GOOD PRACTICE GUIDELINES

Conducting asbestos surveys

GOOD PRACTICE GUIDELINES FOR ASBESTOS SURVEYORS

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Te Kāwanatanga o Aotearoa
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WORKSAFE
Mahi Haumaru Aotearoa

These guidelines provide good practice advice for PCBUs that carry out asbestos surveys.

ACKNOWLEDGEMENTS

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Conducting asbestos surveys

KEY POINTS

- Buildings built before 1 January 2000 are likely to contain asbestos containing materials (ACMs). For buildings built after 1 January 2000, the risk of asbestos material being present is lower.
- Asbestos surveys are designed to identify asbestos material in buildings and workplaces and provide information on the types of asbestos present, the quantity, and the condition of the asbestos.
- Asbestos surveyors have a duty to make sure the work they do does not create a risk to other people – this means providing thorough and accurate survey reports that will allow for the appropriate management or removal of asbestos.
- Only a 'competent person', someone with the right qualifications and experience, should conduct asbestos surveys.

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NOTE TO READERS

Use of ‘must’ and ‘should’

The words ‘must’ and ‘should’ indicate whether:

- an action is required by law, or
- is a recommended practice or approach.

TERM	DEFINITION
Must	Legal requirement that you must comply with.
Should	Recommended practice or approach. Where the word ‘should’ is used it means that it is a recommended practice or approach, but it is not mandatory. Alternative approaches may be adopted, including those which provide for equivalent or greater levels of safety.

Key terms

A list of technical words, terms, and abbreviations used in these guidelines can be found in the glossary at the end of these guidelines. The glossary explains the meaning of each technical word, term, or abbreviation.

Lists

Lists of examples used in these guidelines are not complete lists. They may list some examples, but not all possible examples.

Images

Images used in these guidelines are a guide only. Images are not intended to provide technical specifications.

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1.0
About these guidelines

IN THIS SECTION:

These guidelines provide good practice advice for persons conducting a business or undertaking (PCBUs) that carry out asbestos surveys.

1.1 What are these guidelines about?

These guidelines provide good practice advice for how to plan, carry out, and report the results of an asbestos survey.

These guidelines will help PCBUs that conduct asbestos surveys to comply with the requirements of the Health and Safety at Work Act 2015 (HSWA) and The Health and Safety at Work (Asbestos) Regulations 2016 (Regulations).

An asbestos survey is where a competent person (referred to as a surveyor in these guidelines) inspects a building or workplace to:

- identify asbestos material or asbestos containing material (ACM)
- provide information on the location and quantity of asbestos present
- report on the condition of the asbestos.

This information may then be used to create a plan on how to manage the asbestos in-situ, or safely remove it prior to renovation or demolition work, depending on the type of survey being done.

For more information on the different types of asbestos surveys, see Section 3.0: Asbestos surveys

For more information on the qualifications and experience needed to qualify as a competent person to provide asbestos surveys, see Section 2.0: Qualifications and experience for surveying

These guidelines do not cover surveying contaminated land. For more information, see New Zealand Guidelines for Assessing and Managing Asbestos in Soil

1.2 Who should read these guidelines?

These guidelines are for PCBUs that carry out asbestos surveys (referred to as surveyors in these guidelines).

They may also be useful for PBCUs that commission asbestos surveys or are otherwise involved in work that can disturb asbestos material, including:

- PCBUs that own, lease, or manage a building that has or could have asbestos in it
- PCBUs that carry out refurbishment and demolition work
- asbestos removalists
- asbestos assessors
- architects
- designers
- building surveyors.

For more information about the qualifications and experience needed to be a competent person to provide asbestos surveys Section 2.0: Qualifications and experience for surveying

1.3 Where to find other information about asbestos and asbestos management

This guide focuses specifically on good practice for conducting asbestos surveys. There is guidance available for other aspects of the management or removal of asbestos. This guide should be read together with:

- Asbestos in Aotearoa New Zealand – information about what asbestos is, the risks of asbestos and why it must be managed.
- Managing asbestos in your building or workplace – guidelines for PCBUs about how to manage asbestos in their building or workplace (including when to engage an asbestos surveyor to assist with this).
- Protective clothing and equipment for working with or near asbestos – guidance for PCBUs that carry out any work where there is a risk of exposure to asbestos fibres.
- Good practice guidelines for asbestos removalists.[1]
- Good practice guidelines for asbestos assessors.[1]
- Asbestos in the home – information for homeowners about how to manage asbestos in their home and how to engage asbestos professionals for the safe management and removal of asbestos.

1.4 The Health and Safety at Work Act 2015 (HSWA)

HSWA is the primary work health and safety legislation in New Zealand. HSWA applies to all work and workplaces unless specifically excluded.

All PCBUs (including self-employed surveyors and those who employ surveyors) have a primary duty of care under HSWA. The primary duty of care means that a PCBU must ensure, so far as is reasonably practicable, the health and safety of:

- its workers (such as employees, contractors, subcontractors, apprentices)
- any other workers who are influenced or directed by the PCBU, (such as workers of other PCBUs on the same site).

A PCBU must also ensure that the health and safety of other persons is not put at risk by its work (for example, tenants, visitors, customers, and passers-by).

[1] This guide is currently under development. See We are updating our asbestos guidance for more information.

For surveying this includes:

- anyone that may be nearby when a survey or sampling is being done
- the people or businesses who may rely on the information and advice provided in the surveys and reports they produce.

Surveyors should, so far as is reasonably practicable, make sure their survey findings and reports are thorough and accurate enough for other PCBUs to rely on when creating plans for how to safely manage or remove asbestos.

Self-employed persons are also considered PCBUs, and the primary duty of care applies. They must also ensure, so far as is reasonably practicable, their own health and safety while at work.

1.5 The Health and Safety at Work (Asbestos) Regulations 2016 (the Regulations)

The Regulations outline specific legislative requirements for the safe management and removal of asbestos in New Zealand.

Surveyors do not have specific duties mentioned in the Regulations.

However, surveying for asbestos material is a key step in the asbestos management process. Accurately undertaking asbestos surveys is essential to the safe management and removal of asbestos.

2.0 Qualifications and experience for surveying

IN THIS SECTION:

Competence can be demonstrated through a combination of relevant qualifications and practical experience.

2.1 Competence to carry out asbestos surveys

Before carrying out a survey of a building to identify asbestos, the surveyor should be able to demonstrate that they are a competent person.

Competence can be demonstrated through a combination of relevant qualifications **and** practical experience.

> **Competent person**
>
> A competent person means a person who has the knowledge, experience, skills, and qualifications to carry out a particular task under the Regulations, including any knowledge, experience, skills, and qualifications prescribed in a safe work instrument.

To carry out an asbestos survey, a competent person should be able to demonstrate that they are:

- qualified and experienced in all aspects of asbestos inspection work, including planning, risk assessment, asbestos material assessment, reporting, and quality control – as outlined in these guidelines
- knowledgeable about asbestos products, including their nature, uses, hazards, and sampling techniques
- knowledgeable about relevant building types (such as industrial, commercial, and residential buildings)
- knowledgeable about building components and structures (such as ducts, eaves, fascia, risers, soffits, and partitions) that may contain asbestos
- knowledgeable about relevant construction practices and building design, including past and present practices and design
- able to review and understand construction plans and specifications for proposed works and historic construction records
- aware of the unexpected places asbestos may be located (and most likely not recorded on building plans). For example, being used in ad hoc ways such as packing around columns and as spacers around windows and door frames
- knowledgeable about building systems that may contain asbestos material (such as fire protection systems).

PCBUs providing surveying services should be able to provide the commissioning PCBU with evidence that the workers carrying out the work are competent. This may include a combination of:

- qualification records for the workers carrying out the work
- the status of any relevant accreditations and certifications for the workers carrying out the work
- information about the experience and capabilities of the workers carrying out the work
- evidence of recent similar work
- evidence the surveyor is employed or engaged by an inspection body accredited to ISO 17020.

2.2 Qualifications for asbestos surveyors

Asbestos surveyors should be suitably qualified. Holding a suitable qualification is one part of demonstrating competence to identify asbestos material.

Courses studied should cover these key topics:

- methods of building construction and how asbestos was used
- identifying and taking samples of different asbestos materials
- methods of identifying asbestos
- carrying out adequate material and risk assessments
- using safety controls during asbestos inspections and sampling
- providing accurate and comprehensive survey reports.

This table shows examples of some qualifications that WorkSafe sees as suitable for individuals that carry out asbestos inspection work.

These courses are internationally recognised and are available/delivered locally in New Zealand.

QUALIFICATION	WHAT THE QUALIFICATION IS ABOUT
FAMANZ IP402	– Includes specific reference to Australia and New Zealand asbestos containing materials and terminology, as well as legislation. – Can be conducted in person and online.
British Occupational Hygiene Society **Asbestos and Other Fibres** (M504)	– This course focuses on improving knowledge of asbestos and other fibrous dusts. – This course may be suitable for individuals that work in asbestos consultancy and occupational hygiene.
British Occupational Hygiene Society **Surveying and Sampling Strategies for Asbestos in Buildings** (P402)	– This course focuses on identifying and recording where asbestos is present and likely to be disturbed in premises. It also covers starting the assessment of asbestos material to determine how hazardous it is. – This course may be suitable for: - individuals whose work involves the identification of asbestos materials (for example, asbestos surveyors and occupational hygienists) - individuals that need an understanding of the principles of asbestos identifications (for example, architects and building surveyors).

TABLE 1:
Examples of qualifications for asbestos inspection work

A combination of qualifications may be needed to demonstrate competence, in addition to relevant experience.

2.3 Experience for asbestos surveyors

Being trained to identify ACMs in real-world situations is also an important part of demonstrating competence.

The length of training time needed will depend on the range of experience gained, and the range of survey types completed during that time. As a starting point, the following is recommended:

TYPE OF SURVEY ENVIRONMENT	RECOMMENDED MINIMUM FULL-TIME PRACTICAL EXPERIENCE UNDER THE SUPERVISION OF A COMPETENT PERSON OR PERSONS
Residential	– 6 months (full-time equivalent), including: - management surveys - demolition/refurbishment surveys.
Commercial/industrial	– 12 months (full-time equivalent), including: - management surveys - demolition/refurbishment surveys - identifying asbestos contained in plant and equipment (as well as structures).

TABLE 2: Recommended training time for surveyors

Training should cover:

- management surveys, refurbishment, and demolition surveys
- buildings and building methods in different property sectors, including industrial, commercial, and residential buildings
- methods of accessing cavities, walls, and different types of partitions
- areas of larger premises that need to be inspected (such as voids, ducts, shafts, and risers)
- carrying out risk assessments
- methods of working safely, including the appropriate use of personal protective equipment (PPE) and personal decontamination.

2.4 Accreditation

Accreditation as an inspection body is one way that organisations or individuals can demonstrate their competence.

Accreditation provides commissioning PCBUs with assurance that an independent body (such as IANZ) has assessed the technical competence of an organisation or individual, including its methods, equipment, records, and personnel.

Technical competence to carry out asbestos surveys and sampling may be demonstrated through accreditation under ISO/IEC 17020:2012: Conformity assessment – Requirements for the operation of various types of bodies performing inspection.

Note: Laboratories analysing samples for asbestos or ACMs must be accredited to ISO 17025. For more information about accreditation, see the IANZ website IANZ: Inspection Bodies

2.5 Membership and continuing professional development (CPD) for asbestos surveyors

Surveyors should continue to keep up-to-date with industry knowledge and best practice beyond their initial training (often referred to as CPD). Surveyors should consider refresher training when available. Membership in a professional organisation is a good way to connect with other surveyors, keep up-to-date with industry developments, and access additional training.

Surveyors should consider maintaining membership with a relevant professional organisation that:

- requires a demonstrated level of relevant competence to gain membership
- requires and/or offers CPD to maintain membership.

Maintaining membership to a relevant professional body is also another way a surveyor can provide evidence of competence to a commissioning PCBU (see Section 2.6 below for more information).

Examples of relevant professional bodies include:

- FAMANZ
- HASANZ
- NZOHS.

2.6 Demonstrating competence to commissioning PCBUs

Commissioning PCBUs may ask for evidence of competence to carry out asbestos identification. Be prepared to provide information that demonstrates competence and expertise.

Surveyors should be able to explain to the commissioning PCBU:

- why the survey is needed/being requested
- what type(s) of survey is(are) needed
- what information the survey will provide
- what format the report will be provided in (such as asbestos register, drawings, electronic, and printed formats)
- what information the surveyor will require before commencing.

This table shows examples of information that could be provided.

INFORMATION SURVEYORS SHOULD PROVIDE A COMMISSIONING PCBU	DETAILS
Surveyor(s) identity, qualifications and, any accreditation, or membership status with a relevant professional organisation	– This is to assure the commissioning PCBU that the surveyor is suitably qualified and experienced.
Evidence of an accredited quality management system	– This enables commissioning PCBU to review quality control procedures.
References from previous work	– References that demonstrate the surveyor's experience and reliability.
Insurance (professional indemnity cover)	– To confirm that the surveyor has appropriate professional indemnity insurance coverage.
Costs	– Provide a clear breakdown of the expected costs for the survey.
Proposed scope of work	– Clearly outline the exact areas and extent of the work to be conducted.
Plan of work	– Detailed plans for sampling or any intended asbestos disturbance.
Timetable	– An agreed, clear, and realistic schedule for completing the survey.
Details of caveats	– Details of any limitations or conditions affecting the survey.
Report	– The report should list areas not accessed or surveyed, with clear documentation.

TABLE 3: Information the surveyor should provide a commissioning PCBU

It is essential that both parties are fully aware of each other's expectations.

3.0
Asbestos surveys

IN THIS SECTION:

There are two main types of asbestos surveys. Choosing which type to do depends on what the PCBU intends to do with the information.

3.1 The purpose of asbestos surveys

The overall purpose of an asbestos survey is to identify asbestos containing materials to manage them effectively in a building or workplace. There are two types of asbestos surveys depending on what the PCBU intends to do with the information: an asbestos management survey and a refurbishment/demolition survey.

Asbestos management survey

The purpose of a management survey is to find and record the location, extent, and product type of any known or presumed ACM in a building or workplace.

It should include information about the accessibility, condition, and surface treatment of any known or presumed ACM.

The survey must provide sufficient information for an asbestos management plan to be prepared. This plan is then used to inform the safe management of asbestos during normal occupation and use of the building or workplace.

It will usually involve taking and testing samples of suspected ACM. In certain circumstances, the presence of ACM can be presumed.

See Section 3.2 for more information about management surveys.

Refurbishment/demolition survey

The purpose of a refurbishment/demolition survey is to find and record the location, extent, and product type of all ACM in a building or workplace (or part of it).

It should provide enough detailed information to enable a suitable risk assessment to be carried out in preparation for refurbishment or demolition of the building or workplace (or part of it).

It typically requires more extensive and intrusive sampling than is required for a management survey.

Unlike a management survey, all suspected ACM that may be disturbed must be confirmed by sample testing. The presence of ACM cannot be presumed.

See Section 3.3 for more information about refurbishment/demolition surveys.

For more information about the terms ‘refurbishment’ and ‘maintenance, see WorkSafe’s webpage Asbestos – Refurbishment versus maintenance

For more information about relocating buildings with asbestos, see WorkSafe’s webpage Asbestos approved methods

3.2 What is an asbestos management survey?

An asbestos management survey is a survey carried out to identify asbestos in a building or workplace. It is typically used by PCBUs who own or manage a building or workplace to inform their asbestos management plan. The Regulations require all PCBUs to have an asbestos management plan for their building or workplace, if there is asbestos or ACM suspected to be present.

For more information on PCBU duties to manage asbestos in their building or workplace, see WorkSafe’s good practice guidelines Managing asbestos in your building or workplace – for PCBUs

Management surveys are designed to assist with the management of asbestos in-situ. If a PCBU is planning to refurbish or demolish a building, or part of it, a refurbishment/demolition survey must be done - even if they already have a management survey.

For more information, see Section 3.3: What is a refurbishment/demolition survey?

This table shows key information about asbestos management surveys.

What is the purpose of an asbestos management survey?	– To identify, as far as is reasonably practicable, the presence, location, and extent of any suspected ACM in a building or workplace that could pose a risk of exposure to asbestos fibres. – This includes ACM that could be damaged or disturbed during normal occupancy, such as foreseeable maintenance, repairs, installation or other minor works.
What are the aims of an asbestos management survey?	– An asbestos management survey has two main aims: - to find and record the location, extent, and type of ACM or suspected ACM in a building or workplace - to assess the risk posed by the present, or presumed to be present, ACMs.
What does an asbestos management survey involve?	– An asbestos management survey often involves minor intrusive work and some disturbance to collect samples to test to confirm the presence of ACM. – The extent of intrusion will vary between premises and depend on what is reasonably practicable for each property. – Factors such as the type of building, nature of construction, and accessibility can influence this. – Management surveys do allow for the presence of asbestos to be presumed in some situations. – For more information about how to record and communicate the presence of asbestos, see Section 7.0: Presumptions about asbestos in management surveys
What is a material assessment?	– Management surveys should include a ‘material assessment’. – This is an assessment of the condition of the various ACMs or suspected ACMs and their ability to release fibres into the air if they are disturbed (for example, during a natural disaster, or while doing maintenance such as cleaning or painting). – The material assessment information can help PCBUs decide what work to do first to manage or remove the ACMs. – For more information on carrying out material assessments, see Section 8.0: Writing a survey report

TABLE 4: Key information about asbestos management surveys

Reinspection surveys

This type of survey should be used by PCBUs who own or manage a building or workplace to keep their existing asbestos management plan up to date. Use it to monitor the condition of previously identified or assumed ACMs. The same steps should be followed as outlined for a standard management survey with the following exception:

- There is no requirement to test previously confirmed ACMs. These ACMs should be reassessed to inform an updated priority assessment.

Surveyors should remain vigilant for any suspected asbestos that may have been missed in previous surveys.

The frequency of a reinspection survey will depend on:

- meeting requirements to revise an existing asbestos register or asbestos management plan
- the results and recommendations of previous surveys
- the type of premises and its use (for example, hospitals and schools may require more frequent surveys)
- the unexpected discovery of ACM
- anything that may have potentially damaged or disturbed ACMs (for example, maintenance work or adverse weather events).

3.3 What is a refurbishment/demolition survey?

A refurbishment/demolition survey is used to identify all asbestos material in a building or workplace (or part of it) that is likely to be disturbed, so it can be safely removed before refurbishment or demolition work begins.

