

National Occupational Health and Safety Commission

**GUIDANCE NOTE
FOR THE ASSESSMENT OF
HEALTH RISKS ARISING FROM
THE USE OF
HAZARDOUS SUBSTANCES
IN THE WORKPLACE
[NOHSC:3017(1994)]**

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FOREWORD

The National Occupational Health and Safety Commission is a tripartite body established by the Commonwealth Government to develop, facilitate and implement a national occupational health and safety strategy.

This strategy includes standards development, the development of hazard-specific and industry-based preventive strategies, research, training, information collection and dissemination and the development of common approaches to occupational health and safety legislation.

The National Commission comprises representatives of the peak employee and employer bodies - the Australian Council of Trade Unions and the Australian Chamber of Commerce and Industry - as well as the Commonwealth, State and Territory governments.

Consistent with the National Commission's philosophy of consultation, tripartite standing committees have been established to deal with issues relating to standards development, research and the mining industry. Expert groups and reference groups may be established to provide advice to the standing committees on those issues with which the National Commission is concerned.

FOREWORD	iii
PREFACE	vii
1. INTRODUCTION	1
Purpose of Assessment	1
What are 'Hazard', 'Risk' and 'Exposure'?	1
The Assessment Duty	1
The Purpose of this Guidance Note	1
Different Types of Assessments	2
2. THE STEPS IN ASSESSMENT	4
STEP 1: DECIDE WHO WILL DO THE ASSESSMENT	4
Who Should be Involved in an Assessment?	4
What are the Knowledge and Basic Skills for Persons Doing an Assessment?	5
What Competency is Required to do an Assessment?	5
STEP 2: DIVIDE THE WORK INTO UNITS FOR ASSESSMENT	6
How to Divide the Work into Units	7
STEP 3: IDENTIFY SUBSTANCES IN THE WORK	6
How to Identify Substances in the Work	7
STEP 4: DETERMINE WHICH SUBSTANCES ARE HAZARDOUS	8
How Can Hazardous Substances be Identified?	9
STEP 5: OBTAIN INFORMATION ABOUT HAZARDOUS SUBSTANCES	8
Where to Obtain Information About Hazardous Substances	9
STEP 6: INSPECT WORKPLACE AND EVALUATE EXPOSURE	10
How to Evaluate Exposure	11
To Determine if a Substance is Released or Emitted into the Work Area	11
All Persons who Might be Exposed Should be Considered	11

STEP 7: EVALUATE THE RISK	14
What Conclusions Need to be Made About the Risk?	15
STEP 8: IDENTIFY ACTIONS RESULTING FROM CONCLUSIONS ABOUT RISKS	20
What Needs to be Done?	21
STEP 9: RECORD THE ASSESSMENT	22
What Should be Recorded?	23
STEP 10: REVIEW THE ASSESSMENT	24
When Should an Assessment be Reviewed?	25
APPENDIXES	
1. ENGAGING OUTSIDE CONSULTANTS TO HELP WITH ASSESSMENT	27
2. ASSESSMENT CHECKLIST	28
3. ASSESSMENT EXAMPLES	29
4. EXAMPLE ASSESSMENT RECORD FORMS	34
GLOSSARY OF TERMS	37
REFERENCED DOCUMENTS	38
MEMBERSHIP OF THE EXPERT WORKING GROUP ON WORKPLACE ASSESSMENT	39

PREFACE

In 1990 the National Commission declared *National Model Regulations to Control Workplace Hazardous Substances* [NOHSC:1005(1991)] and an accompanying *National Code of Practice to Control Workplace Hazardous Substances* [NOHSC:2007(1991)]. Following a period of review from August to November 1992, revised versions of these documents were subsequently declared by the National Commission in December 1993 under the titles *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)]¹ and *National Code of Practice for the Control of Workplace Hazardous Substances* [NOHSC:2007(1994)]².

The national model regulations and national code of practice introduce a new legal framework for controlling the risks to health arising from the use of hazardous substances in the workplace. Among other things, these publications establish a requirement that employers ensure that an assessment is made of the risks to health which might arise from work involving exposure to hazardous substances.

To provide detailed practical guidance to persons performing health risk assessments, the National Commission convened the Expert Working Group on Workplace Assessment in December 1991. This *Guidance Note for the Assessment of Health Risks Arising from the Use of Hazardous Substances in the Workplace* [NOHSC:3017(1994)] was the outcome of the working group's deliberations. The guidance note was adopted by the National Commission in December 1993.

As part of its work in relation to the regulation of workplace hazardous substances, the National Commission has produced and released a package of six major publications. The six titles that comprise the set are:

- *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)] (which is produced under the same cover as the national code of practice);
- *National Code of Practice for the Control of Workplace Hazardous Substances* [NOHSC:2007(1994)];
- *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)];
- *National Code of Practice for the Labelling of Workplace Substances* [NOHSC:2012(1994)];
- *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(1994)]; and
- *List of Designated Hazardous Substances* [NOHSC:10005(1994)].

These publications are supplemented by the following titles:

- *Guidance Note for the Assessment of Health Risks Arising from the Use of Hazardous Substances in the Workplace* [NOHSC:3017(1994)]; and
- *Guidance Note for the Control of Workplace Hazardous Substances in the Retail Sector* [NOHSC:3018(1994)].

Each of the above publications may be purchased separately through Commonwealth Government Bookshops.

1. INTRODUCTION

PURPOSE OF ASSESSMENT

- 1.1 Assessment is the evaluation of how hazardous substances are used at work and the health risks involved.
- 1.2 The purpose of assessment is to enable decisions to be made about appropriate control measures, induction and training, monitoring and health surveillance as may be required to protect the health of employees who may be exposed to hazardous substances at work.
- 1.3 These decisions about appropriate action to protect employees will depend on the degree of risk to health that arises from the use of hazardous substances in particular work.

WHAT ARE 'HAZARD', 'RISK' AND 'EXPOSURE'?

- 1.4 The assessment process enables a distinction to be made between the '*hazard*' of a substance and the '*risk*' to health that arises from actual '*exposure*' to the substance through its use at work.
- 1.5 The '*hazard*' is the potential for a substance to adversely affect the health of people in the workplace. For example, the hazard of cyanides is that they are very toxic and a small quantity, if ingested, can cause death.
- 1.6 The '*risk*' is the likelihood that a substance will cause illness in the conditions of its use. The risk to health usually increases with the severity of the hazard, the amount used, and the duration and frequency of exposure. For example, if a cyanide is sealed in a labelled container and stored to minimise the possibility of breakage, the risk is well controlled even though the chemical is a serious hazard.
- 1.7 '*Exposure*' occurs if a person comes into contact with a substance, by breathing it in, getting it onto the skin or into the eyes, or by swallowing it. Injection through the skin can also occur, for example, when syringes or high pressure spray or grease guns are used.

