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WorkSafe VICTORIA

## Compliance Code

# Removing asbestos in workplaces

State Government Victoria

# Contents

WorkSafe Victoria is a trading name of the Victorian WorkCover Authority.

# Preface

This compliance code provides practical guidance to those who have duties under the *Occupational Health and Safety Act 2004* (the OHS Act) or the Occupational Health and Safety Regulations 2007 (the Regulations) on how to comply with those duties or obligations.

It was made under the OHS Act and was approved by The Hon. Tim Holding MP, Minister for Finance, WorkCover and the Transport Accident Commission, on 19 September 2008.

This compliance code has been developed by WorkSafe Victoria. Representatives of employers, employees and government agencies were consulted during its preparation.

Employers, employees, self-employed persons and those with management and control of workplaces need to use the compliance code in conjunction with the OHS Act and Regulations.

> This compliance code is not mandatory. A relevant duty holder who complies with the compliance code will – to the extent the compliance code deals with their duties or obligations under the OHS Act and Regulations – be considered to have complied with their duties and obligations.

If conditions at the workplace or the way work is done raise different or additional risks not covered by the compliance code, compliance needs to be achieved by another means.

WorkSafe publishes guidance to assist with this process at **worksafe.vic.gov.au**.

Evidence of a failure to observe a compliance code may be used as evidence in proceedings for an offence under the OHS Act or Regulations. However, a duty holder will not fail to meet their duty or obligation simply because of a failure to observe a compliance code.

A WorkSafe inspector may cite a compliance code in a direction or condition in an improvement notice or a prohibition notice as a means of achieving compliance.

A health and safety representative (HSR) may cite a compliance code in a provisional improvement notice when providing directions as to how to remedy an alleged contravention of the OHS Act or Regulations.

The approval of a compliance code may be varied or revoked by the Minister. To confirm that this compliance code is current and in force, go to **worksafe.vic.gov.au**.

# Introduction

## Purpose

1. Exposure to asbestos can cause a range of debilitating medical conditions affecting the respiratory system, including mesothelioma, asbestosis and lung cancer. Many asbestos-related conditions are life threatening or associated with a marked reduction in life expectancy.
2. This compliance code has been written primarily for asbestos removalists both licensed and those that perform permitted limited asbestos removal work without a licence. It should be read in conjunction with 'Part 4.3 – Asbestos' of the Occupational Health and Safety Regulations 2007 (the Regulations).
3. Persons carrying out asbestos removal work are expected to have knowledge of both how to perform asbestos removal safely and the asbestos removal requirements of the Regulations. This compliance code provides practical guidance that will assist duty holders meet regulatory obligations.
4. Further information about the risks to health from airborne asbestos fibres is provided in WorkSafe's *Asbestos – A handbook for workplaces*.

## Scope

5. The content of this compliance code relates to the safe removal of asbestos-containing materials (ACM) from all workplaces.

   For guidance about managing asbestos in workplaces, refer to WorkSafe's *Managing asbestos in workplaces* compliance code.

## Application

6. The code applies to:
   - employers and self-employed persons carrying out limited permitted asbestos removal work
   - licensed asbestos removalists
   - persons who have commissioned asbestos removal work
   - persons who have management or control of workplaces where asbestos removal work is carried out
   - employees and their health and safety representatives (HSRs) who are involved in carrying out asbestos removal work.

## Consultation

7. By law, employers must consult with employees on a range of matters that directly affect (or are likely to directly affect) their health and safety, so far as is reasonably practicable.
8. Consultation must involve sharing information with employees, giving employees a reasonable opportunity to express their views and taking those views into account.
9. Where employees are represented by HSRs, these representatives must be involved in the consultation, so far as reasonably practicable.
10. The law sets out specific requirements on how HSRs are to be involved in consultation. These are:
    - provide HSRs with all the information about the matter that the employer provides, or intends to provide, to employees. If it is reasonably practicable, the information must be provided to the HSRs a reasonable time before it is provided to employees
    - invite the HSRs to meet with the employer to consult on the matter or meet with the HSRs at their request
    - give the HSRs a reasonable opportunity to express their views on the matter and take those views into account.
11. The employer must include independent contractors and their employees in the consultation, so far as is reasonably practicable, if the employer has, or should have, control of a relevant matter that affects their health and safety.
12. Consultation is required when:
    - identifying or assessing hazards or risks
    - making decisions on how to control risks
    - making decisions about the adequacy of facilities for employee welfare (such as dining facilities, change rooms, toilets or first aid)
    - making decisions about procedures to:
      - resolve health and safety issues
      - consult with employees on health and safety
      - monitor employee health and workplace conditions
      - provide information and training
    - determining the membership of any health and safety committee in the workplace
    - proposing changes that may affect employee health and safety, such as changes to:
      - the workplace
      - plant, substances or other things used in the workplace
      - the work performed at the workplace
    - doing any other thing prescribed by the Regulations.
13. When planning to implement measures identified in this compliance code or when making decisions to implement alternative measures to those specified in this compliance code, consultation must take place.

# General requirements of the Occupational Health and Safety Regulations 2007

## Duty to control exposure to airborne asbestos fibres

14. People with management or control of a workplace as well as employers and self-employed persons have duties to control exposure to airborne asbestos fibres in the workplace.
15. They must eliminate the exposure to airborne asbestos fibres so far as is reasonably practicable. If exposure cannot be eliminated, they must reduce the exposure so far as is reasonably practicable.
16. There are also duties to:
    - ensure that no person is exposed to an atmospheric concentration of asbestos fibres above the asbestos exposure standard (see definition on page 8)
    - determine the exposure of employees if there is uncertainty
    - ensure copies of the results of any atmospheric monitoring are accessible to any affected employees at the workplace and their HSRs.
17. The duties of both the person with management or control and the employer extend to all people at the workplace (not just employees), including independent contractors and their employees.

**Management or control**

The person who has management or control can be the person who:

- owns a workplace but is not at or based at that workplace (it does not have to be that person's actual place of work)
- has legally been assigned management and control duties over a workplace (such as a management group that may or may not be located at the workplace)
- owns the workplace and is working (or has employees working) at that workplace – in this case the person is both the person with management or control and an employer (if they have employees).

### Determining who has management or control of a workplace

18. To determine who has management or control of a workplace (or plant within a workplace), it is necessary to consider building and/or structure ownership and who can make physical or structural changes.
19. If an employer owns the workplace they would almost certainly have management or control.
20. If an employer leases a building they cannot make physical or structural changes unless there is an agreement in the lease to allow such works. The extent to which an employer has management or control of a workplace can vary, depending on the details of the lease.
21. Buildings are sometimes leased to multiple tenants who are employers but do not own the building or have building management or maintenance responsibilities. In these instances, tenants have to approach the person with management and control of these areas to raise issues or have them addressed.

**These scenarios demonstrate that employers who are tenants do not necessarily have management or control of the workplace:**

- A tenant requires telecommunications access – and that access is achieved through sealed building-riser shafts that contain asbestos insulation.
- Leaking/damaged asbestos cement roofing that needs to be repaired – the repair request needs to go to the building owner or building manager.
- Alterations to power plants and lifts that contain asbestos.
- Water damage to ceiling spaces that contain asbestos.
- Modifications to fire doors that contain asbestos.

22. Contractual leasing arrangements should be examined to establish what extent employers have management or control of the workplace.

### Determining who has management or control of plant in the workplace

23. If the employer has introduced plant or structures that contain asbestos into the workplace, it is the employer who has management and control of that plant or structure. For example, if an employer introduces a press machine with asbestos-containing brakes, they are responsible for management and control duties for that plant.

# Regulatory prohibitions

24. The Regulations contain prohibitions made under the *Occupational Health and Safety Act 2004* (the OHS Act) – which apply to workplaces; and the *Dangerous Goods Act 1985* (Dangerous Goods Act) – which apply to all persons. Guidance in relation to the prohibitions made under the OHS Act is covered below. There is guidance on prohibitions made under the Dangerous Goods Act in WorkSafe's *Managing asbestos in workplaces* compliance code.

## Prohibitions under the *Occupational Health and Safety Act 2004* (regulation 4.3.7 to 4.3.9)

### Prohibitions on asbestos removal

25. Asbestos must not be removed from a workplace unless the asbestos removal work:

- is conducted by a licensed removalist
- is conducted by an employee of a person who is a licensed removalist
- involves non-friable ACM with an area that does not exceed 10 square metres in total and the total time of all asbestos removal by the employer (including all employees) does not exceed one hour in any period of seven days, or
- is for the purpose of sampling and identification (see Appendix C of WorkSafe's *Managing asbestos in workplaces* compliance code for more information on sampling and identification).

### Contaminated clothing

26. Clothing contaminated with asbestos must not be removed from the workplace except for disposal or laundering. When clothing is removed from the workplace to be laundered, it should be placed in two 200 micron-thick plastic bags (ie double bagged) and labelled to identify the presence of asbestos. Clothing needs to be wet down before bagging to minimise the potential for airborne dust to be generated when the bag is re-opened. The launderer must be told about the potential for asbestos contamination on the clothing prior to arrival at the laundry.

27. If the clothing is to be disposed of as waste it must be done as soon as reasonably practicable to, at a waste site licensed by the Environment Protection Authority Victoria (EPA Victoria).

### Use of tools or instruments on asbestos

28. The use of brooms, brushes (except where the brush is used for sealing), high-pressure water jets, power tools or similar tools or instruments on asbestos in workplaces is prohibited unless use is controlled to ensure a person's exposure does not exceed half the asbestos exposure standard. To verify half the exposure standard is not exceeded, personal air monitoring would be required.

**Asbestos exposure standard:**

0·1 f/ml of air measured in a person's breathing zone and expressed as a time weighted average fibre concentration of asbestos calculated over an eight-hour working day and measured over a minimum period of four hours in accordance with:

(a) the membrane filter method, or

(b) a method determined by WorkSafe.

29. Acceptable control measures include:
    - enclosing the tool or instrument
    - engineering controls such as extraction ventilation, or
    - a combination of these.

30. For example, a broom must not be used to collect debris associated with an asbestos cement removal process as exposure may exceed half the exposure standard. There are other collection methods that would reduce exposure to airborne asbestos fibres as far as is reasonably practicable, such as using a vacuum cleaner fitted with a high-efficiency particulate air (HEPA) filter. Use of a HEPA-fitted vacuum cleaner is an engineering control and ensures a person's exposure does not exceed half the exposure standard.

31. Respiratory protection must not be relied on to ensure half the exposure standard is not exceeded. If a respirator is required to reduce the exposure to below half the exposure standard, there is not adequate control and the tool or instrument must not be used.

    **Note:** This provision does not apply however to the removal of ACM within an enclosed removal area in accordance with 'Division 7 – Removal of asbestos' in Part 4.3 of the Regulations.

32. Where a power tool (such as a HEPA-fitted vacuum cleaner) is permitted to be used, it must be appropriately decontaminated, disposed of or sealed in airtight containers that are not used for any other purpose unless cleaned under controlled conditions (refer to 'Asbestos vacuum cleaners' on page 29).

### Use of compressed air and other gases

33. The use of compressed air and other gases on asbestos is prohibited:

    - in areas that are not enclosed to prevent the release of airborne asbestos fibres
    - within six metres of an activity involving asbestos unless it can be demonstrated the use of that air or gas does not result in airborne asbestos fibres above half the exposure standard.

    For example, using compressed air to clean/dislodge asbestos-contaminated dust from a difficult-to-access area (that is not enclosed) is prohibited. Use of compressed air within asbestos removal enclosures is not recommended.

34. The use of a pneumatic (compressed air powered) tool within six metres of any activity involving asbestos is only allowed if it can be shown that airborne asbestos fibres above half the exposure standard will not be produced. Atmospheric monitoring in the area during the task is the only method to demonstrate half the exposure standard will not be exceeded. If atmospheric monitoring is done, all persons in the area must wear at least a P1 particulate respirator in case asbestos fibres become airborne.

# Legislation that applies to asbestos removal

## Asbestos removal and workplaces

35. The Regulations only apply to workplaces. A workplace is defined as a place, whether or not in a building or structure, where employees or self-employed persons work.

## Duties of employers and self-employed persons at domestic premises

36. If an employer or self-employed person attends a domestic premises (not a workplace, eg a home) to conduct asbestos removal, the Regulations apply. The section titled 'General requirements for all asbestos removal' details how to comply with the regulations.

37. It should be noted that domestic premises are not workplaces. This means that duties which relate to asbestos in workplaces – including to identify the presence of asbestos, to record the identified asbestos in a register and to subsequently implement controls based on the condition of this asbestos – are not placed on the:

    - owner of the premises (the homeowner)
    - persons who manage the premises
    - persons leasing the premises, or
    - persons in the premises.

38. It is the duty of the employer or self-employed person who is conducting the work in the domestic premises to identify the presence of asbestos.

39. Where asbestos removal is being done by a person in their own home, the Regulations do not apply because it is not a workplace for this person. However, this compliance code may be used to minimise the risk associated with that removal. The Department of Human Services also provides guidance for householders who intend to work with or remove asbestos in their home.

## What is asbestos removal work?

40. 'Asbestos removal work' (in a workplace) refers to removal of asbestos that is fixed or installed in a building, structure, ship or plant so it is no longer fixed or installed up to the point of containment. 'Division 7 – Removal of asbestos' in Part 4.3 of the Regulations specifically covers asbestos removal work.

**Fixed or installed ACM**

ACM is regarded as being fixed where it has been attached or secured in position (eg asbestos cement sheet screwed or nailed). ACM is considered installed where it has been specifically placed for a purpose (eg asbestos-containing refractory bricks placed on top of each other or loose asbestos-containing insulation blown into a ceiling space).

### Asbestos removal work that does not require a licence

41. The law permits an employer or self-employed person to conduct a limited amount of asbestos removal work without a licence if:
    - the ACM is **non-friable**
    - the area of ACM to be removed **does not exceed 10 square metres** in total
    - the total time asbestos removal work is performed in any period of seven days **does not exceed one hour** (this period is the cumulative total time the asbestos removal work is carried out by all employees over a period of seven days).
42. Where an employer or self-employed person who does not have a licence regularly performs small amounts of non-friable ACM removal work, it is recommended a log is kept of time spent performing these tasks. This log will assist in ensuring the duration of time spent performing this work does not exceed one hour in any period of seven days. If this time will be exceeded, a licensed removalist is required to perform the removal work. The employer or self-employed person may also consider applying for a licence to remove ACM.
43. Limited asbestos removal work without a licence must be carried out in accordance with the Regulations (refer to 'General requirements for all asbestos removal' on page 21).

**Examples where a licence is not required to perform asbestos removal work**

- A single asbestos cement sheet must be removed to install an airconditioner. The sheet is two square metres in total and will take less than 30 minutes for two employees to remove. No employees of the company have done any other asbestos removal work over the previous seven days. This job may be performed by a company that is not a licensed asbestos removalist, observing the requirements outlined in 'General requirements for all asbestos removal' on page 21.
- A self-employed person is required to remove an asbestos cement eave to enable access for pipes. The asbestos cement eave is 1.6 square metres in total and will take less than one hour to remove. The self-employed person has not done any other asbestos removal work over the previous seven days. This job may be performed by the self-employed person who is not a licensed asbestos removalist, observing the requirements outlined on page 20.

### Asbestos removal work that requires a licence

Friable asbestos

44. Asbestos removal work involving friable ACM must always be performed by a class A-licensed person or employees of a class A-licensed person.

Non-friable asbestos

45. Asbestos removal work involving **non-friable** ACM must be performed by a class A or B-licensed person if:
    - the area of ACM to be removed **exceeds 10 square metres** in total, or
    - the total time over which asbestos removal work is performed in any period of seven days **exceeds one hour** (this period is the cumulative total time the asbestos removal work is carried out by all employees over a period of seven days).

> **Friable asbestos:** Asbestos material which, when dry, can be crumbled, pulverised or reduced to powder by hand pressure; or as a result of a work process, may become such that it can be crumbled, pulverised or reduced to powder by hand pressure.
>
> **Non-friable asbestos:** When dry, non-friable asbestos cannot be crumbled, pulverised or reduced to powder by hand pressure.

### Types of licences

46. An employer or self-employed person may be licensed to remove friable or non-friable ACM or both. An employer or self-employed person may also be licensed to only remove a specific type of friable or non-friable ACM. In this case, the licence issued would restrict the holder to removing only that type of ACM (see Table 1). A licensed removalist performing asbestos removal work must comply with the relevant regulations in 'Division 7 – Removal of asbestos' in Part 4.3 of the Regulations.

**Table 1: Type of ACM a licensed removalist can remove**

| Licence type | Type of ACM |
|---|---|
| Class A | Friable ACM (all types)<br>Non-friable ACM (all types) |
| Class B | Non-friable ACM (all types) |
| Class A specific | Friable and non-friable ACM as specified on the licence |
| Class B specific | Non-friable ACM as specified on the licence |

47. Removal work cannot be contracted out to another employer or self-employed person unless that person or self-employed person is also an appropriately licensed asbestos removalist. However, the licensed asbestos removalist contracted for the job is responsible for the asbestos removal work.

48. For example, an employer's core work may be installing/modifying telecommunication lines. To enable this to take place, non-friable asbestos-containing telecommunication pits and pipes need to be cut and removed. No other asbestos-related removal work is required by the employer. Therefore, the employer would apply for a class B-specific licence to remove non-friable asbestos-containing telecommunication pits and pipes.

**Class A or B licensed removal work?**

- A person is engaged to remove asbestos cement sheets from a factory toilet block. The area to be removed is 12 square metres in total. The person must be a licensed asbestos removalist and the material to be removed is non-friable so the work can be done by a class A or class B-licensed removalist.
- A self-employed person is required to remove an asbestos cement eave to enable access for a pipe. The asbestos cement eave is 1.6 square metres in total and will take less than one hour to remove. However, the person has performed a similar job in the previous six days and the total time of the two jobs will exceed one hour in a seven-day period. Unless this person is a licensed (class A or B) asbestos removalist, they cannot perform the job.

  **Note:** The time limitation applies to the person who performs the work. The person is the legal entity performing the work (eg ABC P/L, not individual employees of ABC P/L). Therefore, if a company is to perform an asbestos removal job involving three employees working for approximately 30 minutes each, the company will have carried out 90 minutes of work and must have an asbestos removal licence to perform the job.
- A company is engaged to dismantle and remove a small asbestos cement tool shed. It contains approximately 18 square metres of asbestos cement sheet. The company has two employees who will perform the job and it will take them 45 minutes each (working together). Therefore, the total time the company will spend performing the job is 90 minutes and it will exceed both the '10 square metres' and 'one hour in seven days' limits. Only one of these criteria needs to be exceeded for a licensed removalist to be required, which means the company must be licensed (class A or B).
- A company is required to remove 0.5m$^3$ of asbestos lagging from a pipe in order to carry out maintenance work. This involves the removal of friable asbestos. A class A-licensed removalist is required to do this work.

## Removal of asbestos that is not fixed or installed

49. While the Regulations do not cover licensing requirements for asbestos that is not fixed or installed (including asbestos-contaminated dust), a Dangerous Goods Order does require a licensed removalist to perform this type of removal where it is greater than 'a minor contamination' (For more information on 'a minor contamination' refer to page 16).

50. The Dangerous Goods Order (No. G26) was made to regulate the removal of asbestos (including asbestos-contaminated dust) that is not fixed or installed in a building, structure, ship or plant at a workplace. The Dangerous Goods Order specifies the extent of removal that can be performed by licensed and unlicensed employers and self-employed persons. View the Dangerous Goods Order at **gazette.vic.gov.au**.

51. Examples of asbestos not fixed or installed (for clarification on what is 'fixed' and 'installed' see page 11) include:

    - loose sheets of asbestos cement
    - broken (non-attached) pieces of asbestos cement products (including in soil)
    - surfaces contaminated with asbestos fibres/dust
    - material containing asbestos debris
    - ACMs that are products (such as an asbestos fire blanket, asbestos gaskets or asbestos brakes stored on a shelf).

### Asbestos-contaminated dust

52. Asbestos-contaminated dust is dust that has settled within the workplace and is, or is assumed to be, contaminated with asbestos. Asbestos-contaminated dust is not captured under the definition of friable asbestos and is therefore considered separately. However, because there is a potential risk to health from exposure to airborne asbestos fibres from asbestos-contaminated dust, its removal is regulated under the Dangerous Goods Order.

**Example of asbestos-contaminated dust**

- Dust surrounding an asbestos cement flue.
- Dust on horizontal surfaces below an asbestos cement roof.
- Dust in an electrical switchboard cupboard which has asbestos-backed panels.

53. The Dangerous Goods Order allows a class B-licensed removalist to remove asbestos that is not fixed or installed only if that removal is associated with or derived from the removal of non-friable ACM that is fixed to or installed in a building, structure, ship or plant. This enables a class B-licensed removalist to collect debris associated with a:
    - non-friable removal they are performing
    - non-friable removal inappropriately performed by other people.
54. The Dangerous Goods Order also allows employers or self-employed persons that are not licensed removalists to remove asbestos that is not fixed or installed if it:

    (a) is related to the removal of fixed or installed asbestos permitted under regulation 4.3.45 of the Regulations, and

    (b) does not constitute more than 'a minor contamination'.
55. In relation to 53 (a), this means any debris associated with the removal (present or past) of non-friable fixed or installed ACM may be performed by a person that is not a licensed asbestos removalist. The person who performs the removal must still be appropriately trained and perform the removal in a safe manner.
56. In relation to 53 (b), this means if the asbestos to be removed is greater than a minor contamination, a class A-licensed removalist is required. If it is a minor contamination, a licensed removalist is not required but the person who performs the removal must still be appropriately trained and perform the removal in a safe manner.

**What is a minor contamination?**

The term 'minor contamination' is not defined in the Regulations. The following guidance is therefore provided to ensure consistency in its interpretation and implementation.

### Removal of friable ACM

57. Removal (ie collection/clean-up) of any amount of friable ACM that is not fixed or installed is regarded as greater than a minor contamination. A class A-licensed removalist is required for this type of removal.

### Removal of non-friable ACM

58. A minor contamination is where non-friable ACM that is not fixed or installed can be removed:

    (a) within a period of time not exceeding one hour in total for the entire removal job (this period is the cumulative total time for which the removal is carried out by all employees)

    (b) the total cumulative time over which all removal jobs undertaken by the employer or self-employed person does not exceed one hour in any period of seven days (this period is the cumulative total time for which the removals are carried out by all employees).

59. Where the time limits outlined in paragraph 58 (a) or (b) have been or are likely to be exceeded, the job is greater than a minor contamination and a class A-licensed removalist is required.

### How to determine when the removal job starts and finishes

60. The removal job **starts** as soon as respiratory protection is required to be worn by persons who will remove (ie collect/clean-up) the asbestos.

61. The removal job is **finished** when respiratory protection is no longer required to be worn as part of the removal task.

**Example of non-friable ACM that is a minor contamination**

An employee finds an unfixed flue in a roof space and some asbestos cement debris. Removal will take 20 minutes in total. An employer or self-employed person is permitted to carry out the removal provided that any other removal of unfixed or uninstalled non-friable ACM does not result in the total cumulative time exceeding one hour over a seven-day period.

**Example of non-friable ACM that exceeds a minor contamination**

A pile of asbestos cement roof sheeting is found at the rear of a factory. The roof sheeting was recently removed from a factory roof and removal will take more than one hour. This removal exceeds a minor contamination and a class A or B-licensed removalist is required.

Asbestos-contaminated dust

62. A minor contamination of asbestos-contaminated dust is where:

(a) for the entire removal job, the asbestos-contaminated dust can be removed within a period of time not exceeding 10 minutes in total and the total cumulative time over which all asbestos-contaminated dust jobs undertaken does not exceed one hour in any period of seven days. Where these time limits have been or are likely to be exceeded (consider job start and finish times in paragraphs 60 and 61), the job is greater than a minor contamination and a class A-licensed removalist is required, or

(b) an independent and competent person determines that asbestos-contaminated dust constitutes a minor contamination (even when the time limits in (a) are likely to be exceeded). When making a decision, the independent and competent person must act in accordance with the Regulations and consider the likelihood of airborne levels of asbestos exceeding half the exposure standard during the removal process.

**Asbestos-contaminated dust that is a minor contamination**

An employer has two employees carrying out an asbestos-contaminated dust clean-up for five minutes each as a 'one-off' task. The total (cumulative) time spent by the employer is 10 minutes. Because this 'one-off' task can be performed within a period of time not exceeding 10 minutes in total, the removal is considered a minor contamination and the employer is not required to have a licence.

**Asbestos-contaminated dust that exceeds a minor contamination**

**(i)** A large warehouse has surfaces covered in asbestos-contaminated dust. The dust has come from the asbestos cement roof which has since been enclosed with a false ceiling. The total job would take more than 10 minutes. The removal exceeds a minor contamination and the Dangerous Goods Order requires a class A-licensed removalist to carry out this work.

**(ii)** An employer has two employees that service a number of workplaces. Part of their work involves carrying out incidental asbestos-contaminated dust clean-up for up to five minutes each time they perform a particular task. The task does not require removal of fixed or installed ACM. The number of these tasks performed each week can vary from none to 20. The total (cumulative) time over which removal of asbestos-contaminated dust is undertaken by the employer occasionally exceeds one hour in a period of seven days (ie five minutes per task multiplied by 20 tasks equates to 100 minutes), therefore the removal exceeds a minor contamination. The Dangerous Goods Order requires that a class A-licensed removalist carry sout this removal work.

