure that employees are aware of significant changes.

7.6 Records of induction and training

The employer is required by the OHS Regulation (clause 171(b)) to keep a record of the induction and training programs provided. Records should include:

- the names of employees receiving training and the dates of attendance
- an outline of the course content
- the names of persons providing the induction and training programs.

The employer is required to keep records of induction and training for at least five years from the date of their creation.
CHAPTER 8 – RISK ASSESSMENT

8.1 Purpose of risk assessment

The purpose of the risk assessment is to enable decisions to be made about providing appropriate control measures, induction and training, monitoring and health surveillance, as required by the OHS Regulation.

The risk assessment process enables a distinction to be made between ‘hazard’ and ‘risk’. If a substance is hazardous it has the potential to be harmful to health. Those also classified as dangerous goods may have physical hazards such as fire or explosion. The risk is the likelihood that harm will be caused in the actual circumstances of use of the substance.

Separate requirements relate to the physical hazards and risks – for advice see the Code of practice for the storage and handling of dangerous goods.

Decisions about appropriate action to protect employees and others in the workplace by the measures described in this code of practice will depend on the degree of risk to health that arises from the use of hazardous substances in particular work.

8.2 The risk assessment duty

The employer has the responsibility to ensure that a risk assessment is made of any work (OHS Regulation, clause 10). This includes the risks to health and safety of employees and other persons at the place of work.

The advice in this code covers health hazards arising from potential exposure of persons to any hazardous substance at the workplace. This assessment should take place prior to the commencement of work.

It is only necessary to assess work where there is potential for exposure to a hazardous substance. For example, work involving the handling of unopened containers of hazardous substances would not need to be assessed if those containers are unlikely to be opened or damaged. However, if those containers are opened or damaged so that exposure to the contents might occur, an assessment would be required.

The risk assessment focuses on the use of hazardous substances in work tasks and those generated in work tasks, rather than on just the individual substances.

A practical way to carry out assessments in a workplace would be to divide the work up into jobs or tasks and assess the risks involved in each of these.

Advice on the physical hazards of substances is provided in the Code of practice for the storage and handling of dangerous goods. For dangerous goods, the risks related to unopened containers must be considered (e.g., fire risks).

8.3 What is involved in the risk assessment?

There are three steps involved in completing a risk assessment, outlined in points a, b, and c below:

(a) Identification of hazardous substances used and present in the workplace

The first step is to identify all hazardous substances used or produced in the work being assessed. This will also help you form the register (see section 5.12). In some cases these substances will also be classified as dangerous goods. This should be done as follows:
(i) For substances supplied to the workplace, check the label and MSDS for each substance to establish whether it has been determined to be hazardous (see manufacturer and importer duties in chapter 4). If there is any doubt about whether the substance is hazardous, further information should be requested from the supplier.

(ii) If the substance was produced in the workplace and does not have a MSDS, the *List of Designated Hazardous Substances and Approved Criteria for Classifying Hazardous Substances* should be checked. This includes substances arising from the use of articles (see section 4.11) or plant. “Produced” includes powders and emissions of atmospheric contaminants such as dusts, fumes, vapour and smoke. In such cases the physical form of the substance is relevant. Finely divided forms of substances, such as swarf, dross, powder or slag, can also have a reaction or explosion hazard.

(iii) There are overlaps in the classifications of hazardous substances and dangerous goods. As examples, dangerous goods of Classes (or Subsidiary Risk) 2.3 (toxic gases), 6.1 (toxic) and 8 (corrosive) will be also classified as hazardous.

(b) *Review of information about each hazardous substance*

The second step is to review the MSDS to check on the health hazard information, precautions for use and safe handling information. If there is no MSDS or the MSDS cannot be obtained, equivalent information should be obtained in each of these areas.

The use of equivalent information should be limited to situations where either:

- the hazardous substance is produced in the workplace and not supplied outside, and the MSDS does not exist
- the risk assessment is being undertaken in unusual circumstances, such as away from the usual place of work, and work must proceed.

Some products, such as hazardous substances for retail in consumer packages, may have sufficient information on a consumer package label to address the likely situations of exposure which would include spillage and disposal of this substance.

The lists in the OHS regulation should be checked to see if the substance is a notifiable carcinogen, a prohibited carcinogen, has a prohibited use (see chapter 6), or if procedures are specified for health surveillance (see appendix 2).

(c) *Identification of risks*

The third step is risk identification. The risk to health will depend on the hazardous substances, the nature and severity of the potential health effects and the degree of exposure that occurs. There may also be physical risks such as the risk of fire or explosion that need to be identified when using these substances.

To identify the risk of exposure, the particular work activity should be inspected to establish how people might be exposed, the level of exposure and the adequacy of control. Monitoring of atmospheric contaminants may be required.

8.4 *Routes of exposure*

There are three main ways substances can enter the body, and these are called routes of exposure. The possibility of each route needs to be considered in the risk assessment:

- Inhalation (breathing in) – is important where there are airborne concentrations of a substance (eg in the form of an aerosol, vapour, mist or suspended dust).
• Skin contact or eye contact – many substances are readily absorbed through the skin or eyes. Formulations involving solvents or detergents may increase absorption. Accidental contact with contaminated surfaces is a common route.

• Ingestion (swallowing) – this can result from splashes. Dusts and aerosols can be breathed in then swallowed. Smoking or eating while handling substances or without hand washing can also cause ingestion.

• Other routes are possible such as accidental injection when using plant such as injector guns.

Further guidance on risk assessment is provided in the national publications:

Guidance Note for the Assessment of Health Risks arising from Hazardous Substances in the Workplace [NOHSC 3017 (1994)],

Guidance note for the Control of Workplace Hazardous Substances in the Retail Sector [NOHSC: 3018 (1994)].

In relation to the risks of asphyxiation and other risks in confined spaces, also consult AS 2865 Safe Working in a Confined Space.

8.5 Simple and obvious risk assessments

If the inspection of the work shows that any risk can be, or is already, controlled in accordance with the MSDS (or the equivalent information about precautions for use and safe handling), the risk assessment is complete and no further assessment is needed.

For end use products, the MSDS should provide sufficient information on control measures, such as appropriate personal protective equipment (PPE). Examples of end use products are paints, pesticides, and adhesives.

For these simple and obvious risk assessments, the employer is required to note only the completion of the assessment in the register. No further report or record is required.

8.6 Detailed risk assessments

For some work a more detailed risk assessment may be necessary. These situations include those where either of the following apply:

• there is uncertainty about the degree of risk

• there is a significant risk to health, for example, exposure to a hazardous substance may be high and/or the nature of the health hazard is serious (this is particularly relevant for a listed carcinogen or a substance containing a listed carcinogen)

• more complex chemical processes and/or exposures are involved.

A more detailed risk assessment may include obtaining additional information about health hazards, a thorough evaluation of the work to determine exposures (including atmospheric monitoring or biological monitoring where appropriate), and examination or testing of existing control measures. In such cases, the OHS Regulation requires a written report to be prepared.
8.7 Action arising from risk assessments

Employers (and self-employed persons) must eliminate risks, or control risks if elimination is not reasonably practicable (OHS Regulation, clause 11).

Where the risk assessment indicates that there is a significant risk to health, further decisions will be needed to determine the following:

- selection of appropriate measures to achieve and sustain control
- ensuring that those control measures are properly used and maintained
- providing induction and training
- determining if monitoring or health surveillance is required.

Chapters 7, 9, 10 and 11 of this code of practice explain the requirements for induction and training, exposure control, monitoring and health surveillance.

8.8 General risk assessments

If hazards identified as being likely to arise in the conduct of an employer’s undertaking are of the same kind but arise in different places or circumstances, a general assessment of risk is sufficient compliance with the OHS Regulation so long as it has been applied to each such place or circumstance.

Often a particular hazardous substance(s) is used in the same or similar circumstances in a number of different workplaces, or work areas within the one workplace. In such situations, the nature of the hazard and the degree of risk may be comparable.

Such general risk assessments could be undertaken where a single employer controls many similar workplaces, for example, a chain of hardware stores, or by a trade association on behalf of a number of different employers with essentially identical workplaces, such as service stations. In each case the individual employer is responsible for ensuring that the general assessment is valid for that workplace. For example, the assessment used should detail the work activity and environment and other relevant factors for application in each particular location.

Written Safe Operating Procedures (or safe work method statements) are one way of applying a general risk assessment.

General risk assessments should not be applied to the use of carcinogens.

8.9 Who should perform the risk assessment?

Responsibility for ensuring a risk assessment is carried out lies with the employer (or self-employed person). It is anticipated that the assessment will usually be done by a supervisor or manager of the workplace, in cooperation with the relevant employees.

The assessment must be undertaken in consultation with the employees and their representatives.

A person carrying out a risk assessment should have sufficient knowledge and skills to evaluate the health risks to employees arising from operations involving hazardous substances in the workplace. A simple risk assessment would require at least an ability to interpret an MSDS.

A more complex assessment may require the assistance of relevant professionals, for example an occupational hygienist, with elements of an assessment that require special expertise.
8.10 Recording of risk assessment reports

Where the risk assessment indicates that there is a significant risk to health, and a need for atmospheric monitoring or health surveillance, the employer is required by the OHS Regulation (clause 171(1)(a)) to prepare an assessment report and keep it as a record. This is recommended for the listed carcinogens.

