WORKSAFE
Mahi Haumaru Aotearoa

Asbestos Assessments

Good practice guidelines for conducting asbestos assessments

DRAFT FOR CONSULTATION
June 2025

When reviewing this draft guidance please note the following:

- This draft guidance forms part of a wider suite of asbestos-related guidance currently under development. You can find more information here: We are updating our asbestos guidance
- This draft does not necessarily present WorkSafe's final position on any matters contained within it.
- Some images used in this draft are temporary placeholders. They will be replaced with NZ-based examples before final publication.
- Until otherwise announced, the existing Approved Code of Practice: Management and Removal of Asbestos (ACOP) will remain the primary point of reference for enforceable good practice in asbestos management and removal. The Regulations that underpin the ACOP and the redeveloped guidance documents remain unchanged.
- Please use a submission feedback form provided on WorkSafe's Consultation webpage to provide your feedback.

Submissions close Monday 7 July 2025

Completed submission forms can be sent to:

guidanceandeducationdevelopment@worksafe.govt.nz

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.

- Breathing in airborne asbestos fibres is a serious health risk. When breathed in, they can cause serious diseases, including cancer.

- Asbestos assessors play a key role in protecting people's health and safety during and after asbestos removal.

- Businesses involved in the management or removal of asbestos must ensure the health and safety of their workers and any other people that could be put at risk by the work that they do.

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	Meaning
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.

Contents

1.0 About these guidelines

1.1 What are these guidelines about?

These guidelines provide good practice advice for conducting asbestos assessments relating to asbestos removal activities in buildings or workplaces. This includes air monitoring and clearance inspections.

The guidelines will help people conducting a business or undertaking (PCBUs) and asbestos assessors (assessors) to comply with:

- the Health and Safety at Work Act 2015 (HSWA)
- the Health and Safety at Work (Asbestos) Regulations 2016 (Regulations)
- the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.

1.2 Who should read these guidelines?

These guidelines are for PCBUs and individuals that carry out asbestos assessments. There are two types of asbestos assessors:

Licensed assessors

Licensed asbestos assessors can perform asbestos assessments for Class A and Class B asbestos removal work. For example:

- air monitoring during asbestos removal
- clearance inspections after asbestos removal
- issuing clearance certificates after asbestos removal.

Licences are granted to individuals, not the organisation they work for.

Competent persons

Competent persons can perform asbestos assessments for Class B asbestos removal work only. For example:

- air monitoring during Class B asbestos removal
- clearance inspections for Class B asbestos removal
- issuing clearance certificates for Class B asbestos removal.

A competent person must have the knowledge, experience, skills, and qualifications to perform the task as required by the regulations.

NOTE

In these guidelines the term 'assessor' will be used to mean licenced assessors and competent persons. Where guidance is specifically aimed at a licenced assessors only, the term 'licenced assessor' will be used. For more information about licenced assessors and competent persons, see Sections 2: *The role of an assessor* and 3: *Licensing*

These guidelines may also help PBCUs involved in other parts of the contracting chain for asbestos management and removal including:

- those who own, lease, or manage buildings with asbestos or suspected asbestos
- PCBUs that carry out refurbishment and demolition work
- commissioning PCBUs
- asbestos removalists
- asbestos surveyors
- architects
- designers
- building surveyors
- builders.

1.3 Where to find other information about asbestos and asbestos management

These guidelines focus specifically on good practice for asbestos assessors. There is guidance available for other aspects of the management and/or removal of asbestos. These guidelines should be read together with:

- Asbestos in 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.

- Asbestos surveys [placeholder] – good practice guidelines for asbestos surveys.
- Asbestos removals [placeholder] – good practice guidelines for asbestos removalists.
- 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.
- Asbestos Regulations Interpretive Guidelines [placeholder] – A guide that explains the requirements of the Asbestos Regulations

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.

Primary duty of care

All PCBUs (including assessors) have a primary duty of care under HSWA. The primary duty of care means that, so far as is reasonably practicable, PCBUs must ensure 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).

Assessors must so far as is reasonably practicable make sure their assessments and reports are thorough and accurate enough for other PCBUs to rely on when managing 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.

For more information, see WorkSafe's webpage: Introduction to the Health and Safety at Work Act 2015 – special guide

Overlapping duties

When working with other asbestos professionals in a contracting chain (such as with building owners, and removalists) assessors are likely to have overlapping duties. Overlapping duties is where a PCBU may be managing similar risks to other PCBUs in the same environment, or while involved in the same work activity.

Under HSWA, where there are overlapping duties, all PCBUs involved must, so far as is reasonably practicable:

- consult each other
- cooperate with each other
- coordinate their activities.

This is to make sure all workers across all the PCBUs, (and other people) are not put at risk before, during, and after the asbestos removal procedure. Examples are given in these guideline where assessors and removalists should work together to manage risk.

For more information, see WorkSafe's webpages: Overlapping duties and PCBUs working together: advice when contracting

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

The Health and Safety at Work (Asbestos) Regulations 2016 specify how to manage asbestos risks. Complying with regulations made under the Act is mandatory.

Assessors have specific duties under the Asbestos Regulations. They cover (for example) requirements for:

- the clearance procedure
- training
- decontamination
- clearance inspections and certificates
- air monitoring.

For more information, see [placeholder for Asbestos regulations interpretive guide]

1.6 Health and Safety at Work (General Risk and Workplace Management) Regulations 2016

The General Risk and Workplace Management Regulations (GRWM Regulations) cover general requirements for all workplaces and some more specific requirements for high-risk work which includes asbestos removal and the clearance procedure. They cover (for example) requirements for:

- managing risks associated with substances hazardous to health

- personal protective equipment (PPE)
- exposure monitoring
- health monitoring.
- For a detailed explanation of the GRWM Regulations, see WorkSafe's website:
  - General risk and workplace management - part 1
  - General risk and workplace management - part 2
  - [placeholder for Asbestos regulations interpretive guide]

2.0 The role of an assessor

2.1 Who can carry out asbestos assessor work

Two groups can carry out assessor work: licensed assessors and competent persons.

2.2 Licensed asbestos assessors

Licensed asbestos assessors are responsible for:

- air monitoring during asbestos removal (Class A or B)
- clearance inspections for asbestos removal (Class A or B)
- issuing clearance certificates for asbestos removal (Class A or B).

A licensed asbestos assessor may also perform other activities under a contract, such as reviewing an asbestos removalist's work plan before removal starts to make sure it is suitable.

Sometimes, assessors may also assist with responding to discoveries of asbestos during the work and then reviewing the amendments to the workplan.

> Only licensed assessors can carry out asbestos assessor work for Class A asbestos removal.

Licensed asbestos assessors are authorised by WorkSafe to assess if asbestos removal work is completed to required standards and if the area where asbestos removal took place is safe for reoccupation.

Asbestos assessor licences are granted to individuals, not to PCBUs. WorkSafe manages the licensing process.

For more information, see WorkSafe's webpage: Current asbestos assessor licence holders and Section 3: *Licensing*

2.3 When a licence is not required

A licence is not required for:

- air monitoring during Class B asbestos removal
- clearance inspections for Class B asbestos removal

- issuing clearance certificates for Class B asbestos removal.

Even though a licence is not needed, an independent competent person must do these activities.

A **competent person** for the purposes of doing asbestos assessments is a person who has relevant industry experience, skills, and knowledge. They should also hold either of the following qualifications:

- a certificate from a training course, specified by WorkSafe for asbestos assessor work
- a tertiary qualification in occupational health and safety, occupational hygiene, science, or environmental health.

NOTE

In these guidelines the term 'assessor' will be used to mean licenced assessors and competent persons. Where guidance is specifically aimed at a licenced assessors only, the term 'licenced assessor' will be used.

2.4 Independence and conflicts of interest

Clearance inspections for asbestos removal must be done by an independent licensed asbestos assessor (for Class A removal work) or an independent competent person (for Class B removal work).

- At non-residential premises, the commissioning PCBU must make sure the clearance inspection is done by an independent assessor.
- For homes, if the person who commissioned the work is the home occupier, the asbestos removalist can engage the assessor.

Any actual, perceived, or potential conflicts of interest should also be avoided, or appropriately managed.

Making sure the work is independent

To make sure asbestos removal is carried out to the required standard, the asbestos removalist and asbestos assessor or competent person should come from different businesses. This helps make sure the commissioning PCBU receives a fair and impartial service.

To remain objective and impartial, an asbestos assessor or competent person must not be unduly influenced or controlled by others when they carry out their regulated activities. For example:

- there should be no hidden commercial/ownership links between the assessor and removalist
- there should be no direct familial link between the removalist and assessor, for example, parent and child.
- assessors should be alert to any attempts to influence their work and make sure it is done independently and to a high standard.

An assessor or competent person is not independent if they have been involved in the asbestos removal for that job.

Managing conflicts of interest

Conflicts interest, whether actual, perceived, or potential should be avoided where possible. Conflicts of interest can be financial or non-financial. Any actual, perceived, or potential conflict of interest that cannot be avoided should be acknowledged and appropriately managed:

- It should be clearly disclosed/declared to the commissioning PCBU, and a plan put in place to manage it. Ways to manage a conflict of interest will vary depending on the circumstances but may include:
    - including the commissioning PCBU in all communications between the removalist and assessor
    - having the assessment peer-reviewed by a different independent assessor.
- If a conflict cannot be managed, a different assessor should be engaged.

2.5 Working with commissioning PCBUs and removalists

While removalist and assessors must remain independent of each other, they still need to work together to manage overlapping duties and to support each other to comply with their respective duties. Examples of how this can be done include:

Work activity	Examples where removalist and assessor should work together

Pre-removal site visit	A walk through of the removal site during scoping and before planning starts can help assessors identify and deal with potential issues, avoiding unnecessary delays in completing the clearance. A walk through will also give assessors a better idea of how long they may need for the visual inspection and air monitoring during four-stage clearance.
Asbestos removal control plan (ARCP) development	Assessors should be consulted in the following areas of the ARCP: - Roles and responsibilities - Timelines for task completion - Emergency procedures - Decisions on positioning of monitoring equipment and positioning or viewing panels in enclosures - When deciding what or how to do personal air monitoring - Use and availability of decontamination facilities - Expectations for dealing with remedial cleaning or failed clearances - How the clearance inspection records, and clearance certificates will be provided/delivered.
During removal work	Assessors must make sure air monitoring results are considered as soon as practicable. If the respirable asbestos fibre levels are found to be too high this must be communicated to the commissioning PCBU and the removalist immediately so additional control measures can be put in place, or work stopped. The assessor and the removalist must cooperate during any incident response. See section 4.3 for more information
During assessment work	Assessors must provide specific feedback when an assessment has failed. For example: - be as specific as possible about locations of test failures or elevated readings so the removalist can target remedial work.

	Provide reassessments without unnecessary delay.
After assessment is completed	Issue the clearance certificate without unnecessary delay.

Table 1: Examples of Removalists and Assessors working together

3.0 Licensing

Asbestos assessors' licenses ensure individuals are qualified to carry out asbestos-related assessments safely and competently. WorkSafe administers asbestos assessor licences. This section summarises what is involved in the application process.

To apply for an asbestos assessor licence, you must:

- provide evidence of your knowledge and skills gained through training and experience in the asbestos removal industry
- provide either a certificate from a WorkSafe-specified training course for asbestos assessor work, or evidence of a relevant tertiary qualification in occupational health and safety, occupational hygiene, science, or environmental health
- send your completed application and documents to WorkSafe:
    - email to asbestos@worksafe.govt.nz
    - post to WorkSafe New Zealand, Authorisations – Asbestos, PO Box 165, Wellington.

For more information on licencing, the application criteria, and how to apply, see WorkSafe's webpages: Licensing overview and Apply for an asbestos removal or assessor licence

4.0 Air monitoring requirements for asbestos removal and related work

Air monitoring during and after asbestos removal detects airborne asbestos fibres and measures how many are present. This information is used to assess if control measures are working during removal and to confirm there is no risk from airborne asbestos left after removal has finished (during clearance procedures). It is critical for keeping workers and the public safe, especially during and after Class A asbestos removal.

4.1 Air monitoring requirements

Class A licensed asbestos removal

Air monitoring must be done:

- before Class A asbestos removal starts if the licensed assessor thinks air may contain respirable asbestos fibres in concentrations greater than trace levels, and
- during Class A asbestos removal continuously until the removal is complete.

Class B asbestos removal and unlicensed asbestos removal

Air monitoring is not required, but an assessor can do it to check if the removalist is:

- complying with their duty to eliminate or minimise exposure to airborne asbestos
- not exceeding the airborne contamination standard for asbestos.

Air monitoring should also be considered if the Class B removal is happening in or near a public area. For more information see Section 5.1 *When sampling might be needed for Class B or unlicensed removal*

Assurance for asbestos-related work

Asbestos-related work is work involving asbestos other than asbestos removal. It includes work that may involve the disturbance of asbestos – for example drilling into a soffit to install a light or installing ducting for a heat pump against asbestos-containing cladding.

If it is likely that asbestos levels will exceed the contamination limit during any asbestos-related work PCBUs must arrange for air monitoring by an assessor. This is to help confirm if the air is safe for workers and others while the work is being done. See

[placeholder for T3 asbestos-related work guidance] for more information for PCBUs on keeping safe during asbestos-related work

If asbestos levels exceed the contamination limit, the assessor must tell the PCBU so they can take steps to manage the risk. This includes identifying people who were in the area, warning them about possible asbestos exposure, and making sure they know any necessary safety measures.

4.2 Methods used for air monitoring

Air monitoring must always use an approved membrane filter method. This method should be accredited to make sure it is being used properly and has proper quality controls. If a safe work instrument (SWI) says to use a particular method, it must be used.

WorkSafe recommends the following membrane filter methods.

Country	Code	Title
Australia	NOHSC:3003(2005)	Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres (2nd Ed).
United Kingdom	HSG 248	Asbestos: the Analyst's Guide for Sampling, Analysis and Clearance Procedure.
	ISO-8672-2014	Air quality. Determination of the number concentration of airborne inorganic fibres by phase-contrast optical microscopy - Membrane filter method.
Switzerland	World Health Organisation (WHO), Geneva 1997 ISBN 92 4 1544961	Determination of airborne fibre concentrations. A recommended method, by phase-contrast microscopy (membrane filter method).

Table 2: Approved membrane filter methods

For more information see: See Section 5: Measure airborne fibre concentrations and Appendix 2: *Air monitoring and sampling equipment*

4.3 Action to take if asbestos fibres exceed the limit

During **Class A removal work**, if air monitoring shows respirable asbestos fibre levels are higher than the action levels in Table 3, the assessor must tell the licensed asbestos removalist immediately. The assessor and the removalist must cooperate during the incident response.

Action level	**Control**	**Action**
< 0.01 fibres/ml (f/ml) -trace level	No new control measures are necessary	Continue with existing measures.
≥ 0.01 f/ml But < 0.02 f/ml	1. Investigate	Investigate the cause.
	2. Implement	Put controls in place to prevent exposure.
	3. Prevent	Prevent further fibre release.
≥0.02 f/ml	1. Stop	Stop Class A asbestos removal work.
	2. Notify	Notify WorkSafe **immediately** as a notifiable incident. Include the results of the air monitoring.
	3. Investigate	Conduct a thorough visual inspection of the enclosure, if used, and associated equipment in consultation with all asbestos workers. Review controls.
	4. Put controls in place to prevent exposure and further asbestos fibre release	1. Extend the isolated/barricade area around the work area/enclosure, so far as reasonably practicable, until fibre levels are at or below 0.01 f/ml. 2. Wet-wipe and vacuum the surrounding area, seal any identified leaks (for example, with expandable foam or tape). 3. Smoke test the enclosure until it is satisfactorily sealed.
	5. Conduct further air monitoring	Do not re-start until fibre levels are at or below 0.01 f/ml.
	6. Retain records for five years	

Table 3: Air monitoring actions for Class A asbestos removal

4.4 Communicating the results of air monitoring

The assessor must provide monitoring results to the removalist and commissioning PCBU as soon as practicable.

The commissioning PCBU who hires the removalist must make sure they give the air monitoring results to:

- workers at the workplace
- representatives of the workers at the workplace
- PCBUs at the workplace
- other people at the workplace
- other people living or working in the vicinity of the workplace if it is likely they may be affected by contamination, (so far as is reasonably practicable).

If asbestos fibre levels exceed 0.1 f/ml for any other type of work (Class B, unlicensed, asbestos-related) the results must also be shared with the parties listed in Section 4.5 *Air monitoring in the home workplace*

4.5 Air monitoring in the home workplace

If the workplace is a home, the licensed asbestos removalist must make sure the results are shared with:

- the PCBU who commissioned the removal work (for example, the commercial or residential landlord or body corporate)
- workers
- representatives for workers (if applicable)
- PCBUs at the workplace (if applicable)
- the occupier of the home
- the owner of the home
- other people at the home.

5.0 Measuring airborne asbestos fibre concentrations

5.1 Measure fibre concentrations to keep workers safe

Measuring airborne fibre concentrations is key to managing the risk of workers being exposed to asbestos. It involves collecting particulates from a measured volume of air using a filter and pump. The filter is then examined under a microscope to count the airborne fibres - called the **airborne respirable fibre concentration**.

The results of this sampling can provide assurance that work practices are being effective at minimising the amount or airborne particulates being released, that enclosures are working properly, and that respiratory protective equipment (RPE) in use will be sufficient to protect workers from harmful exposure.

There are two types of sampling methods:

Personal sampling

Personal sampling of workers is required under GRWM Regulations unless their exposure is not likely to exceed the airborne contamination standard for asbestos.

Where monitoring is needed, it should cover a range of jobs and work methods, especially higher--risk activities, and be done regularly.

In personal sampling, the filter is placed near the person's breathing zone (see Figure 1).

Static sampling

Static sampling involves monitoring the air at fixed locations. For example, it can help assess a source, potential spread, or the control and containment of asbestos in certain situations such as leak testing of enclosures.

Static sampling is also a key part of clearance inspection after Class A licensed removal work.

For more information on personal and static sampling methods, see Appendix 2: *Air monitoring and sampling equipment*

Trace levels

Meeting the trace level threshold does not mean the air is completely free of asbestos. Some fibres may remain for a short time after removal but will naturally reduce through dilution, dispersion, and settling.

Airborne fibre levels will return to natural background levels over time as fibres disperse and settle. The trace level sets the maximum allowable fibre concentration after Class A asbestos removal.

When sampling/monitoring may be needed for Class B or unlicensed removal

Sometimes sampling or monitoring may be needed for Class B or unlicensed removal even though not required by the regulations. Examples include when:

- a new removal methodology is being trialled, and it is unknown if potential contamination will fall below the airborne contamination standard for asbestos
- there is not enough information, such as personal sampling data from similar work, to choose the right RPE
- the removal work is happening near a sensitive area, such as a school or hospital.

5.2 Personal sampling of fibre concentrations to monitor exposure

Personal sampling is done to:

- check workers' airborne exposure to asbestos
- confirm the effectiveness of controls and RPE to make sure it provides the right level of protection
- establish exposure records for workers
- support current and future risk assessments.

The fibre concentrations measured should reflect the work being done and the conditions at the time of sampling.

Workers who are actively removing or disturbing asbestos should be prioritised for sampling as fibre concentrations are more likely to exceed the airborne contamination limit.

Gather all relevant worker information

The assessor should gather accurate information on:

- the tasks the worker performed during sampling (including task duration if possible)
- the other factors affecting exposure such as tools, equipment, methods, and techniques
- environmental factors
- the type/source of asbestos
- the controls that were in place.

The assessor should gather this information by tracking where individuals move and what tasks they do using viewing panels, CCTV, and talking with workers. The commissioning PCBU should make sure the assessor has enough resources and time available on site to gather all the relevant information.

Consider sampling parameters

The sampling period should be long enough to fully represent the work. Normally, it should last the entire shift in an enclosed area, so results can be compared to the airborne contamination standard for asbestos. For shorter activities, the sampling should cover the whole activity.

In high-dust environments, sequential sampling may be needed to stop filters becoming overloaded and uncountable. For short activities, sequential sampling can also help measure the shift average.

The table below shows the recommended sampling parameters for personal air sampling, including flow rates, minimum volumes and graticule areas examined, and associated LOQ (limit of quantification).