More information about asbestos removal will be provided in the upcoming good practice guidelines for asbestos removal. You can find more information about the development of this and other new asbestos guidance here We are updating our asbestos guidance

Refurbishment/demolition surveys are intrusive. This means that parts of the building's structure may need to be disturbed (for example, opening wall cavities, lifting carpets, replacing vinyl, or removing tiles).

This table shows key information about refurbishment/demolition surveys.

What is the purpose of a refurbishment/demolition survey?	– To locate and describe, as far as reasonably practicable, all ACMs in the area where the refurbishment work will take place, or in the whole building if demolition is planned. – A refurbishment/demolition survey may also be required in other circumstances. For example, when more intrusive maintenance and repair work will be carried out, or for plant removal or dismantling.
What are the aims of a refurbishment/demolition survey?	– A refurbishment/demolition survey aims to find, confirm and record the location, extent, and type of all ACMs present in a building or workplace (or part of). – This information will inform a risk management plan for minimising the risk of asbestos fibres being released while refurbishment or demolition is taking place.
What does a refurbishment/demolition survey involve?	– A refurbishment/demolition survey is disruptive, intrusive, and may need to penetrate parts of the building structure. – Aggressive inspection techniques are used, for example: - lifting carpets and tiles - opening wall cavities, ceilings, cladding, and partitions - opening up floors and false ceilings. – In these situations, controls must be put in place to prevent the spread of debris, which may contain asbestos, while inspection and sampling is taking place. – For more information, see Section 7.3: Previously inspected areas

TABLE 5: Key information about refurbishment/demolition surveys

3.4 Choose the right survey type

Most buildings/workplaces will require an asbestos management survey. The Regulations require all PCBUs to have an asbestos management plan for their building or workplace if asbestos or ACM is suspected to be present. A management survey is a key tool used to assist PCBUs to manage the risk of asbestos fibre exposure during the normal occupation and use of the building. Normal occupation activities include standard maintenance and minor works. Examples of standard maintenance and minor works include:

- painting
- cleaning
- changing a light fitting
- removing a single panel
- drilling a hole
- cleaning of debris in air conditioning units and gutters.

A refurbishment/demolition survey is required when a building (or part of it) is to be upgraded, refurbished, or demolished. It is likely that at larger premises a mixture of survey types may be needed. For example, a boiler house due for demolition will require a refurbishment/demolition survey, while offices at the same site undergoing repairs, maintenance or minor works may only need a management survey.

It is important that the right type of survey is carried out based on the intended actions (for example, manage the asbestos in-situ or disturb or remove the asbestos).

All PCBUs involved should have a clear understanding of what type of survey will be done, why, and where. There should be a clear statement and record of:

- the type of survey that will be done
- the reasons for choosing that type of survey
- the specific locations where the survey will be carried out
- the agreed-upon scope of the proposed refurbishment/demolition (for refurbishment/demolition surveys).

3.5 Survey restrictions and caveats

The value and usefulness of a survey depends on how thoroughly the surveyor can access all areas of the building and obtain test samples. Surveys can be undermined if restrictions are imposed on the survey scope or on the techniques/methods used by the surveyor to confirm the presence of ACM. For management surveys, incorrectly presuming the presence or absence of asbestos can also negatively affect the reliability of the survey.

For more information, see Section 7.0: Presumptions about asbestos in management surveys

Reliable information on the location of all ACMs, so as far as is reasonably practicable, is crucial to the reliability of the resulting management plan. Making sure a survey is executed as thoroughly as possible can be achieved through good planning and communication with the building owner or commissioning PCBU before the survey takes place.

For more information, see Section 4.0: Planning and preparation

There should be no restrictions on access for refurbishment/demolition surveys, unless the site is unsafe (such as fire damaged premises), or access is physically impractical.

Refurbishment surveys that are done for a specific area or part of a building or workplace can only be used for those specific areas. If the commissioning PCBU changes their scope of refurbishment work after the original survey was conducted, they may need an updated survey done before work starts.

4.0 Planning and preparation

IN THIS SECTION:

Thorough planning is essential to make sure surveys are carried out as fully and comprehensively as possible.

4.1 Five steps for planning and preparation

The level of planning and preparation for an asbestos survey will depend on the complexity and size of the workplace. For example, a small primary school will have different requirements compared to a large hospital complex. Surveys on sites with a variety of building types may need a lot of planning.

A thorough survey is crucial to avoid missing obvious or hidden ACMs. Using checklists and a structured approach can help minimise oversights. Make sure adequate time is allocated for an effective inspection.

It is the responsibility of the commissioning PCBU to make sure that adequate time and resources are made available to allow for a thorough identification of ACMs in the workplace.

This section divides planning an asbestos survey into five steps:

1. COLLECT RELEVANT INFORMATION
2. DO A PRELIMINARY SITE VISIT/WALKTHROUGH
3. CONSIDER ALL THE INFORMATION
4. PREPARE A SURVEY PLAN
5. CARRY OUT A RISK ASSESSMENT FOR THE SURVEY

These steps are listed separately, but in practice there may be some overlap, or they may run at the same time. There may be some situations where all the steps are not necessary or possible (such as small or simple premises, fire-damaged premises, and pre-purchase surveys).

There should be an initial exchange of information between the commissioning PCBU and the surveyor. This is so the surveyor can establish the type of survey(s) that is required, and so both parties have a clear understanding of what will be required.

It may be that more than one survey type will be required. For example, a management survey for most of the premises, but a refurbishment survey in one building or part of a building. Establishing the survey type should be done in consultation with the commissioning PCBU before any planning begins.

1 COLLECT RELEVANT INFORMATION

Collect relevant information about the building or workplace to be surveyed

After confirming with the commissioning PCBU what type of survey or surveys are required, the surveyor should ask the commissioning PCBU or building owner for this information:

- details of buildings or parts of buildings to be surveyed, and survey type(s) for which area
- details of building(s) use, processes, hazards, and priority areas
- plans, documents, reports and surveys on design, structure, and construction
- safety and security information: fire alarm testing, special clothing areas (such as food production)
- access arrangements and permits
- contacts for operational or health and safety issues
- accurate plans of the building(s) and the floor layout that include:
  - the main features of each room, corridors, stairs, and other areas
  - unique floor and room numbers to help identify individual locations.

This table shows specific examples of information that a surveyor should aim to collect when planning an asbestos survey.

CATEGORY	INFORMATION TO COLLECT
Property description and use	– description of how the property is used (for example, industrial, office, retail, domestic) – number of buildings, including age, type, and construction details – number of rooms – any unusual features or underground sections.
Building modifications	– Details of any extensions, adaptations, or refurbishments, including dates of work.
Installed equipment	– details of installed plant or equipment – location of all services, heating and ventilation ducts, plant rooms, riser shafts, and lift shafts.
Historical and regulatory details	– whether the site is a listed building or in a conservation area – site history, including any previously demolished buildings, presence of old/disused underground ducts or shafts.
Survey scope	– extent or scope of the survey, marked on a site plan or architect's drawings – whether surrounding grounds and associated buildings or structures are included in the survey scope.
Plans and drawings	– current site plans or drawings – previous plans, including original architect's drawings and specifications, and any plans for major changes and refurbishment – for complex premises, the asbestos surveyor should ask for building plans that: - show the main features of each room, corridors, and stairs - are marked with unique floor and room numbers to help identify individual locations. – if plans are not available, then the surveyor should make an accurate drawing of the premises during the preliminary site visit/walk-through, before starting the survey (see step 2).
Occupancy status	– whether the premises are vacant or occupied.

CATEGORY	INFORMATION TO COLLECT
Access and safety	– presence of underground ducts or shafts – any restrictions, special requirements, or instructions for access – responsibility and arrangements for access – site-specific risks or hazards (such as mechanical, electrical, chemical) – responsibility for isolating services (such as power, gas, and chemicals) – working machinery or plant (including lifts) to be made safe.
Previous asbestos information	– details of previous asbestos surveys, current asbestos records, and records of asbestos removal or repairs – information on possible repairs to ACMs (such as, pipe/thermal insulation).
If there are any areas where the use of a phone and/or taking photos is not allowed	– high security, high risk areas at petroleum/gas installations or prisons may restrict the use of phones or cameras – in hospitals or other medical settings sensitive equipment may be affected. There may also be a need to protect the privacy of patients.
Other considerations	– Whether sampling damage needs to be repaired (made good).

TABLE 6: Examples of information to collect when planning an asbestos survey

2 DO A PRELIMINARY SITE VISIT/WALKTHROUGH

Preliminary site visit/walk-through

Surveyors should arrange a preliminary site meeting and carry out a walkthrough inspection, especially for large and complex premises.

If it is not possible to carry out a preliminary site meeting (such as small surveys where the cost of a second visit outweighs the advantages, or where there are multiple premises and it is not practical to visit them all), gather the necessary information by other means. For example, through email/correspondence with the site owner or manager, or by carrying out a walk-through immediately before the survey.

A walk-through inspection can help surveyors to:

- gather extra information needed to plan the survey that could not be obtained during step 1
- become familiar with the layout of the premises, including the location of equipment or obstacles that may cause a problem for access or sampling
- understand the size of the project and estimate the extent of sampling required
- identify specific risks
- verify the accuracy of building plans or, if plans are not available, allow an opportunity for the surveyor to make an accurate drawing of the premises' layout (this is very important to have when the actual survey is taking place).

This table shows examples of information to collect during a walk-through inspection.

CATEGORY	INFORMATION TO COLLECT DURING BY A WALK-THROUGH INSPECTION
Entry or access restrictions	– Identify any restrictions (such as ceiling voids, high areas, and crawl spaces) that may be difficult to access.
Sampling issues	– determine if sampling should be conducted only when the area is unoccupied – determine if there are materials or decorations that cannot be disturbed – determine where sample locations should be labelled.
Dust release and clean-up	– plan how to: - reduce dust release and manage clean-up efficiently - seal and protect exposed materials to prevent disturbance and exposure to anyone entering later.
Need for a licensed asbestos removalist	– Assess whether a licensed asbestos removalist is required (for example, to gain access through ceiling tiles).
Access to high areas	– Determine if arrangements need to be made for a safe way of accessing high areas.

TABLE 7: Examples of information to collect during walk-through inspections

3 CONSIDER ALL THE INFORMATION

Consider the information (desktop study)

This step involves the careful review of all the information collected during steps 1 and 2 and to use it to plan the survey in step 4.

Use this as a 'desktop' exercise to review the information, plan the survey strategy, consider if there are any gaps in the information, and work out the resources and equipment that will be necessary to complete the work.

Many premises will be relatively simple and straightforward to plan for. For example, one or two buildings with no additional land, machinery, or outbuildings and no previous refurbishment or demolition. However, more complex sites with buildings of various ages and conditions will require more consideration and a more tailored approach.

Refurbishment/demolition surveys usually need more detailed planning than asbestos management surveys.

The factors the surveyor will need to consider will vary for each survey carried out. However, the surveyor should always consider the things listed in this table.

CATEGORY	THINGS TO CONSIDER AS A SURVEYOR
Type of survey	– Consider whether the proposed survey type is still appropriate. If it looks like a different survey may be needed, it should be raised with the commissioning PCBU.
The surveyor's competency to carry out the survey	– assess the competency needed to undertake the work – consider the likely complexity of the survey: - do you have enough experience to manage it, or will you need assistance? – refurbishment/demolition surveys are more challenging than management surveys: - management surveys typically do not access structural locations like behind concrete or between floors and walls (such as cavity walls) - refurbishment/demolition surveys require a higher level of competency and knowledge, particularly in construction and building techniques. The intrusive nature of these surveys also presents extra risks to health and safety.
Available resources	– evaluate the resources available, including personnel – consider whether you have the resources to carry out the survey accurately and safely.

CATEGORY	THINGS TO CONSIDER AS A SURVEYOR
Any equipment needed to ensure access	– Determine the equipment you will need to access different areas of the building. For example: - into the structure - to high levels - into contaminated areas or confined spaces - through known ACMs.
The need for additional trades	– Think about whether extra tradespeople (such as a joiner, electrician, or builder) are needed to help you access areas during the survey, or to repair areas (make good) after the survey is complete.
Bulk sampling needs	– Think about your bulk sampling strategy. Estimate how many samples will be collected and what sampling methods you will use, based on the site plan.
Gaps in information collected	– Consider if any key information is missing from what you have collected and about how you might find it.

TABLE 8: Example of things to consider when planning an asbestos survey

4 PREPARE A SURVEY PLAN

Prepare a survey plan (including how data will be recorded)

After collecting relevant information and completing the preliminary site inspection, prepare a written plan for the survey.

This plan should outline the content of the survey and can form the basis of the contract with the commissioning PCBU.

This table shows the information to typically include in the survey plan.

CATEGORY	INFORMATION TO INCLUDE IN THE SURVEY PLAN
Scope of the survey	– type of survey – areas that will be included in the survey – areas that will be excluded from the survey – whether any areas will be presumed to contain or not contain asbestos – possible or known ACM that will not be included in the survey.
Survey procedure/sampling strategy	– sampling methods to be used and expected number of samples to be taken – expected number and types of photos to be taken – survey start and completion dates – survey times and work schedule – procedures for making good any areas that were disturbed during accessing or taking samples – material assessment method and parameters for assessment, including the ACM: - type - location - extent - condition - accessibility - quality assurance checks and procedures – the information to be recorded and the method/format to be used.
Access arrangements	– plan with the commissioning PCBU to make sure that, for example: - locked rooms are unlocked, or someone is available to unlock them when needed - height access equipment is available for accessing areas at height (such as roofs and raised ceilings) - any movable obstructions from hallways/corridors are removed.

CATEGORY	INFORMATION TO INCLUDE IN THE SURVEY PLAN
Personnel and safety	- names of the people carrying out the survey - safety precautions, including steps to minimise asbestos disturbance and minimise the spread of asbestos fibres - agreed control measures for high-risk work (such as working at height or work in confined places) - site safety procedures for emergencies, and procedures for decontamination - for more information, see step 5.
Reporting	– what data will be reported and with headings – how the data will be presented (each room/area should be individually recorded) – the way the survey data will be stored, accessed and updated (such as a physical paper copy or digitally) – how photo or video records and marked-up plans will be stored and reported – how any areas not tested will be recorded (including a brief reason or comment) – how to record materials similar in appearance to asbestos (if not sampled) – other information required by the commissioning PCBU that may have been agreed (such as detailing fixings) – storage and reporting of photo or video records and marked-up plans – for more information, see Section 8.0: Writing a survey report

TABLE 9: Information to include in an asbestos survey plan.

Survey strategy

A survey strategy is an approach used to effectively identify the presence and location of asbestos material in a building.

As each building and workplace is likely to be different, a survey strategy will need to be developed for each asbestos survey carried out. Thinking about the survey strategy early in the planning process can help avoid challenges and make sure the survey is comprehensive and reliable.

In premises where there are large numbers of similar or near-identical rooms (such as offices or hotels), a survey strategy can be adopted which reflects the scale and nature of the buildings. All rooms should be visually inspected, as there can be differences due to location (such as the presence of risers or services) or function/facilities.

Rooms with similar locations or facilities rooms can be placed into groups, such as next to lifts or containing risers. There is likely to be greater uniformity in these groups for the presence of asbestos and ACM. In these groups, there may be less need for sampling in all rooms. Sampling can be conducted in a representative number of rooms and, if ACM is identified, the same items in other rooms in this group can be presumed to contain asbestos.

For more information, see Section 7.0: Presumptions about asbestos management surveys

5 CARRY OUT A RISK ASSESSMENT FOR THE SURVEY

Conduct a health and safety risk assessment

Surveying will present health and safety risks for surveyors and others present at the workplace. As a PCBU, the surveyor must, so far as is reasonably practicable, manage the risks their survey work creates or may create. They will need to consult, cooperate and coordinate with the commissioning PCBU when working out how to best manage the risks.

Before conducting a survey, do a risk assessment of the risks to the health and safety of surveyors, sampling personnel, and building occupants. This must include non-asbestos related risks as well as asbestos related risks. The surveyor should ask the commissioning PCBU for information relating to any hazards specific to the site at step 1 of the planning stages.

General health and safety risks to consider

The risk assessment should address any relevant hazards that may be present. It should include what control measures will be used to eliminate or minimise the risk of potential harm. For example:

- working at heights, in ceiling voids, or on a fragile roof
- working on operable machinery or plant
- working in confined spaces
- exposure to:
  - chemical hazards
  - electrical hazards
  - biological hazards
  - radiological hazards
  - noise hazards
  - lone working.

For more general information about managing risk, see WorkSafe's webpage Managing risks

Asbestos specific health and safety risks to consider

The risk assessment should also specifically address asbestos-related issues, including:

- how to prevent the disturbance of asbestos material as much as possible
- how to prevent the spread of asbestos fibres. Safe work procedures (for example, controls that will be used while taking samples and arrangements for entering contaminated areas)
- what PPE surveyors will use during the survey. For more information, see WorkSafe's webpage Protective clothing and equipment for working with or near asbestos
- decontamination procedures
- how to seal and protect exposed materials after completing the survey
- arrangements for the disposal of asbestos waste.

The risk assessment should be prepared by a competent person (normally the surveyor), and it should be written down. It should establish all the hazards at the particular premises and go on to identify precautions and procedures in a plan of work for the survey.

Where the surveyor has not been able to do a preliminary visit, they will only see the site for the first time at the time of the survey. In this case it is important that the information gathered at step 1 is thorough enough to base the risk assessment on.

Consider specific risks for refurbishment/demolition surveys

Refurbishment/demolition surveys are likely to present extra hazards due to the intrusive and destructive nature of the work. This may include:

- hidden electrical cables or pipes
- unstable or damaged buildings.

These hazards need to be properly addressed with procedures in place to deal with emergencies.

Safe work procedures – avoid working alone if possible

Ideally a survey should be conducted by a team of at least two people. This has several advantages:

- assistance with carrying equipment, such as step ladders
- labelling of sample bags and documentation
- having help on hand if there is an incident – in cases of remote or dangerous locations (such as fire damaged or derelict buildings), this is especially important
- allows field training of new surveyors to be carried out in a supervised practical environment and gives a better chance of finding ACMs.

5.0 Carrying out an asbestos survey

IN THIS SECTION:

Using a methodical and systematic approach to carrying out asbestos surveys will help make sure that no areas are accidentally missed.

5.1 Asbestos surveys overview

This section explains how to carry out an asbestos survey. It covers both management and refurbishment/demolition surveys. It provides detailed information on ACMs in buildings including their types, uses, and locations in building fabric and fixed installations.

For more information about where these products are found in buildings and pictures of common asbestos products, see Appendix 2: Examples of ACMs and where they might be found

5.2 Methodical approach to surveying

Using a methodical and systematic approach to carry out an asbestos survey will help make sure that:

- all ACMs are identified
- all areas of the premises are inspected.

