HAZARDOUS MATERIALS MANAGEMENT MANUAL

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Revision History and Approval

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1. Introduction

Australian National University (ANU or University) is committed to achieving the highest standards of management in all aspects of our business. This hazardous materials management manual has been developed by ANU to assist in meeting its statutory obligations and to provide a consistent and standardised approach to the management of hazardous materials in buildings and built environment elements, for which it has responsibility.

The manual underpins the ANU Policy for Work, Health and Safety, ensuring the management of hazardous materials, as identified in the hazardous materials registers, is compliant with the following legislation:

- Work Health and Safety Act 2011 (ACT Parliamentary Council republication dated 29 March 2018);
- Work Health and Safety Regulations 2011 (ACT Parliamentary Council republication dated 29 March 2018);
- How to Safely Remove Asbestos Code of Practice (Safe Work Australia) April 2016;
- How to Safely Remove Asbestos Code of Practice (Work Safe ACT) Approval 2020;
- How to Safely Remove Asbestos Code of Practice (NT Work Safe) October 2020;
- How to Safely Remove Asbestos Code of Practice (Safe Work NSW) August 2019;
- Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia) 2018;
- Guidance Notes on the Membrane Filter Method for estimating Airborne Asbestos Fibres (NOHSC: 3003) 2005;
- Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres (NOHSC: 3006) 1989;
- Guide to Hazardous Paint Management AS/NZS 4361 Part 1 (Standards Australia) 2017;
- Guide to Hazardous Paint Management AS/NZS 4361 Part 2 (Standards Australia) 2017;
- Managing Risks of Hazardous Chemicals in the Workplace Code of Practice (Work Safe ACT) Approval 2018; and
- Identification of PCB-Containing Capacitors (ANZECC) 1997.

ANU has campuses in the ACT, NSW and the NT so legislation may vary slightly between the relevant WHS authorities/regulators in each jurisdiction. To compliment ANU's consistent and standardised approach to the management of hazardous materials, this manual is compliant with legislation applicable to the ACT, unless more stringent state, territory or national legislation is in force. It is the intention for all ANU Campuses, regardless of location, to abide by the content of this manual.

This manual establishes how ANU will manage hazardous materials and provide a safe and healthy work environment for its staff, students, contractors and visitors by:

- Safely identifying, documenting, eliminating/isolating and managing the risks associated with the management of hazardous materials;
- Providing relevant information to staff, students and visitors to ANU sites who may come into contact with hazardous materials in a workplace, either directly or indirectly;
- Providing relevant information to contractors and staff who carry out work at ANU sites and who may come into contact with hazardous materials in a workplace, either directly or indirectly;
- Meeting its legislative and regulatory obligations; and
- Reducing the risk of asbestos containing material (ACM), by ultimately achieving an asbestos free work environment.

The manual is publicly available on the Facilities and Services website and therefore readily accessible to the following workers:

- A worker, who has carried out, carries out or intends to carry out work at the workplace;
- Health and safety representatives who represent staff that carry out or intend to carry out work at the workplace;
- A person conducting a business or undertaking who has carried out, carries out or intends to carry out work at the workplace; and
- A person conducting a business or undertaking who has required, requires or intends to require work to be carried out at the workplace.

This manual will be reviewed, at a minimum interval, every five (5) years.

2. Scope

The requirements and controls in this manual extend to all building users including University staff, students, visitors, consultants, and contractors.

This manual is limited to the ANU site locations in the Australian Capital Territory, New South Wales, Victoria, and the Northern Territory, specific facilities in these states are listed at Appendix A.

This manual covers the most common hazardous materials found, and provides a management plan for the following, namely:

- Lead Paint;
- Synthetic Mineral Fibre (SMF);
- Polychlorinated Biphenyl (PCB);
- Ozone Depleting Substance (ODS)
- Above and Underground Fuel Storage Tank (A/UST); and
- Asbestos Containing Material (ACM).

Where a building or a built environment element was constructed after 31 December 2003, an asbestos register does not need to be prepared, kept or maintained. To assist other hazardous materials to be managed appropriately, a hazardous material register maybe present for these buildings and other built environment elements. Refer to Section 8 through to Section 13, for the University's risk assessments for hazardous materials covered in this manual.

3. Responsibilities

3.1 General Responsibilities

Refer to general Work Health and Safety (WHS) responsibilities on the ANU website.