Application	**Sampling rate (litres per minute)**	**Minimum air volume air for 25 mm diameter filter (litres)**	**Minimum number of graticule areas to examine**	**Calculated airborne concentration at LOQ (20 fibres counted) (f/ml)**
Airborne contamination standard for asbestos	1–2	240	100	0.04

Application	Sampling rate (litres per minute)	Minimum air volume air for 25 mm diameter filter (litres)	Minimum number of graticule areas to examine	Calculated airborne concentration at LOQ (20 fibres counted) (f/ml)
Specific short-duration activities (see note 1 below)	2–4	120	100	0.08
Assessment of suitability of RPE (see note 2 below)	>0.2–4	40	100	0.24

Table 4: Recommended sampling parameters for personal air sampling

1. Higher flow rates (for example, 4 litres/min) can be used to measure airborne fibres during specific tasks or activities. The sampling time should be at least 30 minutes, but longer periods can also be used. A series of short-duration samples can be taken to assess multiple tasks during a shift. The sampling settings should make sure the calculated airborne concentration at the LOQ (20 fibres counted) is 0.08 f/ml or less.
2. The flow rate used will depend on the task being done. For assessors, dust disturbance activities can produce the highest concentration, so a short-term, high-volume sample may be needed.

See Appendix 2: *Air monitoring and sampling equipment* for detailed information on sampling equipment and sampling methods

Personal sampling results

If results are high (near or above the airborne contamination standard for asbestos), the workers PCBU should investigate and check work methods and controls.

The PCBU must make sure exposure monitoring results, carried out under the Regulations, are recorded and kept for:

- 40 years if related to asbestos
- 30 years in other cases.

These records must be easily accessible to anyone at the workplace who may be, or may have been, exposed to the health hazard.

5.3 Static sampling for assessing effectiveness of control measures

Static sampling checks how far asbestos fibres have spread and what their concentration levels are. This helps show how well the control measures are working (see Figure 2).

There are different types of static sampling, used in different situations. Each type is explained in Table 3 below.

Type of static sampling	**Purpose of sampling**
Background sampling	Measures the existing fibre concentrations, usually done before an activity that may release asbestos fibres. Provides a baseline to compare with other samples such as leak or reassurance testing. Conditions, such as whether the building or area is occupied, may also need to be recorded.
Leak testing	Checks if an asbestos enclosure is properly sealed to prevent fibres escaping. Usually, assessors take samples outside the enclosure to make sure fibre levels stay below 0.01 respirable asbestos fibres per millilitre of air (f/ml).
Near-source static sampling	Measures how asbestos fibres spread near the source. This could be inside enclosures, during work without enclosures, in test disturbances in empty areas, in buildings and enclosures under normal use or maintenance, in disturbed soil and ground, or during mineral processing.
Far-source/perimeter sampling	Measures fibre concentrations around the site perimeter where workers, the public, or nearby buildings could be affected.
Clearance sampling	Done during Stage 3 of the four-stage clearance procedure after Class A licensed asbestos removal work is completed. Checks if asbestos fibre concentration are below trace levels to pass or fail.

Type of static sampling	Purpose of sampling
	Shows if surfaces inside the enclosure are clean enough to remove the enclosure with minimal release of airborne fibres. Surfaces in the enclosure are tested at the start of the clearance sampling period in a controlled, timed way using dust disturbance simulation. Air extraction units are turned off to avoid diluting the air during testing.
Reassurance sampling	Checks residual fibre levels are not high after asbestos removal work or in buildings where asbestos is present but undisturbed. Makes sure the area is safe for normal occupancy. May be done regularly to monitor changes in ACM condition.

Table 5: Static sampling types and purposes

Air monitoring must be done just before licensed asbestos removal work starts if the assessor thinks the air may contain respirable asbestos fibres above trace levels. It must also be done during the removal work and in areas next to any negative pressure enclosure.

Consider sampling parameters

If the emission source is unclear or spread out, or if the goal is to measure the average exposure to people in the area, multiple samples should be collected. These samples should be collected in a way that reflects how the space is normally used.

In larger indoor areas and outdoor spaces, samples may be taken at set distances and directions from the source to check how the emission spreads or dilutes. Static samples should usually be collected at heights of 1 and 2 metres above the ground to match typical breathing height, using a downward-facing conductive cowl.

The sampling time and flow rate should suit the situation. The table below shows the recommended sampling parameters for static air sampling, including flow rates, minimum volumes and graticule areas examined, and associated LOQ.

Application	Sampling rate (litres per minute)	Minimum air volume air for 25 mm diameter filter (litres)	Minimum number of graticule areas to examine	Calculated airborne concentration at LOQ (20 fibres counted) (f/ml)
Trace level (see note 1 below)	0.5–16	480	200	0.01
Background (see note 2 below)				
Leak (see note 2 below)				
Reassurance (see note 2 below)				
Near source (see note 2 below)				
Far source/perimeter (see note 2 below)	0.5–16	960	200	0.005

Table 6: Example of recommended sampling parameters for static air sampling

1. This is the minimum air volume required. Any changes in sampling and laboratory equipment may mean that more than 200 graticule areas need to be counted to get an LOQ below 0.010 f/ml. In most cases, using more than 505 litres of air should avoid needing to count more than 200 graticule areas to report below the LOQ.
2. In low-dust environments, up to 2400 litres of air can be sampled (with an approximately 380 mm^2 exposed filter area), giving an LOQ of 0.002 f/ml based on 200 graticule areas counted. Other combinations of sample volume and graticule areas can give similar LOQ results. However, background samples in occupied buildings may show PCM (phase contrast microscopy) fibre concentrations around this level due to non-asbestos fibres, so further testing with other methods is needed to confirm asbestos fibres (see Appendix 2: *Air monitoring and sampling equipment*).

Note: For long sampling periods, the flow rate may need to be checked and adjusted from time to time

Sampling during the four-stage clearance process at Class A asbestos-licensed removal sites

Clearance air sampling is done during the third stage of the four-stage clearance procedure at Class A licensed asbestos removal sites. It is a strict pass or fail test and the results must not exceed the trace level.

The purpose of this test is to check if the surfaces inside the enclosure are clean enough to let the enclosure be removed with minimal release of airborne fibres.

To test the worst case conditions, a disturbance surface test is done by brushing the surfaces inside the enclosure (such as sweeping with a broom) to stir up any settled dust or remaining asbestos. Air extraction units should be turned off during disturbance testing.

For more information, including placement of equipment and the number of samples to take, see *Surface testing*

Figure 1: Assessor setting up a clearance test

The PCM count from clearance air sampling, along with a thorough visual inspection, is used to check if the removal and surface cleaning is complete. **Any fibres counted in the sample are assumed to be asbestos**.

Leak testing

Before removal starts, the enclosure should pass a smoke test to check it is properly sealed and to prevent fibre spread. Frequent, thorough visual inspections should also be done during removal work to make sure the enclosure remains intact and no leaks or damage have occurred.

Leak testing is needed if the air extraction unit (negative pressure unit - NPU) vents inside the building instead of outside. It is also needed when other people are near the enclosure or asbestos work, such as tradespeople or building occupants.

Asbestos fibres can be released from different places and activities, so leak testing should include several monitoring points (see Figure 2):

- near the enclosure openings, such as the three-stage air lock where workers enter and exit
- near the bag lock, where the double-bagged asbestos waste is removed
- near areas that were hard to seal, such as pipe or cable penetrations, other intrusions, and irregular cavities or shapes
- next to occupied areas during the work
- near the air extraction unit's exhaust, if it does not vent outside.

Figure 2: Leak test outside an airlock

Since fibre monitoring only detects leaks after they happen, it is important to inspect the enclosure and control systems thoroughly before work starts each day.

At the start of each shift, check how much the door flap flexes inward. Around 200–250 mm at the base is expected with an extraction air volume of 1000 m3/hr (see Figure 3).

In sensitive areas, such as near schools or hospitals, real-time monitoring can track changes in particle or fibre levels outside the enclosure, giving an early warning of possible leaks.

Figure 3 shows the air lock door flap in chambers 2 and 3 flexing 200–250 mm at the base (see arrows). This means the NPU is extracting 1000 m3/hr and creating a negative pressure of –5 Pascal inside the enclosure.

Figure 3: Flap deflection of 200–250 mm

Background and reassurance sampling

These tests measure airborne fibre levels.

- **Background sampling** is done before an activity, such as asbestos removal or remediation, to establish baseline fibre levels. It can also check if normal occupancy is causing airborne fibres.
- **Reassurance sampling** is done after an asbestos incident, when material has been accidentally disturbed, or found during or after the removal, or when taking down the enclosure after the four-stage clearance. It should only be done once the area is confirmed to be visually clean of debris and dust.

A visually clean space is a strong sign the area is dust-free. Dust disturbance should not be done during reassurance sampling unless there are effective controls in place to stop asbestos from spreading, such as building a new enclosure or isolating the room or building.

Figure 4: Background air test

Sampling locations should include expected fibre sources and areas where people may occupy. When background sampling is done before licensed asbestos removal, the goal is usually to confirm the airborne fibres are below 0.01 f/ml. If the levels are higher, a clearance certificate cannot be issued.

To meet this requirement, at least 480 litres of air should be sampled, and enough graticule areas examined on the 20–22 mm^2 exposed filter area to reach an LOQ of 0.01 f/ml. If background or reassurance sampling results are above 0.01 f/ml, further investigation is needed. These fibres cannot automatically be assumed to be asbestos.

The fibre source should be identified and the fibre types analysed using the methods outlined in Appendix 2: *Air monitoring and sampling equipment*. Samples may be collected just before the enclosure is built or soon after it is removed, so they may not reflect normal conditions.

For more accurate background or reassurance sampling, use longer sampling periods. This gives a better picture of the average airborne fibre and increases the chance of detecting any unexpected releases.

Larger air volumes can also improve the LOQ. Use different flow rates and filter areas, as long as they follow the WHO (World Health Organisation) method, which requires a filter area of at least 20 mm^2.

However, in clean environments, typical air filter loadings are around 1 m^3 of air per square centimetre of exposed filter area. In some urban areas, this may be halved.

Near-source static sampling

Static sampling may be needed to assess different situations and sources of asbestos release. For example:

- specific areas inside large enclosures, such as power stations
- exposures where personal samples may become damp or wet
- releases from known outdoor sources (such as asbestos disposal or waste sites), which may need multiple sampling locations upwind and downwind to assess fibre release from changing wind directions and nearby fibre sources
- tasks in very dusty operations
- checking how well dust suppression methods are working
- situations that need long-term sampling is needed (such as several 8-hour samples over a week to calculate a more accurate average exposure)
- simulating specific disturbance or release scenarios from maintenance or other activities where asbestos materials remain in place.

For near-source static sampling, collect an air volume of at least 480 litres to achieve an LOQ of 0.010 f/ml, unless conditions require a different approach, such as when the task is short or expected to produce a high amount of dust.

In high-dust situations, reduce the sampling volume. The assessor should use judgement to apply the most suitable sampling method.

When setting the sampling parameters, consider the expected dust and fibre concentrations, sampling time, air volume, and position or location.

Where possible, collect larger sampling volumes, to improve sensitivity. In many cases, longer sampling periods will improve sensitivity and make the results more representative.

Far-source/perimeter/ambient sampling

Far-source and related sampling is often done for reassurance or to check conditions such as when an activity may release asbestos fibres. Where possible, these activities should still be controlled and dust suppression practices used. Samples may be taken for the following reasons (this is not a complete list):

- around the edge of contaminated waste and soil remediation work sites where asbestos is exposed, disturbed, or removed
- around the exclusion zone of buildings containing asbestos after a fire

- at the edge of an exclusion zone for demolition work where asbestos materials have remained because of the building's condition, such as being fire-damaged, or being derelict or unsafe

- around the exclusion zone of sites where external asbestos removal is taking place, and full enclosure is not possible

- to assess the external background fibres levels.

As concentrations are likely to be low, increase the sample volume of air to increase the LOQ. In many cases, longer sampling times may be possible, giving a better chance to detect peak release events and a more accurate estimate of average concentrations at the site perimeter.

At low concentrations, the proportion of asbestos fibres in the PCM count may be much lower than in near-source situations. Fibre identification may be necessary to get reliable asbestos concentration results. For more information, see Appendix 2: *Air monitoring and sampling equipment*

5.4 Air sampling and analysis using phase contrast microscopy (PCM)

PCM is the standard method used to sample and count fibres in air (see Figure 5). Air is drawn through a filter (the flow rate) for a set time, to collect airborne particles.

The filter is then placed on a glass slide and made transparent to be examined under a microscope. A known part of the filtered deposit is examined using PCM at 500x magnification or more. All visible fibres within specific microscope graticule areas are counted. Only fibres longer than 5 µm, narrower than 3 µm, and with a length-to-width ration (aspect ratio) over 3:1 are included.

The fibre concentration (in f/ml) is calculated by dividing the number of fibres collected on the exposed area of the filter by the volume of air sampled.

The following equation shows how to calculate fibre concentration (*C*) in f/ml:

$C = 1000\ N\ D^2 / V\ n\ d^2$

Where:

- *N* is the number of fibres counted

- *n* is the number of graticule areas examined

- *D* (mm) is the diameter of the exposed filter area

- *d* (µm) is the diameter of the Walton-Beckett graticule

- *V* (litres) is the volume of air sampled through the filter.

Equation 1: Fibre concentration (C) in f/ml

Figure 5: Analysis by phase contrast microscopy in a mobile laboratory

Things to be aware of when using PCM

PCM does have some limitations which are discussed in the table below.

Category	Details
Limitations of PCM method	PCM cannot specifically identify asbestos fibres. The count includes other fibres and particles that match the shape and size criteria, such as organic fibres, man-made mineral fibres (MMMF), and mineral cleavage fragments. This can cause problems in non-industrial situations such as background monitoring. PCM fibre counts often show the highest possible asbestos concentration and can misinterpreted if non-asbestos fibres are assumed to be asbestos. PCM cannot readily detect fibres thinner than 0.2 µm

Category	Details
Low concentration challenges	Limitations are especially noticeable at low fibre counts, such as when counting fewer than 20 fibres below the limit of quantification (LOQ). Background and reassurance samples need extra care.
Sampling recommendations	Keep unmounted duplicate or half-filters for further analysis if PCM concentrations suggest high levels. Do not assume all PCM fibres are asbestos, especially after incidents where fibres spread and dilute. Avoid sampling if there is visible dust or debris without proper containment. Clean surfaces before sampling.
Advanced analysis needs	When many non-asbestos fibres are present, detailed analysis is needed to find the asbestos level. Electron microscopy is the only way to confirm the asbestos fibre proportion in PCM counts. Some light microscopy methods can exclude fibres larger than 0.8 µm based on optical properties (such as MMMF fibres being isotropic).
Filter handling recommendations	When precise asbestos concentrations are needed (such as outside enclosures or background levels), carefully cut filters in half to save material for further analysis or collect duplicate samples. Keep any unused filter material for future analysis if needed.
Incident and background sampling	After asbestos incidents, results may not show the actual fibre release because fibres spread over time. Advanced analysis is needed to find true asbestos concentrations where non-asbestos fibres may be high or for reassurance or background samples.
Consider sampling conditions	When removing residues, methods such as wire brushing can produce high levels of non-asbestos dust, which can overload the filter. In these cases, sampling strategies, time, or air volume may need to be reduced to keep the filters readable. This might include taking several samples in a row instead of

Category	Details
	just one. Alternatively, indirect sampling methods (such as analytical TEM using the indirect ISO 13794 method) may be necessary. High moisture levels in the air can interfere with sampling
Quality of filter types	Some membrane filter types and batches can have high background counts, even on blank filters

Table 7: Things to be aware of when using PCM

5.5 Other sampling methods

Size-selective samplers can be useful in some situations. For example, at dusty sites (such as when heavy machinery works on even partially dry soil), size-selective sampling can improve analytical sensitivity and reduce the chance of undercounting. It can separate large particles that are unlikely to reach the deep lung.

Note

Other tools cannot replace membrane filter sampling and analysis but can supplement emission monitoring.

6.0 Clearance inspection

All licensed asbestos removal must have a clearance inspection carried out to make sure the asbestos removal has been completed to required standards and that there is no remaining risk to future occupiers of the building or workplace. Once the area is confirmed to be safe to occupy a clearance certificate can be issued to the commissioning PCBU (or the removalist if the removal was in a home).

Air locks, bag locks, and any transiting areas between enclosures and DCUs (decontamination units) must be included in the main clearance assessment. DCUs must be assessed separately and given a separate clearance certificate.

6.1 Class A and Class B clearance inspections

Clearance procedure requirements vary depending on if the work was Class A or Class B work.

Removal type	Who can do it	Clearance requirements
Class A	- Independent licensed assessor	- Visual Assessment - Surface testing - Air monitoring Surface testing and air monitoring must be done while the enclosure is still in place and the area must be dry.
Class B	- Independent licensed assessor - Independent competent person	- Visual assessment - Surface testing (optional) - Air monitoring (optional)

Table 8: Clearance requirements for Class A and Class B removal work

The following sections provide an overview for the main requirements for doing Class A clearance inspections and issuing clearance certificates.

Class B inspections require a thorough visual inspection by a licensed assessor or competent person (air monitoring and surface testing are not a requirement). This can be achieved by following Steps 1 and 2 of the four-stage clearance process for Class A clearance as described in Section 1.3 below.

Appendix 3: *Class A four-stage and DCU-clearance methods* provides a detailed description of the step-by-step process for the various stages of clearance inspections.

6.2 Planning and preparation

Where possible assessors should be involved in early planning and scoping of the removal work while the ARCP is being prepared by the removalist. See Section 2.5 for more information.

Thorough planning will allow the assessor to make sure they have enough time allocated, have the correct tools and materials available and be able to provide accurate reports back to the commissioning PBCU and removalist.

Assessors should review the ARCP before visiting the site. Using information in the ARCP assessors can:

- prepare their assessment method
- conduct a risk assessment
- plan the four-stage clearance (such as preparing site plans)
- properly scope the clearance procedure.

Planning should also include planning for how much time and resources will be needed for the clearance procedure to be done correctly and completely. This should include building in time for to addressing failures and re-assessments if needed.

Factors to look out for that can affect inspection complexity and the time that will be needed include:

- the layout
- items present
- surface areas
- obstructions
- ceiling voids
- cables.

Do not start work until the removalist has confirmed the area is ready to be assessed

Assessors must not start the assessment until the removalist has provided assurance that all the required preparatory work has been done. The removalist must make sure that the work area:

- has been fully cleaned after the work is completed

- is free of visible asbestos materials, including dust and debris on all surfaces, items, and equipment.

The removalist should complete a handover document to confirm the area has been checked and is clean. See Appendix 1: Templates - *Class A clearance inspection records and DCU inspection certificate* for an example of an asbestos removal area handover form.

If the handover document is missing, incomplete, or there is any doubt about the site cleanliness, the clearance process should not start.

The assessor **must not** clean any dust or debris during the clearance. Cleaning is the responsibility of the licensed asbestos removalist only.

6.3 Four-stage clearance procedure for clearance inspection

Asbestos clearance procedures can be divided into four stages. For Class A removal all four stages must be completed and passed before an assessor can issue a clearance certificate.

For Class B clearance stages one and two must be completed. Stages three and four (air monitoring and surface testing) can be skipped.

However in some situations it may still be appropriate to include stages three and four. For example:

- a new removal methodology is being trialled, and it is unknown if potential contamination will fall below the airborne contamination standard for asbestos
- the removal work is happening near a sensitive area, such as a school or hospital.

After completing all four (or two) stages the assessor should be able to confirm (or not) that:

- all asbestos planned for removal is gone
- no visible dust or debris remains on floors or surfaces
- airborne fibre levels are below 0.01 f/ml (Class A removal only).

Once these conditions are met, the area is considered safe for reoccupation or demolition and the assessor can proceed with issuing the clearance certificate.

The four stages are outlined below:

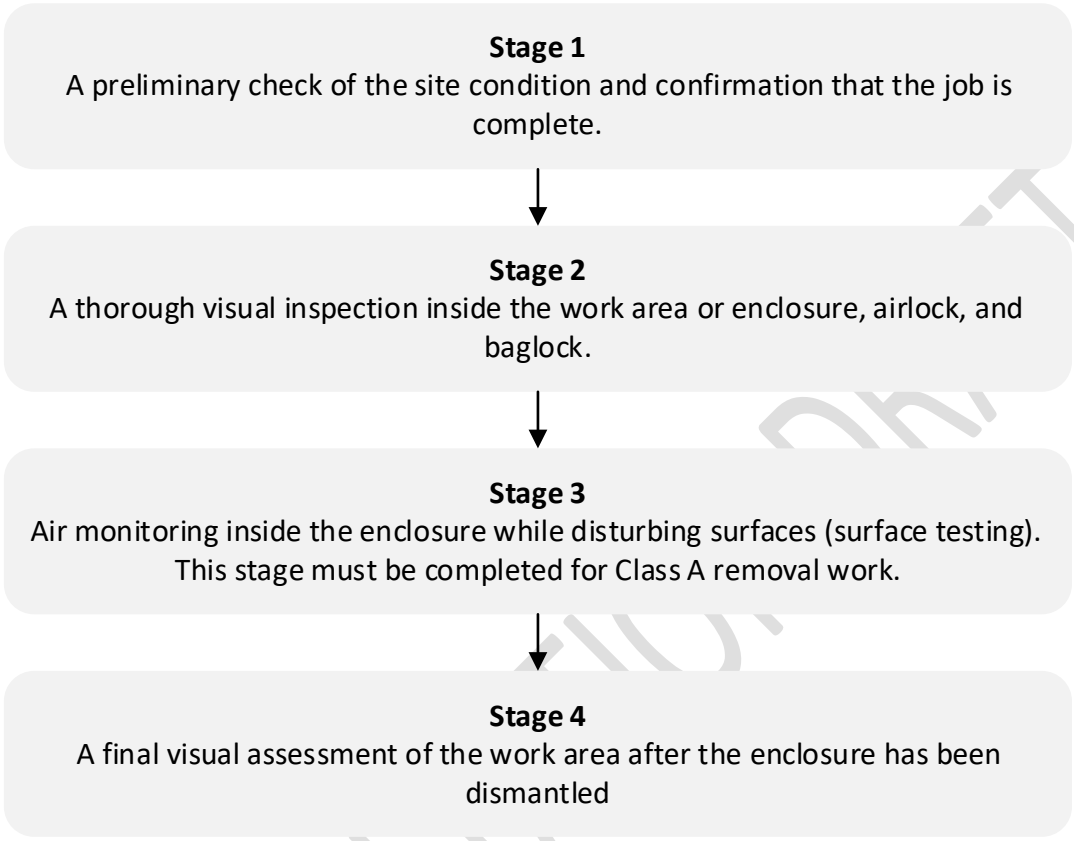

Figure 6: Four-stage clearance procedure

The four-stage clearance should be done without long gaps between stages. Each stage must follow the previous one in order. The same assessor should carry out all stages.

Entering enclosures or work areas for four-stage clearance carries a risk of exposure and contamination. Assessors must wear the correct RPE and PPE. For more information see:

- Section X*:* Personal protective equipment (PPE)
- Section X: Decontamination

Detailed guidance on the four-stage process in covered in Appendix 3: *Class A four-stage and DCU-clearance methods*

If any stage fails, a **failed clearance inspection record** is issued explaining the failure and reason. See Section 6.8 and Appendix 3: *Class A four-stage and DCU-clearance methods* for more information.

Figure 7: Assessor checks airlock during Stage 1

Figure 8: Assessor performing a thorough visual inspection

Figure 9: Assessor using a screwdriver to check for asbestos remnants

Figure 1: Assessor carrying out a thorough visual inspection

6.4 Work together with the removalist during clearance

The assessor and the asbestos removalist should work together and clearly understand their roles and responsibilities. Their duties overlap during the clearance procedure.

During the clearance process, the assessor may ask the removalist to do minor touch ups if needed to help complete the process successfully. However little to no extra cleaning should be required at this stage. The removalist is responsible for doing any touch ups. See Appendix 2: *Air monitoring and sampling equipment* and Appendix 3: *Class A four-stage and DCU-clearance methods* for more information.

6.5 Take photographs to record evidence of clearance

The assessor must provide clear photographic evidence to show all the requirements for the four-stage clearance have been met. This includes confirming the removal areas are free of asbestos and enclosures are fully cleaned and free from asbestos dust and debris.

Larger removals will generally need more photos than smaller ones. The photos help confirm that the site is safe for reoccupation or demolition. Use colour photos and include them in the relevant sections of the clearance inspection record.

Each photo should have a caption explaining what it shows, include time and date stamps, and be detailed enough for close inspection.

Table 9 below lists the areas and items to photograph for four-stage clearance and forms part of the clearance inspection records.

Areas/items to photograph (in colour)	
Stage 1	
1	Skip area and waste route - free of visible asbestos debris and waste bags.
2	Transit route - clean and free from visible asbestos debris and waste bags.
3	The DCU - free from visible asbestos debris and waste bags. Photos should show the clean end, shower, and dirty end.
4	The areas around the enclosure/work area -free from visible asbestos debris and waste bags.
Stage 2	
1	The airlock and bag lock - clear of waste bags, materials, and unnecessary equipment.
2	All ACMs are fully removed (as far as is reasonably practicable) from underlying surfaces. Provide enough photos to cover the removal areas.
3	The interior surfaces inside the enclosure/work area - free from debris and fine settled dust. Provide enough photos, including high-level surfaces (including scaffolding) and voids.
Stage 3	

1	Evidence that the areas are dry. Provide enough photos to cover the relevant areas.
2	Evidence that the NPUs are sealed.
3	The sampling pumps in each of the sampling locations.
4	The brush used for disturbing surfaces.
Stage 4	
1	The former enclosure/work area. Provide enough photos to cover the relevant areas.

Table 9: Areas and items to photograph for four-stage clearance

Table 10 below lists the areas and items to photograph for the mobile DCU clearance procedure to include in the clearance inspection records.

Areas/items to photograph (in colour)	
Clean end	
1	A view of the clean end, showing the area is clean and free from storage debris and waste sacks.
Shower area	
1	A view of the shower area, showing the area is free from stored items, obvious debris, waste, and is dry.
2	Air sampling equipment.
Dirty end	
1	A view of the area showing it is free from stored items, obvious debris, and waste.

2	Air sampling equipment.

Table 10: Areas and items to be photographed for mobile DCU clearance

Take detailed photographs of any items and areas that cause a failure in the clearance procedure. Include these photographs in the relevant section of the clearance inspection records.

> Assessors should never accept photos provided by removalists as evidence of clearance in lieu of doing the assessment inspection in person. Assessors must always attend the site in person to do clearance inspections.

For more information, see Appendix 3: *Class A four-stage and DCU-clearance methods*

6.6 Document remaining asbestos materials

The assessor should identify, so far as is reasonably practicable, any remaining ACMs within the clearance area that were not included in the ARCP.

The assessor should also remind the occupier or commissioning PCBU to update the asbestos location record and management plan to reflect the removed ACMs and to monitor the area for future deterioration.

Clearance certificates must include details on any asbestos remaining in the asbestos removal area. This information will be needed to update the asbestos register and mark locations on floor plans. See Appendix 2: *Air monitoring and sampling equipment* and Appendix 3: *Class A four-stage and DCU-clearance methods* for more information.

6.7 Clearance certificates

Before the asbestos removal area can be reoccupied, the assessor must independently issue a written clearance certificate.

The certificate can only be issued if the assessor can confirm that:

- the asbestos removal area and surroundings are free from visible asbestos contamination
- air monitoring shows respirable asbestos fibre levels do not exceed trace levels (for Class A removal work)

- the area does not pose a health or safety risk from asbestos exposure
- they have remained impartial throughout the process.

The clearance certificate must include:

- the assessor's name, qualifications, and contact details
- the address and location of the asbestos removal area
- the date and time of the inspection
- confirmation that no visible asbestos residue remains
- if applicable, confirmation that air monitoring results are below trace level.

6.8 Clearance failures

If the assessor cannot independently confirm that the area is clean and safe for reoccupation, the assessor must issue a **failed clearance inspection record** to the removalist and the commissioning PCBU.

The failed clearance inspection record must clearly show which stage failed and why.

Common reasons for failing an inspection may include:

- there is still visible asbestos waste that should have been cleaned up already by the removalist
- air monitoring results shows there is still an unacceptable level of air contamination
- the enclosure or work area is too wet to accurately conduct surface testing by dust disturbance of surfaces
- sealant sprays have been used before Stage 3 of the clearance.

See Appendix 2: *Air monitoring and sampling equipment* and Appendix 3: *Class A four-stage and DCU-clearance methods* for more information.

7.0 Decontamination

7.1 Decontamination levels

Decontamination is necessary to make sure assessors, their PPE, and RPE are free of asbestos fibres before leaving the enclosure or work area. It helps prevent the spread of asbestos outside the enclosure or work area.

Nothing that is likely to be contaminated with asbestos should be removed from the asbestos removal area unless it:

- is decontaminated before being removed
- is sealed in a container that has been decontaminated on the exterior and clearly labelled to show it may contain asbestos.

Decontamination is also important for preventing others who come into contact with asbestos workers, equipment, or waste from getting secondary contamination. Family members can be exposed to asbestos if contaminated clothing is taken home.

Assessors must follow decontamination procedures when entering and exiting asbestos enclosures or work areas.

Enclosures should only be entered when absolutely necessary. Some tasks, such as observing personal air monitoring equipment can be done from outside by looking through enclosure viewing panels or by using CCTV.

There are two levels of decontamination, depending on the level of contamination:

- **Preliminary decontamination** can be used when contamination is minimal. It involves decontamination within the air lock system of an enclosure (see Section 7.3 for examples).
- **Full decontamination** should be used when contamination is significant. It includes preliminary decontamination in the air lock followed by further decontamination in the decontamination unit (DCU) associated with the enclosure (see Section 7.4 for examples). If an assessor enters an enclosure while active removal is underway, they must do a full decontamination.

Decide on which decontamination procedure to use each time exiting an enclosure, based on the level of contamination inside. Full decontamination may be needed at any stage, so arrangements must always allow for this. DCUs must remain on site and operational when assessments are being done.

-

7.2 Entering an enclosure

Assessors must enter enclosures through the air lock. They should wear appropriate layers of PPE to allow for correct decontamination when leaving.

Assessors entering enclosure for clearance purposes should be prepared for the possibility of either preliminary or full decontamination.

Place domestic items such as clothes and towels, at the clean end of the DCU for use after decontamination. If the DCU is not connected directly to the air lock, make sure blue transiting overalls are available in the second stage of the air lock for exiting procedures.

Clearance inspections often involve crawling, kneeling, stretching, and climbing. These actions can tear or rip coveralls and contaminate underclothes. Assessors should **not** wear any domestic clothes inside the enclosure.

Before entering the enclosure, while in the clean end of the 3-stage air lock or DCU, the assessor should:

- remove all domestic clothes
- put on any necessary disposable underclothes and overshoes
- put on white coveralls
- make sure any equipment taken into the enclosure is clean.
- Put on required RPE and use a mirror to perform a fit check. RPE should be worn inside enclosures for clearance Stage 2 and Stage 3.

Figure 2: Assessor entering an enclosure

7.3 Preliminary decontamination

Preliminary decontamination involves decontaminating within the enclosure and the air lock before leaving the work area. Preliminary decontamination is always required when exiting an enclosure or work area.

Preliminary decontamination procedures will be different depending on whether the DCU is directly attached to the enclosure (non-transiting) or separate from the enclosure (transiting).

When carrying out sampling or other activities requiring RPE and PPE in areas without an enclosure, follow the same preliminary decontamination steps, but without using an air lock.

Using only preliminary decontamination procedures (and not full decontamination) may be appropriate when contamination risk inside the enclosure is minimal. For example, the assessor was:

- setting up air-monitoring equipment before removal work has begun
- doing the clearance assessment after the removalist has already cleaned the enclosure

To enable preliminary decontamination, the removalist should already have in place:

- a Class H vacuum cleaner inside the enclosure near the exit to the air lock
- two buckets of water, a brush, and sponge in the inner section of the air lock
- asbestos waste bags for contaminated PPE, equipment, and cleaning materials
- duct tape to seal bags
- wet wipes to clean tools and equipment.

Before work starts, assessors should confirm with the removalist that entry, exit, and decontamination facilities will be available for the duration of the assessment work.

Assessors should follow the steps below for preliminary decontamination:

Enclosure edge

1. Before entering the air lock (while still in the enclosure near the exit to the air lock) vacuum PPE, RPE, footwear, and any sampling equipment to remove the bulk of contaminants.

Figure 3: Preliminary decontamination with a Class H vacuum cleaner

First (inner) stage of air lock

2. Keep RPE on.
3. Wipe or dampen RPE with a wet sponge or wipe.
4. Use the brush to clean footwear in the bucket.
5. Clean or wipe sampling equipment and other items brought into the enclosure.

If the air lock is attached directly to the DCU go directly to the dirty end of the DCU to complete the next two stages of preliminary decontamination.

Middle stage for air lock

6. Keep RPE on.
7. Remove white coverall. Keep it for re-entry or place it in a hazardous waste bag if damaged or if re-entry is not needed.
8. Remove shoes or overshoes worn inside the enclosure.
9. Put on blue transiting coverall and transiting footwear.
10. Use wet wipes to clean the outside of smooth surfaces such as plastic bags, sample tins, plastic containers, cameras, and phones, to remove any attached fibres. Dispose used wipes as hazardous waste.
11. Place decontaminated items in a labelled bag or container.

Third (outer) stage of air lock

12. Keep RPE on.

13. Put on transiting footwear.

14. Exit the air lock:

    - If continuing to full decontamination exit the airlock and walk to the DCU. See Section 7.4: Full decontamination for the next steps.

    - If only doing preliminary decontamination see *Outside the air lock* below

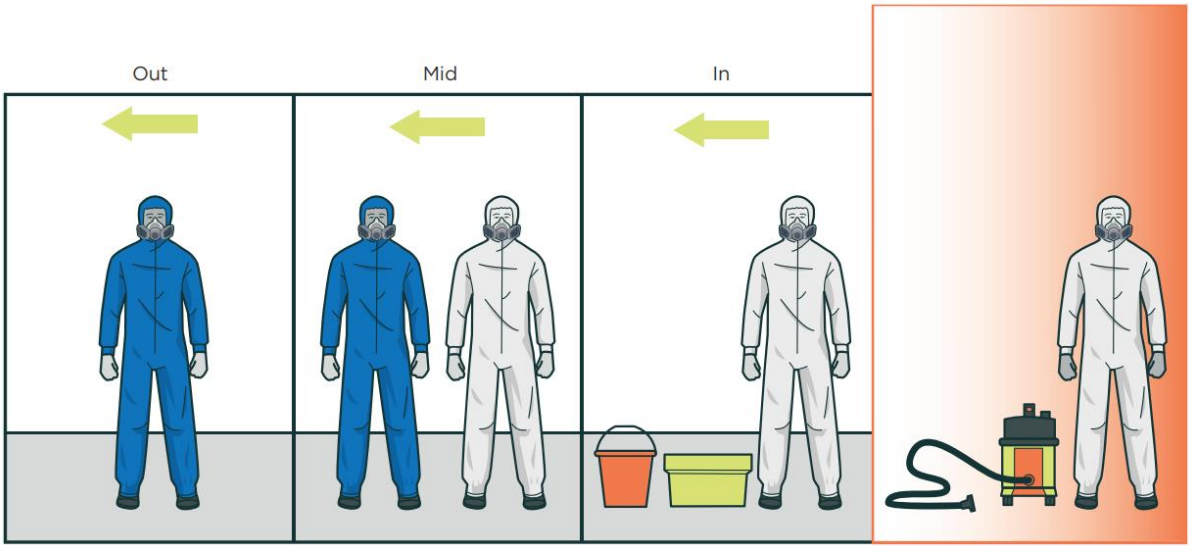

Figure 4: Preliminary decontamination - exiting the enclosure (right to left)

Outside the air lock

If full decontamination is not required, assessors can remove their RPE after exiting the air lock and move around the site wearing the blue transiting coverall.

The assessor can change into normal clothes the 'clean end' of the DCU and exit directly from there without using the shower or 'dirty end' - unless the DCU is directly connected to the enclosure.

Assessors must put on RPE and white coveralls to re-enter the enclosure. This can include the previously worn coverall left in the air lock, as long as it is not ripped or damaged when last removed.

Figure 5: Assessor transiting from an enclosure

7.4 Full decontamination

Some situations will require full decontamination, for example:

- There was significant contamination inside the enclosure.
- PPE got damaged - such as ripped or damaged outer coveralls.
- Inner coveralls or underclothes got contaminated.

Assessors should be aware of these conditions and use their professional judgement to make the final decision. If in doubt, assessors should perform full decontamination.

Assessors should decide if full decontamination is needed before leaving the enclosure to enter the airlock.

Assessors should follow the steps below for full decontamination.

Preliminary decontamination and transiting

Carry out preliminary decontamination as described in in Section 7.3: *Preliminary decontamination*.

- For a 1-stage air lock follow steps 1-5
- For a 3-stage air lock with transiting requirements follow steps 1-14

Zone one - the dirty end

1. In the first stage (the dirty end) take off all footwear, coveralls and underwear worn in the enclosure and place in storage or disposal bags. Do not remove RPE.

Zone two – the shower

2. Move to the shower area (with RPE still on) and use a sponge to clean RPE without allowing water onto filter ports. Remove or cap used filters and place in waste bag for disposal if appropriate.

3. Once RPE has been cleaned, remove it and start showering:

    - take thorough showers (a minimum of five minutes)

    - thoroughly wash hair

    - thoroughly scrub fingernails

4. Use disposable towels to dry.

    - If choosing to dry in the shower cubicle, treat the towel used in the shower cubicle as contaminated and dispose of it as asbestos waste.

Zone three – the clean end

5. Step into the clean end of the DCU and if not already dry, use a fresh disposable towel to dry completely. If the towel has never progressed beyond the clean end of the DCU, it can be treated as uncontaminated non-asbestos waste

6. Get dressed.

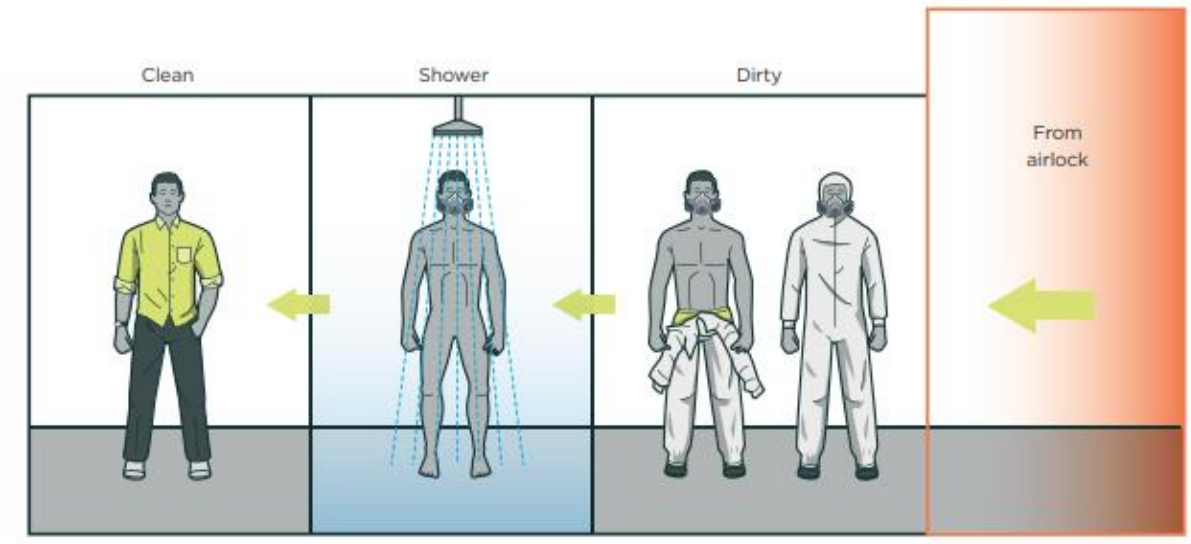

Figure 6: Full decontamination when the DCU is connected to the enclosure via a 1-stage air lock (right to left)

8.0 Personal protective equipment (PPE)

8.1 Why use PPE and RPE?

PPE, including RPE, is essential to help assessors reduce their exposure to asbestos fibres and provide protection from other workplace risks.

This section explains:

- The general requirements for supplying and using PPE and RPE
- RPE requirements for asbestos assessment work
- PPE requirements for assessment work

Using PPE to manage risks other than asbestos

Asbestos will often not be the only hazard present at a removal work site. If the work involves other hazards, for example working at height, working in extreme temperatures, or near hazardous substances, the PCBU must do a further risk assessment to manage these risks, and provide any appropriate PPE related to managing those risks.

The following general guidelines relating to PPE/PRE also apply to assessor work:

- The PCBU or assessor must make sure the PPE is suitable to reduce health and safety risks. This means it is appropriate for the work and hazards, fits well, and be reasonably comfortable for the assessor.
- The PCBU must provide the assessors with information, training, and guidance on how to use, store, and maintain the PPE to make sure it remains effective and safe.
- PPE must be kept clean, in good condition, and repaired or replaced when needed to keep reducing risks. Assessors must wear or use the PPE so far as it is reasonably practicable, and it must work with any other PPE they need to wear.
- When selecting the PPE and RPE check that the chosen equipment will not introduce other risks or affect the functionality of other equipment.

8.2 Respiratory protective equipment

RPE is a key control measure to prevent the inhalation of asbestos fibres while doing assessor work.

RPE should be selected after doing a risk assessment, based on the needs of the individual, the type of work, and the expected level of exposure. Results from previous air monitoring can help with the risk assessment.

During normal assessment activities, assessors are typically unlikely to be exposed to high levels of airborne asbestos fibres above the control limit. However, if assessors enter a 'live' asbestos enclosure, where removal work is actively happening, the risk increases.

RPE for lower risk assessment work

For most assessor work before removal has started and after removal has been completed, for example background air sampling and the clearance sampling, a half-mask with P3 filter or a disposable FFP3 mask may be suitable.

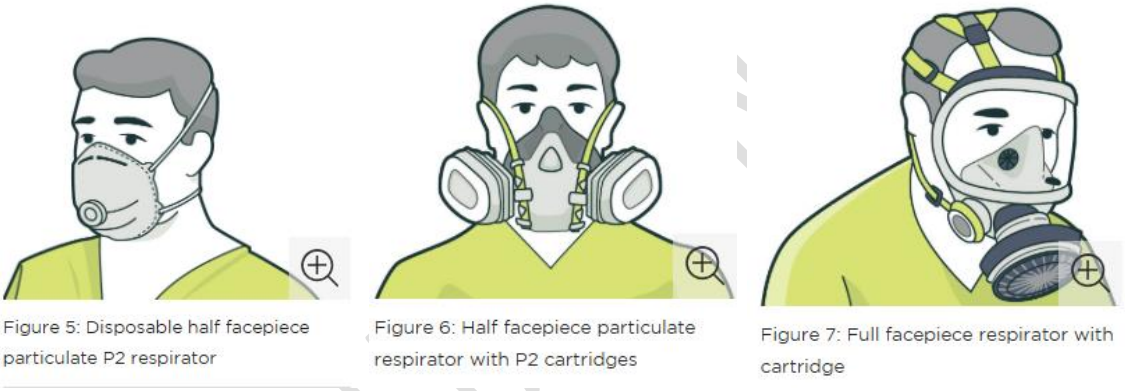

Figure 5: Disposable half facepiece particulate P2 respirator

Figure 6: Half facepiece particulate respirator with P2 cartridges

Figure 7: Full facepiece respirator with cartridge

Figure 16: examples of respirators suitable for low risk assessor work

RPE for higher-risk assessment work

If RPE needs to be worn for more than an hour at a time, powered equipment is required. Alternatively, assessors should take breaks every hour.

If the assessor needs to enter an active enclosure, they will need to use the same types of RPE that removalists use during removal. A full-facepiece powered respirator should be worn. If a proper face-fit cannot be achieved (for example, due to facial hair) individuals may need to use powered hoods or blouses.

For more information see [placeholder for link to RPE section in removalists GPG)

Figure 8: Powered air-purifying respirator

Figure 9: Supplied-air respirator

Figure 10: Self-contained breathing apparatus

Figure 17: examples of respirators suitable for high-risk assessor work

Entry into live asbestos enclosures

Avoid entering live enclosures unless there is a good reason. Tasks such as inspecting enclosures, witnessing smoke tests, or doing personal monitoring, should be done from outside the enclosure. Use viewing panels and CCTV to monitor workers and record activities without entering directly.

If entry into a live enclosure is unavoidable, assessors should spend as little time inside as possible, only doing necessary checks and inspections. They will have to wear full PPE as required for removalists and follow full decontamination procedures. See Section XX of [placeholder for removal GPG] for more information.

Tight-fitting facepieces, fit testing, and fit checking

It is critical that the RPE provided fits the individual wearer properly.

RPE should be fitted properly and worn correctly to work as intended. The manufacturer's instructions should include information on how to put on RPE and perform a pre-use seal check. Assessors should be trained on how to fit RPE and perform a fit check.

RPE should be securely fitted on the head before putting on other PPE or headgear. Wearing RPE over caps, hoods, or goggle straps can affect the fit or cause it to slip during wear.

Stubble, beards, sideburns, or wearing glasses can stop a tight-fitting facepiece from sealing properly. Assessors should be clean-shaven in the area where the face seal meets their mask at the start of their shift. Long hair should be kept out of the face seal to avoid interference, especially with full-face masks.

For more information on fit testing see Section 6 of Protective clothing and equipment for working with or near asbestos | WorkSafe

Poorly fitting RPE can leave small gaps, allowing airborne contaminants to leak in, increasing exposure, and reducing protection. The wearer may not notice the exposure.

Repeat fit tests

Fit tests are specific procedures designed for the individual and RPE at a specific time. Repeat tests are needed if conditions change or after some time has passed.

Pre-use checks

The RPE should be checked to make sure it is clean and in good condition before each use. The wearer should be trained to do this. Table 11 summarises the pre-use checks.

Disposable and half-masks	**Full-piece powered respirators (including checks for disposable and half-masks)**
The facepiece is clean and in good physical condition with no damage or distortion to the face seal.	Visor, seals, gaskets. and 'O' rings are present and in good condition with components that can connect securely. All threaded connectors and seals are in good condition.
Head harness and anchorage points are undamaged and can hold the facepiece on the face correctly, securely, and comfortably	Battery charge/condition

Disposable and half-masks	Full-piece powered respirators (including checks for disposable and half-masks)
All valves (especially exhale valves) are present, in good condition and correctly seated	Airflow rate for power-assisted and powered respirators has been checked and meets manufacturer's specification
Filters are correct, in good condition, in date and securely fitted	The RPE is complete and correctly assembled
Any additional tests in accordance with the manufacturer's instructions	

Table 1: Summary of pre-use checks when wearing RPE

Maintenance of non-disposable RPE

For non-disposable RPE:

- It should be checked and tested by a competent person before it is given to a wearer for the first time, and at least once a month to make sure it is working properly.
- Keep a record of inspections, maintenance, and any defects fixed for five years. Only use manufacturer-approved spare parts.
- **Never** modify RPE without the manufacturer's approval.
- Follow the manufacturer's instructions to clean, maintain, and perform additional checks and tests.
- After each use, decontaminate, clean, disinfect, and store the RPE in clearly labelled containers as part of the decontamination process. See Section 7 for more information on decontamination.

RPE training for assessors

Assessors should be given clear training, information, and instructions on:

- why a particular type of RPE is selected, its limitations, and which filters to use
- how to fit and use the RPE properly
- the importance of wearing a tight-fitting facepiece correctly, the need for fit testing when selecting equipment, and how to check the face seal before each use

- the risk of taking off or setting down RPE in a contaminated area, and what to do in a medical emergency
- how to recognise airflow reduction (where relevant) and what to do if it happens
- how to check the RPE before each use
- the need for thorough examination and maintenance of the RPE
- how to clean and decontaminate RPE after use and store it properly for reuse.

Assessors should get refresher training year on how to use RPE at least once a year.

PCBUs should not assume assessors will always use RPE properly just because they have worn it before.

For more guidance for businesses and workers and the respirator selector tool on WorkSafe's webpage Respiratory Protective Equipment (RPE).

8.3 Other PPE for assessment work

PPE, especially coveralls and footwear, is important for preventing the asbestos spread and reducing secondary exposure for assessors and others. Disposable coveralls should be used, and cleanable footwear or footwear covers should be worn to avoid taking asbestos outside the work area.

Figure 18: Examples of appropriate footwear

Using coveralls during asbestos work

Assessors should wear coveralls that meet certain criteria during asbestos removal.

Disposable coveralls are most common because they do not need to be washed. They can be double-bagged and thrown away as asbestos waste during decontamination. The material should be strong enough to handle physical contact from crawling, kneeling, or climbing on removal sites.

- Coveralls should prevent asbestos fibres from getting through the material.
- Assessors should wear BS EN ISO 13982-151 Type 5 (Category 3 PPE) disposable coveralls whenever there is a risk of asbestos fibre contamination.
- The coveralls should be **white**.

Figure 19: Example of disposable coveralls

Using domestic clothes during asbestos work

Where close contact with asbestos is expected, such as during a four-stage clearance, normal clothes (such as office wear or industrial workwear) should **not** be worn under coveralls. The risk of contamination is higher, and if the coverall tears, underclothes could get contaminated.

In these cases, only protective, disposable clothing should be worn. Disposable coveralls should be worn with disposable undergarments.

In certain situations, such as cold weather, extra clothes may be needed. Disposable vests, pants, and socks are recommended.

PPE for entry into live enclosures

Assessors should avoid entering live enclosures wherever possible. If entering a live enclosure is unavoidable, assessors will have to wear full PPE and RPE as required for removalists and follow full decontamination procedures.

Required RPE and PPE will include:

- full-facepiece powered respirators with P3 filters
- disposable underclothes
- disposable coveralls (including transiting coveralls if needed)
- laceless, cleanable footwear
- gloves if necessary.

See Section XX of [placeholder for removal GPG] for more information.

8.4 Clothing, PPE, and RPE summary

This table outlines the **minimum** clothing, PPE, and RPE standards that assessors must wear during decontamination activities.

	Summary of PPE to be worn			**Decontamination required**	
	Coverall	**RPE**	**Cleanable footwear**	**Preliminary**	**Full**
Four-stage clearance: Stage 1 and any pre-enclosure entry preparation	Optional	No	Optional	No	No
Four-stage clearance: Stages 2 and 3 (inside enclosure)	Yes	Half-mask or disposable APF=20	Yes	Yes	If needed
Four-stage clearance: Stage 4 visual inspection (after enclosure dismantling	Optional	Optional	Yes	If necessary	No

	Summary of PPE to be worn			Decontamination required	
	Coverall	**RPE**	**Cleanable footwear**	**Preliminary**	**Full**
DCU clearance	Single	Half-mask or disposable APF=20	Yes	Yes	No
Live enclosures	Two	Full-facepiece powered APF=40	Yes	Yes	Yes

Table 12: PPE, RPE, and decontamination summary for assessors

9.0 Health monitoring

9.1 Purpose of health monitoring

Working in hazardous conditions can adversely affect workers' health – in both the short (acute) and long term (chronic). This includes when the work involves substances that are harmful to people's health.

Health monitoring can be used to detect if workers are experiencing health effects from potential exposures.

Asbestos-related diseases take years to appear, but doctors can run tests to monitor the health of people who work with asbestos. However, do not use these tests to assess asbestos control measures. Use asbestos air monitoring, especially personal air monitoring, to check if control measures are working.

9.2 Who does health monitoring apply to?

Assessors must have health monitoring if they are at risk of asbestos exposure when doing any of the following:

- licensed asbestos assessor work
- any other ongoing asbestos-related work where airborne asbestos exposure is a risk, including competent persons doing asbestos assessments.

Self-employed PCBUs should monitor their own health to comply with the Act.

9.3 Who is responsible for making sure health monitoring is conducted?

PCBUs that undertake asbestos assessments have a duty to make sure that appropriate health monitoring is in place for their assessors. If the assessor is self-employed they must provide for their own health monitoring.

PCBUs should monitor their worker participation rates in health monitoring at regular periods, to make sure that they are fulfilling their duty to provide it.

9.4 Informing workers about health monitoring

The PCBU must tell its workers about any asbestos-related health monitoring requirements before they start any work that may expose them to asbestos.

The PCBUs must give those workers the following information:

- that the PCBU has a duty to carry out health monitoring
- what health hazard triggered the requirements for the health monitoring (in this case, asbestos)
- what the health monitoring will consist of and how it will be done
- the information that has to be given to the occupational health practitioner
- that the PCBU has a duty to obtain a health monitoring report from the occupational health practitioner
- that the PCBU has a duty to notify the regulator and other relevant PCBUs
- how health monitoring reports will be kept, stored, and shared, including keeping confidentiality
- the reasons for health monitoring:
    a. to help the PCBU reduce the risk of exposure to health hazards in the workplace
    b. to enable the PCBU and other PCBUs in the workplace to take remedial action within the workplace to manage the health risk
    c. to help with treating and protecting workers who are or were exposed to health hazards.
- that they will inform WorkSafe if test results indicate a worker may have a disease, illness, or injury caused by the work that triggered the health monitoring. This helps WorkSafe carry out its functions under the Act.

9.5 Components of health monitoring

Health monitoring must include specific checks to monitor the health of workers at risk of asbestos exposure, unless a medical practitioner recommends otherwise. This is a called a 'full asbestos medical'.

This table shows the checks needed to monitor an assessor's health in these situations.

Health monitoring requirement	Details
Physical examination	This should focus on the respiratory system and include a lung function test (FEV1 and FVC).

Health monitoring requirement	Details
	Note: A chest x-ray (PA and lateral) is **no longer needed** unless recommended by a specialist.
Worker's history	Demographic, medical, and occupational history.
Exposure records	Personal exposure to asbestos, including: - relevant risk assessment reports - air monitoring results - personal exposure monitoring results. Investigation reports if the airborne contamination standard for asbestos was exceeded.

Table 2: Components of a 'full asbestos medical'

9.6 When health monitoring occurs

A full asbestos medical must occur within four weeks of the worker starting asbestos assessment work

Further full asbestos medicals should be done every two years from when asbestos assessment work starts, no matter when the worker started work with their current PCBU.

This table shows the health monitoring calendar to use for asbestos assessors.

Years after starting asbestos work	Procedure
Within 4 weeks of commencing work	Initial full asbestos medical
2	Full asbestos medical
4	Full asbestos medical
Every two years thereafter	Full asbestos medical

Table 14: Health monitoring calendar for asbestos assessors

9.7 The people carrying out health monitoring

An occupational health practitioner must carry out or supervise the health monitoring.

An occupational health practitioner includes medical practitioners, nurse practitioners and registered nurses who have the knowledge, experience, and skills in occupational health to carry out or supervise health monitoring.

9.8 Paying for health monitoring

The PCBU must pay all health monitoring costs for their workers. If multiple PCBUs are responsible for a worker's health monitoring, they can agree that one PCBU will organise it. However, all PCBUs must share the costs equally unless they agree otherwise.

9.9 Information for the occupational health practitioner

The PCBU commissioning health monitoring must provide the following information to the occupational health practitioner:

- the PCBU's name and address
- each worker's name and date of birth
- a description of the type of work the workers are doing that triggered the need for health monitoring
- if the workers have started the work, and how long have they been doing it.

9.10 Health monitoring report

The PCBU who arranges health monitoring must take all reasonable steps to get a report from the occupational health practitioner as soon as possible after the monitoring is complete.

The health monitoring report must include:

- the worker's name and date of birth
- the name of the occupational health practitioner
- the name and address of the PCBU who arranged the health monitoring
- the date the health monitoring took place

- any test results that indicate whether the worker was exposed to a health hazard
- any advice if test results suggest the worker may have a disease, illness, or injury from the work that required health monitoring
- any recommendation for action, including whether the worker can continue the work that required health monitoring.

9.11 Who is entitled to the health monitoring report?

After receiving the report from the occupational health practitioner, the PCBU who arranged the health monitoring must give a copy to the relevant people as soon as possible.

This table below shows who to send the report to.

Need	Details
Who gets the health monitoring report?	- the worker - all PCBUs responsible for the worker's health monitoring - anyone with a duty to provide health monitoring for that worker. **Note:** all parties who receive the health monitoring report must keep it confidential and treat the information in accordance with the Privacy Act 2020
When to give the report to the worker?	Workers must get a copy of their health monitoring report as soon as possible after the PCBU receives it.
Who gets a copy if certain conditions apply?	WorkSafe must get the report if it includes: - test results showing the worker may have a disease, injury, or illness from working with asbestos - recommended actions, including whether the worker can keep working with asbestos.

Table 3: People to send the health monitoring report to

PCBUs may use relevant anonymised health monitoring results to track worker harm rates as part of standard health and safety performance reporting.

9.12 Health monitoring reports

The PCBU must keep each workers' health monitoring reports for at least 40 years.

When a worker leaves the business or the PCBU stops trading, the worker must get a copy of their health monitoring records. A copy of the records may also be sent to the worker's general practitioner if the worker consents to this.

The PCBU must not disclose a workers health monitoring report without the worker's written consent, unless:

- the PCBU must give a copy of the report to a relevant PCBU (such as in a principal-contractor relationship)
- the PCBU must give a copy of the report to WorkSafe or another Regulator.

For more information, see WorkSafe's webpage: Exposure monitoring and health monitoring – guidance for businesses

10.0 Exposure monitoring

Carry out exposure monitoring to assess health risks, check if controls are effective, and decide when to review or change them.

10.1 The purpose of exposure monitoring

PCBUs that undertake asbestos assessments must make sure that appropriate exposure monitoring is done for their assessors while carrying out assessments. If the assessor is self-employed the assessor must provide for their own exposure monitoring.

The Health and Safety at Work (General Risk and Workplace Management) Regulations provide general requirements for exposure monitoring.

Exposure monitoring is used to:

- identify, assess and confirm health risks
- identify where new control measures are needed
- monitor how well current control measures are performing, and
- identify when control measures need to be reviewed, updated or removed.

10.2 When and how exposure monitoring should be done for assessors

Exposure monitoring should be done periodically (for example 5% of air sampling jobs). Assessor PCBUs should develop a sampling strategy that includes all assessors and has an increased focus on higher-risk activities.

Exposure monitoring for assessors should be done when:

- carrying out visual inspections and air monitoring inside enclosures during four-stage clearance procedures
- collecting bulk samples, including soil
- entering active enclosures for any reason.

Assessor exposure monitoring will typically be done using personal air sampling. This can be set up by assessors as part of the air monitoring inside the enclosure if the assessor is suitably qualified, and trained in personal exposure monitoring.

Static monitoring (including clearance sampling) is not a substitute for personal exposure sampling. Static monitoring may underestimate personal exposures where the

disturbance is close to the breathing zone of the person. Clearance sampling cannot be relied on to provide details of the assessor's personal exposure.

Any results from personal air monitoring will need to be analysed by a suitably qualified occupational hygienist. Only a suitably qualified occupational hygienist can do an exposure assessment.

10.3 Exposure monitoring for other health risks

In addition to measuring asbestos exposure. Exposure monitoring should be considered for helping assess the risk of other health hazards common in asbestos worksites. Examples of other risks that should be considered include:

- noise
- hand-arm vibration
- heat stress
- biological hazards
- exposure to harmful solvents.

A suitably qualified and experienced health and safety professional (such as an occupational hygienist) can advise on what type of additional exposure monitoring is appropriate based on the nature of the work, and risks identified.

For more information, see WorkSafe's webpage: Exposure monitoring and health monitoring – guidance for businesses

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 lock	A controlled entry system designed to minimise fibre release when workers enter or exit an enclosure and where workers undertake preliminary decontamination
Air monitoring	Measuring airborne asbestos fibre concentrations 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 and six common types: - chrysotile asbestos (white) - crocidolite asbestos (blue) - grunerite (or amosite) (brown) - actinolite - anthophyllite asbestos - tremolite asbestos.
Asbestos assessors	Asbestos assessors are authorised by WorkSafe to check whether asbestos removal work has been completed to the required standards. They also make sure the area 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: - review a work plan made by an asbestos removalist before removal work to make sure it is safe and suitable before work starts.
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 framework for managing asbestos in a building or workplace. It includes steps on how to: - identify asbestos material in your building or workplace - prioritise and manage the risks of asbestos - keep up-to-date records of your 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 or 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 done (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.
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 ACM.
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 ACM that has been removed. Asbestos waste also includes items used during work with asbestos (for example, plastic sheeting and disposable PPE) that must be disposed of.
Asbestos-containing material (ACM)	Any material or object that contains asbestos.
Asbestos-contaminated dust (ACD)	Dust or debris that has settled within 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.
Bag lock	Controlled system for removing asbestos waste from an enclosure including waste packaging decontamination.
Business or undertaking	The usual meanings are: - business: an activity usually done 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 awarded by a training provider on completion of 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. 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: - any amount of non-friable asbestos or ACM - ACD associated with removing any amount of non-friable asbestos or ACM.
Class B asbestos removal	Asbestos removal work for which a Class B asbestos removal licence is required for non-friable asbestos.
Clearance certificate	A document issued by an independent licensed asbestos assessor or a competent person, certifying that an asbestos removal area is free from contamination and safe for reoccupation.
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	A competent person means a person who has the knowledge, experience, skills, and qualifications to carry out a particular task under these 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.
Decontamination unit (DCU)	A dedicated facility for full personal decontamination including showering and changing into clean clothing

Demolition	Demolishing or dismantling a structure, part of a structure, or equipment that is loadbearing or integral to the physical integrity of the structure.
Dispersed Oil Particulate (DOP)	DOP (Dispersed Oil Particulate) testing is a method for verifying the effectiveness of HEPA filters used in asbestos removal and other hazardous environments. It ensures the HEPA filter is properly functioning and doesn't allow dangerous particles, including asbestos, to leak into the air.
Duty	A legal obligation to act responsibly according to the law.
Duty holder	A person who has a duty under HSWA. Duty holders include PCBUs, officers, workers, and other people at workplaces.
Eliminate	To remove the sources of harm (for example, equipment, substances, or work processes).
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.
Four-stage clearance procedure	A thorough inspection to ensure asbestos removal areas are clean and safe, including site condition checks, visual inspections, air monitoring, and final assessment.
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 similar 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. You can find the full text of the Act on the New Zealand Legislation website.
IANZ	International Accreditation New Zealand.
Independent	In the context of asbestos assessment, to be independent the asbestos assessor or competent person should be able to be objective and impartial when performing their role and not subject to any unmanaged conflict of interest that could influence their decisions.
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.
Minimise	To take steps to protect people's health and safety by reducing the likelihood of an event occurring, reducing the level of harm to people if it does occur, or both.
Membrane filter method	A standardised method for air monitoring using filters to capture fibres from air samples for analysis.
NATA	National Association of Testing Authorities.