The recording of risk assessments that identify that there is not a significant risk to health can be limited to a notation in the register to indicate that each step of the assessment has been done. This should include the date, the MSDS or equivalent information that was reviewed and a notation that controls are in place.

Risk assessment reports should reflect the detail of the assessment. They should record sufficient information to show why decisions about risks and precautions were made. The report should indicate the control measures chosen and how the decisions about the suitability of control measures were reached. If elimination or substitution is not reasonably practicable, this should be justified.

Records of the maintenance of control measures, including rectification of faults in engineering controls or PPE, should also be kept.

8.11 Revision of risk assessments

The OHS Regulation (clause 12) requires risk assessments to be revised when either of the following occurs:

- there is evidence the original assessment is no longer valid
- injury or illness results from exposure
- a significant change is proposed at the place of work, or in work practices or procedures to which the assessment related.

The risk assessment for a particular operation should also be revised if any of the following occurs:

- the process, plant or substance is modified
- new information on the hazards of the substance becomes available
- monitoring or health surveillance indicates inadequate exposure control
- new or improved control measures become practicable.

In any case, the risk assessment must be reviewed at least every five years. A totally new assessment may not be required; particularly if the operation and degree of exposure to employees are similar to that initially assessed.

For listed carcinogens, any spills or leaks or other accidents indicate a need to revise the risk assessment and examine control measures.

8.12 Length of time risk assessment reports must be kept

The employer is required by the OHS Regulation (clause 171) to retain risk assessment reports indicating a need for monitoring and/or health surveillance for at least 30 years. Assessment reports not indicating a need for monitoring and/or health surveillance must be retained by the employer for at least five years. These time periods are taken from the date of the last entry made in that report or after it is superseded by a new assessment report.
8.13 Access to risk assessment reports

Risk assessment reports should be readily accessible to: all employees with potential for exposure to the hazardous substances, employee representatives and WorkCover NSW. Practicable methods for doing this should be discussed in the consultation process (see chapter 3). Practicable methods could include electronic means.
CHAPTER 9 – CONTROL MEASURES

9.1 Consideration of necessary control measures

Employers are required to prevent the exposure of employees to hazardous substances (called elimination in clause 11 of the OHS Regulation). Where this is not reasonably practicable, adequate control measures must be used to minimise risks to health to the lowest level reasonably practicable. This requirement also applies to the physical and chemical effects of those substances classified as dangerous goods.

As far as reasonably practicable, control measures must be implemented in accordance with the hierarchy of controls (OHS Regulation, clause 5) – see advice in section 9.3 of this Code of practice. The use of personal protective equipment is the least preferred measure.

Control measures are not mutually exclusive, and in some circumstances it will be appropriate to use a combination of two or more control measures to reduce exposure to a level as low as is practicable. The selection of control measures must be determined in consultation with employees.

The methods used to control exposure to hazardous substances should be considered in the planning of any new workplace or modifications to an existing workplace. The costs of the control should be considered in the same way, and at the same time, as all other plant and process costs.

When considering methods to control exposure, all the possible routes of entry of the hazardous substances into the body should be taken into account (see section 8.4).

Emergency procedures also need to be considered. These include safe and rapid evacuation, emergency communications and appropriate medical treatment of injured persons (OHS Regulation, clause 17).

9.2 The role of exposure standards

Employers must ensure that employee exposure to a hazardous substance is not greater than the relevant exposure standard listed in the Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment (OHS Regulation clause 51). This document is available at the web site www.ascc.gov.au.

NSW has adopted exposure standards for the following:

- chrysotile – 0.1 fibres per milliliter of air TWA
- nuisance dust from synthetic mineral fibres – 2 mg/m³ TWA
- nuisance dust in general – 10 mg/m³ TWA.

Note that the exposure standards apply to emissions regardless of whether classified as hazardous at the particular concentration in the substance being used in the liquid or solid form. As examples: solid copper is not hazardous, but copper vapour is; an agent in a cleaning solution may be below the concentration defining the cleaning solution as hazardous, but may exceed the atmospheric exposure standard when being sprayed onto a surface.

The OHS Regulation (clause 52) also specifies unsafe oxygen levels – below 19.5% or above 23.5% oxygen is unsafe (measured by volume under normal atmospheric pressure). This is relevant where a gas may displace oxygen in the atmosphere.

Consult the relevant MSDS for the exposure standards, or the national publication, mentioned above.
There are three different types of exposure standards, depending on the period of exposure:

- time weighted averages (TWA)
- peak limits
- short term exposure limits (STEL).

TWA is based on an 8 hour period, while the short term limit is based on 15 minutes. The peak limitation must not be exceeded at any time and applies even to brief periods. The exposure standards publication provides further explanation of the different types of exposure standards and how to determine if they have been exceeded. Whether a particular exposure standard is exceeded or not should be determined by measurement over an appropriate period of time.

Compliance with the relevant exposure standard should not preclude further efforts to reduce exposure. Exposure standards do not represent ‘no effect’ levels at which every worker can be guaranteed protection. Therefore it is a good general policy to keep the level of exposure to any substance as low as is reasonably practicable.

The absence of a specific exposure standard for a hazardous substance does not indicate that exposure does not need to be controlled. Where there is no exposure standard, exposure should be controlled to the lowest reasonably practicable level. What constitutes the lowest reasonably practicable level should be determined during the risk assessment process, and in consultation with employees. This decision is also related to the choice of practicable control methods, discussed in the next section.

Exposure standards do not cover skin contact, although some substances listed in the exposure standards have “skin notation” to indicate its importance as a possible route of entry.

9.3 Hierarchy of control measures

The hierarchy of control measures is a list of measures, in priority order, that can be used to eliminate or minimise exposure to hazardous substances (OHS Regulation clause 5). The hierarchy of control measures is given below, in the sequence in which they must be considered and adopted where reasonably practicable.

For particularly toxic or corrosive substances, classified as dangerous goods, control measures such as containment are more fully described in the Code of practice for the storage and handling of dangerous goods.

9.3.1 Examples of applying the hierarchy of control

(a) Elimination

Where a work activity involves the use of a hazardous substance that is not essential, the hazardous substance should be eliminated wherever practicable. This is particularly important for a listed carcinogen.

Examples of elimination include the following:

- using a physical process rather than a chemical process to clean an object, for example, use of ultra-sound
- using clips, clamps or bolts instead of an adhesive
- purchasing supplies of a material in a ready-cut and sized form rather than carrying out dust-producing cutting processes on site
- adopting an alternative product or production method
- replacing a particular laboratory test with an alternative procedure.
If elimination is not reasonably practicable, then the following steps (b) to (f) must be considered and applied.

(b) **Substitution**

Substitution includes using a less hazardous substance, the same substance in a less hazardous form, or the same substance in a less hazardous process. For a listed carcinogen, it is important to consider substituting it with a substance that is not a carcinogen.

Examples of substitution include:
- replacing a chlorinated degreasing solvent with a detergent
- using a water-based paint in place of an organic solvent-based paint
- using a substance in paste or pellet form rather than a dusty powder, in order to reduce exposure to airborne dust
- brush application of paint rather than aerosol application.

(c) **Isolation**

Isolation involves separation of the process from people by distance or the use of barriers, to prevent exposure and contamination of the working environment.

Examples are:
- the remote operation of a process
- the use of a closed work system such as a glove bag, which contains the substance within the bag and protects the employee from the substance.

(d) **Engineering controls**

Engineering controls are plant or processes that:
- minimise the generation of hazardous substances
- suppress or contain hazardous substances
- limit the area of contamination in the event of spills or leaks.

Types of engineering controls include the following:
- enclosure or partial enclosure
- local exhaust ventilation
- vapour barriers
- automation of processes.

Clause 53(a) of the OHS Regulation requires that mechanical ventilation appropriate to the work being carried out is used to control atmospheric contaminants, and that this is maintained regularly.

Examples of engineering controls include the following:
- ventilated booths (eg for spray painting or fibre glassing)
- robot welding (to avoid personal contact with fumes)
- local extraction systems attached to grinding machines
- automation of the removal of objects from degreasing baths
- vapour barriers (eg the use of a water barrier above denser than air solvent baths)
- closed reaction vessels
• fume cupboards in laboratories
• spillage control such as trip trays or raised edges around work benches
• controls or valves that include fail-safe switches
• any capacity to isolate and decontaminate plant or a work area before employees have to work in or on the area
• process designs that minimise the quantities of hazardous substances used, or the generation of
dusts, fumes or vapours.

Engineering controls, such as ventilation systems and ducts, must be regularly maintained and tested
to ensure effectiveness, and to ensure that contaminants are not trapped and accumulated within the
system. For confined spaces, other methods may be necessary, such as purging the atmosphere to remove
atmospheric contaminants, including those giving rise to any risk of fire or explosion.

(e) Administrative means

Administrative means are safe work practices that require people to work in safer ways. Examples of
safe work practices include the following:
• reducing the number of employees exposed by limiting access to an area
• excluding any access which is not essential by the use of warning signs, and indicating the
necessary PPE for those entering by appropriate signage
• reducing the period of exposure for employees
• regular cleaning of contamination from walls and surfaces, including work surfaces, in order to
prevent exposure from contamination of the working environment, and removing accumulations of
waste
• providing means for safe storage and disposal of hazardous substances
• prohibiting eating, drinking and smoking in contaminated areas
• vacuuming dust from areas where cutting processes take place
• keeping lids on containers when not in use
• providing and using facilities for effective decontamination of work clothing before leaving a
designated area (also the provision of amenities in 9.3.2 below).