3.2 Facilities and Services

Facilities and Services Division (F&S, or the Division) is responsible for:

- Complying with this manual;
- Monitoring, updating and reviewing the performance of this manual;
- Updating and publishing changes to hazardous materials registers;
- Communicating processes and requirements to relevant stakeholders;
- Ensuring college building/facility managers or authorised building representatives (commonly known as building custodians), are aware of their responsibilities;
- Preparing budgets and programs for management, inspection and remediation of hazardous materials identified in the registers; and

Ensuring contractors engaged have relevant accreditation, licences and insurances, and where required asbestos awareness training, and have been inducted to ANU.

3.3 College Building / Facility Managers

College Building / Facility Managers are responsible for:

- Complying with this manual
- Providing Building Custodians, Safety Officers and Deputy Safety Officers with the resources and time to attend WHS training to competently perform the responsibilities detailed in Section 3.3;
- Raising maintenance work orders and ensuring a copy of the hazardous materials register is available to the persons executing works;
- Providing contractors with hazardous materials location and condition information; this information can be sourced through the hazardous materials register;
- Creating and maintaining a local area hazardous materials register for plant and equipment under the direct control of the local area (e.g. research equipment);
- Addressing any local area hazardous materials maintenance issues (including asbestos) as they arise (e.g. research equipment); and
- Ensuring contractors engaged directly (e.g. servicing research equipment), have as a minimum:
  - All relevant inductions, accreditations, licences and insurances;
  - Asbestos awareness training and insurance cover for work with asbestos; and
  - Ensuring adherance to relevant legislation when performing work on plant and equipment that may contain asbestos and other hazardous materials.

3.4 Building Custodians

Building Custodians are responsible for:

- Maintaining currency in relevant training (e.g. asbestos awareness, working with lead paint systems, reviewing safe work method statements);
- Complying with this manual and the Building Custodian responsibilities;
- Raising maintenance work orders and ensuring a copy of the hazardous materials register is available to the persons executing works;
- Reviewing safe work method statements (SWMS) for work that involves, or is likely to involve, the disturbance of existing, known or suspected ACM and/or lead paint; and
- Directing any queries about hazardous materials to the relevant F&S Service Supervisor and/or the Work Environment Group (WEG).

3.5 Contractors

All ANU inducted contractors are responsible for:

- Undertaking ANU Contractor Induction;
- Being familiar with this manual and contractor responsibilities;
- Accessing the relevant hazardous materials register before undertaking work at ANU properties;
- Ensuring their employees have required training (e.g. asbestos awareness or working with lead paint systems);
- Complying with local regulatory requirements for asbestos removal;
- Notifying ANU prior to any works that involves, or is likely to involve, the disturbance of existing, known or suspected ACM and/or lead paint;
- Stop work if ACM is suspected in the work area not previously identified; and
- Immediately notify ANU if further confirmation testing is required for suspected ACM and/or lead paint.

4. Hazardous Materials Register

The University has inspected buildings and built environment elements for hazardous materials, and created hazardous materials registers, an example of a register is at Appendix B. Hazardous materials registers are publicly available on the University website and therefore readily accessible to the following workers:

- A worker, who has carried out, carries out or intends to carry out work at the workplace;
- Health and safety representatives who represent staff that carry out or intend to carry out work at the workplace;
- A person conducting a business or undertaking who has carried out, carries out or intends to carry out work at the workplace; and
- A person conducting a business or undertaking who has required, requires or intends to require work to be carried out at the workplace.
- Staff who engage and manage contractors.

It is not the intention of the University to hold a local hardcopy at each building or any other built environment element because the online hazardous materials registers may be routinely updated.

ACM is deemed the most dangerous of the hazardous substances and there is strict legislation on how ACM is managed, monitored and removed. While the ANU strives to locate, identify and document all sources of ACM in its hazardous materials registers, there is potential for unidentified sources of asbestos to be present in inaccessible parts of buildings, plant and structures. In inaccessible areas of buildings, including subsurface services, plant and structures are presumed to have ACM until proven otherwise.

Registers include the recording of ACM locations and survey and analysis results, which forms the basis of recording and documenting asbestos remediation and mitigation information. The ANU will maintain accurate registers of ACM for each building and built environment elements. The registers shall contain the following information:

- The locations, form, types, quantities and condition of any ACM identified.
- Details of any material presumed to contain asbestos.
- Reference to the associated re-inspection report and NATA asbestos identification laboratory results.
- Date the survey or re-inspection was conducted.
- The name of the Licensed Asbestos Assessor who carried out the survey/re-inspection.
- Risk assessment ratings.
- Reference to the associated results and date of air monitoring testing and clearance inspections.
- Control measures recommended and implemented.
- Reference to the associated remediation and maintenance measures and records.