THE ASSESSMENT DUTY

- 1.8 The employer has the responsibility to ensure that any work involving potential exposure to any hazardous substance is assessed. However, the employer might delegate the tasks to other people in the organisation or engage specialist assistance from outside.
- 1.9 The assessment should focus on the use of substances, that is, the work activity. Therefore, a practical way to carry out assessments is to divide the work into jobs or tasks and to assess the risks involved in each of these.

THE PURPOSE OF THIS GUIDANCE NOTE

- 1.10 This guidance note provides advice on the preliminary steps of deciding who should do the assessments and determining what work should be assessed.
- 1.11 The guidance note then outlines a general process for the assessment of risks in particular work with hazardous substances, as required by the relevant Commonwealth/State/Territory regulations or approved codes of practice for the control of hazardous substances in the workplace.

1.12 This guidance note also describes the action that should be taken following an assessment and the requirements for recording and reviewing assessments.

1.13 The guidance note may be used by employers, managers, supervisors, health and safety representatives or committee members, employees, occupational health and safety practitioners and others who might be involved with assessment.

Note: This guidance note outlines a general approach for doing assessments. Workplaces are free to utilise the most suitable and practical method available for their particular situation.

1.14 In this guidance note, assessment is concerned only with the risks to the people in the workplace. It does not address the risks to those people in the immediate neighborhood, to the public or to the environment.

DIFFERENT TYPES OF ASSESSMENTS

1.15 *The process described in Chapter 2 of this guidance note is appropriate for all assessments. However, the amount of work and detail of a particular assessment will depend on the hazardous substances involved and the complexity of the work processes in which they are used.*

Simple and Obvious Assessments

1.16 A simple and obvious assessment is a straightforward assessment where, after reviewing the Material Safety Data Sheets (MSDS) (or equivalent information) for hazardous substances used in the work and identifying risks involved in their use, it can be concluded that there is not a significant risk to health.

1.17 For simple and obvious assessments, the actions resulting from the assessment and the recording of the assessment are different from that required for assessments where a significant risk to health is identified. This is described in Chapter 2.

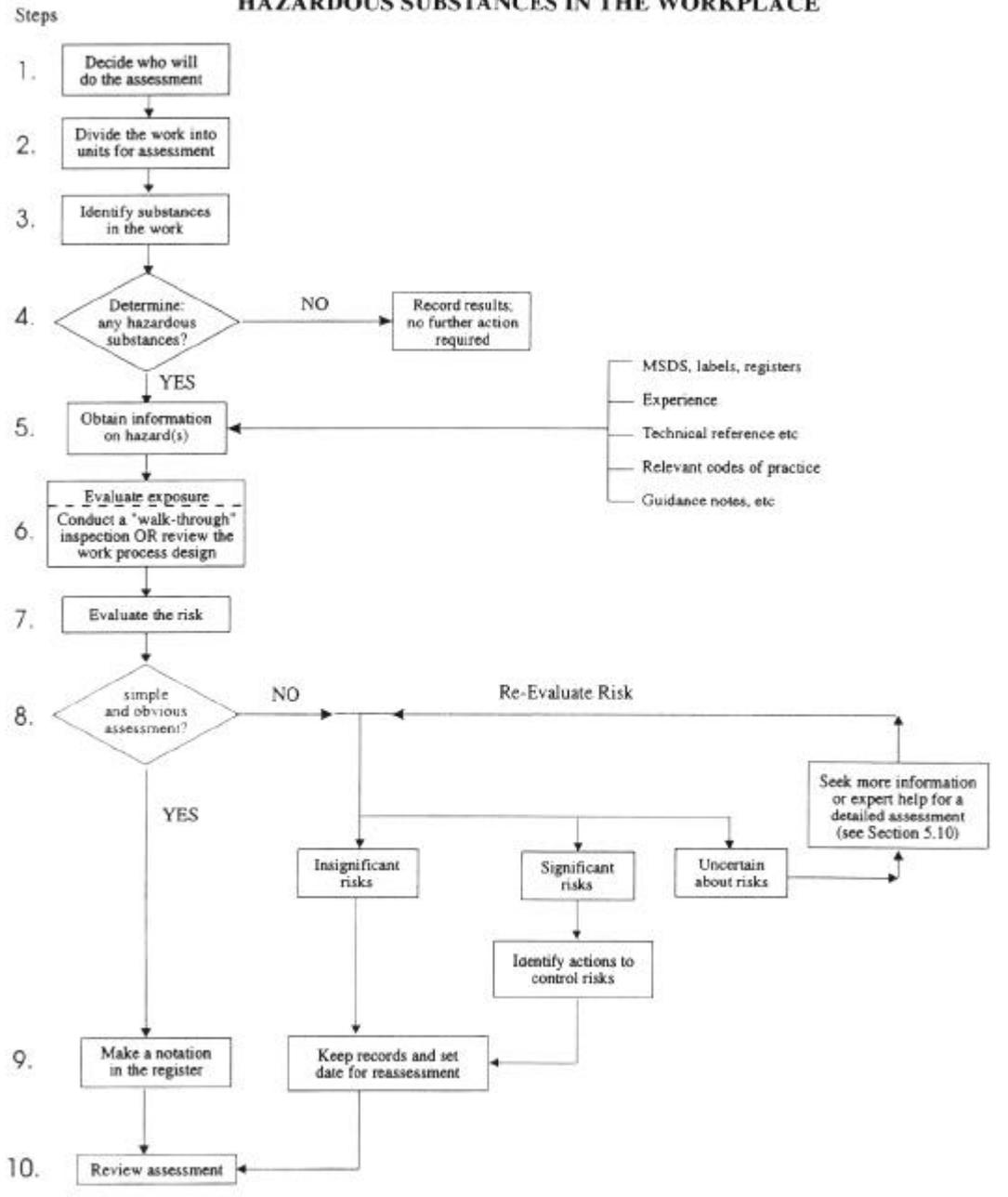
Generic Assessments

1.18 A generic assessment might be used where a hazardous substance or group of hazardous substances are used in the same way in several workplaces. In generic assessment, an assessment is made (using the process described in Chapter 2) of a representative workplace or job, and this assessment is then used for the similar work activities which involve comparable risks.

1.19 For example, a single employer might do a generic assessment for a number of similar workplaces for which the employer is responsible, for example, a chain of fast food outlets. Alternatively, a generic assessment might be done by an industry or trade association on behalf of different employers with essentially identical workplaces, for example, service stations.

1.20 However, it should be emphasised that generic assessment is only valid for work activities which are clearly similar, with comparable levels of risk, and which would require the same types of control measures to control those risks.

