# ASBESTOS MANAGEMENT PLAN

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<th>Date</th>
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SPECIFIC DEFINITIONS

ACM  
Asbestos Containing Materials. Any building material or other manufactured product that contains asbestos minerals.

Asbestos Removalist  
Person deemed competent for removal of ACM – (License requirements for removal of friable ACM and removal of Non-friable ACM in amounts over 10m²).

Asbestos Vacuum Cleaner  
Means a vacuum cleaner that is fitted with a HEPA Filter and complies with Australian Standard 3544-1988 Industrial Vacuum Cleaners for Particulates Hazardous to Health. A domestic vacuum cleaner is not suitable for use with asbestos.

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

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

Independent Competent Person  
An engaged party that is independent of the university and recognised as possessing adequate qualifications, suitable training, sufficient knowledge, experience and skill, for the safe performance of the specific work. Note: A licence may be required for some of the tasks described in this document as requiring a competent person.

Generally this is deemed to include the following:

A. Possession of Asbestos Assessor License (A class).;  
or  
B. Successfully completed an accredited course in Asbestos Assessment or the unit of competency “Conduct asbestos assessment associated with removal” “CPCCBC5014A”; and has a university qualification in one of the following:
   - Occupational or industrial hygiene;  
   - Occupational health and safety;  
   - An environmental or a biological science discipline;  
   - A discipline encompassing building construction;  
   - A qualification that provides a comparable level of knowledge in asbestos assessment; and –  
   Not less than 4 years part time, or 2 years full time, relevant work experience in performing or supervising the work of an
asbestos assessment service.

**In-situ (ACM)**

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

**NATA**

National Association of Testing Authorities.

**National Exposure Standard (NES)**

Means an airborne concentration of a particular substance, within the worker’s breathing zone, which according to current knowledge, should not cause adverse health effects or undue discomfort to nearly all workers. NES are established, from time to time, by SafeWork Australia, formerly known as the National Occupational Health and Safety Commission (NOHSC) and are published on the SafeWork Australia website. The NES is 0.1 fibres per millilitre of air (>0.1 f/mL).

**Respirable Fibres**

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

**Shall**

A requirement to conform as far as reasonably practicable.
1. INTRODUCTION

Background

Asbestos is a term commonly used to describe a set of naturally-occurring silicate minerals. They are characterised by their “asbesti-form” habit – long and thin fibres. Fibres length range from 2-20μm and can be as slim as 0.01μm in breadth. The human hair in comparison ranges in size from 17 – 181μm in breadth. These visible fibres are composed of millions of microscopic fibrils that can be released by abrasion and other processes. The three most common types of asbestos found in building materials and other consumer products are:

- Chrysotile – commonly referred to as White Asbestos;
- Amosite - commonly referred to as Brown Asbestos; and
- Crocidolite - commonly referred to as Blue Asbestos.

Chrysotile is the most common type of asbestos found in building materials and manufactured products.

The inhalation of asbestos fibres has been linked to the development of the following diseases: Mesothelioma, Lung Cancer, Asbestosis and Pleural Disease. The fine diameter, long length, chemical resistance and tensile strength of asbestos fibres results in a long persistence in the lungs. Recent studies have linked ingestion of fibres with the development of bowel cancers. A more detailed description of the health effects linked to asbestos is contained in Appendix 2.

Asbestos has been used in many industrial applications and manufactured products ranging from fibre cement sheeting to fire blankets. Appendix 3 lists materials typically containing asbestos. Asbestos containing material (ACM) can be classed into two general forms: Friable and Non-friable. Friable ACM can be described as material containing a high percentage of asbestos and the fibres are easily released from the matrix of the material. A general rule of thumb is that if one can crush the material to dust by hand pressure alone, it is considered in friable form. However, Asbestos fibrils are not visible to the naked eye so the generation of visible dust is not an accurate indication of whether fibrils are present. Some common examples of friable ACM include fire door millboard insulation, insulation board, loose fill thermal insulation and pipe lagging products.

Non-friable ACM contains a lower percentage of asbestos and its fibres are more firmly locked into the matrix of the material. Significant disturbance of the material is required for the fibres to be released and thus become inhaled. Some examples include fibre cement sheeting and vinyl floor tiles. Activities such as mechanical abrasion, drilling, boring, cutting, buffering, blasting; or physical crushing or explosion is believed to result in the release of fibres. These activities should only be undertaken under the required controlled conditions by persons with the appropriate class of asbestos removal license.

In Australia there has been a national ban on the use of all asbestos containing materials since 2003. This ban includes mining, manufacture, selling, resale and importation of ACMs. Historically, Australia was one of the largest producing and consuming countries of asbestos and ACMs. Australia mined crocidolite in Wittenoom, Western Australia until 1966 and Chrysotile in New South Wales until 1983. Australia also imported large amounts of Chrysotile from Canada and Amosite from South Africa with consumption peaking in 1975. In addition, asbestos containing materials were imported from other producing countries such as the UK, the US, Germany and Japan. Some countries have still not banned asbestos – Indonesia, China, India, Russia and Brazil are still using ACMs. Many buildings built in Australia and or refurbished before 2003 contain ACMS within them.
2. AIMS

The UWA Asbestos Management Plan applies to all university buildings. It outlines the university’s framework and procedures for managing the risk of exposure to asbestos fibres in accordance with applicable legislative requirements and standards of Best Practice. The plan addresses the following areas of compliance:

- Legislative requirements.
- The responsibilities of workplace stakeholders
- The UWA Asbestos Survey Program.
- Procedures for asbestos removals and management of ACMs in-situ.
- Management of the UWA Asbestos Materials Register.
- Control of maintenance and other works – The Work Area Access Permit procedure.
- Asbestos Awareness training programs.
- Workplace communication and consultation procedures.
- The reporting procedure for asbestos concerns and queries.
- The UWA Asbestos Emergency Response Procedure.
- The UWA Asbestos Management Plan Review Procedure.

**Please note!** This asbestos management plan does not address the management of asbestos contaminated sites. The UWA Asbestos Contaminated Soils Management Plan outlines the university’s management framework for assessment, remediation and management of asbestos contaminated sites.
3. LEGISLATIVE COMPLIANCE

Employers, main contractors, self-employed persons and persons in control of workplaces must take reasonable steps to ensure adequate:

- Identification of the presence and location of ACMs at the workplace.
- Assessment of the risk posed by asbestos containing materials (ACMs) at the workplace;
- Introduction of control measures to prevent, as far as is practicable, the generation of airborne asbestos fibres and exposure to airborne asbestos fibres.

The above requirements shall be undertaken in accordance with:

- The Occupational Safety and Health Act (WA) 1984.
- The Occupational Safety and Health Regulations (WA) 1996.

**Please note!** Management of asbestos contaminated soil shall be undertaken in accordance with the Department of Health (WA) Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites (2009). This asbestos management plan does not address these requirements.

In meeting compliance with the above requirements, UWA has implemented the following initiatives:

- The UWA Asbestos Management Plan.
- The UWA Asbestos Survey Program.
- The UWA Asbestos Materials Register.
- Communication protocols in relation to the UWA Asbestos Management Plan, the UWA Materials Register, asbestos survey reports; and asbestos removal works.
- A Work Area Access Permit procedure for controlling workflows where there is the potential to disturb ACM.
- Awareness training programs for staff on asbestos risk and the UWA Asbestos Management Plan.
- A training program for competent persons in relation to asbestos risk management and remedial asbestos removal.
4. ROLES AND RESPONSIBILITIES.

The table below outlines the roles that shall be undertaken by varying stakeholders in the development, maintenance and implementation of the Asbestos Management Plan:

Table 1: Roles and Responsibilities

<table>
<thead>
<tr>
<th>UWA</th>
<th>Independent Competent Person (Third Party)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Campus Management Safety Office</td>
<td></td>
</tr>
<tr>
<td>• Development of the Asbestos Management Plan.</td>
<td></td>
</tr>
<tr>
<td>• Authorisation of the Asbestos Management Plan.</td>
<td></td>
</tr>
<tr>
<td>• Audit compliance with the Asbestos Management Plan.</td>
<td></td>
</tr>
<tr>
<td>• Annual review of the Asbestos Management Plan.</td>
<td></td>
</tr>
<tr>
<td>• Provide advice on the content of the Asbestos Management Plan, Asbestos Materials Register and asbestos management procedures.</td>
<td></td>
</tr>
<tr>
<td>• Engage independent competent persons to undertake identification, risk assessment and recommendations for controls of ACMs.</td>
<td></td>
</tr>
<tr>
<td>• Identify ACMs at the workplace through asbestos surveys, inspections and sample testing.</td>
<td></td>
</tr>
<tr>
<td>• Arrange asbestos surveys of ACMs in buildings built before 1990 - every 3 years by a third party.</td>
<td></td>
</tr>
<tr>
<td>• Arrange demolition or pre-refurbishment asbestos surveys involving destructive inspections and sampling before the works commence.</td>
<td></td>
</tr>
<tr>
<td>• Undertake Management Asbestos Surveys within a minimum three year frequency schedule.</td>
<td></td>
</tr>
<tr>
<td>• Undertake Pre-refurbishment and Demolition Asbestos Surveys before refurbishments and demolitions.</td>
<td></td>
</tr>
<tr>
<td>• Assess the risks posed by ACMs based on the type of asbestos, friability, condition and risk of disturbance.</td>
<td></td>
</tr>
<tr>
<td>• Coordinate and project manage asbestos removals.</td>
<td></td>
</tr>
<tr>
<td>• Provide advice on requirements for managing asbestos removal works and overseeing works on behalf of the university.</td>
<td></td>
</tr>
<tr>
<td>• Undertake reviews of Asbestos Removal Control Plans and Work Method Statements.</td>
<td></td>
</tr>
<tr>
<td>• Advise requirements for sample testing, air monitoring and clearance monitoring.</td>
<td></td>
</tr>
<tr>
<td>• Coordinate Implementation of recommended controls and/or short term management actions to reduce the risks until removal can be undertaken.</td>
<td></td>
</tr>
<tr>
<td>• Recommend risk controls to reduce the risk of exposure for ACMs.</td>
<td></td>
</tr>
<tr>
<td>• Ensure the asbestos materials register is accessible to all persons at the workplace.</td>
<td></td>
</tr>
<tr>
<td>• Inform persons at the workplace in relation to the process for accessing the register and</td>
<td></td>
</tr>
<tr>
<td>• Develop the asbestos materials register logging the location, description, type, amount, condition, risk rating, laboratory</td>
<td></td>
</tr>
<tr>
<td><strong>Asbestos Management Plan.</strong></td>
<td><strong>test results, and recommended controls.</strong></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>• Provide training to staff in relation asbestos risk and exposure and how to interpret the Asbestos Materials Register.</td>
<td></td>
</tr>
<tr>
<td>• Provide information about the Asbestos Materials Register, Asbestos Management Plan and management procedures.</td>
<td></td>
</tr>
<tr>
<td>• Administer work flows to ensure the Asbestos Materials Register is consulted and an adequate risk management process is undertaken – the UWA Work Area Access Permit.</td>
<td>• Provide risk assessment and advice on scopes of work, work method statements and controls.</td>
</tr>
<tr>
<td></td>
<td>• Undertake air monitoring in compliance with the Guidance Note for the Membrane Filter Method and Polarised Microscopy.</td>
</tr>
<tr>
<td>• Update the asbestos register when ACMs are damaged, deteriorated, removed, confirmed via lab testing or newly discovered.</td>
<td>• Advise on the wording of the Asbestos Material Register, and limitations and caveats.</td>
</tr>
<tr>
<td>• Respond to reported concerns of exposure and arrange required remediation actions.</td>
<td>• Confirm asbestos risk and advise on remediation actions.</td>
</tr>
</tbody>
</table>

**UWA Safety, Health & Wellbeing**

- Maintain an Asbestos Exposure Form and Register for persons who believe they may have been exposed.
- Refer persons to the Asbestos Review Program.