Refer to Section 13 for further details on ACM management and related processes.

Other hazardous materials generally have less onerous management requirements and are covered in Sections 8 through to Section 12.

Buildings and built environment elements are re-inspected at least once every five (5) years for ACM. Registers may also be updated between the initial survey and subsequent re-inspections when:

- There are changes to individual registered items (e.g. as a result of maintenance works or project works);

- There is a review of registered hazmat items or a control measure;
- A hazardous material is removed from or disturbed, sealed or enclosed at the workplace;
- The plan is no longer adequate for managing hazardous materials at the workplace; or
- A health and safety representative requests a review if they reasonably believe that any of the matters listed in the above points affects or may affect the health and safety of a member of their work group and/or the register was not adequately reviewed in response to a matter listed in the above points.

5. Hazardous Materials Works Management

Any work within the University that may interface with or potentially disturb hazardous materials will be managed in accordance with this manual.

5.1 Hazardous Materials Maintenance Works Executed by F&S

All hazardous materials maintenance works executed by F&S will be recorded in the maintenance management system Maximo. Any works that change the state of hazardous materials will be recorded in the relevant hazardous materials register. Where a clearance certificates is issued by an independent party, these are attached to the related work order in Maximo. Procedures and processes for these works are can be found in the F&S Quality Management System.

5.2 Capital Works Projects Executed by F&S

All capital works projects executed by F&S maintain records of hazardous materials surveys conducted and where required, hazardous materials removed. Any works that change the state of hazardous materials will be recorded in the relevant hazardous materials register. Where a clearance certificate is issued by an independent party, these are recorded in the project file. Procedures and processes for these works are can be found in the F&S Quality Management System.

6. Refurbishment/Demolition Works

Hazardous materials may be present in a building/facility (hidden within the fabric of the building) but not recorded in the register. Prior to any major fit out, refurbishment work, major upgrade work on plant and machinery or demolition work which could disturb known or presumed ACM, an intrusive hazardous material survey shall be undertaken.

An intrusive hazardous material survey can involve investigating areas and surfaces not accessed in a non-intrusive asbestos survey, a non-intrusive hazmat survey or any periodic re-inspections (e.g. hot water pipes in masonry walls, tiled or linoleum lined wall surfaces, eaves, voids, service risers or under carpeted areas). The purpose of an intrusive survey is to determine the presence and extent of hazardous materials that would normally not be disturbed during routine building occupancy.

F&S is responsible for organising a Licensed Asbestos Assessor to conduct an intrusive hazardous material building survey to identify all ACM, lead paint, PCB, SMF, A/UST and ODS, so far as reasonably practicable. In jurisdictions outside the ACT, a competent person may perform such surveys but in the ACT, any surveys involving asbestos must be conducted by a Licensed Asbestos Assessor (as per Clause 489 of the ACT Work Health and Safety Regulations 2011). Since it is the intention for all ANU Campuses, regardless of location, to abide by the content of this manual, a Licensed Asbestos Assessor must be engaged for any surveys involving asbestos.

7. Training

All F&S maintenance staff and college/school building custodians or facilities managers must complete the online Asbestos Awareness training package in PULSE.

In the ACT, it is a requirement of ACT Worksafe and Clause 445 of the ACT Work Health and Safety Regulations 2011 for any workers who are reasonably expected to work with asbestos or asbestos containing materials (i.e. who manage, arrange and/or perform repairs, refurbishments or renovations) must attend face-to-face training in 10675NAT - Course in Asbestos Awareness through a Registered Training Organisation (RTO). The following workers have been nominated by ANU as requiring this training:

- All ANU maintenance personnel;
- All contractors who carry out work at any ANU site; and
- All Building Custodians, Safety Officers and Deputy Safety Officers.

