



Australian Government

**National Occupational
Health and Safety Commission**

**CODE OF PRACTICE FOR THE MANAGEMENT AND
CONTROL OF ASBESTOS IN WORKPLACES
[NOHSC: 2018 (2005)]**

**CANBERRA
APRIL 2005**

NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION

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CONTROL OF ASBESTOS IN WORKPLACES
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FOREWORD

The National Occupational Health and Safety Commission (NOHSC) leads and coordinates national efforts to prevent workplace deaths, injury and disease in Australia.

Through the quality and relevance of the information it provides, the NOHSC seeks to influence the awareness and activities of every person and organisation with a role in improving Australia's occupational health and safety (OHS) performance.

More specifically, the NOHSC aims to:

- support and enhance the efforts of the Australian Government and State and Territory governments to improve the prevention of workplace deaths, injury and disease;
- work in alliances with others to facilitate the development and implementation of better preventative approaches; and
- ensure the needs of small business are integrated into these approaches.

The NOHSC's *National OHS Strategy 2002-2012*, which was endorsed by the Workplace Relations Ministers' Council on 24 May 2002, records a commitment by all Australian, State and Territory governments, the Australian Chamber of Commerce and Industry and the Australian Council of Trade Unions to share in the responsibility of ensuring Australia's performance in work-related health and safety is continuously improved.

This *National OHS Strategy* sets out five 'national priorities' to achieve short-term and long-term improvements.

These priorities are to:

- reduce high incidence and high severity risks;
- improve the capacity of business operators and workers to manage OHS effectively;
- prevent occupational disease more effectively;
- eliminate hazards at the design stage; and
- strengthen the capacity of government to influence OHS outcomes.

In line with these priorities, the NOHSC declares national codes of practice under section 38 of the National Occupational Health and Safety Commission Act 1985 (Cth).

In common with other NOHSC documents, these national codes of practice are advisory instruments only, unless they are made mandatory by a law other than the National Occupational Health and Safety Commission Act or by an award or instrument made under such a law.

The application of a national code of practice in any particular State or Territory is the prerogative of that State or Territory.

The Australian Government and the NOHSC expect, however, that national codes of practice will be adopted by all State and Territory governments.

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PREFACE

Asbestos is a hazardous material that poses a risk to health by inhalation if the asbestos fibres become airborne and people are exposed to these airborne fibres.

Exposure to asbestos fibres is known to cause mesothelioma, asbestosis and lung cancer.

Asbestos-containing materials were used extensively in Australian buildings and structures, plant and equipment and in ships, trains and motor vehicles during the 1950s, 1960s and 1970s, and some uses, including some friction materials and gaskets, were only discontinued on 31 December 2003.

Appendix A lists materials that have historically contained asbestos, and **Appendix B** provides further information on historical uses of asbestos and the Australian Mesothelioma Register.

National ban on the use of asbestos

On 17 October 2001, the National Health and Safety Commission (NOHSC) declared a prohibition on all uses of chrysotile (white) asbestos from 31 December 2003, subject to a very limited range of exemptions.

This prohibition, originally set out in the *Amendments to Schedule 2 of the National Model Regulations for the Control of Workplace Hazardous Substances (Prohibition of Asbestos) 2001* and subsequently reflected in Australian Government, State and Territory occupational health and safety and hazardous substances legislation, also confirmed earlier prohibitions of the use of amosite (brown) and crocidolite (blue) asbestos.

(There are no known current uses in Australia of the other three forms of asbestos: actinolite, anthophyllite and tremolite.)

Under the *National Model Regulations for the Control of Workplace Hazardous Substances* the chrysotile asbestos ban prohibits the use (i.e. manufacture, supply, storage, sale, use, re-use, installation and replacement) of chrysotile asbestos except for:

- *bona fide* research or analysis;
- removal, handling and storage for disposal;
- chrysotile asbestos encountered during non-asbestos mining; and
- a small number of time-limited exemptions for particular, specified uses for which substitution by an alternative to chrysotile asbestos is technically impossible or would create significantly *greater* health, safety and environmental risks.

Similarly, the use of brown and blue asbestos is prohibited except for:

- removal and disposal purposes; and
- situations where brown or blue asbestos occurs naturally and is not used for any new application.

The prohibition also includes a small number of time-limited exemptions which are restricted to specific products and uses where currently it is not:

- technically possible to substitute an alternative to chrysotile; or
- possible to substitute an alternative to chrysotile without creating a safety problem that has significantly greater health, safety and environmental risks than those presented by the use of chrysotile.

The prohibition does not extend to the removal of asbestos products *in situ* at the time prohibition took effect. These *in situ* asbestos containing materials (ACM) must be appropriately managed to ensure that the risks of exposure to airborne asbestos fibres are minimised.

The ultimate goal is for all workplaces to be free of ACM. Where practicable, consideration should be given to the removal of ACM during renovation, refurbishment, and maintenance, rather than other control measures such as enclosure, encapsulation or sealing.

Asbestos products which were *in situ* on 31 December 2003 may only be replaced by products which do not contain asbestos

Even when the use of asbestos is still permitted, in the very narrow circumstances listed above, it is subject to hazardous substances legislation, under which manufacturers, importers, other suppliers and employers must ensure that specified measures are properly

Preventing health risks from in situ asbestos-containing materials

Strong management and control of all *in situ* asbestos-containing materials (ACM) is essential.

The well-known adverse health consequences of exposure to airborne asbestos fibres can be prevented if precautions are taken and appropriate procedures are followed.

The risks posed by ACM depend on the nature and condition of the materials and the potential for exposure.

The main elements of managing the risks of ACM in workplaces are to:

- identify all ACM in the workplace, as far as practicable;
- assess the risks associated with all ACM; and
- introduce control measures to prevent, as far as practicable, the generation of airborne asbestos fibres and any exposure to airborne asbestos fibres.

A number of approaches for the control of ACM are outlined in this *National Code of Practice for the Management and Control of Asbestos in Workplaces*, but there may be specific applications where special approaches are required.

The removal and disposal of asbestos-containing materials

The removal of ACM poses significant additional hazards.

Accordingly, a separate *National Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002 (2005)] has been developed by NOHSC to supplement and support this *Code of Practice for the Management and Control of Asbestos in Workplaces*.

The transport and disposal of removed ACM are controlled by Australian Government, State Territory legislation and a range of authorities, including but not limited to environmental, waste disposal and occupational health and safety authorities. All relevant authorities should be consulted before transporting and disposing of ACM wastes.

PART 1. TITLE

This code of practice may be cited as the *Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC:2018 (2005)]*.

PART 2. OBJECTIVE

This national code of practice has been developed to assist persons with control of premises and/or plant to control the risks of asbestos-containing materials (ACM) in workplaces.

It sets out the steps to be taken to eliminate or otherwise minimise the risks of exposure to airborne asbestos fibres, including the identification of ACM, risk assessments and the implementation of control measures.

The objective of these measures is to prevent workplace exposure to airborne asbestos fibres and thereby reduce the incidence of asbestos-related diseases such as mesothelioma, asbestosis and lung cancer.

PART 3. SCOPE AND APPLICATION

This code of practice applies to all workplaces where ACM remain, or are likely to remain, *in situ*.

It has been written primarily for persons with control of premises (including government departments and statutory authorities), workers at the premises and their representatives.

However, it is also intended to be used by government inspectors, asbestos removalists and others involved in managing and controlling risks from ACM in buildings, structures, plant and equipment, and friction materials.

All work involving a potential exposure of people to asbestos should be carried out in conformity with this code of practice and the *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)].

This should ensure that the exposure of workers and other persons to asbestos is either eliminated or kept as low as reasonably practicable, and in all circumstances is kept below the National Exposure Standard (NES).

It will also ensure that asbestos work is restricted to areas accessible only by persons who are adequately protected.

The appendices in this code of practice provide examples of how the code may be used to develop work methods for eliminating exposure to asbestos. Other methods may be used if they are found to be more suitable in particular circumstances or provide better protection than the methods described in this code, *provided* they never compromise the health and safety of those involved.

PART 4. DEFINITIONS

Accredited Laboratory

means a testing laboratory accredited by the National Association of Testing Authorities, Australia (NATA) or a similar accreditation authority, or otherwise granted recognition by NATA, either solely or in conjunction with one or more other persons.

Air Monitoring

means airborne asbestos fibre sampling to assist in assessing exposures and the effectiveness of control measures. Air monitoring includes exposure monitoring, control monitoring and clearance monitoring.

Note: Air monitoring should be undertaken in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003 (2005)]

Airborne Asbestos Fibres

means any fibres of asbestos small enough to be made airborne. For the purposes of monitoring airborne asbestos fibres, only respirable asbestos fibres (those fibres less than 3 µm wide, more than 5 µm long and with a length to width ratio of more than 3 to 1) are counted.

Note: Airborne asbestos fibres are generated by the mechanical disintegration of Asbestos-Containing Materials (ACM) and subsequent dispersion of the fibres into the air from activities such as mining and the use, removal and disposal of asbestos and ACM. Airborne dust has the potential to contain respirable asbestos fibres.

ALARP

means As Low As Reasonably Practicable. The exposure of workers and others to asbestos must be eliminated or otherwise kept as low as reasonably practicable, and in all circumstances must be kept below the NES.

Asbestos

means the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite (brown asbestos), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos), tremolite, or any mixture containing one or more of the mineral silicates belonging to the serpentine and amphibole groups.

Asbestos Cement (AC)

means products consisting of sand aggregate and cement reinforced with asbestos fibres (e.g. asbestos cement pipes and flat or corrugated asbestos cement sheets).

Asbestos-Containing Material (ACM) means any material, object, product or debris that contains asbestos.

Note: Information for determining if a material contains asbestos is provided in Part 9.

Asbestos Removalist means a competent person who performs asbestos removal work.

Note: An asbestos removal licence is required in all State and Territory jurisdictions for the removal of friable ACM. Some States and Territories also require a licence for removal of specified quantities of ACM, regardless of whether they are friable, and relevant OHS authorities should be consulted prior to any removal work.

Asbestos Vacuum Cleaner means a vacuum cleaner that is fitted with a High Efficiency Particulate Air (HEPA) Filter and complies with Australian Standard 3544-1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health*. A domestic vacuum cleaner is not suitable for use with asbestos.

Asbestos Waste means all removed ACM and disposable items used during the asbestos work, such as plastic sheeting used to cover surfaces in the asbestos work area, disposable coveralls, disposable respirators, rags used for cleaning.

Asbestos Work Area means the immediate area in which work on ACM is taking place. The boundaries of the asbestos work area must be determined by a risk assessment.

Note: The asbestos work area should include the boundaries of an enclosure or barriers set up to warn or restrict access to the area where the asbestos work is being undertaken.

Breathing Zone means a hemisphere extending in front of a person's face, with a radius of 300 mm from the midpoint of an imaginary line between the ears.

Clearance Inspection means an inspection, carried out by a competent person, to verify that an asbestos work area is safe to be returned to normal use after work involving the disturbance of ACM has taken place. A clearance inspection must include a visual inspection, and may also include clearance monitoring and/or settled dust sampling.

Note: A clearance inspection should only be carried out when the asbestos work area is dry.

Clearance Monitoring

means air monitoring using static or positional samples to measure the level of airborne asbestos fibres in an area following work on ACM. An area is 'cleared' when the level of airborne asbestos fibres is measured as being below 0.01 fibres/mL.

Note: Static or positional samples are taken at fixed locations which are usually between one and two metres above floor level,

Competent Person

means a person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work.

Note: A licence may be required for some of the tasks described in this document as requiring a competent person.

Control Level

means the airborne concentration of a particular substance which, if exceeded, indicates a need to implement a control, action or other requirement. Control levels are generally set at no more than half the NES for the substance. Control levels are occupational hygiene 'best practice', and are *not* health-based standards.

Note: The first Control Level for Asbestos is set at 0.01 fibres/mL of air.

Control Monitoring

means air monitoring, using static or positional to measure the level of airborne asbestos fibres in an area during work on ACM. Control monitoring is designed to assist in assessing the effectiveness of control measures. Its results are not representative of actual occupational exposures, and should not be used for that purpose.

Note: Static or positional samples are taken at fixed locations which are usually between one and two metres above floor level,

Dust and Debris

means visible particles, fragments or chunks of material, large and heavy enough to have settled in the work area, that are likely to have originated from ACM.

Exposure Monitoring

means air monitoring to determine a person's likely exposure to a hazardous substance. Exposure monitoring is designed to reliably estimate the person's exposure, so that it may be compared with the NES.

Note: *Exposure monitoring includes airborne asbestos fibre sampling, analysis, estimation of time-weighted average exposure and interpretation. Samples are taken within the breathing zone and are usually obtained by fastening the filter holder to the worker's jacket lapel.*

Friable (Asbestos)

means asbestos-containing material which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure.