For listed carcinogens, safe work practices should only be used to provide additional protection in
conjunction with other control measures. They are also relevant for emergencies when the other control
measures fail, such as spills and leaks.

Safe work practices are particularly important for those employees involved in cleaning up spills, regular
cleaning and maintenance work. However, many sources of exposure to employees in these situations can
be reduced by the use of effective control measures that control hazards at the source in the first instance.

(f) Personal protective equipment

The use of personal protective equipment as a control measure must be limited to situations where
other control measures (listed above) are not practicable, or where personal protective equipment is
used in conjunction with other control measures to increase protection.

Situations where use of suitable personal protective equipment may be necessary include:
• end use products where no other controls are practicable – for example the use of pesticides in
  the field
where it is not technically feasible to achieve adequate control by other measures – in these
cases, exposure must be reduced as far as practicable by other measures, and then in addition,
suitable personal protective equipment should be used to secure adequate control
where personal protective equipment is necessary to safeguard health until such time as
adequate control is achieved by other means, such as where urgent action is required because of
plant failure
during routine maintenance operations where the infrequency and small number of people
involved may make other control measures impracticable.

Where personal protective equipment is to be used employers must ensure that the following are
carried out:

- the PPE is properly selected for the individual and task – that is, it is appropriate for the person
  and controls the risk for that person
- users are informed of any limitations of the PPE
- users are provided with instruction and training on the use of the PPE, to ensure it controls the
  risk
- the PPE is properly maintained in good repair, clean, hygienic and functional
- items of PPE are readily available and/or replaced as frequently as necessary
- items of PPE are stored in a place provided by the employer for the purpose
- the areas in places of work where PPE must be used are clearly identified (OHS Regulation
  clause 15).

PPE should be maintained by appropriately trained staff in accordance with a personal protective
equipment maintenance and servicing program. Employers should ensure that PPE is correctly used when
required.

Personal protective equipment should be selected and used in accordance with the relevant Australian
Standards, as follows:

- eye protection should conform to AS 1337 Eye Protection for Industrial Applications and be
  selected and used in accordance with AS 1336 Recommended Practices for Eye Protection in
  the Industrial Environment
- respiratory protection should conform to AS 1716 Respiratory Protective Devices and be selected
  in accordance with AS 1715 Selection, Use and Maintenance of Respiratory Protective Devices
- hand protection should conform to AS 2161 Industrial Safety Gloves and Mittens (Excluding
  Electrical and Medical Gloves)
- foot protection should conform to AS 2210 Safety Footwear
- head protection should conform to AS 1801 Industrial Safety Helmets and be used in
  accordance with AS1800 Selection, Care and Use of Industrial Safety Helmets
- clothing for protection against chemicals should conform to AS 3765 Clothing for Protection
  Against Hazardous Chemicals.

In some situations, more specialised personal protective equipment may be required.

### 9.3.2 Amenities

Employers must provide appropriate amenities, having regard to the nature of the work (OHS Regulation
clause 18). Suitable amenities are important to minimise exposure through contamination of bodies and
clothing. As examples, these include facilities for changing clothes, lockers and washing to minimise exposure to contaminated clothing and bodies. Separate eating areas may be necessary. The need for amenities should be assessed in relation to the hazards presented by the substances used. In some cases separate lockers for contaminated clothing and PPE will be necessary.

Amenities must be maintained in a safe and healthy condition to avoid contamination by hazardous substances.

Further advice is provided in the Code of practice: Workplace amenities.

9.4 Use, maintenance and testing of control measures

The employer must ensure that all control measures perform as originally intended and continue to prevent or adequately control exposure of employees to hazardous substances.

Where engineering control measures are used to control exposure, they should be thoroughly examined and tested at specified intervals to ensure effective performance.

Preventive servicing procedures should be established, specifying:

- which control measures require servicing
- the servicing needed
- the frequency of servicing
- who is responsible
- how any defects will be corrected
- performance testing and evaluation standards
- records of servicing.

Where mechanical ventilation is used, clause 53(b) of the OHS Regulation requires the system to be:

- located as close as practicable to the source of the contaminant to minimise the risk of inhalation
- used for as long as the contaminant is present
- kept free from accumulations of dust, fibre and other waste materials
- designed and constructed to prevent the occurrence of fire and explosion if used to control contaminants which are flammable or combustible.

If a ducted ventilation system is used, an inspection point must be fitted at any place where blockages in the ventilation system are likely to occur (OHS Regulation clause 53(c)).

9.5 Emergency procedures

Employers must provide for emergencies (OHS Regulation Clause 17).

In spite of the implementation of all practicable control measures, a leak, spill or uncontrolled release of a hazardous substance could still occur. Established emergency procedures, procedures for safe disposal of the substance and sufficient suitable personal protective equipment should be used, where appropriate, to enable the source of the release to be safely identified and repairs made. All persons not directly concerned with the emergency should be excluded from the area of contamination. Consult the relevant MSDS for advice.
Advice on established procedures applicable to those substances that are classified as dangerous goods is provided in Handbook HB 76 Dangerous Goods – Initial Emergency Response Guide published by Standards Australia. Note that this is applicable to large amounts (the amount requiring a vehicle placard when transported).

The OHS Regulation requires that employers provide for the following:

- safe and rapid evacuation
- emergency communications
- appropriate medical treatment of injured persons.

When determining the emergency arrangements, employers must take into account:

- the nature of the hazards
- the size and location of the work place
- the number, mobility and capability of the persons at the work place.

If at a fixed place of work, the employer must ensure that:

- adequate arrangements are made for shutting down and evacuation in an emergency
- the details of the evacuation plan are displayed in appropriate locations
- one or more persons are appointed (and trained) to oversee the evacuation, and trained in the use of any necessary on-site fire fighting equipment.

Emergency procedures and fire control are important for dangerous goods – further advice is provided in the Code of practice for the storage and handling of dangerous goods.

9.6 Specific control measures for hazardous processes and asbestos removal

9.6.1 Hazardous processes

Chapter 7 of the OHS Regulation specifies measures to be taken for the following processes:

- spray painting
- abrasive blasting
- welding
- electroplating
- molten metal
- lead processes and lead risk work.

Consult the OHS Regulation for details.

9.6.2 Asbestos removal

Chapter 8, clause 259 of the OHS Regulation contains particular provisions in relation to asbestos removal. Asbestos work must be carried out, in a manner appropriate to the work, in accordance with the following documents, published by the NOHS Commission from time to time:

- Guide to the Control of Asbestos Hazards in Buildings and Structures [NOHSC: 3002 (1988)]
CHAPTER 10 – MONITORING

10.1 What is monitoring?

Monitoring is the use of valid and suitable techniques to derive an estimate of the exposure of employees to hazardous substances. Information on the role of exposure standards is provided in section 9.2.

10.1.1 Airborne contaminants

For airborne contaminants, monitoring involves the periodic and/or continuous sampling of workplace atmospheres to derive a quantitative measure of exposure to hazardous substances through inhalation. For this sort of monitoring to be of value in risk assessment, there must be a relevant exposure standard against which to compare the results obtained. Where appropriate, laboratory analysis should be carried out by a laboratory that is accredited by the National Association of Testing Authorities (NATA) for the analysis involved.

10.1.2 Surface contamination

In some cases, other forms of monitoring may be necessary, such as monitoring surface contamination or the monitoring of skin contact. This should be considered for those substances having a skin notation in the list in the national Adopted Exposure Standards for Atmospheric Contaminants in the Occupational Environment, and for the listed carcinogens.

10.2 A competent person to undertake monitoring

Monitoring should only be carried out by a competent person who has sufficient knowledge, skills and experience in the appropriate techniques and procedures detailed in section 10.4 and appendix 1 of this code of practice.

10.3 When is monitoring required?

Monitoring may be required as part of the assessment of risk where it is necessary to obtain a quantitative estimate of exposure, or to determine the effectiveness of measures introduced to control exposure.

If the level of atmospheric contamination routinely approaches the relevant exposure standard, there should be a review of the control measures to ensure that exposure is controlled as far as practicable.

Reference should be made to relevant technical literature, including national documents or NSW standards, codes of practice, guidance notes and guides, for information on other situations where monitoring is needed. See Appendix 1 for further information sources.

10.4 Procedures for monitoring

Procedures for monitoring should detail all of the following:

- when and how the monitoring is to be done
- the sampling procedures and analytical methods to be used
- the sites and frequency of sampling
- how the results are to be interpreted.
10.5 Results of monitoring

The results of monitoring must be recorded. The records should contain sufficient detail to determine the following:

- the hazardous substances concerned, what the results were and when the monitoring was done
- what monitoring procedures were adopted including the duration of sampling
- the locations where samples were taken, the operations in progress at the time and, in the case of personal samples, the names of those individuals concerned
- whether the results reflected normal operating conditions
- how the results were interpreted
- the effectiveness of control.

If there is a risk of exposure to atmospheric contaminants or to unsafe levels of oxygen, the relevant areas must be isolated and appropriate warning signs provided (OHS Regulation Clause 54).

10.6 How monitoring results should be kept

The records of monitoring may be kept in any form, but in all cases the information should be readily retrievable and in an easily understood form. Records should be kept in such a way that the results can be compared with any health records required under the health surveillance requirements of the OHS Regulation (see chapter 11 of this Code of practice).

10.7 Length of time monitoring results must be kept

Employers are required by the OHS Regulation (Clause 171) to keep the results of monitoring for at least 30 years from the date of the last entry made in the records.