As detailed by ACT Worksafe, the following training is accepted as meeting the requirements for asbestos awareness training:

1. Any training undertaken prior to 1 January 2008 is not accepted and the worker must be retrained by a registered training organisation accredited to deliver 10675NAT - Course in asbestos awareness training.
2. Asbestos awareness training - 80803ACT, undertaken between 1 January 2008 and 30 December 2013 through an accredited registered training organisation, listed below, is accepted and workers who have undertaken this training do not need to be retrained.
    - Capital Training Institute;
    - Creative Safety Initiatives;
    - Housing Industry Association Ltd;
    - John Geoffrey Kirwan and Sandra Mary Kirwan trading as Kirwan & Associates;
    - MBA Group Training Ltd; or
    - Robson Environmental.
3. Asbestos awareness training undertaken in the ACT between 1 January 2014 to 30 June 2014 through an approved registered training organisation, listed below, is accepted and workers who have undertaken this training do not need to be retrained.
    - Capital Training Institute;
    - Creative Safety Initiatives;
    - Housing Industry Association Ltd;
    - MBA Group Training Ltd; or
    - Robson Environmental.
4. Any training conducted after 30 June 2014 must be undertaken through a registered training organisation that has scope to deliver the 10675NAT - Course in asbestos awareness. To find a registered training organisation that can deliver this training refer to 10675NAT - Course in asbestos awareness (previously 10314NAT - Course in Asbestos Awareness) on the training.gov.au website.
5. Any of the following training courses completed by the worker are accepted as meeting the requirement to undertake training required by section 445 of the Work Health and Safety Regulation 2011:
    - CPCCDE3014A - Remove non-friable asbestos;
    - CPCCDE3015A - Remove friable asbestos;
    - CPCCBC4051A - Supervise asbestos removal; and
    - CPCCBC5014A - Conduct asbestos assessment associated with removal.

The following workers may also be required to complete a face-to-face asbestos awareness training course provided by a RTO. Justification and approval will be considered on a case by case basis:

- All ANU staff who engage contractors;
- All college building/faculty staff; and
- All College Building / Facility Managers.

8. Lead Paint Systems Management Plan

8.1 Introduction

Lead (Pb) in paint (as lead carbonate) is found extensively in homes and commercial and industrial buildings built pre-1970. Although Australian industry has generally phased out lead in paint (e.g. paints manufactured since 1997 contain less than 0.1% of lead by mass), many older homes and buildings still contain lead paint, even though it may be covered with layers of more recent paint. Paint containing lead was used mainly on exterior surfaces, and, to a lesser extent, on interior doors and architraves, especially in undercoats and primers where concentrations of up to 20% lead were commonly used. Interior walls were not commonly painted with paint containing white lead, but some colours did contain a mix of red, yellow or orange lead-chrome pigments. Although all paints manufactured for non-industrial use from the 1970s onwards contain less than 1% lead, levels of lead below 1% are still permitted in industrial paints. As a result, industrial application of high-lead paint to residential, public and commercial buildings may still continue (Standards Australia, 2017).

Currently, lead paint is defined by the Australian Standard AS 4361.2 – 2017 (Guide to hazardous paint management Part 2: Lead paint in residential, public and commercial buildings) as a paint or component coat of a paint system containing lead or lead compounds, in which the lead content (calculated as lead metal) is in excess of 0.1% by weight of the dry film as determined by laboratory testing.

Analytical values of ≤ 0.1% Pb allow the sample to be categorised as being lead free paint.

The risk associated with occurrences of lead paint should be assessed against the following guidelines by a competent person (i.e. Lead Specialist, Occupational Hygienist, Licensed Asbestos, Assessor, etc.).

ANU Hazardous Materials Reports and Registers produced before December 2017 refer to a superseded definition of lead paint. The definition contained in this manual MUST be referenced.

8.2 Lead Paint Management

Lead paint is defined as hazardous in the ACT Work Health and Safety Regulations 2011 and, depending upon how it is handled, the works may fall under the definition of a 'lead process' as defined by the ACT Work Health and Safety Regulations 2011 (Section 392(i)) and may be subject to the requirements of Section 7.2 of the Regulations. Regarding lead paint, a 'lead process' includes:

- Machine sanding or buffing surfaces coated with lead paint;
- Applying flame for welding, cutting or cleaning to a surface coated with lead paint; and,
- Using a power tool, including abrasive blasting and high pressure water jets to remove a surface coated with lead paint and handling waste containing lead (i.e. paint, dust, debris, etc.) resulting from the removal;

The following information uses Australian Standard AS 4361.2 – 2017 as the primary reference. Lead paint in residential and commercial premises may be managed in one of four ways:

- Leave undisturbed;
- