Key Requirement

Exposure to Asbestos

Watercare
An Auckland Council Organisation

Contents

Purpose

The purpose of this Key Requirement is to set out Watercare's minimum controls to reduce the risk of exposure to respirable asbestos fibres. It describes Watercare's minimum requirements for identifying, assessing and managing the risk of asbestos-containing materials (ACM), and in particular for controls to prevent the release of asbestos fibres in the workplace.

All Watercare managers must ensure that work is planned in accordance with these controls, as well as ensuring that the tools and resources that are referred to are used and made available to workers. All Watercare workers must ensure that they follow the processes and controls for working in areas containing ACM, including using all equipment as required.

Background

What is Asbestos?

Asbestos describes naturally-occurring fibrous silicate minerals (rock-forming minerals).

White asbestos was the most common form of asbestos used in New Zealand, followed by Brown asbestos and blue asbestos which was used to a lesser extent. Under a microscope, white asbestos looks different from brown and blue asbestos. It has long curly fibres which are flexible enough to spin and weave into fabric. Its versatility made it the most common type of asbestos in building and household products.

Brown asbestos has harsh, spiky fibres. It was mostly mined in Africa and was often used in asbestos cement sheet and pipe insulation. It was also used in insulating board, ceiling tiles and thermal insulation.

Blue asbestos is known for its excellent heat resistance and ability to repel water. It was mostly mined in South Africa, Bolivia and Australia. In South Africa it was called 'woolly stone'. It has straight, thin, blue fibres. Blue asbestos was used to insulate steam engines and is also found in some spray-on coatings, pipe insulation and cement products. It is brittle, and products containing blue asbestos often malfunction. This increases the potential for airborne asbestos exposure for people doing maintenance, repair and replacement work. Blue asbestos is claimed to be the 'most dangerous asbestos' because its fibres are so thin. This makes them easy to inhale and lodge in the linings of a person's lungs. However, all types of asbestos should be treated with caution because all of their fibres can be inhaled into the lungs.

Until the mid-1980s, asbestos was often used as a fire retardant and for insulation. Examples are:

- insulating board
- friction linings
- fire doors
- gas or electric heaters
- fuse boxes
- gaskets
- lagging around pipes
- sprayed insulation
- brake linings

ACM degrades with age, chemical exposure, the weather, water damage, lichen growth or moving construction

materials. Birds and rodents may disturb ACM also. This can make asbestos and ACM friable.

Friable asbestos or ACM is in powder form or is able to be crumbled, pulverised or reduced to a powder by hand pressure when it is dry. This is the riskiest condition for asbestos or ACM to be in.

Non-friable asbestos or ACM is usually safer than friable asbestos or ACM because asbestos fibres bond into the product. However, non-friable ACM is likely to release fibres if it is disturbed or manipulated.

Asbestos health risks

Breathing in airborne asbestos fibres is a serious risk to health. Once the fibres are breathed in, they lodge in the lungs and may cause diseases like asbestosis, lung cancer and mesothelioma.

The symptoms of most asbestos-related diseases take around 20 years to show after exposure. The health risks increase when:

- people inhale more fibres
- exposure is more frequent
- exposure occurs over a long period of time

For people who work with asbestos and also smoke, the risk of developing lung cancer is much greater than from asbestos exposure alone. This means smokers who work with asbestos are more likely to develop an asbestos-related illness than non-smokers.

National Asbestos Register

The former Occupational Safety and Health Service of the Department of Labour set up the National Asbestos Register in 1992 after recommendations from the Asbestos Advisory Committee to the Department of Labour. The Committee recommended a medical register for people who were significantly exposed to asbestos. The first part of the register contains details of people who were exposed to asbestos. The second part holds the details of people who were diagnosed with an asbestos-related disease.