Note: *This may include ACM that have been subjected to conditions that leave them in a state where they meet the above definition, such as weathering, physical damage, water damage etc.*

Hazard

means any matter, thing, process or practice that may cause death, injury, illness or disease.

Health Surveillance

means the monitoring of a person to identify any changes in their health as a result of exposure to a hazardous substance. It does not include exposure monitoring.

High Efficiency Particulate Air (HEPA) Filter

means a disposable, extended media, dry type filter, in a rigid frame, with a minimum filtration efficiency of 99.97% for nominal 0.3 µm diameter thermally generated dioctylphthalata (DOP) particles or an equivalent efficiency for a specified alternative aerosol and with an initial maximum resistance to airflow of 250 pa when tested at its rated airflow capacity (see Australian Standard 4260-1997 *High Efficiency Particulate (HEPA) Filters – Classification, Construction and Performance*).

In situ

means fixed or installed in its original position, not having been moved.

Inaccessible Areas

means areas which are difficult to access, such as wall cavities and the interiors of plant and equipment.

Membrane Filter Method (MFM)

means the technique outlined in the NOHSC *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC:3003 (2005)]

National Exposure Standard (NES)

means an airborne concentration of a particular substance, within the worker's breathing zone, which according to current knowledge, should not cause adverse health effects or undue discomfort to nearly all workers. NES are established, from time to time, by the National Occupational Health and

Safety Commission (NOHSC) and are published on the NOHSC website (see **Appendix J**).

Note: The NES for all forms of asbestos is 0.1 fibres/mL of air, measured using the Membrane Filter Method (MFM).

Person with Control

means, in relation to premises, a person who has control of premises used as a workplace. The person with control may be:

- (a) the owner of the premises;
- (b) a person who has, under any contract or lease, an obligation to maintain or repair the premises;
- (c) a person who is occupying the premises;
- (d) a person who is able to make decisions about work undertaken at the premises; or
- (e) an employer at the premises.

Personal Protective Equipment (PPE) means equipment and clothing that is used or worn by an individual person to protect themselves against, or minimise their exposure to, workplace risks. It includes items such as facemasks and respirators, coveralls, goggles, helmets, gloves and footwear (see **Appendix C**).

Respirable Asbestos Fibre

means a fibre of asbestos small enough to penetrate into the gas exchange regions of the lungs. Respirable asbestos fibres are technically defined as fibres that are less than 3 µm wide, more than 5 µm in length and have a length to width ratio of more than 3 to 1.

Risk

means the likelihood of a hazard causing harm to a person.

Note: In this code of practice, Risk relates to illness or disease arising from exposure to Airborne Asbestos Fibres.

Settled Dust Sampling

means the sampling and analysis of settled surface dust to provide an indication of cleanliness following disturbance of ACM. Settled dust sampling does *not* provide an indication of risk to health. Sampling techniques include the use of adhesive tape, wipe or micro-vacuum (using an air sampling pump and filter). Analysis can be by polarised light microscopy (PLM) or transmission electron microscopy (TEM).

Note: *Contamination may occur as a result of deterioration of, or work processes involving ACM.*

Shadow Vacuuming

means the operation of an asbestos vacuum cleaner that is either directly attached to a tool or hand-held by a second worker as close as possible to the source of released asbestos fibres throughout the use of the tool.

Structure

means any construction, whether temporary or permanent.

Note: *A structure includes a bridge, erection, edifice, wall, chimney, fence, earth works, reclamation, ship, floating structure or tunnel.*

Work

means any activity, physical or mental, carried out in the course of a business, industry, commerce, an occupation or a profession.

Worker

means a person who does work, whether or not for reward or recognition.

Note: *'Workers' include persons working under contracts of employment, apprenticeships, traineeships and other contracts of service, but they also include other persons subject to direction by persons with control, such as volunteers and work experience students.*

Workplace

means any place where a person works.

PART 5. INTRODUCTION

As discussed in the Preface to this code of practice, the prohibition on the use of chrysotile asbestos that has applied since 31 December 2003 does not require the removal of asbestos materials that were *in situ* at the time the prohibition took effect. It is only when these materials are replaced that non-asbestos alternatives *must* be used.

Asbestos and asbestos-containing materials (ACM) may still be found *in situ* in workplaces, including:

- buildings and structures;
- plant and equipment;
- friction materials; and
- debris from ACM.

Appendix A lists common examples of ACM in Australia, and **Appendix B** provides further, historical information which is relevant to the types of situations in which ACM may be encountered.

5.1 A hierarchy of controls

The management and control of *in situ* ACM in workplaces, in compliance with the national prohibition, should be based on:

- identifying ACM (see **Part 9** of this code of practice);
- assessing the risks posed by the ACM identified (see **Part 10**); and
- implementing control measures to eliminate the risks arising from ACM and prevent exposure to airborne asbestos fibres (see **Part 11**).

These control measures should reflect the following **hierarchy of controls**:

- 1) Elimination/removal (most preferred);
- 2) Isolation/enclosure/sealing;
- 3) Engineering controls;
- 4) Safe Work Practices (administrative controls); and
- 5) Personal Protective Equipment (PPE) (least preferred).

A combination of these techniques may be required in order to adequately manage ACM.

A key tool in managing asbestos is the development and maintenance of an Asbestos Register (see section 9.3) and an Asbestos Management Plan (see **Part 8**).

PART 6. HEALTH ASPECTS OF EXPOSURE TO AIRBORNE ASBESTOS FIBRES

Asbestos is a known carcinogen. The inhalation of asbestos fibres is known to cause mesothelioma, lung cancer and asbestosis.

Malignant mesothelioma is a cancer of the outer covering of the lung (the pleura) or the abdominal cavity (the peritoneum). It is usually fatal.

Mesothelioma is caused by the inhalation of needle-like asbestos fibres deep into the lungs where they can damage mesothelial cells, potentially resulting in cancer.

The latency period is generally between 35 and 40 years, but it may be longer, and the disease is very difficult to detect prior to the onset of illness.

Mesothelioma was once rare, but its incidence is increasing throughout the industrial world as a result of past exposures to asbestos. Australia has the highest incidence rate in the world.

Lung cancer has been shown to be caused by all types of asbestos. The average latency period of the disease, from the first exposure to asbestos, ranges from 20 to 30 years. Lung cancer symptoms are rarely felt until the disease has developed to an advanced stage.

Asbestosis is a form of lung disease (pneumoconiosis) directly caused by inhaling asbestos fibres, causing a scarring (fibrosis) of the lung tissue which decreases the ability of the lungs to transfer oxygen to the blood. The latency period of asbestosis is generally between 15 and 25 years.

Asbestos poses a risk to health by inhalation whenever asbestos fibres become airborne and people are exposed to these fibres.

Accordingly, exposure should be prevented. The NES of 0.1 fibres/mL should *never* be exceeded, and control measures should be reassessed whenever air monitoring indicates the 'control level' of 0.01 fibres/mL has been reached. The *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)] provides additional information on control levels.

ACM can release asbestos fibres into the air whenever they are disturbed, and especially during the following activities:

- any direct action on ACM, such as drilling, boring, cutting, filing, brushing, grinding, sanding, breaking, smashing or blowing with compressed air (State and Territory legislation prohibits most of these actions, and the relevant laws should be checked before performing *any* activity on ACM);
- the inspection or removal of ACM from workplaces (including vehicles, plant and equipment);
- the maintenance or servicing of materials from vehicles, plant, equipment or workplaces;
- the renovation or demolition of buildings containing ACM.

Non-friable ACM that has been subjected to extensive weathering or deterioration also has a higher potential to release asbestos fibres into the air.

6.1 Health surveillance

Health surveillance is an important part of the monitoring of exposure to hazardous substances, including asbestos, to ensure the health and safety of people in workplaces.

The main purposes are to ensure that control measures are effective and to provide an opportunity to reinforce specific preventive measures and safe work practices.

The need for asbestos-related health surveillance should be determined by an assessment of the potential for exposure to asbestos, in accordance with the requirements of the NOHSC *Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005 (1994)], and consultations with relevant State or Territory OHS authorities to identify any specific health surveillance requirements.

Additional guidance on health surveillance may be obtained from the NOHSC *Guidelines for Health Surveillance* [NOHSC: 7039 (1995)], which set out, in a very practical manner, the minimum requirements for health surveillance for persons engaged in work that may expose them to asbestos or other hazardous substances.

PART 7. RESPONSIBILITIES

Persons with control of premises have a duty of care to:

- develop and implement and maintain an asbestos management plan (see **Part 8** of this code of practice);
- investigate the premises for the presence or possible presence of ACM (see **Part 9**);
- develop and maintain a register of the identified or presumed ACM, including details on their locations, accessibility, condition, risk assessments and control measures (see **Part 9**);
- assess the condition of any ACM that are found and the associated asbestos risks (see **Part 10**);
- develop measures to remove the ACM or otherwise to minimise the risks and prevent exposure to asbestos (see **Part 11**); and
- ensure the control measures are implemented as soon as possible and are maintained as long as the ACM remain in the workplace (see **Part 11**).

State and Territory legislation sets out specific requirements concerning ACM. Before commencing any work that may disturb ACM in the workplace, the relevant legislation should be checked to ensure there will be full compliance with these legal obligations.

7.1 Consultation

Australian Government, State, Territory occupational health and safety legislation requires persons with control of premises to consult with health and safety representatives and other workers at the workplace on occupational health and safety issues. This legislation sets out requirements for establishing these consultative processes.

As with all occupational health and safety issues, if ACM are present or thought to be present in a workplace, there must be full consultation, information-sharing and involvement by everyone in the workplace, including employers, workers, contractors and others, throughout the processes of identifying ACM, developing an asbestos management plan, assessing the risks and developing and implementing control measures.

Persons with control of premises must also consult with any other person who may be affected by the presence of ACM. For example, building owners must consult with their building's occupants and all relevant contractors.

7.2 Awareness training for workers, contractors and others

Information and training must be provided to workers, contractors and others who may come into contact with ACM in a workplace, either directly or indirectly.

Depending on the circumstances this asbestos awareness training may include:

- the purpose of the training;

- the health risks of asbestos;
- the types, uses and likely occurrence of ACM in buildings, plant and/or equipment in the workplace;
- the trainees' roles and responsibilities under the workplace's asbestos management plan (see **Part 8**);
- where the workplace's register of ACM (see **Part 9**) is located and how it can be accessed;
- the timetable for removal of ACM from the workplace;
- the processes and procedures to be followed to prevent exposure, including exposure from any accidental release of asbestos dust into the workplace;
- where applicable, the correct use of maintenance and control measures, protective equipment and work methods to minimise the risks from asbestos, limit the exposure of workers and limit the spread of asbestos fibres outside any asbestos work area;
- the NES and control levels for asbestos; and
- the purpose of any air monitoring or health surveillance that may occur.

PART 8. DEVELOPMENT OF AN ASBESTOS MANAGEMENT PLAN

The purpose of an asbestos management plan is to help persons with control of premises to comply with the asbestos prohibition and prevent exposure to airborne asbestos fibres while ACM remain in the workplace.

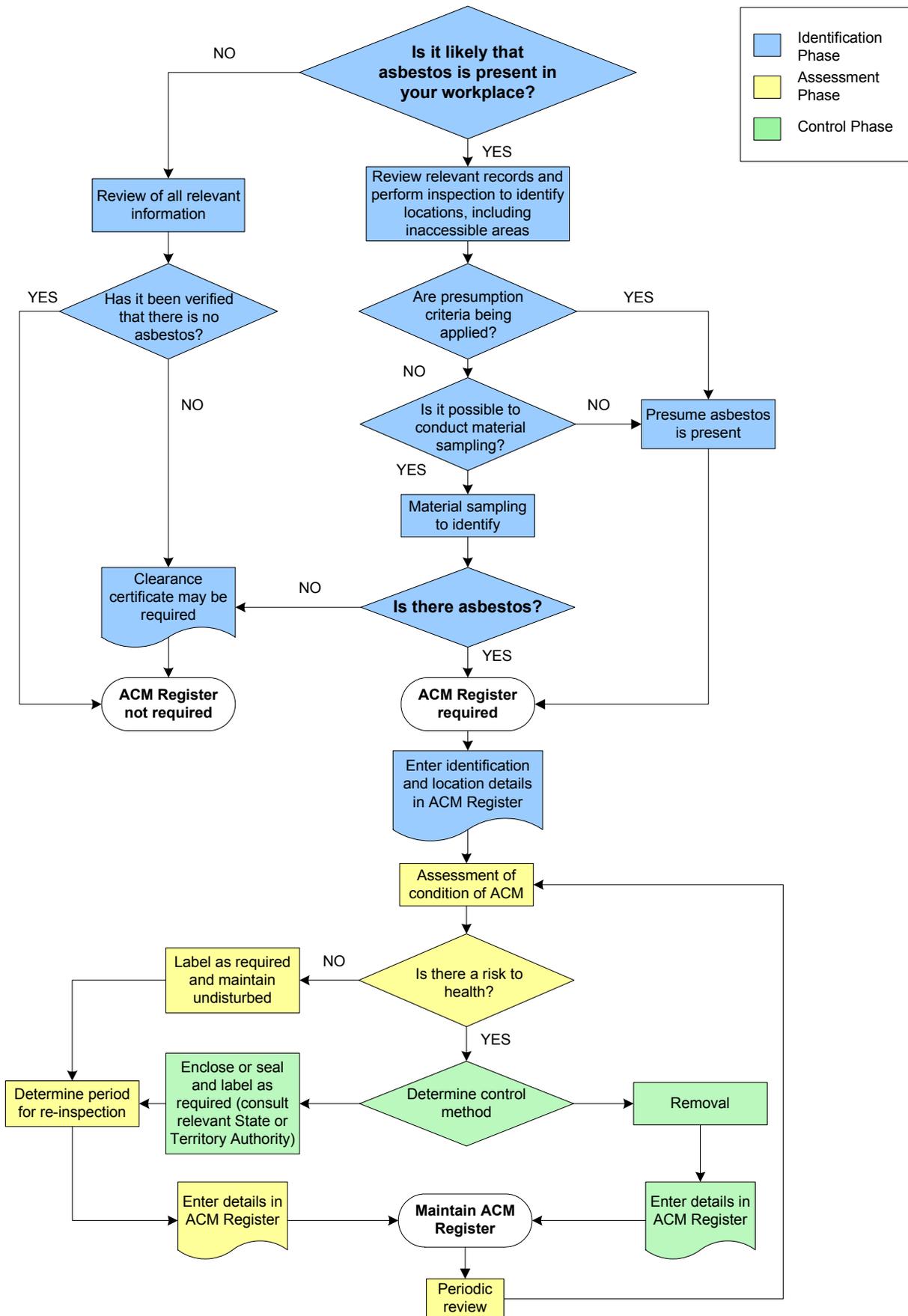
8.1 General principles

The following general principles must be applied in developing an asbestos management plan:

- The ultimate goal is for all workplaces to be free of ACM. Accordingly, consideration should be given to the removal of ACM during renovation, refurbishment and/or maintenance, where practicable, in preference to other control measures such as enclosure, encapsulation or sealing.
- Reasonable steps must be taken to label all identified ACM. Where ACM are identified or presumed, the locations must be recorded in a register of ACM (see **Part 9**).
- A risk assessment must be conducted for all identified or presumed ACM (see **Part 10**).
- Control measures must be established to prevent exposure to airborne asbestos fibres and should take into account the results of risk assessments conducted for the identified or presumed ACM (see **Part 11**).
- If ACM are identified or presumed, there must be full consultation, involvement and information sharing during each step of the development of the asbestos management plan – i.e. during the identification, risk assessment and establishment of control measures (see **Part 7**).
- The identification of ACM and associated risk assessments should only be undertaken by competent persons.
- All workers and contractors on premises where ACM are present or presumed to be present, and all other persons who may be exposed to ACM as a result of being on the premises, must be provided with full information on the occupational health and safety consequences of exposure to asbestos and appropriate control measures. The provision of this information should be recorded.

Figure 1 summarises how these general principles should be applied in the workplace.

Figure 1. General principles of an asbestos management plan



8.2 Contents

The asbestos management plan should be broad-ranging, and should include the following information components:

- the workplace's register of ACM (see section 9.3 of **Part 9**);
- details of any maintenance or service work on the ACM, including:
 - the company who is performing, or performed, the work;
 - the date/s the maintenance or service work was undertaken;
 - the scope of work undertaken; and
 - any clearance certificates.
- mechanisms for providing all relevant people with information about the location, type and condition of the ACM, the risks they pose and the control measures adopted to eliminate or minimise these risks;
- decisions about management options (i.e. to maintain the ACM or replace them with non-asbestos alternatives), including the reasons for these decisions;
- a timetable for action, including priorities and date(s) for reviewing the risk assessment(s) and specific circumstances and activities that may impact timings (i.e. plant shut-down periods);
- monitoring arrangements;
- the responsibilities of all persons involved and the sections of the plan they are responsible for;
- training arrangements for workers and contractors;
- a procedure for reviewing and updating the management plan and the register of ACM, including a timetable; and
- safe work methods.

The asbestos management plan should be clear and unambiguous.

It should set out the aims of the plan, what is going to be done, when it's going to be done and how it is going to be done.

There should be clear lines of responsibility, with each person involved understanding their roles and responsibilities.

Relevant Australian Government, State or Territory OHS legislation should be checked for further information on individual obligations relevant to the management plan.

8.3 Reviews of the asbestos management plan

The asbestos management plan should be reviewed whenever the register of ACM is reviewed (see section 9.3.1 of **Part 9**).

These reviews should critically reassess all asbestos management processes and their effectiveness in:

- preventing exposure to airborne asbestos fibres;
- controlling maintenance workers and contractors;
- highlighting the need for action to maintain or remove ACM;
- raising awareness among all workers; and
- maintaining the accuracy of the register of ACM.

PART 9. IDENTIFICATION OF ACM IN THE WORKPLACE

Persons with control of premises must ensure all ACM in their workplaces are identified, as far as practicable.

More specifically, there is a need to:

- identify the locations of all ACM and determine whether any inaccessible areas are likely to contain ACM; and
- identify the types (e.g. asbestos cement sheet, asbestos lagging on pipes and flues, ACM gaskets in plant or machinery) and condition (i.e. damaged or intact) of ACM.

Only persons competent in the identification of ACM are permitted to carry out these tasks.

Appendix A lists common examples of ACM in Australian workplaces. It is obvious from this list that asbestos is commonly found not only in the buildings and structures of premises but also in plant, gaskets, exhausts, brakes, insulation around ovens, etc. Even in recently constructed buildings and structures, which may themselves generally be regarded as free of ACM, there is a potential for second-hand plant and other installed items to have asbestos components.

Some State and Territory OHS authorities require a clearance certificate to be obtained to certify that ACM is *not* present, regardless of the age of the building, structure, plant or equipment. Your State or Territory OHS authority should be consulted about this requirement.

The minimum respiratory protective equipment to be worn when conducting an inspection of ACM is a class P2 half face respirator, but a risk assessment may show additional personal protective equipment (PPE), including higher-level respiratory protective equipment, is required. This is particularly important when a person is entering areas where friable ACM may not be immediately visible, such as a ceiling cavity where sprayed asbestos insulation materials may be present. The use of disposable coveralls should also be considered in these circumstances (see section 11.7 of **Part 11** and **Appendix C**).

Care should be taken not to disturb any materials suspected of containing asbestos, except for the purposes of sampling.

The presence or absence of asbestos in a material cannot be definitively determined without the aid of a microscope or a similar visual aid.

If reliable information such as a manufacturers warning label or the results of material sampling indicates that asbestos is present in a material, the precautions outlined later in this code should be followed.

If the person with control is uncertain about whether a material contains asbestos, they should either arrange for a sample to be taken for analysis (see section 9.1) or apply the presumption criteria (see section 9.2).

9.1 Material sampling and analysis

It is important that samples of materials suspected of containing asbestos are taken only by competent persons and are analysed only by accredited laboratories.

The sample should be representative of the suspected ACM (e.g. for the walls of multi-storey buildings, at least one sample should be taken on each floor). If there are any variations in the appearance, texture or colour of the material, additional samples should be taken.

The samples should be adequately labelled to enable identification of the address and specific location from which the material was sampled and should include the date of sampling and the batch identification number.

Where necessary, any damage caused by the sampling of a suspected ACM should be repaired without causing further disturbance to the ACM.

If there are inaccessible areas that are likely to contain ACM, the person with control should *presume* that asbestos is present (see section 9.2).

9.2 Presuming that materials contain asbestos

Rather than taking samples to determine whether a material contains asbestos, the person with control may simply *presume* the material contains asbestos.

Once such a presumption has been made, the material must be treated as an ACM, with work practices and disposal criteria as required for the presence of asbestos, until the material is removed or testing has confirmed that it does not, in fact, contain asbestos.

The list of common ACM in **0** may be used as an aid in determining which materials, if any, may be presumed to contain asbestos.

As indicated above, if there are inaccessible areas that are likely to contain ACM the person with control should presume that asbestos is present in these areas. For example, it may be reasonable to presume that wall cavities or ceiling spaces contain ACM such as asbestos insulation.

It may also be more cost effective in other circumstances to apply the presumption instead of sampling and analysing suspected ACM, as would otherwise be required to rule out the presence of asbestos.

The workplace's register of ACM must state all the presumptions made about materials in the workplace.

This can be done through a simple, generic statement relating to all occurrences of a specific type of product or situation. For example, a generic presumption statement in the register might read, 'All wall cavities are presumed to contain asbestos' or 'All underground conduits are presumed to contain asbestos.'

9.3 Register of ACM

Persons with control of premises must keep an accurate register of ACM on the premises.

The register should contain the following information:

- Identification:
 - the date(s) on which the inspection/identification was made and details on the competent person(s) who carried out the inspection/identification;
 - details on the locations, types (i.e. friable or non-friable) and condition (i.e. damaged or intact) of any ACM identified on the premises, including ACM in items of plant and equipment, and the type of asbestos involved (i.e. blue, brown or white);
 - details on any material presumed to contain asbestos (see section 9.2);
 - any inaccessible areas that are likely to contain ACM (see section 9.2); and
 - the results of any analysis that has confirmed a material in the workplace is or is not an ACM.
- Risk assessment (see **Part 10**):
 - the date when the risk assessment was made, and details on the competent person(s) who carried out the assessment;
 - the findings and conclusions of the risk assessment, including any reviews or revisions of the risk assessment; and
 - the results of any air monitoring for airborne asbestos fibres and an assessment of these results.
- Control measures (see **Part 11**):
 - the control measures recommended and decided upon as a result of the risk assessment;
 - any maintenance or service work on an ACM, including the company or persons involved, the date and scope of the work undertaken and details on clearance certificates.

The person with control should ensure workers at the workplace are informed about the register of ACM. Before any work that may expose persons to airborne asbestos fibres is performed, the register should be made readily accessible to:

- workers and their representatives;
- any other employers within the premises;
- any person removing ACM;

- any person engaged to perform work that may disturb ACM, including presumed ACM (see section 9.2); and
- any other person who might be exposed.

9.3.1 Reviewing the register of ACM

The register of ACM, including any risk assessments, should be reviewed every 12 months or earlier where:

- a risk assessment indicates the need for reassessment (see section 10.1); or
- any ACM has been disturbed or removed.

A visual inspection of identified ACM should be undertaken as part of any review.

9.4 Identifying ACM at domestic premises

All contracting businesses that perform work which may involve exposure to asbestos, including work at domestic premises, should establish an asbestos management plan for the work they are contracted to carry out (see **Part 8**).

Although many domestic premises contain ACM, they are unlikely to have a register of ACM for reference.

Accordingly, before commencing any work in domestic premises precautions should be taken to identify the likelihood that ACM are present. Although particular caution needs to be taken when working on buildings built prior to 1990, recycled materials in later buildings may also contain asbestos.

The list of common ACM in Appendix A includes many materials found in domestic premises.

Work at domestic premises that may involve exposure to ACM includes:

- demolition and renovation;
- electrical maintenance or installation, including work on electrical meter boards;
- the maintenance or installation of walls, roofing, ceilings or flooring; and
- plumbing maintenance or installation.

If there are any known or suspected ACM on the premises the owner, occupier and/or resident should be informed. Before work continues, the presence of asbestos should either be confirmed or ruled out through sampling and analysis (see section 9.1) or presumed (see section 9.2).

For confirmed or presumed ACM the work should then proceed only in accordance with the risk assessment and control measures outlined in **Part 10 and Part 11** of this code of practice. The NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002 (2005)] should also be referred to if removal is identified as the best control measure.

The owner, occupier and/or residents of the premises should be informed of the nature of any work to be undertaken and the reasons for the precautions.

If ACM remain is to remain *in situ*, the owner of the premises should be provided with a report outlining the location of the ACM and any work carried out on the ACM.

9.5 Warning signs and labels

All warning signs and labels should comply with Australian Standard 1319 *Safety Signs for the Occupational Environment*.

Examples of warning signs and labels are shown in **Figure 2**.

9.5.1 Warning signs

Any areas of a workplace which contain ACM, including plant, equipment and components, should be signposted with warning signs to ensure that the asbestos is not unknowingly disturbed without the correct precautions being taken.

These signs should be placed at all of the main entrances to the work areas where asbestos is present.

9.5.2 Labels

All identified or presumed ACM — or their enclosures if the ACM are inaccessible — should be clearly labelled.

In conjunction with warning signs and the register of ACM (see section 9.3), these labels should warn people of the presence of ACM.