10.8 Access to monitoring results

Employers must provide the results of monitoring to those employees with the potential for exposure to hazardous substances, subject to monitoring as a record of the risk assessment (Clause 168(2)). Records of workplace monitoring must also be readily accessible to employees, employee representatives and WorkCover NSW.
CHAPTER 11 – HEALTH SURVEILLANCE

11.1 Purpose of health surveillance

Health surveillance is useful only for those hazardous substances for which known and acceptable health surveillance procedures are available. This may include biological monitoring where techniques are available.

Health surveillance can assist in minimising the risk to health from hazardous substances by:

- confirming that the absorbed dose is below the maximum acceptable level
- indicating biological effects requiring cessation or reduction of exposure
- collecting data to evaluate the effects of exposure.

Health surveillance should not be used as an alternative to the maintenance of control measures. Further information on types of health surveillance is in appendix 2.

11.2 Those employees requiring health surveillance

Health surveillance is required for employees who have been identified in the workplace risk assessment as being exposed to a hazardous substance, and having either:

(a) a risk to health from one of the hazardous substances listed in the table following clause 165 of the Regulation

(b) exposure to a hazardous substance for which:

(i) an identifiable disease or health effect may be related to the exposure; and

(ii) there is a reasonable likelihood that the disease or health effect may occur under the particular conditions of work; and

(iii) there are valid techniques for detecting indications of the disease or the effect.

The OHS Regulation also requires that where an effective procedure is available, biological monitoring be undertaken if there is a reasonable likelihood that the employee could be exposed at a level that could be a risk to health, and an effective biological monitoring procedure is available.

The OHS Regulation contains some specific requirements for lead (Clauses 199-204). There is a special blood testing protocol for lead (clauses 202 and 203) – for further advice see the national Code of Practice for the Control and safe use of inorganic lead at work (NOHSC: 2015).

Where listed carcinogens are used, health surveillance should continue for the period of use. Health surveillance should be repeated at the time of job transfer or termination of employment in view of the long latency period between exposure and the appearance of cancer. It may be appropriate to continue health surveillance after exposure has ceased.

Employees should participate in the health surveillance program unless there is some compelling reason to the contrary, in which case the matter should be discussed with the authorised medical practitioner responsible for the health surveillance program.

11.3 Responsibility for health surveillance

The employer is responsible for providing health surveillance of any employee, where it has been established as necessary as a result of the risk assessment process (OHS Regulation (Clause 165)).
The need for biological monitoring to detect exposure to a listed carcinogen, or tests to detect health effects caused by exposure to a carcinogen, should be carefully considered when the risk assessment is conducted. In particular, information should be obtained about health surveillance which can detect early warning signs of exposure or disease.

In the case of substances that are known to cause or are suspected of causing skin cancer, health surveillance should include regular skin inspection by a suitably qualified person.


An authorised medical practitioner approved by WorkCover should be responsible for the supervision of health surveillance, either by directly carrying out the health surveillance program, or by supervising a program carried out by a suitably qualified person such as an occupational health nurse.

The selection of a medical practitioner to supervise health surveillance is the responsibility of the employer, who should ensure that consistent methods are used for the health surveillance of employees exposed to the same hazardous substance. In normal circumstances, the medical practitioner should be appropriately qualified in occupational medicine and authorised by WorkCover (see section 11.5).

However, the selection of the medical practitioner must be done in consultation with the employees concerned, in order to give these employees a reasonable choice in the selection (OHS Regulation clause 165(4)). This should take into account any employee concerns about undertaking health surveillance, or the choice of the medical practitioner, based on their personal cultural or religious beliefs. These concerns should be addressed during consultation. Employees should also be given the opportunity to individually discuss their concerns with either the medical practitioner or their own doctor.

11.4 Employer responsibilities

In order to provide health surveillance, the employer must:

- pay any expenses due to health surveillance, for example, medical fees, pathology tests, travelling expenses and time off work
- ensure that health surveillance results obtained from the medical practitioner are retained as a confidential record (see also section 11.10).

The employer should also:

- inform employees of the purpose and procedures for health surveillance
- make acceptable arrangements for employees to participate in the health surveillance program
- provide the medical practitioner with access to a list of the hazardous substances for which employees are required to have health surveillance, and a copy of the MSDS and exposure standards information for those hazardous substances
- permit the medical practitioner to have access to any relevant risk assessment reports.

Where the employer receives notice from the medical practitioner of an adverse health surveillance result related to exposure to a hazardous substance in the workplace, the employer should reassess the workplace and to provide appropriate controls to minimise any further risks to health or safety.

Where a medical practitioner has certified that an employee is unfit for further exposure to a hazardous substance in the workplace, or should only work under conditions specified by the medical practitioner, the employer should follow these recommendations. This may involve relocating the employee to suitable alternative work or changes to the work to prevent exposure. This should be done only after consultation with the employee, employee representatives and the medical practitioner.
11.5 The role of medical practitioners

The medical practitioner must be adequately trained to undertake the particular health surveillance, have an understanding of the employees' work activities and be aware of the duties of a medical practitioner under Clauses 166 and 172 of the OHS Regulation.

The role of the medical practitioner is to carry out the following:

(a) Assist with the planning and implementation of health surveillance.

(b) Maintain medical records and ensure their confidentiality.

(c) Advise each employee of their results of health surveillance, provide any necessary explanation and arrange treatment, preventative measures or rehabilitation, if necessary.

(d) Decide if a clinical finding or examination result is abnormal, if a trend is significant and whether this indicates an unacceptable level of exposure to a hazardous substance.

(e) Notify the employer of the general outcome of health surveillance and of any trends that indicate inadequate control and the need for remedial action (the information provided to the employer must allow the medical practitioner to maintain medical confidentiality).

(f) WorkCover (or the Department of Primary Industries in the case of a mine worker) is notified of any adverse result detected in the surveillance that is consistent with exposure to a hazard substance referred to in the Table to clause 165.

(g) Ensure that records of health surveillance results are maintained as confidential medical records, and in doing so:

- clearly identify them from records obtained for other purposes such as records of examinations not connected with health surveillance
- offer all health surveillance records in their possession to WorkCover (or the Department of Primary Industries in relation to mines) on cessation of their medical practice.
CHAPTER 12 – RECORD KEEPING AND REPORTING

12.1 What the employer needs to keep as records

The employer must keep risk assessment reports which indicate a need for monitoring and/or health surveillance together with the results of monitoring and/or health surveillance as records in a suitable form for at least 30 years from the date of the last entry made (OHS Regulation Clause 171). Retention for a period of at least 30 years is necessary because some health effects, such as cancers, may take a long time to become evident. The information kept will be valuable in epidemiological studies and for developing effective control strategies.

All other records, including any risk assessment reports that do not indicate a need for monitoring and/or health surveillance, and the records of induction and training, must be maintained for at least five years in a suitable form.

On construction sites (where the cost of the work exceeds $250,000) or for licensed demolition or asbestos removal work, the principal contractor must also keep copies of these records (OHS Regulation clause 229(5)). Sub-contractors must provide the principal contractor with any relevant information held by them (clause 229(5)).

12.2 Listed carcinogens

Users of carcinogens listed in the OHS Regulation must notify WorkCover of any work involving the carcinogen (see section 6.3 and appendix 5 for the lists).

If listed carcinogens are used, a copy of WorkCover’s acknowledgement of notification should also be kept as a record. A notifier who is an employer must also keep a record of each employee who may be exposed to a notifiable carcinogen (clause 169 OHS Regulation).

This must include (a) the full name and date of birth of the employee, and (b) the address of the employee while employed by the employer.

On termination of employment, any employee who may have been exposed must be provided with a written statement (OHS Regulation clause 170). This must include all of the following:

- the name of the carcinogen
- the period of exposure or potential exposure
- details of how and where records of the exposure or potential exposure can be found
- a recommendation on the advisability of having periodic health assessments and the details of the types of health tests that are relevant in the circumstances.

Where any exposure of any person to a carcinogenic substance has occurred or is reasonably thought to have occurred, the occurrence must be reported by the employer in writing within seven days to WorkCover NSW (clauses 341 to 344 OHS Regulation 2001). This includes spills or other incidents that may result in potential exposure. Any exposure should trigger a review of the risk assessment and control measures, and a re-notification to WorkCover under clause 346 of the OHS Regulation.

Copies of the notification to WorkCover of any accident or illness must be kept for five years.
12.3 Advice to employees who have been exposed to listed carcinogens

Additional advice should be provided to employees who have been exposed to a listed carcinogen. Any uncertainty can be a source of concern for the employee. It is important that the provision of advice is handled sensitively so as to minimise the psychological impact on the employee.

This can best be done by providing social support, for example, access to counseling services, information and appropriate health surveillance together with the advice about exposure to the carcinogen. Where health surveillance data is involved, this should be conveyed to employees by the medical practitioner with an explanation of the results, in accordance with the OHS Regulation. Otherwise, the provision of information and social support should be the responsibility of a person with appropriate skills in counselling. If an employee is continuing to work in a job where there is the potential for exposure to a listed carcinogen, then it will be important to reinforce advice about the effectiveness of control measures in place and their correct use.

12.4 Storage of records

Records should be located conveniently so that managers, employees and employee representatives can gain access to the information to which they are entitled. Suitable storage systems for records include traditional book entry records, microfiche or computerised databases.

The employer should offer to WorkCover all records required to be kept for 30 years after that period has expired.