63. An 'independent person' is a person who exercises impartiality and objectivity in determining what constitutes a minor contamination. This person must not be the person carrying out the removal work or the person or employee of the person who commissioned the asbestos-removal work.

64. A 'competent person' is a person who is trained, qualified and has a working knowledge in relation to asbestos matters, including:

- how to conduct airborne asbestos monitoring of removal work
- interpretation of National Association of Testing Authorities (NATA)-endorsed asbestos identification and monitoring reports
- risks and consequences of asbestos exposure
- likelihood of exposures in relation to specific work practices
- safe asbestos removal methods
- the requirements of Victorian law.

**Asbestos-contaminated dust that is a minor contamination determined by an independent and competent person**

Wipe-sampling has found asbestos to be present on surfaces at a workplace – as reported in a NATA-endorsed report. An independent and competent person, who has the ability to interpret NATA-endorsed asbestos identification reports, has advised that although the clean-up will take more than 10 minutes, based on their knowledge and experience, it will not result in airborne levels exceeding half the exposure standard. The removal is considered to be a minor contamination and the employer, who is not a licensed removalist, is permitted to clean it up.

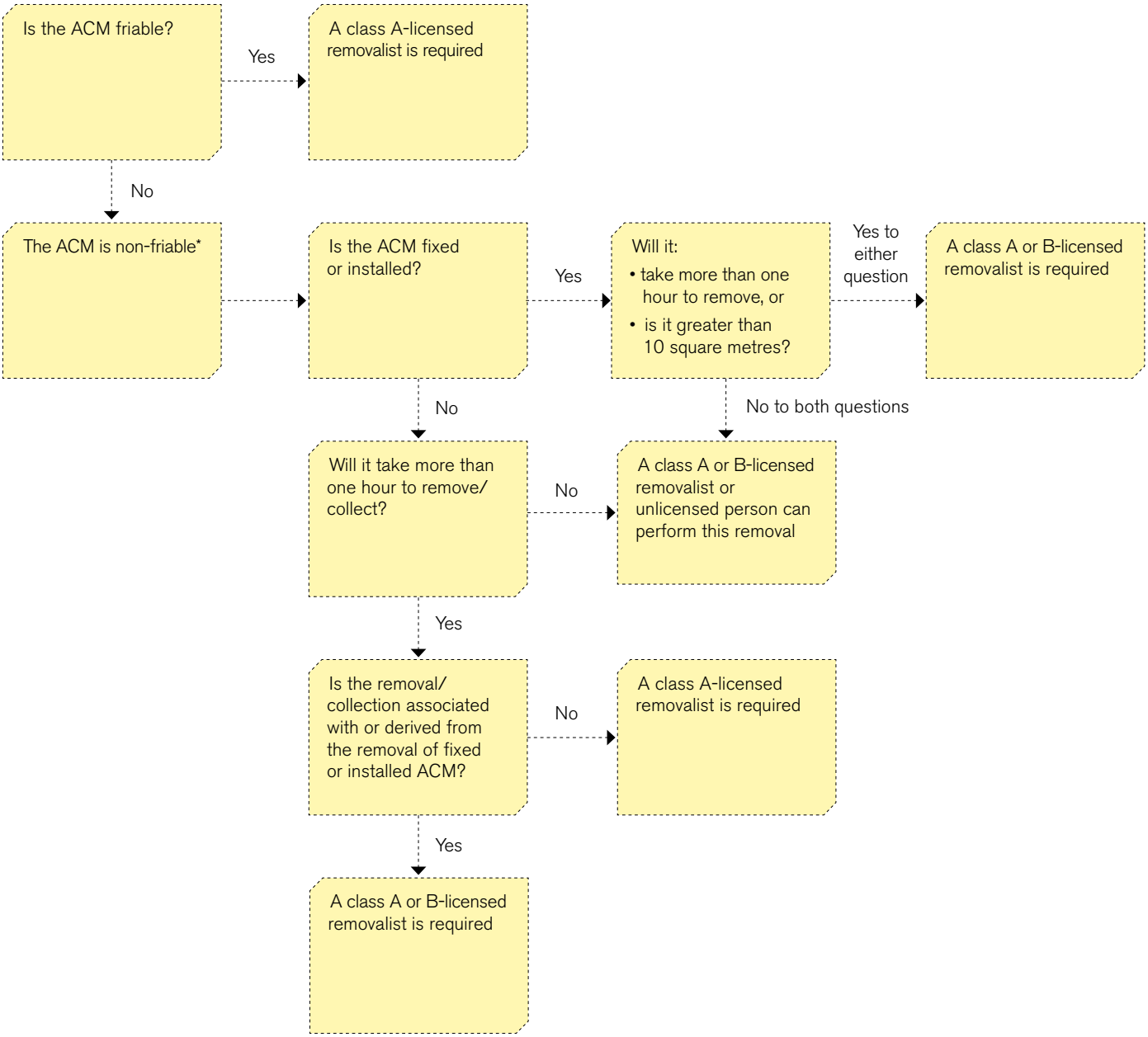
65. An example of a competent person is an occupational hygienist who has practical experience in relation to these matters. Refer to the Australian Institute of Occupational Hygienists website (**aioh.org.au**) for a list of suitable occupational hygienists.

66. Where an employer or self-employed person who does not have a licence regularly performs minor contamination removal work of non-friable ACM or asbestos-contaminated dust, it is recommended a log is kept of time spent performing these tasks. This log will assist in ensuring the duration of time spent performing this work does not exceed the time limitations outlined in paragraph 58 to 61. If the time constraints will be exceeded, a licensed removalist is required to perform the removal work. The employer or self-employed person may also consider applying for a licence to remove ACM.

67. The removal of all asbestos that constitutes a minor contamination must be carried out safely and in accordance with the Regulations – you will ensure that you meet these general requirements if you comply with regulation 4.3.45 to 4.3.60 (refer to 'General requirements for all asbestos removal' on page 21). This includes but is not limited to:

    - appropriate training of employees
    - provision of appropriate personal protective equipment (PPE)
    - provision of decontamination equipment/facilities
    - isolation of the removal area
    - appropriate packaging and disposal of waste.

## Who can perform removal work?




* Where the asbestos to be collected/removed is asbestos-contaminated dust, refer to paragraph 51.

# General requirements for all asbestos removal

68. This section applies to asbestos removal performed by both licensed and unlicensed persons. Additional guidance on the requirements of licensed removal is provided on page 43.

## Planning

69. Planning requirements for the removal of asbestos can differ greatly depending on many factors, including the:
    - specific asbestos removal task
    - type, location, quantity and condition of the ACM to be removed
    - presence of employees or other persons nearby.

70. A removalist must:
    - Obtain as much detail as possible on the location and condition of the ACM to be removed and any adjacent ACM. If in doubt to whether an item contains asbestos, it needs to be assumed that it does (or a sample of it analysed). Appendix C provides a list of examples of ACM.
    - Obtain a copy of the asbestos register (refer to page 22).
    - Consult with the person who commissioned the work and advise them when asbestos removal work will be taking place.
    - Ensure the proposed removal area and its surrounds will be unoccupied for the duration of the removal.
    - Establish a location for personal decontamination.
    - Establish emergency plans for prompt evacuation (such as for fire) and elevated airborne fibre detection.
    - Provide employees with the information, instruction, training or supervision that is necessary to enable them to perform their work safely. Licensed removalists have additional duties under the Regulations in relation to supervisors (refer to 'Additional requirements for asbestos removal' on page 43).
    - Establish the controls to be used and ensure these are conveyed to all relevant persons (see the asbestos removal check sheet in Appendix G).
    - Complete a safe work method statement if one is needed – see paragraph 80.
    - Identify other hazards related to the job, assess the risk and implement controls. Such hazards include but are not limited to working at height, working next to hot surfaces and electrical hazards.

71. Planning is essential as any misunderstanding could lead to the use of unsafe removal methods and potentially endanger the health of asbestos removal workers, people in adjoining properties and local residents.

## Informing people in immediate and adjacent areas

### Asbestos removal work at a workplace (not a domestic premises)

72. Asbestos removal work referred to in this section requires a licensed removalist.

73. The person who engaged the licensed removalist must inform all employers in the immediate and adjacent areas before the asbestos removal work starts.

74. An employer at the workplace where removal work is to take place must inform employees in the immediate and adjacent areas before the removal work commences.

### Asbestos removal work in relation to domestic premises

75. Where asbestos removal work is to take place at a domestic premises by a licensed removalist, it is the licensed removalist's duty to inform all employers in the immediate and adjacent areas of the proposed removal work.

76. The Regulations do not require occupants of domestic premises in the immediate and adjacent areas to be notified of any asbestos removal work. However, informing occupants and other people who may be affected two or three days before the removal is to start would help alleviate any concerns that may arise.

### An immediate and adjacent area

77. An immediate and adjacent area is an area where the removal work will take place, adjoin or directly face the asbestos removal site. This may include the building next door. Informing employers in these areas enables them to inform their employees and make appropriate arrangements to prevent people from approaching these areas if necessary.

## Asbestos register

*Note: Under the* OHS (Asbestos) Regulations 2003 *this was referred to as a part 5 Audit.*

78. The removalist must obtain the asbestos register from the person who commissioned the removal work. The person who has management or control of the workplace or plant and who has engaged the removalist has a duty to provide this register.

79. Where the removal work is to be performed at domestic premises, an asbestos register will not be available. At such premises there is a duty on the employer or self-employed person performing the demolition or refurbishment to determine whether asbestos is fixed or installed on the premises. Where a homeowner has engaged a removalist to remove some asbestos cement sheeting, the duty is the removalists. Where a company has bought three houses and is to demolish them in preparation for townhouses, the duty lies with the company.

**What is an asbestos register and what must be in it?**

An asbestos register contains information about the asbestos that has been identified in the workplace. A person who manages or controls a workplace where asbestos is present must have an asbestos register. In addition, an employer in the workplace who has management or control over any structures or plant that contain asbestos must also have an asbestos register. There is no mandatory format that the register must follow. However, it must include the following:

- information required as part of the identification of asbestos, including:
  - the location of the asbestos
  - the likely source of unfixed or uninstalled asbestos
  - the type of ACM
  - whether the asbestos is friable or non-friable
  - the condition of the ACM
  - whether the ACM is likely to be damaged or disturbed
- details of all inaccessible areas likely to contain asbestos
- detailed information about activities carried out in the workplace that are likely to disturb the asbestos
- dates when the identification and risk assessment were made.

Further guidance on asbestos registers can be found in WorkSafe's *Managing asbestos in workplaces* compliance code.

## Safe work method statements

80. An employer or self-employed person must determine whether the asbestos removal work falls within the meaning of high-risk construction work as defined by the Regulations. If it does, a safe work method statement is required. For licensed removal work the preparation of a control plan is taken to be the equivalent of a safe work method statement, therefore a safe work method statement is not required in relation to asbestos removal. However, if there are activities other than asbestos removal that fall within the meaning of high-risk construction work, a safe work method statement addressing those other activities must be completed. A reference in the safe work method statement to the asbestos control plan would be useful.

81. For further guidance on safe work method statements and asbestos removal refer to paragraphs 237–239.

## Elimination of airborne asbestos fibres

82. An employer or self-employed person performing asbestos removal work must ensure this work is performed in a manner that, so far as is reasonably practicable:
    - eliminates the release of airborne asbestos fibres
    - prevents the contamination of areas adjacent to the asbestos removal area.

83. This requires planning to ensure methods of removal are used that minimise the generation of airborne asbestos fibres whether or not the removal is to be performed within an enclosure (refer to 'Specific requirements for the removal of friable ACM' on page 55). Such methods need to include:

- hand tools in preference to power tools
- careful unfixing of ACM
- wet methods such as a fine water mist spray and damp rags (see Appendix P) wherever practicable. A fine mist water spray may need to be applied at regular intervals during the day (particularly in warm weather) to ensure dust remains suppressed. High pressure water must not be used because this would generate airborne asbestos fibres, spread the asbestos beyond the work area and make clean-up more difficult.
- drop sheets to collect asbestos-containing debris.

84. Adjacent areas where there is potential (or any uncertainty about the potential) for contamination must be well isolated to prevent access by persons not directly associated with the asbestos removal work. In a multi-storey building this may mean isolating the entire floor and floors directly above and below where asbestos removal is to take place.

## Training

85 . All persons performing asbestos removal work must receive information, instruction and training to enable them to perform the work safely and without risk to health. This includes training about:

- the nature of the hazard
  - how asbestos can affect a person's health
  - the added dangers of smoking
- the risk from exposure to airborne asbestos fibres
  - appropriate controls
  - what methods and equipment will do the job properly
  - how to choose, use and look after personal protective equipment
  - decontamination of persons, equipment and the work area
  - waste disposal
  - emergency procedures
- maintenance of controls
- what the law requires.

86. A record of the training for each person performing the asbestos removal work must be readily available at the removal site. This is the responsibility of the licensed removalist. It may not be adequate to rely on individual employees to bring their training records to each job.

87. A non-licensed person performing removal permitted under the Regulations must ensure training records for each person engaged in asbestos removal work is retained while that work is being performed. These records need to be available at the removal site.

88. Refresher training needs to be conducted every year for class-A removalists and every two years for class-B removalists. However it may be needed more often if:

- work methods change
- the type of equipment used changes, or
- the type of work changes.

## Personal protective equipment (PPE)

89. Personal protective clothing needs to be provided and worn at all times during all work in the asbestos removal area prior to achieving a satisfactory final clearance inspection. Personal protective clothing needs to be made from materials which provide protection against fibre penetration.

### Coveralls

90. Clothing made from wool or other materials that attract fibrous dusts should not be worn at the asbestos removal site. Coveralls should not have external pockets or velcro fastenings because these are easily contaminated and difficult to decontaminate. Any clothing worn under coveralls must be disposed of or suitably bagged for laundering as asbestos-contaminated clothing. Disposable coveralls are preferred although some are easily torn (these are unsuitable and should not be worn). Disposable coveralls should also:

    - never be re-used or taken home
    - be disposed of as asbestos waste after a single use
    - be of a suitable standard to prevent penetration of asbestos fibres as far as practicable. Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1) or equivalent would meet this standard
    - be one size too big as this will help prevent ripping at the seams
        - if cuffs are loose ensure they are sealed with tape
        - ensure coverall legs are worn over footwear as tucking them in lets dust in
        - ensure the hood is worn over the respirator straps.

91. In some limited circumstances, for example if there is a fire hazard, disposable protective clothing is not appropriate and re-usable types may be used.

92. Used non-disposable coveralls must be either disposed of after a single use or laundered. However, laundering of asbestos-contaminated protective clothing is not recommended because decontamination cannot be guaranteed. If re-usable protective clothing is to be laundered, refer to 'Laundering of contaminated clothing' on page 53.

93. Special attention needs to be paid to the risk of heat stress and burns from working in very hot environments. A competent person needs to assess this risk and determine the most suitable protective clothing and decontamination procedures for employees in these situations.

### Gloves

94. The use of protective gloves needs to be determined by a risk assessment. If significant quantities of asbestos fibres may be present, single-use disposable gloves need to be worn. If latex gloves must be used, select low protein (powder free) gloves. Gloves used for asbestos removal work need to be disposed of as asbestos waste. Laundering/cleaning these gloves is not recommended due to physical damage/deterioration as a result of the work performed and cleaning process.

95. Regardless of whether gloves are used, asbestos removal workers need to clean their hands and fingernails thoroughly after work.

### Footwear

96. Appropriate safety footwear (ie steel-capped, rubber-soled work shoes or gumboots) needs to be provided for all persons removing asbestos. This footwear needs to be laceless as laces and eyelets are easily contaminated and difficult to clean. Footwear needs to remain inside the barricaded area or dirty decontamination area for the duration of the asbestos removal work and should not be shared due to hygiene reasons. When safety footwear is not in use it needs to be stored upside down to minimise asbestos-contamination inside the footwear. Storage facilities need to be provided to allow this. Disposable overshoes should be avoided because they cause a slipping risk.

97. At the end of the job and upon leaving the work area, safety footwear must be:

- decontaminated
- sealed in double bags for use on the next asbestos removal site (but not for any other type of work), or
- disposed as asbestos waste.

### Respiratory protective equipment

Selection and level of protection

98. All persons engaged in asbestos removal work must wear respiratory protective equipment (RPE) conforming to the requirements of AS/NZS 1716:2003 *Respiratory protective devices* or its equivalent.

99. The selection, use and maintenance of respirators needs to be in accordance with AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* and manufacturer's instructions.

100. The suitability of employees for work in the asbestos removal industry needs to be assessed by a qualified medical practitioner. Employees must be medically fit to wear RPE – the employer needs to seek medical advice if there is any uncertainty. If a medical condition precludes the use of negative pressure respirators, employees need to be provided with a continuous flow, positive pressure respirator wherever possible.

101. Respirators need to be issued to individuals for their exclusive use – employees need to select a size and make that fits them. The fit of a negative-pressure respirator to a person's face is critical. A fit test, in accordance with AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* and the manufacturer's instructions, needs to be performed to assist in determining that the respirator fits the individual. It is difficult for an individual to establish that a disposable respirator provides the required fit. For this reason it is recommended that where a half-face respirator has been determined as providing the required level of protection, a non-disposable respirator be used.

102. All asbestos removal employees using negative-pressure respirators that require a facial seal must be clean shaven or they won't be protected properly. Employees with beards, stubble or facial hair need to use a continuous flow positive pressure respirator.

103. Employees requiring the use of prescription glasses may not be able to use full-face respirators because of the loss of seal around the spectacle arms. If their glasses cannot be modified so they do not need the support of the ears, these people should not use full-face respirators and need to wear air supply hoods instead. However, it is important to be sure these hoods will provide a sufficient level of protection.

104. The level of respiratory protection required (eg P1, P2, P3 and supplied air respirators) needs to be determined by a competent person in accordance with the asbestos removal task to be undertaken. Appendix E provides more information on the selection of suitable respiratory protection for particular removal tasks. RPE suppliers should also be contacted for more information on the selection of suitable RPE.

105. A competent person may change the level of respiratory protection at any stage during the removal process following a thorough assessment of the fibre levels experienced inside the asbestos work area. Typically, this may occur during the final clean-up after the removal of friable ACM (eg when the use of air-lines is no longer considered necessary).

Figure 1: Fit check.

Full or half-face respirator fit check:

- close off inlet to filter
- inhale gently
- hold for 10 seconds
- face piece needs to remain slightly collapsed.

Use and maintenance of respiratory protective equipment

106. A fit check (different to a fit test), in accordance with AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* and the manufacturer's instructions, needs to be performed immediately before commencing work with the respirator each time it is to be used.

107 The respirator must be worn in accordance with the manufacturer's instructions and the coverall hood must go over the respirator straps. It must be worn at all times in the removal area and until the appropriate stage of personal decontamination (refer to 'Decontamination facilities and methods' on page 33 and 'The decontamination unit' on page 49). At the end of a shift or at a break, as part of the decontamination process, ensure the respirator is taken off last. Disposable respirators are not a preferred form of respiratory protection for asbestos removal work. If used, they must be disposed of as asbestos waste after a single use. Non-disposable respirators must be cleaned and stored in a safe place away from contamination.

108. The respirator should never be left lying around where it can collect dust and should never be dangled around a person's neck.

109. A system of regular cleaning, inspection and maintenance must be provided for non-disposable respirators. Records of all respirator uses and maintenance need to be established and kept up-to-date (eg a log book). Respirators need to be maintained in a clean and good working condition by the person responsible for their safe working condition. All parts, including filters, valves and seals, need to be inspected before and after each use. Respirator defects need to be reported immediately to the supervisor of the removal job for repair or replacement.

110. The length of time a particulate filter for asbestos removal work is used depends on resistance to breathing and damage to the filter. The filter needs to be replaced when damaged or when resistance increases in accordance with the manufacturer's instructions. A damaged filter must be replaced before resistance begins to increase. It also needs to be replaced before any manufacturer-recommended period if the filter is damaged or resistance increases.

111. Certain brands of filters may not be able to be re-used after being exposed to certain conditions such as a full decontamination shower. Specific advice needs to be sought from the supplier regarding the effectiveness of a filter after it has been exposed to a decontamination shower to assist in determining whether it may continue to be used or needs to be disposed of.

112. All filters used during asbestos removal work must be disposed of as asbestos waste. Filters must not be cleaned in an effort to extend their life. Tapping of the filter or using compressed air on it can cause damage and reduce the protection it provides. However, gently patting the respirator/filter with a damp cloth to remove any external dust as part of a decontamination process is acceptable.

113. The correct filter must be fitted to the face piece otherwise the respirator would not meet relevant standards and may not provide the required protection.

### Use of air-line respirators

114. Air-line respirators are only required for certain types of friable asbestos removal work. Therefore, this section is not applicable to permitted unlicensed removal or class B-licensed removal work.

115. Where air-lines are used, they need to incorporate a backup filter. Where failure of the air supply system occurs, employees need to leave the work area using normal decontamination procedures. The use of a backup filter device allows for adequate respiratory protection during this process.

116. If the number of employees wearing air-line respirators inside an enclosure is likely to result in the tangling of air-lines, manifolds need to be provided to reduce tangling and assist employees to move around the enclosure. The capacity of the compressor needs to be adequate for the number of air-lines, and the location of the compressor's air intake needs to be assessed to ensure appropriate air quality and avoid contamination. AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* provides guidance on the air quality requirements for supplied-air respirators.

### Training on respiratory protective equipment

117. All employees who undertake any asbestos removal work must receive instruction and training in:

- fit testing/checking
- the importance of a correct facial fit
- the correct method of using their respirators
- the requirements of the system of regular cleaning, inspection and maintenance before they commence work with respirators
- when to stop removal work and leave the area if they think their RPE is not working properly.

Employers must ensure the above training has been understood by employees. Suppliers of respirators can assist with this training.

118. The use of the respirator in ways other than that recommended by the manufacturer would mean the respirator does not meet AS/NZS 1716:2003 *Respiratory protective devices.*

## Signs and barricades

119. The Regulations require an employer or self-employed person performing asbestos removal work to use signs to clearly indicate the area where the removal work is being performed. These signs must be placed so they inform all people nearby that asbestos removal work is taking place in the area.


Figure 2: A warning sign informing people of asbestos work in the area.

Figure 3: Barrier formed using tape (appropriate for small non-friable removal jobs or as part of system using other barriers such as hoarding).

120. Signs need to be weatherproof, lightweight and securely situated so they remain in prominent locations such as entry points to the asbestos work area. They need to be in accordance with AS 1319-1994 *Safety signs for the occupational environment* (refer to Appendix D for examples).

121. In addition to signs, barricades need to be used to indicate the area where the removal work is being performed. Barricades also need to be used to assist in preventing access to the asbestos removal area (refer to 'Signs and barricades' on page 48).

122. Employers have a legal duty to ensure, so far as is reasonably practicable, that persons other than employees are not exposed to risks to their health or safety arising from the conduct of the undertaking of the employer. The use of both signs and barricades would assist in ensuring this.

123. Reliance on signs and barricades alone to prevent access to the removal area is not sufficient. The removalist's system of work for ensuring access to the removal area is prevented needs to include regular checking of areas where access is possible. In some cases, such checking may need to be continuous.

124. All barriers and warning signs must remain in place until the removal work has been completed. For licensed removal work of friable asbestos or non-friable ACM greater than 10 square metres, all barriers and signs must remain in place until a clearance to re-occupy has been granted (refer to 'Clearance to re-occupy an asbestos removal area' on page 68).

## Tools and equipment

125. Tools and equipment include asbestos vacuum cleaners, manually operated hand tools (such as chisels, spatulas, brooms and brushes), power tools and spray equipment to suppress airborne dust.

### Asbestos vacuum cleaners

126. Asbestos vacuum cleaners must conform to the requirements of AS/NZS 60335.2.69:2003 *Household and similar electrical appliances – Safety – Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use* or its equivalent. Filters for these vacuum cleaners must conform to the requirements of AS 4260-1997 *High efficiency particulate air (HEPA) filters – Classification, construction and performance* or its equivalent.

**Warning:** In any removal job, domestic vacuum cleaners are unsuitable and should never be used even if they have a HEPA filter.

127. Asbestos vacuum cleaners can only be used for collecting small pieces of asbestos dust and debris. Larger pieces need to be picked up and placed in suitable waste containers. They should never be broken into smaller sizes for vacuuming.

128. Asbestos vacuum cleaners should not be used for vacuuming wet materials because this can damage the HEPA filter.

129. The correct attachment to the asbestos vacuum cleaner for the type of surface being cleaned needs to be used. Note that brush attachments are difficult to clean properly.

130. Procedures need to be established for the general maintenance (including emptying) of asbestos vacuum cleaners in a controlled environment. A competent person wearing the correct PPE needs to empty asbestos vacuum cleaners in a controlled environment and in compliance with the manufacturer's instructions. It is often more convenient and safer to empty the vacuum cleaner in the asbestos removal area with PPE.

131. When the asbestos removal work is completed, the vacuum cleaner and attachments need to be decontaminated. If possible, clean the vacuum cleaner's outer casing and attachments with the vacuum cleaner, followed by damp rags (see Appendix P). Visually inspect the case, hose and attachments then store in a labelled impervious container. Place a cap over the opening to the asbestos vacuum cleaner when the attachments are removed.