A competent person should determine the number and positions of the labels required.

The location of labels should be consistent with the location of the ACM as outlined by information in the register of ACM.

Labels used for this purpose must identify the material as containing asbestos.

If a risk assessment suggests an ACM might be disturbed or persons might be exposed and it is not practical to label the ACM (e.g. floor tiles or a friable ACM such as lagging), a prominent warning sign, specifying the ACM, should be posted in its immediate vicinity.

For example, if floor tiles have been identified as containing asbestos, an appropriate warning sign, displayed on an adjacent wall, might read, 'WARNING. FLOOR TILES CONTAIN ASBESTOS. DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT.'

Note: The examples of warning signs and labels in **Figure 2** provide only an indication of the words that may be used to alert persons to the presence of ACM and asbestos hazards. *The wording is not mandatory.* Other warning signs and labels may be used, provided they meet the requirements of AS 1319.

Figure 2 – Examples of warning signs and labels



PART 10. RISK ASSESSMENT

If ACM are identified in a workplace, the person with control must ensure the associated risks are assessed, in consultation with workers and/or their representatives.

Where the risk assessment relates to repetitive work practices in the one location, such as the inspection and removal of friction products in vehicles, the risk assessment should relate to the overall work practice, taking account of the repetitive nature of the task.

The purpose of this risk assessment is to allow informed decisions to be made about control measures, induction and training, air monitoring and health surveillance requirements.

Only competent persons should perform risk assessments or any subsequent reviews or revisions of risk assessments.

Decisions about control measures to protect workers will depend on the assessed risks to health.

The risk assessment should take account of the identification information in the register of ACM, including:

- the condition of the ACM (e.g. whether they are friable or bonded and stable, and whether they liable to damage or deterioration);
- the likelihood of exposure;
- whether the nature or location of any work to be carried out is likely to disturb the ACM; and

The results from **air monitoring** by a competent person may assist in assessing the risks. The need for air monitoring will depend on the particular circumstances. For further information on air monitoring procedures, refer to the NOHSC *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC: 3003 (2005)].

The results of the risk assessment should be documented in the register of ACM (see section 9.3 of **Part 9**), which will be included in the asbestos management plan (see **Part 8**).

10.1 Reviewing risk assessments

Risk assessments should be **reviewed** regularly in accordance with Australian Government, State and Territory legislative requirements.

More specifically, the person with control, in consultation with workers and/or their representatives, should review the risk assessment, and any measures adopted to control the risks, whenever:

- there is evidence that the risk assessment is no longer valid;
- there is evidence that any control measures are not effective;
- a significant change is proposed for the workplace or for work practices or procedures relevant to the risk assessment;

- there is a change in the condition of the ACM; or
- the ACM have been removed, enclosed or sealed.

PART 11. CONTROL MEASURES

11.1 Implementing the asbestos management plan

Notwithstanding the ultimate goal of a workplace free of ACM, priorities should be set for effective control of the risks in the short term.

Control measures should be implemented in accordance with the hierarchy of controls shown in **Part 5** of this code of practice, with elimination of the ACM being the first choice and PPE the least preferred approach.

The NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)] should be referred to whenever removal is identified as the best control measure.

The control measures required for identified and presumed ACM should be determined from the risk assessment and should follow the following principles:

- If the ACM are friable and not in a stable condition, and there is a risk to health from exposure, they should be removed by an asbestos removalist as soon as practicable.
- If the ACM are friable but are in a stable condition and are accessible, serious consideration should be given to their removal. If removal is not immediately practicable, short-term control measures, such as sealing and enclosure, may be able to be used until removal is possible, although some State and Territory OHS authorities do not permit the sealing or encapsulation of ACM.
- If the ACM are not friable and are in a good, stable condition, minimising disturbance and encapsulation may be appropriate controls. Again, however, some State and Territory authorities do not permit sealing or encapsulation, so the relevant authority should be consulted before these measures are considered.
- Any remaining ACM should be clearly labelled, where possible, and regularly inspected to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.
- ACM need to be removed before demolition, partial demolition, renovation or refurbishment if they are likely to be disturbed by those works, in accordance with the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002 (2005)].

If a material is proven or presumed to contain asbestos, it is essential to determine whether maintenance or service work can be done without disturbing the ACM.

For example, rather than drilling a hole through an AC sheeting wall to install electrical wiring, the wiring might be able to be routed over the wall. Similarly, if a ventilation flue or pipe has to be installed in an AC ceiling or roof, an alternative might be to run the flue or pipe through a non-asbestos wall.

Some States and Territories do not allow certain maintenance and service tasks to be carried out if identified or presumed ACM are present. The relevant State or Territory legislation should be checked to ensure that any proposed tasks are not prohibited.

11.2 Controlling maintenance work

The person with control should develop a system to control any maintenance work within a workplace that contains ACM.

Particular attention should be paid to controlling work activities that affect inaccessible areas listed in the register of ACM, such as wall cavities and ceiling spaces.

The control system may take one of several forms, depending on the size and complexity of the organisation. For example,

- smaller organisations may prefer in-house controls, with one person being nominated to control all work carried out by maintenance workers and all contractors; and
- formal, written safe systems of work, incorporating permits-to-work, may be used to control both maintenance workers and contractors.

Whatever the method used, it should be effective in making all maintenance workers and contractors aware of the presence of ACM and preventing any work activity that might expose them, or others nearby, to airborne asbestos fibres.

There should be full consultation concerning any maintenance and service work that might disturb ACM. All people performing the work should receive all necessary training, and the work should be documented and supervised.

The asbestos work area must be isolated and access restricted to essential workers only. Barriers and warning signs may be required.

Personal protective equipment needs to be selected to prevent the contamination of clothing and provide adequate respiratory protection. The level of respiratory protection required will depend on the risk assessment. Respirators should be selected, used and maintained according to the relevant Australian Standard (see **Appendix C**).

Thorough decontamination of PPE, equipment and the asbestos work area should be carried out at the completion of the tasks. Section 11.9.3 provides more information on personal decontamination procedures.

Under the asbestos prohibition, wherever an asbestos component requires replacement the replacement product must be non-asbestos. It is illegal to reinstall or reuse any ACM.

All ACM must be disposed of correctly, in accordance with State and Territory laws (see section 11.11.3). PPE used during maintenance and service work must also be disposed of in this way.

11.3 Types of maintenance and service work likely to disturb ACM

While the ultimate goal is for all workplaces to be free of ACM, in some limited circumstances control measures other than removal may be necessary.

As already indicated, some States and Territories do not allow certain maintenance and service tasks to be carried out if ACM are present. The relevant State or Territory legislation should be checked to ensure that any proposed tasks are not prohibited.

The following typical maintenance and service tasks are likely to disturb ACM, and may be performed, only after a risk assessment has been conducted and only after control measures have been implemented to prevent exposure to airborne asbestos fibres:

- drilling asbestos cement products (see **Appendix D**);
- sealing, painting, coating and cleaning asbestos cement products (see **Appendix E**);
- cleaning leaf litter from the gutters of asbestos cement roofs (see **Appendix F**);
- replacing cabling in asbestos cement conduits or boxes (see **Appendix G**);
- working on electrical mounting boards (switchboards) containing asbestos (see **Appendix H**); and
- inspections of asbestos friction materials or seals (see **Appendix I**).

If other maintenance or service tasks are assessed by a competent person as involving similar levels of risk, they, too, may be performed only after the risks for that task have been assessed and appropriate control measures implemented.

11.4 Preparation for maintenance and service work

This is an important part of any task potentially disturbing ACM.

It is essential to have the correct tools, personal protective equipment, decontamination materials, barricades, warning signs, etc ready at the workplace before any work commences, and to minimise the number of people in the area.

11.4.1 Establishing barriers

The asbestos work area should be clearly defined to ensure that non-essential people do not enter and warn persons that asbestos work is being carried out (e.g. through the placement of barriers and signs or other warning devices).

All barriers and warning signs should remain in place until a clearance to re-occupy has been granted (see section 11.10 of this code of practice).

Potential entry points to the asbestos work area should be signposted or labelled in accordance with AS1319-1994 *Safety Signs for the Occupational Environment*. **Figure 2** provides examples of asbestos warning labels and signs.

These signs should be weatherproof, constructed of light-weight material and adequately secured.

Tape can be used as a barrier to define an asbestos work area for some types of asbestos work of short duration. If a sign is not feasible, tape with the words 'asbestos hazard' along its length can be used instead to communicate the hazard.

In determining the distance between barriers and the asbestos work area the risk assessment should take account of:

- whether the ACM are friable or non-friable;
- activity around the asbestos work area (other workers, visitors, the public, etc);
- the work methods used (see section 11.5);
- any existing barriers (walls, doors, etc);
- the amount of work to be done; and
- the type of barrier used (e.g. boarding or tape).

11.4.2 *Preparing the work area*

Before commencing the task plastic sheeting may need to be placed on the floor and any other surfaces that may become contaminated with asbestos dust. At a minimum, heavy-duty 200 µm thick plastic sheeting should be used for this purpose.

Wet wiping or vacuuming of the surface that is to be worked on may also be necessary before commencing the task, to minimise the disturbance of asbestos fibres on the surface (see sections 11.8 and 11.9.1).

11.5 Safe maintenance and service work techniques

Wherever possible, dry ACM should not be worked on.

Techniques that prevent or minimise the generation of airborne asbestos fibres include:

- the wetting of ACM using surfactants or wetting agents, such as detergent water;
- the use of thickened substances, pastes and gels, such as hair gel and shaving cream, to cover the surfaces of ACM that are being worked on (these substances should be compatible with the conditions of use, including the temperature, and should not pose a risk to health);
- the use of shadow vacuuming; and
- performing the task in a controlled environment (i.e. a ventilated enclosure).

When selecting the best technique, the work should first be assessed for any electrical hazards that might result from the use of water or other liquids. If an electrical hazard exists, primary consideration should be given to removing the ACM, rather than relying on dry work methods.

11.6 Tools

It is important to select the correct tools to minimise the generation of airborne asbestos fibres.

Manually operated (non-powered) hand tools should be used wherever possible. If they will not provide sufficient physical force to perform the required operation, low-speed battery-powered tools which are able to be used in conjunction with wet methods for dust control are preferred.

Battery-powered tools should be fitted with a local exhaust ventilation (LEV) dust control hood wherever possible. If a LEV dust control hood cannot be attached and other dust control methods – such as pastes and gels – are unsuitable then shadow vacuuming techniques should be used (requirements for asbestos vacuum cleaners are set out in section 11.8)

Appendix D and **Appendix H** provide guidance on safe work methods for drilling ACM.

Some State and Territory OHS authorities prohibit the use of power tools in certain circumstances, and the relevant authority should be consulted before power tools are used.

At the end of the asbestos maintenance or service work, all tools used should be:

- Decontaminated (i.e. fully dismantled and cleaned under controlled conditions as described in section 11.9.2);
- Placed in sealed containers (and used only for asbestos work); or
- Disposed of as asbestos waste.

Warning: High-speed abrasive power and pneumatic tools such as angle grinders, sanders and saws and high-speed drills *must never* be used.

11.7 Personal protective equipment (PPE)

The risk assessment should determine the need for, and appropriate types and levels of, PPE for the task to be undertaken, including respiratory protection equipment. It is important that personal clothing does not become contaminated with asbestos fibres.

Appendix C provides more detailed information on the selection and use of PPE, and section 11.9.3 provides information on personal decontamination.

All respiratory protection equipment should meet the requirements of AS/NZS 1716-2003 *Respiratory Protective Devices*.

In general, the selection of suitable respiratory protective equipment depends on the nature of the asbestos work, the probable maximum concentrations of asbestos fibres that would be encountered in this work and any personal characteristics of the wearer that may affect the facial fit of the respirator (e.g. facial hair and glasses). All respirators should be worn in accordance with the manufacturer's instructions. AS/NZS 1715-1994 *Selection, Use and Maintenance of Respiratory Protective Devices* provides further advice on these matters.

More comprehensive advice on the selection of respirators for particular tasks is provided in the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002 (2005)].

11.8 Asbestos vacuum cleaners

Asbestos vacuum cleaners should comply with the requirements of AS 3544-1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health* and AS 4260-1997 *High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*.

Warning: Household vacuum cleaners *must never* be used where asbestos is or may be present, even if they have a HEPA filter.

Procedures should be established for the general maintenance of asbestos vacuum cleaners in a controlled environment. They should be cleaned externally with a wet cloth after each task, the hose and attachments should be stored in a labelled impervious bag and a cap should be placed over the opening to the asbestos vacuum cleaner when the attachments are removed.

PPE should be worn whenever an asbestos vacuum cleaner is opened to change the bag or filter or to perform other maintenance.

The emptying of asbestos vacuum cleaners can be hazardous if the correct procedures are not followed. Asbestos vacuum cleaners should only be emptied by a competent person with the correct PPE, in a controlled environment and in compliance with the manufacturer's instructions.

Whenever possible, asbestos vacuum cleaners should not be hired, as they can be difficult to fully decontaminate.

Hiring may be more viable, however, in some instances, such as when a one-off maintenance task is required for an ACM.

Asbestos vacuum cleaners should be hired only from organisations that provide vacuum cleaners specifically for work with asbestos.

The asbestos vacuum cleaner should be decontaminated, as outlined above, before it is returned. Alternatively, the hire organisation may undertake the decontamination and maintenance of the filters and bags of the asbestos vacuum cleaner itself. In these cases, the asbestos vacuum cleaner should be hired out in a sealed storage container, with instructions that it may be removed from the container only when it is inside the asbestos work area and users are wearing appropriate PPE (see section 11.7). When the minor maintenance work is completed the asbestos vacuum cleaner should be re-sealed in the storage container provided, and the sealed storage container should then be decontaminated, by wet wiping (see section 11.9.1), before it is removed from the asbestos work area and returned to the hire organisation for decontamination and maintenance.

Organisations that hire out asbestos vacuum cleaners should ensure that all their asbestos vacuum cleaners are maintained in good working order and that the hirers are competent in their safe use.

11.9 Decontamination

The type of decontamination required will depend on the type of asbestos (i.e. friable or non-friable); the work method used (see section 11.5), and site conditions

All contaminated materials, including cleaning rags, plastic sheeting and PPE etc, must be disposed of as asbestos waste.

11.9.1 *Workplace decontamination*

Any asbestos dust or debris must be collected in a safe manner and the asbestos work area decontaminated, paying attention to all walls, ledges, fittings and furnishings.

Two types of decontamination procedures may be used: wet and dry decontamination:

Wet decontamination, or **wet wiping**, involves the use of damp rags to wipe down contaminated areas. Cleaning rags should only be used once, although they may be re-folded to expose a clean surface. The rags should be used flat and should not be wadded. If a bucket of water is used, the rags should not be re-wetted in the bucket, as this will contaminate the water. Care should be taken to avoid any potential electrical hazards when using this procedure.

Dry decontamination should be only used where wet methods are not suitable or pose a risk because of other hazards such as electricity or slipping. Dry decontamination procedures include carefully rolling or folding up and sealing plastic sheeting and/or vacuuming the asbestos work area with an asbestos vacuum cleaner. Large pieces of asbestos debris should be wetted and picked up by hand rather than vacuumed.

Whenever the asbestos work area cannot be decontaminated using either the wet or dry method — for example, if there is rough sawn wood that cannot be fully decontaminated by wet wiping or vacuuming — pigmented polyvinyl acetate (PVA) may be used to seal the contaminated sections of the asbestos work area, including any plant or equipment where practicable.

If extensive contamination has occurred, an asbestos removalist should be engaged to perform the decontamination and clearance monitoring may be required (see section 11.10.2). The relevant State or Territory OHS authority should be contacted regarding any licensing requirements.

11.9.2 *Decontamination of equipment and tools*

All tools, equipment and reusable respirators used during the maintenance or service task should be dismantled (where appropriate) and decontaminated, using either the wet or dry decontamination procedures described above, before they are removed from the asbestos work area. The method chosen should depend on its practicality and the presence of any electrical hazards.

If tools and equipment cannot be decontaminated in the asbestos work area, or are to be reused at another asbestos work area, they should be tagged to indicate asbestos contamination and double bagged in asbestos waste bags before being removed from the asbestos work area. This equipment and tools must remain sealed until decontamination or

the commencement of the next asbestos maintenance or service task where the equipment can be taken into the work area and reused under full control conditions.

PPE should be worn when opening the bag to clean or re-use the equipment or tools, and decontamination should only be performed in a controlled environment.

Bags containing asbestos contaminated equipment and tools should be clearly labelled with an appropriate warning statement.

11.9.3 *Personal decontamination*

Personal decontamination must be undertaken each time workers leave the asbestos work area and at the completion of the asbestos maintenance or service work. Personal decontamination should be done within the asbestos work area where re-contamination cannot occur.

Asbestos-contaminated PPE should not be transported outside the asbestos work area except for disposal purposes.

Before work clothes and footwear worn during asbestos work are removed from the asbestos work area for any reason, they should be thoroughly vacuumed with an asbestos vacuum cleaner to remove any asbestos fibres (see section 11.8), and the footwear should also be wet wiped.

Respiratory protective equipment should be used until all contaminated disposable coveralls and clothing has been vacuum cleaned and/or removed and bagged for disposal, and personal washing has been completed.

Any PPE used while carrying out asbestos work must not be taken home.

Personal hygiene and careful washing are essential. Particular attention should be paid to the hands, fingernails, face and head.

A competent person may decide, on the basis of a risk assessment, that the following personal decontamination procedure can safely be used:

- First, all visible asbestos dust/residue is removed from protective clothing, using an asbestos vacuum cleaner and/or wet wiping.
- Second, the disposable coveralls are taken off (while still using a respirator), placed in an asbestos waste bag and disposed of as asbestos waste (see section 11.2).
- Third, clothing and footwear worn during the asbestos work should be vacuumed using an asbestos vacuum cleaner, and the footwear should also be wet wiped.
- Disposable respirators should then be discarded as asbestos waste. Non-disposable respirators should be removed and thoroughly cleaned.
- After removing the respirator, workers should wash their head, face and hands, paying particular attention to their fingernails.

11.10 Clearance inspections

The need for clearance monitoring should be assessed as part of planning and undertaking any maintenance work involving ACM.

Clearance to re-occupy an asbestos work area is determined by a thorough clearance inspection.

The clearance inspection must be conducted by a competent person.

All barriers and warning signs (see section 11.4.1) should remain in place until the clearance to re-occupy has been granted.

11.10.1 Visual inspections

Visual inspections involve an examination of the asbestos work area, prior to the resumption of normal work in the area by unprotected personnel, to confirm that the asbestos maintenance work has been completed and there is no visual evidence of dust and debris.

Particular attention should be paid to ledges, the tops of air-conditioning ducts, cracks in the floor, folds in plastic sheeting and crevices or other areas which may have been overlooked during the initial clean-up.

11.10.2 Clearance monitoring

Monitoring results and experience with similar maintenance work in the past will assist in determining whether clearance monitoring will be required.

Clearance monitoring should be undertaken by competent person, independent to the person responsible for the asbestos work, after cleaning has been completed and the area dried.

Air samples should be taken in the asbestos work area. For jobs involving an enclosed area, this should be done within the enclosed area, following the completion of the work but prior to the removal of the enclosure, and again after the removal of the enclosure (for a final clearance inspection).

The maintenance work should not be considered completed until an airborne fibre level of less than 0.01 fibres/mL has been achieved, as determined by the clearance monitoring.

11.10.3 Settled dust sampling

Settled dust sampling may be considered as part of the clearance to reoccupy an asbestos work area.

Settled dust sampling can, however, only provide an *indication* of cleanliness following disturbance of ACM.

Settled dust sampling should *not* be used as an indicator of risk to health.

Any settled dust sampling requirements should be determined by the competent person undertaking the visual inspection.

11.11 Waste removal and disposal

Asbestos waste, including contaminated PPE and cleaning materials (e.g., cleaning rags and plastic sheeting used to cover surfaces in the asbestos work area), should always be removed and disposed of by a competent person.

It may be collected and disposed of in asbestos waste bags (see section 11.11.1) and/or in a solid, sealable asbestos waste container, such as a bin or drum (see section 11.11.2), if storage is required.

Controlled wetting of asbestos waste should be used to reduce the possibility of dust emissions during the bagging or containment of the waste.

11.11.1 Waste bags

Asbestos waste should be collected in heavy-duty 200 µm (minimum thickness) polythene bags that are no more than 1,200 mm long and 900 mm wide.

The bags should be labelled with an appropriate warning, clearly stating that they contain asbestos and that dust creation and inhalation should be avoided.

An example of a warning statement which might be used is:

*CAUTION – ASBESTOS
DO NOT DAMAGE OR OPEN BAG
DO NOT INHALE DUST
CANCER AND LUNG DISEASE HAZARD*

Controlled wetting of the waste should be employed to reduce asbestos dust emissions during bag sealing or any subsequent rupture of a bag.

Only unused bags should be used, and bags marked for asbestos waste should not be used for any other purpose.

Hard and sharp asbestos waste requires preliminary sealing or a protective covering before it is placed in the waste bags, to minimise the risk of damage to the bags.

In order to further minimise the risk of a bag's tearing or splitting, and also to assist in manual handling, asbestos waste bags should not be filled more than half full and excess air should be gently evacuated from the waste bag, in a manner that does not cause the release of dust.

The bags should then be twisted tightly, folded over and the neck secured in the folded position with adhesive tape or any other effective method.

The external surface of each bag should be cleaned to remove any adhering dust before the bag is removed from the asbestos work area.

All asbestos waste should be double bagged outside the work area immediately following the decontamination process.

If asbestos waste cannot be disposed of immediately (e.g. because of volume requirements for disposal, or if several tasks are to be completed on consecutive days), the asbestos waste bags should be stored in a solid waste drum or bin, which should be secured upon the completion of each day's work so that unauthorised access is prevented.

11.11.2 Waste drums and bins

All drums or bins used for the storage and disposal of asbestos waste should be in a good condition, with lids and rims in good working order, and free of hazardous residues.

The drums or bins should be lined with plastic (minimum 200 µm thickness), and labels warning of the asbestos waste should be placed on the top and side of each drum or bin, with the words, 'Danger: asbestos. Do not break seal' or a similar warning (see section 9.5).

If the drum or bin is to be re-used, the asbestos waste must be packed and sealed so that when the drum or bin is emptied there is no residual asbestos contamination.

Controlled wetting of the waste should be used to reduce asbestos dust emissions.

Where possible, the drums or bins should be placed in the asbestos work area before work on ACM begins and should remain there until the clearance inspection has been completed. At the completion of the maintenance or service work the drums or bins should have their rims sealed and their outer surfaces wet wiped and inspected as part of the clearance procedure (see section 11.10) before they are removed from the asbestos work area.

If it is not possible to locate the drums or bins inside the asbestos work area, they should be located as close to the work area as possible. Routes for moving the waste from the asbestos work area to the waste drums or bins should be designated prior to the commencement of each task. A competent person should decide the best means of moving the waste through the building. In occupied buildings, all movement of bags from the work area to the waste drums or bins should be performed out of normal working hours.

Drums or bins used to store asbestos waste should be stored in a secure location when they are not in use.

Drums or bins should not be moved manually once they have been filled. Trolleys or drum lifters should be used.

11.11.3 Disposal

All asbestos waste should be removed from the workplace by a competent person and transported and disposed of in accordance with all relevant State or Territory legislation and guidelines for the transport and disposal of asbestos waste.

In some States and Territories a licence from environmental and/or waste disposal authorities is required for the transport and disposal of asbestos waste.

Further information on the transport and disposal of asbestos waste, including licensing requirements and designated asbestos waste dumps, may be obtained from local councils or the relevant environmental protection authority or waste disposal authority.

APPENDIXES

APPENDIX A. EXAMPLES OF ASBESTOS-CONTAINING MATERIALS

(This is not an exhaustive list)

A

Air-conditioning ducts: exterior or interior acoustic and thermal insulation	Asbestos cement sheet internal walls and ceilings
Arc shields in lift motor rooms or large electrical cabinets	Asbestos cement sheet underlays for vinyl
Asbestos-based plastics products - as electrical insulates and acid-resistant compositions or aircraft seat	Asbestos cement storm drain pipes
Asbestos ceiling tiles	Asbestos cement water pipes (usually underground)
Asbestos cement conduit	Asbestos-containing laminates (e.g. formica) used where heat resistance is required, e.g. ships
Asbestos cement electrical fuse boards	Asbestos-containing pegboard
Asbestos cement external roofs and walls	Asbestos felts
Asbestos Cement in the use of form work when pouring concrete	Asbestos marine board, e.g. marinate
Asbestos cement internal flues and downpipes	Asbestos mattresses used for covering hot equipment in power stations
Asbestos cement moulded products such as gutters, ridge cappings, gas meter covers, cable troughs and covers	Asbestos paper used variously for insulation, filtering and production of fire resistant laminates
Asbestos cement pieces for packing spaces between floor joists and piers	Asbestos roof tiles
Asbestos cement (underground) pits, as used for traffic control wiring, telecommunications cabling, etc	Asbestos textiles
Asbestos cement render, plaster, mortar and coursework	Asbestos textile gussets in air-conditioning ducting systems
Asbestos cement sheet	Asbestos yarn
Asbestos cement sheet behind ceramic tiles	Autoclave / steriliser insulation
Asbestos cement sheet internal over exhaust canopies such as ovens, fume cupboards, etc.	