People on the second register are interviewed by WorkSafe staff to gather information that helps them learn more about how asbestos-related diseases are caused. As nearly all asbestos-related diseases take many years to develop, the person's occupational history is very important. Anyone who believes they were exposed to asbestos, or were diagnosed with an asbestos-related disease, is welcome to join the register by completing a Notifiable Occupational Disease System (NODS) form. Medical practitioners (with the patient's consent) can forward a NODS form to WorkSafe.

[1] http://construction.worksafe.govt.nz/assets/guides/asbestos-acop/removal-of-asbestos-acop.pdf

Approved Code of Practice for Management and Removal of Asbestos

Specific requirements for managing asbestos risks are contained in the Health and Safety at Work (Asbestos) Regulations 2016. Complying with regulations made under the Health and Safety at Work Act is mandatory. Penalties apply for failing to comply with their requirements. WorkSafe has also published an Approved Code of Practice for the Management and Removal of Asbestos[1] which specifically describes what is required under the Regulations.

Workplace PCBUs must ensure that the risk of exposure to airborne asbestos is eliminated. If it is not possible to do so, they must minimise exposure so far as is reasonably practicable. Workplace PCBUs must also make sure the airborne contamination standard for asbestos is not exceeded at the workplace. The duties under the Asbestos Regulations may fall on more than one PCBU. If this happens, the PCBUs must consult, co-operate and co-ordinate with each other, so far as is reasonably practicable, to make sure the legal duties are met and asbestos risks are properly controlled.

The Asbestos Regulations regulate the type of work people can do with asbestos, ACM and asbestos-contaminated dust or debris (ACD). Work involving asbestos is prohibited by the Asbestos Regulations, except for certain specified activities.

Specified types of work permitted under the Asbestos Regulations include:

- sampling and identifying asbestos in accordance with the Asbestos Regulations
- removing, transporting or disposing of asbestos and asbestos waste or ACM including demolition, in accordance with the Asbestos Regulations
- demonstrations, education or practical training involving asbestos or ACM
- fire fighting and responding to an emergency
- maintenance and servicing work involving ACM in accordance with the Asbestos Regulations
- rectifying work to ACM in accordance with the Asbestos Regulations
- asbestos-related work that is approved by WorkSafe
- work involving asbestos-contaminated soil, where the soil doesn't contain a quantity of ACM or friable asbestos likely to lead to airborne asbestos contamination that exceeds trace levels

Figure 1: Overview of Work Involving Asbestos[2]

[2] Approved Code Of Practice // Management And Removal Of Asbestos, Page 39
http://construction.worksafe.govt.nz/assets/guides/asbestos-acop/removal-of-asbestos-acop.pdf