AN OVERVIEW OF THE PROCESS FOR THE ASSESSMENT OF HEALTH RISKS ARISING FROM THE USE OF HAZARDOUS SUBSTANCES IN THE WORKPLACE



- Note:
- 1) Some steps may not be necessary for smaller workplaces.
 - 2) Individual steps may need to be repeated to complete the assessment.
 - 3) Specialist help may be required for some of the assessment steps.

2. THE STEPS IN ASSESSMENT

2.1 This chapter provides a step-by-step guide to assessment. An overview of this 10-step process is given at Figure 1.

Step 1: Decide who will do the assessment



Who should be involved in an assessment?

Employers might do the assessments themselves, they might delegate the tasks to other people in the organisation, or they might call in specialist people from outside.

A sound knowledge of the work is essential for doing an adequate assessment. Therefore, even if an outside consultant is engaged to help with the assessment, workplace personnel who have a thorough knowledge of the work should always be involved.

Consultation between managers and employees benefits an assessment. The participation of employees and their representatives in the assessment process will help in gathering information about the substances used, how the work is done, exposure to substances and in ensuring commitment to the control measures established.

In a large workplace, it might be useful to establish a team, for example, the relevant manager/supervisor and health and safety representative, to assess particular work. In a small workplace, one or two people would normally do the assessment.

If a team approach is used, members of the assessment team might be assigned different tasks. Individual findings should be communicated back to a competent person who can coordinate the assessment, reach appropriate conclusions about risks and determine preventive measures. In larger workplaces where many assessments are needed, an overview committee may be established to coordinate the assessments.

Step 1: Decide who will do the assessment (continued)

What are the knowledge and basic skills for persons doing an assessment?

Anyone who does an assessment should understand the requirements of the relevant Commonwealth/State/Territory hazardous substances regulations and codes of practice. The person should have the authority to do the work, and should have enough resources to gather information, consult the appropriate people, review existing records and examine the workplace.

The person should also have abilities to:

- (a) interpret the information in MSDS* and labels[†];
- (b) observe the conditions of work and to foresee potential problems;
- (c) communicate effectively with employees, contract workers, managers, specialists etc;
- (d) draw all the information together in a systematic way to form valid conclusions about exposures and risks; and
- (e) report the findings accurately to all parties concerned.

What competency is required to do an assessment?

In most cases, sufficient skill should be available from within the workplace. The person or persons doing an assessment needs to have (either individually or among them) sufficient knowledge and skills. However, competence does not necessarily mean the possession of particular qualifications. A sound knowledge of the work may be sufficient, particularly for simple and obvious assessments. The employer should be aware of any limitations in the experience and knowledge of the personnel doing an assessment and be willing to supplement this knowledge if necessary by arranging appropriate training in assessment or engaging specialist assistance.

Guidance is provided at Appendix 1 to help employers decide if specialist help is needed and what sources of expert help are relevant in particular conditions.

*MSDS provided by a supplier should conform to an acceptable format as described in the National Commission's *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)]³.

[†]Labels provided by a supplier should comply with the National Commission's *National Code of Practice for the Labelling of Workplace Substances* [NOHSC:2012(1994)]⁴ or contain at least the equivalent information.

Step 2: Divide the work into units for assessment

Note: Division into work units may not be necessary for small workplaces where, for example, only very few substances and workers are involved.



Step 3: Identify substances in the work



Step 2: Divide the work into units for assessment

How to divide the work into units

To make the assessment easier, the work that utilizes hazardous substances should be divided into departments, jobs, tasks or processes. Visiting the workplace and looking at floor plans or process plans should help with this division.

Step 3: Identify substances in the work

How to identify substances in the work

Identify all the substances that are, or will be, used or produced in the work unit being assessed.

A substance might be in the form of a solid, liquid, gas, vapour, dust, mist or fume. Substances can be identified by:

- (a) referring to stock lists, inventories and registers;
- (b) checking all locations where substances are used or stored (some substances may be purchased locally rather than coming through the official purchasing or stores area);
- (c) considering what substances might be produced during any work process as intermediates, by-products, finished products or given off as wastes, residues or fugitive emissions;
- (d) considering all substances that are used in or arise from ancillary work such as maintenance and repair, cleaning, research or testing; and
- (e) considering substances that can arise from work on a building, for example, disturbance of insulation materials, or from work on machinery, for example, emission of fumes from welding or thermal cutting of metal parts.

Note: Unwanted substances should be disposed of properly after consulting with the relevant waste management authority.

Step 4: Determine which substances are hazardous



Step 5: Obtain information about hazardous substances



Step 4: Determine which substances are hazardous

How can hazardous substances be identified?

Having identified the substances present, it is necessary to determine if they are hazardous substances.

To determine whether a substance is hazardous, an employer, who is not a manufacturer or importer of the substance, should:

- (a) read the label and MSDS - all hazardous substances obtained from a supplier shall have a label, and if a substance is hazardous, there shall also be a MSDS; or

Note: In general the information on a label will be sufficient for workplace assessments where hazardous substances are contained in consumer packages. (*See* Glossary of Terms.)

- (b) check the National Commission's *List of Designated Hazardous Substances* [NOHSC:10005(1994)]⁵, if the substance is produced in the workplace and a MSDS is not available.

Only manufacturers and importers of substances supplied for use at work have a responsibility to determine whether a substance meets the classification criteria detailed in the National Commission's *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(1994)]⁶. This classification is then provided by the supplier on the substance label and, if the substance is hazardous, in the MSDS.

When all hazardous substances used or produced in the work unit have been identified, these should be added to the workplace register, if they have not already been included.

Step 5: Obtain information about hazardous substances

Where to obtain information about hazardous substances

Information should be obtained about the hazard, routes of exposure, recommended control measures and other action to prevent or minimise risks.

The primary source of information will be the labels and MSDS provided by the supplier.

The workplace register which lists all the hazardous substances used and produced in the workplace must also contain all of the available MSDS.

For most assessments, labels and MSDS will be the only required information sources.

However, for substances produced in the workplace for which a MSDS is not available, it will be necessary to obtain equivalent information from other sources. Also, where the nature of the hazard is very serious or chemical processes are complex, it may be necessary to obtain more detailed information.

Additional information on hazardous substances may be obtained from:

- (a) codes of practice and other guidance on specific substances and processes which are published by Worksafe Australia, Commonwealth/State/Territory government authorities, Standards Australia, professional institutions, trade unions and industry organisations;
- (b) technical reference sources, for example, consultancy services, industry seminars, textbooks, relevant Australian Standards, scientific/technical papers, NICNAS* reports, trade journals, computerised databases etc; and
- (c) experience and information from previous use of similar substances or processes.