Use building plans to prepare the survey strategy and check progress through the premises.

Check plans to make sure building features and services are included (such as voids, cavities, risers, ducting, and undercrofts).

The survey should be conducted in a way to make sure that asbestos materials are not missed and that all areas of the premises are thoroughly inspected.

Always allow enough time to carry out the survey.

This table shows one way to carry out an asbestos survey.

AREA	SURVEY PROCEDURE
Outside	– work downwards from high to low – work from the outside inwards.
Inside	– work upwards from the basement to the roof – inspect each area individually – work around each area clockwise from the door of entry – inspect each component inside each compartment in this order: - ceiling - walls - floors - fixtures and fittings - equipment - services.
General	– check and inspect everything – sample and take photo – re-check areas that are complex or that have a lot of items – do a final walk-through and check your notes against the building plans.

TABLE 10: Methodical approach for carrying out an asbestos survey

Use initiative when carrying out a survey

Being inquisitive and using initiative is important when carrying out the survey. Materials should be tapped and prodded. Everything should be checked and inspected. Do not presume that an item is the same as another just because it looks similar. This is particularly relevant when presuming items are non-asbestos.

Sample and take photos as the survey progresses. Look out for unusual potential sources such as overspray or packers.

It is good practice to survey 'in pairs' (two people) working together, with both inspecting one area at the same time.

Re-check areas which have many items (such as plant rooms). ACMs may be missed where surveyors are tired, rushed or make assumptions.

Large premises will require more detailed survey procedures, particularly if several surveyors are involved. For example, it may be appropriate to carry out a separate survey on the building services, machinery and any large floor and ceiling voids. Reviews should be carried out frequently.

5.3 What to assess and record

During a management survey, assess the condition of the ACMs and their ability to release fibres. This information will inform the 'material assessment' (see Section 6.0: Material and priority assessments).

Use a table to find and record information for:

- confirmed ACM
- presumed or suspected ACM (see Section 7.0: Presumptions about asbestos management surveys).

Refurbishment/demolition surveys normally require less information as details of the ACM condition are not required.

The final report should be accurate, comprehensive, and clearly present all findings.

SURVEY TYPE	INFORMATION REQUIRED
Management survey	– asbestos product type(s) – location of the material(s) – extent (or quantity) of the material(s) – asbestos type(s) – accessibility and/or vulnerability (risk of damage) – amount of damage or deterioration – surface treatment (if any).
Refurbishment/demolition survey	– asbestos product type(s) – location of the material(s) – extent (or quantity) of the material(s) – asbestos type(s). The surveyor will need to get extra information if the survey will take place a significant time before the demolition/refurbishment starts (by more than three months). If this is the case, the surveyor should also get information about the: – accessibility and/or vulnerability (risk of damage) – amount of damage or deterioration – surface treatment (if any).

TABLE 11: Required information for surveys

5.4 Understand asbestos types

Knowing the type of asbestos is necessary to carry out a material assessment.

If the material has not been tested, and there are no similar products identified in the survey, assign a likely asbestos type. This is based on the product type and age.

It may be possible to get information on the type of asbestos from close inspection of the material. For example, if fibres are visible in the product, these can give some extra clues to the type of asbestos (for example, by the colour of fibre bundles or if they have sharp or curly bundles).

Unless there is evidence to show otherwise, presume the asbestos type is crocidolite asbestos. This is in line with the precautionary principle in risk management.

5.5 Presumed presence of ACMs

Presuming the presence or absence of asbestos can only be done in certain situations and only for management surveys. For refurbishment/demolition surveys, the asbestos regulations require that all asbestos likely to be disturbed during demolition must be identified.

For management surveys if a material cannot be identified but is likely to be asbestos or ACM, the PCBU must presume it is asbestos. If any part of the workplace is inaccessible, but likely to contain asbestos, it must also be presumed to be present. This does not apply if the PCBU already presumes asbestos is present or has good reason to believe it is not.

For more information, see Section 7.0: Presumptions about asbestos management surveys

Identifying asbestos in inaccessible areas during refurbishment and demolition surveys

Regulations require that all asbestos that is likely to be disturbed during refurbishment or demolition must be identified. Usually the intrusive nature of demolition/refurbishment surveys will allow for testing and sample taking of all suspected asbestos.

Commissioning PCBUs should take all practical steps to facilitate access to all areas to take samples. PCBUs should not restrict access unless there the site is unsafe (such as if there is fire damage).

Where there are areas where asbestos is suspected to be present but cannot be accessed to take samples, it may be necessary to do a staged survey as the demolition or refurbishment work progresses. The surveyor should:

- note the location and reasons why samples could not be taken
- advise the commissioning PCBU that further testing for asbestos will be required as the demolition or refurbishment progresses and the area becomes accessible.

If the suspected ACM is completely contained in a piece of plant or equipment (such as a hot water cylinder), and the plant or equipment can be removed without disturbing the asbestos inside – it does not need to be opened up to allow testing. To do so would create unnecessary risk.

5.6 Possible locations of asbestos in a building or workplace

Many buildings in New Zealand have asbestos in them. If a building or workplace was built before 1 January 2000, it probably contains some asbestos materials. Even buildings built after 2000 may have asbestos because ACMs were still able to be imported into New Zealand up until 2016.

Asbestos can also be found in some products that were manufactured before 2000. It was used to make products like brake linings, filters, and fireproof textiles.

For buildings and products that were built or manufactured after 1 January 2000, the risk of asbestos material being present is lower.

These examples show where asbestos can commonly be found.

For a detailed list of ACMs, examples of how they are used, where to find them, what they are made of, and how easily they may release fibres, see Appendix 2: Examples of ACMs and where they might be found

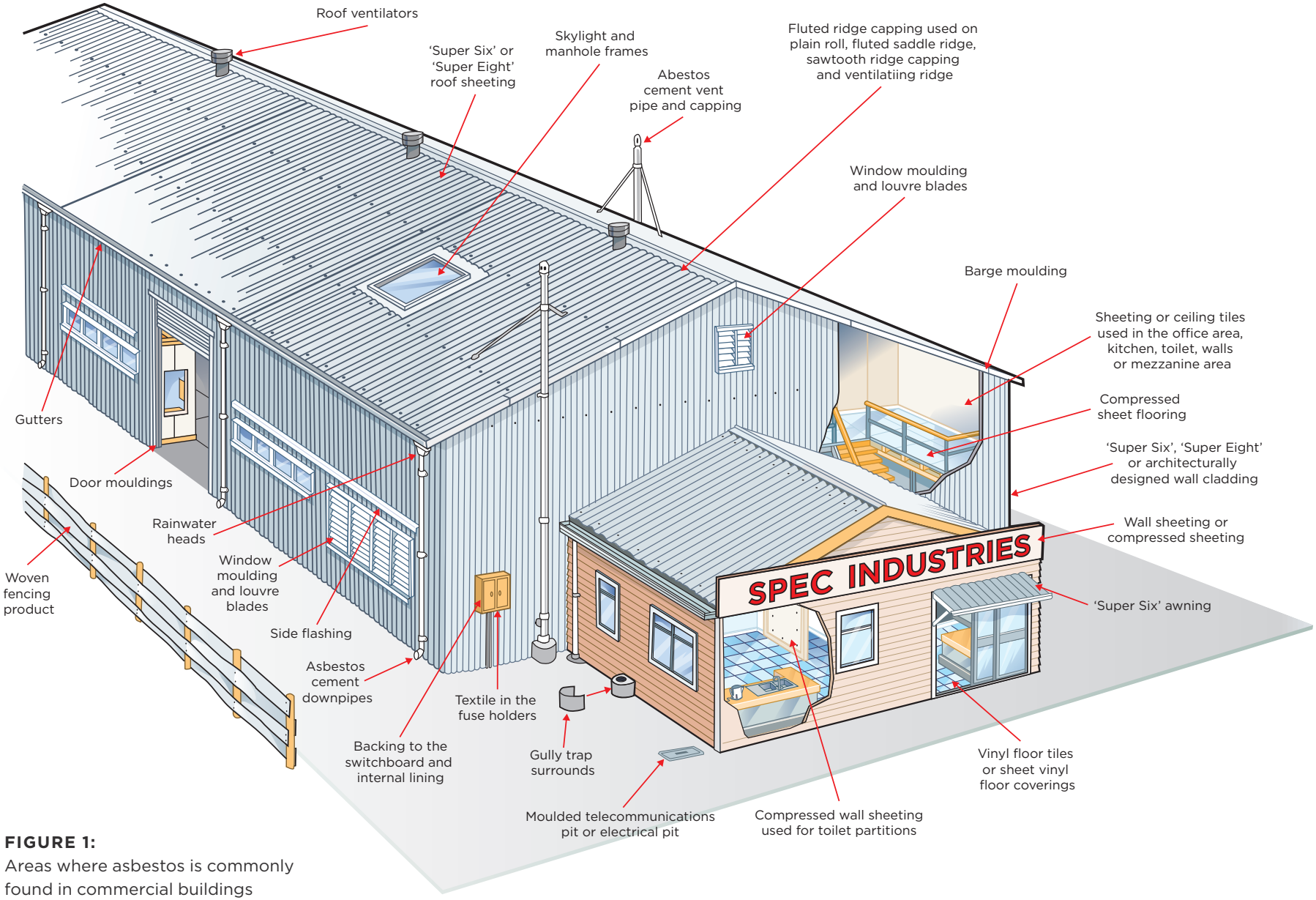


FIGURE 1:
Areas where asbestos is commonly found in commercial buildings

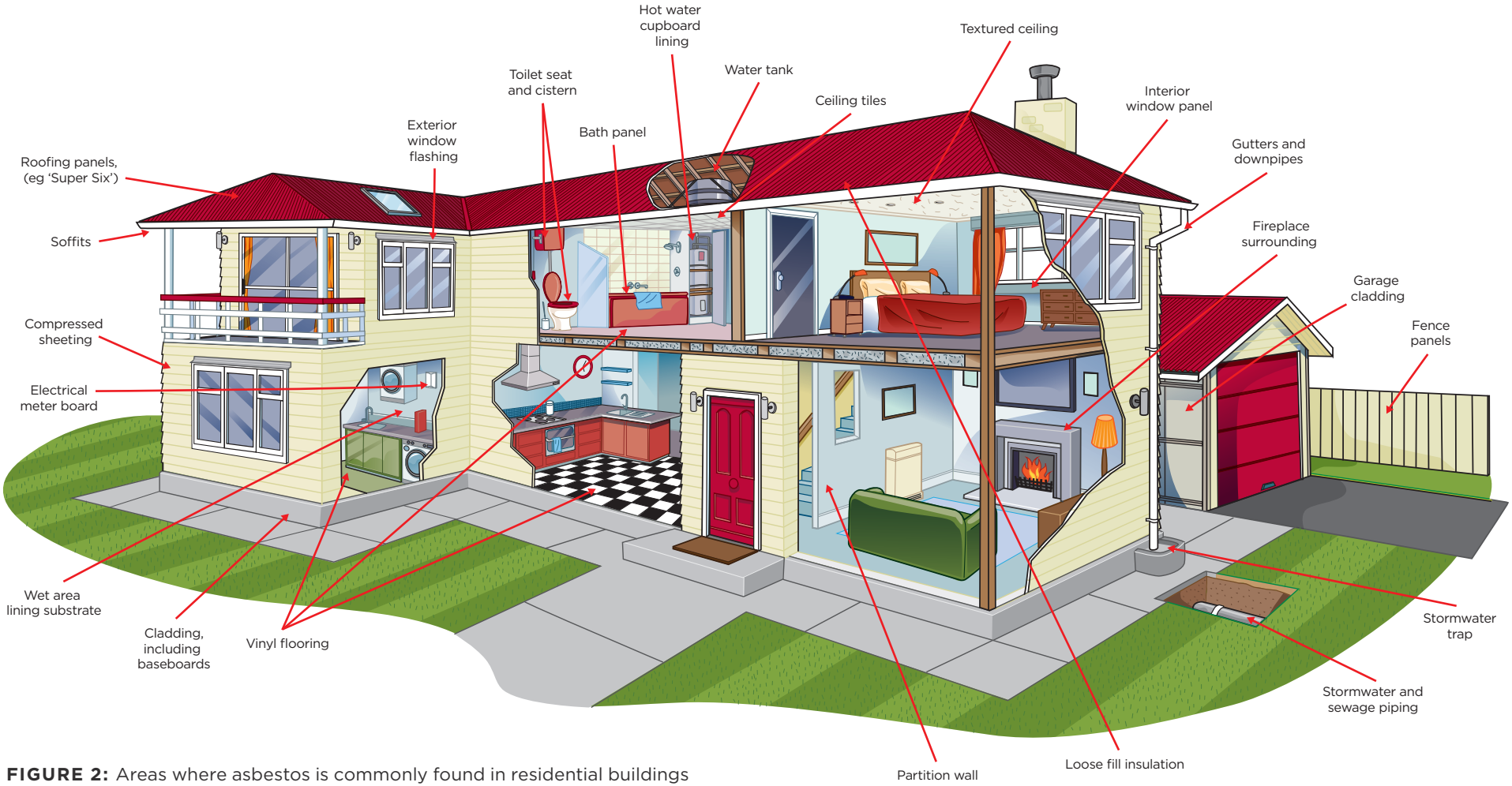


FIGURE 2: Areas where asbestos is commonly found in residential buildings

5.7 Other areas to check during refurbishment/demolition surveys

Many buildings have unique designs, layouts, and materials, and may have undergone numerous refurbishments and modifications over the years. These changes can lead to concealed and hidden areas (such as false floors, ceilings, walls, and surface treatments), that are not apparent in original or updated building drawings.

Access will be required into the fabric of the building and various items (such as brickwork, timber, boards, and panels), may have to be removed or broken into. In these circumstances, it may be helpful to seek professional help on such activities/work from a joiner, builder, maintenance worker, engineer or other appropriate person. Where concrete is to be sampled or brickwork removed, advice may have to be sought from a competent person, such as a structural engineer.

This table shows common and/or frequently found locations which should be examined and how best to examine them. As this list is not exhaustive or exclusive, each type of structure must be examined on its own merits.

AREA TO EXAMINE	DETAILS AND PROCEDURE
'No access' areas from previous survey	– All previous 'no access' areas must be accessed using suitable access equipment and procedures.
Suspended ceilings	– Suspected or confirmed ACM suspended ceilings (such as Asbestos Insulating Board tiles screwed to wooden battens) must be entered using an enclosure and airlock system constructed by a licensed asbestos-removal contractor. – Voids may contain asbestos debris, sprayed coatings, older ceilings, pipe insulation, and damaged fire breaks.
Partition walls (plasterboard/AIB sandwich)	– Partition walls may have undergone partial replacement and must be examined thoroughly. – Documentary evidence is required to confirm no ACMs were used during construction. – If no such evidence exists, inspect all sections visually and physically. – Joints may contain asbestos rope fire seals, which may only be seen after removing the outer trim (such as aluminium).
Cavity walls	– Inspect cavity walls with an endoscope for asbestos materials or debris (such as AIB). – Entry points should be agreed with a competent person (such as a builder, joiner, or structural engineer). – Examine walls where insulated heating pipes pass through brick or breeze block walls for insulation or residues.
Apertures (such as doors and windows)	– Examine cavity closers (such as asbestos cement) around air bricks, windows, and apertures. – Window frames may contain AIB packers or spacers and asbestos rope seals as fire breaks. – Inspect door frames, especially fire doors, for AIB packers. Architraves need to be removed to inspect thoroughly.
Floors	– Carpets and tiles must be lifted, as floor tile adhesives often contained asbestos. – Inspect floor ducts/trenches for formwork, services, pipe insulation, fire stops, and debris. Check duct covers for asbestos cement or AIB formwork. – Floor boards must be lifted to inspect voids for loose asbestos, AIB debris, fire protection, packers, and cables. Make sure joist ends are inspected. – Slab floors may contain AIB/AC expansion joints or formwork, requiring core sampling. – AC sleeves for cables/pipes may be visible at the surface.

AREA TO EXAMINE	DETAILS AND PROCEDURE
Ducts	– Inspect service risers (including fire stops), lift shafts (including pits), and ventilation ducts. – Ventilation systems may contain asbestos attenuators or debris from ACMs.
Cladding	– Inspect columns or stanchions for concealed fire protection (such as AIB or sprayed coatings). – External cladding (such as tiles/slates) may hide bituminous ACM moisture membranes or AIB panels.
Debris in boiler room areas	– Inspect where pipes pass through walls, sumps, and gullies. – Check behind and underneath tanks, walls, and floors for insulation debris (may be painted over). – Investigate plant and electrical equipment (must be in a certified safe condition). – Cast iron sectional boilers containing asbestos need to be disassembled under controlled conditions.
Debris under non-asbestos reinsulation	– If asbestos insulation was stripped and replaced, remove portions of new insulation to check for asbestos debris on pipes, bolt-heads, and flanges. – Frequent debris occurrence may require treating entire pipes as ACMs.
Roof voids	– Inspect areas under Rockwool or vermiculite insulation for ACMs (such as AIB fire breaks). – Loose asbestos is rarely found as loft insulation but may occur near old asbestos factories or dockyards.
Previously demolished areas	– Use a desk-top study to identify structures (including underground) that may have released asbestos into the soil. – Visually inspect the site for demolition debris. – Treat external areas as potentially contaminated sites, excavation (such as trenches and pits) may be necessary. – Desk-top studies should include historical plans (such as from archives).
Overspray debris from sprayed coatings	– Inspect areas where sprayed asbestos coating is present, or previously existed, for debris and overspray.
Damp-proof Course (DPC)	– Often placed above ground level at the base of structures or between building materials to prevent moisture transfer.

TABLE 12: Examples of other areas to check for asbestos

5.8 Check building systems and services

Surveyors are expected to have knowledge on a range of building types and materials, and systems and services (see Section 2: Qualifications and experience for surveying).

Surveyors should have knowledge of the use of ACMs in fire protection systems and the effect of building services on the distribution and location of ACMs. For example:

- fire protection in steel-framed buildings around columns and beams
- fire protection around electrical and heating systems
- fire protection separating multi-occupancy buildings
- fire protection in lift shafts and risers
- building services in voids, ducts, cavities, and risers.

Surveyors should be aware of the range of building components and structures which contain asbestos. For example:

- barge boards
- chimney cowls
- ducts

- eaves
- fascia
- fire dampers
- flue terminals and risers
- gable ends
- plenums
- soffits
- stud partitions
- sandwich partitions.

Knowledge of building construction techniques and design is relevant for refurbishment/demolition surveys, to understand where (and why) ACMs may have been used in a structure.

Surveyors should recognise that ACMs were often used informally in buildings. Examples include AIB panels and offcuts used for formwork, column packers, window and door spacers, and cavity closers.

Other ACMs may have caused contamination in buildings from the way they were applied, poor work practices or later disturbance, producing for example:

- overspray and spread of dust from sprayed coatings
- residues from thermal insulation on brickwork and in ducts
- debris from AIB fire breaks in ceiling voids and in cavity walls.

These ACMs are often hidden and unrecorded in building plans.

5.9 Other areas to check

As well as checking buildings, associated services, or waste, surveyors should look for the presence of asbestos in other areas in the building or workplace such as machinery, plant, or consumer electrical products or equipment.

Industrial machinery and plant

Older equipment may contain asbestos due to its age or performance requirements and often requires maintenance.

Surveyors should inspect accessible parts. For example, heat and electrical insulation, seals, and friction components (such as belts, clutches, brakes, and bearings).

Avoid sampling or working on machinery unless qualified. Seek help from engineers or maintenance personnel if needed.

If sampling is not done, the equipment should be presumed to contain asbestos unless proven otherwise.

Older consumer electrical products

Older consumer and industrial electrical products, such as hairdryers, irons, and dishwashers, may contain ACMs.

Equipment requiring significant heat insulation, like simmering mats, iron stands, fire blankets, heaters, and cooker door seals, should be inspected during surveys.

5.10 Manage risk while doing a survey and taking samples

Controls should be put in place to prevent the spread of debris, which may contain asbestos. Refurbishment/demolition surveys should only be conducted in unoccupied areas to minimise risks to the public or workers on the premises. Ideally, the building should not be in service, and all furnishings should be removed.

For minor refurbishment, this would only apply to the room involved or even part of the room where the work is small and the room large. In these situations, there should be effective isolation of the survey area (such as full floor-to-ceiling partition), and furnishings should be removed as far as possible or protected using sheeting.

The 'surveyed' area must be shown to be fit for reoccupation before people move back in. This will require a thorough visual inspection and, if appropriate (for example, where there is significant destruction), reassurance air sampling.

Under no circumstances should staff remain in rooms or areas of buildings when intrusive sampling is performed.

A demolition survey may be conducted while a building is still in use. For instance, in schools or colleges, these surveys might take place during holidays, with actual work delayed until a later closure. Demolition surveys can also assess a building's economic viability if there is asbestos and how this will change any part of the building. In these situations, the survey will need extremely careful managing with equipment/furnishings being removed or protected (as necessary), while the survey progresses through the building. Surveyed areas should be isolated, and reoccupation only allowed once the area is confirmed safe.

If a surveyor identifies a high-risk situation while doing a survey (for example, they find damaged, friable asbestos in an occupied environment like a classroom) the surveyor must notify the commissioning PCBU immediately. The commissioning PCBU must then take immediate remedial action to manage the risk. The surveyor must not wait until their report is prepared and delivered to notify the commissioning PCBU of any high-risk situations they identify.

5.11 Bulk sampling strategy

The most convenient and efficient approach is to take samples during the survey. However, in cases involving large premises or inaccessible areas, sampling may be carried out later when the area becomes available.

Carry out a thorough visual inspection of each room and area to identify materials and locations to take samples from.

During the inspection, carefully assess the material for differences and variations in appearance. The size of the sample, the number of samples, and the spread of samples will vary depending on the density or spread of the suspected asbestos fibres in the ACM.

Take samples of the surface area and, where necessary through the entire depth of the suspected ACM. This includes any backing paper. It is important to consider the likely spread of the asbestos fibres in the suspected ACM – making sure enough samples are taken to represent the whole material.

Do not take samples where there is an electrical hazard or if the sampling will/could damage the critical integrity of a roof, gutter, or pipe.

Swab sampling (for example, wiping or using adhesive tape to pick up possible asbestos fibres on a surface) cannot be used for asbestos identification. IANZ no longer accredits laboratories to analyse swab samples.

Swab sampling must not form a part of a sampling strategy during asbestos surveys.

For a sampling equipment checklist, see Appendix 3: Example of a survey and sampling equipment checklist

This table shows the main factors that guide the sampling strategy.

FACTOR	DETAILS
Basis for sampling strategy	– The sampling strategy will consider factors such as: - size and number of premises/rooms - extent, types, and variation in materials present.
Material inspection method	– Visual inspection and checking (such as tapping and prodding) of each material will determine sample numbers and locations.
Homogeneous manufactured products	– Presumed to have uniform asbestos distribution throughout the material. – Typically, one or two samples will suffice for the following materials: - boards - sheets - cement products - textiles - ropes - friction products - plastics - vinyl - mastics - sealant - bitumen roofing felt - gaskets.
Non-homogeneous materials	– Insulation materials are generally less homogeneous because they were applied on-site, with composition varying based on supply availability. – Repairs and patching may further increase variability, requiring a higher number of samples. – Repaired and replaced materials should always be sampled in addition to original items.
Contamination and debris	– Substantial contamination and debris may have been produced during installation. For example, overspray, insulation debris, or off-cuts (such as AIB off-cuts). – Debris may have been swept into voids, lift shafts, and other risers. – Asbestos debris and visible contamination should also be sampled.
Single sample for homogeneous material	– A single sample may often suffice to confirm asbestos suspicion in homogeneous material.
Non-homogeneous materials (some presumed non-asbestos materials)	– For non-homogeneous materials and certain presumed non-asbestos materials, additional sampling is often required. – This reduces the risk of false negatives and avoids incorrect conclusions.
Recommended sample numbers	– Suggested sample numbers are provided for each room or defined area. – These recommendations may be adapted depending on site conditions and prevailing circumstances.

TABLE 13: Bulk sampling strategy considerations

In addition, substantial contamination and debris may have been produced at the time of installation (such as overspray, other insulation debris, or AIB off-cuts). A common practice is to drop off-cuts into voids and sweep debris into lift shafts and other risers. Any asbestos debris and other suspect visible contamination should be sampled.

Number of samples taken

These sampling guidelines are suggested for each room or defined area but may be adapted depending on the site and the circumstances.

MATERIAL TYPE	DETAILS	SAMPLING GUIDELINES
Spray coatings, encapsulated sprays, and bulk materials	– usually, but not always, homogeneous (even under encapsulation) – different mixtures may have been used, and material may have been removed, repaired, or patched at various times – variability can occur in large installations.	– if the material appears uniform and consistent, take at least two samples (such as at either end of the sprayed surface) – for large installations (>100m^2), take one sample every 25–30m^2 – sample all patches of repairs or alterations or any areas where a variation can be seen.
Pipe/thermal insulation	– composition is often highly variable, especially where there are changes in colour, size, texture, or visible repairs/ modifications – asbestos may have been removed in some areas but retained around elbows, taps, and valves – demonstrating pipes are asbestos-free can be difficult – check corners closely – non-asbestos pipes may have hand applied asbestos at joins or corners.	– take one sample per 3m run of pipe, focusing on different layers and functional items (such as valves) – for long runs (>20m), take one sample per 6m – all pipes should be sampled even if they appear similar – sample all repairs or alterations.
Insulating board (AIB)	– typically homogeneous, but repairs, replacement boards, or tiles may exist – boards/tiles may be painted – tiles may have been replaced as part of improvement programs – variations can exist based on colour, pattern, design, size, or hidden trade names – some boards/tiles may have asbestos paper.	– take one sample per room or every 25m^2 – inspect ceilings/walls for variations – if there are multiple tile types, take representative samples of each – for large installations completed at the same time, fewer samples may suffice – check hidden sides for trade names.
Asbestos cement materials	– homogeneous material commonly found as corrugated and flat sheets or moulded products – used in low-cost housing, schools, fireproofing, and office partitions – exterior cement sheets in older buildings are often presumed to contain asbestos – asbestos cement sheets resemble non-asbestos fibre cement.	– take one sample per type of sheet or product (such as gutters and downpipes) – sampling may be restricted due to risks from falls (such as asbestos cement roofs).
Textured coatings	– asbestos fibres can be spread widely but at low concentrations in textured coatings.	– Samples should be taken from many points across the coating area.
Other materials (debris and contamination)	– for distinct types of materials, one or two samples are usually sufficient – larger areas may require more sampling for accuracy.	– take one or two samples from each separate source – if the material covers several square metres, two samples are recommended.

TABLE 13: Sampling guidelines

5.12 Bulk sampling procedures

Before sampling begins do a comprehensive risk assessment of the survey site. Safe procedures identified in the risk assessment must be adhered to, ensuring minimal disruption to the commissioning PCBU's operations and maximum protection for the health and safety of everyone at risk.

All sampling personnel must wear adequate PPE. For more information, see WorkSafe's webpage Protective clothing and equipment for working with or near asbestos

General precautions during sampling

Unoccupied areas:

- Sampling should be carried out in unoccupied areas whenever possible.
- For normally occupied areas, sampling should occur during periods of minimal occupation.

Dust control and safety measures:

- Take all reasonably practicable steps to minimise dust from sampling.
- Entry to sampling areas should be restricted, with clear warnings posted. For example: 'Asbestos sampling in progress: Keep out.'
- Surfaces where asbestos debris might fall should be protected using impervious material (such as polythene), which can be easily cleaned using wet-wiping or a Class H vacuum cleaner.
- All equipment used during sampling that may have come into contact with suspected asbestos should be treated as contaminated. Contaminated tools or equipment must be stored in impervious containers until they can be safely decontaminated or disposed of as asbestos waste.

Control of airborne emissions

Airborne asbestos emissions should be controlled by pre-wetting the material to be sampled using water and/or a suitable wetting agent.

Techniques include:

- spraying surfaces (such as boards and sheets)
- injecting material (such as lagging and sprays)
- shadow vacuuming (if wetting is incomplete or unsafe, such as where material might drip into electrical installations):
  - this involves holding the suction inlet close to the area where dust is generated using a Class H vacuum cleaner (see Section 10: Tools and equipment)
  - examples of materials requiring shadow vacuuming include AC sheets, AIB boards, ropes, and gaskets.

Sample collection and sealing

Each sample must be:

- individually sealed in its own container or a sealable polythene bag
- placed in a second sealed container or bag for added security
- the sample area must be left clean, with no evidence of debris, and all sampling points sealed to prevent fibre release
- methods for resealing sampling points include tapes and fillers.

Sample and site labelling

Each collected sample must be labelled with a unique identifier. The identifier must also be recorded in the survey documentation, records, and site plans to ensure traceability of the sample origin.

Sampling positions at the site may also be labelled with the same identifier for clarity.

Visual tools such as marked-up plans or photo records, are effective for documenting:

- the location of the sample
- the extent of sampling and identified ACMs.

Samples should be sent or delivered to the accredited lab according to the lab's instructions, including any chain of custody documentation requirements.

5.13 Bulk sampling techniques

This table shows common material types or processes and their recommended sampling procedures.

MATERIAL TYPE/PROCESS	SAMPLING PROCEDURE
Spray coatings, encapsulated sprays, and bulk materials	– If encapsulated, pre-inject liquid around the sampling area. – Use a sharp knife, scalpel, or flat head screwdriver to lift a small flap and retrieve a sample. – If not encapsulated, wetting (surface spraying or injection) and shadow vacuuming may be required to minimize airborne emissions. – As spray coatings are homogeneous, a surface sample is acceptable. – Where the material appears uniform and consistent, two samples should usually be enough, if taken at either end of the sprayed surface.
Loose insulation	– Inspect wall cavities with an endoscope for loose asbestos materials or debris. – Examine walls where insulated pipes pass through for insulation or residues. – Where the material appears uniform and consistent, two samples should usually be enough. – Samples should be taken from all visually different patches.
Pipe/thermal insulation	– Fully wet the area using injection techniques. – Use a core sampler to penetrate the full depth of the pipe insulation: 1. Push a wet wipe inside the borer to form a plug. 2. Wrap a wet wipe around the outside of the borer. 3. Take the sample and use the inner wipe to seal the surface where the borer enters. 4. Clean the borer using the outer wet wipe as it is withdrawn. – Remove the sample using a plunger and place it, along with the contaminated wipes, into a polythene bag. – Seal the sampling hole (such as with tape or inert filler). – Clean the sampling equipment thoroughly between samples. – Alternative: use core sampling tubes, cap both ends, and place in a bag for transport to the lab. Make sure new insulation doesn't hide earlier asbestos debris.
Insulating board (AIB)	– Inspect for existing damage to collect samples more easily. – If no damage, take a small sample from a discrete location (such as a corner or edge) using a sharp knife or chisel blade. – Make sure any paper layers on one or both sides are included.

MATERIAL TYPE/PROCESS	SAMPLING PROCEDURE
Asbestos cement	– Do not assume all similar looking sheets are the same product – some sheets may have been replaced and all repainted to look the same. – If sampling is necessary (such as to distinguish between AC and AIB), look for damaged portions. – Remove a small 5cm^2 sample from an edge or corner using pliers or a screwdriver. – Sampling from roofs requires special safety precautions to prevent falls. – If analysis is inconclusive, conduct a water absorption test: - AC absorbs <30% water. – If new sheets are detected, make sure no asbestos debris remains from previous installations.
Gaskets, rope, seals, paper, felts, textiles	– Use a sharp knife or scissors to cut a representative portion of the material.
Floor and wall coverings	– Cut samples out using a sharp knife or scissors. – Take one sample for each type or colour of tiles present. – Clean the area after sampling. – Fibre release is minimal unless asbestos is present in a lining or backing material.
Textured coatings	– Wet the areas to be sampled before taking each sample. – Use a screwdriver or narrow scraper to carefully scrape the coating. – Direct the scraped material into a sample container held below each the sampling point.
Debris	– Small fragments of debris released due to damage to ACMs or poor cleaning after removal of ACMs can be picked up with a smooth pair of tweezers and placed directly into a sealable container or plastic bag.
Dust	– Dust sampling is not advised except in very specific situations for example, where there has been a recent substantial release of dust incident being investigated. – Dust can be a variable material so bulk dust samples for asbestos analysis should usually comprise a significant amount of loose dust (approximately one tablespoon is ideal; debris should be excluded). – Dust samples can be collected by various methods such as: - scraping the dust layer into a pile and transferring it into a suitable labelled container - using a plastic bag inverted over the hand to wipe over a representative area of surface. – Do no collect dust samples as wipe samples on adhesive tapes or filters.
Air sampling	– Personal air sampling: measures exposure for survey and sampling personnel. – Background air sampling: conducted in areas where asbestos sensitivity exists, but pre-existing contamination must be considered. – Reassurance air sampling: required for intrusive sampling (such as refurbishment/ demolition surveys) when areas/buildings are to be reoccupied before work begins.

TABLE 15: Common materials and their recommended sampling procedures

6.0
Material and priority assessments

IN THIS SECTION:

Material and priority assessments are an important tool for PCBUs to use when prioritising actions as part of managing asbestos.

6.1 Material assessments

A material assessment identifies the materials that will most readily release airborne fibres if disturbed. A material assessment allows the PCBU with management or control of a workplace to assess the potential for fibre release for each ACM, then go on to prioritise the need for action as part of the plan for managing asbestos.

For more information on creating asbestos management plans for PCBUs, see WorkSafe's webpage Managing asbestos in your building or workplace – for PCBUs

The material assessment should be carried out as part of the management survey using a standardised material assessment equation. It is based on an additive algorithm. The tool can be used to numerically assess the potential for fibre release. The tool is not designed to calculate absolute differences in potency or fibre release/hazard potential between ACMs. However, it does allow ACMs to be ranked in numerical order.

The material assessment focuses on identifying 'high-hazard' materials – those most likely to release airborne fibres if disturbed. However, a high score in the material assessment does not automatically indicate the need for immediate remedial action.

The priority for action must be determined through a risk assessment known as a priority assessment, which considers various additional factors, including:

- **Location of the material**: Where the material is situated
- **Extent of the material**: The size or spread of the material
- **Purpose of the location**: The functions or activities conducted in the area
- **Occupancy of the area**: The number and frequency of people present in the space
- **Activities in the area**: The nature of work or processes carried out in the vicinity
- **Likelihood of maintenance**: The probability and frequency of maintenance activities in the area.

For more information, see Section 6.4: Priority assessments

6.2 Carry out a material assessment

In a material assessment process, the main factors influencing fibre release are given a score that can be added together to obtain a material assessment rating.

The four main parameters that determine the amount of fibre released from an ACM, when subject to disturbance, are:

- product type
- extent of damage or deterioration
- surface treatment
- asbestos type.

Each parameter is scored between 1 and 3, where a score of:

- 1 indicates a low potential for fibre release
- 2 indicates a medium potential for fibre release
- 3 indicates a high potential for fibre release.

Any two of the parameters can also be given a score of zero (equivalent to a very low potential for fibre release).

The values assigned to each parameter are added together to give a total score of between 2 and 12 (see Table 20).

Presumed ACMs are scored as crocidolite (score = 3), unless there is strong evidence to show otherwise.

Non-asbestos materials are not scored.

SCORE	POTENTIAL TO RELEASE ASBESTOS FIBRES
4 or less	– Very low potential to release fibres if disturbed
5 or 6	– Low potential to release fibres if disturbed
7, 8, or 9	– Medium potential to release fibres if disturbed
10 or more	– High potential to release fibres if disturbed

TABLE 16: Material assessment scoring system

6.3 Material assessment algorithm

This table shows the scores for asbestos materials commonly found in buildings or workplaces.

SAMPLE VARIABLE	SCORE	MATERIALS EXAMPLES
Product type	1	– Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, and asbestos cement)
	2	– Asbestos insulating board, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper, and felt
	3	– Thermal insulation (such as pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses, and packing
Extent of damage or deterioration	0	– Good condition: no visible damage
	1	– Low damage: a few scratches or surface marks, broken edges on boards or tiles
	2	– Medium damage: significant breakage of materials or several small areas where material is damaged revealing loose asbestos fibres
	3	– High damage or delamination of materials, sprays, and thermal insulation. Visible asbestos debris

SAMPLE VARIABLE	SCORE	MATERIALS EXAMPLES
Surface treatment	0	– Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles
	1	– Enclosed sprays and lagging, asbestos insulating board (with exposed face painted or encapsulated), asbestos cement sheets
	2	– Unsealed asbestos insulating board, or encapsulated lagging and sprays
	3	– Unsealed lagging and sprays
Asbestos type	1	– Chrysotile
	2	– Amphibole asbestos excluding crocidolite
	3	– Crocidolite

TABLE 17: Material assessment algorithm

6.4 Priority assessments

The material assessment identifies the materials that will most readily release airborne fibres if disturbed. However, the highest scoring materials in the material assessment are not necessarily the priority for remedial action.

Priority should be determined by carrying out a risk assessment (priority assessment) which considers factors listed in Section 6.1: Material assessments

The priority assessment can only be carried out with detailed knowledge of these factors.

It is the duty of the PCBU that owns or manages the building or workplace to create a management plan that will set out how they will prioritise and manage asbestos identified in a survey. The surveyor can assist PCBUs with this by working with them to provide a priority assessment.

For more information on the role of PCBUs who own or manage buildings or workplaces, see WorkSafe's webpage Managing asbestos in your building or workplace – for PCBUs

A priority assessment is normally not needed for refurbishment/demolition surveys. But where the length of time between the survey and the refurbishment or demolition is significant (such as more than three months) then a priority assessment should be conducted and interim management arrangements put in place.

This table shows an example of an algorithm/scoring system that can be used to inform the priority assessment.

ASSESSMENT FACTOR	SCORE	SCORE VARIABLE EXAMPLES
Normal occupant activity		
Activity type	0	– Rare disturbance activity (such as a little used storeroom)
	1	– Low disturbance activities (such as an office-type activity)
	2	– Periodic disturbance (such as industrial or vehicular activity which may contact ACMs)
	3	– High levels of disturbance (such as a fire door with asbestos insulating board sheet in constant use)
Secondary activities for area	As above	– As above

ASSESSMENT FACTOR	SCORE	SCORE VARIABLE EXAMPLES
Likelihood of disturbance		
Main type of activity in area	0	– Rare disturbance activity (such as a little used storeroom)
	1	– Low disturbance activities (such as an office-type activity)
	2	– Periodic disturbance (such as industrial or vehicular activity which may contact ACMs)
	3	– High levels of disturbance (such as a fire door with asbestos insulating board sheet in constant use)
Secondary activities for area	As above	– As above
Likelihood of disturbance		
Location	0	– Outdoors
	1	– Large rooms or well-ventilated areas
	2	– Rooms up to 100m^2
	3	– Confined spaces
Accessibility	0	– Usually inaccessible or unlikely to be disturbed
	1	– Occasionally likely to be disturbed
	2	– Easily disturbed
Extent/amount	0	– Routinely disturbed
	1	– Small amounts or items (such as strings and gaskets)
	2	– 10m^2 to ≤50m^2 or 10m to ≤50m pipe run
	3	– >50m^2 or >50m pipe run
Human exposure potential		
Number of occupants	0	– None
	1	– 1 to 3
	2	– 4 to 10
	3	– >10
Frequency of use of area	0	– Infrequent
	1	– Monthly
	2	– Weekly
	3	– Daily
Average time area is in use	0	– <1 hour
	1	– >1 to ≤3 hours
	2	– >3 to ≤6 hours
	3	– >6 hours

ASSESSMENT FACTOR	SCORE	SCORE VARIABLE EXAMPLES
Maintenance activity		
Type of maintenance activity	0	– Minor disturbance (such as the possibility of contact when gaining access)
	1	– Low disturbance (such as changing light bulbs in asbestos insulating board ceiling)
	2	– Medium disturbance (such as lifting one or two asbestos insulating board ceiling tiles to replace a valve)
	3	– High levels of disturbance (such as removing a number of asbestos insulating board ceiling tiles to replace a valve)
Frequency of maintenance activity	0	– ACM unlikely to be disturbed for maintenance
	1	– 1 per year
	2	– >1 per year
	3	– >1 per month

TABLE 18: Priority assessment algorithm examples (sourced from UK HSE)

Another example of an algorithm can be found here ACM risk calculator

Surveyors should **discuss and agree** with the commissioning PCBU what algorithm they will use. The surveyor should discuss with the commissioning PCBU the advantages or disadvantages of the algorithm they intend to use, and make sure that the resulting information will meet the needs of the commissioning PCBU.

Avoid creating hybrid or combination algorithms.

6.5 Combined material and priority assessments

Combining the material and priority assessments helps to evaluate and manage asbestos materials by assessing both the potential for fibre release and the priority for remedial action.

This method helps to make sure that an effective plan is developed for managing asbestos in the workplace. PCBUs must determine individual action plans based on combined material and priority assessment, reflective of their specific risk profile (such as schools or healthcare settings).

The combined material and priority assessment results should be used to establish the priority for those ACMs needing remedial action, and the type of action that will be taken. There are various remedial options available. Where removal is not reasonably practicable, the ACMs can be protected or enclosed, sealed or encapsulated, or repaired.

7.0 Presumptions about asbestos in management surveys

IN THIS SECTION:

Presuming the presence or absence of asbestos can only be done in certain situations.

7.1 Presuming that asbestos is present

Presuming the presence or absence of asbestos can only be done in certain situations and only for management surveys. For refurbishment/demolition surveys, the asbestos regulations require that all asbestos likely to be disturbed during demolition must be identified.

Management surveys do allow for the presence of asbestos to be presumed in certain situations. In some circumstances, it may be appropriate to presume that a material is asbestos instead of confirming the presence of asbestos by sampling.

Surveyors should always attempt to positively identify ACMs. Assuming the presence of asbestos should not be a default practice. Surveyors should only make such assumptions if they are suitably experienced and familiar with various asbestos products.

Experienced surveyors may use certain characteristics to compare with other materials they know contain asbestos:

- surface texture
- sound when knocked
- warmth to the touch
- surface hardness/deformation with a probe.

Unless the surveyor is convinced that there is adequate evidence to conclude that the material is free from asbestos (for example, in the plaster, plasterboard, or wood), a presumption should be made that it is an ACM.

Examples of situations where it may be appropriate to presume the presence of asbestos include if:

- ACM is confirmed in one area of the building and there is a second area with similar materials used in the same way, it may be acceptable to presume that the material in the second area is also ACM
- an area cannot be accessed for sampling (such as the roof of a building), but building records and a visual inspection indicate it is ACM, it can be recorded as presumed to be ACM
- an area or product cannot be accessed for sampling (such as water heater insulation), but it is known that asbestos was commonly used in that product at the time it was installed, it can be recorded as presumed to contain asbestos
- an area or product would require significant disturbance to access and sample (such as lift brakes), but it is known that asbestos was commonly used in that product at the time it was installed, it can be recorded as presumed to contain asbestos.

The surveyor should presume that any area that is not accessed or inspected contains asbestos unless there is strong evidence it does not (see Section 7.3: Previously inspected areas).

Presuming the presence of asbestos should only be done when the commissioning PCBU has agreed or where access genuinely cannot be obtained. Commissioning PCBUs should be aware of the disadvantages as well as advantages of presuming the presence of asbestos in their management surveys, as well as risks of exposure when taking samples and over-sampling.

This table can help when talking with commissioning PCBUs about the advantages and disadvantages of presuming asbestos is present in their management survey.

ADVANTAGES	DISADVANTAGES
– reduces the amount of disturbance required – can allow a survey to continue/be completed despite there being areas inaccessible for sampling – allows for sampling and analysis to be deferred until a later time (for example, before any work is carried out and asbestos refurbishment/demolition survey is undertaken) – allows for a similar looking building material to one that was confirmed as ACM to be presumed to be ACM elsewhere at the site - reducing sampling time and costs.	– can lead to a less rigorous overall assessment – can leave grey areas for the building owner that may have to be resurveyed later – potentially creating extra costs and delays to future routine maintenance, while areas are sampled/tested – if non-ACM is wrongly presumed to be ACM, managing it as ACM may cause unnecessary cost for the building owner or manager. For example, unnecessary encapsulation may be done – some non-ACM waste may be disposed of as asbestos waste (causing unnecessary costs).

TABLE 19: The advantages and disadvantages of presuming the presence of asbestos

7.2 Presuming that asbestos is not present

Surveyors should take reasonably practicable steps to make sure that asbestos material is not present before recording it as such. Surveyors cannot presume that a material does not contain asbestos unless there is a strong reason to believe so.

Reasons to presume that a material does not contain asbestos include:

- non-asbestos substitute materials are specified in the original architect's or quantity surveyor's plans or in subsequent refurbishments
- the material is very unlikely to contain asbestos or to have had asbestos added (such as wood, glass, metal, or stone).

Avoiding making false assumptions

Asbestos material may be hidden, even if a building or workplace has detailed records of previous work. Original building specifications may not have included asbestos, but workers may have used asbestos material for convenience.

For example:

- asbestos-containing material off-cuts may have been used as filler or packing in places and their use not recorded
- asbestos containing paint may have been applied to non-asbestos roofing material at a later date (so not recorded in the original building records).

7.3 Previously inspected areas

Surveyors should not presume an area is free of asbestos just because a removal has occurred previously.

Poor asbestos removal practices can leave behind asbestos-containing debris (such as asbestos-contaminated dust).

Always reinspect areas where asbestos was previously removed. This helps to make sure that any leftover asbestos material is identified. See *Reinspection surveys* for more information.

8.0
Writing a survey report

IN THIS SECTION:

Survey reports should be clear, and easy to understand and interpret by the intended recipient.

8.1 What is an asbestos survey report?

The survey report is a record of the information collected at a particular time on the presence and condition of ACMs. It will contain information and data that will be used by other PCBUs to undertake an asbestos risk assessment and prepare an asbestos management or removal plan. Errors in the report could lead to incorrect conclusions and inappropriate decisions.

The survey report should contain a summary of the results in a format that can be used as the basis for an updatable register of ACMs (such as the asbestos register) and a diagram (such as building drawings) indicating the locations of ACMs. This register will need to be readily accessible to all involved in initiating maintenance or other work on the building or workplace.

For more information see WorkSafe's webpage Managing asbestos in your building or workplace – for PCBUs

The report should be completed in a written format, supplied either as a hard copy or as an electronic document, or both. It should be presented in a way that is easily understandable by the commissioning PCBU. In particular, the information in the survey report should be easy for the commissioning PCBU to extract and to use to prepare an asbestos register. For example, by presenting the results in a manner or format that can be directly lifted or employed to form the asbestos register. The report should contain the results of sample analyses.

8.2 What an asbestos survey report should include

Asbestos survey reports should contain these sections:

- executive summary
- introduction covering the scope of work
- general site and survey information
- survey results (including material assessment results)
- bulk analysis results
- conclusions and actions.

The design, layout, content, and size of the report are very important. Large reports can be unwieldy and even intimidating. Commissioning PCBUs are generally most interested in the summary, results, conclusions and actions. In hard-copy documents, it can be useful to separate the report into different parts, with the bulk analysis results and the individual survey results, particularly if displayed with accompanying photos, contained in separate detachable appendices.

Using photographs

Photos can be very informative to the commissioning PCBU and should be included in the report. Photos can show the material sampled, its condition and location and its surrounding environment. They can also be used to identify the actual sampling points.

Photos provide a context for the sample and can assist the commissioning PCBU in managing asbestos. For example, by providing a benchmark for the comparison of condition over time.

8.3 Asbestos survey report: Executive summary

The executive summary should provide an overview of the survey, highlighting the scope, type, and extent of the work conducted.

It should summarise the most important findings and recommended actions. The key points should include:

- locations with identified or presumed ACMs
- areas that were not accessed or tested, with a brief reason or comment (specific to the survey – no generic information or disclaimers)
- ACMs with high material assessment scores
- clear and comprehensible notes on any conclusions, actions, and priorities.

8.4 Asbestos survey report: Introduction

The introduction should explain the scope of the work and the purpose, aims and objectives of the survey. It should also contain a description of the nature and age of the building(s) (or other structures) plus construction type.

8.5 Asbestos survey report: General site and survey information

The general site and survey information section provides detailed information about the site and the survey that was carried out.

The key points should include:

- name and address of the organisation
- names of the surveyors
- name and address of the person who commissioned the survey
- name and address of the premises surveyed
- date of the report
- date of the survey
- description of the areas included and excluded in the survey
- survey method used and type of survey undertaken
- variations or deviations from the method
- agreed exclusions and inaccessible areas (specific to the survey)
- the type of survey undertaken (management or refurbishment/demolition) and, if more than one type is used, where they apply in the premises.

8.6 Asbestos survey report: Survey results

The survey results section is the main part of the report. It should present the findings of the survey in a clear and organised manner.

It should include a summary table and marked-up plans showing the location of any confirmed and presumed (for management surveys only) asbestos materials (see Table 20 and Figure 3).

The key points should include:

- location of the ACM (building identifier, floor number or level, room identifier, and position)
- extent of the ACM (area, length, thickness, and volume)
- product type
- level of identification (presumed or identified)
- asbestos type (such as chrysotile, amosite, or crocidolite).

For management surveys (and refurbishment/demolition surveys where work is not about to start), this extra information should be included:

- accessibility of ACM
- amount of damage or deterioration
- surface treatment (if any)
- material assessment score or category
- any required actions from the material assessment.

Asbestos survey results should be clear and easy to understand

Remember that the survey results will be used by the PCBU that owns or manages the building or workplace that was surveyed. They will not necessarily have an in-depth understanding of asbestos.

- Make sure the survey results are easy to understand by summarising results in table format (see Table 20).
- Include marked-up building plans (Figure 3).
- Present information on an individual room basis.
- Record any non-asbestos materials in a separate table.

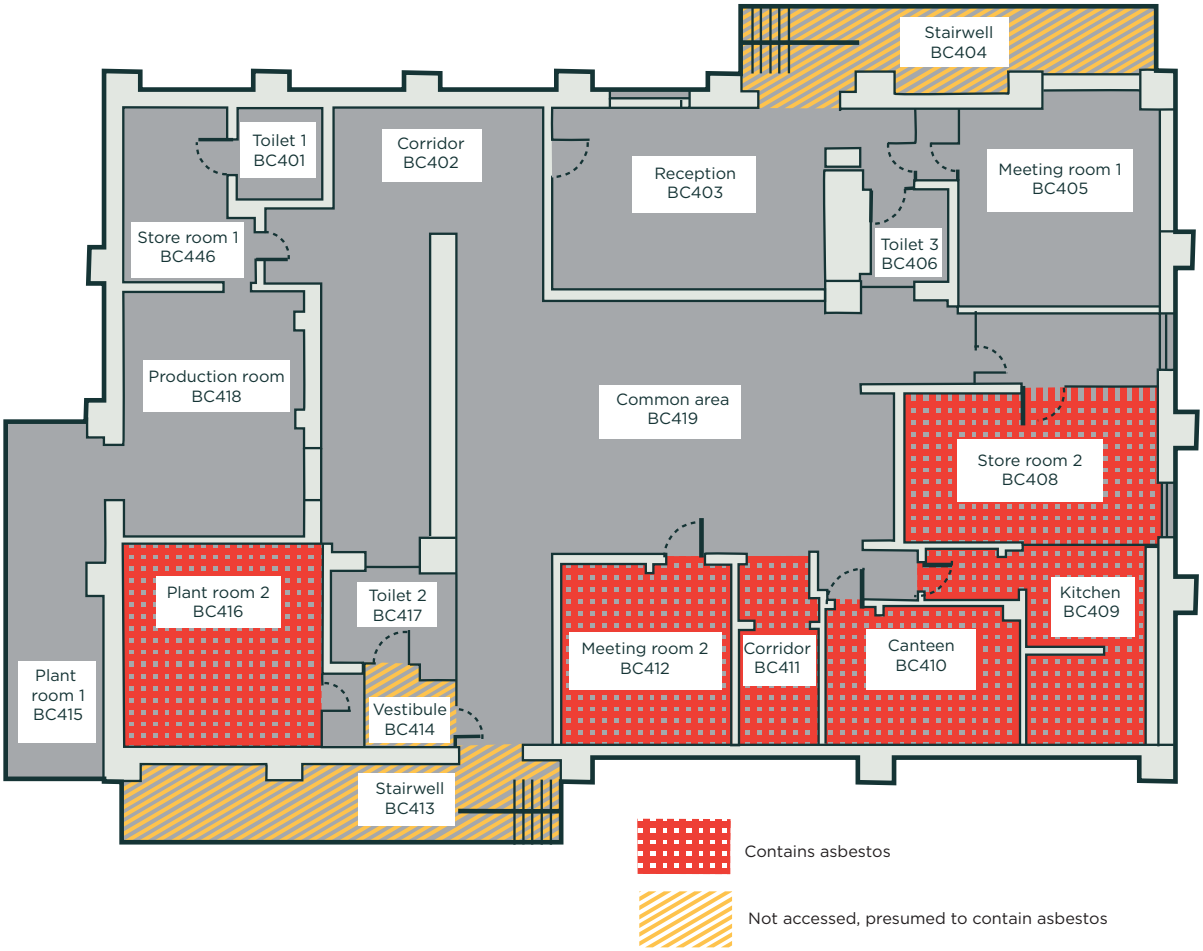


FIGURE 3: Example of asbestos building plan

LOCATION	PRODUCT TYPE	EXTENT	ACCESSIBILITY	CONDITION	SURFACE TREATMENT	ASBESTOS TYPE	SAMPLE NUMBER	NUMBER OF SAMPLES OR PRESUMED	MATERIAL ASSESSMENT SCORE/ ACTION	PRIORITY SCORE/ ACTION
Storeroom 2 BC408 **Ceiling**	AIB	Whole ceiling 120m2	Medium	Good	Painted one side only	Amosite	1	4 samples	5	12
Storeroom 2 BC408 **Fire door**	AIB	21m2	Medium	Good	Encapsulated by wood	Amosite	2	1 sample	5	12
Corridor BC411 **Electrical switch box**	Woven cloth	Possible 4 items	Medium	Medium	Unsealed	Chrysotile	5	Presumed	8	14 remove
Plant room 2 BC416 **Pipe lagging**	Pipe insulation	24 linear metres	Easy	Good	1 face sealed and labeled	Chrysotile	8	4 samples	5	14 monitor weekly

TABLE 20: Example of asbestos survey results

8.7 Asbestos survey report: Bulk analysis results

Include the bulk certificate issued by an accredited laboratory showing the results of the analysis of the samples taken. This data can be listed in an appendix to the survey report. The following information must be included in the bulk certificate:

- the name and address of the laboratory carrying out the bulk identification
- a reference to the method used
- information on the laboratory's current IANZ or NATA accreditation for bulk asbestos analysis/sampling including relevant accreditation body insignia and accreditation number
- results of the bulk analysis, including asbestos found or not found and types identified, by sample identifier
- dates the bulk analysis was carried out and reported by the laboratory
- the names and signatures of the analyst and countersigning person (key technical person or laboratory manager).

8.8 Asbestos survey report: Conclusions and actions

The conclusions and actions section should provide a summary of the findings of the asbestos survey.

It should also outline the recommended steps to manage any identified asbestos material. This should be based on the material and priority assessments conducted during the survey.

The key points should include:

- a summary of survey findings
- recommended actions based on assessment results
- priorities for remedial actions
- any comment or recommendation on when a reinspection survey might be needed.

8.9 Check the survey report

Every report produced should be carefully checked before being issued to the commissioning PCBU. Ideally, this check should be completed by a competent person who was not involved with that specific asbestos survey.

Checking the survey report can help to make sure that the report's contents are technically consistent, accurate, and complete.

This table shows examples of keys things to confirm when checking a survey report.

KEY THINGS TO CONFIRM WHEN CHECKING A SURVEY REPORT	
○	– Make sure the commissioning PBCU's instructions for the survey and report have been followed.
○	– Confirm all site notes agree with the final report.
○	– Verify no observed asbestos materials have been left out of the report.
○	– Make sure all appendices are included as required.
○	– Check all titles, reference numbers, and descriptions are correct.
○	– Verify the assessments and recommendations for any remedial work are appropriate.
○	– Confirm the report summary is included and is a fair statement.

TABLE 21:
Examples of keys things to check when checking a survey report

9.0
Manage survey quality

IN THIS SECTION:

Regular reinspection of a portion of surveys should be done to make sure that surveys are accurate and of a good quality.

9.1 Quality management systems

To make sure high standards are maintained, all organisations (including sole traders) should implement a quality management system.

Quality management systems should include quality control measures for survey work.

What is a quality management system?

A quality management system is a structured framework that sets out the procedures, processes, and responsibilities for achieving quality objectives.

An effective quality management system helps an organisation to consistently deliver high-quality services that meet commissioning PCBUs' and regulatory requirements.

All PCBUs that carry out asbestos surveys (including sole traders) should maintain written quality management procedures and keep records of audits and checks.

To manage the quality of asbestos surveys, the quality management system should include measures to make sure that surveys are accurate and reliable. Consider engaging an independent organisation for an annual audit of completed surveys.

9.2 Quality assurance for asbestos surveys

A portion of surveys (for example, 5%) should be reassessed during the survey process to make sure that the survey is accurate.

When selecting sites to reassess, make sure that the chosen sites are representative of the different types of surveys performed by the business and consider focusing on sites where new or recently employed surveyors have worked.

In cases where it is not practical to carry out a reassessment of an entire site, a representative part of the site should be reassessed.

9.3 Manage quality by reassessment

This table shows key areas to check during a survey reassessment.

Where errors are identified following a reassessment, arrangements should be in place to rectify the situation, including retraining and supervision of workers where needed.

ASBESTOS SURVEY REASSESSMENT CHECKLIST	
○	– Verify no asbestos materials or suspected asbestos materials were omitted from the recorded data.
○	– Make sure all recorded asbestos material and suspected asbestos material were valid.
○	– Confirm assumptions about asbestos type are valid where asbestos material was presumed.
○	– Check all identifiers for records, sample numbers, and photo numbers correspond and are unique.
○	– Confirm all inspected areas were correctly and clearly identified.
○	– Confirm all 'no access' areas and make sure they were correctly and clearly identified.
○	– Confirm all material types for asbestos material and suspected asbestos material were correctly listed.
○	– Make sure all recorded asbestos material and suspect asbestos material were correctly and uniquely located.
○	– Verify the quantities of asbestos material and suspected asbestos material were correctly assessed.
○	– Make sure correct assessments were made and recorded for: - asbestos product type - surface treatment - damage - accessibility.
○	– Confirm adequate numbers and sizes of samples were collected, correctly labelled, and individually double bagged.
○	– Verify adequate cleaning was carried out after sampling.
○	– Make sure sampling sites were made good in the agreed manner and in accordance with the plan of work.

TABLE 22:
Checklist for asbestos survey assessment

9.4 Conduct audits of completed asbestos surveys

Do an audit of the quality management system at least annually. This audit should review:

- the format of asbestos survey reports (such as their structure and content)
- how data about surveys is gathered and reported (such as ensuring the data gathered about survey quality is accurate)
- who is authorised or approved to check survey reports (for example, their experience and any relevant certifications or qualifications)
- how the commissioning PCBUs' instructions are followed
- how data is stored, including site logs and compiled reports.

10.0
Tools and equipment

IN THIS SECTION:

Asbestos surveyors should select the correct tools and equipment for any work on asbestos material.

10.1 Use the right tools and equipment

Care should be taken when choosing the appropriate tool for surveying and sampling.

Tools and equipment that generate dust may be used, but under strict controls. These are referred to as controlled tools and equipment.

Some tools and equipment, such as high-pressure water sprayers and air compressors, are prohibited for any use on asbestos. These are unlikely to be needed for surveying work.

For a list of the tools and equipment commonly used in surveying and sampling, see Appendix 3: Example of a survey and sampling equipment checklist

10.2 Controlled tools and equipment

Power tools and other equipment (including, drills, brushes, or brooms) may only be used on asbestos material if:

- the equipment is enclosed while being used
- the equipment is designed to capture or suppress airborne asbestos, and is used according to manufacturer's instructions
- the equipment is used in a way designed to capture or suppress airborne asbestos safely, such as through engineering control measures like dust suppression or extraction ventilation
- a combination of the above.

Where possible, use non-powered hand tools. If more force is needed, consider using low-speed, battery-powered tools that can be used with wetting methods to minimise the release of dust.

When using power tools with dust suppression or extraction, air monitoring must be carried out to ensure the controls in place are effective in reducing the release of fibres.

More information about this will be provided in the upcoming good practice guidelines for asbestos assessments. You can find more information about the development of this and other new asbestos guidance here We are updating our asbestos guidance

10.3 Prevent tool contamination

There is a risk of cross-contamination when tools are used for surveying and sampling.

All tools and equipment used for sampling suspected ACMs must be thoroughly decontaminated. If thorough cleaning is not possible due to hard-to-reach areas like hollows, grooves, or dust reservoirs, the tools should be cleaned as much as possible.

The tools should then be sealed in a marked bag or container and clearly labelled to indicate asbestos contamination.

More information about this will be provided in the upcoming good practice guidelines for asbestos removal. You can find more information about the development of this and other new asbestos guidance here We are updating our asbestos guidance

10.4 Industrial vacuum cleaners

Vacuum cleaners used for hazardous dusts such as asbestos, must be fit for purpose to make sure the dust is safely captured and contained.

Domestic or standard commercial vacuums are not suitable for this purpose, regardless of the filter used.

Industrial vacuums rated for use with hazardous dusts are classified as L, M, or H, which refer to the hazard rating: light, medium, or high hazard.

The commonly used vacuum by surveyors is the H-type. This is used to shadow vacuum when taking a sample to capture fugitive dust at a particular source and used at the early stages of decontamination.

Licensed asbestos assessors and licensed asbestos removalists use the H-type vacuum to control the risk of exposure.

> Asbestos is classified as a high hazard, so only H-class industrial vacuums should be used for work involving asbestos material (including asbestos-contaminated dust).
>
> High-efficiency particulate air (HEPA) filter **does not** mean H-class.

10.5 Vacuum cleaner filters

Filters used in vacuum cleaners for hazardous dusts must:

- be designed to fit the specific model of the vacuum cleaner being used
- achieve the same or higher filtration efficiency that the vacuum cleaner is rated for.

Class H14 vacuum cleaners used for asbestos work should not be used on wet materials or surfaces unless designed for that type of work.

For more information on how to select the right industrial vacuum or filter, or how to maintain a vacuum, see WorkSafe's webpage Industrial vacuums and portable extractors for hazardous dust

10.6 Maintaining and transporting vacuum cleaners used for asbestos

When vacuum cleaners have been used with asbestos, removal and disposal of the contents must be performed by a competent person. Vacuum cleaners should be maintained according to the manufacturer's guidance, which can include DOP (Dispersed Oil Particulate) testing.

DOP testing ensures HEPA filters in H-class vacuums and negative pressure units work properly by detecting particle leaks, ensuring no harmful fibres are released.

H-Class vacuum cleaners used on asbestos should be inspected and tested at least annually.

Competent person

A competent person is someone who has the appropriate skills, training, knowledge, and experience to perform the task or role.

The competent person should:

- wear personal protective equipment (PPE), including appropriate respiratory protective equipment (RPE) (which has been fit-tested)
- seal or cordon off an appropriate area to prevent unnecessary dust exposure to others
- make sure the dust bag has been removed and disposed of first
- use a damp cloth to clean the dust off the outside of the vacuum, and any inside parts that can be accessed
- dispose of dust and containment bags and contaminated damp cloths as asbestos waste in tightly sealed and labelled bags or containers
- only dispose of asbestos waste at authorised asbestos disposal sites.

For a more thorough clean, it can also be cleaned using another industrial vacuum cleaner.

Only use this method if the other vacuum cleaner is rated at the same class, or higher. A licensed asbestos assessor could perform this function in a controlled environment.

Dry brushing or using compressed air should never be used to clean vacuums. These methods cause the hazardous dust to spread and become airborne. Compressed air can also damage the filters, making them ineffective.

Treat vacuum cleaners used for asbestos work as asbestos waste during transportation. This means double bagging the vacuum cleaners and any hoses and attachments in suitable asbestos waste bags, clearly identified as containing asbestos.

Appendices

IN THIS SECTION:

Appendix 1: Glossary

TERM	DEFINITION
Accredited laboratory	A laboratory that is accredited by International Accreditation New Zealand (IANZ) or National Association of Testing Authorities (NATA). A laboratory may also be approved by WorkSafe to analyse samples for the presence of asbestos or asbestos-containing material (ACM) for up to 12 months while obtaining accreditation.
Air monitoring	Measuring airborne asbestos fibres by sampling and analysing them.
Airborne contamination standard for asbestos	The average concentration of 0.1 respirable fibres per millilitre of air over any eight-hour period.
Asbestos	A naturally occurring fibrous silicate mineral (rock-forming mineral). There are two groups of asbestos (serpentine and amphibole), and six common types: – chrysotile asbestos (white) – crocidolite asbestos (blue) – grunerite (or amosite) asbestos (brown) – actinolite asbestos – anthophyllite asbestos – tremolite asbestos.
Asbestos assessors	Asbestos assessors are authorised by WorkSafe to assess if asbestos removal work has been completed to the required standard and that the area where asbestos removal took place is safe for reoccupation. Only an independent licensed asbestos assessor can carry out regulated activities for Class A removal work. This includes: – air monitoring – clearance inspection – issuing clearance certificates. An independent licensed asbestos assessor may also carry out other activities as part of contractual obligations. For example, they could review a work plan made by an asbestos removalist before removal work, to make sure it is safe and suitable.
Asbestos Management Plan (AMP)	A document that sets out where any identified asbestos material is present and how it will be managed.
Asbestos identification and management process	A process that can be followed, which sets out how to manage asbestos material in a building or workplace. Its steps include information about how to: – identify asbestos material in a building or workplace – prioritise and manage the risks of asbestos – keep up-to-date records of the asbestos management approach.
Asbestos management survey	An assessment of a building or workplace undertaken by an asbestos surveyor to: – identify and record the location, amount, and type of asbestos material readily accessible during normal occupancy of the building (including maintenance) – inspect and record information about the condition of asbestos material present – confirm whether material suspected to be asbestos material is asbestos material.
Asbestos refurbishment or demolition survey	An assessment of a building undertaken by an asbestos surveyor when a building or workplace (or part of it) is going to be refurbished or demolished. The purpose of a refurbishment/demolition survey is to locate all the asbestos material in a building or workplace (or part of it) before refurbishment or demolition work starts.
Asbestos register	A document that lists all identified or presumed asbestos in a building or workplace.
Asbestos Regulations	The Health and Safety at Work (Asbestos) Regulations 2016.
Asbestos Removal Control Plan (ARCP)	A document prepared by a licensed asbestos removalist that includes information about: – how the asbestos removal will be carried out (including the method, tools, equipment, and PPE that will be used) – the asbestos material that will be removed (including its location, type, and condition) – the asbestos removal area for the work and any air monitoring points – how asbestos waste will be transported and disposed of.

TERM	DEFINITION
Asbestos removal licence	A Class A or Class B asbestos removal licence.
Asbestos removal work	Work involving the removal of asbestos, asbestos-contaminated soil, or asbestos-containing material.
Asbestos removalist	A PCBU that carries out asbestos removal work.
Asbestos surveyor	A PCBU that carries out asbestos survey work.
Asbestos waste	Asbestos material, asbestos-contaminated soil, or asbestos-containing material that has been removed. Asbestos waste also includes items used during work with or on asbestos material (such as plastic sheeting and disposable PPE) that needs to be disposed of.
Asbestos Containing Material (ACM)	Any material or thing that, by its design, contains asbestos.
Asbestos Contaminated Dust (ACD)	Dust or debris that has settled in a workplace and is (or is presumed to be) contaminated with asbestos.
Asbestos contaminated soil	Soil that is contaminated with asbestos material.
Asbestos related work	Work involving asbestos other than asbestos removal work.
Business or undertaking	The usual meanings are: – business: an activity usually carried out with the intention of making a profit or gain – undertaking: an activity that is non-commercial in nature (for example, certain activities of a local authority or a not-for-profit group).
Certified (training)	A certificate obtained from a training provider for undergoing training for either Class A or Class B licensed asbestos removal work.
Class A asbestos removal licence	A licence that authorises the holder to carry out Class A asbestos removal work. This includes 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 or ACM.
Class A asbestos removal work	Asbestos removal work for which a Class A asbestos removal licence is required for friable asbestos.
Class B asbestos removal licence	A licence that authorises the holder to carry out Class B asbestos removal work, including: – any amount of non-friable asbestos or ACM – ACD associated with removing any amount of non-friable asbestos or ACM.
Class B asbestos removal work	Asbestos removal work for which a Class B asbestos removal licence is required for non-friable asbestos.
Clearance inspection	An inspection of an asbestos removal area after asbestos removal work has been completed to verify that the area is safe for normal use.
Competent person	Competent person means a person who has the knowledge, experience, skills, and qualifications to carry out a particular task under the Asbestos Regulations, including any knowledge, experience, skills, and qualifications prescribed in a safe work instrument.
Control measure	A way of eliminating or minimising risks to health and safety.
Demolition	Demolishing or dismantling a structure, or part of a structure, or equipment that is loadbearing or otherwise related to the physical integrity of the structure.
Duty	A legal obligation to act responsibly according to the law.
Duty holder	A person who has a duty under HSWA. There are four types of duty holders – PCBUs, officers, workers and other persons at workplaces.
Eliminate	To remove the sources of harm (such as equipment, substances, or work processes).

TERM	DEFINITION
Emergency	An uncontrolled event that has caused, or could cause: – loss of life – injury – serious property damage. It can include declarations of civil defence emergencies, fires, or other significant incidents. It does not include delays unless these are the result of one of the above situations.
Friable	In a powder form or able to be crumbled, pulverised, or reduced to a powder by hand pressure when dry.
Good Practice Guidelines (GPG)	Describes current 'good practice' to help duty holders understand and apply their duties under HSWA.
GRWM Regulations	Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.
Hazard	A potential source of harm. It could include an object, situation, or behaviour.
Health monitoring	Monitoring a person to identify any changes in their health status because of exposure to certain health hazards arising from the conduct of the business or undertaking. Health monitoring is a way to check if the health of workers is being harmed from exposure to hazards while carrying out work. It aims to detect early signs of ill-health or disease.
Homogeneous materials	Material that is like in colour and texture, and uniform in nature.
HSWA	Health and Safety at Work Act 2015. The key work health and safety legislation in New Zealand. HSWA applies to all work and workplaces unless specifically excluded. For the full text of the Act, see New Zealand Legislation website
IANZ	International Accreditation New Zealand.
Licensed asbestos assessor	A competent person licensed by WorkSafe to carry out clearance inspections for Class A asbestos removal work.
Licensed asbestos removal work	Removal work for which a Class A or Class B asbestos removal licence is required.
Licensed asbestos removalist	A PCBU that holds a Class A or Class B asbestos removal licence.
Material assessment	The process of identifying and evaluating materials in a building that may contain asbestos. It includes inspecting, sampling, and assessing the condition of these materials to determine the potential risk of exposure and how to manage or remove them safely.
Minimise	To take steps that protect the health and safety of people by reducing the likelihood of an event occurring, reducing the level of harm to people if it does occur, or both.
NATA	National Association of Testing Authorities (Australia)
Non-friable asbestos	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).
Other persons at the workplace	Includes workplace visitors and casual volunteers (who are not volunteer workers). These people have their own health and safety duties to take reasonable care to keep themselves safe and to not harm others at a workplace.
Overlapping duties	When a PCBU shares duties with other PCBUs. When two or more PCBUs are working together at the same location or through a contracting chain, they must work together to fulfil their duties of care and manage risks. Where those duties overlap, the PCBUs must consult, cooperate and coordinate with each other to meet their health and safety responsibilities to workers and others.

TERM	DEFINITION
PCBU	Person conducting a business or undertaking. In most cases a PCBU will be a business entity, such as a company. However, an individual carrying out business as a sole trader or self-employed person is also a PCBU. A PCBU does not include workers or officers of a PCBU, volunteer associations with no employees, or home occupiers that employ or engage a tradesperson to carry out residential work.
Plant	Includes: – any machinery, vehicle, vessel, aircraft, equipment (including personal protective equipment), appliance, container, implement, or tool – any component of any of those things – anything fitted or connected to any of those things.
Policy clarification	Aims to 'clear things up' – by clarifying WorkSafe's approach on a specific issue.
Position	Outlines how WorkSafe interprets key concepts in law.
PPE	Personal protective equipment. Anything used or worn by a person (including clothing) to minimise risks to the person's health and safety. This may include – but is not limited to: – respiratory protective equipment – protective helmets – protective eyewear – protective boots – protective gloves – hearing protection – high-vis clothing – sunhats – sunscreen and lip protection – safety harness systems.
Primary duty of care	A PCBU must ensure, so far as is reasonably practicable, the health and safety of workers, and that other persons are not put at risk by its work. This is called the 'primary duty of care'.
Readily accessible	The document can be accessed without difficulty in hard copy, electronic form, or any other form.
Reasonably practicable	What is or was reasonably able to be done to ensure health and safety taking into account and weighing up relevant matters including: – the likelihood of the risk concerned occurring or workers being exposed to the hazard – the degree of harm that might result – what the person concerned knows, or ought reasonably to know, about: - the hazard or risk - ways of eliminating or minimising the risk – the availability and suitability of ways to eliminate or minimise the risk – after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk. For more information, see WorkSafe's fact sheet Reasonably practicable
Refurbishment	Carrying out work in a building or structure with an emphasis on changing or upgrading it.
Risk	Risks arise from people being exposed to a hazard (a source of harm).

TERM	DEFINITION
Safe work instrument (SWI)	A type of subordinate instrument (sometimes called tertiary legislation) under HSWA. SWIs can be used for almost any purpose, however, they only have legal effect where specifically referred to in relevant regulations. SWIs can be used to: – prescribe detailed or technical matters or standards that change relatively frequently and will often be industry-specific – set additional or modified control measures for hazardous substances approved or reassessed by the Environmental Protection Authority – provide an alternative means of complying with regulations – support the effective operation of the health and safety regulatory framework, for instance by setting exposure monitoring standards or stipulating requirements for training, competence, or safety management systems.
Safety data sheet (SDS)	Describes the properties and uses of a substance, that is, its identity, chemical and physical properties, health hazard information, precautions for use, and safe handling information.
Sample analysis	Methods used to identify and quantify asbestos in materials or soils.
Shadow vacuuming	Holding a vacuum cleaner nozzle close to the task being performed and sucking the dust and debris away as it is created. In work involving asbestos this should be via a H-Type vacuum that has been recently DOP tested, otherwise there is a risk of mobilising asbestos fibres and creating a contamination scenario.
Trace level	An average concentration over any 8-hour period of less than 0.01 respirable asbestos fibres per millilitre of air.
WEPR Regulations	Health and Safety at Work (Worker Engagement, Participation, and Representation) Regulations 2016.
Worker	An individual who carries out work in any capacity for a PCBU. A worker may be: – an employee – a contractor or subcontractor – an employee of a contractor or subcontractor – an employee of a labour hire company – an outworker (including a homeworker) – an apprentice or a trainee, a person gaining work experience or on a work trial – a volunteer worker. Workers can be at any level (for example, managers are workers too). A PCBU is also a worker if the PCBU is an individual who carries out work in that business or undertaking.
Workplace	Any place where a worker goes or is likely to be while at work, or where work is being carried out or is customarily carried out. Most duties under HSWA relate to the conduct of work. However, some duties are linked to workplaces.
WorkSafe/ WorkSafe New Zealand	The government agency that is the primary work health and safety regulator. Other government agencies can be designated to carry out certain health and safety functions. For example, Maritime New Zealand and the Civil Aviation Authority. Previous work health and safety regulators include OSH, Department of Labour, and MBIE.

Appendix 2: Examples of ACMs and where they might be found

This appendix describes the most common forms of asbestos-containing materials (ACMs). It includes examples of how they are used, where they are found, what they are made of, and how likely they are to release fibres.

This is not a complete list – there may be asbestos in other places and materials.

- Asbestos-containing putty, mastics, grout, and mortar
- Asbestos gaskets and washers
- Asbestos paper, cardboard, and felt
- Asbestos-reinforced plastic/resin composites
- Bitumen materials
- Cement materials
- Domestic appliances and products
- Asbestos insulating board (AIB)/fibrous board
- Flooring
- Friction materials
- Loose insulation
- Metal-asbestos composites
- Millboard
- Other asbestos products
- Sprayed coatings
- Textiles
- Textured coatings, paints, and plasters used for decorative effects
- Thermal insulation

Asbestos-containing putty, mastics, grout, and mortar

Builders commonly used asbestos-containing putties and mastics before the 1980s as sealants and fillers around windows, doors, and joints. Many of these products were made in New Zealand or imported, often without clear labels showing they contained asbestos.

Some grout and mortar products used in New Zealand before the 1980s may also contain asbestos. Manufacturers added it to improve strength, durability, and resistance to heat and chemicals.

PUTTY AND MASTIC

Material description/uses

Used:

- commonly in construction and maintenance, particularly before the 1980s
- as sealants, adhesives, or fillers, typically in construction and glazing work
- silicone sealants used for waterproofing, sealing joints, and giving flexibility between materials

Locations

- Putty to seal:
  - windowpanes
  - glass into metal or timber frames
- Mastics for sealing and expansion joints such as:
  - between walls and floors
  - in roofing sheets and guttering
  - around air conditioning ducts, flues, pipes, and ducts
  - under flooring materials like tiles

Asbestos type/material name

- Chrysotile
- Common brand names include Vulcatex, and Orion's Plug Easy

Ease of fibre release

Fibre release can occur if:

- the material is disturbed, cut, sanded, or scraped
- it becomes brittle with age, especially if exposed to heat, UV, or weathering
- it is burned or removed unsafely

Friable/non-friable (if undisturbed)

Non-friable

GROUT AND MORTAR

Material description/uses

Used for:

- filling crevices, especially gaps between wall or floor tiles
- bond building materials such as brick, stone, or tiles

Locations

- Tiling in kitchens, bathrooms, toilets, laundries, and commercial or public floors
- Around kitchen splashbacks
- Around swimming pools and wet areas
- Tiling in industrial facilities with
- Fireplaces and chimneys
- External and internal walls, masonry, or brickwork foundations

Asbestos type/material name

- Chrysotile
- Less commonly amosite and crocidolite (for extra heat resistance)

Ease of fibre release

Fibre release can occur if:

- the material is damaged, cut, drilled, or sanded

Friable/non-friable (if undisturbed)

Non-friable

Asbestos gaskets and washers

A wide range of asbestos gaskets have been produced and used for sealing pipe and valve joints in industrial plant, but they may also be found in some older domestic boilers.

GASKETS AND WASHERS

Material description/uses

Used for:

- braided gaskets used to seal gaps, especially in hot or high-pressure equipment
- rubber gaskets used to make a tight seal

Locations

Domestic and industrial plant and pipe systems such as:

- hot water boilers and pipework
- industrial power and chemical plant
- automotive engines
- mechanical ventilation ducting
- fireproofing
- seals used in boilers, pipe flanges, and cabinet

Asbestos type/material name

- Variable but usually around 90% asbestos
- Crocidolite used for acid resistance and chrysotile for chlor-alkali
- Common brand names include Klinger, Garlock, Durabla, James Walker, and Bonded Seal

Ease of fibre release

Fibre release can occur if:

- it becomes dry and damaged when removed, disturbed, or degraded

Friable/non-friable (if undisturbed)

Friable

Asbestos paper, cardboard, and felt

Asbestos-containing paper, cardboard, and felt was widely used in New Zealand due to their heat-resistant, fireproofing, and insulating properties.

Note: Some materials, such as roofing membranes reinforced with asbestos felt or paper, might be non-homogeneous.

ASBESTOS PAPER

Material description/uses

Used:

- in industrial and construction applications, including insulation, fireproofing, electrical insulation, and as gaskets and seals
- as backing to floor tiles and sheet vinyl
- as a reinforcer in bitumen and similar materials
- as facing/lining to flooring materials, combustible boards, and flame-resistant laminate

Locations

- Around electrical equipment (such as transformers, switchboards, circuit breakers, and electric motors)
- As insulation around piping, walls, and ceilings
- Around and in air-conditioning systems
- Old machinery (such as engines, pumps, and turbines)
- Around fireplaces
- Under flooring material

Asbestos type/material name

These materials typically contained chrysotile and were sometimes mixed with other non-asbestos fibres such as organic fibres and synthetic mineral fibres

Ease of fibre release

- Paper materials, if not encapsulated or combined in vinyl, bitumen, or bonded in some way, can easily be damaged and release fibres
- For example, a worn flooring surface with visible asbestos paper backing may release airborne fibres, especially when disturbed by vacuuming or sweeping floor surfaces

Friable/non-friable (if undisturbed)

Friable

ASBESTOS CARDBOARD

Material description/uses

Used:

- for insulation, fireproofing, and electrical applications
- often manufactured as a composite material with asbestos fibres bonded to a cardboard or fibreboard base

Locations

- Wall and ceiling linings
- Roof spaces
- Around electrical components
- Lining electrical fuse sockets
- Lining on high temperature machinery
- Boilers and furnaces
- Gaskets and seals

Asbestos type/material name

- Most commonly chrysotile
- Amosite and crocidolite (less often)

Ease of fibre release

- Paper materials, if not encapsulated or combined in vinyl, bitumen, or bonded in some way, can easily be damaged and release fibres
- For example, a worn flooring surface with paper backing could release fibres

Friable/non-friable (if undisturbed)

Friable

ASBESTOS FELT

Material description/uses

Used for insulating, fireproofing, and soundproofing

Locations

- Under roofing materials
- As flooring insulation
- Wall and ceiling insulation
- Fireproof doors, partitions, curtains, and screens
- Boilers and furnaces
- Brake linings, gaskets, and seals
- Electrical installations

Asbestos type/material name

- Most commonly chrysotile
- Amosite and crocidolite (less often)

Friable/non-friable (if undisturbed)

Friable

Asbestos-reinforced plastic/resin composites

Asbestos-reinforced plastics and resin composite material were used for a range of materials. The material is often black and has a high density and scratch resistance.

ASBESTOS REINFORCED PLASTICS AND RESIN COMPOSITE MATERIAL

Material description/uses

Used for:

- electrical components
- gaskets and seals

Locations

- Windowsills
- Capping for bannisters
- School and laboratory worktops/countertops
- Toilet cisterns
- Electrical mounting boards

Asbestos type/material name

- Resinous composite materials usually contained 10–40% chrysotile
- Amosite has been detected in some materials
- Brand names include Zelemite and Bakerlite
- Resins were reinforced with woven chrysotile cloth usually containing 20–50% asbestos

Ease of fibre release

Fibres unlikely to be released, limited emissions during cutting

Friable/non-friable (if undisturbed)

Non-friable

RESIN-BASED MATERIALS

Material description/uses

Used for:

- welding and fire blankets
- insulating materials

Locations

- Building sites
- Shipyards, workshops, power plants, energy facilities, and welding or metalworking shops
- Firefighting or heavy manufacturing industries

Asbestos type/material name

- 30–70% chrysotile asbestos bound in phenolic resins
- Banned in New Zealand from 2000

Ease of fibre release

Normal handling will produce low emissions

Friable/non-friable (if undisturbed)

Non-friable

Bitumen materials

The combination of bitumen (a tar-like substance) and asbestos fibres provided a material that was resistant to heat, moisture, and wear, making it suitable for a variety of uses, particularly in the construction industry.

Note: Some bitumen materials, such as composite panels, might be non-homogeneous.

Material description/uses

Roofing materials used in:

- asphalt roofing felt and bitumen-based roofing membranes
- roll roofing, roof coatings, roofing, and siding panels
- cement sheets
- bitumen or asphalt shingles
- decramastic roof tiles

Waterproofing used as flexible, waterproof layers

Flooring materials used in:

- bitumastic adhesives and bitumen-based underlays

Bitumen-coated paper, polystyrene, and other coatings used in:

- electrical/heat insulation or as a lining, facing, or reinforcement of other products
- typically used to seal and insulate pipework, tanks, or other industrial plant
- waterproofing or acoustic dampening

Bitumen washers

Locations

- Roofs – flat roofs in particular
- Flooring – vinyl tiles, or in the adhesives or other layers beneath
- Waterproofed areas in basements and foundations
- Older asphalt road surfaces
- Pipes, seals and gaskets, older machinery, electrical installations
- Acoustic dampeners on the back of urinals or underneath sinks
- Washers often used between corrugated cement sheets and the screws on industrial buildings

Asbestos type/material name

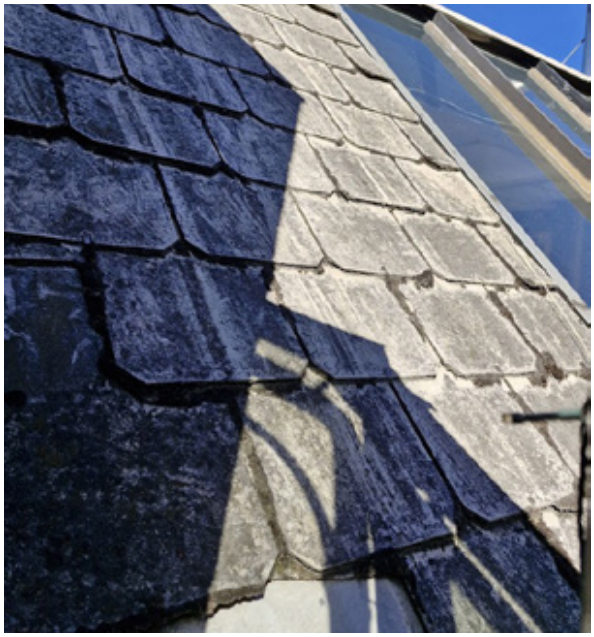
- Anywhere from 1–30% chrysotile depending on the material
- Adhesives may contain up to a few per cent chrysotile asbestos
- Bitumastic membranes may contain 10–25% chrysotile
- Bitumen-coatings may contain asbestos fibres
- Common brand names include Galbestos

Ease of fibre release

- Fibre release unlikely during normal use as the fibres are bound into a bitumen matrix
- Roofing felts and bitumen-based sealants must not be burnt after removal

Friable/non-friable (if undisturbed)

Non-friable



Cement materials

Asbestos cement (AC) has been extensively used for roofing and exterior cladding and well as moulded to make materials, such as pipes and tanks.

Note: Some cement materials, such as composite panels, might be non-homogeneous.

COMPRESSED FLAT SHEET

Material description/uses

Manufacturers used organic material to reduce asbestos, beginning in the 1970s but mostly during the 1980s

Used for:

- tiles and roof slates
- cladding, decking, and board

Locations

- Roofing
- Wall cladding, pebble cladding (pebble dash/ roughcast), faux-brick or timber (imitation) cladding
- Permanent formwork
- Cooling tower elements
- Infill panels below windows on prefabricated buildings

Asbestos type/material name

- 10–25% asbestos (some flexible sheets contain a proportion of cellulose)
- Chrysotile was commonly used, but crocidolite and amosite haves also been used
- Up to 50% chrysotile
- Common brand names include Super Six, Fibrolite, Durock, Durotherm, Hardiflex, Harditherm, Hardiplank, Coverline, Highline, Villaboard, Versilux

Ease of fibre release

- Likely to release increasing levels of fibres if abraded, hand sawn or worked on with power tools
- Exposed surfaces and acid conditions will remove cement matrix and concentrate unbound fibres on surface and sheet laps
- Cleaning asbestos-containing roofs may also release fibres

Friable/non-friable (if undisturbed)

Non-friable

SEMI-COMPRESSED SHEET

Locations
- Partitioning in farm buildings
- Infill panels for housing
- Formwork in industrial buildings
- Decorative panels for facings
- Bath panels
- Soffits, gable ends and fascias
- Linings to walls and ceilings
- Portable buildings
- Propagation beds in horticulture
- Fireplace surrounds
- Weather boarding

Asbestos type/material name
- Same as for profiled sheets
- Also 5–25% chrysotile and some amosite for asbestos wood used for fire doors.
- Composite panels contained – 4% chrysotile or crocidolite
- Common brand names include Fibrolite, Durock, Coverline, Highline, Villaboard, and Versilux

Ease of fibre release
Same as for profiled sheets

Friable/non-friable (if undisturbed)
Non-friable

PRE-FORMED MOULDED AND EXTRUDED MATERIALS

Locations
- Cable troughs and conduits
- Cisterns and tanks
- Drains and sewer pressure pipes
- Fencing
- Roofing components ridge capping
- Gutters, downpipes, flues, and flue caps
- Ventilators and ducts
- Weather boarding
- Windowsills and planter boxes
- Bath panels
- Draining boards
- Extraction hoods

Asbestos type/material name
- Same as for profiled sheets
- Common brand names include Mighty Pipe, Mighty Board, Monier, Super Six, A.C Pipes, Durock, Coverline, Highline, Bristol, Fibrolite, and Decramastic tile

Ease of fibre release
Same as for profiled sheets

Friable/non-friable (if undisturbed)
Non-friable

Domestic appliances and products

Many older domestic appliances and products contained asbestos insulation materials for thermal or electrical insulation.

Note: Some domestic appliances and products may contain layers of asbestos insulating boards or linings hidden beneath or inside metal or plastic casings; and may be non-homogeneous.

Product description/uses

For example:

- ironing boards
- hairdryers
- oven seals
- simmering plates
- electric fires
- storage radiators
- gas fires with catalytic elements
- coal or log effect gas fires

Friable/non-friable (if undisturbed)

Non-friable

Asbestos insulating board (AIB)/fibrous board

Widely used for internal partition walls and linings, and for fire protection, acoustic and thermal insulation. AIB comes in a range of densities and can be easily damaged. This material was also used in composite materials and may be sandwiched between or covered with non-asbestos materials.

All kinds of combinations are found, and surveyors should look out for all possible uses.

Material description/uses

- Fire protection
- Thermal and acoustic insulation
- Resistance to moisture movement
- General building board
- Suspended ceiling tiles
- Backing behind ceramic wall tiles
- Composite material cores and linings
- Between/covering non-asbestos materials (such as strawboard, plywood, metal mesh, sheet metal, and plasterboard)

Locations

- Facings around lift shafts, stairwells, and service ducts
- Firebreaks
- Roof underlay, partition and ceiling panels, wall linings, and cladding infill panels
- Areas around gas fires and central heating boilers
- Fire doors facing and cores
- Suspended floor systems and ceilings in older commercial buildings and schools
- Domestic boiler casings and oven linings
- Fibrous/insulating board is usually found indoors but it may be in weather-protected outdoor areas (such as canopies, porches, and soffits)

Asbestos type/material name

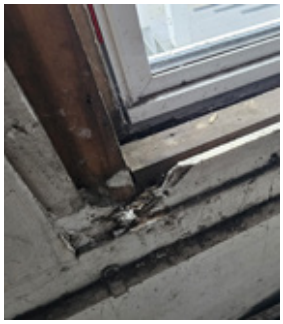
- Fibrous/insulating board contains mostly amosite but also contain chrysotile and crocidolite
- Usually 15–25% amosite or a mixture of amosite and chrysotile in calcium silicate. Older boards and some marine boards contain up to 40% asbestos
- Common brand names include Hardie branded materials (Asbestolux, Harditherm, Versilux, and Villaboard), Monier, Fibrolite, Durock, Coverline, and Mighty Board

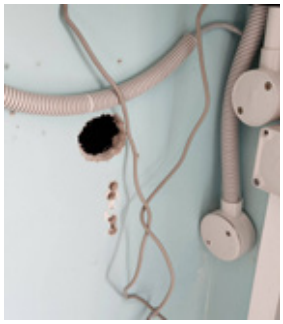
Ease of fibre release

- Fibrous/insulating board can be readily broken, giving significant fibre release
- Significant surface release is possible by abrasion, but surfaces are usually painted or plastered
- Sawing and drilling can also release a lot of fibres

Friable/non-friable (if undisturbed)

Friable





Flooring

Polyvinyl chloride (PVC or vinyl) tiles and thermosplastic tiles were manufactured with added asbestos. Sheet floor coverings were sometimes backed with a thin layer of chrysotile. Some underfelts for carpets and linoleum were also manufactured containing asbestos. The mastics which were used to bond the floor covering to the surface could also contain asbestos (see Bitumen materials).