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 people 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.
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.
Phase Contrast Microscopy (PCM)	A technique used to analyse air samples by counting fibres collected on a filter to determine airborne fibre concentrations.
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 clothes) 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 people 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 considering 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).
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 hazardous 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 using a H-Type vacuum that has been recently DOP tested, otherwise asbestos fibres may be released creating a contamination risk.
Surface testing	Planned and controlled disturbance of enclosure surfaces immediately before clearance air monitoring.
Trace level	An average concentration over any 8-hour period of less than 0.01 respirable asbestos fibres per millilitre of air.

Worker	An individual who works for a PCBU including: - employees - contractors or subcontractors - employees of a contractor or subcontractor - employees of a labour hire company - outworkers (including homeworkers) - apprentices or trainees, people gaining work experience or on a work trial - volunteer workers. 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 done or is customarily done. 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 1: Templates - Class A clearance inspection records and DCU inspection records

Class A clearance inspection record template

Class A Clearance inspection record			
Assessor's name			Assessor's licence number and expiry date
Assessor's business address			
Telephone			
Email			
Contract number	Job number	Reference number	
Commissioning PCBU's name, address, and contact information			
Clearance site address			
Areas to assess. A brief description of the work, including the dates when the removal was done.			
Estimated time in hours, for the Stage 2 thorough visual inspection. Discuss with the removalist and confirm if you have.		Actual time in hours, for Stage 2 thorough visual inspection.	
Time difference between estimated and actual, and comment if over 20%			
Attachment number attaching the following:	Drawings/photos	Plan of work/extracts from plan of work	Notification form
Attachment number			

Class A Clearance inspection record				
Removalist's name, address, and contact information				
Removalist site supervisor's name and contact information				
Commissioning PCBU representative who will confirm when the clearance starts and acknowledge the outcome				
Anticipated start of the clearance		Date	Time	
Confirmed start of the clearance		Date	Time	
Stage 1 of 4: Preliminary site check and job completeness				
		Yes	No	Comments
1.1 State if the ARCP was checked to confirm the areas to assess (record any issues, differences, fixed installations, or ACMs to remain)				
State if the following are intact and working (if not, record the issues)	1.2 Work areas			
	1.3 Enclosures/air extraction: (airlock door flap (middle section) should deflect by 200–250 mm)			
	1.4 DCU			
State if the following areas/items and their immediate surroundings are free of	1.5 Skip area/waste route/wheelie bins			
	1.6 Transit route			

Class A Clearance inspection record					
obvious asbestos debris and waste sacks (wheelie bins should be clear of dust and debris). Record any issues if not. Note: 1.8 should also be free of unnecessary equipment. If not or this cannot be confirmed, note it down and continue the assessment. The enclosure is covered in Section 2.2	1.7 DCU				
	1.8 Enclosure/work area				
State if Stage 1 clearance passed or failed, and include the time and date		Passed	Failed	Time	Date
Comments: if failed, cross out the remaining stages and ask the representative to sign the acknowledgement box at the end					
Assessor details		Name	Signature		
Attach Stage 1 photos to the document with the date, time, and caption					
Photos showing transit route					
Photos showing waste route					
Photos showing area around skip					

Class A Clearance inspection record				
Photos showing areas surrounding enclosure				
Stage 2 of 4: Thorough visual inspection				
Requirement	Yes	No	Comment	
2.1 Airlock/bag lock/enclosure are free of waste bags, materials, and unnecessary equipment				
2.2 All ACMs are completely removed from the underlying surfaces				
2.3 Interior surfaces inside the enclosure are free from debris and fine settled dust				
State if Stage 2 passed or failed, and include the time and date	Passed	Failed	Time	Date
Comments: if failed, insert a photo of the location, cross out the remaining stages, and ask the representative to sign the acknowledgement box at the end				
Comments: record if additional, minor cleaning (less than 10 minutes) was needed				
Assessor details	Name	Signature		
Attach Stage 2 photos to the document with the date, time, and caption				
Photos showing airlock free from obvious debris				
Photos showing bag lock free from obvious debris and waste bags				
Photos showing ACMs are completely removed				

Class A Clearance inspection record				
Photos showing all interior surfaces, including at high-level, are free from debris and fine settled dust				
Stage 3 of 4: Surface testing and clearance air monitoring - inside enclosure				
Sampling information	Yes	No	Comments/values	
3.1 All areas are dry				
3.2 Air movers off and sealed				
3.3 No evidence of lock-down sprays				
3.4 Original floor surface uncovered				
3.5 Area or volume of enclosure (state both m^2 and m^3)	m2	m3		
3.6 Number of collected air samples	Calculated	Actual		
3.7 Total surface testing disturbance time (minutes)	Calculated	Actual		
3.8 Surface testing disturbance method used				
A drawing showing the sampling positions is included as attachment number:				
Results (use extra rows if more than 5 samples)	Set 1: Fibre conc. (f/ml)	Set 2: Fibre conc. (f/ml)	Set 3: Fibre conc. (f/ml)	Set 4: Fibre conc. (f/ml)
Sample 1				
Sample 2				
Sample 3				
Sample 4				

Class A Clearance inspection record				
Sample 5				
Pass/fail				
State if Stage 3 is passed or failed, and include the time and date	Pass	Fail	Time	Date
State whether the area is cleared and ready for enclosure removal. Record the air monitoring test details in the attachment number.				
Comments: if failed, cross out the remaining stage and get the representative to sign the acknowledgement box at the end				
Assessor details	Name		Signature	
Attach Stage 3 photos to the document with the date, time, and caption. You must include a photo for each pump and associated area.				
Photo showing pump 1 and area				
Photo showing pump 2 and area				
Photo showing pump 3 and area				
Add photos showing extra pumps and areas as needed				
Photo of the broom used				
Photos showing that areas are dry				
Photos showing that NPUs are sealed				
Stage 4 of 4: Site assessment for reoccupation (after enclosure removal)				

Class A Clearance inspection record				
Requirements	Yes	No	Comments	
4.1 The former enclosure/work area and the nearby surroundings are free from visible debris, asbestos sacks, and waste				
4.2 The transit and waste routes are free of sacks and waste				
4.3 All ACMs involved in the work were removed, and any remaining known ACMs are intact				
Attach Stage 4 photos to the document with the date, time, and caption. Photos should show the former enclosure area is clear from debris and other material.				
State if Stage 4 passed or failed, and include the time and date	Passed	Failed	Time	Date
The area can/cannot be reoccupied (circle correct option)				
Comments				
Assessor details	Name	Signature		
Commissioning PCBU's representative's acknowledgement				
I have been advised by…… that the Clearance certificate has not been issued because the area has failed stage [number]	Name	Signature		
	Date	Time		
I have been advised by…… that the Clearance certificate can be	Name	Signature		
	Date	Time		

Class A Clearance inspection record		
issued as the area has passed all four stages		
(Complete one of the above, and cross out the other option)		

DCU inspection record

DCU inspection record			
Assessor's name and licence number			
DCU inspection certificate number and issue number			
Manufacturer		Serial number	
Contract number	Job number	Reference number	
Membrane method used			
Removalist's name, address, and contact information			
DCU site address for clearance			
Removalist site supervisor's name, address, and contact information			
Commissioning PCBU representative who will confirm when the inspection starts and acknowledge the outcome			
Anticipated start	Date	Time	
Confirmed start	Date	Time	
Stage 1: Thorough visual inspection			
Requirement		Yes	
DCU is free from waste, debris, dust, contaminated clothing, and waste bags			

DCU inspection record				
Interior surfaces are free from debris and settled dust				
State if the DCU inspection passed or failed, and include the time and date	Passed	Failed	Time	Date
The DCU is free/not free of visible asbestos waste, debris, and surface dust (circle correct option)				
Comments: if failed, cross out the remaining stage and get the representative to sign the acknowledgement box at the end				
Assessor's details	Name		Signature	
Attach Stage 1 photos to the document with the date, time, and caption				
Photo showing the clean end				
Photo showing the shower				
Photo showing the dirty end				
Stage 2: Clearance air sampling inside the DCU				
Sampling information	Yes	No	Comments	
All areas are dry				
Surface testing disturbance method used				
Total time of the disturbance	Minutes			
Total floor area of the shower and dirty end (m^2)				
Number of samples collected				
Air sampling results				
Results	Set 1: Fibre conc. (f/ml)	Set 2: Fibre conc. (f/ml)	Set 3: Fibre conc. (f/ml)	Set 4: Fibre conc. (f/ml)

DCU inspection record				
Sample 1				
Sample 2				
Pass/fail				
Attach Stage 2 photos to the document with date, time, and caption				
Photo showing the brush				
State if DCU clearance air sampling passed or failed, and include the time and date	Pass	Fail	Time	Date
The DCU is cleared/not cleared for removal and reuse (circle appropriate option). Note if the DCU will stay on site for another job. Test details for air monitoring are in attachment number:				
Comments: if failed, cross out the remaining stage and get the representative to sign the acknowledgement box at the end				
Assessor's details	Name		Signature	
Removalist's representative acknowledgement				
I have been advised by……. that the DCU inspection records has not been issued because the DCU has failed stage [number]	Name		Signature	
	Date		Time	
I have been advised by……. that the DCU inspection records can be issued as the DCU has passed all stages	Name		Signature	
	Date		Time	
(Complete one of the above, and cross out the other option)				
Issue of the DCU inspection records by the assessor				

DCU inspection record		
Copies of this inspection record and issue [number] were issued to:		
Assessor’s details	Name	Signature
	Date	Time

Asbestos removal area handover form

Asbestos removal area handover form The removalist's visual inspection form must be given to the assessor before the four-stage clearance starts. The removalist must keep a copy.	
Objective: Supervisor to carry out the thorough visual inspection of enclosure/work area to confirm the readiness for clearance inspection. Areas to be clean from visible debris and dust.	
Site address	
Size of enclosure? (see ARCP) (L×W × H (metres))	
Has a new NPU pre-filter been installed?	Yes/No - if no, explain
Have all ACM removal locations been checked and confirmed free from asbestos?	Yes/No – if no, explain
Have all floor surfaces, walls, and items been inspected and confirmed visually clean?	Yes/No - if no, explain
Have all ledges, sills, high surfaces, and voids been inspected and confirmed visually clean?	Yes/No - if no, explain
Have ACM removal locations been checked and confirmed visually clean?	Yes/No - if no, explain
Have all rooms been checked and confirmed visually clean?	Yes/No - if no, explain
Have all cables, wiring, and items staying in enclosure during the four-stage clearance been checked and confirmed visually clean?	Yes/No - if no, explain
How long did the supervisor’s visual inspection take?	
Start time	
Finish time	

Asbestos removal area handover form The removalist's visual inspection form must be given to the assessor before the four-stage clearance starts. The removalist must keep a copy.	
Total time (hours/minutes)	
I confirm that I have carried out a thorough visual inspection of the enclosure or work area, and the area is visually clean and ready for the assessor for the independent four-stage clearance	Supervisor's signature
	Date
	Time
Hand form to assessor before the four-stage clearance starts	Assessor's signature
	Date
	Time

Appendix 2: Air monitoring and sampling equipment

World Health Organisation (WHO) standard air sampling method

Use an open-faced filter holder to comply with the WHO standard method. It should:

- be fitted with an electrically conducting cylindrical cowl
- expose a circular filter area at least 20 mm in diameter for sampling.

The cowl usually extends 1.5 to 3.0 times the filter's effective diameter in front of the filter.

Types of sampling heads

Several manufacturers make injection-moulded conductive plastic sampling heads that come preloaded with a suitable filter.

Alternatively, use metal cowls with a PTFE O-ring. A cowled filter holder protects the filter and allows a uniform deposit. The cowl points downwards during sampling.

Required components

Set up the filter holder with these components:

- Use flexible tubing to connect the filter holder to the pump
- Fit a cap or bung over the cowl entrance to protect the filter from contamination during transport.

Use different filter diameters and shorter cowls if they give comparable results. Measure them to confirm the effective filter area.

Filter specifications

- Use membrane filters made from mixed esters of cellulose or cellulose nitrate, with a pore size between 0.8 and 1.2 micrometres (optically clear grade).
- Ideally, use filters that:
    - are 25 mm in diameter (minimum 20 mm)

- have a printed grid on the sampling side. This grid aligns with the collected particles and helps with focusing during analysis. Distorted grid lines suggest the filter was not mounted correctly.

Measuring the exposed filter area

- Measure and record the diameter of the exposed filter area to the nearest millimetre (within ±5%) for each cowl or O-ring type used.
- One method is to sample from a cloud of dark-coloured dust using the filter holder and cowl. Mount the filter on a slide as usual and measure the diameter using:
  - the microscope stage vernier at low magnification to traverse the dark area, or
  - vernier callipers.
- Take at least two measurements at right angles. Repeat this for a minimum of three filters from the same holder or O-ring type.
- If the six measurements differ by more than 1 mm, this could indicate a poor filter holder fit or an unsatisfactory clearing method.

Identifying leaks

- Leaks in the sampling head may appear as an uneven deposit along one edge or as dust outside the exposed filter area.
- If all sampling cowls are the same type, only measure a representative selection.
- Calculate the exposed filter area to one decimal place.

Handling precautions

- Handle filters carefully to avoid contamination.

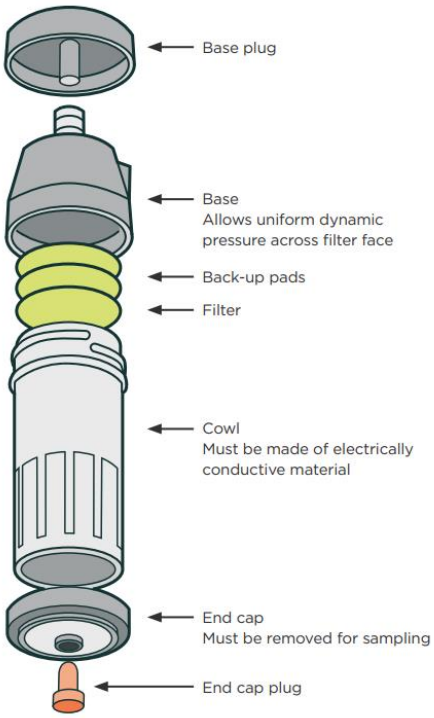

Figure 7: Exploded view of a personal sampling head

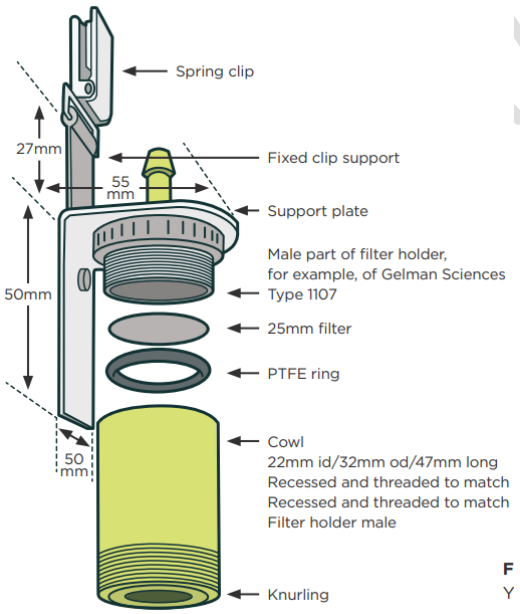

Figure 8: Exploded view of a personal sampling head with a metal cowl

Pump requirements and operation

Pump requirements (WHO method)

To comply with the WHO standard method when selecting and preparing a pump, the pump must:

- provide a smooth airflow
- keep the flow within ±10% for rates up to 2 litres per minute (L/min), and within ±5% for rates over 2 L/min
- maintain this flow rate throughout sampling, even if the pump's position changes.

For personal sampling, use a light, portable pump that can be worn on a belt or in a pocket. The battery must last the entire sampling period and keep the flow within the limits.

For static sampling, use mains-powered pumps that meet safety requirements. The pump should allow the sampling head to sit 1–2 metres above ground.

Pump preparation (general guidance)

Set up pumps to ensure consistent and accurate sampling.

- **Flow stabilisation:** Some pumps may drift during warm-up. Run the pump for 10–15 minutes before setting the flow, unless the manufacturer or sampling data shows this is unnecessary.
- **Filter and holder:** Use a dedicated filter and holder. Reuse them across several pumps before discarding.
- **Flow maintenance:** Check the pump can hold a steady flow for the full sampling period (for example, up to 4 hours).
- **Short-period samples:** Take extra care with short samples. Instability early on can affect the measured volume.

Flow measurement

- Use a working flow meter that can accurately measure flow within the specified limits (see *Pump requirements and operation* in Appendix 2: *Air monitoring sampling equipment*).
- Calibrate the flow meter using a primary standard.

- A flow meter built into the pump may be used if it meets the accuracy requirements and is calibrated against a primary standard or a master flow meter with a loaded filter in place.

Flow rate settings

- Set the flow rate to within ±10% at 0.5 L/min (the minimum recommended rate). Use at least 10 mm of tube distance for each 1 L/min division.
- The pump must allow fine adjustment and hold a steady flow so the float can be read within ±0.5 mm of the 0.5 L/min mark.
- Wider spacing between scale markings and higher flow rates proportionally improve reading accuracy.
- Set the flow within:
    - ±10% for rates up or equal to 2 L/min
    - ±5% for rates above 2 L/min.
- Float-type flow meter tubes must have enough markings, spaced appropriately, to set flow rates within these limits.
- Some rotameter-type flow meters include a foam insert where the sampling cowl pushes on to check the flow rate. These are not recommended because they seal poorly.
- When using a master flow meter to calibrate a field meter:
    - the laboratory must show both meters can be read accurately enough to set airflow within the required limits (see *Pump requirements and operation* in Appendix 2: *Air monitoring sampling equipment*)
    - this is usually done using wider spacing between airflow markings than the minimums listed earlier.
- Bubble flow meters and digital direct-reading instruments:
    - measure the air volume displaced by the pump
    - do not need correction for pressure or temperature
    - give more accurate readings than float-type meters when used within their specified airflow range.

Accuracy and stability

- Keep float-type flow meters vertical when taking readings.

- Temperature and pressure measurements are not usually needed, as they have little effect on overall uncertainty. In New Zealand, there is no need to adjust sample volumes for changes in atmospheric temperature and pressure.
- The length of the flow meter tube, airflow range, and the spacing and number of markings affect calibration and reading accuracy.
- If using an external flow meter to check the flow rate, include its accuracy in the overall pump performance assessment (see *Pump requirements and operation* in Appendix 2: *Air monitoring sampling equipment*).
- The airflow and float in the flow meter tube must stay stable enough to take precise readings against the tube markings.