**Asbestos Review Program**

- Provide health surveillance for referred persons.
- Undertake medical screening.
- Recommend medical health plans and strategies for coping with asbestos related disease.

**General Staff and Persons at the Workplace**

- Comply with the Asbestos Management Plan and asbestos management procedures.
- To make oneself aware of the ACMs in the workplace and to take reasonable care not to disturb it.
- To report all concerns of damage and deterioration to ACM to the CM Safety Office on 6488 5662.
- To comply with instructions in relation to asbestos risk management
- To not expose oneself or others to asbestos fibres through any act or omission.
- To use and adorn asbestos PPE when instructed.
- To undertake asbestos awareness training as instructed.
- To cooperate and consult in relation to issues concerning asbestos risk management.
5A) THE UWA ASBESTOS SURVEY PROGRAM

The university shall implement an asbestos survey program of all buildings built before 1990. The survey program shall comply with the National Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)]. The survey methodology adopted shall be consistent with Best Practice and conform to the Asbestos Survey Guidelines (Health and Safety Executive), UK (2012).

The below survey requirements shall be complied with:

- Only independent competent persons shall be engaged to undertake identification, risk assessment and development of control recommendations for ACMS in all UWA buildings and associated property built before 1990.
- Every building and associated property that was built/developed before 1990 shall have an asbestos survey report, site management plan and asbestos materials register initially developed by an independent competent person.
- A master UWA Asbestos Materials Register which comprises of the asbestos material registers for all UWA buildings and properties built or developed before 1990 shall be actively maintained by competent persons employed within UWA as part of the university’s Work Health & Safety Management System.
- In-lieu of a 12 monthly visual inspection and assessment, the university having demonstrated an established asbestos management system is in place, will ensure each building within scope is visually inspected and assessed by an independent competent person at a minimum survey frequency of three years. The scheduled surveys will be the Management Survey Class of Assessment as outlined by the HSE Asbestos Survey Guide (HSG264).
- Demolition and Pre-refurbishment Asbestos Surveys shall be undertaken before any demolitions and refurbishments involving major intrusive works that have the potential to disturb ACM. This requirement will be managed through the Work Area Access Permit process.
- Asbestos Surveys will be arranged by the Campus Management Safety Office and the reports made accessible to all persons occupying UWA buildings or other persons conducting a business or undertaking on behalf of the university.
- The UWA Asbestos Materials Register will be maintained by the Campus Management Safety Office and made accessible to all persons occupying UWA buildings or conducting a business or undertaking on behalf of the university. It shall be stored on the HP Records Manager in file 14/56008.
Asbestos Surveys Types - Class of Assessment

In accordance with the HSG264 Asbestos Survey Guide, UWA shall adopt two classes of assessments for assessment of asbestos risk:

**Table 2: Class of Assessment**

<table>
<thead>
<tr>
<th>Class of Assessment</th>
<th>Methodology</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Surveys</td>
<td>Involves a review of existing records and documentation. Visual inspections involving non-destructive access. Highlights areas of inaccessibility for further investigation. Relies predominantly on presumption but can involve material sampling to confirm ACM.</td>
<td>Initial survey for buildings without an existing asbestos materials register. Every 3 years for ongoing management.</td>
</tr>
<tr>
<td>Demolition &amp; Pre-refurbishment Surveys</td>
<td>Involves a review of existing records and documentation. Visual inspections involving destructive access. Involves material sampling of all identified ACM.</td>
<td>Before every refurbishment or demolition.</td>
</tr>
</tbody>
</table>

For feasibility reasons asbestos surveys on buildings or properties without an existing asbestos materials register shall utilise the management survey class of assessment. When these building are to be re-surveyed, consideration shall be given to sampling of identified ACM to confirm it contains asbestos.

Other methods implemented for identifying ACM include the UWA Workplace Inspection Procedure; and UWA Incident, Hazard and Injury Reporting Procedures.

**Survey Scope Development**

The scope of asbestos surveys shall be developed by the Campus Management Safety Office in accordance with the Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)]. This shall involve consultation with relevant workplace stakeholders including:

- Campus Management building management services and systems;
- The UWA Safety, Health & Wellbeing Section;
- UWA faculties, schools and Infrastructure management;
- Lease holders; and
- Other workplace representatives with a good knowledge of the history of the building or property.

Suspected asbestos materials will be presumed in the absence of sampling. These materials will be treated as if it contains asbestos until proven otherwise by laboratory testing. Sampling may be elected to be undertaken if there is a high exposure risk.
5B) ACM IDENTIFICATION GUIDELINES

Methods for Identification of ACM

Initial identification of ACM shall involve the following methodology. This may occur as part of a survey program or in response to reported exposure concerns:

**Table 3: Identification Methodology**

<table>
<thead>
<tr>
<th>Identification Methodology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual inspections: non-destructive and destructive access.</td>
<td>Dependent on the type of survey undertaken, visual inspections may involve either non-destructive or destructive access to ACMs. Clearance inspections are also undertaken after all removal works to confirm if traces of ACM are still present.</td>
</tr>
<tr>
<td>Presumptions of suspected ACM.</td>
<td>Presumption of ACM based on visual inspections, the physical characteristics of the material, reference in building documentation and the historical uses of ACM.</td>
</tr>
<tr>
<td>Review of existing building drawings and other reference documentation.</td>
<td>Reference to ACM used in original construction and refurbishment plans.</td>
</tr>
<tr>
<td>Air monitoring.</td>
<td>To identify the number of asbesti-form fibres in a given sample of air using polarised light microscopy. Asbesti-form fibres are fibres that resemble the size and shape of asbestos minerals.</td>
</tr>
</tbody>
</table>

Methods for Confirmation of ACM

Once initial identification of ACM is achieved the following methods shall be undertaken to confirm the material actually contains asbestos. This may occur during a survey or at a later date and at the very least before refurbishments and demolitions.

**Table 4: Method of Confirmation**

<table>
<thead>
<tr>
<th>Confirmatory Methodology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample and dust testing.</td>
<td>Confirms asbestos is present. Used as an indication of the presence of asbestos and of cleanliness after removals. This is not recognised as measure of exposure risk.</td>
</tr>
<tr>
<td>Scanning Electron Microscopic (SEM) tests</td>
<td>Analyses the chemical composition of asbesti-form fibres. Confirms asbestos minerals.</td>
</tr>
</tbody>
</table>
5C) ACM ASSESSMENT GUIDELINES

The following risk assessment requirements shall be complied with:

- Risk assessments shall be undertaken by an independent competent person on all ACMs in UWA buildings or properties.
- Risk assessment ratings shall be recorded in the UWA Asbestos Materials Register and Survey Reports and made accessible to all persons at the workplace.
- Risk assessments recorded in demolition and refurbishment survey reports shall be incorporated into the UWA Asbestos Materials Register.
- Risk ratings shall be reviewed at minimum of 3 years by an independent competent person or after being disturbed to a degree causing the condition to worsen and potential exposure.

Risk Ratings – ACM In-situ

The primary route of entry for asbestos into the body is through respiration. Therefore measurement of risk is determined by the potential for persons to be exposed to respirable fibres. Respirable fibres are fibres from friable ACM that has detached from the matrix of the ACM, become airborne and respirable. In determining, the risk that ACM in-situ will result in respirable fibres, the condition of the ACM and the likelihood that it will be disturbed in everyday operations must be assessed. The following risk assessment matrix shall be adopted:

Table 5A: The Risk Rating Calculator (ACM In-situ)

<table>
<thead>
<tr>
<th>Current Condition</th>
<th>Conceivable</th>
<th>Remotely Possible</th>
<th>Unusual</th>
<th>Likely</th>
<th>Almost Certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Poor</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>Poor</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Average</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Fair</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Good</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

Likelihood of Disturbance

The risk rating shall be established by applying (adding) the current condition of the ACM against the likelihood for it to be disturbed. The risk ratings range from Low to Very High.
Current Condition

Establishing the current condition of ACM involves an assessment of the physical state and stability of the ACM in-situ and whether it is potential for releasing respirable fibres. For example, ACM vinyl tiles require a very high level of mechanical abrasion and ashing to separate asbestos fibres from the tile matrix. There is also a very low percentage of asbestos in the tile composition. In contrast, asbestos limpet has a high percentage of asbestos in its composition and fibres can be released by finger pressure alone.

When considering the current condition of ACM, the following characteristics shall be considered:

- Whether it is friable or non-friable ACM. Friable ACM has a much higher percentage of asbestos within it and the is more risk of fibres releasing;
- The level of deterioration and damage of the ACM – indicates the capability for release of fibres;
- Whether the ACM has been encapsulated, painted or sealed. This will impact on the potential for fibre release;
- The type of asbestos mineral. Crocidolite and Amosite fibres are more aerodynamic.

The Likelihood of Disturbance

The likelihood of disturbance refers to the potential for everyday operations to disturb ACM to a degree that would result in respirable fibres.

The establishment of the “Likelihood of Disturbance” shall involve an assessment of:

- Whether the ACM is in a location or part of infrastructure requiring routine maintenance;
- Whether the ACM is in a location or part of infrastructure where the public access;
- Whether the ACM is in an environment where daily operations may disturb it;
- Whether the ACM is exposed to external weathering or vibration;
- Whether the ACM is labelled, encapsulated or sealed.
- Whether the ACM is in a friable or non-friable form. It is much easier to disturb friable ACM to a degree resulting in fibre release. It can be achieved through finger pressure alone.
The below tables define the varying rankings for the “Current Condition” and the “Likelihood of Disturbance” of ACM.

**Table 5B: Characteristics for Rankings of “Current Condition”**

<table>
<thead>
<tr>
<th>Condition Ranking</th>
<th>Ranking Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very Poor</strong></td>
<td>Friable ACM severely deteriorated or damaged. Any form of ACM that has been mechanical abraded, crushed or blasted.</td>
<td>• ACM pipe lagging that was abraded with an angle grinder.</td>
</tr>
<tr>
<td><strong>Poor</strong></td>
<td>Friable ACM that is in a stable condition but is showing signs of substantial damage deterioration due to weathering and is not encapsulated, painted or sealed.</td>
<td>• An external ACM fire door that has weathered and the external layer is rotting and chipping away potentially exposing the millboard insulation underneath.</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>Non-friable ACM that is in an unstable condition. It shows evidence of minor physical disturbance and deterioration due to weathering. It may or may not be encapsulated, painted or sealed.</td>
<td>• An ACM fibre cement fence that was blown over by a storm and is now cracked and broken exposing broken edges.</td>
</tr>
<tr>
<td><strong>Fair</strong></td>
<td>Non Friable ACM that is in a stable condition. Does not show signs of damage or weathering but is not encapsulated, painted or sealed.</td>
<td>• An electrical mounting board that has not been painted.</td>
</tr>
<tr>
<td><strong>Good</strong></td>
<td>Non-friable ACM that is in a stable condition and does not show signs of damage and deterioration. The ACM is encapsulated, painted and/or sealed.</td>
<td>• Painted internal wall panels that are not exposed to weathering.</td>
</tr>
<tr>
<td>Likelihood Ranking</td>
<td>Ranking Characteristics</td>
<td>Examples</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>Friable ACM that is not labelled and there is a very high likelihood that it will be disturbed by routine maintenance or damaged by operational activities. ACM that is exposed to external weathering. Friable ACM in areas of public access. ACM that is exposed to regular vibration or compression.</td>
<td>• ACM dust residue from a pipe lagging that was removed with mechanical abrasion in a plumbing duct. • An ACM limpet ceiling coating in an environment where there is a risk of explosions. • An ACM external fire door significantly deteriorated by weathering over many years resulting in exposure to the millboard insulation beneath. • Residue ACM fibre cement fragments unearthed in the soil of a child playground which is badly deteriorated. • Residue ACM fibre cement fence that was broken off and partly remains buried in a driveway where vehicles are traversing over.</td>
</tr>
<tr>
<td>Likely</td>
<td>Friable ACM that is not labelled, there is a high likelihood that it will be disturbed through routine maintenance or operational activities and/or is exposed to external weathering.</td>
<td>• ACM vermiculite/limpet coatings on ceilings where fittings are to be installed. No label is installed. • An ACM roof waterproof membrane that has severely deteriorated over a long period of time.</td>
</tr>
<tr>
<td>Unusual</td>
<td>Friable ACM that is labelled, and there is a moderate likelihood that it will be disturbed through routine maintenance or operational activities and is not exposed to external weathering.</td>
<td>• ACM internal fire doors that are labelled.</td>
</tr>
<tr>
<td>Remotely Possible</td>
<td>Non-friable ACM that is labelled and is exposed to external weathering. There is a moderate likelihood that it will be disturbed through routine maintenance or operational activities.</td>
<td>• External roof gable infill panel that is labelled.</td>
</tr>
<tr>
<td>Conceivable</td>
<td>Non-friable ACM that is not exposed to external weathering, is labelled and there is a low likelihood that it will be disturbed through routine maintenance or operational activities.</td>
<td>• An internal ACM fire hydrant gasket that is labelled.</td>
</tr>
</tbody>
</table>
Occupational Risk Categories

A three tiered risk exposure category has been developed below. UWA Safe Systems of Work and local risk assessments of work or access shall be guided by the relevant tiers of occupational exposure risk outlined below:

Table 6: Occupational Risk Category

<table>
<thead>
<tr>
<th>Tier</th>
<th>Occupational Risk Category</th>
<th>Risk of Disturbance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asbestos Removal, Demolition, Refurbishment Works. Persons working directly with or removing asbestos and undertaking inspections and testing. Persons involved in demolition and destructive refurbishment of buildings.</td>
<td>Very High</td>
</tr>
<tr>
<td>2</td>
<td>Maintenance Works Persons undertaking maintenance and other works with potential for disturbance of ACM.</td>
<td>High Medium</td>
</tr>
<tr>
<td>3</td>
<td>General Occupancy Persons occupying building with ACM within it.</td>
<td>Low</td>
</tr>
</tbody>
</table>

Assessing Exposure from Respirable Fibres

The assessment of exposure to respirable fibres shall be undertaken by an independent competent person. This will be accomplished with air monitoring and polarised light microscopy analysis in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003 (2005)].

Air monitoring involves sampling air through a membrane filter of mixed esters of cellulose or cellulose nitrate via a mechanical air pump. Sampling volumes required to obtain a sufficient sample range between 500 to 1000 litres of air. To obtain this volume, the pump flow rate can be varied to the corresponding sampling time. Sample times can range from one hour to eight hours. It is common industry practice to run air monitors for four – eight hours in a clean environment. Air monitoring must be undertaken by an independent person competent in undertaking the membrane filter method.

Polarised light microscopy involves the air sample being analysed at a NATA accredited laboratory by a competent person under polarised light microscopy. The competent person counts the number of asbestiform fibres within a specified range of field. Asbestiform fibres are fibres that resemble the shape of known asbestos minerals i.e. Chrysotile, Amosite, Crocidolite etc. This count is extrapolated to a calculation of the number of fibres present per mL of air. The calculation then outlines whether the exposures limits have been.
The code of practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)] prescribes the membrane filter method and polarised light microscopy as the method for measuring exposure risk to persons. Furthermore it outlines the minimum exposure standard that is deemed safe for persons to be exposed to in background air levels. This standard is set at equal to or below 0.01 fibres per millilitre of air sampled (>0.01f/mL). This standard has been adopted as the industry standard within the asbestos risk management industry.

Table 7: Exposure Limits

<table>
<thead>
<tr>
<th>Standards</th>
<th>Minimum Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Exposure limit</td>
<td>&gt;0.1f/mL</td>
</tr>
<tr>
<td>Industry Exposure Limit</td>
<td>&gt;0.01f/mL</td>
</tr>
</tbody>
</table>

The membrane filter method and polarised light microscopy analysis method in its entirety can’t be relied upon as confirmation that fibres are asbestos but is only as a measure whether the air sampled contains a level of asbestos-form fibres exceeding the NES. To confirm if fibres are actually asbestos, and not organic or synthetic minerals that resemble asbestos in shape, the samples need to be analysed under a Scanning Electron Microscopy (SEM) test. The SEM test confirms the chemical characteristics of the fibre. It should be noted that it is not uncommon for insulation such as glass wool and organic minerals such as body skin to be mistaken for asbestos fibres under polarised light microscopy.

Types of air monitoring

There are three main types of air monitoring:

- **Background Monitoring:** undertaken before any scheduled ACM removals for a baseline reading of background air levels. Also undertaken for measuring exposure in background air levels.
- **Control Monitoring:** Undertaken during asbestos removals to ensure the controls – i.e. enclosure and negative air units are adequate.
- **Clearance Monitoring:** Undertaken at the completion of removals to verify the asbestos has been adequately removed and the area is cleared for re-occupation.

Monitor locations can either be placed at a static location or may be attached to persons as close to the breathing zone as practicable.

Table 8: Types of Air Monitoring

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static monitoring</td>
<td>Monitors are placed in selected locations. Can be adjacent to materials of concern, in asbestos removal areas and adjacent occupied areas. Locations shall be selected by the independent competent person.</td>
</tr>
<tr>
<td>Personal monitoring</td>
<td>Monitors are attached to operatives clothing close to the breathing zone. Usually on the shirt neck collar or front breast pocket. Monitoring is based on the locations the operative accesses and gives a more accurate measure of the individual’s direct exposure.</td>
</tr>
</tbody>
</table>
6A) CONTROL PRIORITY

In accordance with the recommendations of the Australian Governments’ National Strategic Plan for Asbestos Management and Awareness, UWA has committed to staged removal of all ACM. UWA has adopted the following control management priorities:

1) Removal of ACM where it is reasonably practicable.
2) Management of ACM safely in-situ until it can be removed.
3) A Life Cycle Renewal Program for staged removal of all ACM.

In accordance with the Code of Practice for Management and Control of Asbestos in the Workplace, the below hierarchy of controls shall be employed to manage the exposure risk within tolerable thresholds.

Table 9: The Control Hierarchy

<table>
<thead>
<tr>
<th>Controls Hierarchy</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Elimination</td>
<td>• Where reasonably practicable remove ACM (most preferred).</td>
</tr>
</tbody>
</table>
| 2. Substitution    | • Replace all ACM with materials not containing asbestos through the UWA Life Cycle Renewal Program.  
|                    | • Ensuring all products procured are asbestos free – particularly from countries still producing ACMs. |
| 3. Isolation & Engineering | • Encapsulate all ACM within physical barriers.  
|                    | • Seal ACM with paint or other sealants.  
|                    | • Install barricades and physical access restrictions to all ACMs.  
|                    | • Install warning labels and signs on and around all ACM. |
| 4. Administrative  | • Implement the Asbestos Management Plan.  
|                    | • Implement Asbestos Management Procedures and Work Methods.  
|                    | • Maintain an Asbestos Materials Register of all ACM onsite, the risk assessment and control actions.  
|                    | • Implement a Work Area Access Permit process to control workflows with the potential to impact ACMs.  
|                    | • Provide maintenance staff with Asbestos Awareness training. |
| 5. Persons Protective Equipment (PPE) | • Providing asbestos PPE such as respirators, gloves, protective clothing and washable boots. Personal decontamination equipment. |

Control Selection Matrix

The decision to remove ACMs will be based on the recommendations of the engaged independent competent person and principle of “Reasonably Practicable”. If ACM is not currently practicable to remove, it will be managed in-situ in accordance with the legislative requirements until it can be scheduled for
removal. As a minimum, all ACM will be removed before refurbishments, demolitions and as programmed for life cycle renewal.

In the implementation of the above controls, a risk assessment shall be undertaken to ensure the control does not introduce new risks to the workplace. For example, the encapsulation of ACM may make it less visible and if warning labels fail then it may result in the material being disturbed. A safer control may be sealing the material with paint. A combination of these techniques shall be used to manage the risk of exposure to asbestos fibres as far as reasonably practicable.

The UWA Asbestos Materials Register contains an assessed risk rating and control action priority recommended by the independent competent person for all identified ACMs.

**Table 10: UWA Control Definitions**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Description</th>
<th>Controls implemented</th>
</tr>
</thead>
</table>
| **A1 - Very High Risk - Remove** | ACM is friable, and/or it is in a unstable condition and likely to be disturbed | • Removal should be undertaken immediately (As far as is practically).  
• Access shall be restricted.  
• Requires an Asbestos Removal Control Plan and Friable removal methodology. |
| **A2 - High Risk - Remove** | ACM is friable, but is in a stable condition and is not likely to be disturbed; or  
• ACM is non-friable, but is damaged or deteriorating, unstable. ACM is not enclosed or sealed and is likely to be disturbed.  
• If the above factors worsen, elevate to A1. | • Removal should be undertaken as soon as possible as per LCR schedule.  
• Control actions such as encapsulation and sealing shall be implemented.  
• Access shall be controlled.  
• Warning labels installed.  
• Requires either an Asbestos Removal Control Plan and Friable removal methodology or Safe Work Methods and Non-friable removal methodology. |
| **A3 - Medium Risk - Manage in-situ until removal** | ACM is non-friable, is in a stable condition and is encapsulated or sealed. ACM has a moderate risk of disturbance.  
• If the above factors worsen, elevate to A2. | Until removal can be undertaken -  
• Monitor condition of ACM.  
• Warning labels installed.  
• Remove before refurbishment, demolition or Life Cycle Renewal.  
• Requires Work Area Access Permit and Safe Work Methods. |
| **A4 – Low Risk - Manage in-situ until removal** | ACM is non-friable, in a stable condition with a low risk of disturbance.  
• If the above factors worsen, elevate to A3. | Until removal can be undertaken -  
• Monitor condition.  
• Warning labels installed.  
• Remove before refurbishment, demolition or LCR.  
• Requires Work Area Access Permit and Safe Work Methods. |
6B) REMOVAL CONTROL ACTIONS

Asbestos Removals

In accordance with the National Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC: 2002 (2005)] UWA shall implement the following asbestos removal requirements:

All asbestos removals shall be undertaken by competent persons, i.e. asbestos removalists with the appropriate licenses and/or training:

Table 11: License Requirements for Removal

<table>
<thead>
<tr>
<th>Form and size of ACM</th>
<th>License and training requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friable ACM of any amount</td>
<td>Unrestricted asbestos removal licence.</td>
</tr>
<tr>
<td>Non friable ACM in amounts over 10m²</td>
<td>Unrestricted or restricted asbestos removal license.</td>
</tr>
<tr>
<td>Non friable ACM in amounts below 10m²</td>
<td>Restricted asbestos removal license or person who has undertaken asbestos awareness training.</td>
</tr>
</tbody>
</table>

Asbestos removals shall either be coordinated by the Campus Management Safety Officer or delegated to main contractors as part of a capital and major works project.

The CM Safety Officer shall coordinate scheduled removals as part of:
- The maintenance LCR Asbestos Removal Program.
- Response to reported exposure concerns.
- As requested as part of demolition or refurbishment projects.

Coordination of ACM removal may be delegated to principal contractors as part of demolition or refurbishment projects where there exists a logistical efficiency in doing so i.e. multiple contractors onsite and multiple works are being coordinated simultaneously. The decision to refer coordination shall be determined as part of the Work Area Access Permit process in consultation with the CM Safety Officer.

Asbestos Removal Guidelines

Categorisation of ACM into friable or non-friable form shall only be undertaken by an independent competent person (asbestos assessor).

Friable ACM removal presents a high risk of exposure to asbestos fibres to both the removalists and other persons in the workplace. The following requirements shall be implemented to ensure the risk of exposure to respirable fibres is minimised:

- Only asbestos removalists with the appropriate licenses shall undertake asbestos removals.
- An independent competent person shall be engaged to advise on the adequacy of the scope and Asbestos Removal Control Plan or safe working methods for the removal.
- ACM removals must be adequately supervised and carried out in a safe manner.
• The removalist must inform UWA or delegated principal contractor reliably and regularly on the progress of the removal work.
• All persons must be trained and competent for the tasks they undertake.
• Where practicable removals shall be undertaken outside of normal operating hours – i.e. on the weekends or early or late in the day.
• Where practicable whole buildings, floors or sections where removals are being undertaken shall be restricted to staff or other persons.

Asbestos Removal Control Plans and Work Method Statements

The level of removal methodology required is dependent on the type of asbestos removal. For friable removals, before the works commence the removalist must provide UWA with an Asbestos Removal Control Plan specific to the site and equitable to the level of risk the ACM presents. For non-friable asbestos removal jobs, work method statements are sufficient for verification of removal methodologies.

Table 12: Removal Methodology Documentation Requirements

<table>
<thead>
<tr>
<th>Type of asbestos removal</th>
<th>Methodology Documentation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friable Removals</td>
<td>Asbestos Removal Control Plan</td>
</tr>
<tr>
<td>Non-friable Removals</td>
<td>Work Method Statements</td>
</tr>
</tbody>
</table>

Asbestos Removal Control Plans should address:

a. Details of the asbestos to be removed or otherwise controlled. Including the type, friability, condition and quantity;

b. Consultation and notification requirements;

c. Assigned responsibilities;

d. Dates and the removal schedule;

e. Emergency plans;

f. Removal boundaries and warning signs placement;

g. Electrical and other service isolation requirements;

h. Personal protective equipment used;

i. Details of the monitoring program;

j. Removal and cleaning methods;

k. Containment and enclosure requirements, smoke testing and negative air units setup; and

l. Personal and equipment decontamination equipment and practices.

• The adequacy of the plan shall be reviewed by the independent competent person in consultation with the CM Safety Officer in accordance with the Code of Practice for Safe Removal of Asbestos in Workplaces.
Removal Boundaries

The boundaries of the removal site will be established by the asbestos removalist before the works commence. The engaged independent competent person shall review the adequacy of the boundaries.

Friable ACM removals involve two boundaries – the Asbestos Work Area and the Asbestos Removal Site. Non-friable ACM removals may often only involve one boundary – the Asbestos Work Area. The purposes of two boundaries is outlined below:

1. The asbestos work area - the actual areas where the material is being physically removed. It may involve an enclosure and decontamination and negative air units. It may be limited to the taping of 200um polythene plastic over door openings. This area is routinely where material is wrapped and cleaned before being moved to the asbestos bin or truck for disposal.

2. The greater asbestos removal site – is a second boundary encompassing the asbestos work area and is intended to delineate persons a suitable distance from the asbestos work area boundary. It typically can be marked by solid fencing but can also be wooden hoarding. It can involve access restrictions into buildings, floors or sections of buildings.

The boundaries shall be clearly defined and persons at the workplace notified of restricted access requirements before the works commence. Danger, Warning, Access and Mandatory Equipment signs will be installed on the boundary fencing or hoarding in accordance with AS1319.4 Safety Signs for the Occupational Environment.

Asbestos Removal Signs

For all asbestos removals, danger signs will be installed on the boundary barricading. The signs will be clearly written and comply with AS1319.4 Safety Signs for the Occupational Environment.

The following Danger signs will be installed:

![Danger Asbestos Removal in Progress]

As per construction project guidelines, the following Restrictive Signs will be installed

![Danger Construction Site Unauthorised Persons Keep Out]
Notification Guidelines

In accordance with the Code of Practice for Safe Removal of Asbestos in Workplaces 2nd Edition [NOHSC: 2002 (2005)] the university shall endeavour to notify all persons who have the potential to be impacted by the removal at the earliest convenience by formal communication.

In the case that the independent competent person deems it safe for occupants to access parts of the building where asbestos is being removed and the asbestos work area is adequately enclosed, the occupants shall be notified of the removal at the very minimum of 2 weeks prior to the removal. The communication shall be made by either the Campus Management Safety Office or the UWA Project Manager. This is to allow staff to make alternative working arrangements if desired.

Formal communications shall take the form of staff consultative meetings, memorandums, emails and formal/social media notices. Where possible, the independent competent person will be invited to provide clarification of the risks involved and the removal control plan to be implemented. This shall involve consideration of requests for additional air monitoring.

Preparation of the site

- Commencement of the removal shall not occur until the independent competent person in consultation with the university has approved the asbestos removal control plan and the job set up.
- All moveable equipment and plant should be removed from the area; or placed in shelves that can be covered.
- 200um polythene plastic shall be installed over all remaining plant and surfaces to improve cleaning effectiveness.
- Required isolation of electrical, gas, water, fire system and other energised plant should be undertaken by appropriately licensed persons engaged by UWA or the main contractor.
- The unfastening of piping, brackets, lights and other structures must be undertaken by the removalist where there is a risk of disturbing friable ACM.
- The enclosure for the site will be installed in consultation with the university and be reviewed by an independent competent person. The following factors shall be checked by the independent competent person:
  - Air containment/seal adequacy via inspection, smoke testing and the negative air units operation.
  - All air vents and penetrations are covered.
  - The air handling system has been isolated (if required).
  - The negative air pressure units are adequate for the volume of air being filtered, the number and locations of units, the filter replacement schedule, power and back-up power requirements and alarms.
  - Decontamination units are adequate for containment, integrity, showering, air locks and access for standby persons.
  - Cooling requirements in hot working environments, for example, roof spaces. Sprinklers may be required to wet the roof or for the work to be undertaken early in the morning or at night.
  - Material wrapping stations.
- The enclosure inspection and smoke test will be repeated until the enclosure is passed by the independent competent person.
- The enclosure may be constructed of 200um polythene plastic taped to building structures or may be a purpose-built mobile enclosure for smaller jobs.
Control Air Monitoring

The below requirements shall be implemented:

- Control Air Monitoring shall be undertaken by independent competent persons during removals to ensure controls such as enclosures and negative air units are effective during ACM removals.
- The decision to undertake air monitoring will be advised by the independent competent person and take into account the form of ACM and amount being removed.
- As a minimum, it will always be undertaken in removal of friable ACM in any amount for control and clearance purposes.
- It shall be undertaken for removal of Non-friable ACM when there is an amount greater than 10m² or if the duration for removal is more than one day.
- For removal of Non friable ACM less than 10m² there is no legislative requirement to undertake air monitoring. However, it may still be undertaken for client reassurance reasons or if the removal process poses a risk of disturbance.
- The independent competent person shall advise on the following:
  - The location, rate and frequency of sampling;
  - The necessity to monitor air quality in areas adjacent to, above and below the asbestos work area, taking account of the potential exposures of occupants of these areas; and
  - Whether additional routine air sampling is warranted in (for example) nearby high-occupancy areas.
- Air monitoring shall be performed in accordance with the NOHSC Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003 (2005)].
- Static air samplers will be placed in the middle of the sampling area, away from areas where there may be poor air mixing (e.g. close to walls, corners or large objects) or fast air movements (e.g. in front of air-conditioning inlets or exhausts).
- If an enclosure is used, air monitoring will occur:
  - At least daily at the boundary of the asbestos work area;
  - As part of preliminary clearance monitoring, following a satisfactory visual inspection;
  - During dismantling of the enclosure, and
  - As part of the final clearance inspection.
- If an enclosure and a decontamination units are used, air quality should be monitored at the following locations: the clean side of the decontamination unit;
  - The change area;
  - The lunch room (where applicable);
  - The laundry; and
  - The surroundings of the asbestos work area including in the vicinity of the negative air exhaust (where possible).
- The results of all air monitoring will be provided to all relevant parties as soon as possible.
- Control levels and actions for monitored airborne asbestos fibres are outlined below:

**Table 13: Control Level Standards**

<table>
<thead>
<tr>
<th>Control level (airborne asbestos fibres/mL)</th>
<th>Control / Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.01</td>
<td>Continue with control measures</td>
</tr>
<tr>
<td>=0.01</td>
<td>Review control measures</td>
</tr>
<tr>
<td>&gt;0.02</td>
<td>Stop removal work and find the cause</td>
</tr>
</tbody>
</table>
Clearance Procedures

UWA shall ensure that an independent competent person undertakes clearance monitoring to establish that the removal has been adequately undertaken and it is safe to reoccupy the area. Clearance monitoring comprises of a number of activities. These are listed below:

- Clearance inspections
- Clearance air monitoring
- Settle dust sampling

If the above processes do not meet the required standards, the removalist will continue to clean the area until further clearance monitoring confirms the cleaning has been successful.

The below requirements shall be implemented:

Clearance Inspections

- Only independent competent persons shall undertake clearance inspections.
- Clearance visual inspections shall be undertaken for all ACM removals – for friable and non-friable ACM removal.
- Visual inspections shall involve an examination of the asbestos work area, by the independent competent person to confirm that the asbestos removal work has been completed and there is no visual evidence of dust and debris. It involves the independent competent person methodically scanning all surfaces within the site. Typically starting within a 10cm² grid and slowly moving from one grid to the next in a straight line until the whole areas has been scanned.
- Particular attention is paid to ledges, the tops of air-conditioning ducts, cracks in the floor, folds in plastic sheeting and crevices or other areas which may have been overlooked during the initial clean-up.

Clearance Air Monitoring

- The decision to undertake clearance air monitoring shall be advised by the independent competent person and take into account the form of ACM and amount being removed.
- As a minimum, it will always be undertaken after removal of friable ACM in any amount after cleaning has been completed and the area dried, to check that fibre levels are below 0.01 fibres/mL.
- The asbestos assessor will advise on the following:
  o The location, rate and frequency of sampling;
  o The necessity to monitor air quality in areas adjacent to, above and below the asbestos work area, taking account of the potential exposures of occupants of these areas; and
  o Whether additional routine air sampling is warranted in (for example) nearby high-occupancy areas.
- The results of all air monitoring will be provided to all relevant parties as soon as possible.
- Control levels for monitored airborne asbestos fibres are outlined below:

Table 14: Clearance Level Standards

<table>
<thead>
<tr>
<th>Clearance level (airborne asbestos fibres/mL)</th>
<th>Clearance Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.01</td>
<td>Successful clearance</td>
</tr>
<tr>
<td>&gt;0.01</td>
<td>Continual cleaning until a reading of &gt;0.01 has been achieved.</td>
</tr>
</tbody>
</table>
Settled Dust Sampling

- Settled dust sampling may also be undertaken as part of a clearance inspection, however, it is only an indication of cleanliness. Settled dust sampling is not used as an indicator of exposure to asbestiform fibres or risk to health.
- Any settled dust sampling should be undertaken by the independent competent person undertaking the visual inspection using polarised light or scanning electron microscopy as directed by the university.

Following the final clearance inspection and clearance air monitoring, the independent competent person shall provide a clearance report to the university. The clearance report shall be made accessible to all affected parties.

Waste Disposal

ACM shall be disposed in accordance with the Code of Practice for Safe Removal of Asbestos in Workplaces and in accordance with the procedure outlined in Appendix 7.

Decontamination

Removal of friable ACM and non-friable ACM over 10m² shall be undertaken by licensed asbestos removalist. All removalists engaged shall undertake workplace, equipment and personal decontamination in accordance with the Code of Practice for Safe Removal of Asbestos in Workplaces.

In the case of accidental personal exposure to ACM dust or debris, or remedial removal and control of non-friable ACM (less than 10m²), the Personal Decontamination Procedure outline in Appendix 9 shall be followed as far as is reasonably practicable.

6C) OTHER MANAGEMENT CONTROL ACTIONS

Encapsulation

Encapsulation involves the installation of a physical barrier over and enclosing the ACM. Common examples include:

- Hard stand (concrete), wood chips or other dust suppression covers over soils contaminated with fragments or fines.
- Sprayed coatings, render over building materials on walls and ceilings covering ACM.

Where practicable, the university will endeavour to remove ACM rather than encapsulate it. However, there may be occasions where full removal is not practicable due to access issues where the ACM is mixed into a building material that is not accessible such as mortar between brick joints and cracks in walls etc. In this scenario, encapsulation such as rendering, expanding foam or other filling agents could be considered in combination with the appropriate records in the Asbestos Materials Register identifying that the ACM is still in-situ, and the installation of appropriate warning signs and labels in the area.

Encapsulation is not preferred as a control because it may increase the risk of the ACM being unknowingly disturbed. Covering ACM with another material will remove the visual clues that warn maintenance and other workers of the presence of the ACM. For example, vermiculite covering asbestos limpet; plasterboard covering asbestos fibre cement sheeting; and carpet covering asbestos vinyl tiles are all examples where easily recognizable ACM has been hidden and therefore a risk of being unknowingly disturbed.
Sealing

Sealing ACM involves painting or sealing the ACM with paint or other seal. Sealing ACM is more labour-intensive requiring ongoing maintenance as the seal overtime may start to wear and peel off. This can be accelerated by external weathering and/or other disturbance such as hail storms, physical impacts and abrasion. Reapplication of the sealing will often not be undertaken due to the difficulties and risks in preparing the surface and the poor finish.

Asbestos Warning Signs and Labels

Asbestos warning signs and labels will be installed on or next to all identified ACM within buildings and properties. The signs and labels will be clearly written and comply with AS1319.4 Safety Signs for the Occupational Environment.

The following warning labels or signs shall be installed:

![WARNING ASBESTOS]

Materials in this area contain asbestos. Avoid creating dust. Prior to cutting or penetrating materials contact property manager and consult asbestos register.

Controlling works – The Work Area Access Permit

All works on UWA buildings and properties that has the potential of disturbing ACM shall be undertaken in accordance with the UWA Work Area Access Permit (WAAP) procedure. The procedure requires a WAAP to be raised by the UWA Works Manager who is responsible for managing or coordinating the works. This may be UWA Workshops Managers managing maintenance or UWA Project Managers managing refurbishments or demolitions.

In determination of what work has the potential for disturbance of ACM, the UWA Asbestos Materials Register has been integrated into the workflow management system - Maximo. ACM has been recorded down to the room level. When a work order is received the UWA Works Manager must check the ACM tab on the work order to confirm if ACM has been identified in the room. Please see screen shot below:

![Asbestos Registered Locations]

If there is ACM listed and the work has the potential to disturb this ACM, then the UWA Works Manager shall raise a WAAP and undertake the required actions as prescribed in the WAAP. The WAAP is available
from the Campus Management Website and Campus Management Safety Office on 6488 5662. A copy of the permit is listed in Appendix 5.

The Asbestos Material Register data has been supplied in AutoCad files of building drawings. A project has been established to input this graphical data onto the university’s architectural database, Archibus to provide a visual confirmation of all ACM locations which can then be linked to work flow system for checking.

There are two flowcharts that shall be complied with - as prescribed in the WAAP:

- Low Risk Flowchart; and
- Medium to Very High Risk Flowchart

These flowcharts are outlined in Appendix 6.

The WAAP requires the UWA Manager to verify that they have reviewed the UWA Asbestos Materials Register. If the works involve removal or disturbance of ACM, the Campus Management Safety Officer in consultation with the UWA Works Manager shall arrange either a risk assessment or pre-refurbishment asbestos survey of the scope of works. The risk assessment and survey shall be undertaken by an independent competent person. If removal is required, the removal shall be arranged by the Campus Management Safety Officer.

In the case of large scale projects with principal contractors and many competing works and sub-contractors being managed, the CM Safety Officer, for ease of management, may elect to delegate the coordination of the removal and independent assessment to the principal contractor. However, the CM Safety Officer and UWA Works Manager will continue to undertake an overseeing role in the project management of the asbestos removal.

Once the works have been completed and in the case of asbestos related works or removals, successful clearance has been obtained, the permit shall be kept and recorded in the CM Safety Office.

**Table 15: Training Programs.**

Development of asbestos safety training shall be in accordance with the following occupational risk categories.

<table>
<thead>
<tr>
<th>Tier</th>
<th>Occupational Risk Category</th>
<th>Risk of Disturbance</th>
<th>Training Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asbestos Removal, Demolition, Refurbishment Works. Persons working directly with or removing asbestos and undertaking inspections and testing. Persons involved in demolition and destructive refurbishment of buildings.</td>
<td>Very High</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Maintenance Works Persons undertaking maintenance and other works with potential for disturbance of ACM.</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>General Occupancy Persons occupying building with ACM and exposed to background air levels.</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>
Tier One and Tier Two training programs shall be coordinated by the CM Safety Officer. Only accredited courses and accredited training providers shall be engaged. Tier Three training will be undertaken by all new staff on commencement and ongoing contractors as required. In addition, the following online training course is available for personal reference. This course is accessible in the UWA Safety, Health & Wellbeing website:

![Asbestos Awareness](image)

**Personal Protective Equipment**

The removal or disturbance of ACM shall only be undertaken under the required controlled conditions and by competent persons authorised to do so. Friable ACM and non-friable ACM over 10m² shall only be removed by asbestos removalists with the appropriate licenses in accordance with the Code of Practice for Safe Removal of Asbestos in Workplaces. The code of practice outlines the minimum PPE requirements to be employed.

In the scenario where non-friable ACM less than 10m² is newly discovered or found to be damaged or deteriorated, then the Campus Management Safety Office can authorised competent persons to undertake remedial removal or control to ensure others are not accidentally exposed to asbestos fibres. For example, a small amount of asbestos cement board fragments are uncovered as a garden bed is being dug by hand shovels. To prevent persons disturbing this ACM at a later date, it shall be removed and disposed of in accordance with the below work method statements:

- Remedial Removal of Non-friable ACM less than 10m².
- Remedial Control of discovered, disturbed and damaged Non-friable ACM less than 10m².

Remedial ACM removals and control actions shall employ the below PPE as required, and in accordance with legislative requirements:

The following PPE may be required as per risk assessment:

**Table 16: Personal Protective Equipment**

<table>
<thead>
<tr>
<th>Personal Protection</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiration</td>
<td>P2 and P3 Respirators</td>
</tr>
<tr>
<td>Hands</td>
<td>Disposable gloves</td>
</tr>
<tr>
<td>Body &amp; Feet</td>
<td>Protective clothing. Washable or disposable rubber boots.</td>
</tr>
</tbody>
</table>
The UWA Asbestos Materials Register records the location, description, amount, condition, risk rating, laboratory test results, recommended controls and management actions undertaken to date - for all identified or presumed ACMs in UWA premises and property. The register is actively maintained by the UWA Campus Management Safety Office.

The register is readily accessible in:

1. The university’s record management system - the HP Records Manager (requires a Pheme password):

   **Electronic copy: file 14/56008.**

2. Hard copies of the register and asbestos survey reports are available to contractors and other persons by contacting:

   **The Campus Management Contractors Administration Office:** Phone number: 6488 5588.
   **The UWA Health, Safety & Wellbeing Office:** Phone number: 6488 3938.
   **The Campus Management Safety Office:** Phone number 6488 5662.

The register is actively managed by the UWA Campus Management Safety Office and updated when:

- The condition of ACM is damaged or deteriorated.
- ACM are removed.
- Previously unknown ACM is identified in surveys and inspections.
- Laboratory testing confirms presumed ACM contains asbestos.
- In lieu of a 12 monthly review, the 3 yearly review by an independent competent person.

Information and training shall be provided to persons at the workplace on where the Asbestos Materials Register is stored; how to access it; and how to interpret the date in particular risk ratings and controls.

Please see an example of the UWA Asbestos Materials Register below:
8. ASBESTOS EXPOSURE REGISTER

UWA maintains an Asbestos Exposure Register. Any person at the workplace who believes they have been exposed to respirable asbestos fibres can submit an asbestos exposure form to UWA Safety, Health & Wellbeing to be recorded onto the UWA Asbestos Exposure Register.

This includes, staff, contractors, students, visitors, volunteers and any other persons conducting a business or undertaking on behalf of the university.

The form is available from: http://www.safety.uwa.edu.au/forms/asbestos-exposure-form

The form will request information such as occupation and work details, diagnosis, work history, exposure incidents and personal details.

Health Surveillance and the Asbestos Review Program

The university can refer persons believing they have been exposed to asbestos fibres to the Asbestos Review Program. The Asbestos Review Program is a joint research venture between the School of Population Health (UWA) and the Department of Respiratory Medicine (North Metropolitan Area Health Service). It focuses on monitoring the health status of participants and providing health promotion advice and resources to participants in relation to smoking, diet, exercise and recommended screening programs.

The health of participants is monitored by accredited medical professionals and they undergo an annual assessment that includes:

- A chest x-ray or low dose CT scan to diagnose any significant abnormalities;
- A blood test to assist in future identification of markers for tumours and mesothelioma;
- A questionnaire and health plan for coping with the symptoms of asbestos related illness and advice in relation to smoking, diet and exercise;
- Lung function tests including a spirometry test and a gas transfer test.

All information is kept secure onsite and privacy and confidentiality is maintained in accordance with privacy laws. A copy of the referral form is outlined in Appendix 8.
9. REPORTING ASBESTOS CONCERNS.

Concerns that persons could be exposed to asbestos fibres or that ACM has been discovered or damaged and/or deteriorated shall be reported to UWA Safety, Health & Wellbeing and the Campus Management Safety Office. The contact details are listed below:

Table 17: Reporting Contacts

<table>
<thead>
<tr>
<th>Contact Persons</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>UWA Safety, Health &amp; Wellbeing:</td>
<td>6488 3938</td>
<td><a href="mailto:Safety@uwa.edu.au">Safety@uwa.edu.au</a></td>
</tr>
<tr>
<td>Campus Management Safety Office</td>
<td>6488 5662</td>
<td><a href="mailto:alex.scholz@uwa.edu.au">alex.scholz@uwa.edu.au</a>.</td>
</tr>
</tbody>
</table>

The UWA Asbestos Materials Register and Maximo shall be actively updated by the Campus Management Safety Office on confirmation of any changes arising from reports.
In the case that ACM is disturbed and there is a concern that persons could be exposed to asbestos fibres, the following emergency response process shall be followed:

**The Asbestos Exposure Response Procedure:**

1. **Discovered, disturbed and damaged ACM**
   - Notify CSO

2. **CSO checks the UWA Asbestos Register.**
   - Arranges a visual inspection.
   - Arranges laboratory tests.

3. **Is ACM confirmed as asbestos?**
   - If testing is required the CSO temporarily restricts access to the area. Persons leave and doors closed. Area sealed with 200μm plastic. Warning signs installed and notifications made.
   - CSO advises occupants to resume normal duties.

4. **Is ACM friable & at-risk of inhalation?**
   - No.
     - Arrange Asbestos Removalist (Restricted) to remove, encapsulate seal & install warning labels.
   - Yes.
     - CSO advises occupants to resume normal duties.

5. **CSO arranges full evacuation, seals area, notifies affected persons and established access restrictions.**

6. **CSO engages Independent Competent Person to oversee asbestos removal.**

7. **Asbestos Removalist (Unrestricted) to remove ACM and clean.**

8. **Independent Competent Person to undertake clearance monitoring.**
   - CM Safety Officer investigates potential causes, implements corrective and preventative actions.
   - Updates Asbestos Materials Register and Asbestos Management Plan.

9. **CSO advises occupants to resume normal duties.**
11. REVIEW PROCEDURE.

The asbestos management plan shall be reviewed annually by the Campus Management Safety Office, representatives from UWA Safety, Health and Wellbeing and building services representatives. The review shall consider engagement of an independent competent person within the 3 yearly survey program to provide advice on legislative compliance and content adequacy.

The review shall be undertaken for the purposes of:

- Legislative Compliance.
- Continuous Improvement and Best Practice.
- In response to identified shortcomings.
- Changes in Management Organisational and Governance.
APPENDIX 1: ASBESTOS CHARACTERISTICS

Amosite or Brown Asbestos:
Amosite is from the Amphibole group of asbestos minerals. Its fibres are a brown colour and are needle-like in shape. Its fibres are highly aerodynamic and highly resistant to chemical breakdown within the human lung.

Crocidolite or “Blue Asbestos”:
Crocidolite is from the Amphibole group of asbestos minerals. Its fibres are a blue colour and are needle-like in shape. Its fibres are highly aerodynamic and highly resistant to chemical breakdown within the human lung.
Chrysotile or “White Asbestos”:
Chrysotile is from the Serpentine group of asbestos minerals. Its fibres are white in colour and have a curly shape. Its fibres are less aerodynamic and more prone to fragmentation and excretion from the human lung.

Image Credit: Marilimillerphoto.com

Image Credit: Wikipedia.org
APPENDIX 2: HEALTH IMPACTS

The toxicity of asbestos

Asbestos is mostly a risk when its fibres can be inhaled. Inhalation is the primary route of entry into the body but it can also be ingested. The fine diameter, length, chemical resistance and tensile strength of the fibres result in a long persistence in the lungs. Inhalation of asbestos fibres can cause the following diseases:

- Mesothelioma: cancer of the lung lining.
- Lung Cancer: cancer of the lung.
- Asbestosis: scarring and fibrosis of the alveoli (air sacs) of the lungs.
- Pleural Disease: thickening and fluid retention within the pleural region of the lungs.

Please see comparison of a healthy lung and a lung with asbestos related diseases below:

The latency period for the above diseases generally ranges from 5 and 50 years depending on a number of factors including exposure levels, type of asbestos and personal demographics.
Toxicity is believed to be relational to the type of asbestos mineral and the amount of fibres inhaled or ingested.

The relative toxicity of the common types of asbestos are listed below:

1. Crocidolite:
2. Amosite:
3. Chrysotile:

The aerodynamic shape and chemical stability of Crocidolite and Amosite asbestos fibres mean they are more likely to become airborne, enter the lungs, become imbedded and persist in the lungs. These fibres are highly chemically resistant and the lungs are less effective at breaking down and excreting these fibres. As a result, the body’s immune system continuously attacks the fibres and the lungs become inflamed. A build-up of dead antibodies surrounds the fibres eventually resulting in fibrosis and scarring throughout the lungs. This impedes the ability of the air sacks to transfer oxygen into the blood. This inflammation is also believed to be the condition that may trigger the development of Lung and Mesothelioma cancers.

Chrysotile fibres are curly in shape, less likely to become airborne and enter the lungs. These fibres are less chemically stable and more likely to be excreted from the lungs.

There is evidence to suggest a link between asbestosis and lung cancer – persons suffering asbestosis will eventually succumb to lung cancer. Individual’s personal characteristics such as age and smoking habits also are believed to affect the development of these diseases. Younger persons and smokers are believed to be more perceptible to developing asbestos related lung cancer. Historically, the national exposure rate for Chrysotile asbestos was set at a higher rate than that of Amosite and Crocidolite asbestos. However, for prudence sake the Industry Exposure standard of 0.01 fibres per millilitre (0.01f/mL) of air has now been generically applied to all types of asbestos.
In Australia, asbestos was used in a wide range of products manufactured between the 1940s and the 1980s. These are below:

- Fibre cements sheeting: fencing, roofing, eave lining, gables, ceiling and wall panels.
- Fibre cement moulded materials: plumbing and irrigation piping, flues and capping.
- Woven textiles: insulation tapes/rope, electrical cloths, stage curtains, fire blankets, filters.
- Sprayed and painted coatings: fire proofing, asbestos limpet and vermiculite.
- Plaster and paint mixed slurries.
- Acoustic ceiling and baffles.
- Lagging around pipes.
- Fibrous felt, membranes and roofing tars.
- Mastics filler, sealants, putties, adhesives and caulking compounds.
- Vinyl flooring tiles/sheeting and the adhesives below the flooring.
- Adhesives
- Millboard: fire doors.
- Hot water pressure units.
- Electrical mounting boards – for electrical insulation.
- Brake and clutch linings – gaskets.
- Polmer bound.
- Loose fill insulation – in roof spaces and wall cavities.
- Dental Cast linings.
- HVAC flexible duct connectors.
- Lorillard cigarette filters from 1952 to 1956.

Photographs of typical Asbestos Containing Materials are available in building asbestos survey reports and on request from the Campus Management Safety Officer.
APPENDIX 4: METHOD STATEMENTS

METHOD STATEMENT

LOCATION: Generic

TASK/ACTIVITY: Remedial Removal of Non-friable Asbestos Cement Material (ACM) less than 10m².

PREPARED BY
Name: Safety Officer, Campus Management.
Date: 20/03/2014

PERMISSION FOR TASK/ACTIVITY TO PROCEED
Name: (Supervisor for relevant work area)
Signature: Generic
Date: Generic

Cross
This document is part of a Job Safety Analysis (JSA) and reflects the findings of an associated risk

OR
JSA Waiver - There are no identifiable hazards associated with this activity which warrant further risk

Purpose
To outline practices for remedial internal removal of non-friable Asbestos Cement Material (ACM) - for jobs not requiring an Asbestos Removalist Licence (i.e. ACM in amounts smaller than 10m², in a stable condition as deemed not to be friable).

This Method Statement outlines the processes of:
• Preparation for Removal;
• Equipment Requirements;
• Personal Protective Equipment;
• Work Methods;
• Personal Decontamination and
• Clearance and Monitoring requirements.

Scope
This Method Statement is limited to remedial¹ internal² removal activities undertaken by persons who have undertaken an asbestos awareness course as a minimum. It involves ACM debris that was previously unknown is damaged and remedial action must be taken to manage the risk of exposure. Common examples include left over cement board fragments from previous demolishing jobs that was buried in ground areas.

The term “Previously Unknown” as a minimum, refers to not being registered on the current or previous versions of the Asbestos Register.

1. The term “Remedial Action” refers to corrective action/controls enacted to reduce the risk of exposure to as low as reasonably practicable.

2. The term “Internal Removal Activities” refer to removal activities that do not require an Asbestos Removal License - when the ACM debris is in a fairly stable condition, not disintegrating into dust (friable form) that may be inhaled. Removal activities for friable Asbestos Containing Material (ACM) in any size and/or non-friable ACM in sizes in excess of 10m² require an Asbestos Removalist License.

Please note! This Work Method statement does not address pre-planned removal activities of known asbestos containing material that requires the development of an Asbestos Removal Control Plan.

Related Information
This Method Statement provides guidance on practices that meet the legislative requirements of:
• Occupational Health & Safety Act 1984 WA
• Occupational Health & Safety Regulations 1996 WA
• Code of Practice for the Management and Control of Asbestos in the Workplace [NOHSC:2018(2005)]
• Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1011 (1995)].
• Guidelines for the Assessment, Remediation and Management of Asbestos-contaminated Sites in Western Australia. May 2009, DOHWA.
• Occupational Safety and Health Management and Contaminated Site Work 2005.

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk Assessment and Approval for Reactive Removal Activities</strong></td>
<td>Nominated Supervisor.</td>
</tr>
<tr>
<td>• On discovery of the ACM debris the supervisor should report it to the CM Safety Office for recording in the Asbestos Register and to seek advice as required.</td>
<td></td>
</tr>
<tr>
<td>• Before proceeding the Manager, Building Workshop must approve the removal work.</td>
<td></td>
</tr>
<tr>
<td>• Approval should be based on a risk assessment where the risk of exposure is low (within tolerable levels). If it is not, further approvals are required.</td>
<td></td>
</tr>
<tr>
<td>The risk assessment must:</td>
<td></td>
</tr>
<tr>
<td>• Reference the Asbestos Register to try and determine the source of the ACM debris and type of asbestos. The register may provide a record of removal activities undertaken in the area - for example, removal of roofs or fences.</td>
<td></td>
</tr>
<tr>
<td>• Confirm there are no other forms of ACM in the area that may be disturbed. Some demolitions may result in a range of materials such as insulation or lagging being buried that when containing asbestos may be more friable and dangerous.</td>
<td></td>
</tr>
<tr>
<td>• Confirm that the ACM is in a fairly stable condition and able to be handled without causing the generation or disturbance of inhalable airborne fibres into the environment. Particular attention must be given to any broken edges.</td>
<td></td>
</tr>
<tr>
<td>• Confirm that the environment/weather will not increase the exposure to airborne fibres. For example, dry, windy conditions.</td>
<td></td>
</tr>
<tr>
<td>• Confirm that the amount of ACM to be removed does not exceed 10m².</td>
<td></td>
</tr>
<tr>
<td>• The decision on the need for laboratory testing or the presumption of whether the debris contains asbestos should be based on a visual inspection by a “competent person”; reference to the Asbestos Register and the risk assessment.</td>
<td></td>
</tr>
<tr>
<td><strong>Preparing the Work Area</strong></td>
<td>Nominated Supervisor</td>
</tr>
<tr>
<td>• Ensure safe access.</td>
<td></td>
</tr>
<tr>
<td>• Restrict access to the area to personnel required in the removal.</td>
<td></td>
</tr>
<tr>
<td>• Close doors and any affected windows or vents.</td>
<td></td>
</tr>
<tr>
<td>• Use warning tape and signs to warn others.</td>
<td></td>
</tr>
<tr>
<td>• Ensure adequate lighting.</td>
<td></td>
</tr>
<tr>
<td>• Consult with the work area and affected persons to ensure they are aware of the removal activities.</td>
<td></td>
</tr>
<tr>
<td><strong>Equipment</strong></td>
<td>Nominated Supervisor</td>
</tr>
<tr>
<td>• Warning tape and signs.</td>
<td></td>
</tr>
<tr>
<td>• Scoop, trowel or scraper.</td>
<td></td>
</tr>
<tr>
<td>• Adhesive tape.</td>
<td></td>
</tr>
<tr>
<td>• Garden type sprayer containing wetting agent (water).</td>
<td></td>
</tr>
<tr>
<td>• Bucket of water and rags.</td>
<td></td>
</tr>
<tr>
<td>• Waste container, eg. labelled polythene bag; and clear polythene bag that can be taped or tied shut.</td>
<td></td>
</tr>
<tr>
<td><strong>Personal Protective Equipment</strong></td>
<td>Nominated Supervisor</td>
</tr>
<tr>
<td>• Provide: disposable overalls fitted with a hood; and boots without laces (laced boots are hard to decontaminate) or chaps.</td>
<td></td>
</tr>
<tr>
<td>• P2 dust masks must be worn.</td>
<td></td>
</tr>
</tbody>
</table>

43
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Supervisor of the work area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caution: make sure the debris is non-friable ACM only.</td>
<td></td>
</tr>
<tr>
<td>• Wet the ACM debris with spray.</td>
<td></td>
</tr>
<tr>
<td>• Clean up visible contamination in occupied areas, eg paths, gardens beds nearby.</td>
<td></td>
</tr>
<tr>
<td>Pick up larger pieces of debris. Put them in the waste container.</td>
<td></td>
</tr>
<tr>
<td>• For debris on rough surfaces, keep it damp and scoop or scrape it into the waste container.</td>
<td></td>
</tr>
<tr>
<td>• Put used rags and other waste in the waste container and tape it closed.</td>
<td></td>
</tr>
<tr>
<td>• Put the waste container in a clear polythene sack and tape it closed.</td>
<td></td>
</tr>
<tr>
<td>• Refer to Asbestos Waste Disposal procedures.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal decontamination</th>
<th>Supervisor of the work area</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Refer to the Personal Decontamination, Asbestos Removal Method Statement.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clearance and checking off</th>
<th>CM Safety Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Clearance Assessment involves:</td>
<td></td>
</tr>
<tr>
<td>• A visual inspection of the area by a competent person to detect any left-over debris.</td>
<td></td>
</tr>
<tr>
<td>• Clearance air sampling is not normally required for non-friable ACM although Reassurance Clearances may be requested by the clients.</td>
<td></td>
</tr>
<tr>
<td>• If dust is present the removal should be referred to a licensed Asbestos Removalist.</td>
<td></td>
</tr>
</tbody>
</table>
## Purpose

To outline practices for UWA remedial response actions in relation to discovery of previously unknown, damaged or severely deteriorated ACM requiring either removal or management.