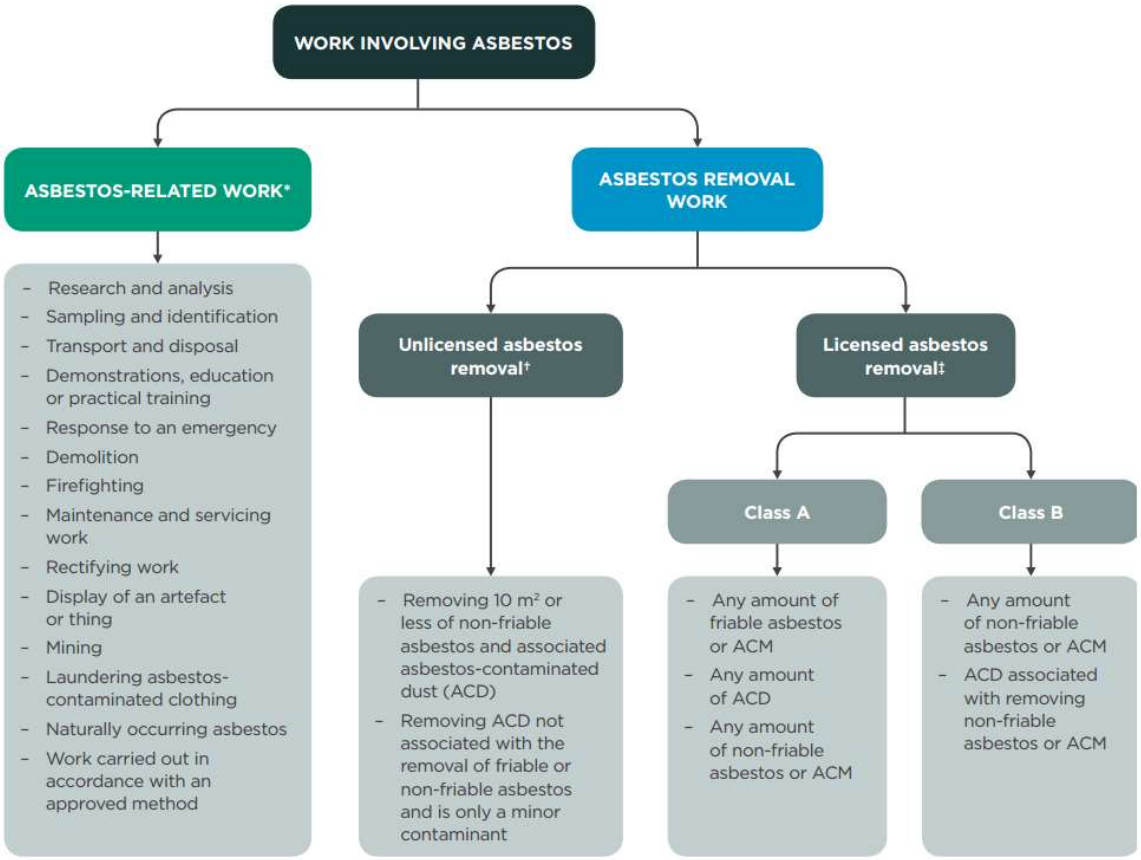
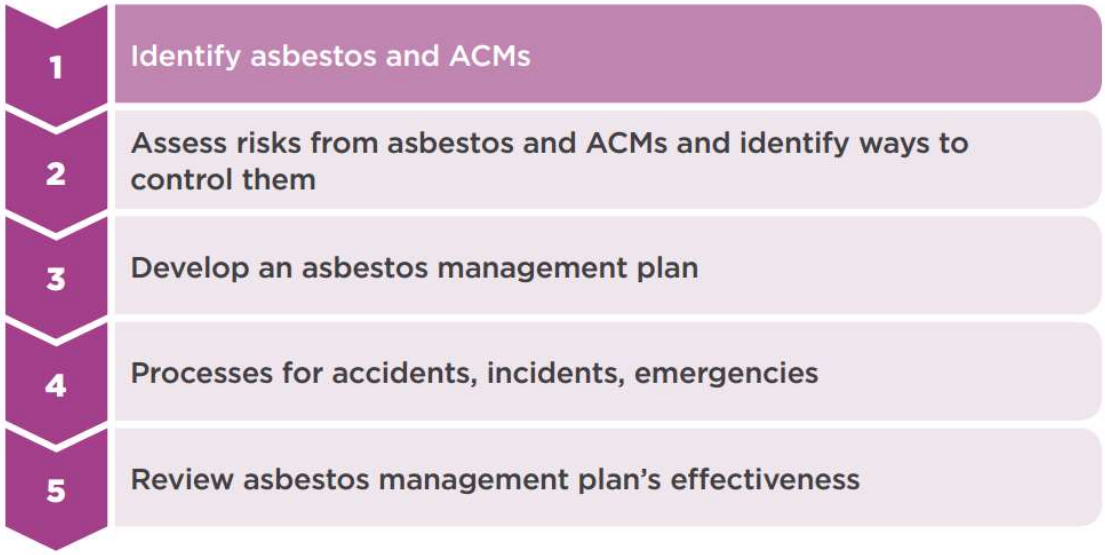


Figure 2: The Asbestos Management Process[3]

[3] Approved Code Of Practice // Management And Removal Of Asbestos, Page 48
http://construction.worksafe.govt.nz/assets/guides/asbestos-acop/removal-of-asbestos-acop.pdf



Responsibilities

All workers	• Attend training courses as required by Watercare or its contractors • Comply with the specified controls for working with or near ACMs, as communicated in Approved Code of Practice, Asbestos Management Plans, Standard Operating Procedures, Job Safety Analyses, Take 5 assessments and Toolbox Meetings
Supervisors	• Monitor workers to ensure they understand and comply with the risk controls for working with or near ACMs, as communicated in Approved Code of Practice, Asbestos Management Plans, Standard Operating Procedures, Job Safety Analyses, Take 5 assessments and Toolbox Meetings

[4] A competent person is defined in the Code of Practice as someone who has the knowledge, experience, skills and qualifications to carry out a particular task under the Asbestos Regulations. Managers will need to seek assurance from the person about their competence to do the work.

Tier 4 Managers	• Ensure that all ACMs in the workplace have been identified and listed in an Asbestos Register and that reduction of risk from potential exposure to fibres is covered in an Asbestos Management Plan • Review Asbestos Registers and Asbestos Management Plans at least every five years • Ensure that the hierarchy of risk controls is used to determine if working with or near ACMs can be eliminated • For working with or near ACMs that cannot be eliminated or isolated; ensure that safe methods of work are planned, communicated and implemented and that workers have been trained and understand • Ensure that any asbestos removal work is carried out by suitably qualified workers and that qualifications have been adequately verified • Monitor sites and projects to ensure that work is appropriately planned, that workers have adequate equipment (including PPE) and training, and that work is being carried out in compliance with this Key Requirement
Tier 2 and Tier 3 Managers	• Monitor sites and projects to ensure that this Key Requirement is understood by Tier 4 managers, supervisors and workers • Ensure that procured goods do not contain asbestos or ACMs
Health and Safety Advisors	• Assist Tier 4 managers to understand the controls in this Key Requirement • Monitor sites and projects to ensure that work is appropriately planned, that workers have adequate equipment (including PPE) and training, and that work is being carried out in compliance with this Key Requirement
Health and Safety Manager	• Monitor the implementation and effectiveness of this Key Requirement and report to the senior management health and safety committee • Recommend any further actions or changes required to ensure adequate management of working with or near ACMs
Chief Executive Officer	• Review reports of the implementation and effectiveness of this Key Requirement and report to the Board

Planning

Asbestos surveys

[5] See Appendix F, Page 229. WorkSafe (2016). Management and Removal of Asbestos: Code of Approved Practice. http://construction.worksafe.govt.nz/assets/guides/asbestos-acop/removal-of-asbestos-acop.pdf

If ACMs are suspected to be present in a building or other structure, the manager must make sure that all asbestos or ACM in the workplace relating to the risk is identified.

A competent person[4] should determine whether ACM is friable or non-friable. The condition of identified asbestos should be recorded in the asbestos management plan and reviewed.

Asbestos can be assumed to be present in a building or structure without being identified. If it is reasonably believed that the material is asbestos or an ACM, it must be assumed the material is asbestos. In this situation, managers must:

- follow the requirements for managing asbestos until it is removed or there are reasonable grounds to believe the workplace does not contain asbestos (e.g. by testing)
- record their assumptions in the asbestos management plan (e.g. 'roof sheeting assumed to contain asbestos' or 'all underground conduits assumed to contain asbestos')

The requirement to identify asbestos does not apply if a manager believes, on reasonable grounds, that asbestos is not present.

If the workplace has inaccessible areas that are likely to contain asbestos or ACM, it must be assumed they contain asbestos.

Managers must ensure that all analysis conducted to identify asbestos is conducted by a New Zealand-accredited laboratory.