Calibrations and maintenance

- Make sure there are no leaks or significant blockages in the sampling train between the sampling head and the flow meter.
- Keep the flow metre inlet open to the atmosphere (unobstructed) to avoid incorrect readings.
- Primary standard or master flow meters must:
    - have accuracy traceable to national standards
    - be used only for in-house calibration of working flow meters
    - be used only according to the calibration certificate conditions.
- Recalibrate the master and working flow meters based on how often and how they are used, and any evidence that shows their stability over time:
    - The WHO method gives procedures for in-house calibration against a bubble flow meter.
    - Many prefer to send their master flow meters to an accredited calibration laboratory for recalibration.
- Visually check master flow meters for damage every three months.
- Calibrate working flow meters monthly or quarterly, with documented evidence covering at least one year to justify the longer interval.
- Keep records of all checks and calibrations.

Sampling

Sampling period, flow rate, and volume

Where possible, design sampling procedures and strategies to:

- keep sample densities within the range for optimum accuracy (100–650 f/mm²)
- make sure the minimum LOQ is based on at least 20 fibres.

For recommended flow rates and sampling times for various sampling strategies, see Table 16.

Sampling method

Before starting the timed sampling period that records flow rate and volume:

- Remove the protective cap from the filter holder and connect the holder to the sampling pump.
- Switch on the pump to warm it up and stabilise the flow rate.
- If required, replace the filter cassette used during warm-up with the field sampling cassette.
- Set the flow rate to the required level using the working flow metre (see Table 16).
- Switch off the pump, place it in the sampling location, then restart it immediately to avoid repeating the stabilisation process. See *Sampling* in this appendix.

Start of the sampling period

- For personal samples inside an active enclosure, the assessor may only be able to measure the flow rate before the workers enter and after they exit.
- Switch on the pump and record the time, flow rate, sampling location, and any relevant information (see *Sampling* in this appendix, and *Pump preparation* and *Flow measurement* in Appendix 2: *Air monitoring sampling equipment*).
- Shortly after starting, remeasure the flow rate into the filter cassette to check the sampling train is correctly assembled and leak-tight.
- For personal samples inside an active enclosure, the assessor may only be able to measure the flow rate before workers enter and after they leave.

During the sampling period

- For sampling periods longer than one hour, regularly check and adjust the flow rate. Record any adjustments and use these values to calculate the average flow and sample volume (see Figure 22).
- If the filter cassette is damaged or overloaded with particulates, replace it. Use the field flow meter to check the flow rate into the new filter cassette inlet is similar (within ±5%) and leak-free.
- If the pump records back pressure, use it to check for leaks. The back pressure should match the expected value for the filter in use.

End of the sampling period

- Remeasure the final flow rate using the working flow meter before switching off the pump. Fit the protective cap to the filter holder for transport.
- Record the time the pump was switched off and the final flow rate.
- The sampling period must be within ±2.5% of the planned duration.
- Check that the change in flow rate from start to end stays within the limits:
  - ±10% for flow rates of 2 L/min or less
  - ±5% for flow rates over 2 L/min.
- If the variation is outside these limits, reject the sample. If resampling is not possible, report an indicative value with the measured flow rate difference.
- Calculate the sampled air volume using the average flow rate and the total sampling time (see Figure 22).
- Smart pumps with built-in flow control, data logging, and a flow meter will automatically record the sampling data and calculate the total air volume.

This table shows flow rates recorded over time and how to calculate the air volume sampled in each period.

Time since first measurement (minutes)	Recorded flow rate (L/minute)	Duration of each period (minutes)	Average flow rate per period (L/minute)	Volume sampled (litres)
0	0.99	0	0	0
65	1.05	65	1.02	66.3
120	1.03	55	1.04	57.2

Time since first measurement (minutes)	Recorded flow rate (L/minute)	Duration of each period (minutes)	Average flow rate per period (L/minute)	Volume sampled (litres)
170	1.01	50	1.02	51.0
240	0.95	70	0.98	68.6
Total		240		243.1

Table 4: Time, flow rate, and volume calculations for sampling

This example shows a personal sample measurement, where a ±5% flow rate changes by ±5% at different times.

Calculate the total volume of air sampled (V) by adding the average volume collected during each time period using:

$$V = \frac{(f1 + f0)}{2.(t1 - t0)} + \frac{(f2 + f1)}{2.(t2 - t1)} + \frac{(f3 + f2)}{2.(t3 - t2)} + \frac{(f4 + f3)}{2.(t4 - t3)} + \frac{(fn + fn\text{-}1)}{2.(tn - tn\text{-}1)}$$

Where:

- **f** = flow rate measured at each time
- **t** = the time the flow rate was measured

Using only the first and last flow rate readings gives an average flow rate of 0.97 L/min over 240 minutes. The sample volume is 232.8 litres - 4.2% less than the volume calculated using flow rates measured at different points in time.

Figure 9: Example calculating total sample air volume from flow rate measurements

Personal sampling

- Attach the filter holder to the worker's clothing (such as the upper lapel, hood, or shoulder), so it points downwards and sits as close as possible to the mouth and nose, ideally within 200 mm.
- If localised concentrations are likely, place the sampling head on the side expected to show the highest result. Also consider whether the worker is left or right-handed.

- When a respirator is worn, position the sampling head away from the clean exhaust air.

Figure 10: Flow rate of pump being measured

- For specific short-duration activities compliance, and respiratory protection assessments, use a conductive cowled filter holder. Attach it to the worker's coverall so it points downwards and sits within 200 mm of the mouth and nose.
- Follow the same steps for localised dust and when a respirator is worn.

Figure 24: Personal sampler head

Static sampling

- Position the filter holder pointing downwards, 1-2 m above the floor, and away from walls or large objects.
- Label each filter holder clearly with details such as who or what took the sample, the date, and any relevant site information, including activities and environmental conditions that may affect the results.

Asbestos sampling blanks

Three types of blanks support quality control and help maintain the integrity of asbestos sampling:

- **Sampling media blanks** help check the quality of unused filters. To prepare these, extract filters from a box of unused filters, mount them, and count them before use. This confirms the batch is suitable. The procedure includes:
  - selecting at least four blank filters from each manufacturer's batch, or at least 1% of larger batches
  - confirming that average blank counts do not exceed three fibres per mm² (for example, five fibres per 200 fields)
  - investigating the cause if laboratory records show consistently higher counts, including checking the source supply.

Some filter types and batches have occasionally shown high background fibre counts. Manufacturer-supplied field blank results may not be reliable. Mounting filters can also introduce fibres, so laboratories should maintain their own quality assurance data.

- **Field blanks** support quality control. They are made by taking filters from suitable batches to the sampling area and handling them the same way as sampling filters.
  - Keep filters in capped, cowled heads during transport. Do not draw air through them or connect them to the pump.
  - Briefly remove and replace the cap at the sampling site.

Typically, use one field blank per job, or one per day for longer jobs. Mount and store all blank samples with the actual samples.

Count field blanks only if an actual sample has more than 20 fibres. If a field blank also has more than 20 fibres, reject all filters and resample.

- **Laboratory blanks** help check for contamination during laboratory handling. They are prepared by mounting and counting filters from approved batches. Use laboratory blanks if a field blank shows possible contamination or if there are concerns about contamination from laboratory sources.

  A laboratory blank may be analysed:

  - with each batch of routine samples
  - after sampling, if contamination is suspected.

The number and type of blanks tested depend on several factors. Always test sampling media blanks before use to confirm they are suitable.

The sampling organisation must prepare and label field blanks for identification. Investigate any contamination found in blank filters and monitor the consistency of membrane filters between batches.

Do not subtract blank counts from sample counts.

Note: The WHO method recommends subtracting blank counts, but this guidance does not. Evidence shows that blank counts are usually low and do not affect compliance measurements based on counts above 20 fibres (40 ends). For low counts, the precision is poor. Subtracting two low numbers, each with a wide confidence interval, is unlikely to give reliable results. For example, a count of four fibres has a 95% confidence interval of 1–10 fibres.

Only subtract blank counts if contamination on a field or laboratory blank is more than 8 fibres per mm² and resampling is not possible. In these cases, report both the original and adjusted counts and clearly state that subtraction was used due to high contamination on the blank.

Filter handling and transportation

Where possible, transport the filter in the capped filter holder.

If this is not possible:

- Remove the filter in a clean area and place it in a clean, conductive container with a tight-fitting lid. The exposed face must face upwards.
- Handle the filter only with flat tweezers, gripping the unexposed edges.
- If transporting in a container, secure the filter by taping the clean, unexposed edge - unless the container is guaranteed to stay upright and be handled with care.
- Cut the filter for mounting and analysis using a surgical scalpel with a rolling action.
- Avoid contaminating the filter or dislodging any deposits at any stage.
- Clean and dry the filter holder, cowl, or container before reuse.

Clearing and mounting filters

When extra analysis is needed to identify fibre types (see Appendix 4), cut the sample and blank filters in half using a scalpel with a rolling action. Hold each filter carefully by the edge:

- mount one half of the filter
- store the other half properly in case future investigation is needed
- label all samples and sub-samples clearly and with unique identifiers.

Preparation of filter holders

Before starting work, make sure suitable facilities are available and agreed with the commissioning PCBU. Make sure to:

- clean filter holders and cowls before reuse
- load and unload filters in an area with minimal fibre contamination
- **do not** load sampling cowls or mount filters inside the mobile DCU.

If loading sampling cowls or changing filters near the enclosure or asbestos work, collect background air tests to confirm the area is not contaminated.

Also:

- handle the filter with clean, flat-tipped tweezers, gripping only the edge of the filter holder, outside the exposed area (see Figure 25)
- face the printed grid on the filter towards the cowl
- seal the cowl entrance with a protective cap or bung when not sampling.

For push-fit cowls, especially if reloaded, check for poor sealing and tightness. To improve the seal:

- remove the protective cap
- push the cowl entry down very firmly onto a hard surface using a slight rocking action.

After loading, apply extra shrink seal bands over the seal to reduce the risk of leaks.

For screw-tightening cowls, check for tightness before use:

- over-tightening may damage the filter and cause leaks
- under-tightening may allow leaks around the filter’s edge.

Figure 25: Loading a cowl with an MCE filter

Acetone-triacetin mounting method

Assessors must use the acetone-triacetin mounting method.

- Condensing acetone vapour collapses the filter pores, making the filter stick to the glass slide. The filter becomes clear, and asbestos fibres stay close to the top surface.
- Triacetin forms a layer between the collapsed filter and the coverslip.
- When stored flat, the mounted slide can last for years with little damage, though some fibres may move slightly.
- If mounting half-filters, too much triacetin used to form the mount can cause slight changes in the area over time.

Mounting the filter

- Place the filter in the centre of a clean microscope slide, with the sample side facing up. Align the grid lines parallel to the slide edges if possible.
- Check that the filter is dry. Moisture interferes with the clearing process. Dry filters exposed to high humidity before mounting.

- Before mounting, place filters and containers in a warm air cabinet without a fan, or on a slide warmer. Partially remove the container lid to let moisture escape.
- Place a metal or inert plastic ring around the filter to control the spread of acetone and improve clearing.

Acetone application

- Use only enough acetone to clear the filter completely (approximately 0.25 ml).
- Place the **clean** slide under the outlet of the hot block (see Figure 26).
- Slowly inject acetone into the hot block to produce a steady stream of vapour over the filter. The filter should clear instantly.
- Using a small amount of acetone lowers the risk of fire hazards and health risks.

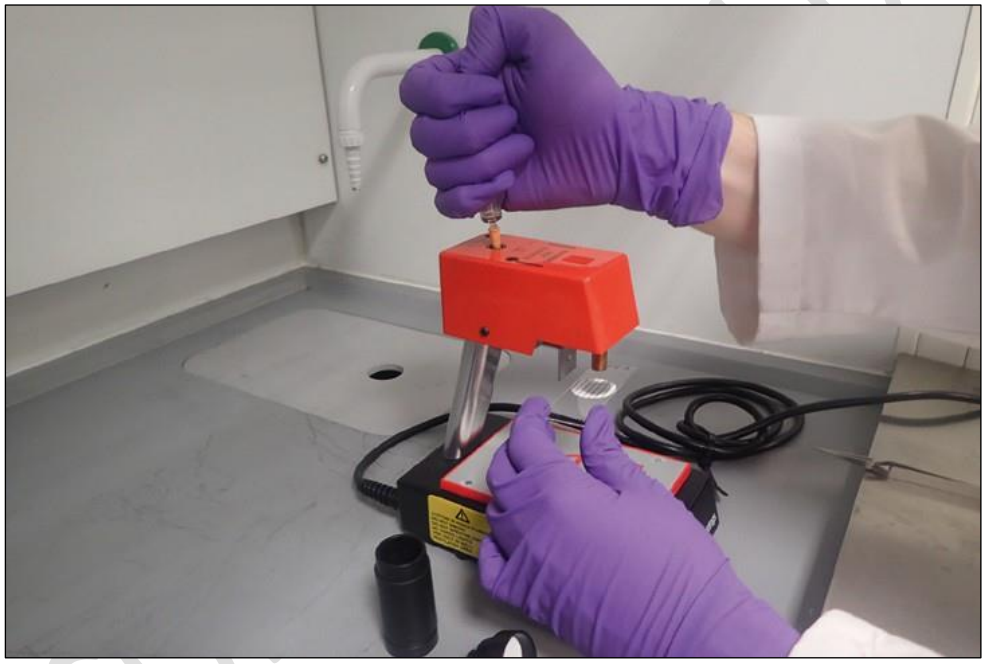

Figure 26: Clearing a filter using a hot block

Acetone vapour is highly flammable and has low toxicity. Carry out a proper risk assessment and follow safety precautions before starting.

- Remove or isolate all ignition sources. Keep the acetone storage bottle sealed when not in use.

- Perform the procedure in a fume cupboard to reduce exposure of acetone vapour:
    - Place the slide on a hot plate at 50-60°C for a few seconds to evaporate any remaining acetone before adding triacetin and the coverslip.
    - After evaporation, use a micropipette or suitable dropper to place approximately 120 µl triacetin on the filter. Use just enough to cover it without spilling when the coverslip is added.
    - Gently lower the clean coverslip at an angle onto the filter to push out any air.
    - **Do not** press or move the coverslip once placed.
    - Use a tissue or similar to draw off any excess triacetin using capillary action. **Do not** touch or wipe the coverslip. The filter will still look grainy under the microscope.

If immediate counting is planned, place the slide on the hot plate (up to 15 minutes at 50–60°C) to help clear the filter.

If not counting immediately, leave the slide overnight at room temperature. Keep it clean and horizontal, with the coverslip facing up, until cleared and ready to count.

If further analysis (such as SEM or TEM) or fibre identification is or may be needed, cut the filter in half before mounting. Mount one half using the acetone-triacetin method and store the other half in a clean, clearly labelled container.

For the recommended cutting filter method, see *Filter handling and transportation* in this appendix.

Storage and preservation

- Store slides in stable conditions, away from extreme temperatures.
- Keep slides with all related records for at least 12 months in case results need to be reviewed.

Microscopy

The ability to see fine fibres using PCM depends on:

- the transparency of the mounted filter
- the quality and cleanliness of the microscope optics
- correct use and maintenance of the microscope
- the operator’s eyesight

- other factors such as operator fatigue.

Differences in the smallest fibre width visible with phase contrast microscopes affect results between counters, because some fibre width distributions are smaller than the detection limit.

Microscope requirements

To consistently detect fibres at the limit of visibility, the microscope and its accessories must meet the following specifications:

- A **binocular stand** with Köhler or Köhler-type illumination, including a field iris. The condenser (sub-stage assembly), objectives, and eyepieces must be compatible with each other and with the stand.

- A **sub-stage assembly** with an Abbé or achromatic phase contrast condenser in a centrable focusing mount. The phase annulus centring must operate independently of the condenser centring mechanism.

- A **built-in mechanical stage** with slide clamps and x-y displacement.

- A **low-powered objective lens** (for example, 10x or 4x) for checking the evenness of the dust deposit on the filter and for locating the stage micrometer and test slide tramlines.

- A **positive-phase contrast objective lens** (preferably par focal with the low-powered lens) with 40x magnification. The numerical aperture (NA) (which helps distinguish between two very close points), must be between 0.65 and 0.70. The phase ring absorption must be between 65% and 85%.

- A **pair of optically matched binocular eyepieces**, preferably wide field, high eye-point type, providing at least 500x total magnification. One eyepiece must be a focusing type and allow a graticule to be inserted.

  Note: Some microscope stands have a tube extension that increases total magnification. To calculate total magnification, multiply the magnifications of the objective lens, tube extension, and eyepiece. The total magnification must not exceed 1000 times the NA.

- A **Walton-Beckett eyepiece graticule**, 32 type G22, with an apparent diameter of 100 ±2 µm in the object plane (when checked against a calibrated stage micrometer), to define the counting area.

- **Accessories**, including:

  - a **phase telescope or Bertrand lens** to align the phase rings

- a **green filter** (optional) to improve visibility, as the optics are optimised for green light
- a **calibrated stage micrometer** of 2 µm divisions (such as type S12)
- an **HSE/NLP mark II (green certificate) test slide** (see Figure 27)

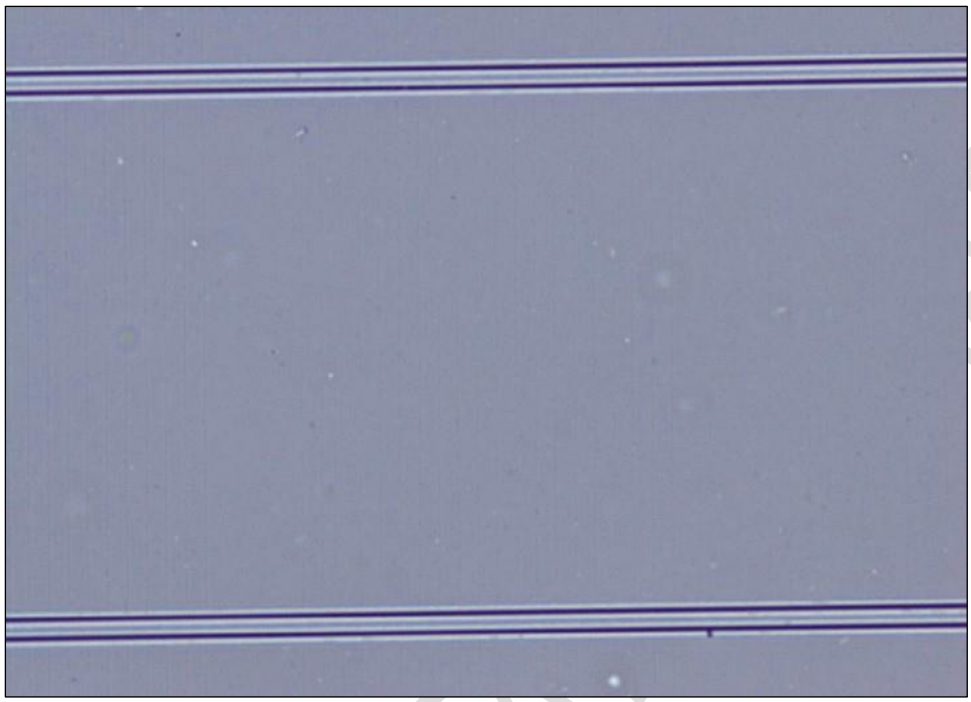

Figure 27: HSE/NLP Mark II test slide under phase contrast microscope at 500x

The coverslip and slide also affect how well fine fibres can be seen. Both must be made of glass and have the correct thickness:

- use standard-sized microscope slides (approximately 76 mm × 25 mm), preferably 0.8 mm to 1.0 mm thick
- the coverslip thickness must match the value marked on the objective lens (for example, 0.17 mm)
- select coverslips usually sold as 0.16 to 0.19 mm thick (for example, No. 1½) and approximately 25 mm in diameter or around 500 mm²
- keep slides and coverslips clean and in good condition for use.

Equipment for clearing filters

Use the acetone/triacetin hot block method to clear the filter (see Figure 28). Use a syringe to add the acetone, and a fine-tipped pipette or similar dropper to add the triacetin.