This Method Statement outlines the processes of:

- Notification— friable or non-friable;
- Evacuation requirements;
- Isolating the area.

## Scope

This Method Statement is limited to remedial response actions in relation to previously unknown, damaged or severely deteriorated ACM.

The term “Remedial Response Actions” refers to the corrective actions taken by UWA staff to reduce the risk of exposure to as low as reasonably practicable. This may include removal of non-friable ACM less than 10m². It does not refer to removal of any amount of friable ACM.

The term “Friable” means ACM in a form where the fibres are not bound to the building material, and when disturbed may become airborne and inhaled.

The term “Non-friable” means ACM in a form where the fibres are bound within a building material compound or matrix and not normally being able to be inhaled. However, non-friable ACM can become friable to a degree when severely disturbed either by mechanical means such as abrasion, cutting, buffering, blasting or drilling; being physically impacted, crushed, broken or exploded to a significant degree causing it to emit fibres. For example, hail damage.

The term “Previously Unknown” as a minimum, refers to not being registered on the current or previous versions of the Asbestos Register.

Please note! This Work Method statement does not address programmed removal activities of known asbestos containing material that requires the development of an Asbestos Removal Control Plan.

## Related Information

This Method Statement provides guidance on practices that meet the legislative requirements of:

- WA Occupational Health & Safety Act 1984

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**LOCATION:** Generic

**TASK/ACTIVITY:** Remedial Control of Discovered, Disturbed or Damaged Non-friable Asbestos Containing Material (ACM) less than 10m².

**PREPARED BY**

**Name:** Safety Officer, Campus Management.

**Date:** 30/04/2015

**PERMISSION FOR TASK/ACTIVITY TO PROCEED**

**Name:** (Supervisor for relevant work area)

**Signature:** Generic

**Date:** Generic
- Occupational Health & Safety Regulations 1996 WA
- Code of Practice for the Management and Control of Asbestos in the Workplace [NOHSC:2018(2005)]
- Guidelines for the Assessment, Remediation and Management of Asbestos-contaminated Sites in Western Australia. May 2009, DOHWA.

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notification and Isolation</strong></td>
<td>Any staff.</td>
</tr>
<tr>
<td>• On discovery of previously unknown, damaged or deteriorated ACM, report it to the CM Safety Officer and Nominated Supervisors within Building Workshop for management actions.</td>
<td></td>
</tr>
<tr>
<td>• If the ACM could be friable and there is an exposure risk request the area is evacuated.</td>
<td></td>
</tr>
<tr>
<td>• If safe to do so, install barricading around the damaged ACM or ACM debris and cover with plastic sheeting.</td>
<td></td>
</tr>
<tr>
<td>• If required install a spotter in the area until the ACM is managed and the area cleared for re-occupation.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The CM Safety Officer will:</th>
<th>CM Safety Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reference the UWA Asbestos Register to identify and confirm the ACM form, risk and determine the source of the ACM debris.</td>
<td></td>
</tr>
<tr>
<td>• If friable, arrange the management actions or removal – to be undertaken by a licensed asbestos removalist under an asbestos removal control plan.</td>
<td></td>
</tr>
<tr>
<td>• If it is non-friable ACM over 10m² and/or mixed, and/or damaged or severely deteriorated to a degree that could result in it emitting fibres arrange the management actions or removal undertaken by a licensed asbestos removalist.</td>
<td></td>
</tr>
<tr>
<td>• Once clearance is confirmed reoccupation can occur.</td>
<td></td>
</tr>
<tr>
<td>• If it is non-friable ACM under 10m², undertake removal in accordance with Work Method Statement “Removal of Non-friable Asbestos Cement Material (ACM) under 10m²”</td>
<td>Nominated Supervisors</td>
</tr>
</tbody>
</table>
# Work Area Access Permit

**Date:**

<table>
<thead>
<tr>
<th>Work/Purchase Order Number:</th>
<th>Building/Room Number/Area:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Work Description/Job Scope:</th>
<th>Description of hazardous material - eg asbestos.</th>
</tr>
</thead>
</table>

(Hazardous materials register reference)

**A Before works start.**

<table>
<thead>
<tr>
<th>UWA Works Manager</th>
<th></th>
</tr>
</thead>
</table>

I have been informed or am aware that there are hazardous materials existing within the work area in which I am proposing to conduct works.  
Yes/ No – (I need assistance).

I have reviewed the relevant UWA Hazardous Materials Register and have made myself familiar with all the hazardous materials in the work area which I am proposing to conduct works (Example Asbestos).  
Yes/ No – (I need assistance).

I have checked with the CM Safety Officer as to whether I need to arrange a Refurbishment/Demolition Survey for asbestos in the area being disturbed?  
Yes/ No – (I need assistance).

I have forwarded this permit, with the Scope of Works and Risk Assessment to the CM Safety Officer for an assessment on whether the hazardous material will be disturbed?  
Yes/ No – (I need assistance).

**Full Name:**

<table>
<thead>
<tr>
<th>Signature:</th>
<th>Date:</th>
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</thead>
</table>

**CM Safety Officer**

I, the CM Safety Officer have reviewed the Scope of Works and Risk Assessment and assessed the risk of disturbance of the identified hazardous material if required in consultation with an Accredited Consultant. This may involve a refurbishment/demolition survey to be undertaken.

**Question:** Is an Accredited Consultant and/or Licensed Hazmat Contractor required to be engaged to manage the risk/works?

☐ No - the disturbance risk is Very Low to Low and works can proceed under the controls outlined in the Scope of Works and Risk Assessment provided.  
**UWA Works Manager to consult with Workshops/Contractors to complete Section B.**

☐ Yes – the disturbance risk level is Moderate to Very High and requires an Asbestos Consultant and Licensed Hazmat Contractor to provide hazardous materials risk management services and/or undertake removal and/or cleaning.

Election of person engaging the Accredited Consultant and Hazmat Contractor?

☐ **CM Safety Officer – SO completes Section C then forwards permit to the UWA Works Manager for completion of Section D.**

☐ **UWA Works Manager – WM completes Section C and Section D and forwards the permit to the SO on completion.**

**B Works – (Very Low to Low Disturbance Risk)**

**Acknowledgement:** I have been provided with the Work Area Access Permit by the UWA Works Manager with approval to proceed under the controls outlined in the Scope of Works and Risk Assessment.

I will ensure all workers/subcontractors will abide with the UWA Contractor Safety Procedures, the works risk assessment and comply with legislative requirements in relation to hazardous materials management.  
**When works are finished, complete Section D and forward the permit to the UWA Works Manager.**
## C. Works - Medium to Very High Disturbance Risk. Engagement of Accredited Consultant and/or Hazmat Contractors.

<table>
<thead>
<tr>
<th>Accredited Consultant:</th>
<th>Contact Person:</th>
<th>Contact details:</th>
</tr>
</thead>
</table>

1. The Accredited Consultant has provided a Risk Management Plan in relation to the works impacting on/or removal of the hazardous material? (For example an Asbestos Removal Control Plan). *Attach to the permit.*

- **Yes/No**

2. Licensed Hazmat Contractor details:

<table>
<thead>
<tr>
<th>Hazmat Contractor:</th>
<th>License Number:</th>
<th>Contact Person:</th>
<th>Contact details:</th>
</tr>
</thead>
</table>

3. For Removal works – WorkSafe WA have been notified in writing?

- **Yes/No**

4. The Accredited Consultant has provided Clearance Monitoring and cleared the area for reoccupation and access?

- **Yes/No**

   - Clearance Monitoring undertaken: [ ] Visual Inspection: [ ] Air Monitoring: [ ] Dust Sampling: [ ]
   - Soil Sampling: [ ] *(Attach to the permit) Go to Section D.*

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

## D. After the works are completed.

**Workshops or Contractor**

- Completion: The work covered by this permit has now been completed. The work was carried out in accordance with the Risk Assessment or Risk Management Plan. The area now is available for re-occupancy.

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

**UWA Works Manager**

- I have verified that the work is completed in accordance with the UWA Asbestos Management Procedures, Risk Management Plan and the Risk Assessment.

  - The room/area is now available for re-occupancy. The completed permit to be sent to the CM Safety Officer.

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

**UWA Delegated Authority**

- I have received a copy of the Clearance Report and will now arrange for reoccupation as per the above verification from the UWA Works Manager.

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

### List of workers/subcontractors

- **Business Name:**
- **Contact Details:** (Name, phone numbers)

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

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- **The CM Safety Officer:** the CM Safety Officer or delegate.
- **UWA Works Manager:** An officer within Campus Management or other schools and sections within UWA that is managing the maintenance job request or works project.
- **Workshops:** UWA Workshop Staff.
- **Contractors:** Private contractors engaged by UWA.
- **Accredited Consultants:** Consultants accredited with assessing the risk associated with various hazardous materials eg Asbestos Assessors.
- **Licensed Hazmat Contractors:** Contractors who possess a license required by law for removal or management of certain hazardous materials - eg. Licensed Asbestos Removalists.
- **UWA Delegated Authority:** delegated management authority responsible for occupation of the site.
Work Area Access Permit Process
Medium to very High Disturbance Risk

Maximo Alert – Hazardous Material Identified
CM raises WAAP

WM applies for access and provides Scope of Works and Work Method Statements to SQ.

CSO reviews Scope of Works, Work Method Statement and disturbance risk. Is a Refurbishment/Demolition Survey required?

WM coordinates HC for Risk Management Plan in liaison with CSO

CSO elects coordinator of HC.

CSO coordinates HC for Risk Management Plan in liaison with WM.

Risk Management Plan developed by HC.

1. Works, cleaning & removal undertaken by HC or 2. HC oversees works by WO.

Residual Work undertaken by WO.

Clearance Monitoring undertaken by HC.

WAAP sign off by WM.

WM sends completed permit to CM.

Permit stored by CM.

Hazardous material registers updated by CSO.
Work Area Access Permit Process
Part B - Low Disturbance Risk

Maximo Alert – Hazardous Material identified
CM Raises WAAP

WM applies for access and provides
Scope of Works and Work Method Statements to CSO.

(Low risk of disturbance)
CM notifies WM work is cleared to proceed
under Work Method Statement.

CSO reviews Scope of Works, Work Method Statement and disturbance
risk.

Work undertaken by WO.

Compliance auditing by CSO.

WAAP sign off by WM.

Quality Assurance check
Undertaken by CSO.