12.5 When an employer ceases to trade

If an organisation ceases to trade in New South Wales, the OHS Regulation (clause 171(2)) requires that the records of risk assessments indicating the need for monitoring or health surveillance, and the records of the monitoring or health surveillance, must be offered to WorkCover, or the Department of Primary Industries in the case of mines.
CHAPTER 13 – EMPLOYEES’ DUTIES

13.1 Employee responsibilities

Employees have a responsibility to maintain safe work practices to the extent that they are capable. This is specifically addressed in NSW occupational health and safety legislation and is dependent on adequate induction, training and supervision by the employer.

13.2 Employee responsibilities for the control of exposure

Employees should use the control measures in the way that they are intended to be used, and in particular should carry out the following:

(a) Cooperate with their employer in performing the risk assessments of hazardous substances in the workplace.

(b) Participate in suitable induction and training programs.

(c) Use the control measures provided for hazardous substances, plant and processes.

(d) Wear, in a proper manner, the personal protective equipment provided.

(e) Store personal protective equipment in the accommodation provided when it is not in use.

(f) Remove from their person any protective equipment that could cause contamination, and wash before eating, drinking or smoking.

(g) Practice a high standard of personal hygiene, and make proper use of the facilities provided for washing, showering or bathing and for eating and drinking.

(h) Report promptly to their employer, through their supervisor, any defects discovered in any control measure, device, facility, label or item of personal protective equipment that may affect compliance with the provisions of the OHS Regulation.

(i) Cooperate with their employers in the conduct of appropriate monitoring or health surveillance programs that arise from risk assessments.

13.3 Need for employees to apply information

Employees should, to the best of their ability, apply the information that they have been provided with, to improve the health and safety standards in their work environment.
CHAPTER 14 – ACCESS TO INFORMATION BY WORKCOVER NSW AND EMERGENCY SERVICES

The OHS Regulation (clause 174) requires employers to give emergency services, WorkCover, and the Department of Primary Industries in relation to mines, access to all records maintained by the employer in relation to hazardous substances for the purposes of the OHS Regulation.

It is essential that emergency services have information on the hazards present at any location involving the manufacture, use, storage or disposal of hazardous substances, as well as other relevant information such as the location of water hydrants, the workplace register, risk assessment reports and emergency response plan. However, it is not appropriate or necessary for emergency services to have access to monitoring or health surveillance results. The employer should cooperate with requests for information and make such information available as soon as practicable.

Employers should prepare a suitable emergency response plan in consultation with emergency services, where appropriate. Further advice is provided in the Code of practice for the storage and handling of dangerous goods.
CHAPTER 15 – DEFINITIONS

The following terms used in this code of practice have these meanings.

**article** means something (that is not a fluid or particle) that
(a) is formed during production to a specific shape or design, or to have a specific surface, and
(b) has an end use that depends in whole or in part on its shape, design or surface, and
(c) undergoes no change in chemical composition or physical state during its end use, except as an intrinsic aspect of that end use.

**atmospheric contaminant** means:
(a) a hazardous substance that occurs in the form of a fume, mist, gas, dust or vapour, or
(b) an asphyxiant, or
(c) nuisance dust,

to which persons may be exposed in the working environment.

**ADG Code** means the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Ministerial Council for Road Transport and published by the Commonwealth.

Notes: The ADG Code is based on recommendations prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods and is adopted into law in NSW. The ADG Code covers the classification, packaging, marking and transport of dangerous goods.

**authorised medical practitioner** means a medical practitioner authorised by WorkCover, or authorised by another body or under a scheme approved by WorkCover, to perform health surveillance for the purposes of the OHS Regulation.

**biological monitoring** means the measurement and evaluation of hazardous substances or their metabolites in the body tissues, fluids or exhaled air of a person.

**bulk container** means:
(a) in the case of a container designed to hold gas – a container that has a capacity of more than 500 litres, or
(b) in the case of a container designed to hold either solids or liquids – a container that has either a net mass of more than 400 kilograms or a capacity of more than 450 litres.

**chemical name** of a substance means a recognised chemical name of the substance that is generally used in scientific and technical texts.

**consumer package** means a container that is intended for retail display and sale, and includes a container that is transported and distributed as part of a larger consolidated container that consists of a number of identical consumer packages.

**container** means anything in, or by which substances are or have been wholly (or partly) cased, covered, enclosed, contained or packed (whether such a container is empty, or partially or completely full), but does not include a bulk container.

Note: see the definition of bulk container above.

**dangerous goods** has the same meaning as in the ADG Code.
**emergency service** includes any of the following:
- the Ambulance Service of New South Wales
- New South Wales Fire Brigade
- the NSW Rural Fire Service
- the NSW Police
- the State Emergency Service
- the New South Wales Volunteer Rescue Association Incorporated
- an accredited rescue unit within the meaning of the *State Emergency and Rescue Management Act 1989*.

**employee representative** is either an employee member of an occupational health and safety committee, a person elected by the persons employed at a place of work to represent a group of workers on health and safety matters, or the appropriate union representative at the request of employees.

**employer** includes a self-employed person.

Note that in some circumstances, employer duties also apply to principal contractors in construction.

**exposure** of a person to a hazardous substance includes the absorption, or potential absorption, by the person of the substance by ingestion, or inhalation, or through the skin or mucous membrane, or by any other means.

**exposure standard** means the standard determined in accordance with the documents entitled *Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC: 3008] and *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC: 1003], as amended from time to time by amendments published in the Chemical Gazette of the Commonwealth of Australia.

Note: this refers to the airborne concentration of a particular substance in a person’s breathing zone and does not include an evaluation of skin contact.

**fugitive emissions** means substances that escape to the atmosphere during a manufacturing process or transfer.

**generic name** of a substance means a name that describes the category or group of chemicals to which the substance belongs (for example, azo dyes and halogenated aromatic amines).

**hazardous substance** means a substance that:

(a) is listed in the document entitled *List of Designated Hazardous Substances* [NOHSC: 10005 (1999)] published by the NOHS Commission, as in force from time to time; or

(b) fits the criteria for a hazardous substance set out in the document entitled *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008 (1999)] published by the NOHS Commission, as in force from time to time.

Notes: Articles are excluded in the above criteria (see definition of “article”). This information can be found online by searching the Hazardous Substances Information System (HSIS) on the web site [www.ascc.gov.au](http://www.ascc.gov.au).

**health practitioner** means a health practitioner within the meaning of the *Health Care Complaints Act 1993*. 
**health surveillance** means the monitoring of persons to identify changes (if any) in their health due to exposure to a hazardous substance, including biological monitoring but not including the monitoring of atmospheric contaminants.

**ingredient** means any component of a substance, and includes any impurity that is mixed in with the substance.

**label** means a set of information on a container which identifies the substance in the container, identifies whether the substance is hazardous or dangerous and provides basic information about the safe use and handling of the substance.

**listed carcinogen** is a substance listed as *notifiable or prohibited* in clause 158 of the OHS Regulation.

Note: See the lists of carcinogens in appendix 5 and section 6.3 of this Code of practice.

**monitor** means to survey regularly all measures that are used to control hazardous substances in a place of work, and includes the monitoring of atmospheric contaminants, but does not include biological monitoring that is an element of health surveillance.

**NOHSC** means the National Occupational Health and Safety Commission.

Note: NOHSC has now been replaced by the Australian Safety and Compensation Council, but some publications still bear the NOHSC name.

**OHS Act** means the *Occupational Health and Safety Act 2000* of NSW.

**OHS Regulation** means the *Occupational Health and Safety Regulation 2001* of NSW.

**PPE** means personal protective equipment.

**produced** means, for the purposes of this code, the production or generation of a substance, or form of a substance, including dusts, fumes and vapours.

**product name** of a hazardous substance means the brand name, trade name, code name or code number specified by a supplier of the substance.

**record** includes any form in which information is stored on a permanent basis or from which information may be reproduced.

**retailer** means a person who sells goods to members of the public who are not themselves engaged in any further resale of those goods.

**retail warehouse operator** means a person who operates a warehouse where unopened packaged goods intended for retail sale are held, but does not include a retailer.

**risk to health** means the likelihood that a substance will cause harm to health in the circumstances of use.

**risk phrase**, in relation to a substance, means a phrase that describes the hazards of a substance, as referred to in the document entitled *List of designated Hazardous Substances* [NOHSC: 1005 (1999)] published by the NOHS Commission, as in force from time to time.

**safe level of oxygen** means a minimum oxygen content in the air of 19.5% by volume under normal atmospheric pressure and a maximum oxygen content in air of 23.5% by volume under normal atmospheric pressure.
safety phrase, in relation to a substance, means a phrase that describes the procedures for the safe handling or storage of the substance, or the use of personal protective equipment in conjunction with the substance, as referred to in the document entitled List of designated Hazardous Substances [NOHSC: 1005 (1999)] published by the NOHS Commission, as in force from time to time.

substance (as defined in the OHS Act) means any natural or artificial substance, whether in solid or liquid form or in the form of a gas or vapour.

Notes: The term excludes articles when applied in the definition of hazardous substances (see definition of “article” above). Any fluid or particle is a substance, regardless of shape or design, and not an article.

supplier includes an importer, manufacturer, wholesaler or distributor of substances for use in workplaces.

Note: an importer must ensure that manufacturer’s responsibilities are met.

type I ingredient means an ingredient present in a particular hazardous substance in a quantity that exceeds the lowest relevant concentration cut-off level specified for the hazard classification of the substance in the document entitled “Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008 (1999)]” published by the NOHS Commission being an ingredient that:

(a) is a substance that is, according to that document:
   (i) a carcinogenic, mutagenic or teratogenic substance, or
   (ii) a skin or respiratory sensitiser, or
   (iii) a corrosive, toxic, very toxic or
   (iv) a harmful substance that can cause irreversible effects after acute exposure, or
   (v) a harmful substance that can cause serious damage to health after repeated or prolonged exposure, or
   (vi) toxic to reproduction, or

(b) is a substance for which an exposure standard is listed in the document entitled “Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC: 1033]” published by the NOHS Commission, as in force from time to time.

type II ingredient means an ingredient present in a particular hazardous substance in a quantity that exceeds the lowest relevant concentration cut-off level specified for the hazard classification of the substance in the document entitled “Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008 (1999)]” published by the NOHS Commission, being an ingredient that:

(a) is a harmful substance according to that document, and

(b) is not a type I ingredient.

type III ingredient means an ingredient present in a hazardous substance that is not a type I ingredient or a type II ingredient.

Notes: Type III ingredients are not classified as hazardous. This includes hazardous ingredients that are below the appropriate concentration cut-off point.

use of a substance means the use, production, handling, storage, transport or disposal of the substance.

WorkCover means the WorkCover Authority of NSW.
APPENDIX 1 – Monitoring

Advice on suitable sampling techniques and methods of analysis may be found in publications including the following:

(a) Australian Standards, from Standards Australia, Sydney, for example:

(b) the Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC: 1003(1995)].

(c) the United Kingdom Health and Safety Executive’s Monitoring Strategies for Toxic Substances, Environmental Hygiene, No. 42.

(d) The United Kingdom Health and Safety Executive’s Methods for the Determination of Hazardous Substances, MDHS Series.


APPENDIX 2 – Health surveillance

Types of health surveillance

The type of health surveillance needed should be carefully considered. The types of procedures that may be followed include:

- biological monitoring, for example, measurement and assessment of hazardous substances or their metabolites in blood, urine or expired air
- medical tests
- medical examination
- a review of present and past medical and work history
- a review of medical records and occupational exposure.

Biological monitoring may be complementary to atmospheric monitoring (see appendix 1).

These procedures are not mutually exclusive and the results from one procedure may indicate the need for another. Non-invasive methods of testing, for example, analysis of expired air, are generally preferable to invasive methods, such as blood analysis, in cases where equally meaningful results can be obtained.

Where a method of health surveillance is specified for a particular substance in National or NSW standards, codes of practice, guidance notes or guides, that method should be used. The Australian College of Occupational Medicine has produced a brochure *Health Assessment for Work – A Guide*.

What health surveillance should cover

Health surveillance should take the following into consideration:

(a) the nature and extent, including duration, of exposure.

(b) the changes attributable to exposure which may occur in exposed workers and the likelihood that a disease or adverse health effect may occur, which must both be related to the nature and degree of exposure.

(c) the frequency at which any changes may be expected to occur.

(d) An assessment of available epidemiological information on human exposure and toxicological data.

(e) The sensitivity, specificity and reliability of the detection and measurement of these changes.

(f) The remedial action that is available to reverse or arrest these changes.

(g) The resources and levels of competence required to perform the necessary detection and/or measurement procedures.

Valid techniques for use in health surveillance are those of acceptably high sensitivity and specificity that can detect adverse effects related to the nature and degree of exposure. Health surveillance procedures should be safe, easy to perform, non-invasive where possible, and acceptable to employees. There should be criteria for interpreting the data obtained.

Health surveillance should be maintained for as long as the workplace risk assessment determines that it is necessary. In certain cases, it may be appropriate, on advice from a medical practitioner, for an employer to continue to provide health surveillance to employees after exposure to a hazardous substance has ceased.
The role of biological monitoring

The assessment of the airborne concentration of a particular contaminant and the subsequent comparison with the appropriate exposure standards(s) is usually the primary technique for monitoring the working environment. However, in some situations this approach may be complemented by the use of biological monitoring techniques that measure the levels of the substance or its metabolite(s) in body fluids, such as sweat, urine or blood, or in exhaled breath.

Employees differ from each other in size, fitness, personal hygiene, work practices, smoking habits, alcohol and drug usage, and nutritional status. Consequently there are differences between individuals in uptake, metabolism and excretion of toxic substances, and in response to a particular hazardous substance. Biological monitoring has the specific advantage that it can take account of these differences, enabling individual risk assessments to be made. As such, in certain circumstances, biological monitoring serves as a useful adjunct to atmospheric monitoring in assessing actual occupational exposure.

For a limited number of substances, the application of biological monitoring can be particularly useful in suggesting the degree of skin absorption and, in some cases, can identify unknown or unexpected exposures that cannot be predicted from atmospheric monitoring alone. However, biological monitoring does have limitations, particularly in regard to the collection and preservation of samples and the interpretation of results. There is limited knowledge of suitable and definitive biological tests for most substances.

Clause 165 of the OHS Regulation lists the following substances – use of these may require health surveillance:

- Acrylonitrile
- Arsenic (inorganic)
- Asbestos
- Benzene
- Cadmium
- Chromium (inorganic)
- Creosote
- Crystalline silica
- Isocyanates
- Lead (inorganic)
- Mercury (inorganic)
- MOCA (4,4-Methylenebis(2-chloroaniline))
- Organophosphate pesticides
- Pentachlorophenol (PCP)
- Polycyclic aromatic hydrocarbons
- Thalium
- Vinyl Chloride.

The nature of health surveillance for each substance is also specified in clause 165 of the OHS Regulation.
APPENDIX 3 – Sample labels

Sample 1:
Label for a workplace hazardous substance that is carcinogenic, but not a dangerous good

MOCA
4,4’ – Methylene
bis (2 chloroaniline)
500gm
DANGEROUS
POISON

Risk
May cause cancer. Harmful if swallowed.

Safety
Avoid exposure – obtain instructions before use.
Wear suitable protective clothing.

First Aid
In case of accident or if you feel unwell contact a doctor or Poisons Information Centre immediately (show the label where possible). Transfer patient to fresh air. If breathing has stopped begin artificial respiration immediately. Wash exposed skin or eyes thoroughly with water. If ingested have victim drink 250ml of water.

Spills/Leaks
Only trained personnel should clean up. Use impervious protective clothing, for example, nitrile rubber, and respirators. Contain spill with sand or absorbent material. Shovel solid material into clean dry labelled containers and cover.

Fire
Based on current available information MOCA does not burn.

Additional information is listed in the Material Safety Data Sheet.

Prodaustrial, 15 Bunch Lane.
BANANA TOWN QLD 4567 Ph: (071) 369 7241
Sample 2:
Label for a hazardous substance comprised of a single ingredient which complies with the ADG code for sole packages

ANILINE
99.5%
25L

RISK
Toxic by inhalation, in contact with skin and if swallowed.
Irritating to eyes.

SPILLS/LEAKS
Evacuate and ventilate area of leak or spill.
Contain and recover spill.

SAFETY
Do not breathe vapour.
Avoid contact with skin and eyes.
Wear suitable protective clothing.
Use only in well ventilated areas.

FIRE
In case of fire use dry chemical, alcohol foam or carbon dioxide.
Wear full protective clothing and self-contained breathing apparatus with full face-piece.

FIRST AID
In case of accident or if you feel unwell contact a doctor of Poisons Information Centre immediately (show the label where possible).
After contact with skin or eyes wash immediately with water.
If swallowed induce vomiting, preferable using Ipecac syrup APF.
If inhaled remove to fresh air.
If not breathing give artificial respiration.

Additional information is listed in the Material Safety Data Sheet.
In a transport emergency dial 000, police or fire brigade.

Prodaustralian
15 Brunchy Lane
BANANA TOWN QLD 4567
Ph: (071) 369 7241
Sample 2: continued

Label for a hazardous substance comprised of a single ingredient which complies with the ADG code for sole packages

POISON

6

ANILINE 99.5%

UN 1547

25L
Sample 3:
Label for a hazardous substance composed of several ingredients

NEVEREXIST
POISON

FLAMMABLE LIQUID, N.O.S., CONTAINS:

- Toluene 30-60%
- Ethyl methyl ketone 30-60%
- Also contains: Methanol <10%

2.5L
UN 1993

RISK
Highly flammable.
Irritating to respiratory system and eyes.
Harmful by inhalation.

SAFETY
Use only in well ventilated areas.
Wear suitable protective clothing including suitable respiratory equipment.
Keep away from sources of ignition – No smoking.
Do not empty into drains.
Take precautions against static discharges.

FIRST AID
If swallowed, contact a doctor or Poisons Information Centre immediately and show this container or label.
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SPILLS/LEAKS
Restrict access to area.
Provide adequate protective equipment and ventilation.
Remove sources of ignition.
Prevent material entering sewers and confined spaces.
If possible cover liquid with earth, sand or absorbent material that does not react with spilled material.
Flush area with water.

FIRE
Firefighters should wear full protective clothing and self-contained breathing apparatus with full face-piece.
Use dry chemical foam or carbon dioxide to fight fire.

Additional information is listed in the Material Safety Data Sheet.
Prodaustralian, 15 Bunchy Lane, BANANA TOWN QLD 4567, Ph: (071) 369 7241
APPENDIX 4 – Forms of hazardous substances and their health risks

This appendix provides background information on the physical and chemical nature of hazardous substances and the ways substances can present a risk. This may assist readers when carrying out a risk assessment.