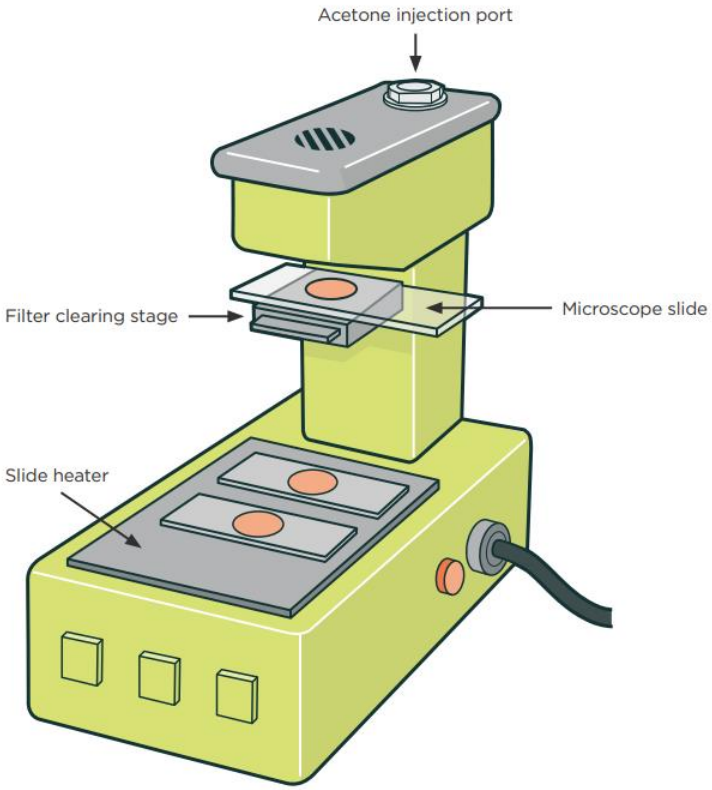

Figure 28: Example of a hot block for filter clearing

Appendix 3: Class A four-stage and DCU-clearance methods

Class A and DCU clearance overview

This appendix describes the four-stage Class A clearance and the DCU clearance procedures. For a summary, see Section 6: *Clearance inspection* and Table A5.1.

Dust and debris can collect on almost any surface inside the enclosure. Pay close attention to corners, overlaps, and folds in the sheeting, as these spots can trap asbestos dust and debris.

Other areas to check include:

- brackets and clamps around pipes and similar fixtures
- flanges and hatches on vessels and pipework
- screw holes, and areas around nails and battens where asbestos was removed
- roof spaces
- cable trays and conduits, especially those with metal mesh
- horizontal surfaces such as ledges, shelves, and windowsills
- undersides of equipment, furniture, and fittings
- rough, porous surfaces such as breeze block and rough concrete
- holes or cavities in walls where pipes, cables, or steelwork pass through
- areas around drains and sumps.

This table summarises the four-stage clearance procedure and the DCU inspection.

Stage	**Procedure**
Before starting	Define the scope of work during the contract stage to ensure enough time and resources are available.

Stage 1: Confirm scope	- Obtain or create a diagram showing areas needing clearance.
	- Visually check:
	  - the DCU
	  - the enclosure, nearby areas, and waste and transit routes
	  - that the enclosure is sealed properly

Stage	Procedure
	- inside the enclosure using viewing panels or CCTV. - Estimate the time needed for the thorough visual inspection.
Stage 2: Check inside enclosure	- Confirm all ACMs are fully removed from underlying surfaces. - Look for visible debris, including in the air lock and bag lock compartments. - Check for fine settled dust.

Stage 3: Test surfaces and sample air inside the enclosure	- Collect 480 litres per sample (for example, sample for 30 minutes at 16 L/min).
	- Immediately before air sampling, test surfaces by:
	  - sweeping floors with a long-handled brush
	  - brushing other surfaces with a short-handled brush.
	- Brush or sweep for at least 1.5 minutes per sample.
	- To pass, all air sample results must be below 0.01 f/ml.

Stage 4: After dismantling enclosure	- Visually inspect the area where enclosure was. - Check the waste and transit routes again for asbestos debris.

Mobile DCU clearance procedure	- Inspect the clean end:
	  - do a thorough visual inspection of the shower area and dirty end
	  - take air samples in the shower area and dirty end
	  - if the combined area is over 10 m^2, collect separate samples (480 litres per sample for each)
	  - disturb surfaces by sweeping the floor for 1.5 minutes per sample.

Table 5: Four-stage clearance procedure and DCU inspection summary

Preparing for the clearance inspection

Successful completion of the four-stage clearance and safe decontamination depend on the assessor being well prepared and having the right equipment.

- Enclosures vary in size, shape, location, and complexity. The assessor may need extra access and lighting and may face physical obstructions or restrictions.
- A camera is needed for photographic records. Cleaning materials are needed to decontaminate equipment after use.

Detailed four-stage clearance procedure

Stage 1: Preliminary check of site condition and job completion

Checking the ARCP and confirming the scope of work

When arriving on site, the assessor must:

- confirm the scope of work completed by the removalist
- make sure a current and suitable ARCP is available on site (electronic or hardcopy).
- check the ARCP to confirm it matches the agreed scope (see Section 6.3: *Scoping and planning the four-stage clearance*)

WorkSafe lists what the ARCP must include in [Section 6 of the *Good practice guide for asbestos removalists*].

If the ARCP is not suitable, current, available on site, or does not match the agreed removal work, the assessor must either:

- stop the clearance inspection, or
- issue a failed clearance inspection record (with the reason clearly stated) if the removalist cannot fix the problem immediately or take corrective action to stop it happening again.

Diagram of the removal work

Include a diagram in the clearance inspection records that shows the extent and scope of the removal work. The diagram must clearly show the main features, including:

- the removal area
- the enclosure or work area
- the airlock and bag lock
- transit and waste routes
- the skip and DCU locations
- key dimensions or sizes.

The assessor can use the diagram from the ARCP (electronic or hard copy). If none is available, the assessor must prepare one (see Figure 42).

The assessor and removalist should agree on the diagram's contents:

- for hard copies, both must sign and date it
- for electronic versions, the assessor should add a dated and timed note confirming the removalist has agreed to it.

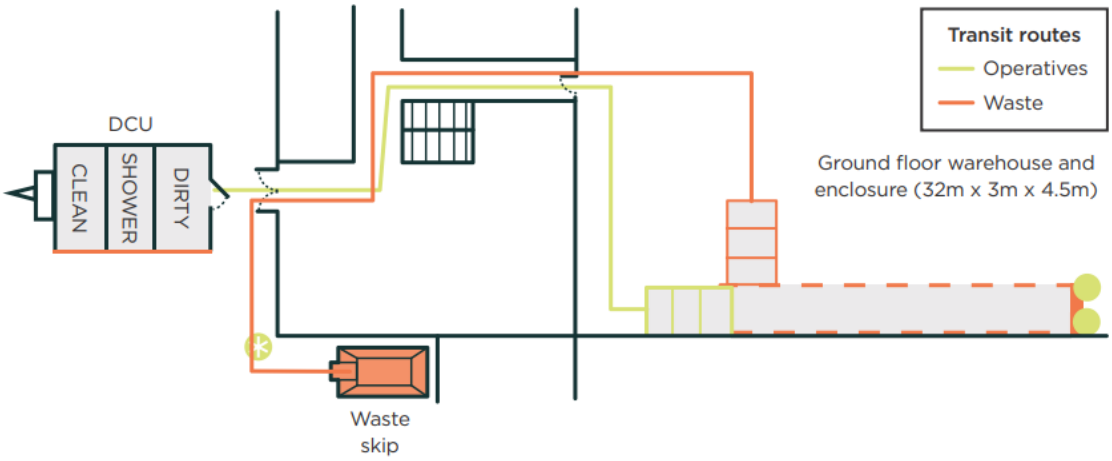

Figure 11: Example diagram showing removal area and transit routes

Having no clear view inside

If there are no viewing panels to see the whole work area, or the view is limited:

- install a viewing panel if possible
- make a note of this in the clearance inspection records
- take extra care when entering the enclosure.

Inspecting site conditions

Once the assessor has checked the ARCP and confirmed the scope of the work, they should complete a visual inspection of the site.

Taking photographs

The assessor should take photos to show site conditions (see Table 9).

Inspecting the surrounding areas

The assessor should check around the enclosure for clear signs of contamination.

Check the following areas:

- transit and waste routes
- areas next to the enclosure
- surfaces and floor areas near air locks and bag locks inside buildings (check these areas carefully)
- other nearby surfaces and floors.

Check for contamination such as:

- leaks from the enclosure
- burst or damaged waste bags
- debris or dust from poor decontamination or damaged waste bags.

Focus on obvious issues: This is not a detailed inspection like the one inside the enclosure. The aim is to find any obvious signs of contamination caused by the asbestos removal work.

For more information, see *Conditions for inspecting transit and waste routes* and *Multi-job sites* in *Record findings*

Checking waste transport items

The assessor should inspect any equipment used to move waste, such as wheelie bins. They should be clean and free of visible dust and debris.

If site conditions inspection findings are not satisfactory, the assessor must either:

- stop the clearance inspection, or
- issue a failed clearance inspection record (with the reason clearly stated) if the removalist cannot fix the problem immediately or take corrective action to stop it happening again.

Checking the DCU

The assessor must make sure the DCU facilities is fully operational, clean, and ready for use:

- check the clean end for:
  - cleanliness/dryness
  - hot and cold water
  - heating.
- check the shower area and dirty end by either:

    - looking in from the clean end
    - entering with the correct RPE and PPE.
- confirm the:
    - shower works and has hot and cold water
    - water drains to a safe place through a suitable filtration system
    - shower and dirty end are clean, dry, and free of any stored items
    - NPU is in place and operating.

If the DCU does not meet the above criteria, the assessor must either:

- stop the clearance inspection, or
- issue a failed clearance inspection record (with the reason clearly stated) if the removalist cannot fix the problem immediately or take corrective action to stop it happening again.

Checking the enclosure's integrity

The assessor must make sure:

- the enclosure is intact
- the removalist immediately cleans any asbestos debris found outside the enclosure
- any breaches in the enclosure are repaired before starting Stage 2
- the NPU is in place and working correctly.

The air extraction equipment should:

- remain on until just before Stage 3 air monitoring
- remain on until Stage 3 is complete and the enclosure is dismantled
- have new pre-filters fitted before the removalist's final clean.

If the enclose checks are not satisfactory or the extraction equipment is inadequate or not operational, the assessor must either:

- stop the clearance inspection, or
- issue a failed clearance inspection record (with the reason clearly stated) if the removalist cannot fix the problem immediately or take corrective action to stop it happening again.

Looking inside the enclosure

Before entering, the assessor should examine the inside of the enclosure using viewing panels or CCTV to check if the job appears complete. Look for:

- any remaining waste
- visible debris on surfaces
- poor lighting that makes inspection difficult
- missing inspection equipment (such as ladders or scaffolding)
- puddles, wet patches, or leaks
- signs of sealant on exposed surfaces
- other potential hazards.

If any of these issues are present, the assessor must either:

- stop the clearance inspection, or
- issue a failed clearance inspection record (with the reason clearly stated) if the removalist cannot fix the problem immediately or take corrective action to stop it happening again.

Before entering the enclosure, the assessor and removalist should also review any items in the ARCP that need special attention, such as water ingress (see Appendix 4: *Common problems during visual inspections*).

Important: Only enter the enclosure after fixing all issues and confirming that all required equipment is available to complete the clearance. If it is not possible to see inside the enclosure to pre-assess it, consider stopping or failing the clearance inspection. If the enclosure structure (such as solid walls lined with polythene or no windows) blocks the view, note this in the Stage 1 clearance inspection and take extra care when entering the enclosure.

Recording findings and actions

Before starting Stage 2 of the clearance inspection, the licenced assessor must record all findings, conversations, and any actions taken to address the issues identified during Stage 1 of the clearance inspection (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*).

Adverse conditions when inspecting transit and waste routes

The assessor must be able to identify obvious asbestos debris along the transit and waste routes. Rain or damp ground should not stop a stage 1 inspection, as the assessor is checking for visible debris rather than fine settled dust. A night-time inspection is acceptable if the area is well-lit (300-500 lux).

If the assessor considers the conditions unsuitable for inspection (for example, if it is too dark), they should not start or they should pause stage 1 of the clearance inspection until the conditions improve (for example, the following day). In rare cases where a long delay is expected (such as snow covering the routes for several days), the assessor can consider:

- recording the issue in the clearance inspection records
- continuing with the remaining clearance stages
- return with the removalist to complete stage 1 (and stage 4 if necessary) as soon as conditions allow.

Multi-job sites

- If multiple jobs are in progress at the same site and share areas such as a waste skip, transit routes, the assessor cannot inspect those shared areas for stage 1 while they are still in use. In this case:
- explain in the stage 1 certificate why the area was not inspected until all activities stop or are paused
- clearly identify which areas were inspected and record the exact time of each inspection
- apply this same approach to any other shared areas still in use for another job.

Estimating time for the visual inspection

The assessor should allow enough time for the detailed visual inspection. The time needed depends on the size and complexity of the job.

A thorough visual check of all parts of the enclosure is needed to confirm the area is clean and free from asbestos debris and fine settled dust.

At the start of the job, the assessor should:

- assess the complexity of the area and estimate how long the inspection may take

- use the estimate to plan and prepare for the work and allow enough time
- record the estimated time in the Stage 1 clearance inspection records.

Use Table A5.4 and *Things to consider when estimating time for a thorough visual inspection* to help estimate inspection time.

If the job does not match the examples in Table A5.4, the assessor should:

- estimate the time based on the size and complexity of the job and their experience
- consider factors such as ceiling voids, pipework, ledges, high surfaces, and how easy it is to access all areas (see *Things to consider when estimating time for a thorough visual inspection)*.

Other important points:

- estimate the inspection time early during the initial scope (see Section 6.3: *Scoping and planning the four-stage clearance*)
- include the estimated time in the formal contractual arrangements for the clearance
- share the estimated inspection time with the commissioning PCBU and/or removalist.

Once the visual inspection is complete:

- record how long it took
- if the time taken differs by more than 20%, explain why (for example, better access than expected or extra cleaning needed)
- keep a record of estimated and actual times to help with future visual inspection estimates.

This table shows how long a **thorough visual inspection** is expected to take for different types of asbestos removal work.

ACM	**Location**	**Size of area or volume**	**Complexity/difficulty**	**Estimated time required**
AIB				
AIB	Ceiling tiles plus void	500–600 m2	Very difficult	8 hours
AIB	Selective ceiling tile removal	200–300 m2	Not very complex but time-consuming	3–4 hours

ACM	Location	Size of area or volume	Complexity/difficulty	Estimated time required
AIB single panel	Domestic cupboard, small enclosure	6–10 m2	Not very complex. Some pipes, shelf, or skirting.	15–30 minutes but up to 1 hour
AIB soffit	External	20–40 linear metres	Not complex but high-level with mobile platform	1–4 hours
AIB	Panel(s) below window	20–30 m²	Not complex	0.5–2 hours
AIB	Ceiling tiles plus void	25–50 m2	Quite difficult. Services, cable trays	1–4 hours
AIB	Ceiling tiles plus void	100–150 m2	Quite difficult. Services, cable trays	2–6 hours
AIB	Ceiling tiles plus void	200–300 m2	Quite difficult. Services, cable trays. Time-consuming	4–8 hours
Lagging/insulation				
Pipe insulation/lagging	Boiler room	50–100 m2 (pipes) (150–300 m3) (vessels)	Complex. Various vessels, pipes, ledges	2–4 hours to 1–2 days
Pipe insulation/lagging remnants from previous removal	Boiler room	50–100 m2 (pipes) (150–300 m3) (vessels)	Complex. Various vessels, pipes, ledges	2–4 hours to 1–2 days
Asbestos debris (lagging/AIB)	Ceiling void	25–50 m2	Quite difficult. Services, cable trays. Time-consuming	1–6 hours

Table 6: Estimated times for thorough visual inspections

Notes

The way the removalist has 'sheeted out' will affect how long visual inspection takes. Ceiling voids may be empty or full of fixtures and fittings, which also affects the inspection time.

Things to consider when estimating time for a thorough visual inspection

- enclosure/work area size and volume
- layout of enclosure
- extent of sheeting out involved
- items remaining while removal is carried out
- voids involved (extent of any cabling, pipework, other items)
- high-level surfaces
- types of surfaces
- ducting and pipework
- tunnels and cavities
- underground.

Stage 2: Thorough visual inspection of the enclosure or work area

Starting Stage 2

Only start Stage 2 when Stage 1 is completed satisfactorily.

This stage is a thorough visual inspection of the entire enclosure or work area. The aim is to make sure, as far as reasonably practicable, all surfaces and areas are free from any visible dust and debris.

Asbestos removal work spreads dust and debris in the enclosure or work area, which can settle on any surface – especially in hard-to-reach or poorly cleaned areas.

Any remaining asbestos contamination is a serious risk when the enclosure is removed or access restrictions to the work area are lifted. It can spread when the enclosure is dismantled and pose ongoing and persistent risk of harm to workers, maintenance staff, cleaners, or building occupants who may disturb it without knowing.

This stage is the most significant part of the clearance procedure.

Areas to inspect

The visual inspection must cover:

- all areas, parts, surfaces, items, and equipment in the enclosure or work area
- any waste items that have not gone through the bag lock or are stored in the waste area
- areas opened or exposed during work (for example, ceiling voids, floors voids, cupboards).

Assessor checks

The assessor must check that:

- all ACMs are fully removed from the underlying surfaces
- any asbestos left in place is in good condition (see A5.76)
- no visible dust or debris remains in the enclosure, air lock, bag lock (all compartments), or work area
- all areas have been inspected, including any that are difficult to reach (use access equipment if needed)
- high-level areas and voids have been inspected (see Figure A5.4).

Inspection tools and techniques

To support the inspection, the assessor can:

- shine a torch along surfaces (see Figures 29 and 30)
- run a wet wipe across surfaces to check for fine settled dust.

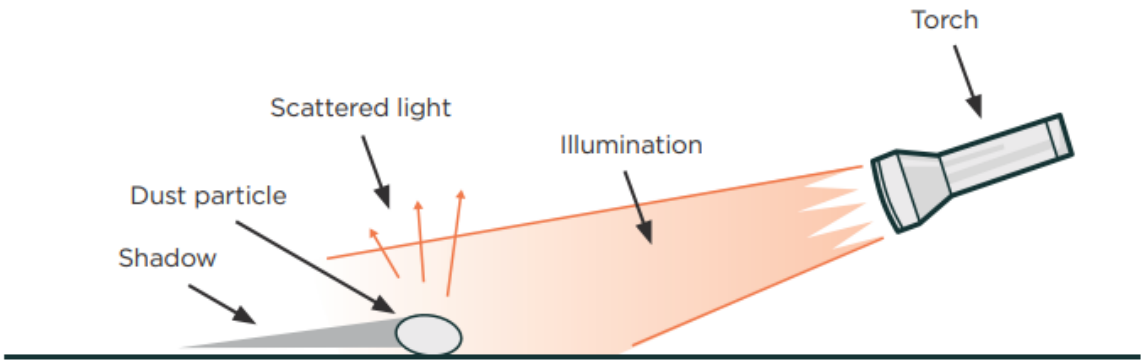

Figure 29: Effect of low-angle torch lighting when identifying dust particles

Taking photographs

The assessor must take enough photos to show that the interior surfaces are clean and free from dust and debris and include them in the clearance inspection records. Include photos:

- of all relevant surfaces, including ceiling voids and ledges
- showing that all ACMs have been removed
- confirming the airlock and bag lock are clear of waste bags, materials, and unnecessary equipment

For a list of the photographs to take, see Table 7.

Figure 30: A torch illuminating fine settled dust

Availability of removalist representative

A removalist representative should be available to fix minor problems found during the visual inspection. For smaller jobs, the representative may join the assessor during the inspection or enter the enclosure when asked. Minor issues include:

- holes in the enclosure not visible from outside
- small amounts of dust or debris found during the inspection.

Address minor issues

The assessor must judge whether the extent of the dust and debris identified during the inspection is:

- minor and can be cleaned by the assisting removalist during the inspection
- more significant, showing the final clean was not thorough enough.

Recording additional cleaning and clearance inspection failures in the clearance inspection records

If problems arise during any stage of the four-stage clearance, the assessor must formally record the situation, the discussions, and the actions taken to resolve it - s**tage 2 needs particular attention**.

If the enclosure is not adequately cleaned:

1. The assessor must decide how much additional cleaning is needed and tell the removalist what is needed.
2. The removalist must do the cleaning.
3. If the cleaning is minor (less than 10 minutes):
    - it does not need to be recorded as a formal failure
    - the assessor should still note it in the clearance inspection records
    - the assessor can stay in the enclosure during the cleaning but is forbidden from cleaning, as cleaning counts as licensed asbestos removal.
4. If the additional cleaning be expected to take more than 10 minutes, the assessor:
    - must leave the enclosure (decontaminating based on how much visible contamination is present)
    - issue a failed clearance inspection record
    - outline the reasons for the failure on the clearance inspection records
    - take photographs of areas that caused the failure and include them in the failed clearance inspection record.