Recording the presence and location of Asbestos

The presence and location of identified or assumed asbestos or ACM in the workplace, (including places where asbestos is not accessible) must be recorded and shown using:

- asbestos registers (see format for an asbestos register in Appendix B)
- asbestos management plans
- placing colour-coded labels on ACM (if it is safe to do so) and informing all workers of the presence of these labels and their meaning (If it is not reasonably practicable to label the asbestos directly, a warning sign should be posted in the immediate vicinity.)
- placing a sign at the entrance to the workplace or the work area
- identifying its presence and location on site plans and making them accessible to all workers and making sure workers are aware of the presence, meaning and purpose of the plans

Asbestos registers should be reviewed at least once every five years.

Asbestos Management Plans

When asbestos and ACM has been identified, an asbestos management plan must be prepared. This can include all the asbestos and ACM in one building, structure or workplace. The plan must include:

- the identification of asbestos and ACM (e.g. where any signs and labels are located)
- decisions, and reasons for the decisions, about how the asbestos risks are managed (e.g. safe work practices[5] and control measures)
- procedures for recording incidents or emergencies involving asbestos in the workplace
- information about the workers carrying out work involving asbestos, including
    - information and training that has been or will be provided
    - their roles and responsibilities – any health monitoring that has been or will be conducted
- other information may be included in the asbestos management plan, such as:
    - a timetable for managing asbestos exposure risks (e.g. priorities and dates for removal, reviews, circumstances and activities that could affect the timing of action)
    - procedures, including a timetable for reviewing and (if necessary) revising the asbestos management plan and asbestos documentation
    - air monitoring procedures

Asbestos management plans should use the format in Appendix B. The plan must also be readily accessible. It should be reviewed every five years.