*National Industrial Chemicals Notification and Assessment Scheme. NICNAS reports are available from the library of Worksafe Australia and most State/Territory libraries.

Step 6: Inspect workplace and evaluate exposure



For each hazardous substance or group or hazardous substances in the work unit, find out:

Note: If a work unit involves many hazardous substances, it might be advisable to group the substances according to their properties and/or the methods by which they are handled.

(a) Is the substance released or emitted into the work area?

If not, go to Step 7 and enter result.

(b) Are persons exposed to the hazardous substance through inhalation, ingestion, skin or eye contact, or is there a possibility of accidental injection into the body?

Step 6: Inspect workplace and evaluate exposure

How to evaluate exposure

A 'walk-through' inspection will provide information about each of the work units.

In assessing existing processes, it is important to talk to the employees at each location regarding practical information about work practices and procedures. For example, they could describe what happens during a breakdown, maintenance, staff shortages, changes in personnel or volume of production, weather conditions or other changes that can affect the work with hazardous substances.

Ensure that all persons who could be exposed to the substances are covered. This might include employees involved in production, repairs, maintenance, research and development, cleaning or office work, supervisors, managers and contractors on site. Consider also the persons who might be exposed in an emergency such as a chemical spill, leak or fire.

If a new job, process or work unit is being planned but not yet in operation, evaluation of the relevant work process, plan or design is needed.

To determine if a substance is released or emitted into the work area, consider:

- (a) evidence of contamination, for example, dust or fumes visible in the air or on surfaces, substance visible on a person's skin or clothing, odour of substance, visible leaks, spills or residues;

Note: the use of odour should be used with caution as the odour threshold of some substances may be above or below the hazardous level.

- (b) direct contact with the substance, for example, handling powder with unprotected hands;
- (c) chemical splashes; and
- (d) employees' experience or symptoms of exposure.

All persons who might be exposed should be considered. This might include persons who:

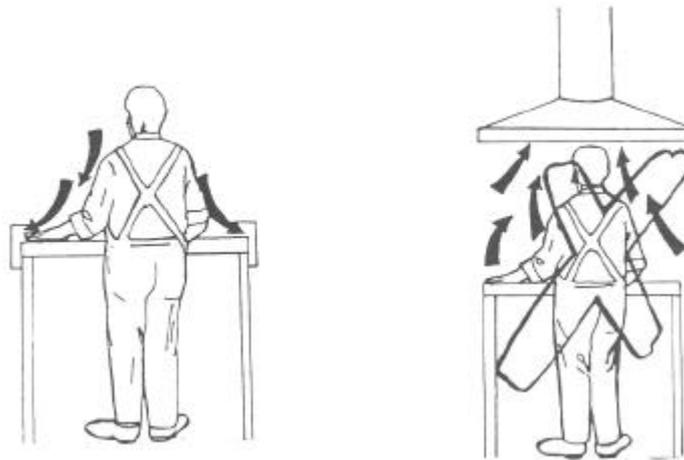
- (a) work directly with the substance;
- (b) work near or pass through areas in which the substance is used, produced (including discharge of emissions), stored, transported or disposed of;
- (c) enter a confined space in which the substance might be present; or
- (d) clean, perform maintenance or other work in areas where the substance might be present.

Step 6: Inspect workplace and evaluate exposure (continued)

(c) **How much are the persons exposed to and for how long?**

- What exposure is expected?
- Does exposure occur intermittently or continuously?
- Does exposure occur frequently?

(d) **What control measures are used or proposed? Are the existing control measures effective, properly used and maintained?**



(e) **Are there any risks associated with the storage and transport of the substance?**



Step 6: Inspect workplace and evaluate exposure (continued)

For the different persons who might be exposed to the substance, estimate the degree of exposure, taking into account the level, frequency and duration of the exposure, as well as the different routes of exposure.

Atmospheric monitoring is not routinely required as part of the assessment, although it might be appropriate in some circumstances. If the exposure cannot be estimated with confidence, expert assistance should be sought.

During a 'walk-through' inspection, the following matters should be considered:

- (a) Are any engineering controls in place, such as, isolation or enclosure of processes?
- (b) Are general ventilation and local exhaust ventilation systems in place, effective and adequately maintained?
- (c) Are employees trained in the proper use and maintenance of control measures?
- (d) Do work practices ensure safe handling?
- (e) Are appropriate personal protective clothing and equipment used and maintained in a clean and effective condition?
- (f) Are facilities for changing, washing and meal areas maintained in good condition? (Good personal hygiene practices can also help reduce employee exposure to hazardous substances.)
- (g) Are good housekeeping practices in place?
- (h) Are hazardous substances stored correctly?
- (i) Is disposal of waste appropriate?
- (j) Are appropriate emergency procedures and equipment in place, for example, eye-wash, safety shower, etc?

The risks associated with the storage and transport of hazardous substances in the workplace often relate to spillage and fire. Under these extraordinary circumstances, workers might be exposed briefly but at high concentrations (acute exposure). These risks are different from those associated with the usual day-to-day exposure and should be considered separately.

Note: Relevant Commonwealth/State/Territory dangerous goods legislation often sets storage requirements according to the classification and quantities of the dangerous goods involved. Workplace arrangements should be assessed to ensure that these requirements are being met.

Step 7: Evaluate the risk



Step 7: Evaluate the risk

What conclusions need to be made about the risk?

To estimate the level of risk it will be necessary to draw together the information gathered about the hazardous substances used (Step 5) and the information collected in the work evaluation (Step 6). In summary this will involve considering:

- (a) the nature and severity of the hazard for each hazardous substance;
- (b) the degree of exposure of persons in the workplace; and
- (c) whether existing control measures adequately control exposure.

The risk may generally be described as 'not significant' or 'significant'.

The risk can be regarded as 'not significant' if it is unlikely that the work will adversely affect the health of people in the workplace.

If the work evaluation is straight forward and shows that hazardous substances are already or can be readily controlled in accordance with the MSDS and there is not a significant risk to health, then the assessment is complete. The assessment can be regarded as 'simple and obvious', that is, the risks are not significant now and are not likely to increase in the future. (Go to Step 9.)

A 'significant risk' means that the work is *likely* to adversely affect the health of people in the workplace. For example, there would be a 'significant risk' if:

- (a) exposure is high or the substance used is highly toxic;
- (b) a dangerous reaction with other substances might occur; or
- (c) it is reasonably foreseeable that leaks or spills of a hazardous substance might occur.

In these circumstances, there are commonly three possibilities for describing the risk:

- (a) the risks are significant, but already effectively controlled;
- (b) the risks are significant now, and not adequately controlled; or
- (c) there is uncertainty about the risks, there is not enough information about the hazards or there is uncertainty about the degree of exposure.