After the assessor issues the failed clearance inspection record for a visual inspection failure, and the removalist finishes additional cleaning, the clearance inspection **restarts at stage 1**. This can only happen after the asbestos removal supervisor:

- does a further visual inspection
- confirms the area is fit for clearance to restart
- formally issues a completed asbestos removal area handover form to the assessor (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*).

Final clean and visual inspection

The removalist is responsible for doing the final clean and a thorough visual inspection before requesting the clearance inspection.

- If the clean or inspection is inadequate, the assessor should fail the visual inspection and note what must be done before reinspection.
- If the inspection fails, the assessor should leave the enclosure to allow cleaning.
- The failure could be due to several small contaminations or one significant issue (see *Recording extra cleaning and clearance failures on the clearance inspection records*).

The assessor should stay focused and methodical, as interruptions for minor recleaning could cause missed areas and overlooked contamination.

Figure 31: Void showing surfaces, cables, and items to inspect for dust and debris

The assessor should visually inspect the floor of the enclosure as it is presented, including any protective coverings such as polythene, plywood, or other timber.

If a second layer of polythene or other material was laid on the floor for protection during the asbestos removal, the removalist should remove it at the end of cleaning. The lower layer of polythene should remain in place.

The assessor must fail the visual inspection if visible suspect material, dust, or debris is under the polythene and the assisting removalist takes more than ten minutes to clean it.

Any **water on the floor** may have caused asbestos to leak from the enclosure. Any sign of water within the enclosure must be cleaned thoroughly and allowed to dry before starting stage 3. The outside area may also need extra checking. Some floor surfaces may need extra treatment.

Assessor breaks

During a large or long clearance, the assessor should:

- leave the enclosure and decontaminate to take a break at least every 2–3 hours minimum to rest the eyes
- leave the enclosure and decontaminate about every hour if wearing non-powered RPE to avoid elevated cardiac and respiratory stress.

Recording findings and actions

Before starting Stage 3 of the clearance inspection, the assessor must record the results of the thorough visual inspection and include supporting photographs in the clearance inspection records (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*).

The assessor must include all findings, conversations, and any actions taken to address the issues identified during Stage 2 of the clearance inspection.

The records must confirm that:

- the airlock, bag lock, and enclosure are free from visible debris or contamination
- all ACMs are removed, and interior surfaces of the enclosure are free from visible debris and settled dust
- any scaffolding, access equipment, or other items left in the enclosure were inspected and are clean.

If any issue is found during Stage 2, the assessor should:

- note the problem or formally record what was discussed and what action was taken (see *Recording extra cleaning and clearance failures on the clearance inspection records*)

- record the location and details of any ACMs that must remain in the clearance inspection records, recommend adding this to the asbestos register or management plan.

Stage 3: Surface testing and clearance air monitoring/trace-level air sampling

Start Stage 3 of the clearance inspection only when Stage 2 is satisfactorily completed. Before Stage 3 starts, the NPUs must be turned off and capped. The licenced assessor must check if the pre filter was changed by the removalist before the final clean.

This stage involves surface testing simulating a worst-case disturbance of the surfaces inside the enclosure immediately followed by air sampling.

The purpose of this simulation is to ensure that the risk posed by even the most aggressive and deliberate disturbance of non-visible surface dust is negligible as the transient/peak respirable asbestos fibre level is below the trace limit

In most cases, the enclosed area can be cleaned well enough for the respirable airborne fibre concentration during simulated disturbance to stay below 0.01 f/ml. Because of that a value of 0.01f/ml level is the practical trace level threshold. Do not dismantle the enclosure until all air monitoring results are below trace level.

Figure 32: Simulated disturbance inside enclosure

Surface testing

Surface testing involves deliberately and thoroughly disturbing all surfaces inside the enclosure, including the enclosure itself. This means sweeping the floors and brushing all other accessible surfaces inside and of the enclosure.

Licensed assessors doing surface testing need to:

- only use synthetic fibre brooms and brushes
- for enclosures larger than 20 m2, use a broom to sweep the floor - for ergonomic and practical reasons (see Figure 32)
- use a short-handled brush to brush other surfaces
- sweep and brush for at least 1.5 minutes for each air sample to be taken (for example, if four air samples are to be taken, disturb surfaces for a total of six minutes (4 x 1.5 minutes).

Clearance air monitoring/trace level air sampling

Trace level air sampling must be done immediately after surface testing.

For full details on air sampling methodology, see Appendix 2: *Air monitoring and sampling equipment*

Trace level air sampling equipment placement

Trace level sampling equipment must be placed across the enclosure with at least half of the sample locations near or below the areas where asbestos has been removed from.

The licenced assessor must make sure to:

- locate the sampling heads/cowls at a height between 1-2 m above the floor with filter holders pointing downwards
- in tall enclosures, such as lift shafts, place the sampling equipment at heights where people could be exposed, especially in the areas where residual dust may be difficult to detect
- the number of air samples taken is proportionate to the enclosure size and complexity.

Number of air samples

To ensure a proportionate number of air samples, the licenced assessor must take at least the nearest whole number below ($A^{1/3} - 1$), where A is calculated as follows:

- If the enclosure is 3 metres high or less, or if it is taller but exposure is only expected at ground level, A is the floor area in square metres.

- In all other cases, A is one-third of the enclosure volume in cubic metres. Subtract the volume of large items, such as boilers, before calculating A.

Figure 33: Air sampling during Stage 3

This formula gives the minimum number of samples to take. The licenced assessor can decide if more air samples must be taken, based on the enclosure complexity.

If the enclosure includes clearly divided areas, such as several rooms across a floor more than the minimum number of air samples must be taken.

This table gives examples of the minimum numbers of samples needed, based on the ($A^{1/3} - 1$) formula.

Enclosure size		**Number of air samples**
Area (m^2)	**Volume (m^3)**	
N/A	< 10	1
< 50	150	2
100	300	3
200	600	4
500	1 500	6
1 000	3 000	9

5 000	15 000	16
10 000	30 000	20

Table 7: Minimum number of measurements using the ($A^{1/3} - 1$) formula

Air sampling results

If all sampling results are below the trace level 0.01f/ml, Stage 3 has been successfully completed.

If, despite satisfactory completing Stage 2 and lack of any visible dust or debris, any of the air sampling results are above the trace level 0.01f/ml, the licenced assessor must stop the clearance inspection, issue a failed clearance inspection record, state the reason clearly, and attach the laboratory certificates.

After the assessor issues the failed clearance inspection record due to Stage 3 failure, and the removalist finishes additional cleaning, the clearance inspection **restarts at Stage 1.** This can only happen after the asbestos removal supervisor:

- does a further visual inspection
- confirms the area is fit for the clearance to restart
- formally issues a completed asbestos removal area handover form to the assessor (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*)

Dusty surfaces inside enclosures

Licensed assessors may come across enclosures where the original/remaining surfaces are a source of non-asbestos dust, making filters unreadable during air sampling.

- The licensed assessor should be notified about this as early as possible - preferably before removal work starts, or at least before the Class A clearance inspection starts.
- If not discussed earlier, the assessor will have to consider it during Stage 2. The removalist should normally vacuum these dusty surfaces.

In these situations, the licenced assessor can either:

- carry out normal air sampling and, if filters are unreadable, repeat the test using shorter sampling times and paired samplers to reduce dust on each filter
- run standard and short-period sampling at the same time.

If samples fail because of the dust loading, the licenced assessor can consider instructing the removalist to spray a sealant onto the relevant difficult to clean surfaces before a

further air test. If a sealant is used, the air test should not be carried out until the sealant is dry (see *Sprayed sealant*). Air test results will be necessary to demonstrate the need for using a sealant.

Figure 34: Assessor carrying out a PCM count in a mobile laboratory

Recording findings and actions

Before starting Stage 4 of the clearance inspection, the licenced assessor must record all findings, conversations, and any actions taken to address the issues identified during Stage 3 of the clearance inspection (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*).

Stage 4: Final assessment after dismantling the enclosure and work area

After Stage 3 is complete, the removalist can dismantle the enclosure. The assessor should stay on site during the enclosure deconstruction unless dismantling is not to take place for a considerable amount of time.

After the enclosure is removed, the licensed assessor must:

- visually check the area to make sure it is clean
- look for asbestos debris that may have been trapped in folds of the enclosure sheeting or under protective flooring, such as plywood or polythene sheeting
- inspect the waste and transit routes again for leftover asbestos debris.

Cleaning minor contamination

If minor amounts of debris are found, the removalist:

- can clean it up immediately using a Class H vacuum and wet disposable cloth
- must wear appropriate PPE, including RPE.

In an unlikely event that significant asbestos contamination is present following enclosure dismantling, the licenced assessor must stop the clearance inspection and issue a failed clearance inspection record, clearly stating the reason for failure.

The site must be re-enclosed by the removalist immediately.

After the assessor issues the failed clearance inspection record due to Stage 4 failure, after re-enclosing the area, and the removalist finishes additional cleaning, the clearance procedure inspection **restarts at Stage 1**. This can only happen after the asbestos removal supervisor:

- does a further visual inspection
- confirms the area is fit for the clearance to restart
- formally issues a completed asbestos removal area handover form to the assessor (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*)

Recording the findings and actions

On completing Stage 4 of the clearance inspection satisfactory, the licenced assessor must record all findings, conversations, and any actions taken to address the issues identified during Stage 4 of the clearance inspection (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*).

Clearance certificate requirements

The licensed asbestos assessor or competent person must only issue a clearance certificate upon satisfactory completion on the clearance inspection and if they are satisfied that:

- the asbestos removal area and the surrounding area immediately have no visible asbestos contamination; and
- if the assessor or competent person did air monitoring as part of the clearance inspection, the respirable asbestos fibre level is below the trace limit, and
- the asbestos removal area does not pose a health and safety risk from exposure to asbestos.

The clearance certificate must be in writing, must contain the name, qualifications, and contact details of the licensed asbestos assessor or competent person issuing the certificate, and must state:

- the address and location of the asbestos removal area and the date and time that the inspection occurred

- that the assessor or competent person found no visible asbestos residue from asbestos removal work in the area, or in the vicinity of the area, where the work was done
- if air monitoring was done by the assessor or competent person as part of the clearance inspection, that the respirable asbestos fibre level does not exceed trace level
- that, as far as can be determined from the clearance inspection, the asbestos removal area does not pose a risk to health and safety from exposure to asbestos.

When the area can be reoccupied

The PCBU with management or control of the workplace where the clearance inspection was done, must obtain the clearance certificate from the licensed asbestos assessor or competent person, before the asbestos removal area reoccupied.

Clearance inspection of mobile DCUs

The assessor must carry out the clearance inspection of the mobile DCU. Before this begins, the removalist must clean and check the mobile DCU. The assessor will have already inspected the DCU as part of Stage 1 of the four-stage clearance.

The formal mobile DCU clearance inspection includes:

- a visual check of the clean end
- a thorough visual inspection of the shower area and dirty end
- surface testing and clearance air sampling in the shower area and dirty end.

The mobile DCU must be:

- clean and dry, including the shower area, before the clearance inspection starts
- entered through the clean end to check if this area is free from bagged materials
- free from potentially asbestos-contaminated items such as bags containing used coveralls, used or discarded respirator filters, or transit clothing.

The assessor must:

- do a thorough visual inspection of the shower area and dirty end, using the same criteria as an enclosure
- if no dust and debris is found, carry out surface testing and clearance air sampling in the shower area and dirty end (see *Surface testing* in *Stage 3: Trace-level air sampling and surface testing for Class A clearance certificates*).

Before the surface testing and air sampling starts the extraction in the mobile DCU must be turned off and capped.

For more information, see [link to Removalist GPG]

Figure 35: Static sampler inside DCU shower for a specific licensed removal job

Air sampling for mobile DCU clearance

For full details on air sampling methodology, see Appendix 2: *Air monitoring and sampling equipment*

For full details on surface testing and clearance air monitoring/trace level air sampling, see Stage 3 of the *Detailed four-stage clearance procedure*

Mobile DCU clearance air sampling equipment placement and number of air samples

For small mobile DCUs with a combined floor area of the shower and dirty end less than 10 m^2, one air sample is sufficient (the door between the shower and dirty areas should be propped open and the sample head positioned in the doorway).

For larger mobile DCUs with a combined floor area of the shower and dirty end over 10m^2, one air sample in the shower and one in the dirty end must be taken.

During air sampling, the extraction in the DCU must be switched off and capped.

Timing of the mobile DCU clearance inspection

Ideally, mobile DCU clearance inspection should start after the clearance certificate for asbestos removal area is issued. If the assessor considers the asbestos removal area clearance straightforward, the mobile DCU clearance inspection can begin earlier, but never before Stage 2 of the asbestos removal area clearance is satisfactorily completed.

If the Stage 3 or 4 of the asbestos removal clearance inspection later fails and the mobile DCU is reused, the mobile DCU clearance procedure must be undertaken again.

The mobile DCU must be fully operational and available until the asbestos removal clearance inspection is successfully completed (see Appendix 1: *Templates - Class A clearance inspection records and DCU inspection records*).

Appendix 4: Common problems during visual inspections

Wet enclosures

Assessors often find wet enclosures during clearance inspections. Wetness may result from condensation, dampness, overuse of water for dust suppression, leaks, incorrect or recent sealant use, or even from using prohibited equipment (such as high-pressure water spray). Enclosures must be clean and dry before the start of Stage 2 of the clearance inspection, and then throughout the rest of the clearance inspection.

- If the enclosure is wet at the start of the four-stage clearance, the issue must be fixed by the removalist. This may include drying the area or arranging a plumber to enter the enclosure to repair leaks.
- Incorrect sealant use can delay the thorough visual inspection (see *Sprayed sealant* in this appendix).
- If the enclosure remains wet and the issue cannot be fixed quickly, the assessor must fail the visual examination.
- If the visual examination goes ahead as the issue cannot be fixed, the assessor needs to photograph and record the wet or damp areas, then record the reasons they could not be dried.

Leaving water in the enclosure must be seen by the licenced assessor as incomplete cleaning. Removalists not allowing drying time after cleaning is not a valid reason for wet enclosures. Wet enclosures can compromise or even fully invalidate results of the stage 3 of the clearance inspection.

Sprayed sealant

Sealants should not be sprayed before completing Stage 3 of the clearance inspection. Exceptions can be made, but these should be agreed in writing with the licensed assessor before the asbestos removal starts. For example, exceptions may apply if the floor is porous, difficult to clean, or could release enough non-asbestos dust (such as from concrete) to clog filters and invalidate the air test.

The assessor can use discretion and, after air testing, may allow sealant in these cases (see *Dusty surfaces inside enclosures*). This should be recorded in the clearance inspection records and the air test should begin.

If the enclosure is still wet from sealant when the licensed assessor begins Stage 2 of the clearance inspection, the licensed assessor must:

- fail Stage 2 of the clearance inspection
- inform the removalist that the clearance inspection can only restart once the sealant is washed off and the enclosure is dry.

If the sealant has already dried, the assessor must fail the stage 2 of the clearance and carefully consider advice to be given on next steps.

If there is evidence that the sealant is protecting significant amount of asbestos dust, which may pose a risk to future occupants:

- the sealant must be removed
- the relevant areas must be recleaned
- the commissioning PCBU should be fully informed about the use of sealant and its implications for any remaining asbestos.

Enclosures with loose rubble or soil flooring

Guidance on dealing with asbestos contaminated spoil (including building rubble) see New Zealand Guidelines for Assessing and Managing Asbestos in Soil

Before asbestos removal

The removalist should:

1. Identify any work areas with loose rubble or soil flooring, as these make clearance more difficult.
2. Seal the loose flooring with an impervious layer, such as metal or hardboard sheeting.

At Stage 4 of the clearance inspection

Dismantling the enclosure at Stage 4 of the clearance inspection **includes removing any protective flooring**.

The licenced assessor must check the loose rubble or soil flooring for asbestos debris.

If any debris or suspicious material is found, the licensed assessor should advise the

removalist that the top layer must be removed. The removal depth depends on how much contamination is present. The assessor must inspect the newly exposed surface. If no contamination is identified, the area passes Stage 4 of the clearance inspection.

If asbestos contamination of loose rubble/soil is identified before the asbestos removal starts, the removalist must treat the rubble or soil as part of the asbestos removal.

The ARCP must outline the loose rubble/soil removal methodology. It is advisable that the removalist consults the assessor before starting the removal work, as the rubble/soil must be removed to a depth where no asbestos contamination is visible.

The assessor must then inspect the newly exposed surface as part of Stage 2 of the clearance inspection.

Clearance with fixed scaffolding or access equipment in place

Fixed or mobile scaffolding and other access equipment may be used inside the enclosure or work area to remove items such as high-level panels or ceiling tiles. Removalists should cap end pieces of the scaffolding before the start of asbestos removal and must fully decontaminate all access equipment during final cleaning, before the enclosure or work area is handed over to the assessor for clearance inspection.

The equipment must stay inside the enclosure or work area for the duration of Stage 2 of the clearance inspection to allow full access to all surfaces.

The assessor must thoroughly inspect all access equipment, but only after it has been used by the assessor for access. Assessor should pay additional attention when visually inspecting scaffolding boards, gaps between them, poles, and fixings.

After the removalist dismantles the enclosure, they can remove the scaffolding or access equipment. The assessor then inspects the area where the equipment was present and makes sure the removalist has cleaned any remaining material.

Note: If the scaffolding remains for other maintenance work, the assessor should reinspect the area around and under it for debris, so as far as is reasonably practicable. They should record in the clearance inspection that (likely minor) debris may fall when the structure is finally removed.

Asbestos intended to remain

Sometimes asbestos is left in the enclosure or work area. For example, damaged lagging may be removed from pipework, but undamaged lagging remains, or only some asbestos ceiling tiles are removed. The assessor should be told about this during the Stage 1 scope of work discussion, and it should be recorded in the ARCP.

The removalist must check the condition of any remaining ACMs. If any materials are in poor condition, the four-stage clearance may fail when the assessor inspects them.

If the assessor finds poor-quality asbestos materials, they must be dealt with (for example, repaired, encapsulated, or removed). The commissioning PCBU must agree to these actions, and the removalist must be involved.

The clearance inspection must stop at this point. The removalist or commissioning PCBU must be informed, and the clearance inspection must not restart until those issues are resolved.

Assessors must record any remaining ACMs in good condition in the clearance inspection records. This allows the commissioning PCBU to update the asbestos register and management plan.

Asbestos waste remaining in the enclosure

In rare cases, asbestos waste (bagged or wrapped) may need to stay inside the enclosure until Stage 4 of the clearance inspection. This can happen when bulky waste, such as large pipes, vessels, or AIB panels, cannot pass through the bag lock system.

- The waste should remain in the enclosure and be included in Stage 2 of the clearance inspection to confirm the outer wrapping is free of asbestos.
- During the thorough visual inspection, the removalist must move the items on the assessor's instruction so the assessor can check the surfaces underneath.

Inaccessible or impossible to remove asbestos

Spray-applied asbestos is often found in crevices or holes in walls where pipes or girders run. These areas may contain asbestos residues that that cannot be removed. In these cases, the assessor may allow non-flammable sealants, such as foams or plaster, to fill the hole and seal the asbestos inside.

Before applying the sealant, the assessor must make sure, as far as is reasonably practicable, asbestos has been removed.

Figure 36: Remnants of asbestos on materials

The commissioning PCBU should be told about the proposed encapsulation before it begins. This should be recorded in the ARCP.

The sealant location and remaining asbestos should be recorded in the clearance inspection records to help the commissioning PCBU update the asbestos register and management plan.

If the assessor finds holes or asbestos residues already sealed with foam or proprietary sealant, they should check the sealant's condition. The sealant should adequately cover the area or material and remain intact.

If the sealant is not in good condition, more will be needed before Stage 2 of the clearance inspection can be completed.

Encapsulant and sealant use

Figure 37: Remnants of asbestos on breeze blocks

Where asbestos was sprayed onto porous surfaces (such as breeze blocks, bricks, plaster, and concrete), achieving an asbestos-free surface is nearly impossible (see Figure 37).

The assessor should:

1. Confirm further removal is not reasonably practicable.
2. Advise the removalist and/or commissioning PCBU to seal the remaining asbestos with a permanent proprietary sealant.
3. Restart the visual inspection once the sealant has dried.
4. Contain the asbestos after viewing the residual material.

Only use encapsulants or sealants after the assessor:

- has seen the residual asbestos
- given approval to go ahead.

The sealant location and remaining asbestos should be recorded in the clearance inspection records to help the commissioning PCBU update the asbestos register and management plan.