What are hazardous substances?

Essentially hazardous substances are chemicals that can harm human health. While it might be obvious that some substances, such as acids or poisons, can cause harm, some health effects may not be so readily apparent. For example, in some cases dusts or vapours can also be hazardous substances.

Substances that cause skin irritation, allergies, cancer, birth defects, genetic mutations, and other health effects are also classified as hazardous substances. Health effects may not be immediate and may occur over a long time period. A hazardous substance may be a simple chemical or it may be a mixture of several chemicals.

Chemical hazards are not limited to those substances obtained from a supplier and delivered in a labelled container with an MSDS. Industrial processes such as welding or grinding may cause toxic fumes or dusts. Toxic atmospheres, or atmospheres without enough oxygen to sustain life, may develop in confined spaces or inadequately ventilated spaces.

Some hazardous substances are also classified as dangerous goods. Dangerous goods are those substances or articles with an immediate risk to health or safety. This includes physical risks such as flammability or corrosion.

Routes of entry

For a hazardous substance to have an effect it has to make contact with or enter the body – the way this occurs is called a route of entry. The main routes of entry are:

- swallowing – for example from hand contamination or food contact
- breathing in (inhalation) of atmospheric contaminants
- skin or eye contact – such as contact with dust on surfaces, splashes to the skin or eyes.

Some substances are so poisonous that swallowing a small amount will cause harm. Swallowing can occur from airborne dusts and sprays, or during eating or smoking from unwashed hands or contaminated food.

The way the different physical forms of a substance enter the body determines how health is affected. For example, solvents can affect the skin causing dermatitis but if the vapours are breathed in, narcotic effects can occur.
Toxicity and dose

The effects of a hazardous substance depend on:

- the toxicity – the capacity to cause harm
- the level of exposure to the chemical – the dose the body actually receives
- individual susceptibility.

The risk of a hazardous substance is determined by a combination of dose and toxicity.

Toxicity

Toxicity (or hazard) is the ability of a substance to produce injury or death in a living organism. The more toxic a substance, the greater the possibility that a small dose of that substance will damage health. Exposure control becomes more necessary as toxicity increases.

Some substances may not appear to be very toxic simply because they do not have noticeable acute (short-term) health effects. However, these may have serious chronic (long-term) health effects if exposures are repeated over a longer period of time.

Hazardous substances are classified by the nature of the toxicity – explained in the section “Health effects of hazardous substances” below.

Dose

The potential health effect is a combination of dose and individual susceptibility. Dose is a combination of exposure, and frequency of exposure. Dose depends on the following:

- how much of the substance is involved in the exposure
- how often the exposure has occurred (often or just once in a while)
- the length of each period of exposure (minutes, days, weeks or years).

This can be expressed as an equation:

\[
\text{Dose} = \text{the amount of a chemical} \times \text{the length of exposure} \times \text{how often exposure occurs}.
\]

Physical forms

There are three basic physical forms:

- solids (including dusts and fumes)
- liquids (including mists and vapours)
- gases (including vapours).

The physical form of a substance often depends on how it has been generated or how it is being used. Physical form usually determines two important risk factors:

- how easily a substance will move from one place to another, where it will go in the workplace
- how easily it will enter the body.

This is why different physical forms of the same substance can have different effects on health and safety. Some of these health and safety effects are outlined later in this appendix. Consider the different physical forms of the hazardous substances you use in your workplace when considering the effect these forms may have on health and safety.
Solids

Types of solids include:

• dusts – eg from sanding or grinding
• fumes – eg from welding and cutting
• smoke – eg from incomplete burning.

Dusts

Dusts are generally formed by grinding, abrasion, or crushing of larger solids. They can be generated by processes such as grinding, sanding or polishing. Sandstone cutting will create silica dust, unless a wet process is used. Other examples are asbestos, coal, cotton, wood and wheat dust. Most industrial dusts are capable of being drawn into the human respiratory system (ie breathed in).

Whether dust gets into the body depends on the size of the dust particle. The two terms used are inspirable and respirable. Inspirable dust includes larger particles that tend to lodge in the upper respiratory tract. Respirable dusts are tiny particles that become lodged deep in the lungs.

Some dusts can also be a fire or explosion hazard. In form of a dust some substances become very reactive.

Fumes

Fumes are fine, solid, dust particles that are formed when metal is melted and some of the molten metal turns to vapour (for example by processes such as MIG welding or stick welding). As these metal vapours cool they condense into fumes.

Fume particles are so small they can be carried deep into the lungs. A single exposure to the fumes of metals, such as zinc oxide, copper oxide or magnesium oxide, can cause metal fume fever. Metal fume fever has symptoms that are very like a cold or the flu, except that the symptoms often clear up when employees are removed from the area where exposure is occurring.

Fumes can arise from molten metals such as lead baths and metal casting. Welding is particularly hazardous when the metal has coatings such as lead or cadmium.

Smoke

This results from the incomplete burning of materials. Smoke consists of soot, liquid droplets and ash. Smoke also occurs during processes such as spot welding or oil quenching. Smoke particles are usually smaller than dust particles and can easily move deep into the lungs.

Carbon particles in smoke can have other chemicals absorbed on to them that may cause lung irritation.

Liquids

Liquids may cause poisoning and/or physical injury if they are swallowed. Some can burn your skin (acute local effect). Many other liquids used in industry, including pesticides, solvents, paints, cutting fluids/oils and liquid fuels are also hazardous substances because they are easily absorbed through the skin into the blood. They can be absorbed more quickly if your skin is weakened in some way – for example if your skin is cracked, reddened, broken or very dry.
It is important to prevent spillage of liquids since they can rapidly spread. Other risks from liquids arise because they easily change to aerosols and vapours that move even more rapidly through the air. Flammable liquids can be very dangerous if spilt, since flammable vapours result and can ignite explosively.

Liquids that change easily into gases (e.g., petrol, alcohol) can spread widely through a workplace if the container has no lid or seal. These vapours can cause both exposure and fire hazards.

**Vapours**

Vapours can form when a liquid evaporates — i.e., moves into the air as a gas. Vapours can be inhaled easily. Vapours are even more hazardous in small enclosed spaces; they can form explosive atmospheres and easily reach toxic levels.

Liquids are more likely to become vapours (vaporise) when temperatures increase and/or when atmospheric pressure decreases. Liquids that vaporise easily at room temperature are said to have a high vapour pressure and low boiling point.

High vapour pressure/low boiling point liquids are also known as volatile liquids. The more volatile a liquid, the faster it will evaporate. It is difficult to control the risks for volatile liquids because they are so likely to change to vapours. Vapour from flammable liquid can be explosive.

**Mists, fogs and aerosols**

Mists, fogs and aerosols consist of fine liquid droplets suspended in the air. Mists can be formed in the workplace when machine and lubricating oils are used (for example, oil mists from cutting and grinding operations and pesticide mists formed from spraying operations). Steam cleaning spray jets can also produce mists.

Aerosols are often generated when liquids are handled too vigorously or sprayed. Usually the size of the droplets in an aerosol is so small that they remain suspended for long enough to be widely dispersed.

**Gases**

Gases can be a hazard because they disperse in the air very quickly. Air is a gas made up mainly of nitrogen and oxygen with a small amount of other gases. Gases can be hazardous to your health if they are toxic or take the place of oxygen needed to breathe.

Human lungs absorb oxygen, but also can absorb other gases easily. These gases enter the blood stream and are carried directly to other parts of the body with rapid effects. Carbon monoxide is an example of a gas that readily enters the blood stream. This can be generated by vehicle engines such as forklift trucks and is a problem in enclosed spaces such as stores.

Non-toxic gases can be hazardous if they are allowed to build up to the point that they are taking up the space that would normally be occupied by the oxygen needed to stay alive. This will cause death by asphyxiation. Some gases have no detectable odour or colour thus adding an increased risk because the presence of the gas cannot be detected.

Hazardous substances that are used in the workplace without proper exposure controls may harm the health of all those exposed. These adverse health effects can be immediate, or appear days, weeks, months or even years after exposure.
Some hazardous substances produce few, if any, obvious symptoms until the onset of illness. For example, in the case of asbestos exposure, symptoms of illness usually do not show up until 20 or 30 years later.

Some other chemicals can have both short-term (perhaps coughing) and long-term symptoms (such as cancer) that do not appear until years after exposure. For example, some solvents can produce headaches, nausea and vomiting soon after exposure and increase the risk of cancer in the long term.

The symptoms of exposure to hazardous substances, such as metal fumes given off by welding, may be very similar to everyday diseases caused by bacteria and viruses. For example, metal fume fever can easily be mistaken for the onset of a cold or flu.

**Acute health effects**

The symptoms of exposure are divided into two general groups, short-term (acute) and long-term (chronic) health effects.

Acute effects are immediate, usually resulting from a single high dose exposure. As examples, coughing may follow exposure to fumes, or skin irritation may arise from contact with acid.

The acute effects of exposure to most solvents are:

- irritation of the eyes
- irritation of the skin and breathing passages
- headache, nausea, vomiting, loss of coordination, dizziness, mental confusion, weakness and, if severe, narcosis and possible coma.

Acute effects are usually obvious and short-lived, but can lead to permanent damage to health, or death in some cases.

**Chronic health effects**

Chronic effects from an exposure occur days, weeks, months or even years later. The exposure may have been a series of high dose exposures over a short period of time, or repeated low dose exposures over a longer period of time.