In these circumstances, further work may be required to ensure that control measures are maintained and implemented, to undertake monitoring or health surveillance, or to repeat the assessment.

Step 7: Evaluate the risk (continued)

Conclusion 1: Risks not significant now and not likely to increase in future

Actions required:

- End current assessment and go to Step 9.
- Review assessment in five years or if situation changes.

Conclusion 2: Risks are significant but already effectively controlled, could increase in the future

Actions required:

- Determine precautions to maintain controls and minimise chances of higher exposure occurring.
- Determine additional measures for regaining control if a high risk event occurs, despite precautions (see Step 8).
- Determine if monitoring or health surveillance are required to check on effectiveness of controls (see Step 8).
- Provide induction and training (see Step 8).
- Review assessment in five years or if situation changes.

Step 7: Evaluate the risk (continued)

Conclusion 1:

Some examples are:

- the amounts or rates of use of the substance are too small to constitute a risk, even if controls fail;
- the operations obviously and strictly conform to the guidelines contained in the suppliers' MSDS and label;
- similar assessments in the past have confirmed that the risks were not significant, and work conditions now are the same; and/or
- the process is conducted according to standards equivalent to, or better than, those recommended in relevant Commonwealth/State/Territory government guidance on good practice.

Conclusion 2:

This conclusion usually applies to conditions where serious health effects could result if the control measures fail or deteriorate because the substance used is highly toxic or the potential exposure is high.

Risks, while presently adequately controlled, could increase in the future, owing to, for example:

- undetected deterioration in the efficiency of control measures;
- plant or system failure;
- control measures not used properly;
- human error, from lack of awareness, monitoring or training;
- changes in methods or rate of work; and/or
- a significant increase in the quantity of substances used.

Step 7 - Evaluate the risk (continued)

Conclusion 3: Risks significant now, and not adequately controlled

Actions required:

- Identify and implement immediate measures for preventing or controlling exposure (see Step 8).
- Consider stopping the process.
- Begin review of longer term control requirements.
- Re-evaluate exposures when the upgraded control measures are in place.
- Determine if monitoring or health surveillance is required (see Step 8).
- Provide induction and training (see Step 8).

Conclusion 4: Uncertain about risks: not enough information, or uncertain about degree of exposure

Actions required:

- Find more information or conduct a more detailed assessment. Obtain specialist advice if necessary (*see* Appendix I for guidance on this). Arrive at Conclusion 1, 2 or 3 and take the appropriate actions.
- Meanwhile, apply good practice to minimise exposure.

Step 7 - Evaluate the risk (continued)

Conclusion 3:

The following are examples of work conditions where the use of a hazardous substance is likely to constitute a risk, and further investigation, for example, monitoring, might be necessary:

- dusts, mists or fumes visible in the air, for example, in light beams, and there are persistent or widespread complaints of illness, discomfort, irritation or excessive odour;
- splashing with substances is observed;
- broken, defective or badly maintained control measures;
- recognised good practice is not being observed;
- airborne concentrations approach or exceed exposure standards*; and/or
- ill-health associated with exposure has been detected by health surveillance.

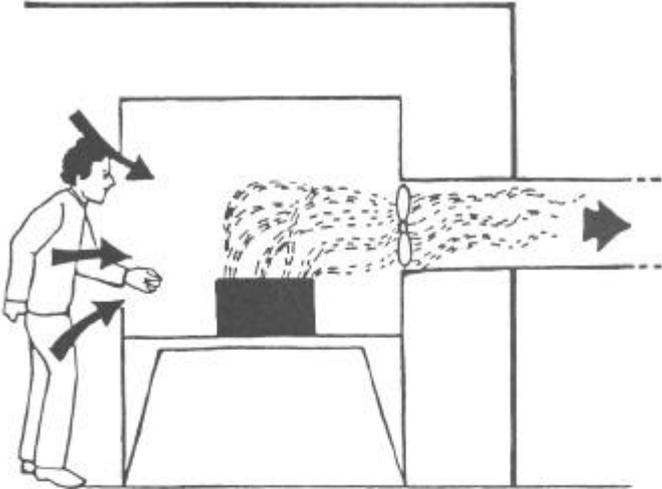
Conclusion 4:

If the level of exposure cannot be estimated with confidence, further investigation is necessary. Atmospheric monitoring might be required to estimate the level of exposure. For substances absorbed through the skin or ingested, biological monitoring might be required. A detailed evaluation might be needed if there is the potential for a major hazard such as a large leak or spill. (In these cases, relevant specialist advice would probably be required (*see* Appendix 1).

If there is not enough information from which to estimate the risks, more information or help should be sought from sources such as suppliers, occupational health and safety consultants, industry or trade associations or the relevant public authorities.

*Exposure standards are airborne concentrations of substances, and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. These standards are published in the National Commission's *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1991)]⁷.

Step 8: Identify actions resulting from conclusions about risks



Step 8 - Identify actions resulting from conclusions about risks

What needs to be done?

If the assessment shows that there is a significant risk to health, further actions should be taken to:

(a) ***Select appropriate measures to achieve control.***

These measures may include, in priority order:

- (i) elimination of the hazardous substance from the workplace;
- (ii) substitution with a less hazardous substance;
- (iii) isolation (separating the employees from where the substance is used);
- (iv) engineering methods (for example, local exhaust ventilation systems);
- (v) administrative control (for example, restricting access to a work area); and
- (vi) personal protective clothing and equipment (gloves, safety glasses, respirators, etc).

It might be necessary to use a combination of these control measures to eliminate or minimise exposure. To ensure that adequate control is maintained, all control measures should be reviewed at regular intervals. Routine checks, regular maintenance and appropriate supervision procedures are also necessary.

(b) ***Arrange induction and training.***

The extent of training will depend on the level of risk, with more extensive training being required for workers who are exposed to significant risks. The information collected during the assessment about the nature of the hazards and the control measures required should be used in preparing induction and training.

(c) ***Determine if monitoring is required.***

Ongoing monitoring may be required where the assessment indicates that it is necessary to check the effectiveness of control measures or where serious health effects might result if control measures fail because the substance is highly toxic or the potential exposure is high.

(d) ***Determine if health surveillance is required.***

Health surveillance is required for those substances nominated under the relevant regulations and where the information gathered during the assessment shows that:

- (i) there is an identifiable work-related disease or adverse health effect for a hazardous substance used in the work;
- (ii) it is likely that the disease or condition might occur during the conduct of the work; and
- (iii) valid techniques are available to detect early signs of the disease or condition.