132. When required, remove the bag and filter in accordance with the manufacturer's instructions and dispose of them as asbestos waste. Wipe the inside and outside of the vacuum cleaner with damp rags (dispose of rags as asbestos waste after use). The vacuum cleaner needs to be re-sealed in the storage container provided. The sealed storage container then needs to be decontaminated by wet wiping the exterior before being removed from the asbestos work area. In between removal jobs, the vacuum cleaner needs to be isolated to prevent untrained persons using it in an inappropriate manner.


Figure 4: A HEPA vacuum cleaner.

133. Whenever possible, asbestos vacuum cleaners should not be hired as they can be difficult to fully decontaminate. If hiring is necessary, vacuum cleaners need to be:
    - hired only from organisations that provide vacuum cleaners specifically for work with asbestos
    - transported in a sealed airtight storage container with instructions that it may be removed only when it is inside the asbestos work area and users are wearing appropriate PPE.

134. Organisations that hire out asbestos vacuum cleaners must ensure that all their asbestos vacuum cleaners, filters and bags are maintained in good working order. People hiring asbestos vacuum cleaners must be competent to use them safely.

**Warning:** Unless proper precautions are taken, employees and other people will be exposed to high levels of asbestos fibres.

### Tools

135. Care needs to be taken in selecting tools for asbestos removal work. In addition to being suitable for the work, all tools need to prevent or minimise the generation and dispersion of airborne asbestos fibres as much as possible. Such tools may include scrapers, chisels, bolt-cutters and screwdrivers.

136. The Regulations state that a broom, brush, high-pressure water jet, power tool or other similar tool or instrument must not be used on asbestos unless the use is controlled. The control must be in the form of an enclosure, an engineering control or a combination of these so that a person is not likely to be exposed to more than one half of the exposure standard. A person cannot rely on respiratory protection to ensure their exposure is reduced to half the exposure standard. The use of such a tool or instrument may require personal air monitoring to demonstrate that exposure is not likely to exceed half the exposure standard.

137. In any case, the use of power tools in asbestos removal work needs to be avoided because of the potential generation of airborne asbestos fibres and the possibility of internal contamination of the tool (which commonly occurs with such devices).

138. Manually operated hand tools are preferred. If they are not adequate, low-speed battery powered tools may be considered. Battery-powered tools fitted with a local exhaust ventilation dust control hood are likely to meet the regulatory requirements.

139. The use of brooms or brushes in asbestos removal work needs to be avoided because of the potential generation of airborne asbestos fibres. However, if the removal work is within an enclosure (refer to 'Specific requirements for the removal of friable ACM' on page 55), the use of brooms or brushes would be appropriate as any airborne dust generated would be captured.

140. At the end of the removal work, all tools must be:

- decontaminated (ie fully dismantled and cleaned under controlled conditions as described in 'Decontamination facilities and methods' on page 33)
- placed in sealed containers (to be re-opened at other asbestos removal jobs in the removal area under controlled conditions), or
- disposed of as asbestos waste.

Figure 5: Spray using a low-pressure sprayer.

### Spray equipment

141. A constant low-pressure water supply is required for wetting down ACM and related items to suppress airborne asbestos fibres. This can be achieved with a mains-supplied garden hose fitted with a pistol grip. If no water supply is readily available, a portable pressurised vessel (such as a pump-up garden sprayer) may be used. For very small areas, a small spray water bottle may be sufficient. In all cases, the use of water needs to be in the form of a mist to minimise the potential to generate airborne dust (see Figure 5).

**Warning:** High-pressure spray equipment must never be used.

## Wet and dry methods of removing ACM

142. Wherever possible, dry ACM should not be worked on.

143. Techniques that prevent or minimise the generation of airborne asbestos fibres need to be used. The following methods can assist in preventing or minimising the generation of airborne asbestos fibres.

### Wet spray method (preferred)

144. A fine water spray needs to be applied to the ACM in a manner that ensures the entire surface of the ACM is saturated but minimises run-off. It needs to be maintained in a wet condition.

145 In many instances it is helpful if a wetting agent (surfactant), such as detergent, is added to the water as this facilitates more rapid wetting of the ACM.

146. A manually controlled, consistent low-pressure, fine spray (such as from an adjustable pistol-grip garden hose) is recommended.

147. The design of the spraying equipment will depend on the availability of a water supply and access to the area to be sprayed.
148. While the water spray needs to be copious, it should not be so forceful that the water droplets generate dust when they hit the surface of the ACM.
149. Immediately after the ACM is removed from its fixed/installed position, it should also be sprayed on sides previously not exposed.
150. When cutting equipment is being used to remove ACM that is friable, the water spray needs to be directed at the site of the cut and the wetted material needs to be removed as the cut progresses.
151. The wetted ACM needs to be removed in sections, immediately placed in suitably labelled asbestos waste containers and properly sealed (see 'Asbestos waste containment and disposal' on page 52). Any small sections that might be dislodged need to be collected and properly disposed of as asbestos waste.
152. The wet spray method is the preferred removal method. It can only be used however, if:
    - the ACM is not covered with other materials such as calico or metal cladding which require prior removal – in this case the ACM should be wet as the cover is being removed from each section
    - the ACM is not coated with paint or mastic
    - any rapid temperature drop caused by excessive water will not damage heated metal components
    - no live electrical conductors are present and no damage to electrical equipment can arise from the ingression of water.
153. Although airborne asbestos fibres are significantly suppressed when the wet spray method is used, they are not entirely eliminated so effective respiratory protection is also essential.
154. Consideration needs to be given to applying a PVA emulsion as it may be more effective than water (with a wetting agent) in reducing fibre release.
155. Wherever reasonably practicable, a HEPA-fitted vacuum cleaner needs to be used in conjunction with the wet spray method (eg prior to spraying ACM with water, dust spread over a large area may be collected using the HEPA-fitted vacuum cleaner).

**Dry removal method (not preferred)**

156. The dry removal method can only be used if the wet spray method is not suitable (eg if there are live electrical conductors or if major electrical equipment could be permanently damaged or made dangerous by contact with water).
157. There is a much greater potential for airborne asbestos fibres to be generated with the dry removal method than the wet spray method.
158. Accordingly, if the dry removal method has to be used, the following controls need to be implemented.

Friable removal

159. Fully enclose the work area with plastic sheeting (at least 200 micron thick) and maintain at a negative pressure (at least 12 Pa water gauge). Ensure all employees involved in the removal operation wear full-face positive-pressure supplied air-line respirators (refer to Appendix E).

Non-friable removal

160. Enclose the removal area as far as reasonably practicable.

Both friable and non-friable removal

161. The ACM needs to be removed in small, pre-cut sections with minimal disturbance to reduce the generation of airborne asbestos fibres as much as possible. Wherever reasonably practicable, a HEPA-fitted vacuum cleaner needs to be used and waste material needs to be immediately placed in appropriate wetted containers.

**Wet injection (friable ACM)**

162. This method involves injecting water or a water-based solution directly into friable ACM. It is a process that requires specific training in relation to the use of the equipment and the process.

## Decontamination facilities and methods

163. Decontamination facilities are required for:

- decontaminating the work area
- decontaminating tools and equipment
- personal decontamination.

**Decontaminating the work area**

164. Asbestos-contaminated dust and debris must be collected in a safe manner and the asbestos removal area must be decontaminated (paying particular attention to walls, ledges, fittings and furnishings). Two types of decontamination procedures may be used – wet and dry decontamination.

165. **Wet decontamination (or wet/damp wiping)** involves the use of damp rags to collect settled dust (see Appendix P). Similar to the wet spray method, this method of decontamination needs to be used in combination with a dry decontamination method. For example, a HEPA-fitted vacuum cleaner may be used initially to clean the area, followed by damp rags to collect any residual dust. For very small non-friable removal work, use of damp rags alone may be adequate. Employees must be trained in an appropriate procedure to ensure dust is collected and disposed of correctly (and not distributed elsewhere).

166. Wet wiping may be used in an area that is isolated where employees are wearing appropriate PPE and bigger pieces of debris have been picked up and placed in waste containers. Cotton rags that do not leave bits on clean surfaces may be soaked in a bucket of water, folded in half or quarters and wrung out. The rag can then be used to wipe the contaminated surface and may be re-folded so a clean surface of the rag is used (this may be repeated until all clean surfaces of the rag are used). All used rags must be disposed of as asbestos waste. Care needs to be taken to avoid any potential electrical hazards.

**Warning:** Never re-soak a contaminated rag as this will contaminate the water. If contamination of the bucket of water is avoided, no special precautions are needed for disposal of the water.

167. **Dry decontamination** can only be 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 plastic sheeting and/or vacuuming the asbestos work area with a HEPA-fitted vacuum cleaner. Employees must be trained in an appropriate procedure to ensure dust is collected and disposed of.

168. Vacuuming may be used in an area that is isolated and where employees are wearing appropriate PPE. Bigger pieces of debris need to be wetted, picked up by hand and placed in waste containers (refer to page 29 for further information on the use and maintenance of HEPA-fitted vacuum cleaners).

### Decontaminating tools and equipment

169. All tools and equipment used during the removal task must be decontaminated using either the wet or dry decontamination procedures before they are removed from the asbestos removal area. Otherwise they need to be double bagged for later use or disposed of as asbestos-contaminated waste. The method chosen will depend on its practicality, the level of contamination and the presence of any electrical hazards.

170. If tools and equipment cannot be decontaminated in the asbestos removal area and are to be re-used at another asbestos removal area, they need to:

- be tagged to indicate asbestos contamination
- be double bagged in clearly labelled asbestos bags with an appropriate warning statement before being removed from the asbestos removal area
- remain sealed until they have been decontaminated or the commencement of the next asbestos removal/maintenance task (where the equipment can be taken into the removal area and re-used under controlled conditions).

171. PPE needs to be worn when opening the bag to clean or re-use the equipment or tools and decontamination can only be performed in a controlled environment (refer to page 29 for further information on asbestos vacuum cleaners).

172. In some circumstances it may be better to dispose of contaminated tools and equipment depending on the level of contamination and the ease of replacement.

### Personal decontamination

173. Employers have a legal duty to provide, so far as is reasonably practicable, adequate facilities for the welfare of employees at any workplace under the management and control of the employer. Such facilities may include personal decontamination facilities. The provision of decontamination facilities is essential for asbestos removal work.

174. Employers must provide appropriate personal decontamination facilities for the duration of the removal work. The type of decontamination required will depend on the type and condition of asbestos (ie friable or non-friable), the work method used and site conditions. Some asbestos removal work necessitates the use of decontamination units, which are discussed in detail on page 49.

175. WorkSafe's *Workplace amenities and work environment* compliance code states that employees who undertake work which requires strenuous effort, involves possible exposure to infectious agents or other contaminants or leaves them dirty or smelly, need to have access to showers before leaving work. This means that even though the asbestos removal aspect of the work may not require personal decontamination to include decontamination units (as detailed on page 49), access to showers before leaving work may still be required. Personal washing and hygiene are essential (particular attention needs to be paid to the hands, fingernails, face and head).

176. Personal decontamination must be undertaken each time employees leave the asbestos work area. Personal decontamination needs to be performed within the asbestos work area where re-contamination cannot occur.

177. Asbestos-contaminated personal protective clothing should not be transported outside the asbestos removal area except for disposal or laundering purposes.

178. Before personal protective clothing and footwear worn during asbestos removal work are removed, they need to be decontaminated to the point where the generation of airborne dust from the subsequent handling of the clothing and footwear is minimised. This preferably needs to be done by vacuuming with a HEPA-fitted vacuum cleaner to remove any asbestos fibres (refer to page 29). Footwear also needs to be wet-wiped.

179. Respiratory protective equipment can only be removed after:

- decontaminating personal protective clothing and footwear (as described above)
- bagging personal protective clothing for disposal (or laundering)
- completing personal washing.

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

181. If friable ACM is being removed, the decontamination procedures described on page 49 must be followed. Exceptions to this generally include 'glove bag', 'wrap and cut' (described on page 64) and friable gasket removal jobs, where the decontamination process outlined in paragraphs 186 to 193 is likely to be satisfactory.

182. 'Mini enclosure' removals may require a combination of the personal decontamination procedure outlined in paragraphs 184 to 190 and page 60.

### Removal of small quantities of non-friable ACM

183. For the purpose of this section, a small quantity of non-friable ACM is:

- any quantity permitted to be removed by an unlicensed person
- ACM cladding on an average size house.

184. Where small quantities of non-friable ACM are being removed, a competent person may decide that the personal decontamination procedure (outlined in paragraphs 186 to 191) can safely be used instead of a full decontamination unit. This decision is made based on a risk assessment that takes into account the:

- condition of the ACM
- difficulty in performing the removal
- level of airborne dust likely to be generated
- available cleaning/washing facilities at the site
- duration of the task.

185 In some cases (particularly dusty jobs), double coveralls need to be used with the outer coverall being removed a predetermined distance from the final decontamination area.

186. Establish a decontamination area. This area needs to be selected so that it:

- is isolated from the asbestos removal work area
- includes sufficient space for equipment for decontamination
- has access routes that allow persons to leave the asbestos removal work area and do not require them to re-enter it after personal decontamination.

Figure 6: 'Buddy' cleaning.

187. Workers need to decontaminate every time they leave the asbestos removal work area. Remove all visible asbestos dust/residue from protective clothing and footwear using an asbestos vacuum cleaner and/or wet wiping with a damp rag (see Appendix P). Use damp rags with a gentle patting action (rubbing can disturb fibres) or spray overalls with a fine mist spray to suppress the dust. Where there are two employees, they can help clean each other.

188. Carefully peel off disposable coveralls (while still wearing the respirator). They need to be peeled off inside out and then placed in an asbestos-waste container. Footwear needs to be wet-wiped.

189. As covered on page 25, disposable coveralls are preferred. If non-disposable coveralls are used, they need to be completely wetted before being double bagged, labelled and sent to an appropriate laundering facility.

190. Remove and place disposable respirators into an asbestos-waste container. If non-disposable respirators are used, they need to be gently patted with a damp rag while still being worn. The rag then needs to be placed into an asbestos-waste container and the respirator removed and thoroughly cleaned. The respirator must only be removed after coveralls are removed and bagged. After removing the respirator, workers need to wash their face and hands, paying particular attention to their fingernails.

191. If site washing facilities are used, restrict access by other people during asbestos removal work. Clean washing facilities daily and at the end of the job with wet rags. Inspect the facilities once the job is finished to ensure the area is clean.

192. The above method of personal decontamination might be suitable after the removal of the following non-friable ACM:

- an asbestos (Zelemite) electrical switchboard
- small amounts of asbestos cement sheeting (covering an average house) or vinyl floor covering
- minor amounts of asbestos debris
- asbestos cement conduits and inground surface pits.

193. However, where these forms of ACM are friable, more extensive decontamination procedures are required. The measures adopted need to be based on a risk assessment where the risks of each individual asbestos removal job are assessed to determine the appropriate decontamination procedure.

## Asbestos waste containment and disposal

194. The person performing the removal work must have a system of work for containing and disposing of the asbestos waste, no matter how big or small the removal work is.

### Waste disposal program

195. A waste disposal program needs to be developed, taking account of:

- the containment of waste so as to eliminate the release of airborne asbestos fibres
- the location and security of waste storage on site
- the transport of waste within the site and off site
- the location of the waste disposal site
- approvals needed from the relevant local disposal authority
- any local disposal authority requirements that may apply to the amount and dimensions of asbestos waste (eg EPA Victoria-licensed waste disposal site requirements).

General requirements

196. Loose asbestos waste must not be allowed to accumulate within the asbestos work area. It must be contained so as to eliminate the release of airborne asbestos fibres. This may be achieved by the use of double bags or polythene sheeting, a polythene-lined drum or bin or a double-lined skip.

197. Only unused bags and polythene sheeting can be used. Bags marked for asbestos waste should not be used for any other purpose.

198. Controlled wetting of the asbestos waste must be carried out to reduce asbestos-dust emissions during bag/polythene sealing or any subsequent rupture of the bag or wrapped bundles.

199. The external surface of each waste container (ie bag or wrapped bundle) must be decontaminated/cleaned to remove any dust before the container is removed from the asbestos removal area.

200. The routes to be used for removing waste from the asbestos removal area need to be designated before the commencement of each removal, preferably as part of the asbestos removal control plan (see page 43). The methods used to transport waste through a building need to be determined by a competent person following discussions with the asbestos removalist. In occupied buildings, all movement of waste containers through a building need to take place outside normal working hours.

201. Once the waste has been removed from the asbestos removal area, it must either be:

- placed in a solid waste drum, bin or skip for secure storage and eventual disposal, or
- immediately removed from the site by an EPA Victoria-approved/licensed carrier for disposal.

202. Waste containers must not be stored at the asbestos removal site if they are not contained to eliminate the release of airborne asbestos fibres (eg within locked solid containers such as drums, bins, skips or in containers within locked areas). Containers must also be labelled to indicate the presence of asbestos.

203. Prior to packaging the asbestos, the site to which the waste is to be taken (ie a site licensed by EPA Victoria to accept waste asbestos) needs to be contacted to establish any specific packaging requirements they may have.

204. If anything is to be taken out of the removal work area for re-use, the items must be inspected by a competent person to establish there is no residual asbestos on the items. Items may include a structural beam previously covered with sprayed asbestos or light fixtures from an asbestos-contaminated ceiling space.

**Note:** Generally where drums or bins are required for containing asbestos waste, the amount of ACM removed would be greater than 10 square metres. Therefore, a licensed removalist would be required to perform this work. The use of drums or bins for containing asbestos waste is discussed on page 52.

### Bags for containing asbestos waste

205. Asbestos waste, such as friable ACM and small pieces of non-friable ACM, needs to be contained in heavy-duty 200 micron (minimum thickness) polythene bags that are no more than 1200mm-long and 900mm-wide. The bags must be labelled with an appropriate warning, clearly indicating that they contain asbestos (see Figure 7).


Figure 7: 200 micron thick asbestos waste bag.

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

207. To further minimise the risk of a bag tearing or splitting and to assist in manual handling, asbestos waste bags should not be filled more than half full and excess air needs to be gently evacuated from the waste bag in a way that does not cause the release of dust. Depending on the weight of the items placed in the bag, half filling a bag may be excessive.

208. All asbestos waste needs to be double bagged outside the removal areas immediately following the decontamination process. The bags then need to be twisted tightly and have the neck folded over and secured with adhesive tape (referred to as goose-necking).

209. If a decontamination unit is being used for the asbestos removal work, asbestos waste bags need to be removed using the following 'production line' operation:

- One worker is located in each section of the decontamination unit.
- The waste bags are passed from cubicle to cubicle and 'showered out' to remove any asbestos residue.
- Once they have been removed from the decontamination unit, the waste bags are double bagged prior to disposal.

### Polythene sheeting for containing asbestos waste

210. Asbestos, such as asbestos sheeting and redundant asbestos lagged pipes and equipment, needs to be contained in heavy-duty 200 micron (minimum thickness) polythene sheeting.

211. Asbestos sheeting needs to be bundled securely. These bundles and redundant asbestos lagged pipes and equipment need to be double wrapped in the polythene sheeting and adhesive tape needs to be used to tape the entire length of every overlap. Wrapped bundles of asbestos sheeting and redundant asbestos lagged pipes and equipment need be of a size that minimises the risk of the polythene sheeting tearing or splitting and/or a manual handling injury occurring.

### Disposal of asbestos waste

212. Asbestos waste must be disposed of as soon as is reasonably practicable. Generally, this means the asbestos waste must be disposed of at the end of the removal job or when the waste containers are full. It must also be disposed of at the end of each day if waste on the removal site cannot be secured (that is untrained/unprotected people can come into contact with the waste). Where waste can be secured, it also needs to be labelled to indicate that it contains asbestos waste.

213. In some cases, very small quantities of waste may be brought back to a central location where the waste is stored in a labelled, secure container. This container is then taken to an EPA Victoria-licensed asbestos waste disposal site once it is full. This approach may be appropriate where a company, such as a utilities company, occasionally removes small quantities of ACM (eg electric metre boards) or a licensed removalist has removed a very small quantity of ACM (eg two square metres). EPA Victoria should be contacted to establish whether such storage, until disposal, is acceptable.

214. Anyone removing asbestos needs to first establish the specific waste disposal site's requirements for packaging the asbestos waste otherwise it may not be accepted. All asbestos waste must be removed from the workplace by a competent person and transported and disposed of in accordance with the Regulations and EPA Victoria requirements. Asbestos waste must be disposed of at an EPA Victoria-licensed asbestos waste disposal site and disposal must be carried out in a manner that eliminates the release of airborne asbestos fibres, which means ensuring:

    - asbestos waste is securely packaged in containers
    - waste containers are secure during transport
    - the method of unloading the waste is safe.

215. Contact EPA Victoria (**epa.vic.gov.au**) for more information about licensing of waste transport vehicles and licensed asbestos waste disposal sites.

## Medical examinations

216. The employer performing asbestos removal work must arrange for appropriate medical examinations by a registered medical practitioner for each employee engaged in ongoing asbestos removal work if there is a risk of exposure to airborne asbestos fibres above one half of the exposure standard.

217. 'Ongoing asbestos removal work' is where the activity is not a 'one off' and will continue as part of the employer's work. Where an employer's services include activities such as removal of non-friable ACM, it is regarded as being ongoing. If removal of non-friable ACM is a one-off job never to be repeated, it is not regarded as ongoing.

**Note:** Licensed removalists MUST arrange for appropriate medical examinations for each employee engaged in asbestos removal work.

218. Where medical examinations are required by the Regulations, the employer must ensure they are provided:
    - before an employee commences asbestos removal work for the first time for that employer unless that employee has had an appropriate medical examination within:
        - the preceding year – for a licensed asbestos removalist, or
        - the preceding two years – for an unlicensed asbestos removalist performing limited asbestos removal work (see paragraph 41)
    - at intervals of no more than two years
    - within 30 days after the employee ceases asbestos removal work (unless the employee has had an appropriate medical examination within the preceding year).

219. The registered medical practitioner does not have to be approved by WorkSafe for the purpose of performing a medical examination. It is important however, that they are aware of the ASCC health surveillance document *Guidelines for health surveillance* (available at **ascc.gov.au**). This publication sets out the minimum requirements for health surveillance for people engaged in work that may expose them to asbestos. A medical examination performed in accordance with this guidance would be regarded as appropriate.

220. The examination is simple and will usually include a discussion about whether the employee has a history of exposure to ACM. A simple lung function test known as spirometry (where the person exhales into a tube) may be conducted to test the performance of the lungs. The medical practitioner may also recommend an x-ray.

221. The employer arranging the medical examinations must:
    - notify WorkSafe of the registered medical practitioner's details in writing within seven days of their engagement
    - pay for the medical examinations required under the Regulations
    - obtain from the registered medical practitioner a summary of the examination results indicating whether an asbestos-related disease exists and whether the person's fitness is suitable for carrying out asbestos removal work
    - retain a copy of these results for 30 years (or another period as determined by WorkSafe).

## Emergency planning

222. A site-specific emergency plan reflecting the risks involved needs to be developed before any asbestos removal work commences. The plan must be conveyed to all employees and relevant persons (eg the person who commissioned the removal work).

223. Employees need to be trained for emergency situations. Decontamination procedures can be temporarily waived in the event of an emergency such as a fire or seriously injured or sick personnel.

224. Emergency planning needs to include:
    - provisions for emergency and fire evacuation, including exit arrangements that are adequate for the risks involved
    - emergency communications such as audible alarms (these alarms need to be used for emergencies only)
    - barriers and signs or other warning devices that can be used to communicate emergency arrangements.

225. A first aid kit and first aid officer need to be readily available at all times. A sufficient number of suitable fire extinguishers and hoses also need to be available at strategic locations. The locations of fire extinguishers and hoses need to be displayed in written and/or graphic format and conveyed to all employees and relevant persons.

## Summary of duties

226. Table 2 below identifies the duties required to be met by licensed asbestos removalists and by persons permitted to carry out limited removal work without a licence. These requirements relate to the removal of asbestos that is fixed or installed in a building, structure, ship or plant so that it is no longer fixed or installed up to the point of containment. Further guidance for licensed removalists is in 'Additional requirements for licensed asbestos removal' on page 43).

**Table 2: Overview of asbestos removal work requirements for removing fixed or installed asbestos**

| Duty | Limited permitted removal without a licence | Class B | Class A |
|---|---|---|---|
| **Training** | ✓ | ✓ | ✓ |
| **Information on asbestos to job applicants** | × | ✓ | ✓ |
| **Training records on site** | × | ✓ | ✓ |
| **Notification sent to WorkSafe** | × | ✓ | ✓ |
| **Asbestos register obtained** | ✓ | ✓ | ✓ |
| **Supervisor on site** | Must be appropriately supervised as per section 21(2)(e) of the OHS Act. | Must be accessible (refer to paragraph 228). | ✓ |
| **Control plan completed and available on site** | × | ✓ | ✓ |
| **Inform person who commissioned removal work** | ✓ | ✓ | ✓ |
| **Cannot commence until air monitoring has started** | × | × | ✓ In most cases. Duty to perform air monitoring is on the person who commissioned the removal work. |

# General requirements for all asbestos removal

| Duty | Limited permitted removal without a licence | Class B | Class A |
|---|---|---|---|
| **Cannot dismantle enclosure until air monitoring at the end of the job is satisfactory** | ✗ | ✗ | ✓ In most cases. Duty to perform air monitoring is on the person who commissioned the removal work. |
| **Enclose the removal area and conduct a smoke test, so far as is reasonably practicable** | ✗ | ✗ | ✓ |
| **Provision of protective clothing and equipment** | ✓ | ✓ | ✓ |
| **Signs to indicate asbestos removal work** | ✓ | ✓ | ✓ |
| **Barricades to indicate asbestos removal work** | While no barricades are required, they need to be considered. | ✓ | ✓ |
| **Decontamination facilities for the area, tools and employees** | ✓ | ✓ | ✓ |
| **Waste appropriately contained** | ✓ | ✓ | ✓ |
| **Waste appropriately disposed of** | ✓ | ✓ | ✓ |
| **Obtain clearance certificates – the duty is on the person who commissioned the removal work*** | While no clearance certificate is required, exposure to airborne asbestos fibres must be eliminated as far as is reasonably practicable. | ✓ Visual | ✓ Visual and (usually) air monitoring. |
| **Laundering requirements for contaminated non-disposable clothing** | Not recommended. | ✓ | ✓ |
| **Medical examinations** | Assessment required, see regulation 4.3.58. | ✓ | ✓ |

* Where the removal is being performed at a domestic premises and the licensed removalist has been engaged by the homeowner, the duty to obtain a clearance certificate is placed on the licensed removalist.

227. The removal of asbestos that is not fixed or installed from a workplace must be carried out safely and in accordance with the Regulations. If the removal constitutes a minor contamination (as per the Dangerous Goods Order, see page 15), the person should implement the requirements for limited permitted removal outlined in Table 2 above.

# Additional requirements for licensed asbestos removal

## Planning

228. In addition to the requirements outlined in 'General requirements for all asbestos removal' on page 21, licensed removalists must:
    - ensure notification of any asbestos removal has been forwarded to WorkSafe and a copy provided to the person who commissioned the work
    - ensure documentation relating to the job is at the removal site, including copies of
        - training records of all persons performing removal work
        - the control plan
        - the licence
    - for friable asbestos removal work, ensure the site supervisor is on site for the entire time during the removal
    - for non-friable asbestos removal work, ensure the site supervisor is on site or accessible for the entire time during the removal (if the site supervisor is contactable by phone and able to arrive at the removal site within 20 minutes, this would be regarded as 'accessible').

229. Whatever the factors or circumstances, a licensed asbestos removalist must develop and implement an asbestos removal control plan whenever ACM is to be removed. This control plan will assist in ensuring the removal is carried out in a safe manner.

## The control plan

230. A control plan is a document which identifies the specific control measures a licence holder will use to ensure employees and other people are not at risk when removal work is being conducted. It is similar to a job safety analysis (JSA) but is focused on the specific control measures necessary to reduce risk from exposure to asbestos.

231. The licensed asbestos removalist must develop a site-specific control plan before commencing any asbestos removal work. When drafting the procedure, the items listed in Appendix Q need to be considered. The removalist must also take into account any asbestos register relevant to the asbestos to be removed and the area to be worked on. The structure of the plan may be generic but each plan must address the specific situation/requirements for each job.

# Additional requirements for licensed asbestos removal

232. The licensed removalist must :
    - provide a copy of the control plan to the person who commissioned the asbestos removal work (this is the person who engaged the removalist to perform the asbestos removal work)
    - ensure a copy of the control plan is readily accessible for the duration of the asbestos removal work. It would be regarded accessible if it was available on request to:
        - employees (including HSRs) at the workplace
        - an employer at the workplace
        - any person engaged to do work at the workplace
        - a WorkSafe inspector
233. Appendix F provides a pro forma control plan that meets the requirements of the Regulations.
234. The attachment of additional documentation to the control plan (such as specifications or drawings) relevant to the particular removal job would assist the reader's understanding of the control plan.
235. The asbestos removal control plan needs to be finalised in consultation with:
    - persons who will perform the removal work
    - the person who engaged the removalist
    - any other relevant parties such as an occupational hygienist who has knowledge and experience in asbestos removal.
236. Under 'Part 5.1 – Construction' of the Regulations, high-risk construction work includes the removal of asbestos.
237. Where high-risk construction work is to take place the employer must complete a safe work method statement before the work commences and ensure the work is performed in accordance with that statement. Therefore, where it has been determined that construction work is to take place and asbestos removal will also be occurring as part of that construction work, a safe work method statement is required.
238. Where a safe work method statement is required under the construction part of the Regulations, the preparation of a control plan for licensed removal work is taken to be the equivalent of a safe work method statement. Therefore the safe work method statement is not required in relation to asbestos removal.
239. However, if there are activities other than asbestos removal that fall within the meaning of high-risk construction work, a safe work method statement addressing those other activities must be completed. For example, where an asbestos cement roof is to be removed, a control plan must be completed (in relation to the asbestos removal work) and a safe work method statement must be completed in relation to the risk of persons falling more than two metres.
240. Table 3 (pages 45 and 46) includes the requirements of a control plan as well as additional items that would assist in preparing for an asbestos removal job. A non-licensed person performing removal permitted under the Regulations could also use this checklist or develop and implement a control plan to assist in controlling risks.

# Additional requirements for licensed asbestos removal

**Table 3: Components of an asbestos removal control plan**

| Information to be included in the asbestos removal control plan | | Buildings and structures | | Plant and equipment | |
|---|---|---|---|---|---|
| | | Friable | Non-friable | Friable | Non-friable |
| A | Notification requirements have been met and required documentation will be on site (eg removal licence, control plan, training records) | ✓ | ✓ | ✓ | ✓ |
| B | Details of the ACM to be removed (eg the locations, whether the asbestos is friable or non-friable, its type, condition and the quantity to be removed) | ✓ | ✓ | ✓ | ✓ |
| C | Consultation with relevant parties (eg HSRs, employees) | ✓ | ✓ | ✓ | ✓ |
| D | Assigned responsibilities for the removal | ✓ | ✓ | ✓ | ✓ |
| E | Program of commencement and completion dates | ✓ | ✓ | ✓ | ✓ |
| F | Emergency plans | ✓ | ✓ | ✓ | ✓ |
| G | Asbestos removal boundaries, including the type and extent of isolation required and the location of any signs and barriers | ✓ | ✓ | ✓ | ✓ |
| H | Control of electrical and lighting installations | ✓ | ✓ | ✓ | ✓ |
| I | Personal protective equipment (PPE) to be used, including respiratory protective equipment (RPE) | ✓ | ✓ | ✓ | ✓ |
| J | Details of air-monitoring program | ✓ | ✗ | ✓ | ✗ |
| K | Waste storage and disposal program | ✓ | ✓ | ✓ | ✓ |
| L | Methods for removing the ACM (wet or dry methods) | ✓ | ✓ | ✓ | ✓ |
| M | Asbestos removal equipment (eg spray equipment, asbestos vacuum cleaners, cutting tools) | ✓ | ✓ | ✓ | ✓ |
| N | Details on required enclosures, including their size, shape, structure, smoke testing enclosures and the location of negative-pressure exhaust units | ✓ | ✗ | ✓ | ✗ |
| O | Details on temporary buildings required by the asbestos removalist (eg decontamination units), including details on water, lighting and power requirements, negative-pressure exhaust units and the locations of decontamination units | ✓ | Maybe required depending on the job. | ✓ | ✗ |

# Additional requirements for licensed asbestos removal

| Information to be included in the asbestos removal control plan | | Buildings and structures | | Plant and equipment | |
|---|---|---|---|---|---|
| | | Friable | Non-friable | Friable | Non-friable |
| P | Other risk-control measures to prevent the release of airborne asbestos fibres from the area where the asbestos removal work is being performed | ✓ | ✓ | ✓ | ✓ |
| | Detailed procedures for workplace decontamination, the decontamination of tools and equipment, personal decontamination and the decontamination of non-disposable PPE and RPE | ✓ | ✓ | ✓ | ✓ |
| R | Methods of disposing of asbestos wastes, including details on: | | | | |
| | • the disposal of disposable protective clothing and equipment | ✓ | ✓ | ✓ | ✓ |
| | • the structures used to enclose the removal area | ✓ | × | ✓ | × |
| S | Method of cleaning the removal area following asbestos removal work | ✓ | ✓ | ✓ | ✓ |
| T | Name of person engaged to conduct asbestos paraoccupational air monitoring (if any) and to conduct clearance inspection | ✓ | ✓ | ✓ | ✓ |

## Notification of asbestos removal work

241. A licensed removalist must notify WorkSafe of any asbestos removal work they perform. The timing and method of notification may vary.

### When must WorkSafe be notified?

242. A licensed removalist performing asbestos removal work in relation to friable ACM or non-friable ACM greater than a total area of 10 square metres must notify WorkSafe in writing of the proposed asbestos removal work at least five days before the work commences.

243. A licensed removalist performing asbestos removal work in relation to non-friable ACM of a total area of 10 square metres or less must notify WorkSafe in writing of the proposed asbestos removal work at least 24 hours before the work commences.

244. All notifications of asbestos removal work must include:

- the name, registered business name, Australian Business Number (ABN), licence number and contact details of the licence holder
- the name of the supervisor who will oversee the asbestos removal work and the supervisor's contact details
- the client name and contact details

- the name, including registered business or corporate name, and address of the workplace and the type of workplace where the asbestos removal work will be performed including the specific location if it is a large workplace
- the date of notification
- the commencement date and estimated duration of the asbestos removal work
- whether the asbestos is friable ACM or non-friable ACM
- if friable ACM is to be removed, details of the way that the area where the asbestos removal work is to be performed will be enclosed
- the type of ACM
- the estimated quantity of asbestos to be removed
- the number of employees who will perform the asbestos removal work
- details of training and experience of those individual employees, if different to the information notified previously
- the date of any asbestos register or employer's asbestos register used to prepare the asbestos control plan.

A pro forma notification can be downloaded at **worksafe.vic.gov.au.**

245. Before commencing asbestos removal work, the licensed removalist must also give a copy of the notification to the person who commissioned the removal work.

### What if a change occurs to information provided in the notification?

246. If a change occurs to any information in the notification provided to WorkSafe, the licensed removalist must advise WorkSafe in writing of that change as soon as possible after they become aware a change has occurred. However, this requirement does not apply to any change of supervisor (if a change does occur, an additional five days notification is not required).

247. If the licensed removalist has changed, the new removalist needs to provide a new notification with a minimum five days notice.

### What happens when an unexpected situation arises?

248. An unexpected situation is:

- a sudden unexpected event, including non-routine failures of equipment, that may result in a person being exposed to airborne asbestos fibres (eg a burst pipe that was lagged with asbestos or a forklift crashing into an asbestos cement sheet wall), or
- an unexpected breakdown of an essential service (including gas, water, sewerage, electricity and telecommunications) that requires immediate rectification to enable continuance of that service (eg a breakdown of hot water system that requires the removal of asbestos-containing insulation or the replacement of burst asbestos cement water pipes to enable continuance of the service).

249. In these situations the licensed removalist must notify WorkSafe in writing not later than 24 hours after commencing the removal work. The notification must include information specified in paragraph 244.

# Additional requirements for licensed asbestos removal

## Documentation to be available on site

250. The licensed removalist must ensure the following documentation is available at the removal site:
    - a copy of the removalist's licence
    - the training records of employees for the safe removal of asbestos
    - a site-specific control plan.

251. Ensuring a copy of the notification form sent to WorkSafe is also available at the removal site may be useful in clarifying any issues that may arise.

## Nominated supervisor

252. A licensed removalist must ensure the site supervisor for the removal job is a person that has been accepted by WorkSafe as a site supervisor.

253. The site supervisor must be on site the entire time a friable asbestos removal job is being carried out. For non-friable removal jobs, the supervisor must be accessible (ie either on site or immediately contactable and able to be on site within 20 minutes).

## Signs and barricades

254. The licensed removalist must use signs and barricades to clearly indicate the area where the removal work is being performed. These signs must be placed to inform all people nearby that asbestos removal work is taking place in that area.

255. Signs need to be weatherproof, lightweight and securely situated so that they remain in prominent locations (such as entry points to the asbestos work area). They need to be in accordance with AS 1319-1994 *Safety signs for the occupational environment* (see Appendix D for examples).

256. Barricades can take various forms, from tape to solid hoarding. Tape may be appropriate for non-friable asbestos removal jobs of short duration. The type of barricading needs to reflect the level of risk. For friable asbestos removal jobs, solid barricades need to be used.

257. The location of barricades will depend on the physical environment and the level of risk. A risk assessment needs to be conducted to determine the appropriate placement of barricades. A non-friable asbestos cement removal job where the asbestos cement is in good condition may use a wall located three metres from the removal area as the barrier. A friable sprayed asbestos removal job being performed dry due to electrical restrictions may require a barricade 15 metres from the removal area.

258. In determining the distance between barriers and the asbestos removal area, the risk assessment needs to take account of:
    - whether the ACM is friable or non-friable
    - activity around the asbestos removal area (eg other workers, visitors, neighbours, the public) – ie other people's exposure
    - the methods of ACM removal
    - any existing barriers (walls, doors)
    - the quantity of ACM to be removed
    - the type of barrier used (eg hoarding or tape).

259. The licensed removalist must ensure that only persons performing asbestos removal work, persons engaged in work incidental to the removal work who require access (eg an occupational hygienist) and persons with a statutory right (eg members of Victoria Police and WorkSafe inspectors) have access to the removal area.

260. Reliance on signs and barricades alone to deny unauthorised access to the removal area is not sufficient. The licensed removalist's system of work needs to include regular checking of areas where access is possible. In some cases, such checking may need to be continuous.

261. All barriers and warning signs must remain in place until a clearance to re-occupy the site has been granted (refer to 'Clearance to re-occupy as asbestos removal area' on page 68).

## The decontamination unit

262. Decontamination units are generally required for all friable asbestos removal jobs other than 'wrap and cut', 'glove bag' and gasket removals. Non-friable asbestos removal jobs of a certain size (eg where the ACM to be removed is greater than that contained in the cladding of an average size house) may also require the use of decontamination units. A risk assessment needs to be conducted to determine this while also taking into account the:

- condition of the ACM
- difficulty in performing the removal
- level of airborne dust likely to be generated
- available cleaning/washing facilities at the site
- duration of the task.

263. Where men and women are required to use the same decontamination unit, a system of work needs be implemented to enable them to access the unit separately.

264. In many instances, the only satisfactory way of providing appropriate changing facilities is to provide a mobile or specially constructed on-site decontamination unit.

265. This decontamination unit needs be immediately adjacent to and directly connected with the enclosed asbestos work area. It needs to be located as far away as practicable from amenities and lunch rooms.

266. The decontamination unit needs to be divided into three distinct areas:

- dirty decontamination area
- clean decontamination area
- clean changing area.

267. All of these areas need be large enough to enable employees to adequately decontaminate themselves.

268. These areas need to be separated by suitable airlocks or buffer zones. Normally these airlocks have spring-loaded doors or two or more overlapping sheets of plastic sheet that are positioned to define the boundary between each segment of the decontamination unit while allowing access and airflow towards the asbestos work area. To ensure there is sufficient airflow through the decontamination unit, doors (if used) need to have large openings with a hinged flap operating as a one-way valve. See Figure 8 on page 50 for a typical layout.

269. The employer must provide towels and soap to allow employees to appropriately decontaminate themselves. The employer needs to assess each removal job to determine the number of decontamination units required. As a guide, one decontamination unit needs to be provided for every six employees in the removal area.

270. The dirty decontamination area needs to include:

- a suitable rack for air-lines to be stored on at the entrance of the area
- equipment for vacuum cleaning or hosing down (by use of a fine mist) of contaminated clothing and footwear
- storage for contaminated clothing and footwear
- labelled waste bags/bins for disposing of protective clothing
- shower area with an adequate supply of hot and cold water and toiletries.

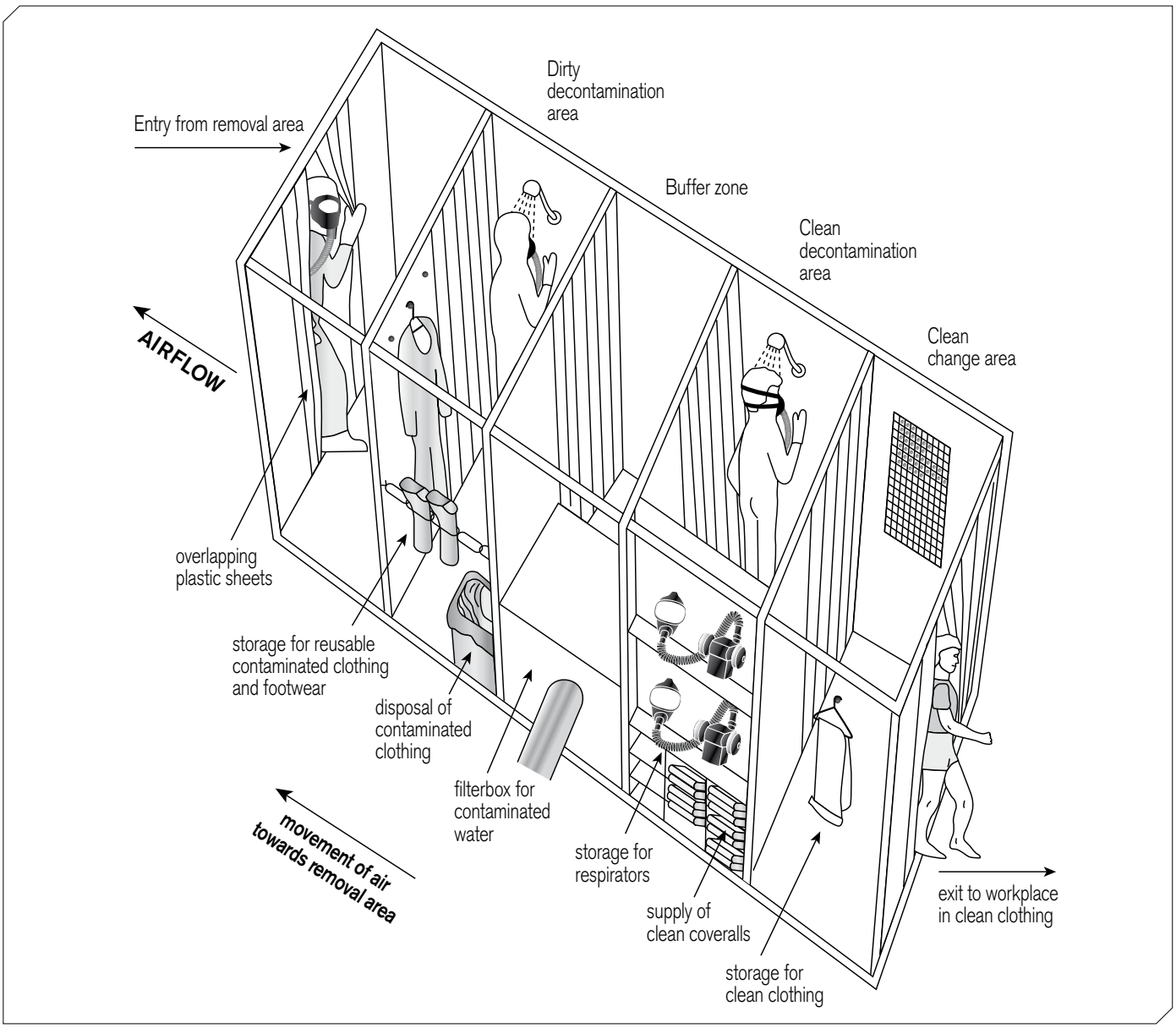



Figure 8: An example of a decontamination facility arrangement.

# Additional requirements for licensed asbestos removal

271. The clean decontamination area needs to include:
    - storage for individual respirators in containers or lockers
    - airflow towards the dirty decontamination area
    - shower area with an adequate supply of hot and cold water and toiletries.
272. The clean changing area needs to include:
    - storage for clean clothing
    - separate storage for clean and dirty towels
    - airflow towards the clean decontamination area.
273. All water from the decontamination facility needs to pass through a particulate filter or other trap before it passes into sewer mains. The filter or trap needs to be capable of capturing particles down to five micron.
274. Workers must not smoke, eat or drink in any part of the decontamination unit.

### Use of remote decontamination units

275. Remote decontamination units are decontamination units not located next to the asbestos removal area. They can only be used if a decontamination unit cannot be located immediately adjacent to the asbestos removal area.
276. When a remote decontamination unit is to be used, the asbestos removalist would need to implement additional procedures to minimise asbestos contamination. This may include wearing double coveralls, partial decontamination at the removal site (refer to page 36) and methods for the connection and disconnection of air-line respirators.
277. The route of access from the asbestos removal area to the decontamination unit needs to be suitably signposted and barricaded to restrict public access.
278. Paraoccupational air monitoring must be conducted in the immediate vicinity of this access route and at other suitable locations outside the asbestos removal area.
279. An isolated changing area needs to be attached to the asbestos removal area. Before employees enter this changing area, all obvious signs of asbestos dust need to be removed from their protective clothing using an asbestos vacuum cleaner. The isolated changing area is then used to discard outer garments, including coveralls and overshoes before employees can put on fresh outer/protective clothing for the journey to the decontamination unit.
280. Respiratory protection needs to be worn until the appropriate phase of the decontamination procedure within the remote decontamination unit.

### Entering the asbestos removal area

281. Employees entering the asbestos removal area need to follow the procedure in paragraphs 282 to 284.
282. Clean change area: Change into clean work clothes and put on clean protective clothing. Store any removed clothing in a dust-proof container. Pass through the airlock into the clean decontamination area.
283. Clean decontamination area: Put on respirator. Check that it is working properly and there is a good facial seal (ie fit check). Move to the dirty decontamination area.

284. Dirty decontamination area: Put on any additional protective equipment that has been stored in the dirty decontamination area such as footwear. Connect to the air supply if required. Move from the decontamination unit to the asbestos work area.

### Leaving the asbestos removal area

285. Employees leaving the asbestos removal area need to follow the procedure outlined in paragraphs 286 to 290.

286. Asbestos removal area: Use an asbestos vacuum cleaner to remove any obvious signs of asbestos dust from protective clothing. Remove footwear and leave shoes/boots inside the asbestos removal area next to the decontamination unit (footwear needs to be stored upside down to minimise further contamination). Proceed into the dirty decontamination area.

287. Dirty decontamination area: If shoes/boots have not already been removed, remove them and store upside down within the dirty decontamination area. Disconnect air-line respirator if being used. Shower while wearing protective clothing and respirator. Leaving the respirator on, remove protective clothing and place in labelled waste bags. Remove wet underclothing, such as t-shirts or shorts, while showering and place in the storage unit provided within the dirty decontamination area. Pass through the airlock into the clean decontamination area.

288. Clean decontamination area: Shower and remove respirator. Thoroughly wash hands, fingernails, face, head and respirator. Store respirator in a suitable container within the clean decontamination area. Move to the clean change area.

289. Clean change area: Change into clean clothing.

290. Personal protective equipment (PPE) including footwear should not be shared. This equipment needs to be thoroughly cleaned as there is a risk of contracting respiratory problems and tinea in such circumstances.

## Asbestos waste containment and disposal

### Asbestos waste drums or bins

291. All drums or bins used for the storage and disposal of asbestos waste need to be in good condition with lids and rims in good working order and free of hazardous residue.

292. The drums or bins need to be lined with plastic (minimum 200 micron thickness) and labels warning of the asbestos waste must be placed on the exterior of each drum or bin. An example of appropriate wording is: 'Danger: Asbestos. Do not break seal'.

293. 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. The drum or bin needs to be inspected after use to ensure there is no asbestos residue.

294. Where possible, the drums or bins need to be placed in the asbestos work area before work on ACM begins. Controlled wetting of the waste during drum or bin filling needs to be carried out to reduce asbestos dust emissions. The drums or bins need to have their rims sealed and their outer surfaces wet-wiped and inspected before they are removed from the asbestos work area.

295. If it is not possible to locate the drums or bins inside the asbestos work area, they need to 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 need to be designated prior to the commencement of each task. A competent person needs to 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 needs to be performed outside of normal working hours.

296. Drums or bins used to store asbestos waste must be stored in a secure location when they are not in use. They should not be moved manually once they have been filled. Trolleys or drum lifters need to be used.

**Asbestos waste skips, vehicle trays and similar containers**

297. If it is not feasible to use asbestos waste bags, drums or bins because of the volume or size of the asbestos waste, a waste skip, vehicle tray or similar container may be used (needs to be in good condition).

298. The ACM needs to be sealed in double-lined, heavy-duty plastic sheeting or double bagged before it is placed in the skip. However, non-friable asbestos waste may be placed directly into a skip or vehicle tray that has been double-lined with heavy-duty plastic sheeting (200 micron minimum thickness) provided it is kept damp to minimise the generation of airborne asbestos fibres. Consideration needs to be given to how the skip will be emptied at the waste disposal site to minimise the risk of the plastic lining the skip tearing. In addition, the EPA Victoria-licensed asbestos waste disposal site needs to be contacted to establish any specific packaging requirements for that site.

299. Once the skip is full, its contents need to be completely sealed with the plastic sheeting.

300. If asbestos waste cannot be disposed of immediately, the skip may be used for storing the asbestos waste on site over a period of time, but only if its contents are secured (eg using a lockable lid or locating the skip in a secure area) to prevent unauthorised access. Overlaying and taping down plastic in a skip is not adequate. If the waste cannot be secured on site, it must not be left on site.

## Laundering of contaminated clothing

301. Use of non-disposable coveralls for asbestos removal work is not preferred (refer to 'Personal protective equipment' on page 25). However, any employer or self-employed person removing asbestos using non-disposable coveralls and any other personal protective clothing must provide for its laundering if the clothing is likely to be contaminated with asbestos and it is not contained and disposed of as asbestos waste.

302. Visible dust on personal protective clothing is a strong indication of asbestos contamination. However, absence of visible dust **does not** mean there is no contamination.

303. Contaminated clothing needs to be removed damp and immediately be made thoroughly wet, then placed in impermeable containers with labels to identify that the container holds asbestos-contaminated clothing. Where the containers used are bags, they must be double bagged. The containers need to then be provided to an appropriate laundering facility, which has been notified in advance of the presence of asbestos contamination on the clothing.

304. The laundering facility needs be constructed of smooth surfaces that are able to be lined with polythene sheeting. Procedures need to be established for cleaning up spills. Flooding of neighbouring areas needs to be prevented. Laundering must be carried out in a manner that eliminates, so far as is reasonably practicable, the release of airborne asbestos fibres. This may be achieved by placing the laundering room under negative pressure.

305. Conventional washing machines may be used provided they are not used for other clothing. The clothing to be laundered should not be allowed to dry out before it is washed. Bags of asbestos-contaminated clothing need be opened in the washing machine while being further saturated with water to minimise airborne dust. As a minimum, P1 respiratory protection needs to be worn while unloading clothes into the washing machine.

306. The containers/bags need to be disposed of as asbestos waste. Waste water needs to be filtered and the filtering medium disposed of as asbestos waste.

307. Random air monitoring needs to be carried out to confirm employees are not being exposed to asbestos.

308. Contaminated protective clothing must not be laundered in homes. Refer to 'Division 8 – Activities involving asbestos' in Part 4.3 of the Regulations for specific requirements for the laundering of clothing contaminated with asbestos.

## Planning for removal work from hot surfaces

309. If possible, the removal of asbestos from hot metal or machinery needs to be scheduled and planned around shutdowns with sufficient time allowed for the metal/machinery to cool.

310. Machinery needs to be cool before removal is attempted. The removal of friable ACM from hot metal presents one of the worst conditions for removal because airborne asbestos fibres can readily spread on convection currents in the air and the potential for burns is high. In addition, the use of fine water sprays may not be possible as steam may be created that would make the removal task more difficult. Hot metal removal can only be performed in emergency situations. There may be other circumstances under which such removal work may take place. However, a person competent in heat stress issues needs to be consulted when making this decision.

311. The person who has management and control of the workplace needs to make every attempt to arrange for the removal work to be done during periods when surfaces are not hot.

312. In the limited circumstances where the dry removal of ACM from hot surfaces is the only option (eg emergency situations), particular care needs to be taken in the selection of dust extraction equipment to cope with the convection currents involved. The selection of appropriate PPE also becomes much more important.

313. Heat stress must be considered when preparing the asbestos removal control plan, particularly in the selection of PPE and the design of the work program (eg sufficient rest breaks and the provision of cool drinking water).

# Specific requirements for removal of friable ACM

## General methods for the removal of friable ACM

314. Friable asbestos removal work generally involves establishing an enclosure with a negative pressure exhaust unit and full decontamination unit attached to the enclosure. There are exceptions generally relating to small-scale removal such as glove bag removals, mini-enclosure removals and wrap and cut removals.

315. The methods used to remove ACM must prevent the release of asbestos fibres into the atmosphere both during and after the removal operation.

316. The appropriate removal method will therefore depend on the nature, condition, quantity and location of the ACM and any other health or safety hazards present.

317. Friable ACM needs to be removed using wet methods within an enclosed area so far as is reasonably practicable. Methods for enclosing large and small-scale removal work are described from paragraph 314. In addition:

    - all ventilation and airconditioning networks servicing the asbestos removal area need to be closed down for the duration of the asbestos removal work and all vents thoroughly sealed to prevent the entry of airborne asbestos fibres into the duct network
    - on completion and after final cleaning of the asbestos work area, all mechanical ventilation filters for recirculated air need to be replaced prior to start-up
    - care needs to be taken to ensure that airborne asbestos fibres cannot escape at points where pipes and conduits pass out of the asbestos work area (greater attention to sealing and testing is required at these points, particularly if service riser shafts pass through the asbestos removal area).

318. The methods and equipment described below are commonly used for the removal of sprayed asbestos thermal and acoustic insulation from buildings and structures and the removal of ACM from plant and equipment, including steam pipes, boilers and other industrial plant.

## Large-scale removal work

### Enclosures

319. A licence holder must ensure, so far as is reasonably practicable, the area where the asbestos removal work is performed is enclosed so as to prevent the release of airborne asbestos fibres (this area is sometimes referred to as the ‘bubble’).

# Specific requirements for removal of friable ACM

320. In most cases of friable asbestos removal work it will be practicable to enclose the removal area. In nearly all cases it will be practicable to establish enclosed asbestos removal work areas under 'negative pressure' for any large-scale removal of friable ACM (refer to page 58 for guidance on the use of negative pressure exhaust units).

321. The design and installation of the enclosure needs to take account of:

    - the methods used to contain the asbestos work area
    - the provision and locations of decontamination/changing facilities and negative pressure exhaust units
    - the precautions that must be implemented to prevent the spread of asbestos contamination outside the asbestos removal area
    - air quality within the enclosure (eg there must always be sufficient oxygen and machinery emitting any fumes or potentially dangerous gases needs to be placed outside the enclosure well away from any air intake for the enclosure)
    - the temperature within the enclosure (especially to avoid heat stress)
    - any other hazards in the enclosure (these must be identified and the risks controlled before any asbestos removal work commences).

322. Work methods may also need to be adapted for the work environment within the enclosure. For example, rest breaks need to be based on a risk assessment taking into account factors such as the weather and heating/cooling requirements.

323. Heavy-duty plastic sheeting (200 micron minimum thickness) needs to be used for the enclosure. Re-milled plastic sheeting should not be used.

324. Every location where the asbestos work area connects either to the outside environment or to the rest of the building (eg windows, ducts, wall cavities, conduits and lift entrances) needs to be enclosed so that an airtight seal is maintained for the duration of the asbestos removal work.

325. The plastic sheeting needs to enclose all the walls, windows and doors. Wooden cleats may be able to be used to anchor the plastic sheeting to walls.

326. Viewing panels need to be placed in appropriate locations so that the work area can be seen from outside the enclosure.

327. Adequate lighting needs to be provided within the enclosure, either:

    - naturally, using clear plastic or perspex panels in the enclosure walls, or
    - artificially, preferably from outside the enclosure using clear plastic or perspex panels (lights within an enclosure can increase the temperature within the enclosure).

328. All non-movable items (eg fixtures and fittings) need to be covered with plastic sheeting and all the joints sealed.

329. All movable items need to be removed from the asbestos removal area. If this is not possible, they need to be moved to a convenient location and covered with two layers of plastic sheeting with a minimum overlap of 300mm between the layers. Both layers need to be double taped.

330. Airlocks need to be provided at the entry points to the change area. They need to be constructed using double sets of overlapping plastic with suitable provisions for ensuring a seal.

# Specific requirements for removal of friable ACM

331. All floors need to be protected with at least one layer of woven plastic. This is important for penetration to be prevented. The joints need to be lapped 300mm and sealed with double-sided tape and duct tape.

332. If the asbestos removal area is next to areas occupied by unprotected persons, priority needs to be given to:

    - performing the removal work during periods when these areas are unoccupied, or
    - greater isolation of the removal area (preferable).

333. Consideration needs to be given to the use of hoarding to form a barrier between the asbestos removal area and the adjoining occupied areas. A plastic-lined barrier needs to be erected within this hoarding and a buffer area needs to be reserved between the hoarding and occupied areas.

334. Any platforms and fixed scaffolding required for the safe removal of the ACM needs to be erected during the early stages of the work. Ideally these structures need to be erected on the outside of the enclosed area. However, where it is necessary to construct platforms or fixed scaffolding within the enclosed area, decontamination and visual inspection of these structures will be necessary at the end of the removal work.

335. During the masking up and later removal of the screening, all persons involved need to wear appropriate PPE. This needs to include coveralls and as a minimum, a half-face respirator with a P1 filter.

336. All tools and equipment used for removal work, including asbestos vacuum cleaners, need to remain within the asbestos work area until the completion of the removal work. When this equipment is removed it must be decontaminated as described in ‘Decontamination facilities and methods’ on page 33.

337. All the plastic and tape used for the enclosure must be disposed of as asbestos waste. Any temporary structures used within the enclosure must also be disposed of as asbestos waste if they cannot be decontaminated and inspected by a competent person to confirm they are free of any visible asbestos.

### Testing the effectiveness of the enclosure

338. When the asbestos removalist is satisfied that the enclosure is complete, a competent independent person needs to carry out a visual inspection and smoke test the enclosure prior to the commencement of the asbestos removal work. While smoke is generated within the enclosure, a person outside the enclosure needs to check for leaks. The competent person needs to document the result of the smoke test and provide a copy to the licensed removalist.

339. Negative pressure exhaust units should not be used while the smoke test is being conducted. Only smoke-generating devices incorporating non-oil-based, non-toxic smoke fluids can be used. Flares should not be used. Smoke (fire) detection devices in the immediate vicinity of the work area need to be isolated for the duration of the smoke test. Asbestos removal work should not proceed if any leaks or other deficiencies in the enclosure are found during the testing. Leaks or deficiencies must be rectified (an expandable foam sealant, tape or equivalent may be used) and another smoke test performed until no leaks or deficiencies are identified.

340. The effectiveness of the enclosure needs to be regularly monitored while asbestos removal work is underway (eg visual examination, air-monitoring results and negative pressure readings).

341. If visual examinations of the enclosure and surrounding area indicate that asbestos dust might be escaping from the enclosure, asbestos removal work needs to be stopped until any defects have been rectified. Refer to page 65 for paraoccupational air monitoring levels at which specific action is required to be taken.

**Negative pressure exhaust units (negative air units)**

342. To prevent the escape of airborne asbestos fibres from an enclosed asbestos work area, an exhaust extraction fan needs to be installed so as to create a 'negative' air pressure of approximately 12 Pa (water gauge) within the enclosed asbestos work area. This may require the use of more than one negative pressure exhaust unit.

343. Use of these units must include regular checks/inspections, and a log of these checks/inspections needs to be maintained. The units need to incorporate warning devices for filter integrity/overload and power failure. They need to include a manometer or magnohelic gauge and an audible and visual alarm system.

344. Ideally, the negative pressure exhaust unit needs to be positioned opposite the decontamination unit to enable laminar (smooth) air flow. In this arrangement, the air entering the asbestos work area passes through the decontamination unit or point of entry while the air extracted by this system passes through a HEPA filter to remove any asbestos dust before it is, where reasonably practicable, discharged to the outside atmosphere. If this is not possible, consideration needs to be given to how to set up the enclosure, decontamination unit and negative pressure exhaust unit to enable optimum smooth flow of air through the enclosure so as to minimise dead air pockets. Discharge of the air from the enclosure needs to be at a location away from other working areas, airconditioning inlets or breathing air compressors.

345. The units need to be operated continuously (24 hours a day) until all asbestos removal and decontamination tasks within the enclosure have been completed (that is, from when the removal commences to when clearance is given to dismantle the enclosure). If the units stop during removal work, the licensed removalist must immediately cease all removal work until the problem is rectified and the required number of units are in operation. This delay needs to be as small as possible to minimise the risk of airborne asbestos fibres escaping the enclosure. Consideration needs to be given to backup negative pressure exhaust units and a generator.

346. The HEPA filter must comply with AS 4260:1997 *High efficiency particulate air (HEPA) filters – Classification, construction and performance* or its equivalent. A coarse pre-filter needs to be installed on the air intake side of the negative air unit to prolong the useful life of the HEPA filter. These pre-filters may need to be changed once per work shift or more frequently depending on dust loads. Used pre-filters must be disposed of as asbestos waste.

347. Procedures need to be established for changing HEPA filters so that areas outside the enclosure are not contaminated.

348. A satisfactory method for assessing the integrity of the HEPA filter and seal fittings is regular inspection in conjunction with a static pressure alarm to indicate any failure in the system.

349. Maintenance work on these units must only be performed after they have been thoroughly decontaminated, or the work may be carried out under controlled conditions, such as in an asbestos removal enclosure while wearing appropriate PPE.

# Specific requirements for removal of friable ACM

### Bulk stripping and cleaning within an enclosure

350. Sprayed asbestos insulations need to be wet thoroughly using a fine water spray (refer to 'Wet and dry methods of removing ACM' on page 31). Aim to achieve maximum saturation with minimum run-off to minimise any subsequent clean-up and slip hazards.

351. Wetting, scraping and vacuuming methods need to be used wherever reasonably practicable. Where the ACM is covered with cloth, metal cladding or wire reinforcing, it needs to be wet thoroughly during the removal process.

352. Once a competent person has determined the removal area is clean, the licensed removalist needs to, wherever reasonably practicable, spray clean surfaces within the removal area with tinted PVA or a similar acrylic emulsion using airless spraying equipment. This includes any layer of plastic forming the inner surface of the enclosure to ensure any loose asbestos fibres on the plastic are firmly adhered to prior to its dismantling.

353. After the PVA has dried and sufficient time has elapsed for it to dissipate, paraoccupational air (clearance) monitoring, where required, needs to take place. The plastic enclosure must not be dismantled until a satisfactory visual inspection and monitoring has taken place.

### Dismantling an asbestos removal enclosure

354. The licensed removalist may only dismantle a structure used to enclose an asbestos removal area once all of the following are done:

- asbestos removal work has been completed
- visual inspection by an independent person is satisfactory (refer to 'Clearance to re-occupy an asbestos removal area' on page 68)
- paraoccupational air monitoring, where required, is found to be less than 0.01 fibres/ml.

355. The plastic that formed the enclosure must be disposed of as asbestos waste, along with any other contaminated material that assisted in forming the enclosure. In some cases, structures used in building the enclosure (other than the plastic that formed the enclosure) may be wrapped and sealed in plastic and not opened until in a similar controlled environment, such as another asbestos removal enclosure (eg collapsible rods used to form the enclosure frame).

356. The area from which the enclosure was dismantled must be thoroughly cleaned and inspected. This needs to be followed by further paraoccupational monitoring demonstrating the levels are below 0.01 fibres/ml.

357. Ropes, warning signs and protective plastic isolating public areas should not be removed until:

- the enclosure has been dismantled and removed as asbestos waste
- satisfactory paraoccupational air-monitoring results have been achieved
- the removal area and its surrounds have been visually inspected by an independent person and found to be satisfactory for re-occupation (refer to page 70).

**Security and checks when using an enclosure**

358. The licensed removalist needs to ensure an employee is stationed outside the asbestos work area for the duration of the asbestos removal work to:
    - liaise with the project supervisor
    - check and maintain negative air units, compressor units, decontamination units and hot water service
    - ensure security of the area is maintained
    - communicate with personnel inside the work enclosure
    - instigate emergency or evacuation procedures if necessary.
359. Records of these checks need to be made on a daily basis and kept (refer to Appendix G for a suggested log).

## Small-scale removal work

Mini-enclosures

360. Mini-enclosures are suitable for asbestos removal work in areas with restricted access, such as ceiling spaces and for emergency asbestos removals.
361. The mini-enclosure has to be large enough to allow movement inside the enclosure and contain all the equipment needed for the asbestos removal work. See Figure 9, on page 61.
362. Machinery that emits exhaust fumes should not be placed in a mini-enclosure.
363. The frame of a mini-enclosure can be made from a variety of materials, but has to be strong enough to support the plastic sheeting that forms the enclosure.
364. Heavy-duty plastic sheeting (200 micron minimum thickness) needs to be used for making the enclosure. Recycled plastic (including re-milled plastic) should not be used.
365. The tape used to connect the plastic to the frame needs to be strong enough to securely hold the plastic to the frame. A smoke test of the enclosure must be done to check the sealing of the plastic sheeting. For mini-enclosures, a smoke tube may be used to perform this task.
366. A slit will have to be made in the plastic sheeting to allow entry. This slit can then be taped from inside the enclosure. See Figure 9 on page 61 for a typical layout.
367. The hazards and work procedures that need to be considered for large enclosures (discussed in 'Large-scale removal work' on page 55) also need to be taken into account for mini-enclosures.
368. Employees leaving a mini-enclosure need to follow personal decontamination procedures based on a combination of the procedures described in 'Decontamination facilities and methods' on page 33.

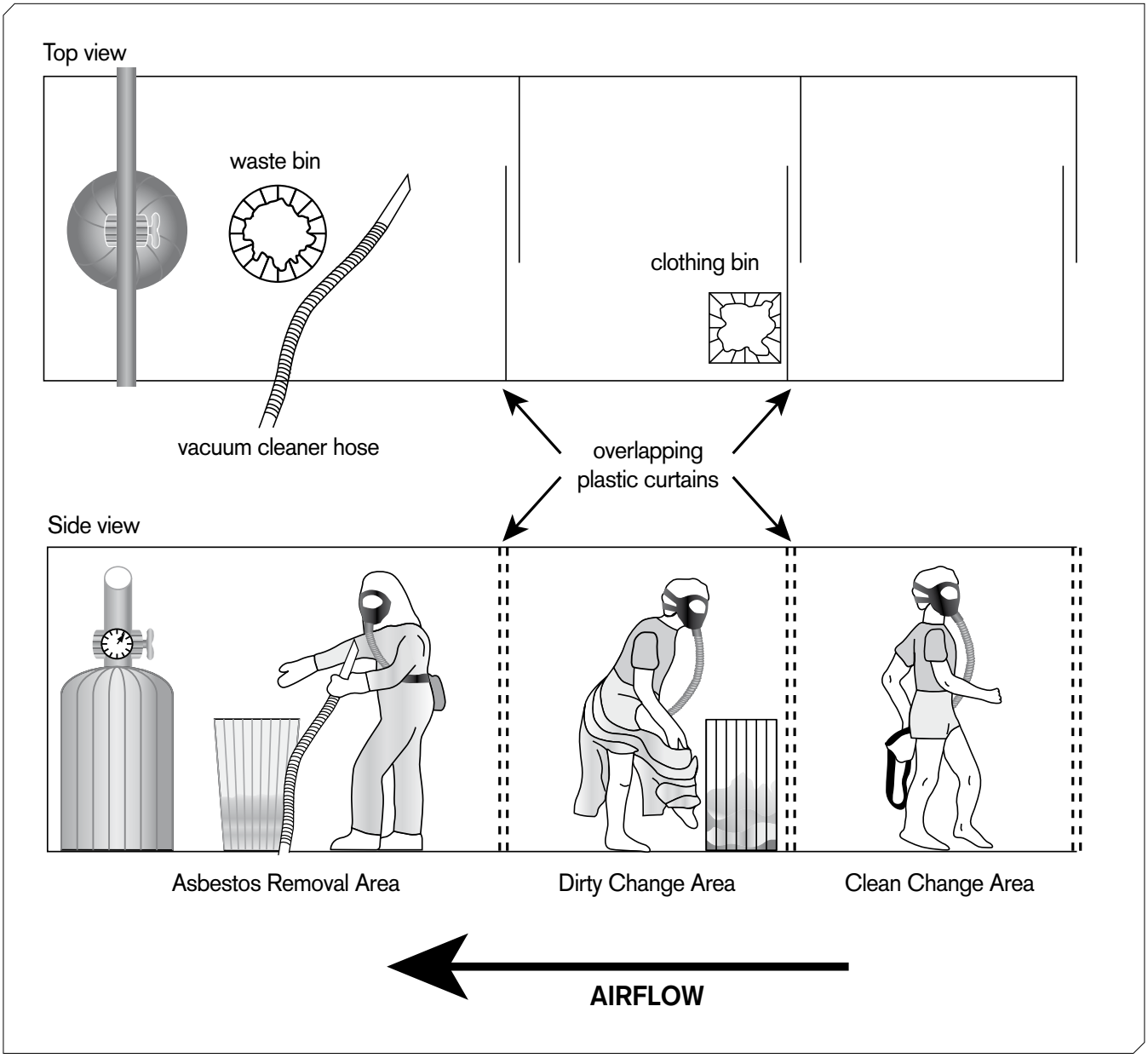



Figure 9: Layout of a mini-enclosure for asbestos removal.

### Glove bag removal work

369. Glove bags are single-use bags constructed from transparent, heavy-duty polyethylene with built-in arms and access ports. Generally, these glove bags are approximately one metre wide and 1.5 metres deep.

370. Glove bags are designed to isolate small removal jobs from the general working environment. They provide a flexible, easily installed and quickly dismantled temporary enclosure for small asbestos removal jobs.

371. The glove bag removal method is especially suited to the removal of asbestos lagging from individual valves, joints and piping.

# Specific requirements for removal of friable ACM

372. A major advantage of glove bags is that they contain all the waste and contamination within them, eliminating the need for extensive PPE and decontamination.

373. The limitation of glove bags is the volume of waste material they are able to contain. Care needs to be exercised to prevent overfilling the bag with water or waste. In addition, they should not be used on hot pipe work due to difficulties in sealing the glove bag to the pipe or maintaining the seal.

374. A P1 filtered respirator and disposable coveralls need to be worn as a minimum while using glove bags in case a bag ruptures or leaks.

Glove bags need to be used as follows:

375. Cutting and removal tools that will be used in the removal work need to be placed into the glove bag at the start of the job. When the removal is complete, tools used need to be disposed of as asbestos waste or sealed for re-use in future removal jobs.

376. The glove bag needs to completely cover the pipe or object on which the asbestos removal work is to be performed. The lagging on either side of the bag must be sound enough to support the weight of the bag and its wet contents.

377. Cut the sides of the glove bag to fit the size of the pipe from which asbestos is to be removed. Attach the glove bag to the pipe by folding the open edges together and securely sealing them with duct tape or an equivalent. Seal all openings in the glove bag with the tape. The bottom and side seams of the glove bag also need to be sealed with tape to prevent any leakage if there is a defect in a seam.

378. Thoroughly saturate the ACM with a wetting agent and then remove it from the pipe, beam or other surface. The wetting agent needs to be applied with an airless sprayer through a pre-cut port, as provided in most glove bags, or through a small hole cut in the bag. ACM that has fallen into the bag needs to be thoroughly saturated. The choice of tool to remove the ACM depends on the nature of the material to be removed. ACM is generally covered with painted canvas and/or wire mesh. Any canvas needs to be cut and peeled away from the ACM underneath. If this ACM is dry, it needs to be re-sprayed with the wetting agent before it is removed.

379. Thoroughly clean the pipe or surface from which the asbestos has been removed with a wire brush or similar tool and wet-wipe it until no traces of the ACM can be seen. Wash down the upper section of the bag to remove any adhering ACM.

380. Seal any edges of ACM that have been exposed by the removal or by any maintenance activity to ensure these edges do not release airborne asbestos fibres after the glove bag is removed.

381. Once the ACM has been removed and sealed, insert a vacuum hose from an asbestos vacuum cleaner into the glove bag through the access port to remove any air in the bag that might contain airborne asbestos fibres. Once the bag has been evacuated, squeeze it tightly (as close to the top as possible) and twist and seal it with tape, keeping the ACM safely in the bottom of the bag.

382. Remove the vacuum line from the bag and then remove the glove bag from the workplace for disposal as asbestos waste.

383. On completion of the removal, employees need to follow the personal decontamination procedures described on page 34.

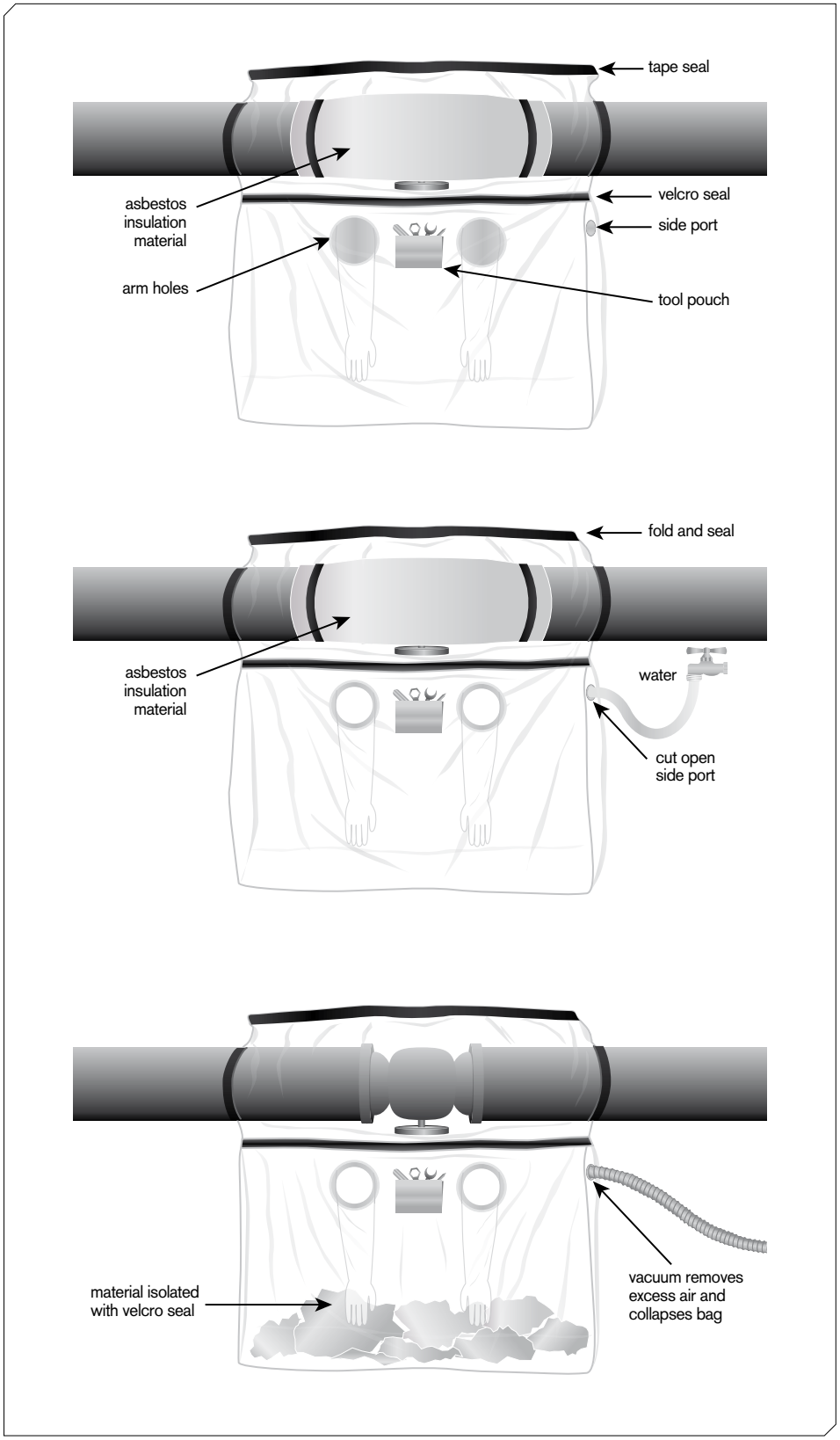



Figure 10: Use of glove bags.

### Wrap and cut removal work

384. This method of removal produces the lowest levels of airborne asbestos fibres and is most appropriate for redundant plant and equipment.

385. The plant or equipment to be removed needs to be vacuumed with a HEPA-fitted vacuum cleaner and/or wiped with damp rags (which need to be disposed of as asbestos waste). The plant or equipment then needs to be double wrapped with 200 micron thick plastic and taped so that the ACM is totally sealed within the plastic. The wrapped plant or equipment can then be cut from the rest of the plant and equipment using mechanical shears or oxy-cutting tools. Only exposed metal can be cut and care needs to be taken to ensure the plastic wrapping is not punctured or melted. The cut section can then be removed as asbestos waste.

386. If lagging has to be removed to allow a pipe to be cut, the glove bag removal method may be used to expose the metal at the point to be cut and for a sufficient length on either side (refer to Figure 10 on page 63). The pipe then needs to be cut at the centre of the exposed section.

387. A P1 filtered respirator and disposable coveralls need to be worn as a minimum while doing wrap and cut removal work. However, if the lagging is in very poor condition such that significant airborne asbestos fibres may be generated, a higher level of respiratory protection may be required or the method of removal reconsidered.

388. On completion of the removal, employees need to follow the personal decontamination procedures described on page 34.

# Paraoccupational air monitoring and clearance inspections

## Friable asbestos removal work

### Paraoccupational air monitoring requirements

389. Paraoccupational (or control) air monitoring involves taking samples of air from fixed locations, which are usually immediately outside the area where asbestos removal is taking place. This area is usually enclosed by plastic and is sometimes referred to as the 'bubble'.

390. The purpose of this monitoring is to identify whether airborne asbestos fibres are present outside the removal enclosure and to ensure that control measures designed to prevent asbestos escaping from the enclosure are working.

391. The person who commissioned the removal work must ensure that paraoccupational monitoring is done when the asbestos removal work will be done:

    - indoors, or
    - outdoors and could pose a risk to other persons (eg employees working nearby who cannot be isolated from the area during the removal).

392. Paraoccupational air monitoring is not required when glove bag asbestos removal is undertaken.

393. The person who commissioned the removal work (not the licence holder) must arrange for paraoccupational air monitoring to be done before the removal work commences and must ensure monitoring lasts for the duration of the removal work.

394. Where paraoccupational air monitoring is required, the licensed removalist must not commence asbestos removal work until that monitoring has commenced.

395. A person who is suitable to conduct paraoccupational air monitoring for asbestos removal work needs to be:

    - experienced and knowledgeable in the asbestos removal industry
    - competent in operating monitoring equipment such as sampling pumps
    - able to implement the most appropriate sampling strategy and place the appropriate number of sampling pumps in the correct locations
    - able to comply with the ASCC Guidance Note *The membrane filter method for estimating airborne asbestos fibres* (available at **ascc.gov.au**)
    - able to adequately store and transport samples to ensure a proper chain of custody prior to analysis.

396. This person must be competent to perform paraoccupational air monitoring but does not have to be approved by anyone. The person who analyses the subsequent samples however, must be an approved analyst.

# Paraoccupational air monitoring and clearance inspections

397. The person who performs paraoccupational air monitoring needs to determine all air monitoring requirements. Among other things, they need to decide:
    - the location, rate and frequency of sampling
    - whether it is necessary to monitor air quality in areas next to, above and below the asbestos removal area and in routes used for removing asbestos waste, taking account of the potential exposure of current and future occupants of these areas
    - whether additional routine air sampling is warranted (eg in nearby high-occupancy areas)
    - clearance air monitoring requirements (see page 67).
398. Paraoccupational air monitors generally need to be placed in the middle of the sampling area, away from areas where there may be poor air-mixing (eg close to walls, corners or large objects) or fast air movements (eg in front of airconditioning inlets or exhausts).
399. If an enclosure is used, paraoccupational air monitoring needs to occur:
    - prior to any work (background monitoring)
    - throughout the duration of the removal work (commencing before the asbestos removal work commences and finishing after asbestos removal work finishes for the day or shift)
    - at least at the boundary of the asbestos removal work area
    - as part of preliminary clearance monitoring following a satisfactory visual inspection
    - during dismantling of the enclosure
    - as part of the final clearance inspection.
400. If an enclosure and a decontamination unit are used, paraoccupational air monitoring needs to occur at the following locations:
    - clean side of the decontamination unit
    - change area
    - lunch room (where applicable)
    - surroundings of the asbestos work area, including near the negative air unit (where possible).
401. Air monitoring of the exhaust from the extraction unit is a specialised task. The membrane filter method (MFM) is unsuitable because the results obtained do not always truly reflect actual fibre concentrations in the exhaust air. Air monitoring devices also should not be positioned at the exit point of a negative air unit because this can lead to unwarranted confidence in the filter's integrity. If the exhaust is to be monitored directly, isokinetic sampling techniques need to be used.
402. The person who commissioned the removal work must arrange for the analysis of samples to be done by an approved asbestos analyst. An approved asbestos analyst is a person approved by NATA to perform asbestos fibre counting (or to identify asbestos in samples) and to issue reports under the authority of a NATA-accredited laboratory. Such persons may be found at **nata.asn.au**. If an analysis is requested for the purpose of meeting a regulatory requirement, ensure the report has a NATA stamp.
403. Air monitoring needs to be done in accordance with the ASCC Guidance Note *Membrane filter method for estimating airborne asbestos fibres* (available at **ascc.gov.au**).

# Paraoccupational air monitoring and clearance inspections

### Air monitoring results

404. The results of paraoccupational air monitoring cannot be compared to the asbestos exposure standard specified in the Regulations. The asbestos exposure standard is designed to assist in controlling risk to employees and is measured in the employees' breathing zone. Paraoccupational air monitoring is conducted at stationary or static positions outside the removal area to evaluate the effectiveness of controls.

405. The person who commissioned the removal work must:

- give a copy of the results to the licensed removalist as soon as the results are received
- ensure the results are accessible to the HSR of any affected designated work group
- ensure the results are accessible to any affected employees.

### Air monitoring action levels

406. Where levels exceed 0.01 fibres/ml, the licensed removalist must take the following action:

- more than 0.01 fibres/ml but less than or equal to 0.05 fibres/ml:
  - investigate the cause
  - implement controls to prevent exposure and prevent further release
- more than 0.05 fibres/ml:
  - **stop removal work**
  - **notify WorkSafe** – this needs to be done as soon as possible by phone followed by a fax of the results accompanying a statement that work has ceased
  - **investigate the cause** – this needs to include a thorough visual inspection of the enclosure (if used) and associated equipment in consultation with all employees involved with the removal work
  - **implement controls to prevent exposure and further release** – this needs to include extending the isolated/barricaded area around the removal area/enclosure as far as reasonably practicable (until airborne asbestos fibre levels are at or below 0.01 fibres/ml), wet wiping and vacuuming the surrounding area, sealing any identified leaks (eg with expandable foam or tape) and smoke testing the enclosure until it is satisfactorily sealed
  - **do not recommence asbestos removal work until further paraoccupational air monitoring is conducted** that indicates the airborne asbestos fibre levels are at or below 0.01 fibres/ml.

407. Employees and other persons entering the area must be adequately protected. This is likely to require respiratory protection (the level will depend on the likely level of exposure) and personal protective clothing.

### Clearance air monitoring

408. This type of air monitoring is required after friable ACM has been removed and the area has been cleaned dry to ensure fibre levels are less than 0.01 fibres/ml.

# Paraoccupational air monitoring and clearance inspections

409. For removal jobs involving an enclosed area, paraoccupational air monitoring needs to be done following completion of the removal work both prior to and after removal of the enclosure.

410. Where fibre levels are found to be equal to or greater than 0.01 fibres/ml, further clean-up work (such as wet wiping and vacuuming of the area) must take place. The area must then be re-tested to establish the fibre levels are less than 0.01 fibres/ml.

## Non-friable asbestos removal work

411. The Regulations do not require any form of air monitoring for non-friable asbestos removal work. However, the person who commissioned the removal work needs to consider providing paraoccupational air monitoring during removal of non-friable ACM that is being done in or next to a public location. The results of this monitoring may assist in addressing any potential concerns raised by persons occupying these areas.

## Clearance to re-occupy an asbestos removal area

### What is a clearance certificate?

412. A clearance certificate is a written statement confirming the asbestos removal area and the area surrounding it have been cleaned satisfactorily and are safe to be re-occupied (by unprotected persons) for normal use.

### When must a clearance certificate be obtained?

413. A clearance certificate must be obtained prior to any person re-occupying the area where removal work has been done in relation to:

- any quantity of friable ACM, or
- non-friable ACM greater than 10 square metres.

414. If a clearance certificate has not been obtained, the area where the removal work was done must not be re-occupied. For example, at a site containing non-friable ACM where demolition is to take place, the ACM must be removed, so far as is reasonably practicable, before demolition work starts. A clearance certificate must then be issued before the area can be re-occupied for demolition or other work.

415. At a work site such as a factory where asbestos removal work is taking place, the removal work cannot be stopped to allow employees, the owner of the factory or anyone else (other than those persons specified in paragraph 259) to enter the removal area prior to a clearance certificate being issued.

### Who must obtain a clearance certificate?

416. The person who commissioned the removal work (not the licensed removalist) must obtain a clearance certificate from an independent person (see page 70). The exception to this is when removal is conducted in domestic premises used solely for domestic purposes (and the person who commissioned the removal is the owner of the premises). In this case, the licensed removalist must obtain the clearance certificate.

### What must a clearance certificate for friable asbestos removal work contain?

417. The clearance certificate must state that:

- an inspection by an independent person (refer to paragraphs 418 and 419) has found there is no visible asbestos residue remaining as a result of the asbestos removal work in the area where the removal work was done or in the immediately surrounding area
- if applicable, asbestos paraoccupational air monitoring in the area where the removal work was done indicates the airborne asbestos fibre level is less than 0.01 fibres/ml (paraoccupational air monitoring is not required for glove bag removals or where the removal work is done outdoors and will not pose a risk to other persons).

The clearance certificate should also include the scope of the removal work performed to avoid confusion with any remaining fixed or installed asbestos that was not part of the asbestos removal work.

418. Where paraoccupational air monitoring is required, the samples collected must be analysed by an approved analyst (see paragraph 402). When the person who commissioned the removal work obtains the clearance certificate, they also need to ask for the NATA-accredited report related to the counting of asbestos fibres.

419. The visual inspection relates to the removal work that was done and any visible asbestos residue resulting from the removal work in the removal area and the area surrounding it at the time of the inspection. The visual inspection for a clearance certificate does not require wipe samples (or settled dust sampling). However, settled dust sampling may be performed to provide an indication of cleanliness. The need for any settled dust sampling should be determined and undertaken by a person with the requisite knowledge, skills and experience to determine and undertake such sampling.

420. In some situations, it may be apparent that asbestos contamination of the removal area could occur after the visual inspection. In these situations, the person performing the visual inspection and issuing the clearance certificate needs to explain that the visual inspection relates to the removal work that was done and the status of the area at the time of the inspection (photos may assist). In addition to the clearance certificate, a further statement needs to be provided explaining there is potential for asbestos contamination in the area based on the particular circumstances, which need to be described.

### What must a clearance certificate for non-friable asbestos removal work contain?

421. The clearance certificate must state that an inspection by an independent person has found there is no visible asbestos residue remaining as a result of the asbestos removal work in the area where the removal work was done or in the immediately surrounding area.

422. Procedure and requirements relating to visible inspection for a clearance inspection are the same as for friable asbestos removal work – refer to paragraphs 419 and 420.

**Who is an independent person in relation to the clearance certificate?**

423. An independent person is someone who is independent from the licensed removalist and from the person who commissioned the removal work. This person must not be in a position of conflict with their independence of judgement and integrity in relation to their inspection activity. Anyone who has a conflict of interest or a vested interest in declaring there is no visible asbestos residue remaining would not be considered independent. An independent person can not be a director, employee or person with a pecuniary interest.

424. In some cases, a consultant may be engaged to manage a project. Where this consultant commissions the removalist, they can not take on the role of the independent person to issue the clearance certificate.

425. An independent person must have the requisite knowledge, skills and experience to undertake visual inspections. This means they must have:

- knowledge of the asbestos removal industry and the Regulations
- the ability to identify what is or what may be ACM
- the ability to thoroughly inspect the area for suspect material
- experience in asbestos removal work, inspection of asbestos removal areas or audits of workplaces for ACM that is relevant to the visual inspection to be performed (eg friable or non-friable ACM, the type of structure or plant from which ACM was removed)
- the ability to interpret paraoccupational air monitoring reports for friable removal work (where required).

426. The person proposing to engage the independent person should consider asking for referees and examples of clearance certificates issued for other removal work. They should also ask the independent person what process they will be undertaking to assist in determining whether this person's knowledge, skills and experience are appropriate.

427. There must be no contractual or financial relationship between the independent person and the licensed removalist unless the removal is conducted in domestic premises used solely for domestic purposes (and the person who commissioned the removal work is the owner of the premises).

# Appendices

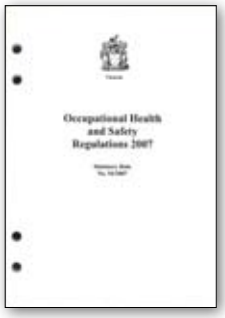
# Appendices

## Appendix A – The compliance framework


*Occupational Health and Safety Act 2004*

Act No. 107/2004

The ***Occupational Health and Safety Act 2004*** (the OHS Act) sets out the key principles, duties and rights in relation to occupational health and safety (OHS).




Occupational Health and Safety Regulations 2007

Statutory Rule No. 54/2007

The **Occupational Health and Safety Regulations 2007** (the Regulations) specify the way in which a duty imposed by the Act must be performed, or prescribe procedural or administrative matters to support the Act (eg requiring licences for specific activities, the keeping of records or giving notice).


**Compliance codes** provide practical guidance to duty holders. If a person complies with a provision of a compliance code, they are deemed to comply with the Act or Regulation duty covered by the code provision. However, compliance codes are not mandatory and a duty holder may choose to use some other way to achieve compliance.


**WorkSafe Positions** are guidelines made under section 12 of the Act that state how WorkSafe will apply the Act or Regulations or exercise discretion under a provision of the Act or Regulations. WorkSafe Positions are intended to provide certainty to duty holders and other affected parties.



**Non-statutory guidance** includes information published by WorkSafe aimed at building people's knowledge and awareness of OHS issues, risks to health and safety and the disciplines and techniques that can be applied to manage and control risks. Non-statutory guidance is not mandatory, nor does it provide any 'deemed to comply' outcomes for duty holders. This guidance does, however, form part of the 'state of knowledge' about OHS.

## Appendix B – Definitions

**Administrative control**

A system of work or a work procedure that is designed to eliminate or reduce a risk, but does not include:

(a) a physical control, or

(b) the use of personal protective equipment.

**Air-supplied respiratory protective equipment**

A device that supplies air to the wearer from a source other than the ambient atmosphere.

**Approved asbestos analyst**

An analyst approved:

(a) by NATA to perform asbestos fibre counting or to identify asbestos in samples, and to issue findings as endorsed reports under the authority of a NATA accredited laboratory, or

(b) by some other scheme determined by WorkSafe.

**Asbestos**

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

(b) any material or object, whether natural or manufactured, that contains one or more of the mineral silicates referred to in paragraph (a) above.

**Asbestos exposure standard**

0·1 f/ml of air measured in a person's breathing zone and expressed as a time weighted average fibre concentration of asbestos calculated over an eight-hour working day and measured over a minimum period of four hours in accordance with:

(a) the Membrane Filter Method, or

(b) a method determined by WorkSafe.

**Asbestos licence holder**

An employer or self-employed person who is the holder of an asbestos removal licence issued under 'Part 6.1 – Licences' of the Regulations.

**Asbestos paraoccupational air monitoring**

Air sampling to estimate the airborne asbestos fibre concentration in the occupational environment, taken at fixed locations, usually between one and two metres above floor level, in accordance with:

(a) the Membrane Filter Method, or

(b) a method determined by WorkSafe under regulation 1.1.6.

**Asbestos register**

The asbestos register kept under regulation 4.3.21 as revised in accordance with 'Part 4.3 – Asbestos' of the Regulations.

**Asbestos removal supervisor**

A person who is appointed by an asbestos licence holder to oversee asbestos removal work in accordance with regulation 4.3.62.

**Asbestos removal work**

The removal of asbestos that is fixed or installed in a building, structure, ship or plant so that the asbestos is no longer fixed or installed in that building, structure, ship or plant, up to the point of containment.

**Asbestos waste**

Asbestos removed and disposable items used during asbestos removal work or asbestos-related activities under Division 8 of 'Part 4.3 – Asbestos' of the Regulations, including plastic sheeting and disposable personal protective clothing and disposable protective equipment including tools.

**Asbestos-containing material (ACM)**

Any manufactured material or object that, as part of its design, contains one or more of the mineral silicates referred to in paragraph (a) of the definition of asbestos (other than plant in which asbestos is fixed or installed).

**Atmospheric monitoring**

A procedure whereby air is sampled within the breathing zone of a person to evaluate the person's exposure to airborne contaminants.

**Australian Safety and Compensation Council (ASCC)**

The Australian Safety and Compensation Council as defined in section 3 of the *Australian Workplace Safety Standards Act 2005* of the Commonwealth.

Note: The ASCC succeeded the National Occupational Health and Safety Commission in February 2005.

**Chrysotile-containing material**

ACM that contains chrysotile asbestos.

**Class-A asbestos removal licence**

A licence that permits the holder to remove asbestos of any kind as specified in the licence.

**Class-B asbestos removal licence**

A licence that allows the holder to remove non-friable asbestos-containing material as specified in the licence.

**Domestic premises**

Domestic premises used solely for domestic purposes.

**Employer's asbestos register**

The employer's asbestos register kept under regulation 4.3.29 as revised in accordance with part 4.3 (Asbestos) of the Regulations.

**Engineering control**

A physical control of any kind that is designed to eliminate or reduce a risk, but does not include:

(a) a system of work or procedure, or

(b) the use of personal protective equipment.

**Evidence of licence document**

In relation to a licence, means the document given to the licence holder by WorkSafe under regulation 6.1.7, and includes any replacement document issued under 'Part 6.1 – Licences'.

**Exposure standard**

An airborne concentration of a particular substance in a person's breathing zone, as set out in the Hazardous Substances Information System (HSIS) administered by the Australian Safety and Compensation Council (ASCC).

**Friable**

Ehen dry:

(a) may be crumbled, pulverised or reduced to powder by hand pressure, or

(b) as a result of a work process becomes such that it may be crumbled, pulverised or reduced to powder by hand pressure.

**F/ml**

Fibres per millilitre.

**Glove bag**

A single-use bag constructed from transparent, heavy duty polyethylene with built-in arms and access ports.

**HEPA filter**

A high-efficiency particulate air filter that is a disposable, extended media, dry type filter, in a rigid frame, with a minimum filtration efficiency of 99·97% filtration for nominal 0·3 micrometres (µm) diameter thermally generated dioctylphthalata particles or an equivalent efficiency for a specified alternative aerosol and with an initial maximum resistance to airflow of 250 pascals when tested at its rated airflow capacity.

**Independent person**

A person who is independent from the asbestos licence holder and from the person who commissioned the work.

**Membrane Filter Method**

The method for estimating airborne asbestos fibres in accordance with the Guidance Note on the *Membrane Filter Method for Estimating Airborne Asbestos Fibres* prepared by the National Health and Safety Commission and published in 2005.

**NATA**

National Association of Testing Authorities – Australia's national laboratory accreditation authority.

**Person who commissioned the work**

The person managing or controlling a workplace or the employer who arranged for asbestos removal work to be performed.

**Personal protective equipment**

includes respiratory protective equipment and personal protective clothing.

**Structure**

Any construction, including a bridge, tunnel, shaft, dam, pipe or access pit, or any part of a construction but does not include a building, ship or plant (Part 4.3 (Asbestos) of the Regulations).

**Type of asbestos-containing material**

A description of asbestos-containing material.

Example: Asbestos-containing cement sheeting, cement pipes, vinyl tiles, sprayed insulation, telecommunications pits and pipes, pipe lagging, millboard and gaskets.

## Appendix C – Examples of asbestos-containing materials

### A

Airconditioning ducts – exterior or interior acoustic and thermal insulation

Arc shields in lift motor rooms or large electrical cabinets

Asbestos-based plastics products – as electrical insulates and acid-resistant compositions or aircraft seats

Asbestos ceiling tiles

Asbestos cement conduits

Asbestos cement electrical fuse boards

Asbestos cement external roofs and walls

Asbestos cement in the use of form work when pouring concrete

Asbestos cement internal flues and downpipes

Asbestos cement moulded products, such as gutters, ridge cappings, gas meter covers, cable troughs and covers

Asbestos cement pieces for packing spaces between floor joists and piers

Asbestos cement underground pits, as used for traffic control wiring and telecommunications cabling

Asbestos cement render, plaster, mortar and coursework

Asbestos cement sheet

Asbestos cement sheet behind ceramic tiles

Asbestos cement sheet internal over exhaust canopies, such as ovens and fume cupboards

Asbestos cement sheet internal walls and ceilings

Asbestos cement sheet underlays for vinyl

Asbestos cement storm drain pipes

Asbestos cement water pipes (usually underground)

Asbestos-containing laminates (eg Formica) used where heat resistance is required (eg ships)

Asbestos-containing pegboard

Asbestos felts

Asbestos marine board (eg marinate)

Asbestos mattresses used for covering hot equipment in power stations

Asbestos paper used variously for insulation, filtering and production of fire resistant laminates

Asbestos roof tiles

Asbestos textiles

Asbestos textile gussets in airconditioning ducting systems

Asbestos yarn

Autoclave/steriliser insulation

### 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

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, verandas, bathrooms and steps for demountable buildings

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

**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 roofs for sound proofing)

Gaskets – chemicals, refineries

Gaskets – general

Gauze mats in laboratories/chemical refineries

Gloves – for insulation against heat

**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

Lift 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 units and walls

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 (eg Zelemite, Ausbestos, Lebah) electrical switchboards

Plaster and plaster cornice adhesives

Pump insulation

**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 mastic 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, guards vans, millboard between heater and wall

Trains – Harris cars (sprayed asbestos between steel shell and laminex)

**V**

Valve insulation

**W**

Welding rods

Woven asbestos cable sheath

## Appendix D – Examples of asbestos warning signs

## Appendix E – Guide to the selection of respiratory protection

There is a wide range of respiratory protection available for protection against airborne asbestos fibres.

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 (eg facial hair and glasses).

The diagrams below provide, in approximate order of increasing efficiency, an overview of some of the respirators which can be used for protection against airborne asbestos fibres. The protection afforded by each device depends not only on the design and fit of the respirator but also upon the efficiency of the filters (ie P1, P2 or P3).

AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* and AS1716:2003 *Respiratory protective devices* provide detailed advice on the selection, use and maintenance of respiratory protection equipment and need to be consulted for more detailed advice on 'nominal protection factors' and other relevant matters.

The table 'Selection of appropriate respiratory equipment' (page 82) provides guidance for the selection of appropriate respiratory protection for different tasks, assuming the correct work procedures are being followed.

This guide does not take account of personal features, such as facial hair or the need to wear glasses (full protection will not be achieved if either of these factors interferes with the face seal). It also does not take any account of potential misuse of the protective equipment.

The respirators and filters in the table 'Selection of appropriate respiratory equipment' (page 81) are the minimum recommended for the corresponding task. The most efficient respirator and filter needs to be used.

Ensuring a proper fit is critical. Establishing that a proper fit has been obtained with a disposable half-face respirator is difficult. Therefore, consideration needs be given to upgrading to a non-disposable half-face respirator.