Note: Some flooring, such as vinyl floor tiles and carpet underlay made from recycled jute bags, might be non-homogeneous.

Material description/uses

- Thermoplastic floor tiles
- Pvc vinyl floor tiles and unbacked pvc flooring
- Asbestos paper-backed pvc floors
- Magnesium oxychloride was a harder wearing flooring used in bathrooms, staircases, and for industrial flooring
- Carpet underlay made from recycled jute bags, used for cushioning and soundproofing

Locations

- Floors – particularly in bathrooms, kitchens, hallways
- Commonly used in schools, hospitals, and other public buildings

Asbestos type/material name

- Typically, chrysotile
- Pvc or vinyl tiles typically were 5–7% chrysotile
- Paper backing can be 100% chrysotile
- Magnesium oxychloride flooring may contain about 2% of mineral fibres which could be asbestos
- Common brand names include Armstrong, Forbo, Gerflor, Icopal, Kensington, Noddy, Polyflor, Shaw Industries, Solco, Tarkett, and Terrazzo

Ease of fibre release

- Fibre release is unlikely under normal use if it remains in good condition
- Fibre may be released when material is cut, and there may be substantial release where flooring residue, particularly paper backing, is power-sanded

Friable/non-friable (if undisturbed)

Friable:

- thermoplastic floor tiles (depending on the type)
- vinyl sheet-backing material
- carpet underlay made from recycled jute bags that contain asbestos

Non-friable:

- PVC vinyl floor tiles and unbacked flooring
- asbestos paper-backed PVC floors
- magnesium oxychloride flooring

Friction materials

Asbestos was widely used as a reinforcing material in friction materials (such as conveyor and fan belts, brake and clutch linings). Older asbestos-containing components may still be in use in vehicle repair and maintenance workshops.

ASBESTOS-REINFORCED PLASTICS AND RESIN COMPOSITE MATERIAL

Material description/uses
Used for brakes and clutch plates

Locations
- Older vehicles made before the 1990s
- Industrial equipment, tractors, and forklifts
- Vehicle repair and maintenance workshops
- Scrap yard parts from old vehicles or equipment

Asbestos type/material name
- Resinous composite materials usually contained 10–40% chrysotile
- Amosite has been detected in some materials
- Brand names include Zelemite and Bakerlite
- Resins were reinforced with woven chrysotile cloth usually containing 20–50% asbestos

Ease of fibre release
Fibres unlikely to be released, limited emissions during cutting

Friable/non-friable (if undisturbed)
Non-friable

RESIN-BASED MATERIALS

Material description/uses
Used for brakes and clutch plates

Locations
Transport, machinery and lift motors

Asbestos type/material name
- 30–70% chrysotile asbestos bound in phenolic resins
- banned in New Zealand from 2000

Ease of fibre release
- Normal handling will produce low emissions, but dust may build up with friction debris
- Grinding brake and clutch components and brushing or blowing clean can produce significant airborne levels

Friable/non-friable (if undisturbed)
Non-friable

DRIVE BELTS/CONVEYOR BELTS

Locations
- Engines
- Conveyors

Asbestos type/material name
Chrysotile textiles encapsulated in rubber

Ease of fibre release
Low friability, except when worn to expose textile

Friable/non-friable (if undisturbed)
Non-friable

Loose insulation

Loose-fill asbestos was often used as insulation material in homes and buildings during the mid-20th century. It was typically blown or poured into wall cavities, ceilings, and attics to help with heat and acoustic insulation. This type of insulation was mostly pure asbestos. It is a friable material, posing a very high risk for asbestos exposure/contamination.

Material description/uses

- Loose fill (sometimes called asbestos wool)
- Used for:
  - filling quilts and blankets
  - insulation in ceiling spaces
  - 'jiffy bag' type bags/sacks stuffed with loose asbestos

Locations

- Wall cavities, between floors, ceilings, and attics
- Penetration filling material between floors in multi-story buildings
- Packed around electrical cables in service ducts
- Quilts and blankets used for thermal insulation of industrial boilers, and other items of hot plant and equipment
- Paper bags/sacks used for acoustic insulation under floors and in walls
- Some fire doors contained loose asbestos insulation sandwiched between the wooden or metal facings

Asbestos type/material name

- Usually pure asbestos except for lining/bags
- Some old blankets/quits contained amosite
- Sound insulation often included amosite

Ease of fibre release

- Loose asbestos may release significant levels of airborne asbestos fibre if disturbed
- Dry materials have an even greater exposure risk
- Covers/bags may deteriorate or be easily damaged by repair work or accidental contact

Friable/non-friable (if undisturbed)

Friable

Metal-asbestos composites

Metal-asbestos composites are materials made by combining asbestos fibres with metal components.

Material description/uses

Used:

- in metal flues where asbestos was added as insulation between the inner and outer layers of stainless steel to give a high degree of insulation when passing through floors and on the outside to prevent sudden cooling of the flue gases
- in fire doors, where a layer of asbestos was incorporated between steel panels

Locations

- Flues connected to wood-burning stoves
- Fire doors

Asbestos type/material name

- Chrysotile
- Common brand names include Durasteel

Friable/non-friable (if undisturbed)

Non-friable

Millboard

Asbestos millboard was commonly used in industrial settings for insulation and fireproofing due to its heat-resistant properties.

Material description/uses

- A thick, rigid material made from a combination of asbestos fibres and other substances
- It was primarily used for its heat-resistant and insulating properties
- Commonly used for fire protection, electrical insulation, and switchboards, and for wall and ceiling linings

Locations

- Generally found in commercial and industrial buildings
- Exterior and interior lining on ventilation ducting particularly around inline heaters
- Inside fire doors
- Wall panels behind ovens in old kitchens
- Walls around and adjacent to fireplace and heaters

Asbestos type/material name

- Usually, chrysotile but crocidolite was also used
- Millboards may contain 37–97% asbestos, with a matrix of clay and starch
- Common brand names include Asbestolux and Vermiculite

Ease of fibre release

- Millboard has a high asbestos content and low density so is quite easy to break
- The surface is vulnerable to abrasion and wear

Friable/non-friable (if undisturbed)

Friable

Other asbestos products

ACETYLENE CYLINDERS

Acetylene cylinders are filled with a porous solid, then acetylene is added as a solution in liquid acetone to help dilute the gas to reduce the risk of them exploding. This is different from most other compressed gases.

Early cylinders were completely filled with diatomaceous earth, charcoal, asbestos, and cement. The earth and charcoal made the material porous, the asbestos added strength, and the cement held it all together. By 1994, cylinders were usually filled with silica and lime, though some manufacturers still added asbestos, charcoal, or other materials.

Material description/uses

Used for:

- oxy-acetylene welding and cutting
- brazing and soldering
- heating metals in industrial and mechanical work commonly used

Locations

- Engineering workshops
- Automotive repair shops
- Industrial sites and factories
- Construction sites
- Farms and rural properties
- School and polytechnic metalwork rooms

Asbestos type/material name

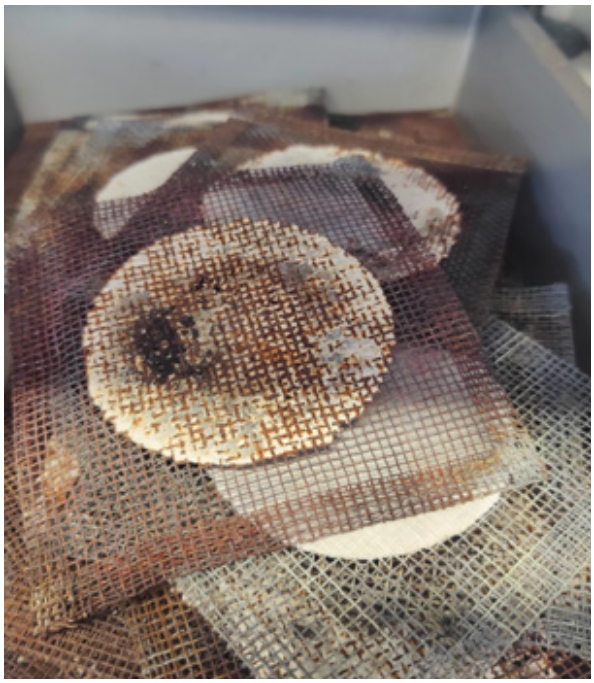
- Chrysotile, amosite, or crocidolite depending on the manufacturer and era
- Common brand names include BOC, Coregas, Eziswap Gas, and Air Liquide

Ease of fibre release

- Low under normal use as the asbestos is sealed inside the cylinder
- Risk increases only if the cylinder is cut open, damaged, or dismantled

Friable/non-friable (if undisturbed)

Non-friable



Spray coatings

These are typically coatings sprayed or trowelled onto surfaces. Often used for fire protection and thermal or acoustic insulation in larger scale commercial and industrial buildings, as well as decorative purposes.

The depth of the spray usually varies from 10 to 150 mm thick. Dry sprayed coatings may have a candyfloss appearance if left untamped. Wet sprayed/trowelled coatings are usually denser. Coatings with higher proportions of Portland cement that have been well tamped can be quite hard.

Surfaces may be sealed with an elasticised paint or proprietary encapsulant, reinforced with calico or man-made fibre mesh, or left completely unsealed.

Material description/uses

Normally homogeneous coatings sprayed or trowelled onto surfaces

Used for:

- fireproofing
- thermal/anti condensation insulation
- acoustic insulation

Locations

- Underside of roofs and sides of industrial buildings
- Widely used in the marine industry
- On steel and reinforced concrete beams/columns and on underside of floors
- Sprayed onto walls and ceilings for acoustic and decorative purposes. For example:
  - theatres
  - cinemas
  - studios
  - halls
- Commonly found adjacent surfaces resulting from overspray of target areas

Asbestos type/material name

- Sprayed coatings usually contain 55%–85% asbestos with a Portland cement binder
- Sprayed coatings such as Vermiculite typically contain chrysotile, but other sprayed coatings may contain all three common asbestos types
- Common brand names include Isolantite, Limpet, Monokote, and Super Six

Ease of fibre release

- Spray coatings are considered a friable acm and may release airborne asbestos fibres if disturbed
- Sprayed coatings are vulnerable to accidental damage and delamination due to water leakage
- Damaged spray coatings may release debris onto the floor and other horizontal surfaces below
- Dust released may accumulate on false ceilings, wiring and ventilation systems
- Unsealed surfaces have a higher risk of fibre release if disturbed

Friable/non-friable (if undisturbed)

Friable

Textiles

Asbestos textiles were manufactured for heat or fire protection uses. Textiles were also used widely as a reinforcing material in friction materials/composites.

Note: Some textiles, such as fire protection, gaskets, or seals using asbestos cloth, might be non-homogeneous.

ROPES, STRINGS, AND YARNS

Material description/uses

Used for:

- lagging, jointing, and packing materials
- as heat/fire-resistant sealing
- caulking in brickwork
- gland packing/seals
- plaited asbestos tubing in electric cable
- arcing barriers in switches and circuit breakers
- by plumbers to seal screw thread joints
- fire rating insulation in gaps above walls and below ceilings etc

Locations

- Lights, electrical boxes, heaters, stoves, and engines
- Around pipes, boilers, ovens, flue seals, and brickwork
- Industrial taps
- Sealing on hot water radiators
- In electric cables and electrical cable shrouding

Asbestos type/material name

- Typically, crocidolite and chrysotile
- Asbestos content approaching 100% unless combined with other fibres

Ease of fibre release

- Fibres may be released when damaged, disturbed, or worn down, causing tiny asbestos fibres to become airborne
- Weaving reduces fibre release from materials, but abrading or cutting the materials will release fibres
- Likely to degrade if exposed, becoming more friable with age
- If used with caulking, fibres will be encapsulated and less likely to be released

Friable/non-friable (if undisturbed)

Friable

CLOTH

Material description/uses

Used for:

- fire protection (fire blankets and pillows, fire curtains, fire-resistant clothing)
- lagging
- jointing, packing
- thermal insulation
- gaskets

Locations

- Fire-resisting blankets
- Protective curtains
- Gloves
- Aprons and overalls
- Fire blankets in old science labs

Asbestos type/material name

- All types of asbestos were used but chrysotile was the most common
- Asbestos content approaching 100%

Ease of fibre release

Fibres may be released if material is abraded or damaged

Friable/non-friable (if undisturbed)

Friable

TEXTILE TAPES AND WEBBING

Material description/uses

Used for:

- reinforcing wall joints before plastering
- wall plugs and wall repair fillers
- sealing fireproof doors and shutters
- sealing ovens
- door seals

Locations

- Plastered walls
- Lining on oven doors

Asbestos type/material name

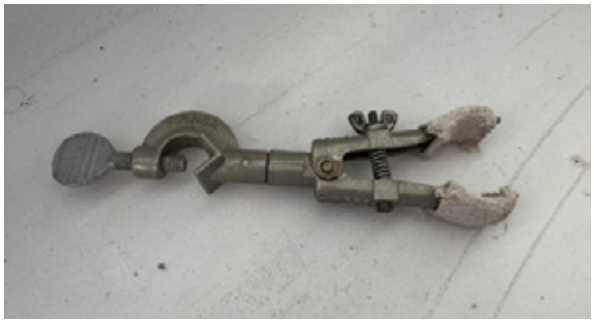
- Chrysotile

Ease of fibre release

Very difficult to locate as they are integrated into the plaster finish

Friable/non-friable (if undisturbed)

Friable



Textured coatings, paints, and plasters used for decorative effects

These were often manufactured containing up to a few per cent of chrysotile asbestos.

TEXTURED COATINGS

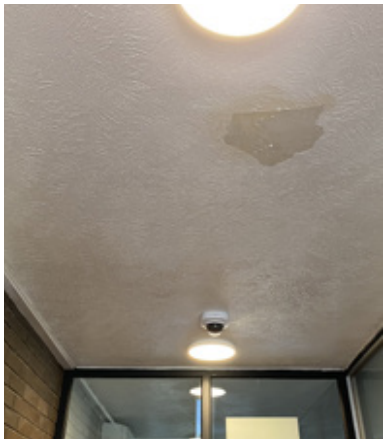
Material description/uses
Sometimes described as:
- popcorn ceilings
- cottage cheese ceilings
- shimmer ceilings
- flock ceilings
- sack finish ceilings.
- decorative coatings
- asbestos paint
- jointing compound

Locations
Decorative/flexible coatings on walls and ceilings

Asbestos type/material name
- 3–5% chrysotile asbestos
- Common brand names include Artex, Ribtex, and Polytex

Ease of fibre release
Fibres are well contained in the matrix but may be released when old coating is sanded down or scraped off

Friable/non-friable (if undisturbed)
Friable



Thermal insulation

Asbestos was widely used to insulate pipes, boilers and heat exchangers. There are several types and forms of insulation, often with multi-layer construction.

Material description/uses

- Hand-applied thermal lagging to pipes and boilers as well as exhausts and manifolds
- A lot of thermal insulation comprised calcium silicate filler mixed with amosite and other asbestos types
- Pre-formed pipe sections, slabs, and blocks. These can be strapped on, calico-wrapped, and sometimes painted or sealed with a hard plaster (often also asbestos-containing)
- Very hard-wearing coatings may contain metal sheets and/or chicken wire reinforcement beneath a hard plaster finish
- External pipes may also be clad with sheet metal or painted with bitumen for extra weatherproofing

Locations

- Thermal insulation of pipes, boilers, pressure vessels, and calorifiers in plant rooms
- Thermal insulation to pipes in ceiling spaces, crawl spaces, wall cavities, service ducts and risers, etc.
- Look out for variations on material used on the same pipe or boiler. Pay particular attention to bends and valves, or where repairs have been made

Asbestos type/material name

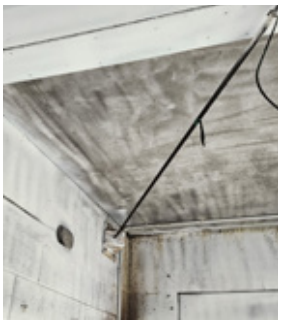
- All three common types of asbestos have been used but amosite was most common
- Asbestos content varied from 6–85%. Various ad hoc mixtures were hand-applied on joints and bends, and pipe runs

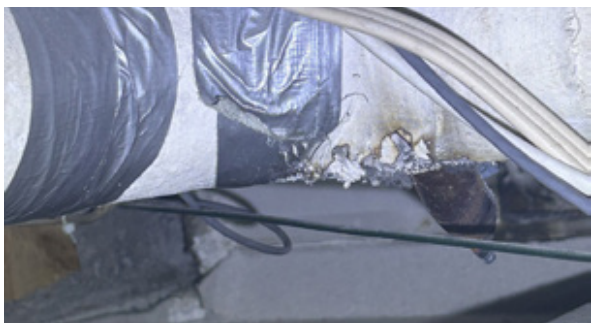
Ease of fibre release

The ease of fibre release often depends on the type of lagging used and the surface treatment

Friable/non-friable (if undisturbed)

Friable





Appendix 3: Example of a survey and sampling equipment checklist

CATEGORY	ITEM	
Survey equipment	Site plan	
	Logbook, organiser, computer	
	Step ladder	
	Digital camera with flash	
	Torch	
	Access keys to rooms and covers	
	Screwdrivers	
Ppe for sampling	Disposable overalls (hooded)	
	Disposable overshoes or gumboots	
	Disposable gloves	
Bulk sampling equipment	Pliers	
	Screwdrivers	
	Core samplers or cork borers	
	Aluminium foil or cloth tape	
	Box cutter knife with spare blades	
	Hand-spray with diluted PVA or surfactant	
	Sample bags (polythene self-seal bags)	
	Sample point labels	
	Type H vacuum	
	Asbestos waste bags of the approved type	
	Warning signs: 'Asbestos sampling: Keep clear'	
	Wet wipes and tissues	
	Polythene sheeting	
	Non-serrated pliers	
	Chisels	
	Safety knife	
	Hammer	
	Crowbar	
	Flexible inspection camera (Endoscope)	
	Ladders	
RPE	As per risk assessment	

Disclaimer

This publication provides general guidance. It is not possible for WorkSafe to address every situation that could occur in every workplace. This means that you will need to think about this guidance and how to apply it to your particular circumstances.

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