(e) ***Establish emergency procedures and first aid when necessary.***

Employers should establish appropriate procedures if an assessment suggests a risk of leaks, spills or other uncontrolled releases of hazardous substances. These include procedures for prevention, provision of first aid, safety showers and eye wash facilities, evacuation procedures, emergency procedures, etc.

Step 9: Record the assessment



Step 9: Record the assessment

What should be recorded?

Simple and obvious assessments do not need to be recorded in detail. However, a notation should be made in the register to indicate that the appropriate assessment steps have been followed. It should include:

- (a) *work unit;*
- (b) *date when MSDS (or other information) was reviewed;*
- (c) *date when the workplace was inspected;*
- (d) *control measures in place;* and
- (e) *name and position of assessor/assessment team.*

All other assessments should be recorded in a permanent form, either in writing or on computer. The record should be concise. Supplementary information can be appended. It should include:

- (a) *description of work unit;*
- (b) *name of assessor or assessment team;*
- (c) *personnel involved;*
- (d) *work area, date and time;*
- (e) *a list of hazardous substances used or produced in that work unit and a notation to indicate whether MSDS are available;*
- (f) *hazard information* - important route of entry and hazards, for example, cancer-causing, corrosive etc;
- (g) *summary of process* - a description of normal operations in that work unit, with note of any changes observed or anticipated which might affect accuracy of assessment;
- (h) *risk identification* - possible routes of exposure; procedure for assessment of exposure; the degree of exposure; existing control measures;
- (i) *conclusions about risks;*
- (j) *recommendations* - actions to be taken from the conclusions about risks, that is, the control measures, induction and training required, arranging emergency procedures and first aid, monitoring and health surveillance (if required), and the circumstances in which reassessment would be required;
- (k) *signature, date and position of the assessor/assessment team;* and
- (l) *signature, date and position of the employer accepting the assessment.*

A standard format might be considered for records of assessment for an organisation.

Examples of assessments recorded in two different formats are provided at Appendix 3. Example assessment forms are at Appendix 4.

Step 10: Review the assessment



Step 10: Review the assessment

When should an assessment be reviewed?

A review is required if the following situations occur:

- (a) there are significant changes in volume of production, plant, material, process or control measures;
- (b) work-related ill health is reported;
- (c) accidents or near misses have occurred which may be due to inadequate control;
- (d) monitoring or health surveillance indicates a loss of control;
- (e) there is new evidence about hazards of substances, perhaps resulting in a revised exposure standard; and/or
- (f) new or improved control technology becomes practicable.

In any case, each assessment must be reviewed as required by Commonwealth/State/Territory legislation, or at least every five years if the particular work is still performed.

ENGAGING OUTSIDE CONSULTANTS TO HELP WITH ASSESSMENT

WHAT PROFESSIONALS MIGHT HELP IN ASSESSMENT?

A1.1 Assessments are based on a thorough understanding of what happens, or might happen, in the workplace. Therefore, employers should start the assessments in-house, before considering whether to call in specialists from outside.

A1.2 If an employer finds that specific expertise is needed to complete an assessment, and this expertise is not available within the organisation, an outside consultant should be engaged.

A1.3 Occupational hygiene is often the most relevant discipline for the work of assessment as it is concerned with identifying, assessing and controlling conditions in the work environment that might adversely affect health or safety.

A1.4 Other specialists who might be relevant for the assessment of particular work conditions include health and safety practitioners, ventilation engineers, occupational health physicians and nurses, toxicologists, industrial chemists and mechanical or chemical engineers.

EXAMPLES OF WHEN SPECIFIC EXPERTISE MIGHT BE NEEDED

A1.5 Some areas normally involve professional expertise or specialist knowledge before committing resources. These situations include:

- the design and installation of local exhaust ventilation;
- examination, testing and servicing of engineering controls;
- the design of an air monitoring strategy, collection and analysis of samples, and interpretation of results; and
- undertaking health surveillance procedures.

HOW TO SELECT A SUITABLE CONSULTANT

A1.6 The following guidelines may be useful in selecting a suitable consultant:

- ensure that the consultant's qualifications and experience are relevant to the service offered;
- ensure that the consultant has sufficient staff and equipment to do the job competently;
- beware of consultants who claim to be expert in every aspect;
- be cautious of those for whom occupational health and safety consultancy is not their main means of making a living;
- check the independence of the advice and services, for although some suppliers of control measures and protective equipment are acknowledged experts in their fields, advice from such suppliers should not be considered in isolation; and
- membership of an association that requires members to adhere to specified professional standards and codes of ethics should be regarded as an advantage.

ASSESSMENT CHECKLIST

	Yes	No
Q.1 Has it been decided who will do the assessment?	<input type="checkbox"/>	<input type="checkbox"/>
Q.2 Has the work been divided into units for assessment?	<input type="checkbox"/>	<input type="checkbox"/>
<i>The following questions (Q.3 -9) should be answered for each work unit:</i>		
Q.3 Have all the substances in the work been identified?	<input type="checkbox"/>	<input type="checkbox"/>
Q.4 Has it been determined which substances are hazardous?	<input type="checkbox"/>	<input type="checkbox"/>
Q.5 Has information about the hazardous substances been gathered?	<input type="checkbox"/>	<input type="checkbox"/>
Q.6 Has exposure to hazardous substances in the work unit been identified? <i>This procedure comprises the following steps:</i>	<input type="checkbox"/>	<input type="checkbox"/>
<i>For each hazardous substance or group of hazardous substances in the work unit, find out:</i>		
<ul style="list-style-type: none"> • Is the substance released or emitted into the work area? • Are persons exposed to the substance? • How much are the persons exposed to and for how long? • What control measures are used or proposed? • Are there any risks associated with the storage and transport of the substance? 		
<i>Have all hazardous substances in the work unit been covered? If not, repeat Q.6 for the next hazardous substance.</i>		
Q.7 What is the conclusion about risks? Is it a simple and obvious assessment?	<input type="checkbox"/>	<input type="checkbox"/>
<i>If yes, go to Q.9. If no, decide:</i>		
		<i>(Tick as appropriate)</i>
<ul style="list-style-type: none"> • Conclusion 1: risks not significant <input type="checkbox"/> • Conclusion 2: risks significant but effectively controlled <input type="checkbox"/> • Conclusion 3: risks significant and not adequately controlled <input type="checkbox"/> • Conclusion 4: uncertain about risks <input type="checkbox"/> 		
Q.8 Have actions resulting from conclusion about risks been identified?	<i>(Tick as appropriate)</i>	
<ul style="list-style-type: none"> • Requires no further action <input type="checkbox"/> • Seek expert help <input type="checkbox"/> • Requires appropriate control measures <input type="checkbox"/> • Requires induction and training <input type="checkbox"/> • Requires ongoing monitoring <input type="checkbox"/> • Requires health surveillance <input type="checkbox"/> • Requires emergency procedures and first aid <input type="checkbox"/> 		
Q.9 Has the assessment been recorded? (For a simple and obvious assessment, make only a notation in the register.)	<input type="checkbox"/>	<input type="checkbox"/>
<i>Have all the work units been assessed? If not, repeat Q.3-9 for the next work unit.</i>		
Q.10 Has a workplace register been compiled?	<input type="checkbox"/>	<input type="checkbox"/>

ASSESSMENT EXAMPLES

A3.1 The process of assessment is illustrated below using two examples of job-based assessment at the Sydney Factory of XYZ Industries Pty Ltd. The steps of determining who will do the assessment, dividing the work into units and compiling an inventory of substances (Example Form 1) have been carried out. Two of the work units are the cleaning of amenities on the site, and the finishing of fleet vehicles in the automotive workshop.