WM sends completed permit to CM.

Permit stored by CM.
APPENDIX 7: WASTE REMOVAL PROCEDURE

Waste removal

- Waste disposal programs shall form part of all asbestos removal control plans and shall take into account: containment, method and location for waste storage whilst onsite, waste transport mode and schedule and designated/approved asbestos disposal sites.
- Waste shall be collected in heavy-duty 200 μm (minimum thickness) polythene bags that are not more than 1200 mm long and 900 mm wide. Only unused bags shall be used, and bags marked for asbestos waste shall not be used for any other purpose.
- In order to further minimise the risk of a bag’s tearing or splitting, and also to assist in manual handling, asbestos waste bags shall not be filled more than half full and excess air should be gently evacuated from the waste bag, in a manner that does not cause the release of dust.
- The bags shall then be twisted tightly, folded over and the neck secured in the folded position with adhesive tape or any other effective method.
- All asbestos waste shall be double bagged immediately following the decontamination process.
- The routes used for removing waste from the asbestos work area shall be designated in the asbestos removal control plan before the commencement of each removal. The methods used to transport wastes through a building shall be determined by a competent person following discussions with the asbestos removalist. In occupied buildings, all movements of waste bags shall be outside normal working hours.
- Once the waste bags have been removed from the asbestos work area, they shall either:
  - Be placed in a solid waste drum, bin or skip; or be removed from the site by an approved and licensed carrier.
  - Waste bags shall not be stored at the asbestos removal site if they are not placed in an asbestos waste drum, bin or skip.
- All drums or bins used for the storage and disposal of asbestos waste shall be in a good condition, with lids and rims in good working order, and free of hazardous residues.
- The drums or bins shall be lined with plastic (minimum 200 μm thickness), and labels warning of the asbestos waste shall be placed on the top and side of each drum or bin, with the words, ‘Danger: asbestos. Do not break seal’ or a similar warning. If it is not feasible to use asbestos waste bags, drums or bins, because of the volume or size of the asbestos wastes, a waste skip, vehicle tray or similar container may be used.
APPENDIX 8: THE ASBESTOS REVIEW PROGRAM

Asbestos Review Program
Department of Respiratory Medicine
Ground Floor “B” Block
Sir Charles Gairdner Hospital
NEDLANDS WA 6009

Telephone: (08) 9346 2922
Facsimile: (08) 9346 1555
Toll free number for Interstate and Country callers: 1800 999 505

Jointly conducted by:
The Department of Respiratory Medicine
Sir Charles Gairdner Hospital
The School of Population Health
The University of Western Australia

INFORMATION SHEET – NEW PARTICIPANTS (PLEASE KEEP)

Background to the Asbestos Review Program
The Asbestos Review Program (ARP) began in 1990. Initially it was known as the Vitamin A Program and involved providing people with Vitamin A capsules for cancer prevention in people with previous exposure to asbestos. Evaluation of the Program after the first 5, 10 and 15 years showed that taking part was consistently associated with lower rates of death. However, evaluation after 15 years showed no significant reduction of mesothelioma cases. Therefore it was decided that it was not the Vitamin A that was having an effect on death rates but some other aspect of the program. Other studies elsewhere have shown similar results where taking Vitamin A did not reduce the risk of developing lung cancer. Therefore Vitamin A is no longer provided. However, the program continues as a review program for people who have had exposure to asbestos.

As well as provide an annual review for anyone who has been exposed to asbestos the information collected has improved our understanding of asbestos-related disease. This information has been used by the Occupational Respiratory Epidemiology (ORE) Group at the University of Western Australia and this group will continue to assess the information as it is gathered.

Objectives of the ARP
To monitor the health status of people exposed to asbestos
To provide health promotion resources to all subjects on the program, particularly in relation to smoking, diet, exercise and recommended screening programs.
Continually improve our understanding of the health effects of asbestos exposure

Potential benefits to participants
Provision of an efficient and effective annual “checkup” and ongoing contact with a team of people who are there for the purpose of providing support, assistance and advice regarding issues related to past exposure to asbestos. In particular the provision of help in coping with the knowledge that an individual’s mesothelioma risk continues to increase with time.
Assistance in quitting smoking and advice on exercise, diet and cancer.

Potential benefits of the program to humanity in general
The program offers to provide important insights into the health effects of exposure to asbestos. We will also continue to explore and the possibilities for the prevention of disease.

Methods
If you agree to take part you will participate in an annual assessment that includes;
1. A plain chest X-ray or Low-dose CT.
2. A blood test.
3. A questionnaire about symptoms, smoking, diet and exercise.
4. Simple lung function tests, including repeat tests after Ventolin.

You will be offered the choice of a plain chest x-ray or Low-dose CT scan. Both are used for scanning for any changes in your lungs. The CT scan provides more information but uses more radiation. You have been given a separate form to describe the differences between the two scanning techniques. If the X-ray or CT
shows any significant abnormality (or significant change since the previous scan) you will be contacted and advised to see the doctor that you have named as your GP who will also be informed of the result.

Between 8 and 13mL (2 to 3 tea spoonfuls) of blood will be collected from your arm or hand. Some blood will be used to measure vitamin A levels and the rest will be stored and may be used in the future for research to identify markers of mesothelioma.

There are two lung function tests. The first is called spirometry. For this test you will be asked to take a deep breath to fill up your lungs and then blow out as hard and fast as you can into a spirometer until your lungs are empty. This measures how much air you can blow out (FVC) and how quickly you can do that (FEV1). This test is repeated until there are at least two similar results. The maximum number of blows you will do is 7. The test will also be repeated after you have taken 4 puffs of Ventolin. Ventolin is used to open your airways and may make blowing out easier. Ventolin is safe to take but in some cases it may cause heart palpitations (noticeable beating of the heart), rapid heart rate, tremor, nausea, headache, nervousness, light-headedness, coughing and dizziness. These effects are rare but please inform the staff if you have ever used Ventolin and experienced these effects. The second test is called gas transfer and measures how well gases diffuse across your lungs. For this test you will be asked to blow out fully, then breathe in fully and hold your breath for 10 seconds before blowing out again. This test is repeated at least once. This test is not done on everyone but you may be asked to do this test if there is enough time during your visit.

Everybody joining the Program may withdraw at any time. However, chest x-rays, lung function results and blood samples remain the property of the Asbestos Review Program if a participant decides to withdraw from the program.

Privacy and confidentiality of data storage
All participants’ files will be stored in metal filing cabinets, locked and housed at the Department of Respiratory Medicine which is a secured building. Data stored on computers are password protected and are also protected by the UWA computer security systems. Quality control of lung function data will be performed by respiratory technicians from the Pulmonary Physiology Department of Sir Charles Gairdner Hospital. To do this your results will be added to their dataset. They will then be able to access your results to ensure that the measurements are okay and conform to accepted standards. The Pulmonary Physiology dataset is confidential and your results will only be available to people authorised to review them.

Publication of research results
In the past, results of this research have been published in Scientific Journals. Presentations about the study and its findings have been made to members of Asbestos Diseases Society at their annual general meeting, as well as to local, national and international scientific audiences.

The supervisors of this Program are:
Dr Bill Musk, Clinical Professor of Medicine and Population Health in the Department of Respiratory Medicine at the Sir Charles Gairdner Hospital and University of WA.
Dr Nick de Klerk, Winthrop Professor of Epidemiology at the School of Population Health and the Institute of Child Health Research, University of WA.

Questions?
If you are keen to join the program or have any questions about it, please contact us to obtain answers:
Phone: 9346 2922 (Lynne Defrenne) 9346 4528 (Dr Bill Musk).

CHIEF INVESTIGATORS: Clinical Professor AW (Bill) Musk
Winthrop Professor NH (Nick) de Klerk

The aim of this program is to review people who have previously been exposed to asbestos to determine if they are developing an asbestos-related disease. People who have already developed asbestosis will be monitored to see if it is progressing and advised of its presence so that they can decide about their working arrangements and possible compensation. People who show signs of developing lung cancer or malignant mesothelioma will be informed so that they can obtain appropriate medical advice and treatment as determined by their treating doctors.

The tests that I will have are:
1. a questionnaire about myself and any symptoms
2. a plain chest X-ray or low-dose CT scan
3. breathing tests done before and after 4 puffs of Ventolin
4. a blood test to measure Vitamin A levels and which may be used for future research, i.e. to identify predictive tumor markers.
APPENDIX 9: PERSONAL DECONTAMINATION PROCEDURE

Personal Decontamination – accidental exposure or remedial removal or control of non-friable ACM less than 10m².

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

Table 18: Personal Decontamination Procedure

<table>
<thead>
<tr>
<th>Accidental Exposure. Personal Decontamination</th>
<th>Remedial Non-friable Removal/Control Personal Decontamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Asbestos work area: Use an asbestos vacuum (HEPA FILTER) cleaner to remove any obvious signs of asbestos dust from protective clothing. Remove footwear and leave shoes/boots inside the asbestos affected area, (footwear should be stored upside down to minimise further contamination).</td>
<td>1. Remove all visible asbestos dust/residue from protective clothing, using an asbestos vacuum cleaner and/or wet wiping.</td>
</tr>
<tr>
<td>2. If shoes/boots have not already been removed, remove them and store them (upside down) within the Asbestos affected area. Wash while wearing clothing. Remove clothing and place it in labelled waste bags. Remove wet underclothing, such as t-shirts or shorts, while washing and place it in the waste disposal bags provided within the asbestos affected area.</td>
<td>2. Remove PPE off (while still using a respirator) and placed in an waste bag for asbestos.</td>
</tr>
<tr>
<td>3. Thoroughly wash hands, fingernails, face, and head. Move into a clean area. Change into clean clothing.</td>
<td>3. Disposable protective clothing is preferred. If non-disposable clothing is used, it should be completely wetted before double bagging, labelled and sent to a laundering facility capable of laundering asbestos-contaminated clothing. In some States and Territories notification requirements apply. The laundering of contaminated protective clothing in workers’ homes is strictly prohibited.)</td>
</tr>
<tr>
<td></td>
<td>4. Clothing and footwear worn during the removal should be vacuumed using an asbestos vacuum cleaner and the footwear should also be wet wiped.</td>
</tr>
<tr>
<td></td>
<td>5. Disposable respirators should then be discarded as asbestos waste. Non-disposable respirators should be removed and thoroughly cleaned.</td>
</tr>
<tr>
<td></td>
<td>6. After removing the respirator, workers should wash their face and hands, paying particular attention to their fingernails.</td>
</tr>
</tbody>
</table>
REFERENCES

The following documentation has been referenced in the development of the Asbestos Management Plan.

- The Department of Health (WA) - Guidelines for the Assessment, Remediation and Management of Asbestos-contaminated Sites in Western Australia, (2009).
- AS1319.4” Safety Signs for the Occupational Environment”.
- University of Western Australia & the Department of Health (NMAHS) - The Asbestos Review Program Information Sheet.
- Safe Work Australia - Model Code of Practice - How to Manage and Control Asbestos in the Workplace.
- EM1 “What to do if you uncover or damage materials that may contain asbestos (Health and Safety Executive), UK (2012).
- EM 4 “Using a Class H Vacuum Cleaner for Asbestos” (Health and Safety Executive), UK (2012).
- Health and Safety Executive (HSE) - EM6 “Personal Protective Equipment” UK (2012).
- Health and Safety Executive (HSE) - EM8 “Personal Decontamination”, UK (2012).
• Pulmonary Pathology – http://flicr.com/photos/30950973@N03/5926330470/
• LookFor Diagnosis.com - https://lookfordiagnosis.com/mesh_info.php?term=Asbestos%2C+Crocidolite&lang=1
• About Asbestos - Mediway Insulations Ltd - http://www.medwayinsulations.com/about-asbestos/