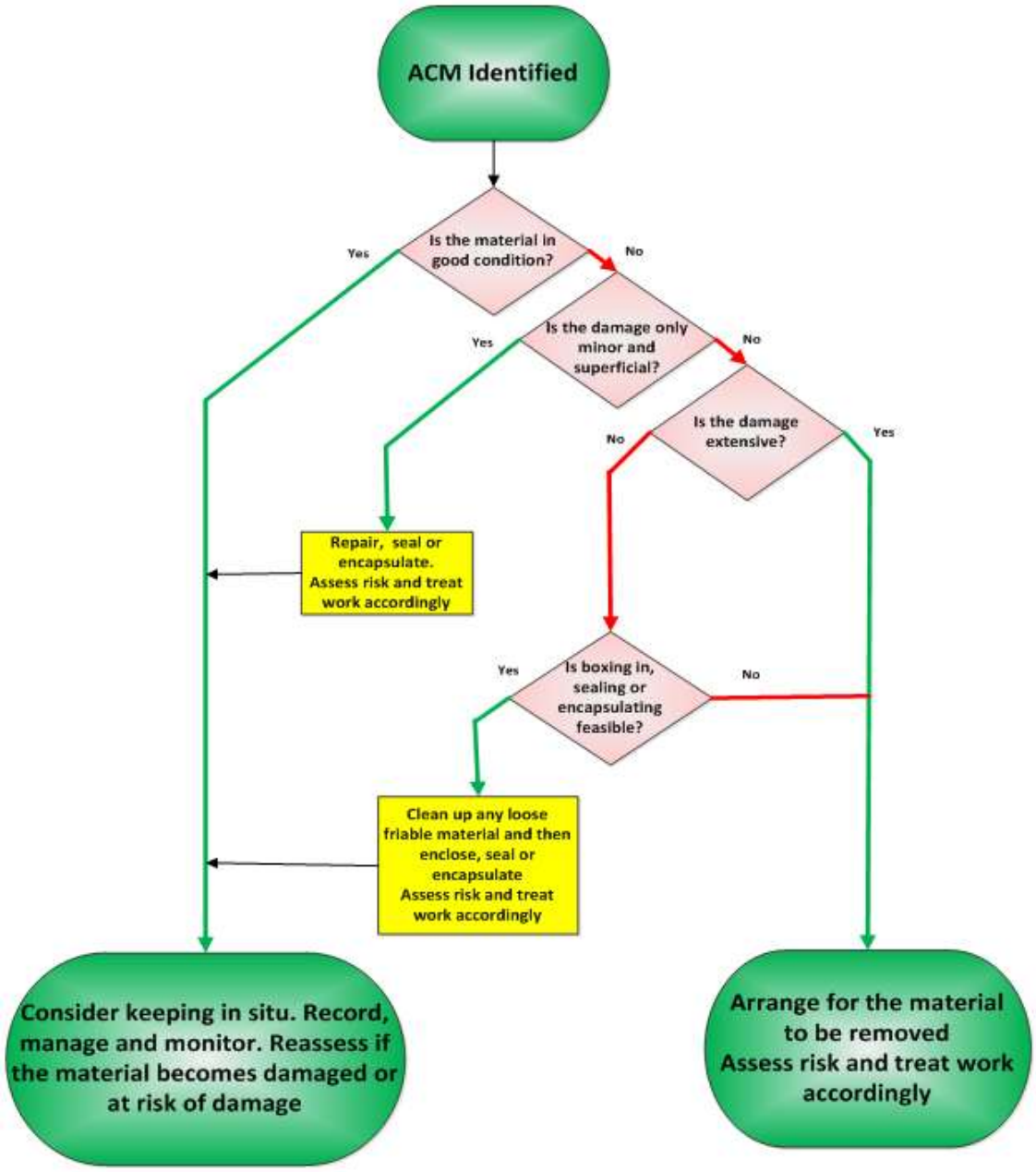
Risk Assessment

Managers must ensure a risk assessment of all asbestos identified or assumed to be present in the workplace or sites is carried out by a competent person. Results of risk assessments must be noted on the Asbestos register. Any recommended actions must be listed in the asbestos management plan.

Things to consider when deciding if the ACM should be removed include:

- the ACM's condition
- the proximity of the ACM is to work areas
- whether it is likely to be damaged or will deteriorate
- the potential quantity of airborne asbestos fibres that could be released, based on its existing condition
- whether it is likely to be disturbed through routine work
- whether it is in an area where workers are exposed to the material
- potential exposure routes
- maximum potential human exposure periods

Visually inspecting the asbestos and its location and understanding the work practices will help with this decision. The following process should be used to determine how the ACM should be managed or whether it should be removed.



Process for controlling risks for in-situ ACMs

If the asbestos or ACM is in good condition and undisturbed, it is unlikely that airborne asbestos fibres will be released. In this situation the risk to health is low. It is usually safer to leave it and review its condition over time. However, if the asbestos or ACM deteriorates, is disturbed or if asbestos contaminated dust or debris (ACD) is present, there is an increased likelihood airborne asbestos will be released.

[6] See Section 14, Page 87. WorkSafe (2016). Management and Removal of Asbestos: Code of Approved Practice. http://construction.worksafe.govt.nz/assets/guides/asbestos-acop/removal-of-asbestos-acop.pdf

The material binding the asbestos fibres will have an impact on the potential for airborne asbestos to be released. For example, a loosely-bound sprayed coating is more likely to release fibres if it is disturbed, compared with asbestos cement with firmly-bound fibres.

Managers must put control measures in place to minimise any exposure if it is not reasonably practicable to remove the asbestos. These control measures include enclosing, encapsulating or sealing the asbestos.

Wherever possible, work should not be carried out on dry asbestos. Techniques that minimise airborne asbestos fibre generation include:

- wetting asbestos, using surfactants or wetting agents
- using thickened substances, pastes or gels to cover the surfaces of the asbestos being worked on
- shadow vacuuming (using a narrow nozzle of a vacuum cleaner used for asbestos work to 'shadow' the work to collect debris as it is generated)
- doing the task in a controlled environment (e.g. an enclosure)
- Before starting, assess the risk of airborne asbestos fibre generation and put appropriate control measures in place

When selecting the best technique, the work area must first be assessed for additional workplace hazards and appropriatecontrol measures put in place. One example is electrical hazards that could present a risk if the asbestos work involves water.