B

Bitumen-based water proofing such as malthoid, typically on roofs and floors but also in brickwork

Bituminous adhesives and sealants

Boiler gaskets

Boiler insulation, slabs and wet mix

Brake disc pads

Brake linings

C

Cable penetration insulation bags (typically Telecom)

Calorifier insulation

Car body filters (not common)

Caulking compounds, sealant and adhesives

Cement render

Chrysotile wicks in kerosene heaters

Clutch faces

Compressed asbestos cement panels for flooring, typically verandas, bathrooms and steps for demountable buildings

Compressed asbestos fibres (CAF) used in brakes and gaskets for plant and automobiles

D

Door seals on ovens

E

Electric heat banks - block insulation

Electric hot water services - normally not asbestos but some millboard could be present

Electric light fittings, high wattage, insulation around fitting (and bituminised)

Electrical switchboards – see Pitch-based

Exhausts on vehicles

F

Filler in acetylene gas cylinders

Filters - beverage; wine filtration

Fire blankets

Fire curtains

Fire door insulation

Fire-rated wall rendering containing asbestos with mortar

Fire-resistant plaster board, typically on ships

Fire-retardant material on steel work supporting reactors on columns in refineries in the chemical industry

Flexible hoses

Floor vinyl sheets

Floor vinyl tiles

Fuse blankets and ceramic fuses in switchboards

G

Galbestos™ roofing materials (decorative coating on metal roof for sound proofing)

Gaskets - chemicals, refineries

Gaskets - general

Gauze mats in laboratories / chemical refineries

Gloves - asbestos

H

Hairdryers - insulation around heating elements

Header (manifold) insulation

I

Insulation blocks

Insulation in electric reheat units for air-conditioner systems

L

Laboratory bench tops

Laboratory fume cupboard panels

Laboratory ovens - wall insulation

Lagged exhaust pipes on emergency power generators

Lagging in penetrations in fireproof walls

Lifts shafts - asbestos cement panels lining the shaft at the opening of each floor, and asbestos packing around penetrations

Limpet asbestos spray insulation

Locomotives - steam; lagging on boilers, steam lines, steam dome and gaskets

M

Mastics

Millboard between heating unit and wall

Millboard lining of switchboxes

Mortar

P

Packing materials for gauges, valves, etc., can be square packing, rope or loose fibre

Packing material on window anchorage points in high rise buildings

Paint, typically industrial epoxy paints

Penetrations through concrete slabs in high rise buildings

Pipe insulation including moulded sections, water-mix type, rope braid and sheet

Pitch-based (e.g. zelemite, ausbestos, lebah) electrical switchboard

Plaster and plaster cornice adhesives

R

Refractory linings

Refractory tiles

Rubber articles - extent of usage unknown

S

Sealant between floor slab and wall, usually in boiler rooms, risers or lift shafts

Sealant or mastik on windows

Sealants and mastics in airconditioning ducting joints

Spackle or plasterboard wall jointing compounds

Sprayed insulation - acoustic wall and ceiling

Sprayed insulation - beams and ceiling slabs

Sprayed insulation - fire retardant sprayed on nut internally, for bolts holding external building wall panels

Stoves - old domestic type; wall insulation

T

Tape and rope - lagging and jointing

Tapered ends of pipe lagging, where lagging is not necessarily asbestos

Tilux sheeting in place of ceramic tiles in bathrooms

Trailing cable under lift cabins

Trains - country - guards vans - millboard between heater and wall

Trains - Harris cars - sprayed asbestos between steel shell and laminex

V

Valve, pump, etc. insulation

W

Welding rods

Woven asbestos cable sheath

APPENDIX B. ASBESTOS USE, PRODUCTION AND SURVEILLANCE IN AUSTRALIA

Historical uses of asbestos

Asbestos is the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals.

The most significant types are crocidolite (blue asbestos), amosite (brown or grey asbestos) and chrysotile (white asbestos). Other mineral forms of asbestos include actinolite, anthophyllite and tremolite, but these were not widely used.

As a naturally occurring mineral fibre, asbestos is mined and then broken down from mineral clumps into groups of loose fibres.

Asbestos has excellent fire resistance, insulation properties, fibre strength, durability and flexibility. As a result, it was used in more than 3,000 products, including heat-resistant textiles (cloth, padding and board), asbestos cement products (sheets and pipes), special filters for industrial chemicals, thermal insulation products (pipe and boiler insulation), friction materials (clutch plates, brake linings), gaskets, floor tiles, roofing materials, packing materials, paints and protective paper (see **Appendix A**).

A major historical use was as sprayed thermal insulation on steel beams for fire protection. This sprayed or 'limpet' asbestos poses the greatest health risk, because of its highly friable nature.

Asbestos-containing materials (ACM) may still be encountered throughout public and private buildings and structures, especially those built between the 1950s and the late 1970s to early 1980s. Some uses of ACM continued until 2003, notably in friction materials (brakes) and gaskets.

Asbestos production and use in Australia

In Australia, more chrysotile than amphibole asbestos was mined until 1939.

With the commencement of mining at Wittenoom in Western Australia in 1937, crocidolite dominated production until the final closure of this mine in 1966.

New South Wales, the first State to mine asbestos, produced the largest tonnages of chrysotile (until 1983), as well as smaller quantities of amphibole (until 1949).

Australian asbestos production and exports declined after the closure of the Wittenoom mine, and imports of chrysotile also started to decline. Consumption peaked in about 1975, at 70,000 tonnes/year.

The main sources of raw asbestos imports were Canada (chrysotile) and South Africa (crocidolite and amosite). Australia also imported many manufactured asbestos products, including asbestos cement articles, asbestos yarn, cord and fabric, asbestos joint and millboard, asbestos friction materials and gaskets. The main sources of these products were the United Kingdom, the USA, the Federal Republic of Germany and Japan.

In Australia, the asbestos cement manufacturing industry was responsible for over 60% of all production and 90% of all consumption of asbestos fibre. From about 1940 to the late 1960s all three types of asbestos were used in this industry. The use of crocidolite was gradually phased out from 1967, but amosite was used until the mid-1980s. Much of this industry output remains in service today in the form of 'fibro' houses and water and sewerage piping.

Between 1945 and 1954, 70,000 asbestos cement houses were built in New South Wales alone (52% of all the houses built in that State). In Australia as a whole, until the 1960s, 25% of all new housing was clad in asbestos cement.

By 1954 Australia was number four in the Western world in gross consumption of asbestos cement products, after the USA, the UK and France, and clearly first on a per capita basis.

Exposures to asbestos dust

In the past exposure to airborne asbestos fibres was very high in some industries and jobs. For asbestos pulverisers and disintegrators in the asbestos cement industry exposure levels were up to 25 million particles per cubic foot (150 fibres/mL), and baggers at the crocidolite mine at Wittenoom experienced exposures of up to 600 fibres/mL.

In comparison, State and Territory laws now apply a NES of 0.1 fibres/mL for all forms of asbestos.

National ban on the use of asbestos

On 17 October 2001, the National Health and Safety Commission (NOHSC) declared a prohibition on all uses of chrysotile from 31 December 2003, subject to a very limited range of exemptions.

This prohibition also confirmed earlier prohibitions of the use of amosite and crocidolite asbestos.

Under the *National Model Regulations for the Control of Workplace Hazardous Substances* the chrysotile asbestos ban prohibits the use (i.e. manufacture, supply, storage, sale, use, re-use, installation and replacement) of chrysotile asbestos except for:

- *bona fide* research or analysis;
- removal, handling and storage for disposal;
- chrysotile asbestos encountered during non-asbestos mining; and
- a small number of time-limited exemptions for particular, specified uses for which substitution by an alternative to chrysotile asbestos is technically impossible or would create significantly *greater* health, safety and environmental risks.

Similarly, the use of brown and blue asbestos is prohibited except for:

- removal and disposal purposes; and
- situations where brown or blue asbestos occurs naturally and is not used for any new application.

The prohibition also included a small number of time-limited exemptions which are restricted to specific products and uses where currently it is not:

- technically possible to substitute an alternative to chrysotile; or
- possible to substitute an alternative to chrysotile without creating a safety problem that has significantly greater health, safety and environmental risks than those presented by the use of chrysotile.

The prohibition does not extend to the removal of asbestos products *in situ* at the time prohibition took effect. These *in situ* asbestos containing materials (ACM) must be appropriately managed to ensure that the risks of exposure to airborne asbestos fibres are minimised.

The ultimate goal is for all workplaces to be free of ACM. Where practicable, consideration should be given to the removal of ACM during renovation, refurbishment, and maintenance, rather than other control measures such as enclosure, encapsulation or sealing.

Asbestos products which were *in situ* on 31 December 2003 may only be replaced by products which do not contain asbestos

Even when the use of asbestos is still permitted, in the very narrow circumstances listed above, it is subject to hazardous substances legislation, under which manufacturers, importers, other suppliers and employers must ensure that specified measures are properly used, installed and maintained to control the risks associated with exposure to asbestos.

The Australian Mesothelioma Surveillance Program and Register

Mesothelioma is a malignant cancer of the outer covering of the lung (the pleura) or the abdominal cavity (the peritoneum). Once rare, mesothelioma is increasing in incidence throughout the industrial world and is most often associated as a result of past exposures to asbestos. It is usually fatal. Australia has the world's highest incidence rate of mesothelioma in the world.

The first reported case of mesothelioma, from Wittenoom, was in 1962 (McNulty, 1962). A retrospective search later identified 658 cases (535 male, 123 female) occurring in Australia from between 1945- and 1979 (Musk et al, 1989).

The Australian Mesothelioma Surveillance Program (Ferguson et al, 1987) began on 1 January 1980. (Ferguson et al 1987). Formal but voluntary notification of cases was actively sought from a network of respiratory physicians, pathologists, general and thoracic surgeons, medical superintendents, medical records administrators, State and Territory departments of occupational health, cancer registries, compensation authorities or any other source. A full occupational and environmental history was obtained for each case, either from the patient or from their next-of-kin. The history taking was non-directive but included specific questions on asbestos exposure. Estimates of occupational and environmental exposure were based on the opinions of two experienced hygienists. The diagnosing pathologist was requested to provide slides and/or tissue specimens and these were circulated among a pathology expert panel for a confirmation of the original diagnosis. Post-mortem examination was actively sought in every case, in order to confirm the diagnosis and to obtain lung tissue free of tumour for lung fibre content analysis.

From 1 January 1986, a less detailed notification system has operated, with a short questionnaire on exposure history, which is followed up by mail. In the case of all WA and most of the NSW notifications (comprising— constituting 60% of the total all Australian notifications), — detailed occupational and environmental exposure histories from interviews are available from the WA Mesothelioma Register and the NSW Dust Diseases Board. Only histologically confirmed cases are accepted, but there is no pathology panel diagnosis confirmation.

This is now known as the 'Australian Mesothelioma Register' and is a continuation of the Australian Mesothelioma Surveillance Program. Cross checks with State cancer registries are regularly carried out. Annual incidence reports are published (NIOHS (AGPS) 1989-00). These reports include data on cases notified to the register and diagnosed since 1986 (NIOHS (AGPS) 1989–1996; NOHSC (AGPS) 1997-2003). Full reconciliation with all State cancer registries has been carried out. Recent reviews are available (Leigh 2004a, 2004b; Leigh and Driscoll, 2003; and Leigh et al, 2002a,2002b). Full analysis of incidence in 2002, 2003 and 2004 awaits reconciliation checks with State cancer registries. However, notifications for 2002, 2003 and 2004 were 322, 331 and 219 respectively (to 30 June 2004).

APPENDIX C. SELECTION AND USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment may need to be used, in combination with other effective control measures, when working with asbestos-containing materials.

The selection and use of PPE should be based on risk assessments (see **Part 10** of this code of practice) and determined by a competent person.

The ease of decontamination should be one of the factors considered when choosing PPE. Where possible, disposable equipment should be used. All disposable PPE should be disposed of as asbestos waste.

If work with asbestos requires the use of other chemicals that are themselves hazardous substances, a further risk assessment must be performed. The relevant Material Safety Data Sheets (MSDS) must be referred to for information on the PPE to be used and any other precautions to be taken when using the chemicals (the manufacturer can supply the MSDS).

Coveralls

Protective clothing should be made from material capable of providing adequate protection against fibre penetration.

When selecting protective clothing, factors such as the possibilities of heat stress, fire and electrical hazards should also be considered.

Disposable coveralls with fitted hoods and cuffs should be worn. Coveralls with open pockets and/or Velcro fastenings should not be used, because these features can be easily contaminated and are difficult to decontaminate. Fitted hoods should always be worn over the straps of respirators, and loose cuffs should be sealed with tape.

Asbestos fibres should be prevented from being transported outside the workplace by thoroughly vacuuming asbestos fibres from work clothes using an asbestos vacuum cleaner (see sections 11.8 and 11.9.3 of **Part 11** of this code of practice). Disposable coveralls should be disposed of as asbestos waste at the completion of the task (see section 11.11).