**Types of respiratory protective equipment (see diagrams on page 81):**

- disposable, half face particulate respirator (A)
- half-face, particulate filter (cartridge) respirator (B)
- powered, air-purifying, ventilated helmet respirator (C)
- full-face, particulate, filter (cartridge) respirator (D)
- full-face, powered air-purifying particulate respirator (E)
- full-face, positive pressure demand air-line respirator (F).

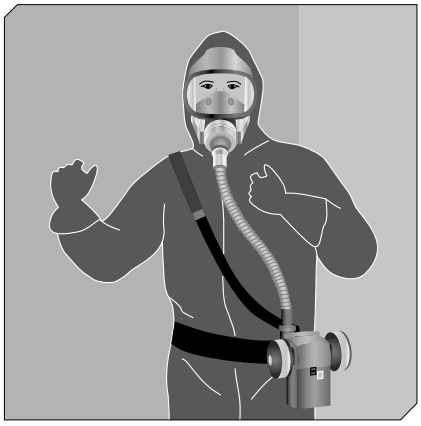
These diagrams are indicative only. In order to show the correct respirator fit they do not show the use of hoods. Respirators must always be worn under a hood.

(A) Disposable, half-face particulate respirator.

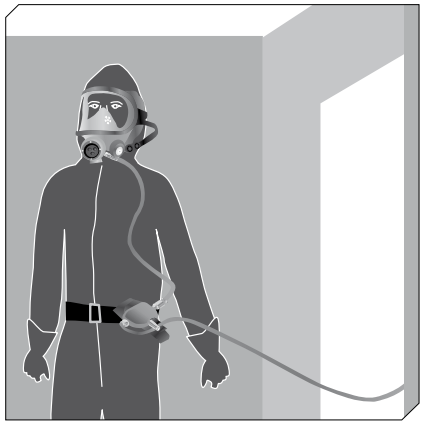
(B) Half-face, particulate filter (cartridge) respirator.

(C) Powered, air-purifying, ventilated helmet respirator.

(D) Full-face, particulate filter (cartridge) respirator.



(E) Full-face, powered air-purifying particulate respirator.



(F) Full-face, positive pressure demand air-line respirator.

# Appendices

**Selection of appropriate respiratory equipment**

| Work procedure | Required respirator | Filter type (where applicable) |
|---|---|---|
| Simple enclosure erection for containing undamaged asbestos materials to prevent damage – no direct handling but possible disturbance of asbestos | Disposable,* half-face particulate respirators<br>or<br>Half-face, particulate filter (cartridge) respirator | P1 or P2 |
| Inspection of the condition of any installed friable asbestos, which appears in poor condition or has been disturbed | Disposable,* half-face particulate respirators<br>or<br>Half-face, particulate filter (cartridge) respirator | P1 or P2 |
| Sampling material for the purpose of identifying asbestos | Disposable,* half-face particulate respirators<br>or<br>Half-face, particulate filter (cartridge) respirator | P1 or P2 |
| Removal of non-friable asbestos (eg asbestos cement sheets, ceiling tiles and vinyl tiles) | Disposable,* half-face particulate respirators<br>or<br>Half-face, particulate filter (cartridge) respirator | P1 or P2 |
| Extensive sample operations on friable asbestos | Full-face, particulate, filter (cartridge) respirator | P3 |
| Maintenance work involving the removal of small quantities of friable asbestos (eg replacement of friable asbestos gaskets and insulation) | Full-face, particulate, filter (cartridge) respirator | P3 |
| Certain forms of wet stripping in which wetting is prolonged and effective, and certain small-scale dry stripping operations. | Full-face, powered air-purifying particulate respirator<br>or<br>Full-face, positive pressure demand air-line respirator | P3 |
| Certain forms of dry stripping and ineffective wet stripping (light wetting, no time given to saturate) | Powered air-purifying particulate respirator<br>or<br>Full-face, positive pressure demand air-line respirator.<br>No lesser respirator will suffice | P3 |

*Disposable half-face respirators are not preferred for ongoing asbestos-related activities.

| Work procedure | Required respirator | Filter type (where applicable) |
|---|---|---|
| Dry stripping in confined areas | Full suit or hood, positive pressure demand continuous flow air-line respirator.<br>No lesser respirator will suffice | P3 only as a backup |

## Appendix F – Pro forma control plans

### CONTROL PLAN FOR ASBESTOS REMOVAL (Class A)

DATE: _____

| Name of removalist (as shown in licence): | Name/address of removal site |
|---|---|
| _____<br>_____<br>_____ | _____<br>_____<br>☐ Domestic ☐ Industrial ☐ School ☐ Public venue |

**GENERAL/PRELIMINARY**

- ☐ Notified WorkSafe
- ☐ Adjacent employers (if relevant) notified by person who commissioned work or removalist (domestic)
- ☐ Nominated supervisor assigned for job
- ☐ Person who commissioned work has notified people (other employees) in immediate and adjacent areas
- ☐ Copies of training tickets available on site
- ☐ Copy of asbestos removalist licence available on site
- ☐ Copy of control plan available on site
- ☐ Copy of Division 5 audit obtained from person who commissioned the work
- ☐ Paraoccupational air monitoring arranged by person who commissioned removal work [for removal of friable asbestos 1) indoors or 2) outdoors that may present a risk to others]
- ☐ Equipment [HEPA vac/Neg-air unit/decon unit (filters etc)/respirators] maintained/checked and records/logs kept

### 1. Asbestos-containing material (ACM) to be removed

| Type of ACM | | Location | Friable (F) Non-friable (NF) | Condition (Good/Fair/ Poor) | Quantity ($m^2$/$m^3$) |
|---|---|---|---|---|---|
| ☐ | Asbestos cement roof | | | | |
| ☐ | Asbestos cement pipe | | | | |
| ☐ | Asbestos cement sheet | | | | |
| ☐ | Vinyl tiles | | | | |
| ☐ | Zelemite board | | | | |
| ☐ | Pipe lagging | | | | |
| ☐ | Sprayed | | | | |
| ☐ | Other (specify) | | | | |

## 2. Personal protective clothing and equipment

| | | | |
|---|---|---|---|
| ☐ | Disposable overalls | ☐ | Full-face respirators (air-line) |
| ☐ | Non-disposable overalls | ☐ | Employees clean shaven |
| ☐ | Half-face respirators (P1/P2/disposable/ cartridge) | ☐ | Fit checks conducted |
| ☐ | Full-face respirators (P3) | ☐ | Other (specify): |
| ☐ | Full-face powered air-purifying respirators | | |

## 3. Administrative controls (including securing area)

| | | | |
|---|---|---|---|
| ☐ | Asbestos warning signs | ☐ | Personnel to prevent unauthorised access |
| ☐ | Barricades/safety tape | ☐ | Other (specify): |
| ☐ | Security fencing to prevent unauthorised access to removal area | | |

## 4. Controls/work practices to control airborne asbestos fibres

| | | | |
|---|---|---|---|
| ☐ | No power tools (hammer/pinch bar/scraper/ knife/other) | ☐ | Full enclosure **(friable)** |
| ☐ | Seal air vents/windows/entrances/openings | ☐ | Negative air unit/decontamination unit **(friable)** |
| ☐ | Wet methods (water/PVA spray) | ☐ | Glove bag **(friable)** |
| ☐ | No unnecessary breakage<br>☐ Sheets removed in whole (if practical)<br>☐ Scaffolding<br>☐ Scissor lift/elevated mobile platform | ☐ | Clean up debris throughout removal<br>☐ HEPA vacuum<br>☐ Wet-wipe |
| | | ☐ | Other (specify): |

## 5. Enclosed removal area (friable)

| | |
|---|---|
| ☐ | Smoke test to be conducted (by whom): |
| ☐ | Negative air units (number: ____) |
| ☐ | Decontamination unit in place |

## 6. Decontamination procedures

| Employees | |
|---|---|
| ☐ | Full decontamination unit (for friable removal and in certain circumstances for some large non-friable removal jobs) |
| ☐ | HEPA vacuum |
| ☐ | Water spray (using only water spray is usually appropriate for minor non-friable removal jobs) |

| Tools and equipment | | Non-disposable clothing | |
|---|---|---|---|
| ☐ | HEPA vacuum | ☐<br>☐ | Spray with water<br>HEPA vacuum |
| ☐ | Wet-wipe | ☐ | Dispose of as asbestos waste |
| ☐ | Wash | ☐ | Launder at commercial laundry<br>(name:_____) |
| ☐ | Dispose of as asbestos waste | ☐ | Other (specify): |

## 7. Methods of disposal

| Asbestos waste and protective clothing / equipment | | Structure used to enclose removal area (friable) | |
|---|---|---|---|
| ☐ | Double bagged/twisted/taped | ☐ | EPA Victoria-licensed tip (specify: _____) |
| ☐ | Labelled | ☐ | PVA spray then dispose as asbestos waste |
| ☐ | Double lined waste skips | ☐ | Other (specify): |
| ☐ | Other (specify): | | |

## 8. Method of clean-up following removal

| | | | |
|---|---|---|---|
| ☐ | Remove all visible debris | ☐ | Spray PVA solution onto substance/structure |
| ☐ | HEPA vacuum | ☐ | Visual inspection |
| ☐ | Wet-wipe | ☐ | Other (specify): |
| ☐ | Clearance certificate (Required for all friable removal jobs and non-friable removal jobs greater than 10 square metres)<br>To be obtained from independent person by person who commissioned work (or by removalist in the case of domestic premises used solely for domestic purposes). | | |

## 9. Other information

_____

_____

_____

Nominated supervisor: _____ Date: _____

# Appendices

## CONTROL PLAN FOR ASBESTOS REMOVAL (Class B)

DATE: _____

| Name of removalist (as shown in licence) | Name/address of removal site |
|---|---|
| _____<br>_____<br>_____ | _____<br>_____<br>☐ Domestic ☐ Industrial ☐ School ☐ Public venue |

**GENERAL/PRELIMINARY**

- ☐ Notified WorkSafe
- ☐ Adjacent employers (if relevant) notified by person who commissioned work or removalist (domestic)
- ☐ Nominated supervisor assigned for job
- ☐ Person who commissioned work has notified people (ie other employees) in immediate and adjacent areas
- ☐ Copies of training tickets available on site
- ☐ Copy of asbestos removalist licence available on site
- ☐ Copy of control plan available on site
- ☐ Copy of Division 5 audit obtained from person who commissioned the work
- ☐ Equipment (HEPA vacuum/respirators) maintained/checked and records/logs kept

## 1. Non-friable asbestos-containing material (ACM) to be removed

| Type of ACM | | Location | Condition (Good/Fair/Poor) | Quantity ($m^2$/$m^3$) |
|---|---|---|---|---|
| ☐ | Asbestos cement roof | | | |
| ☐ | Asbestos cement pipe | | | |
| ☐ | Asbestos cement sheet | | | |
| ☐ | Vinyl tiles | | | |
| ☐ | Zelemite board | | | |
| ☐ | Other (specify) | | | |

## 2. Personal protective clothing and equipment

| | | | |
|---|---|---|---|
| ☐ | Disposable overalls | ☐ | Full-face powered air-purifying respirators |
| ☐ | Non-disposable overalls | ☐ | Employees clean shaven |
| ☐ | Half-face respirators (P1/P2/disposable/ cartridge) | ☐ | Fit checks conducted |
| ☐ | Full-face respirators (P3) | ☐ | Other (specify): |

## 3. Administrative controls (including securing area)

| | | | |
|---|---|---|---|
| ☐ | Asbestos warning signs | ☐ | Personnel to prevent unauthorised access |
| ☐ | Barricades/safety tape | ☐ | Other (specify): |
| ☐ | Security fencing to prevent unauthorised access to removal area | | |

## 4. Controls/work practices to control airborne asbestos fibres

| | | | |
|---|---|---|---|
| ☐ | No power tools (hammer/pinch bar/scraper/ knife/other) | ☐ | Seal air vents/windows/entrances/openings |
| ☐ | No unnecessary breakage<br>☐ Sheets removed in whole (if practical)<br>☐ Scaffolding<br>☐ Elevated mobile platform | ☐ | Clean up debris throughout removal<br>☐ HEPA vacuum<br>☐ Wet-wipe |
| ☐ | Wet methods (water / PVA spray) | ☐ | Other (specify): |

## 5. Decontamination procedures

| Employees | |
|---|---|
| ☐ | Decontamination unit (in certain circumstances for some large non-friable removal jobs) |
| ☐ | HEPA vacuum |
| ☐ | Water spray (Using only water spray is usually appropriate for minor non–friable removal jobs) |

| Tools and equipment | | Non-disposable clothing | |
|---|---|---|---|
| ☐ | HEPA vacuum | ☐ | Spray with water |
| | | ☐ | HEPA vacuum |
| ☐ | Wet-wipe | ☐ | Dispose of as asbestos waste |
| ☐ | Wash | ☐ | Launder at commercial laundry (name:_____) |
| ☐ | Dispose of as asbestos waste | ☐ | Other (specify): |

## 6. Methods of disposal

| Asbestos waste and protective clothing/equipment and any enclosures used | | | |
|---|---|---|---|
| ☐ | Double bagged/twisted/taped | ☐ | PVA spray then dispose as asbestos waste |
| ☐ | Labelled | ☐ | EPA Victoria-licensed tip (specify): |
| ☐ | Double-lined waste skips | ☐ | Other (specify): |

## 7. Cleanup following removal

| | | | |
|---|---|---|---|
| ☐ | Remove all visible debris | ☐ | Spray PVA solution onto substance/structure |
| ☐ | HEPA vacuum | ☐ | Visual inspection |
| ☐ | Wet-wipe | ☐ | Other (specify): |

## 7. Cleanup following removal

| | |
|---|---|
| ☐ | Clearance certificate (required for all friable removal jobs and non-friable removal jobs greater than 10 square metres)<br>To be obtained from independent person by person who commissioned work (or by removalist in the case of domestic premises used solely for domestic purposes). |

## 8. Other information

_____

_____

_____

Nominated supervisor: _____ Date: _____

## Appendix G – Example of an asbestos removal log and check sheet

### Asbestos removal log

| Site: | | | Address: | | Specific location: | |
|---|---|---|---|---|---|---|
| **Negative air units** | **Pressure** | **Pre-filter (condition/ last changed)** | **HEPA filter (condition/ last changed)** | **Pressure differential** | **Magnohelic** | **Warning devices (check)** |
| No. 1 | | | | | | |
| No. 2 | | | | | | |
| No. 3 | | | | | | |

| **Compressor** | **Last date of air test** | **Last date of filter change** | **Any odour?** | **Performance** |
|---|---|---|---|---|
| No. 1 | | | | |
| No. 2 | | | | |
| No. 3 | | | | |

## Appendix G – Example of an asbestos removal log and check sheet

### Asbestos removal log

| **HEPA vacuum cleaners (condition/last date of filter change):** | | |
|---|---|---|
| No. 1 | | |
| No. 2 | | |
| No. 3 | | |
| Decontamination unit (condition/operation – eg hot/cold water): | | |
| Pump box filter (condition/date last changed): | | |
| Hot water unit availability and performance: | | |
| Fire extinguishers available: | | |
| First aid box available (check contents): | | |
| Notes: | | |
| Print name: | Sign name: | Date: |

## Appendix G – Example of an asbestos removal log and check sheet

### Asbestos removal check sheet

| **Site address:** | | | |
|---|---|---|---|
| **Name of client:** | | | |
| **Step no.** | | **Checked by** | **Date checked** |
| **1** | *Barriers and signs erected* | | |
| **2** | *Area pre-cleaned (in/out of enclosure/area)* | | |
| **3** | *Enclosure inspection:* | | |
| | Sealing checked – smoke test and visual | | |
| | Scaffold suitable – access/railing/kickboards | | |
| | Planks and scaffold fittings covered with plastic | | |
| | Walkways covered with plastic | | |
| | Emergency exits established and identified | | |
| | Fire extinguishers appropriately placed | | |
| | Enclosure drainage connected and filtered | | |
| | Bag disposal area/enclosure inspected | | |
| | Asbestos disposal bags in enclosure/area | | |
| | Bag ties/tools in enclosure/area | | |
| | Leak proof metal storage containers provided | | |
| | Electric equipment or cabling protected against water | | |
| | Air handling systems isolated and sealed off | | |
| | Negative air units functioning correctly, pressure drop appropriate | | |
| **4** | *Decontamination unit inspection:* | | |
| | Hot and cold water connected and operating | | |
| | Change room/decontamination lighting operating | | |
| | Decontamination drainage system checked | | |
| | Contaminated clothes container provided | | |
| | Air-flow test through decontamination checked | | |
| **5** | *Change room:* | | |
| | Clothing lockers provided | | |
| | Protective clothing and spares in change room | | |
| | Safety gumboots available | | |
| | Towels/soap/shampoo/nail cleaners in change room | | |
| | Respirator storage and cleaning facilities provided | | |
| **6** | *All personnel trained in use and maintenance of PPE and emergency procedures* | | |
| **7** | *Air monitoring in place* | | |
| **8** | *Asbestos waste facilities available* | | |
| **9** | *Vehicle available for waste transport* | | |
| **Name of supervisor:** | | **Date checked** | |

## Appendix H – Exposure standard and atmospheric monitoring

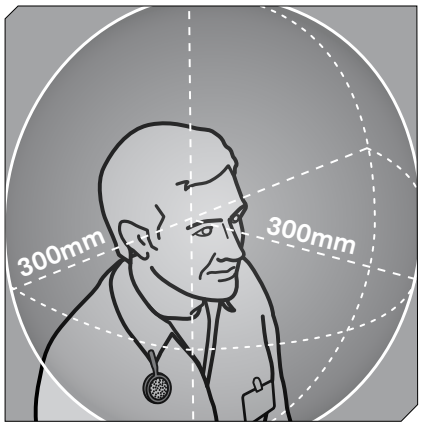
### How is an employee's exposure determined?

Employees' exposure to asbestos can be determined through personal atmospheric monitoring and comparing those atmospheric monitoring results with the asbestos exposure standard.

### What is personal atmospheric monitoring?

Personal atmospheric monitoring involves the use of sampling and analytical techniques to obtain an estimate of the level of airborne asbestos inhaled by employees. This level is then compared with the asbestos exposure standard.

Under the asbestos part of the Regulations, these measurements must be made in accordance with the Australian Safety and Compensation Council's Guidance Note *Membrane filter method for estimating airborne asbestos dust* 2nd Edition [NOHSC: 3003 (2005)].



The breathing zone.

### What is the exposure standard?

The asbestos part of the Regulations set the exposure standard for all forms of asbestos at 0.1 fibres per millilitre of air (0.1 f/ml). This standard is expressed as a time-weighted average fibre concentration of asbestos calculated over an eight-hour working day. An exposure standard represents an airborne concentration of a particular substance in the breathing zone, which according to current knowledge, should neither impair employees' health nor cause them undue discomfort.

The breathing zone is defined as a hemisphere with a radius of 300mm extending in front of a person's face measured from the midpoint of an imaginary straight line joining the ears.

Exposure standards do not represent 'no-effect' levels at which every employee can be guaranteed adequate protection nor do they constitute a 'fine line' between satisfactory and unsatisfactory working conditions.

The results of the atmospheric monitoring are compared with the asbestos exposure standard to determine if an employee's exposure to asbestos is excessive.

Results of atmospheric monitoring can only be directly compared to the exposure standard if personal monitoring was performed in the breathing zone of the employee over a continuous period of not less than four hours and the sample is considered representative of exposure.

The results of static or fixed position monitoring should not be used as an indicator of actual employee exposure to a substance. However, in certain circumstances, static or fixed position monitoring can help in determining the design of risk controls or the effectiveness of existing risk controls.

### When is atmospheric monitoring required?

Personal atmospheric monitoring must be carried out to determine employees' exposure to airborne asbestos fibres if, based on reasonable grounds, there is uncertainty as to whether the exposure standard has been exceeded.

In other words, atmospheric monitoring is needed if risk to health cannot be determined with confidence by simply reviewing the information about asbestos and examining the nature of the work.

The following are examples of situations in which atmospheric monitoring may be needed because of uncertainty about the level of exposure or whether there is a risk:

- it is not clear whether new or existing risk controls are effective
- the risk to health is largely controlled through the use of respiratory protection, but there are concerns that respiratory equipment has not been correctly selected, used, fitted, maintained or stored, and employees have not been adequately trained in its use
- the risk to health is largely managed through administrative controls (ie safe work practices or systems of work) and employees do not always follow these practices – perhaps due to lack of training or supervision
- there is evidence (such as dust deposits in the work area) that the risk controls (such as engineering controls) have deteriorated as a result of poor maintenance, or
- process modifications or changes in work practices have occurred that may adversely affect employee exposure.

Where it is not practicable to eliminate exposure to asbestos, the Regulations require that exposure to asbestos is reduced so far as is reasonably practicable for all people at the workplace.

If it is obvious that there is potential for exposure to asbestos, priority needs to be given to controlling the risk rather than carrying out atmospheric monitoring just to confirm that the potential for exposure exists. However, once controls have been put in place, their effectiveness can be determined by performing atmospheric monitoring.

For further information about atmospheric monitoring, refer to relevant documented standards, technical journals or publications issued by WorkSafe and the Australian Safety and Compensation Council (ASCC). Further information and advice can be obtained from professionals such as occupational hygienists. Other employers in the industry could also be approached for advice.

### Who can conduct the atmospheric monitoring?

People who perform atmospheric monitoring do not have to be approved under the Regulations. However, atmospheric monitoring and the interpretation of the results (including comparison with the asbestos exposure standard) need to be undertaken by a competent person, such as an occupational hygienist or safety professional, who has the appropriate qualifications, knowledge, skills and experience.

The Australian Institute of Occupational Hygienists (AIOH) is an incorporated institute that represents the occupational hygiene field, both nationally and internationally. A list of service providers who may be able to conduct atmospheric monitoring can be found at **aioh.org.au**.

### Who can analyse the atmospheric monitoring samples?

If an analysis of any sample is required under the Regulations, the analysis must be undertaken by an approved analyst. The accurate identification of asbestos and counting of fibres by approved analysts is an important step in controlling exposure to this harmful substance. The Regulations define an approved analyst as being: 'An analyst approved by the National Association of Testing Authorities (NATA) to perform asbestos fibre counting or to identify asbestos in samples, and to issue findings as endorsed reports under the authority of a NATA accredited laboratory.'

Employers, self-employed persons and persons with management or control of a workplace who have commissioned the analysis of atmospheric monitoring samples for asbestos must ensure that the person who undertakes the analysis is an approved analyst and can issue endorsed reports under the authority of the accredited laboratory. Endorsed reports have the NATA insignia stamped on the report. It is recommended that a copy of the endorsed analysis report be obtained as evidence of compliance.

Prior to engaging an analyst, request verification from the laboratory where the analysis is to be done confirming the analyst is NATA approved. The website **nata.asn.au** can also be used to confirm that the laboratory is accredited to perform asbestos analysis.

### What actions are required after atmospheric monitoring?

If atmospheric monitoring results indicate that control measures have deteriorated or are not effective, prompt action must be taken to reduce employee exposure to airborne asbestos. Control measures need to be restored or improved as soon as possible. This may involve ceasing work while normal control measures are restored to the required level of effectiveness, providing portable or temporary ventilation, adopting modified work practices or providing personal protective equipment.

### Results of atmospheric monitoring to be available

Copies of the results of atmospheric monitoring must be accessible to the HSR of any affected designated workgroup and to affected employees. It is important that all atmospheric monitoring results are communicated to the employees involved, regardless of whether the results indicate excessive, minimal or no employee exposure to asbestos.

## Appendix I – Removal of asbestos-contaminated dust that is greater than 'a minor contamination'

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

1. Obtain and review the asbestos register or any other relevant documentation relating to the presence of asbestos-contaminated dust (from the person who commissioned the removal work).
2. A class A-licensed removalist must perform the removal.
3. Ensure a nominated supervisor is on site at all times when the removal is being performed.
4. Establish where the removal area will be and move all items out of the area or cover them with 200 micron plastic sheeting if they could be contaminated during the removal work.
5. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. Ensure signs and barricades remain in place until a satisfactory visual inspection is completed.
6. Put on personal protective equipment (PPE), including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
7. The minimum respiratory protection for this task is a half-face mask with a P1 particulate cartridge or alternatively, a disposable P1 respirator provided that a proper fit can be assured. If there is any uncertainty regarding respiratory protection, advice from a competent person (such as a hygienist) needs to be obtained.
8. Use damp cloths or an industrial vacuum cleaner fitted with a HEPA filter to collect the asbestos-contaminated dust.
9. Place the waste into a 200 micron plastic waste bag or suitable alternate waste container dedicated for asbestos waste that is clearly labelled with an appropriate warning sign indicating asbestos waste.
10. Once all contaminated dust, used rags and waste have been placed in waste containers and all tools have been cleaned, begin the personal decontamination process.
11. Carry out personal decontamination in a designated area. The method of personal decontamination may vary. The following is one method:
    - Clean the disposable coveralls and respirator while still wearing them. Coveralls can be cleaned using a HEPA vacuum, damp rag or fine water spray and the respirator can be cleaned with a wet rag or cloth.
    - While still wearing the respirator, remove coveralls turning them inside-out to entrap any remaining contamination and then place them into an asbestos waste bag.
    - Remove the respirator. If a non-disposable respirator was used, inspect it to ensure it is free from contamination, clean it with a wet rag if necessary, then store in a container. Disposable respirators do not require cleaning. They need to be placed into an asbestos waste bag or waste container dedicated for asbestos waste.

12. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed.
13. Place all waste containers in a secure storage facility or transport vehicle for disposal.
14. After completing the removal, perform a visual clearance to ensure that there is no visible asbestos residue. Consider seeking a competent independent person's visual assessment to confirm that there is no visible asbestos residue.
15. Transport the waste in accordance with EPA Victoria requirements.
16. Dispose of the waste bags/containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix J – Removal of non-friable asbestos cement products

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

1. Obtain and review the asbestos register (from the person who commissioned the removal work). This is not relevant if the removal work will be undertaken at a domestic premises used solely for domestic purposes. If this is the case, ensure all ACM in the area to be worked on is identified prior to any refurbishment or removal work.
2. If the amount of non-friable asbestos cement to be removed is greater than 10 square metres or will take longer than one hour in any seven days, the removalist must have an asbestos removal licence and complete a control plan.
3. Ensure a nominated supervisor is accessible at all times where licensed removal work is being conducted.
4. Establish where the removal area will be and move all items out of the area or cover them with 200 micron thick plastic sheeting if they could be contaminated during the removal work.
5. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. Ensure signs and barricades remain in place until the removal work is completed or in the case of removal greater than 10 square metres, until a satisfactory visual inspection is achieved as part of the clearance certificate.
6. Put on personal protective equipment, including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
7. Clean the removal area of any debris prior to removing fixed or installed asbestos cement products and place drop sheets in areas where debris and dust is likely to fall. This will assist in cleaning the removal area.
8. The minimum respiratory protection for this task is a half-face mask with a P1 particulate cartridge or, alternatively, a disposable P1 respirator provided that a proper fit can be assured.
9. Ensure the minimum numbers of people are present.
10. If possible, remove the asbestos cement products whole. If some sections have been damaged prior to removal, these may be strengthened by applying duct tape.
11. Identify the method in which the asbestos cement product is held in place, then use a method that would minimise airborne dust generation in removing the product. Examples include:
    - Fasteners: dampen then carefully remove using a chisel.
    - Bolts: dampen then use bolt cutters (or an oxy torch) – do not use an angle grinder.
    - Screws: dampen then carefully unscrew with a screwdriver.
    - Nails: dampen then carefully lever the panel or punch through if absolutely necessary.

12. Avoid breaking the asbestos cement products. If breakage is absolutely necessary to remove/dislodge the product, dampen the material and minimise breakage.
13. Remove the asbestos cement product wet/damp by applying a fine water spray unless this creates an electrical risk. Once removed from its fixed/installed position, spray the back of the product with a fine water spray. Frequent application of a fine water spray may be required depending on circumstances (eg a very hot day) but be careful not to create a slip hazard.
14. If asbestos-contaminated nails are to be re-used, they must be decontaminated. This may be done by carefully wiping them with a damp rag. Nails that cannot be decontaminated or will not be re-used must be removed from the timber and disposed of as asbestos waste.
15. If the system of removal involves walking on the roof to remove roof sheeting (this needs to be the last option when choosing a method to remove roof sheeting), spray the asbestos cement roof sheeting with a PVA solution prior to removal. Ensure the PVA is dry before removing it so as to avoid a slip hazard. Once removed, spray the back (underside) of the asbestos cement with either a fine water spray or the PVA solution.
16. Where the asbestos cement product requires lowering to the ground, ensure this is done in a manner that will minimise the generation of airborne dust – do not use chutes, ramps or similar gravity dependent devices. Examples of appropriate lowering methods include:
    - by hand – over short distances
    - using scissor lifts or similar devices
    - using scaffolds.
17. Check for debris in fasteners, bolts, etc and remove with either a HEPA-fitted industrial vacuum cleaner or damp rags.
18. Clean the removal area with either a HEPA-fitted industrial vacuum cleaner or damp rags. If the timber is to be re-used and cannot be effectively wet-wiped or vacuumed, it needs to be sealed with a PVA low pressure spray. A pigmented spray would assist in identifying which areas had been sprayed.
19. Clean the equipment used for removing the asbestos cement products with either a HEPA-fitted industrial vacuum cleaner or damp rags.
20. Dispose of all damp rags, plastic sheeting (used to cover items in the removal area) and drop sheets as asbestos waste.
21. Ensure all waste is double wrapped/bagged in 200 micron plastic. The following methods would be appropriate depending on the type of asbestos waste being packaged:
    - Plastic waste bags (half-filled) – see item 24 below.
    - Plastic sheeting wrapped and taped around an individual or a manageable (small) number of asbestos cement products – ensure the exterior of the plastic is cleaned.
    - Double lining a waste bin/skip with plastic sheeting.

    Ensure waste containers are clearly labelled with an appropriate warning sign indicating asbestos waste.

22. Once all removed asbestos cement products, associated debris, used rags and waste have been placed in waste containers and all tools have been cleaned, begin the personal decontamination process.
23. Carry out personal decontamination in a designated area away from the main removal area and near the boundary of the barricaded area. The method of personal decontamination may vary.
    a. The following is appropriate where the area to be removed is no more than the size of an average domestic house:
        - Clean the disposable coveralls and respirator while still wearing them. Coveralls can be cleaned using a HEPA vacuum, damp rag or fine water spray and the respirator can be cleaned with a damp rag or cloth.
        - While still wearing the respirator, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an asbestos waste bag.
        - Remove the respirator. If a non-disposable respirator was used, inspect it to ensure it is free from contamination, clean it with a wet rag if necessary, then store in a container. Disposable respirators do not require cleaning. They need to be placed into an asbestos waste bag or waste container dedicated for asbestos waste.
    b. Where the area to be removed is greater than the size of an average domestic house or where considerable dust will be generated, use of a full decontamination unit would be appropriate.
24. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed.
25. Place all waste containers in a secure storage facility or transport vehicle for disposal.
26. Perform a visual clearance to ensure that there is no visible asbestos residue. For removal over 10 square metres, a clearance certificate from an independent person is required.
27. Transport the waste in accordance with EPA Victoria requirements.
28. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix K – Removal of non-friable asbestos-containing floor tiles

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

1. Obtain and review the asbestos register (from the person who commissioned the removal work). This is not relevant if the removal work will be undertaken at a domestic premises used solely for domestic purposes.
2. If the amount of floor tiles to be removed is greater 10 square metres or will take longer than one hour in any seven days, the removalist must have an asbestos removal licence and complete a control plan.
3. Ensure a nominated supervisor is accessible at all times where licensed removal work is being conducted.
4. Establish where the removal area will be and move all items and furniture out of the area or cover them with 200 micron plastic sheeting if they could be contaminated during the removal work.
5. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. Ensure signs and barricades remain in place until removal work is completed or in the case of removal greater than 10 square metres, until a satisfactory visual inspection is achieved as part of the clearance certificate.
6. Put on personal protective equipment (PPE) including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
7. The minimum respiratory protection for this task is a half-face mask with a P1 particulate cartridge or alternatively a disposable P1 respirator, provided that a proper fit can be assured.
8. Place a tool (such as a scraper or wide blade) between the tiles and lift the tile away from the floor being careful to minimise breakage. A hammer or mallet can be used to tap the tool under firmly adhered tiles to assist separating the tiles from the floor.
9. Minimise dust by spraying fine water mist under tiles as they are lifted.
10. Place the tiles into a 200 micron plastic waste bag or suitable alternate waste container dedicated for asbestos waste that is clearly labelled with an appropriate warning sign indicating asbestos waste.
11. Use the scraper to remove any adhesive that is left adhered to the floor after each tile has been removed and place this waste into the asbestos waste bag or suitable waste container.
12. Ensure waste bags are not filled more than half full to assist with sealing and to avoid bag tears.
13. After all tiles, adhesive and any debris has been removed, clean the entire area using an industrial vacuum cleaner fitted with a HEPA filter. Alternatively the area can be cleaned by wet wiping with damp rags.
14. Use damp rags to clean the equipment that was used for removing the tiles and any adhesive.

15. Place used rags into an asbestos waste bag or waste container (as outlined in 10 above).
16. Once all tiles, adhesive and waste have been placed in waste bags/containers and all tools have been cleaned, begin the personal decontamination process.
17. Clean the disposable coveralls and respirator while still wearing them. Overalls can be cleaned using a HEPA vacuum, damp rag or fine water spray and the respirator can be cleaned with a wet rag or cloth.
18. Whilst still wearing the respirator, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an asbestos waste bag.
19. Remove the respirator. If a non-disposable respirator was used, inspect it to ensure it is free from contamination, clean it with a wet rag if necessary, then store in a container. Disposable respirators do not require cleaning. They need to be placed into an asbestos waste bag or waste container dedicated for asbestos waste.
20. Ensure all used rags are placed into waste bags.
21. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed. Place them all into a secure storage facility or transport vehicle for disposal.
22. Perform a visual clearance to ensure that there is no visible asbestos residue – for removal over ten square metres, a clearance certificate from an independent person is required.
23. Transport the waste in accordance with EPA Victoria requirements.
24. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix L – Removal of asbestos-containing gaskets and rope seals

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

This material is generally regarded as non-friable. If there is any doubt, advice needs to be sought from a person with knowledge and experience in dealing with ACMs. Members of the Australian Institute of Occupational Hygiene would be able to assist in providing this advice.

1. Obtain and review the asbestos register (from the person who commissioned the removal work). This is not relevant if the removal work will be undertaken at a domestic premises used solely for domestic purposes.
2. If the ACM is non-friable and will take more than one hour to remove, an appropriately licensed removalist must perform the removal. The licensed removalist must complete a control plan for the job. If the ACM to be removed is friable, a class A-licensed removalist must perform the removal.
3. Ensure a nominated supervisor is accessible at all times where licensed removal work is being conducted. If the ACM is friable, a supervisor must be on site at all times when removal work is taking place.
4. Establish where the removal area will be and move all items out of the area or cover them with 200 micron plastic sheeting if they could be contaminated during the removal work.
5. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. Ensure signs and barricades remain in place until the removal work is completed. In the case of friable ACM, signs and barricades must remain in place until a satisfactory visual inspection and clearance monitoring is achieved as part of the clearance certificate.
6. Put on personal protective equipment including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
7. The minimum respiratory protection for this task is a half-face mask with a P1 particulate cartridge or alternatively a disposable P1 respirator provided that a proper fit can be assured. A higher level of respiratory protection may be required depending on the level of airborne asbestos fibres likely to be generated during the removal.
8. Ensure the plant and equipment has been made safe (pipework emptied, electrical supply isolated, equipment shutdown, etc).
9. Unbolt or unscrew the flange or dismantle the equipment.
10. Once accessible, dampen the ACM with a fine water mist or similar. Continue dampening the ACM as more of it is exposed/accessible.
11. Ease the gasket or rope seal away with the scraper and place into the waste container positioned directly beside/beneath it.
12. Keep the area damp and scrape away any residue. Consider using an industrial vacuum cleaner fitted with a HEPA filter while scraping.

13. Place the waste into a 200 micron plastic waste bag or suitable alternate waste container dedicated for asbestos waste that is clearly labelled with an appropriate warning sign indicating asbestos waste.
14. Ensure waste bags are not filled more than half full to assist with sealing and to avoid bag tears.
15. Clean the entire area using an industrial vacuum cleaner fitted with a HEPA filter. Alternatively a wet method, such as damp rags, can be used to clean the area.
16. Use damp rags to clean the equipment that was used for removing the ACM.
17. Place used rags into an asbestos waste bag or waste container (as outlined in item 13).
18. Once all ACM and waste has been placed in waste bags and all tools have been cleaned, begin the personal decontamination process.
19. Clean the disposable overalls and respirator while still wearing them. Overalls can be cleaned using a HEPA vacuum, damp rag or fine water spray and the respirator can be cleaned with a wet rag or cloth.
20. While still wearing the respirator, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an asbestos waste bag.
21. Remove the respirator. If a non-disposable respirator was used, inspect it to ensure it is free from contamination, clean it with a wet rag if necessary, then store in a container. Disposable respirators do not require cleaning. They need to be placed into an asbestos waste bag or waste container dedicated for asbestos waste.
22. Ensure all used rags are placed into waste bags.
23. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed. Place them all into a secure storage facility or transport vehicle for disposal.
24. Perform a visual clearance to ensure that there is no visible asbestos residue. A clearance certificate from an independent person is required for non-friable ACM greater than 10 square metres in total and for all friable ACM removal work.
25. Transport the waste in accordance with EPA Victoria requirements.
26. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix M – Removal of bituminous (malthoid) asbestos-containing material

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

This material is generally regarded as non-friable. If there is any doubt, advice needs to be sought from a person with knowledge and experience in dealing with ACM. Members of the Australian Institute of Occupational Hygiene would be able to assist in providing this advice.

1. Obtain and review the asbestos register (from the person who commissioned the removal work). This is not relevant if the removal work will be undertaken at domestic premises used solely for domestic purposes.
2. If the ACM is non-friable and will take more than one hour to remove, an appropriately licensed removalist must perform the removal. The licensed removalist must complete a control plan for the job. In the unusual circumstance where the ACM to be removed is friable, a class A-licensed removalist must perform the removal.
3. Ensure a nominated supervisor is accessible at all times where licensed removal work is being conducted. If the ACM is friable, a supervisor must be on site at all times when removal is being performed.
4. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. Ensure signs and barricades remain in place until removal work is completed or, in the case of removal work of non-friable ACM greater than 10 square metres, until a satisfactory visual inspection is achieved as part of the clearance certificate.
5. Put on personal protective equipment including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
6. The minimum respiratory protection for this task is a half-face mask with a P1 particulate cartridge or alternatively a disposable P1 respirator, provided that a proper fit can be assured. A higher level of respiratory protection may be required depending on the level of airborne asbestos fibres likely to be generated during the removal.
7. Seal access points (eg skylights) with material such as 200 micron plastic sheeting and duct tape.

   **WARNING:** Where there are exhaust vents from gas fired equipment in the area it is dangerous to seal over them. Turn the gas off if possible.
8. Cut and remove manageable sections.
9. Place cut pieces in a lined skip or wrap in plastic sheeting.
10. Remove adhering material by dampening and gently scraping. Consider using an industrial vacuum cleaner fitted with a HEPA filter while scraping.
11. Collect all debris.
12. Place small pieces of waste into a 200 micron polythene waste bag or suitable alternate waste container dedicated for asbestos waste that is clearly labelled with an appropriate warning sign indicating asbestos waste.

13. Ensure waste bags are not filled more than half full to assist with sealing and to avoid bag tears.
14. Clean the entire area using damp rags and/or an industrial vacuum cleaner fitted with a HEPA filter.
15. Use damp rags to clean the equipment that was used for removing the ACM.
16. Place used rags into an asbestos waste bag or waste container (as outlined in item 12).
17. Once all ACM and waste has been placed in waste bags and/or a lined skip and all tools have been cleaned, begin the personal decontamination process.
18. Clean the disposable coveralls and respirator while still wearing them. Coveralls can be cleaned using a HEPA vacuum, damp rag or fine water spray and the respirator can be cleaned with a wet rag or cloth.
19. While still wearing the respirator, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an asbestos waste bag.
20. Remove the respirator. If a non-disposable respirator was used, inspect it to ensure it is free from contamination, clean it with a wet rag if necessary, then store in a container. Disposable respirators do not require cleaning. They need to be placed into an asbestos waste bag or waste container dedicated for asbestos waste.
21. Ensure all used rags are placed into waste bags.
22. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed. Place them all into a secure storage facility or transport vehicle for disposal.
23. Perform a visual clearance to ensure that there is no visible asbestos residue. A clearance certificate from an independent person is required for non-friable ACM greater than 10 square metres in total (and for all friable ACM removal work).
24. Transport the waste in accordance with EPA Victoria requirements.
25. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix N – Removal of a small section of pipe lagging using a glove bag

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

Note: Glove bag removal work does not require paraoccupational air-monitoring.

1. Obtain and review the asbestos register (from the person who commissioned the removal work).
2. A class A-licensed removalist must perform the removal.
3. Ensure a nominated supervisor is on site at all times when removal is being performed.
4. Establish where the removal area will be and move all items out of the area or cover then with plastic sheeting if they could be contaminated during the removal work.
5. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. Ensure signs and barricades remain in place until a satisfactory visual inspection is achieved as part of the clearance certificate.
6. Put on personal protective equipment including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
7. The minimum respiratory protection for this task is a half-face mask with a P1 particulate cartridge or alternatively a disposable P1 respirator, provided that a proper fit can be assured.
8. Ensure the plant and equipment has been made safe (eg pipework emptied, electrical supply isolated, equipment shut down).
9. Set-up/attach glove bag and perform removal work as described in 'Glove bag removal work' on page 61.
10. Begin the personal decontamination process.
11. Clean the disposable coveralls and respirator while still wearing them. Coveralls can be cleaned using a HEPA vacuum, damp rag or fine water spray and the respirator can be cleaned with a wet rag or cloth.
12. While still wearing the respirator, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an asbestos waste bag.
13. Remove the respirator. If a non-disposable respirator was used, inspect it to ensure it is free from contamination, clean it with a wet rag if necessary, then store in a container. Disposable respirators do not require cleaning. They need to be placed into an asbestos waste bag or waste container dedicated for asbestos waste.
14. Ensure all used rags are placed into waste bags.
15. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed. Place them all into a secure storage facility or transport vehicle for disposal.

16. Perform a visual clearance to ensure that there is no visible asbestos residue. A clearance certificate from an independent person is required. The clearance certificate for glove bag removals does not require air monitoring.
17. Transport the waste in accordance with EPA Victoria requirements.
18. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix O – Removal of friable asbestos-containing fire retardant material from a large ceiling space

*This appendix provides an example of how to perform a specific asbestos removal task. It does not address hazards other than asbestos (such as fall from heights or electrical hazards) – these hazards also need to be identified and the associated risk controlled.*

1. Obtain and review the asbestos register (from the person who commissioned the removal work).
2. A class A-licensed removalist must perform the removal.
3. Obtain as much information about the location and condition of the ACM as possible. Review building plans, thoroughly inspect the area (with appropriate personal protective equipment), discuss the removal with a competent person, such as an occupational hygienist, and the person who has management or control of the workplace to establish any facts that are not directly apparent.
4. Develop the control plan in consultation with employees and a competent person, such as an occupational hygienist, and the person who has management or control of the workplace.
5. Establish the extent of the removal area and move all items out of the area or cover them with 200 micron plastic sheeting if they could be contaminated during the removal work. If work on items, such as ceiling tiles, will result in disturbing asbestos, this should not take place until after the enclosure is established.
6. In consultation with employees and a competent person, develop an enclosure that allows smooth flow of air from the decontamination unit to the negative air units. In constructing the enclosure, pay particular attention to penetrations through the floor and ceiling/roof.
7. Ensure the enclosure is satisfactorily smoke tested and air monitoring has commenced before beginning the removal work.
8. Ensure a nominated supervisor is on site at all times when the removal is being performed.
9. Identify and isolate the removal area with appropriately placed durable signs and barricades using methods which may include temporary fencing, bollards, tape, rope or plastic sheeting. The floor above and below will require isolation if there is a risk of asbestos fibres reaching these areas. Ensure signs and barricades remain in place until a satisfactory visual inspection is achieved as part of the clearance certificate.
10. Put on personal protective equipment including disposable coveralls with hood, boots and respirator. Preference needs to be given to boots without laces as laced boots can be difficult to decontaminate.
11. The minimum respiratory protection for this task is a full-face mask with a P3 particulate cartridge if the removal can be performed wet. Refer to Appendix E for further guidance on selecting an appropriate respirator.
12. Ensure all airconditioning equipment has been shut and isolated/blanked from this area.
13. Enter the enclosure with appropriate equipment to access the asbestos, keep it damp/wet (using fine water spray equipment) and bag it as asbestos waste.

14. Place the waste into a 200 micron plastic waste bag or suitable alternate waste container dedicated for asbestos waste that is clearly labelled with an appropriate warning sign indicating asbestos waste.
15. Maintain regular checks on the negative air unit, decontamination unit (and hot water service), compressor (if used), enclosure, signs and barricades and supplies of personal protective equipment throughout the removal (refer to an example of a log in Appendix G).
16. Ensure employees decontaminate at every break, using the decontamination unit, when exiting the enclosure.
17. Ensure monitoring results are obtained and conveyed to all employees.
18. Ensure bagged waste is secure on site and disposed of as soon as possible.
19. Ensure all waste bags are goose-necked, the exterior cleaned then double bagged and all waste containers are sealed. Place them all into a secure storage facility or transport vehicle for disposal.
20. Thoroughly wet-wipe and/or vacuum the area until the removal is regarded as completed (by the removalist). Visually inspect the area to ensure it is satisfactorily clean, then arrange for an independent (competent) person, such as a hygienist, to visually inspect the area.
21. If the visual inspection is satisfactory, the area needs to be sprayed with PVA (including the interior of the plastic).
22. Decontaminate or dispose of as asbestos waste all tools and equipment used. Otherwise, used tools and equipment may be bagged prior to removal from the enclosure – only to be opened in another enclosure, removal area or similarly controlled environment.
23. After the PVA has been applied and has dried, clearance monitoring needs to take place.
24. If the air monitoring result is found to be less than 0.01 f/ml, the enclosure may be dismantled and disposed of as asbestos waste.
25. This area needs to be thoroughly visually inspected for any residual ACM. Further clearance monitoring needs to take place after the enclosure has been removed.
26. Once all visual inspections and clearance monitoring is satisfactorily completed, signs and barricades (such as hoarding) can be removed.
27. Transport the waste in accordance with EPA Victoria requirements.
28. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.
29. A clearance certificate from an independent person is required prior to the area being re-occupied.

## Appendix P – How to use rags to clean asbestos contamination from smooth surfaces and equipment

*This procedure is specific to the use of rags. It does not address other removal/clean up requirements (eg isolation of the area, personal protective equipment and personal decontamination).*

Avoid any potential electrical hazards when using this procedure.

1. Pick up bigger pieces of debris and put them in a suitable 200 micron plastic waste bag or suitable alternate waste container that is clearly labelled with an appropriate warning sign indicating asbestos waste.
2. Soak the rag in a bucket of water. Fold in half or quarters and then wring it out.
3. Wipe the contaminated surface.
4. Re-fold the rag to give a clean surface.
5. Repeat until all the clean surfaces of the rag have been used.
6. Put the used rag in the plastic waste bag. Take a clean rag, and continue until all surfaces are clean.

**Warning:** Use each wet rag surface only once. Never re-soak a contaminated rag. This will contaminate the water. If contamination of the bucket of water is avoided, no special precautions are needed for disposing of the water.

7. Tape is useful only for removing small dust deposits. Surfaces may need repeated tape applications.
   - Place a strip of tape over the contaminated surface. Peel it off slowly.
   - Put the used tape in the plastic waste bag. Repeat with a fresh piece.
8. Put sealed bags of used rags and tape in a second waste container and seal.
9. Dispose of the waste bags and containers at a site licensed by the EPA Victoria to accept waste asbestos.

## Appendix Q – Information required to be included in an asbestos control plan

Information required to be included in an asbestos control plan:

1. A record to indicate that the notification requirements have been met and that required documentation is kept at the workplace where the asbestos removal work is being performed.
2. In relation to asbestos:
   - its location
   - in relation to ACM:
     - whether the ACM is friable or non-friable
     - the type of ACM
     - the condition of the ACM
     - the quantity of ACM proposed to be removed.
3. The type of personal protective clothing and personal protective equipment to be used, including respiratory protective equipment.
4. Proposed risk control measures to be used to prevent release of airborne asbestos fibres from the area where the asbestos removal work is being performed.
5. If the area where the asbestos removal work is being performed in a negative air enclosure, details regarding:
   - smoke testing
   - negative air units.
6. Details of decontamination procedures for:
   - persons performing the asbestos removal work
   - tools and equipment used for the asbestos removal work
   - non-disposable personal protective clothing and personal protective equipment.
7. Method of disposal of:
   - asbestos waste
   - disposable personal protective clothing and personal protective equipment
   - the structure used to enclose the areas where the asbestos removal work is being performed.
8. Administrative controls to be implemented, including:
   - security
   - work practices.
9. Methods of cleaning following asbestos removal work.
10. Names of persons engaged by the licence holder or person who commissioned the work (as applicable) to conduct asbestos paraoccupational air monitoring (if any) and to conduct the clearance inspection.

## Appendix R – Documents applied, adopted or incorporated by this compliance code, in whole or in part, under section 149(2) of the *Occupational Health and Safety Act 2004* (the OHS Act)

The documents or parts of documents listed below are applied, adopted or incorporated into this compliance code. This means that the documents in whole or in part as referenced form part of this compliance code.

The following standards are referred to in this compliance code:

AS 1319-1994 – *Safety signs for the occupational environment*

AS/NZS 1715:1994 – *Selection, use and maintenance of respiratory protective devices*

AS/NZS 1716:2003 – *Respiratory protective devices*

AS/NZS 60335.2.69: 2003 – *Household and similar electrical appliances – Safety – Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use*

AS 4260-1997 – *High efficiency particulate air (HEPA) filters – Classification, construction and performance*

## Appendix S – Documents associated with this compliance code

The references listed below are not incorporated into this compliance code. This means that they do not form part of this compliance code, although they may have regulatory status in their own right. They are included only to provide an indication of sources of further information.

Australian Safety and Compensation Council *Code of Practice for the Safe Removal of Asbestos*, 2nd edition [NOHSC: 2002 (2005)]

Australian Safety and Compensation Council *Code of Practice for the Management and Control of Asbestos in Workplaces*, 2nd edition [NOHSC: 2018 (2005)]

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