Power tools including angle grinders, sanders, saws and drills must not be used, except if they are used with dust suppression or extraction controls or in an enclosure. High-pressure water spray and compressed air must not be used either.

Where work with asbestos cannot be eliminated or substituted for a less harmful material, business units must put in place effective engineering controls such as:

- process separation and automation
- bonding asbestos fibres to other materials to prevent dust generation
- local exhaust ventilation systems
- use of wet methods

Every worker who works with asbestos must be knowledgeable about and experienced with asbestos and other risks the work may present so they are not likely to harm themselves or other people, or is supervised by someone with that knowledge and experience. The worker must be trained adequately in how to recognise material that may contain asbestos or is an ACM and how to safely use everything they need to work with, including any protective clothing they may need to wear.

Preventative maintenance and monitoring must be scheduled for plant and equipment containing asbestos.

PPE requirements

Managers must ensure that all workers conducting asbestos-related work are issued with suitable PPE[6]. They must make sure that there is a sufficient and suitable supply of PPE for workers conducting asbestos-related work; and ensure that workers are trained in the use, maintenance and decontamination of PPE.

When asbestos removal is undertaken, facilities should be provided so that reusable or works clothing can be

stored separately from personal clothing. Facilities should include:

- vacuum cleaners for preliminary de-dusting of clothing and respirators
- shower and washroom facilities should be provided between the contaminated area and clean locker rooms
- Facilities shall be regularly cleaned to ensure no build-up of asbestos fibres
- provision for special laundering of protective or works clothing (if not disposable)
- clothes for laundering that are kept separate from other laundry
- laundering of asbestos-contaminated clothing by workers at home is not permitted

Air monitoring

The airborne contamination standard for asbestos is an average concentration over any eight-hour period of 0.1 respirable asbestos fibres per millilitre of air. The standard does not replace the requirement to ensure everyone's personal exposure to airborne asbestos in the workplace is eliminated. If it is not possible to eliminate personal exposure to airborne asbestos, exposure must be minimised so far as is reasonably practicable.

In other words, the airborne contamination standard for asbestos is a control limit for the workplace. It does not set an acceptable limit for personal exposure. This means that people who are at risk of exposure to airborne asbestos above trace level must wear suitable personal protective equipment (PPE).

An accredited analyst must carry out air monitoring if:

- any asbestos-related work is being performed and there is uncertainty as to whether exposure levels are exceeded
- risk assessment has indicated that the exposure standard for asbestos may be exceeded

Airborne concentrations of asbestos must be measured in all places of work where the risk of exposure to asbestos dust might occur. Static and personal monitoring must be carried out when asbestos is handled or used in a manner that may emit asbestos fibres.

Where concentrations of airborne asbestos may vary from one work operation to another; dust sampling should be done to determine the average, and in any case the maximum, level of exposure of each individual worker.

Monitoring involves record keeping, visual checks on work processes, the security of the working zone, access and egress arrangements and waste disposal protocols. All work procedures for work with asbestos shall be reviewed regularly for their efficiency and effectiveness; as well as the implications for the health, safety and welfare of all.

Health monitoring

Asbestos-related disease takes many years to develop, but there are some tests that medical professionals can conduct to monitor an asbestos worker's continuing health.

Managers should not rely on results from asbestos-related health monitoring to determine how effective their

asbestos risk management processes are. This is because there is a long period of time between asbestos exposure and identifying asbestos-related disease. Air monitoring is significantly more effective at assessing the effectiveness of asbestos controls.

Health monitoring must be provided to workers if they are at risk of exposure to asbestos when carrying out ongoing asbestos-related work or unlicensed asbestos removal work and are at risk of exposure to airborne asbestos when doing that work. Monitoring should also be provided to workers carrying out licensed asbestos removal. Managers should check with contracted asbestos removal companies to ensure that asbestos monitoring is provided for their workers.

Information about health monitoring must be provided to all workers who may require monitoring.