Footwear and gloves

Laced boots should be avoided, as they can be difficult to clean and asbestos dust can gather in the laces and eyelets. Laceless boots, such as gumboots, are preferred where practicable, and boot covers should be worn where necessary.

Safety footwear must be decontaminated before leaving the asbestos work area for any reason, or sealed in double bags for use only on the next asbestos maintenance task. Alternatively, work boots that cannot be effectively decontaminated must be disposed of as asbestos waste at the end of the job.

The use of protective gloves should be determined by a risk assessment. If significant amounts of asbestos fibres may be present, disposable gloves should be worn. Protective gloves can be unsuitable if dexterity is required. Workers must clean their hands and fingernails thoroughly after work, and any gloves used they must be disposed of as asbestos waste.

Respirators

In general, the selection of suitable respiratory protection equipment depends on the nature of the asbestos work, the probable maximum concentrations of asbestos fibres that would be encountered in this work and any personal characteristics of the wearer that may affect the facial fit of the respirator (e.g. facial hair and glasses).

A competent person should determine the most efficient respirator for the task.

Respirators should comply with AS/NZS 1716-2003 *Respiratory Protective Devices* and be selected, used and maintained in accordance with AS/NZS 1715-1994 *Selection, Use and Maintenance of Respiratory Protective Devices*. They should always be worn under fitted hoods. Facepieces should be cleaned and disinfected according to the manufacturer's instructions.

Some State and Territory legislation imposes minimum requirements for respiratory equipment, and relevant laws should be checked before selecting an appropriate respirator.

Respiratory protective equipment should be used until all contaminated disposable coveralls and clothing has been vacuum cleaned and/or removed and bagged for disposal, and personal washing has been completed. Respirators should be properly stored when not in use.

APPENDIX D. DRILLING OF ASBESTOS-CONTAINING MATERIALS

As a first priority, planning for the maintenance of ACM must include consideration of the removal of the ACM as the most preferred control option. Where removed, asbestos products must be replaced with a non-asbestos product. Removal of asbestos products must be done in accordance with the NOHSC Code of Practice for the Safe Removal of Asbestos [NOHSC:2002(2005)].

A risk assessment, as described in **Part 10** of this code of practice, should be undertaken before any maintenance or service work with ACM is commenced, and only competent persons should carry out work with ACM.

The drilling of asbestos cement sheeting can release asbestos fibres into the atmosphere, so precautions must be taken to protect the drill operator and other persons from exposure to these fibres.

A hand drill is preferred to a battery-powered drill, because the quantity of fibres is drastically reduced if a hand drill is used.

Equipment

In addition to any equipment required to complete the particular task, the following equipment may be required on site prior to commencing the work:

- a non-powered hand drill or a *low-speed* battery-powered drill or drilling equipment. Battery-powered drills should be fitted with a local exhaust ventilation (LEV) dust control hood wherever possible. If a LEV dust control hood cannot be attached and other dust control methods – such as pastes and gels – are unsuitable then shadow vacuuming techniques should be used (requirements for asbestos vacuum cleaners are set out in section 11.8);
- disposable cleaning rags;
- a bucket of water, or more as appropriate, and/or a misting spray bottle;
- duct tape;
- sealant;
- spare PPE;
- a thickened substance such as wallpaper paste, shaving cream or hair gel;
- a suitable asbestos waste container (e.g. 200 µm plastic bags or a drum, bin or skip lined with 200 µm plastic sheeting);
- 200 µm plastic sheeting;
- warning signs and/or barrier tape;
- an asbestos vacuum cleaner; and

- a sturdy paper, foam or thin metal cup, or similar (for work on overhead surfaces only).

Personal protective equipment

- Protective clothing: see **Appendix C**.
- Respirator (see AS1715, AS 1716 and section 11.7 of **Part 11** of this code of practice): It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.

Preparing the asbestos work area

- If the work is to be carried out at a height, appropriate precautions must be taken to prevent the risk of falls.
- Ensure appropriately marked asbestos waste disposal bags are available.
- Carry out the work with as few people present as possible.
- Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. close door and/or use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment.
 - If drilling a roof from outside, segregate the area below.
 - If access is available to the rear of the asbestos cement, segregate this area as well, as above.
- If possible, use plastic sheeting, secured with duct tape, to cover any surface within the asbestos work area that could become contaminated.
- Ensure there is adequate lighting.
- Avoid working in windy environments where asbestos fibres can be redistributed.
- If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Drilling vertical surfaces

- Tape both the point to be drilled and the exit point, if accessible, with a strong adhesive tape such as duct tape to prevent the edges crumbling.
- Cover the drill entry and exit points (if accessible) on the ACM with a generous amount of thickened substance.
- Drill through the paste.
- Use damp rags to clean off the paste and debris from the wall and drill bit.

- Dispose of the rags as asbestos waste, as they will contain asbestos dust and fibres.
- Seal the cut edges with sealant.
- If a cable is to be passed through, insert a sleeve to protect the inner edge of the hole.

Drilling overhead horizontal surfaces

- Mark the point to be drilled.
- Drill a hole through the bottom of the cup.
- Fill or line the inside of the cup with shaving cream, gel or a similar thickened substance.
- Put the drill bit through the hole in the cup so that the cup encloses the drill bit, and make sure the drill bit extends beyond the lip of the cup.
- Align the drill bit with the marked point.
- Ensure the cup is firmly held against the surface to be drilled.
- Drill through the surface.
- Remove the drill bit from the cup, ensuring that the cup remains firmly against the surface.
- Remove the cup from the surface.
- Use damp rags to clean off the paste and debris from the drill bit.
- Dispose of the rags as asbestos waste, as they will contain asbestos dust and fibres.
- Seal the cut edges with sealant.
- If a cable is to be passed through, insert a sleeve to protect the inner edge of the hole.

Decontaminating the asbestos work area and equipment

- Use damp rags to clean the equipment.
- Carefully roll or fold any plastic sheeting used to cover any surface within the asbestos work area, so as not to spill any dust or debris that has been collected.
- If necessary, use damp rags and/or an asbestos vacuum cleaner to clean any remaining visibly contaminated sections of the asbestos work area.
- Place debris, used rags, plastic sheeting and other waste in the asbestos waste bags/container.

- Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.

Personal decontamination

See section 11.9.3 of **Part 11** of this code of practice.

Clearance procedure

- Visually inspect the asbestos work area to make sure it has been properly cleaned (see section 11.10.1 of **Part 11** of this code of practice).
- Clearance air sampling is not normally required for this task.
- Dispose of all waste as asbestos waste. Refer to the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)] and relevant State and Territory legislation (see section 11.11 of **Part 11**).

APPENDIX E. SEALING, PAINTING, COATING AND CLEANING OF ASBESTOS CEMENT PRODUCTS

As a first priority, planning for the maintenance of ACM must include consideration of the removal of the ACM as the most preferred control option. Where removed, asbestos products must be replaced with a non-asbestos product. Removal of asbestos products must be done in accordance with the NOHSC Code of Practice for the Safe Removal of Asbestos [NOHSC:2002(2005)].

These tasks should only to be carried out on AC products that are in good condition. For this reason, the AC material should be thoroughly inspected before commencing the work.

There is a risk to health if the surface of asbestos cement sheeting is disturbed (e.g. from hail storms and cyclones) or if the sheeting has deteriorated as a result of aggressive environmental factors such as pollution. If asbestos cement sheeting is so weathered that its surface is cracked or broken, the asbestos cement matrix may be eroded, increasing the likelihood that asbestos fibres will be released.

If treatment of asbestos cement sheeting is considered essential, a method that does not disturb the matrix of the asbestos cement sheeting should be used.

Under no circumstances should asbestos cement products be water blasted or dry sanded in preparation for painting, coating or sealing.

Equipment

In addition to any equipment required to complete the particular task (e.g. paint, paint brushes, paint rollers or airless spray gun/equipment), the following equipment may be required on site prior to commencing the work:

- disposable cleaning rags;
- a bucket of water, or more as appropriate, and/or a misting spray bottle;
- sealant;
- spare PPE;
- a suitable asbestos waste container; and
- warning signs and/or barrier tape.

Personal protective equipment

- Protective clothing: see **Appendix C**.
- Respirator (see AS1715, AS 1716 and section 11.7 of **Part 11** of this code of practice): It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.

- Where paint is to be applied, appropriate respiratory protection to control the paint vapours/mist must also be considered.

Preparing the asbestos work area

- If the work is to be carried out at a height, appropriate precautions must be taken to prevent the risk of falls.
- Before starting, assess the asbestos cement for damage.
- Ensure appropriately marked asbestos waste disposal bags are available.
- Carry out the work with as few people present as possible.
- Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. close door and/or use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment.
- If working at a height, segregate the area below.
- If possible, use plastic sheeting, secured with duct tape, to cover any floor surface within the asbestos work area which could become contaminated. This will help to contain any runoff from wet sanding methods.
- Ensure there is adequate lighting.
- If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.
- *Never* use high-pressure water cleaning methods.
- *Never* prepare surfaces using dry sanding methods. Where sanding is required consideration should be given to removing the ACM and replacing it with a non-asbestos product.
- Wet sanding methods may be used to prepare the AC material, provided precautions are taken to ensure all the runoff is captured, and filtered where possible.
- Wipe dusty surfaces with a damp cloth.

Painting and sealing

- When using a spray brush, *never* use a high pressure spray to apply the paint.
- When using a roller, use it lightly to avoid abrasion or other damage.

Decontaminating the asbestos work area and equipment

- Use damp rags to clean the equipment.

- Where required, use damp rags and/or an asbestos vacuum cleaner to clean the asbestos work area.
- Place debris, used rags, plastic sheeting and other waste in the asbestos waste bags/container.
- Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.

Personal decontamination

See section 11.9.3 of **Part 11** of this code of practice.

Clearance procedure

- Visually inspect the asbestos work area to make sure it has been properly cleaned (see section 11.10.1 of **Part 11** of this code of practice).
- Clearance air sampling is not normally required for this task.
- Dispose of all waste as asbestos waste. Refer to the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)] and relevant State and Territory legislation (see section 11.11 of **Part 11**).

APPENDIX F. CLEANING LEAF LITTER FROM THE GUTTERS OF ASBESTOS CEMENT ROOFS

Equipment

In addition to any equipment required to complete the particular task, the following equipment may also be required on site prior to commencing the work:

- a bucket of water, or more as appropriate, and detergent;
- a watering can or garden spray;
- a hand trowel or scoop;
- disposable cleaning rags;
- a suitable asbestos waste container;
- warning signs and/or barrier tape; and
- an asbestos vacuum cleaner.

Personal protective equipment

- Protective clothing: see *Appendix C*.
- Respirator (see AS1715, AS 1716 and section 11.7 of **Part 11** of this code of practice): At least a class P1 or P2 half face respirator should be used for this task, provided the recommended safe work procedure is followed.

Preparing the asbestos work area

- Since the work is to be carried out at a height, appropriate precautions must be taken to prevent the risk of falls.
- Ensure appropriately marked asbestos waste disposal containers are available.
- Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment.
 - Segregate the area below.
- Avoid working in windy environments where asbestos fibres can be redistributed.
- If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Gutter cleaning

- Disconnect or re-route the downpipes to prevent any entry of contaminated water into the waste water system and ensure there is a suitable container to collect contaminated runoff. Contaminated water must be disposed of as asbestos waste.
- Mix the water and detergent.
- Using the watering can or garden spray, pour the water and detergent mixture into the gutter, but avoid over-wetting as this will create a slurry.
- Remove the debris using a scoop or trowel. Do not allow debris or slurry to enter the water system.
- Wet the debris again if dry material is uncovered.
- Place the removed debris straight into the asbestos waste container.

Decontaminating the asbestos work area and equipment

- Use damp rags to wipe down all equipment used.
- Use damp rags to wipe down the guttering.
- Where practicable, and if necessary, use an asbestos vacuum cleaner to vacuum the area below.
- Place debris, used rags and other waste in the asbestos waste container.
- Wet wipe the external surfaces of the asbestos waste container to remove any adhering dust before it is removed from the asbestos work area.

Personal decontamination

See section 11.9.3 of **Part 11** of this code of practice.

Clearance procedure

- Visually inspect the asbestos work area to make sure it has been properly cleaned (see section 11.10.1 of **Part 11** of this code of practice).
- Clearance air sampling is not normally required for this task.
- Dispose of all waste, including all water, as asbestos waste. Refer to the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)] and relevant State and Territory legislation (see section 11.11 of **Part 11**).

APPENDIX G. REPLACING CABLING IN ASBESTOS CEMENT CONDUITS OR BOXES

As a first priority, planning for the maintenance of ACM must include consideration of the removal of the ACM as the most preferred control option. Where removed, asbestos products must be replaced with a non-asbestos product. Removal of asbestos products must be done in accordance with the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)].