For example, the chronic effects of exposure to methanol (wood alcohol), over a long period are dermatitis, blindness and liver damage.

**Local effects**

Local effects are those caused by a substance when it acts only on the part of the body where it came into contact. For example, acid burns on skin are a local effect.

**Systemic effects**

Systemic effects are damage caused to parts of the body away from the point of contact. This usually means the chemicals are carried away by the blood from the point of absorption to other parts of the body. A headache caused by inhaling a solvent is an example of an acute, systemic effect.
Symptoms of exposure

Typical symptoms which can indicate exposure to a hazardous substance are:

- eye irritation
- skin rashes
- difficulty in breathing/shortness of breath
- headaches, confusion, fatigue
- cold or flu symptoms.

However some very serious chemical exposures have no warning symptoms.

Find out about the health effects of the substances being used before working with them. Do not wait for the signs of exposure to develop. However, if any symptoms develop report the situation and seek medical advice.

Nature of the health effects of hazardous substances

The words ‘Poison’ or ‘Toxic’ are ways of describing hazardous substances where small amounts can harm certain organs or body systems. They may slow down or stop normal body functions. Some may even cause death.

The labels on containers use risk phrases such as ‘Very toxic’, ‘Toxic’ and ‘Harmful’ to indicate the degree of hazard, and indicate the route of entry. For example, ‘Toxic in contact with skin’. If a substance has several different health effects, these will be indicated by several risk phrases on the label.

The symptoms and health effects of poisoning depend on the poison. So always assume the worst and handle hazardous substances with extreme care. Common workplace poisons include: cyanide salts (used in electro-plating and heat treating of metals), biocides added to metal cutting fluids, and insecticides.

The following are examples of the types of health effects that hazardous substances may have.

Acute lethal effects

These are substances that can cause death almost immediately after one exposure. Many of these are also classified as dangerous goods and have the black and white skull and cross bones ‘Toxic 6’ label on the container, or are gases of dangerous goods Class 2.3. A typical risk phrase on a container label would be: ‘Very toxic by inhalation’. Since they are extremely toxic all precautions must be taken to prevent exposure. A substance of lower toxicity would have the risk phrase ‘Harmful if swallowed’.

Non-lethal irreversible effects after a single exposure

Extreme caution is needed when using these substances that have serious health effects from which there is no recovery. The acute effects can include: damage to the central nervous system (CNS), kidneys, liver, or anaemia or paralysis. The label will have the phrase: ‘Danger of very serious irreversible effects’.

Severe effects after repeated or prolonged exposure

These are also called chronic effects, because they result from exposure over a long period. A number of effects on body organs and metabolism are considered when classifying substances into this category. The label will include the risk phrase: ‘Danger of serious damage to health by prolonged exposure’.
**Corrosives**

These substances directly damage the body on contact. For example, by attacking the skin, eyes or damaging the airways if it is breathed in. Examples include acids and alkalis. Corrosives are also classified as dangerous goods of Class 8. Most corrosives may also be classified irritants when they are below the concentration at which they are normally classified as corrosive.

**Irritants**

Irritants are chemicals that cause inflammation, and a burning sensation to the skin, eyes and the mucous membranes inside the nose and throat. Many products used for maintenance and cleaning are irritants, especially those containing ammonia or chlorine. Some substances, if swallowed, can irritate the gut causing diarrhoea.

Inhaled in high concentrations, irritants can cause severe breathing problems and even death in certain circumstances. Irritants can cause reddening and itching of the skin upon contact. This reaction is called dermatitis, which means ‘inflamed skin’. The label will have the risk phrase, ‘Irritating to skin’. Many corrosives are irritants when at low concentrations.

**Sensitisers**

Sensitisers are substances that may cause allergic type reactions after one or more exposures. Usually the reaction involves the skin or lungs. Health effects of sensitisers include dermatitis and asthma-like conditions.

The symptoms of dermatitis are red, itchy, blistered, crusty, oozing or peeling skin. This may be similar to the skin reaction caused by irritants. An example risk phrase on the label would be, ‘May cause sensitisation by skin contact’.

The symptoms of the lung reaction to sensitisers are usually coughing, wheezing, shortness of breath or even asthma. Some common sensitisers are liquid epoxy resins used in some sealers, cements, adhesives and many two-part urethane paints.

Fortunately, sensitisers do not affect everybody, but for those affected even small amounts can cause another reaction in the future. Chromium in cement is a common cause of dermatitis (unless modified by an additive). Some wood dusts can cause chest tightness. Formaldehyde is a sensitisier, which is a commonly used substance, and is also emitted from some materials when curing.

**Asphyxiants**

Some asphyxiants are gases that reduce the amount of oxygen in the air by taking up space in the air that is normally occupied by oxygen. This can lead to heart attack, suffocation and death. Some asphyxiants inhibit the body’s ability to use oxygen.

Asphyxiants are particularly dangerous in confined spaces or where there is poor circulation of clean, fresh air.

Gases such as pure nitrogen, methane, helium and argon are all asphyxiants. However, these are not classified as hazardous substances. Deaths have resulted because these gases have no smell and workers have failed to realise that there is insufficient oxygen. Some other gases can deaden the sense of smell and so cannot be detected easily. The detection of asphyxiants is crucial before entry into confined spaces.
CNS depressants

These act on the brain and spinal cord at high concentrations. The acute (short-term) health effects of CNS (central nervous system) depressants include drowsiness, blurred vision, nausea, vomiting, headache, confusion, giddiness and unsteadiness on your feet.

Some can also cause long-term health effects such as permanent tremors in the hands. The vapours from many organic solvents are CNS depressants. Vapours can also act like anaesthetics. Therefore adequate controls are important when working with solvents or solvent-bases paints or adhesives.

Carcinogens

Carcinogens are substances that can cause cancer. Carcinogenesis is the process of causing cancer. Some carcinogens are more likely to cause cancer than others and they are usually divided into three groups:

- known carcinogens – cancer producing effect (carcinogenic effect) has been shown to occur in humans who are exposed to the substance
- possible carcinogens – cancer producing effect has been shown in animals and/or is also suspected to occur in humans
- suspected carcinogens – cancer producing effect is suspected in animals but this is not proven.

The effects of a carcinogen usually do not become apparent until many years after exposure, when treatment of the disease is difficult. Exposure to carcinogens should be avoided at all times.

Mutagens

Mutagens are hazardous substances that can affect genetic material in sperm and egg cells. The changes can result in changes to the normal pattern of development of cells resulting in birth defects. Mutagens may also cause cancer and so can also be classified as carcinogens. Like carcinogens, mutagens may be either proven, possible or suspected. Typical phrase on the label would be ‘May cause cancer by inhalation’ or ‘Possible risk of irreversible effects’.

Teratogens

Teratogens produce birth defects by acting directly on the developing foetus rather than on the genetic material of the parents. They usually restrict development at particular stages of the pregnancy if the mother is exposed. Teratogens are also classified as either proven, possible or suspected.

Synergistic effects

Employees are often exposed to a number of different substances at the same time. Certain combinations of hazardous substances, and even certain combinations of hazardous and non-hazardous substances can turn out to be far more toxic than the added effects of the individual ingredients. This compounding effect is known as synergism.

Avoiding potential synergistic effects is an important reason for ensuring that exposure levels for all workplace substances and hazardous substances are kept as low, if not lower than the nominated exposure standards given for each particular substance. The more substances used in a workplace, the greater the potential for synergistic effect to occur.
APPENDIX 5 – Notifiable carcinogens

The use of the following substances must be notified to WorkCover.

- Acrylonitrile
- Benzene when used as feedstock containing more than 50% of benzene by volume
- Cyclophosphamide in preparations for therapeutic use or manufacturing
- 3, 3'-Dichlorobenzidine and its salts including 3,3'-Dichlorobenzidine dihydrochloride
- Diethyl sulphate
- Dimethyl sulphate
- Ethylene dibromide when used as a fumigant
- 4, 4-Methylene bis-(2-chloroaniline) (MOCA)
- 2-Propiolactone (Betapropiolactone)
- O-toluidine
- Vinyl chloride monomer.

For further information see WorkCover’s Guidelines: Listed carcinogenic substances notification and use.

See section 6.3 for a list of prohibited carcinogens.
APPENDIX 6 – Referenced documents

Publication dates for the following references should be checked to ensure you consult the latest edition.

- AS 2161 *Industrial Safety Gloves and Mittens (Excluding Electrical and Medical Gloves)*, Standards Australia, Sydney.
- AS 1800 *Selection, Care and Use of Industrial Safety Helmets*, Standards Australia, Sydney.
- AS 3765 *Clothing for Protection Against Hazardous Chemicals*, Standards Australia, Sydney.
- Health and Safety Executive (United Kingdom), *Monitoring Strategies for Toxic Substances, Environmental Hygiene*, No. 42.

Note: two documents are published together [NOHSC 3008 and NOHSC:1003 (1995)], and incorporates the Guidance Note on the interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment and the Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment. Several exposure standards have been declared and published in the Chemical Gazette since 1995. These documents and the exposure standards are also available on the web site www.ascc.nsw.gov.au.


Reports and information relating to the National Industrial Chemical Notification and Assessment Scheme can be accessed from www.nicnas.nsw.gov.au. This site includes access to copies of the Chemical Gazette.

WorkCover publications can be viewed on the web site: www.workcover.nsw.gov.au.