Unless a medical practitioner recommends another type of health monitoring, the health monitoring must include:

- a physical examination – this should emphasise the respiratory system and include a chest x-ray and lung function test
- the worker's demographic, medical and occupational history
- records of the worker's personal exposure to asbestos, e.g. relevant risk assessment reports, air monitoring results, investigation reports if the airborne contamination standard for asbestos was exceeded

Asbestos removal

Managers must ensure an asbestos removalist with the appropriate licence carries out the work. Two types of licences apply to asbestos removal: Class A and Class B. The licence depends on the type and quantity of asbestos or ACM undergoing removal. WorkSafe keeps a register of every currently licensed asbestos removalist on its website: www.worksafe.govt.nz

Type of licence	What Asbestos can be removed?
Class A	Any type or quantity of Asbestos or ACM, including: ➢ Any amount of friable asbestos or ACM ➢ Any amount of ACD ➢ Any amount of non-friable Asbestos of ACM
Class B	➢ Any amount of non-friable Asbestos or ACM ➢ ACD associated with removing any amount of non-friable asbestos or ACM
No licence required	➢ Up to and including 10m² of non-friable asbestos or ACM, cumulatively over the whole course of the removal project for the site ➢ ACD that is:

Appendix A: Definitions

Terminology	Description
Airborne contamination standard for asbestos	Is an average concentration over any 8-hour period of 0.1 respirable asbestos fibres per millilitre of air. Respirable asbestos fibre means an asbestos fibre that: a) is less than 3 micrometres wide b) is more than 5 micrometres long c) has a length-to-width ratio of more than 3:1
Asbestos Cement Pipe (AC Pipe)	AC Pipe was commonly used as water and sewer pipe from the 1940s and contains approximately 10 to 15% asbestos fibres bonded in a matrix of cement or cement and finely-ground silica
Asbestos-containing material (ACM)	Any material or thing that, as part of the design, contains asbestos
Asbestos	The asbestiform varieties of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals, including the following: a) actinolite asbestos b) grunerite (or amosite) asbestos (brown) c) anthophyllite asbestos d) chrysotile asbestos (white) e) crocidolite asbestos (blue) f) tremolite asbestos g) a mixture that contains 1 or more of the minerals referred to in items (a) to (f) above
Asbestos-contaminated dust or debris (ACD)	Dust or debris that has settled within a workplace and is, or is assumed to be, contaminated with asbestos
Asbestos-contaminated soil	Soil that is contaminated with asbestos or ACM
Asbestos-related work	Authorised work involving asbestos. This includes: • sampling and identification • transport and disposal of asbestos-containing waste • maintenance of plant or equipment containing asbestos This does not include asbestos removal work.

Friable	In relation to asbestos or ACM, means in a powder form or able to be crumbled, pulverised or reduced to a powder by hand pressure when dry
New Zealand-accredited laboratory	A laboratory that is currently accredited by International Accreditation New Zealand on behalf of the Testing Laboratory Registration Council
Non-friable	In relation to asbestos or ACM, means not friable (and for the purposes of this definition, asbestos and ACM include material containing asbestos fibres reinforced with a bonding compound)
Restricted work	Work in one or more of the following categories: • Work involving asbestos, if the asbestos concerned is friable and is, or has been used in connection with thermal or acoustic insulation, or fire protection, in buildings, ships, structures or vehicles • Work involving asbestos, if the asbestos concerned is friable and is, or has been used in connection with lagging around boilers, ducts, furnaces or pipes • The demolition or maintenance of anything, including a building or part of a building containing friable asbestos • The encapsulation of material containing friable asbestos • The use of asbestos cement or other bonded product containing asbestos with: - a power tool with any kind of cutting blade or abrasive device, except when used with dust control equipment or - any other equipment whose use may result in the release of asbestos dust except when it is used with dust control equipment • Dry sanding of floor coverings containing asbestos

Appendix B: Asbestos Management Plan/Asbestos Register

- Template
- Example

Appendix C: Reference