Equipment

In addition to any equipment required to complete the particular task, the following equipment may also be required on site prior to commencing the work:

- disposable cleaning rags;
- a bucket of water, or more as appropriate, and/or a misting spray bottle
- 200 µm thick plastic sheeting;
- cable slipping compound;
- appropriately marked asbestos waste disposal bags;
- spare PPE;
- duct tape;
- warning signs and/or barrier tape; and
- an asbestos vacuum cleaner.

Personal protective equipment

- Protective clothing: see **Appendix C**.
- Respirator (see AS1715, AS 1716 and section 11.7 of **Part 11** of this code of practice): It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.

Preparing the asbestos work area

- If the work will be carried out in a confined space, appropriate precautions must be taken to prevent the risk of asphyxiation.
- Ensure appropriately marked asbestos waste disposal bags are available.
- Carry out the work with as few people present as possible.

- Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment.
- Use plastic sheeting, secured with duct tape, to cover any surface within the asbestos work area which could become contaminated.
- Place plastic sheeting below the conduits through which cable(s) are to be pulled, prior to pulling any cables.
- Ensure there is adequate lighting.
- Avoid working in windy environments where asbestos fibres can be redistributed.
- If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Replacement or installation of cables

- Wet down the equipment and apply adequate cable slipping compound to the conduits/ducts throughout the process.
- Clean all ropes, rods or snakes used to pull cables after use. Cleaning should be undertaken close to the point(s) where the cables exit from the conduits/ducts.
- Ropes used for cable pulling should have a smooth surface that can easily be cleaned.
- *Do not* use metal stockings when pulling cables through asbestos cement conduits.
- *Do not* use compressed air darts for pulling cables through asbestos cement conduits/ducts.

Decontaminating the asbestos work area and equipment

- Use damp rags to clean the equipment.
- Wet wipe around the end of the conduit, sections of exposed cable and the pulling eye at the completion of the cable pulling operation.
- If the rope or cable pass through any rollers, these must also be wet wiped after use.
- Wet wipe the external surface of excess cable pulled through the conduit/duct, as close as possible to the exit point from the conduit, before it is removed from the work site.
- Carefully roll or fold any plastic sheeting used to cover any surface within the asbestos work area, so as not to spill any dust or debris that has been collected.
- If required, use damp rags or an asbestos vacuum cleaner to clean any remaining visibly contaminated sections of the asbestos work area.

- Place all debris, used rags, plastic sheeting and other waste in the asbestos waste bags/container.
- Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.

Personal decontamination

See section 11.9.3 of **Part 11** of this code of practice.

Clearance procedure

- Visually inspect the asbestos work area to make sure it has been properly cleaned (see section 11.10.1 of **Part 11** of this code of practice).
- Clearance air sampling is not normally required for this task.
- Dispose of all waste as asbestos waste. Refer to the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)] and relevant State and Territory legislation (see section 11.11 of **Part 11**).

APPENDIX H. WORKING ON ELECTRICAL MOUNTING BOARDS (SWITCHBOARDS) CONTAINING ASBESTOS

As a first priority, planning for the maintenance of ACM must include consideration of the removal of the ACM as the most preferred control option. Where removed, asbestos products must be replaced with a non-asbestos product. Removal of asbestos products must be done in accordance with the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)].

Where a risk assessment identifies the need, electrical mounting panels containing asbestos in poor condition (i.e. friable), or those requiring major works, should be removed in accordance with the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)] and replaced with non-asbestos panels.

Equipment

In addition to any equipment required to complete the particular task, the following equipment may also be required on site prior to commencing the work:

- a non-powered hand drill or a *low-speed* battery-powered drill or drilling equipment. Battery-powered drills should be fitted with a local exhaust ventilation (LEV) dust control hood wherever possible. If a LEV dust control hood cannot be attached and other dust control methods – such as pastes and gels – are unsuitable then shadow vacuuming techniques should be used (requirements for asbestos vacuum cleaners are set out in section 11.8);
- duct tape;
- warning signs and/or barrier tape;
- disposable cleaning rags;
- a plastic bucket of water, or more as appropriate, and/or a misting spray bottle;
- spare PPE;
- a suitable asbestos waste container;
- 200 µm plastic sheeting; and
- an asbestos vacuum cleaner.

Personal protective equipment

- Protective clothing: see **Appendix C**.
- Respirator (see AS1715, AS 1716 and section 11.7 of **Part 11** of this code of practice): It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.

Preparing the asbestos work area

- Because the asbestos work area will involve electrical hazards, appropriate precautions must be taken to prevent the risk of electrocution.
- Ensure appropriately marked asbestos waste disposal bags are available.
- Carry out the work with as few people present as possible.
- Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment.
- Use plastic sheeting, secured with duct tape, to cover any surface within the asbestos work area which could become contaminated.
- Ensure there is adequate lighting.
- Avoid working in windy environments where asbestos fibres can be redistributed.
- If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Work on electrical mounting panels

Providing the panel is not friable, maintenance and service work may include:

- the replacement of asbestos-containing equipment on the electrical panel with non-asbestos equipment;
- the operation of main switches and individual circuit devices;
- pulling / inserting service and circuit fuses;
- bridging supplies at meter bases;
- using testing equipment;
- accessing the neutral link; and
- the installation of new components/equipment.

If the asbestos-containing electrical mounting panel has to be removed for work behind the board, the procedures for removing electrical meter boards outlined in the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002 (2005)] should be followed.

If drilling is required, the control process should be consistent with the measures described in **Appendix D**.

Decontaminating the asbestos work area and equipment

- Use damp rags to clean the equipment.
- Carefully roll or fold any plastic sheeting used to cover any surface within the asbestos work area, so as not to spill any dust or debris that has been collected.
- In areas where there is an electrical hazard, an asbestos vacuum cleaner should be used to remove any dust or debris from the mounting panel and other visibly contaminated sections of the asbestos work area.
- In areas where there is no electrical hazard, wet wiping with a damp rag can be used to remove minor amounts of dust or debris.
- Place debris, used rags, plastic sheeting and other waste in the asbestos waste bags/container.
- Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.

Personal decontamination

See section 11.9.3 of **Part 11** of this code of practice.

Clearance procedure

- Visually inspect the asbestos work area to make sure it has been properly cleaned (see section 11.10.1 of **Part 11** of this code of practice).
- Clearance air sampling is not normally required for this task.
- Dispose of all waste, including all water, as asbestos waste. Refer to the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)] and relevant State and Territory legislation (see section 11.11 of **Part 11**).

APPENDIX I. INSPECTION OF ASBESTOS FRICTION MATERIALS

This guide may be used when friction materials containing asbestos (e.g. brake assemblies or clutch housings) need to be inspected or their housings need to be cleaned.

Warning: Compressed air *must never* be used to clean dust from a brake assembly.

Equipment

In addition to any equipment required to complete the particular task, the following equipment may also be required on site prior to commencing the work:

- a misting spray bottle;
- duct tape;
- warning signs and/or barrier tape;
- disposable cleaning rags;
- a bucket of water, or more as appropriate, and detergent;
- spare PPE;
- a suitable asbestos waste container;
- a catch tray or similar container; and
- an asbestos vacuum cleaner

Personal protective equipment

- Protective clothing is generally not required for this task.
- Respirator (see AS1715, AS 1716 and section 11.7 of **Part 11** of this code of practice): It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.

Preparing the asbestos work area

- Ensure appropriately marked asbestos waste disposal bags are available.
- Carry out the work with as few people present as possible.
- A decision on whether to segregate the asbestos work area should be based on a risk assessment, but it may be necessary to ensure unauthorised personnel are restricted from entry through the use of barrier tape and/or warning signs at entry points.

- Use a suitable collection device (i.e. tray or container) below the location where the work will be carried out, to collect any debris or runoff.
- Ensure there is adequate lighting.
- Avoid working in windy environments where asbestos fibres can be redistributed.
- If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Inspection of asbestos friction materials

A misting spray bottle should be used to wet down any dust.

If the use of spray equipment to wet the asbestos-containing material might disturb asbestos fibres, alternative wetting agents, such as a water-miscible degreaser or a water and detergent mixture, should be used.

The asbestos material should preferably be inspected using the wet method discussed in section 11.9.1 of **Part 11** of this code of practice, but if this is not possible the dry method may be used in its place.

Wet method:

- Use the misting spray bottle to wet down any visible dust.
- Use a damp rag to wipe down the wheel or automobile part before removal. Ensure the dust is kept wet, as this will prevent airborne contamination.
- Use hand tools rather than power tools if possible, to reduce the generation of airborne fibres.
- Partially open the housing and softly spray the inside with water using the misting spray bottle. Any spillage of dust, debris or water must be controlled (e.g. through the use of containers to capture runoff) and either filtered or disposed of as asbestos waste.
- Open the housing.
- Clean all asbestos parts using a damp rag, ensuring that all runoff water is caught in a suitable asbestos waste container.

Dry method:

- Place a collection tray under the components being inspected, to catch any dust or debris spilling from the housing or components during the inspection, and dispose of any collected material as asbestos waste
- Use an asbestos vacuum cleaner to remove asbestos fibres from the brakes and rims or other asbestos-containing materials before carrying out the inspection.
- *Never* use compressed air to clean a brake assembly.

Decontaminating the asbestos work area and equipment

- Use damp rags to clean the equipment, including the dust collection tray.
- If necessary, use damp rags or an asbestos vacuum cleaner to clean any remaining visibly contaminated sections of the asbestos work area.
- Place debris, used rags and other waste in the asbestos waste bags/container.
- Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before removing them from the asbestos work area.

Personal decontamination

See section 11.9.3 of **Part 11** of this code of practice.

Clearance procedure

- Visually inspect the asbestos work area to make sure it has been properly cleaned (see section 11.10.1 of **Part 11** of this code of practice).
- Clearance air sampling is not normally required for this task
- Dispose of all waste, including all water, as asbestos waste. Refer to the NOHSC *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)] and relevant State and Territory legislation (see section 11.11 of **Part 11**).

APPENDIX J. REFERENCES

All NOHSC publications are free and are available from the NOHSC Website at <http://www.nohsc.gov.au>.

National Exposure Standards for hazardous substances can be found utilising the NOHSC Hazardous Substances Information System (HSIS) at <http://www.nohsc.gov.au/applications/hsis/>

The following documents provide additional information on asbestos management and control:

1. Health and Safety Executive (HSE) (1999), *Controlled Asbestos Stripping Techniques; For Work Requiring a Licence*, Her Majesty's Stationery Office, Norwich, England
2. Health and Safety Executive (HSE) (1999), *Selection of Suitable Respiratory Protective Equipment; for Work with Asbestos*, Her Majesty's Stationery Office, Norwich, England
3. Health and Safety Executive (HSE) (1999), *Working with Asbestos Cement (2nd Edition)*, Her Majesty's Stationery Office, Norwich, England
4. Health and Safety Executive (HSE) (1999), *Working with Asbestos in Buildings*, Her Majesty's Stationery Office, Norwich, England
5. Health and Safety Executive (HSE) (2001), *Asbestos Essentials Task Manual: Task Guidance Sheets for the Building Maintenance and Allied Trades*, Her Majesty's Stationery Office, Norwich, England
6. Health and Safety Executive (HSE) (2001), *Introduction to Asbestos Essentials; Comprehensive Guidance on Working with Asbestos in the Building Maintenance and Allied Trades*, Her Majesty's Stationery Office, Norwich, England
7. Health and Safety Executive (HSE) (2002), *A Comprehensive Guide to Managing Asbestos in Premises*, Her Majesty's Stationery Office, Norwich, England
8. Health and Safety Executive (HSE) (2002), *Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulation Board (4th edition)*, Her Majesty's Stationery Office, Norwich, England
9. Health and Safety Executive (HSE) (2002), *Work with Asbestos which does not normally require a licence (4th edition)*, Her Majesty's Stationery Office, Norwich, England
10. National Occupational Health and Safety Commission (NOHSC) (2005), *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)], NOHSC, Canberra, Australia.
11. National Occupational Health and Safety Commission (NOHSC) (2005), *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC:3003(2005)], NOHSC, Canberra, Australia.

12. Victorian Asbestos Removal Industry Consultative Committee (VARICC), *Standard Specification for Asbestos Removal from Buildings, Structures, Ships, Plants and Workplaces*, Australia

APPENDIX K. AUSTRALIAN STANDARDS

The following standards are referenced in this code.

1. Australian Standard 1319: 1994 *Safety Signs for the Occupational Environment*
2. Australia / New Zealand Standard 1715: 1994 *Selection Use and Maintenance of Respiratory Protective Devices*
3. Australia / New Zealand Standard 1716: 2003 *Respiratory Protective Devices*
4. Australian Standard 3544: 1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health*
5. Australian Standard 4260: 1997 High Efficiency Particulate Air (HEPA) Filters – Classification, Construction and Performance