EXAMPLE 1: CLEANING AMENITIES (see Example Form 2A)

A3.2 A review of the labels and MSDS has indicated that the hazardous substances, 'Sparkle' and 'Britewash', are both irritant to the skin, eyes and respiratory tract. If they are mixed, chlorine (an irritant gas) could be released. Spraying of 'Britewash' in a poorly-ventilated area may result in a low concentration of chlorine gas.

A3.3 The cleaners dilute the concentrates with water for cleaning, disinfecting and spraying. They all wear overalls and rubber gloves. Splashes to the eyes and face are unlikely to occur if the established work procedures are followed.

A3.4 No adverse health effects have been experienced by the workers.

A3.5 The assessment team decides that the risks of inhalation, skin and eye exposures are not significant, and that the workers should continue to use the personal protective equipment and follow the instructions in the MSDS. However, there is significant risk associated with accidental mixing of the two substances. Workers should use separate and clearly labelled containers for diluting the concentrates, and appropriate training or instruction is needed.

EXAMPLE 2: MOTOR VEHICLE FINISHING (see Example Form 2B)

A3.6 The hazardous substances used in this job are the organic solvent and lead paint.

A3.7 Abrasive paper is used, sometimes dry, for sanding, which could generate lead-containing dust. Spraying is done in a booth, which has not been regularly maintained.

A3.8 The painters wear overalls and gloves. Face masks are used for spraying, but not sanding. There is an odour of solvents in the workshop during spraying and the painters suffer from headache and stinging eyes.

A3.9 The assessment team was uncertain about the exposures and therefore consulted an occupational hygienist.

A3.10 The occupational hygienist assessed the work environment and found significant risks of exposure to lead and solvents. The following actions are recommended:

- regular maintenance and testing of the spray booth;
- provision of suitable personal protective equipment;
- regular atmospheric monitoring of solvent vapours;
- biological monitoring of workers' blood lead levels be considered; and
- ?? appropriate training of workers.

EXAMPLE FORM 1

Company: <i>XYZ Industries Pty Ltd</i>		LIST OF SUBSTANCES				Date: <i>1/5/92</i>	
Worksite: <i>Sydney Factory</i>						Contact: <i>J Bloggs</i>	
Local ID Number	Name of Substances	Location of Substances	Current MSDS? Yes/No	Hazardous? Yes/No	Labelled? Yes/No	Uses (Haz.Sub only)	Comments
<i>C-001</i>	<i>'Sparkle'</i>	<i>Cleaner Store room</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>Cleaner</i>	<i>Label Needed Assessment needed</i>
<i>C-005</i>	<i>'Shine'</i>	<i>Cleaner Store room</i>	<i>No</i>	<i>No</i>	<i>Yes</i>	<i>No action needed</i>	<i>No action needed</i>
<i>C-019</i>	<i>'Britewash'</i>	<i>Cleaner Store room</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Disinfect</i>	<i>Assessment needed</i>
<i>C-028</i>	<i>'Slick'</i>	<i>Cleaner Store room</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No action needed</i>	<i>No action needed</i>
	<i>"</i>						
	<i>"</i>						
<i>P-005</i>	<i>Red Acrylic Lacquer No. 5</i>	<i>Workshop</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Spray paint</i>	<i>Assessment needed</i>
<i>P-006</i>	<i>White Acrylic Lacquer No. 5</i>	<i>Workshop</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Spray paint</i>	<i>Assessment needed</i>

EXAMPLE FORM 1 (continued)

Company: <i>XYZ Industries Pty Ltd</i>		LIST OF SUBSTANCES			Date: <i>1/5/92</i>		
Worksite: <i>Sydney Factory</i>					Contact: <i>J Bloggs</i>		
Local ID Number	Name of Substances	Location of Substances	Current MSDS? Yes/No	Hazardous? Yes/No	Labelled? Yes/No	Uses (Haz.Sub only)	Comments
<i>S-005</i>	<i>Solvent No. 5</i>	<i>Workshop & paint store</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>Dilute paint</i>	<i>Label Needed Assessment needed</i>
	”						
	”						

Note: Although the listing of non-hazardous substances is not essential, this information would be useful in re-assessment.

EXAMPLE FORM 2A

WORK UNIT (JOB): *CLEANER* **PERSON NAME(S):** *Jim Mopper* **Management Team** *Mary Supervisor and Fred Buckettt*
Work Area: *Factory, Office and Workshop amenities blocks* **Date:** *1/5/92* **Time:** *10.30am*
Summary of Process: *Cleaning amenities with diluted and undiluted 'Britewash' and 'Sparkle'*

HAZARDOUS SUB	HAZARD INFORMATION	TASK	EXPOSURE ROUTES	ASSESSMENT/FINDINGS	COMMENTS
'Sparkle'	<i>irritant to eyes, skin and respiratory tract</i>	<i>1. used undiluted to dean toilets (daily)</i>	<i>skin/eye</i>	<i>No skin contact No splash hazard</i>	<i>Wearing gloves and overalls</i>
		<i>2. diluted to clean tiles and basins (daily)</i>	<i>skin/eye</i>	<i>No skin contact</i>	<i>Correct procedure is used (concentrate is added to water)</i>
'Britewash'	<i>1) irritant to eyes, skin and respiratory tract</i>	<i>1. diluted to disinfect toilets (daily)</i>	<i>skin/eye</i>	<i>No skin contact</i>	<i>Wearing gloves; (concentrate is added to water)</i>
	<i>2) may release chlorine (a strong irritant gas) if mixed with other cleaning agent</i>	<i>2. diluted to spray showers (weekly)</i>	<i>inhalation and skin/eye</i>	<i>Inhalation - low risk; no skin contact</i>	<i>(as above)</i>

Controls in place: *Rubber gloves and overalls are used by all cleaners.
Cleaners have been advised of hazards and precautions in MSDS.
Pump dispenser is used for diluting 'Sparkle'; separate pump is used for 'Britewash'.*

ASSESSMENT RESULT AND RECOMMENDATIONS:
*No skin, eye or respiratory problems have been reported by cleaners.
Team decides no significant health risks. 'Sparkle' containers are now labelled.
Containers with dilute 'Britewash' and dilute 'Sparkle' are labelled.
Employees have been advised that mixing 'Sparkle' and 'Britewash' could cause hazardous reactions. Separate and labelled containers should be used for preparing dilute solutions.
This information will be included in induction for new employees.
Re-assessment date: 1/5/97.*

ASSESSORS/SIGNATURE: _____ **DATE:** *20/5/92*

APPROVED BY/NAME: *J General Manager* **SIGNATURE:** _____ **DATE:** *20/5/92*

EXAMPLE FORM 2B

WORK UNIT (JOB): <i>Painting trucks</i>		ASSESSMENT TEAM: <i>W Manager, F Ladder</i>		DATE: <i>1/5/92</i>	
WORK AREAS A: <i>Automotive workshop</i>		PERSONNEL A: <i>F Ladder, S Painter</i>			
B:		B:			
HAZARDOUS SUBSTANCES*	DESCRIPTION OF USE (INCL QUANTITIES)	ROUTES OF EXPOSURE	EXISTING CONTROLS	CONCLUSION ABOUT RISKS	ACTIONS
<i>Acrylic lacquer, red & white, No.5</i>	<i>Spray trucks in spray booth, 2 litres/day red; small amount white</i>	<i>inhalation skin eye</i>	<i>booth, face masks overalls, gloves nil</i>	<i>uncertain low? uncertain</i>	<i>Get an occupational hygiene consultant to help complete assessment</i>
<i>Solvent No.5</i>	<i>Thin paint in workshop 1 litre/day</i>	<i>inhalation skin</i>	<i>nil overalls, gloves</i>	<i>uncertain insignificant</i>	
REPORTED HEALTH EFFECTS: <i>F Ladder has headache after painting. Both Ladder and Painter get stinging eyes.</i>					
COMMENTS: <i>Workshop smells of solvents. Spray booth not serviced recently. Assessment completed by Occupational Hygiene Consultant Pty Ltd. Report attached (*report not provided for the purpose of this example).</i>					
ASSESSORS/SIGNATURE:			DATE: <i>20/5/92</i>		
APPROVED BY/NAME: <i>J General Manager</i>		SIGNATURE:		DATE: <i>20/5/92</i>	

EXAMPLE ASSESSMENT RECORD FORM 2A

WORK UNIT (JOB):		PERSON'S NAME(S):		Assessment Team:	
Work Area:		Date:		Time:	
Summary of Process:					
HAZARDOUS SUB	HAZARD INFORMATION	TASK	EXPOSURE ROUTES	ASSESSMENT/FINDINGS	COMMENTS
Controls in place:					
ASSESSMENT RESULT AND RECOMMENDATIONS:					
ASSESSORS/SIGNATURE:				DATE:	
APPROVED BY/NAME:		SIGNATURE:		DATE:	

EXAMPLE ASSESSMENT RECORD FORM 2B

WORK UNIT (JOB):			ASSESSMENT TEAM:		DATE:
WORK AREAS A:			PERSONNEL A:		
B:			B:		
HAZARDOUS SUBSTANCES*	DESCRIPTION OF USE (INCL. QUANTITIES)	ROUTES OF EXPOSURE	EXISTING CONTROLS	CONCLUSION ABOUT RISKS	ACTIONS
REPORTED HEALTH EFFECTS:					
COMMENTS:					
				ASSESSORS/SIGNATURE:	DATE:
APPROVED BY/NAME:		SIGNATURE:		DATE:	

*Refer to MSDS for hazard information

GLOSSARY OF TERMS

Atmospheric monitoring

Atmospheric monitoring involves the sampling of air to estimate the exposure of employees to atmospheric contaminants, that is, measuring the levels of substances in the air. Expertise in occupational hygiene is usually required to plan and undertake atmospheric monitoring and to interpret the results. Atmospheric monitoring can only be performed for those substances where testing methods are available, and generally for those with exposure standards.

Biological monitoring

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

Consumer package

Means a package which is intended for retail display and sale. It may be transported and distributed as part of a larger consolidated package consisting of a number of identical consumer packages.

Control measure

Means a method which can be used to reduce the risks to health and safety from work with hazardous substances.

Employee

Means an individual who works under a contract of employment, apprenticeship or traineeship.

Employee representative

Includes an employee member of a health and safety committee where established in the workplace, or a person elected to represent a group of employees on health and safety matters.

Employer

Means a corporation or an individual who employs persons under a contract of employment, apprenticeship or traineeship.

Note: The definition of employer includes the self-employed which means a person who works for gain, other than under a contract of employment, apprenticeship or traineeship, whether or not that person employs others.

Health surveillance

Means the monitoring of individuals for the purpose of identifying changes in health status due to occupational exposure to hazardous substances. It includes biological monitoring (as defined) but not monitoring as elsewhere defined in this section.

Register

Means a listing of all hazardous substances which are used or produced in the workplace and the available MSDS for hazardous substances, as required by the National Occupational Health and Safety Commission's *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)].

REFERENCED DOCUMENTS

1. National Occupational Health and Safety Commission, 'National Model Regulations for the Control of Workplace Hazardous Substances' [NOHSC:1005(1994)], in *Control of Workplace Hazardous Substances: National Model Regulations and National Code of Practice*, Australian Government Publishing Service, Canberra, 1994.
2. National Occupational Health and Safety Commission, 'National Code of Practice for the Control of Workplace Hazardous Substances' [NOHSC:2007(1994)], in *Control of Workplace Hazardous Substances: National Model Regulations and National Code of Practice*, Australian Government Publishing Service, Canberra, 1994.
3. National Occupational Health and Safety Commission, *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)], Australian Government Publishing Service, Canberra, 1994.
4. National Occupational Health and Safety Commission, *National Code of Practice for the Labelling of Workplace Substances* [NOHSC:2012(1994)], Australian Government Publishing Service, Canberra, 1994.
5. National Occupational Health and Safety Commission, *List of Designated Hazardous Substances* [NOHSC:10005(1994)], Australian Government Publishing Service, Canberra, 1994.
6. National Occupational Health and Safety Commission, *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(1994)], Australian Government Publishing Service, Canberra, 1994.
7. National Occupational Health and Safety Commission, 'Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment' [NOHSC:1003(1991)], in *Exposure Standards for Atmospheric Contaminants in the Occupational Environment*, Australian Government Publishing Service, Canberra, 1991.

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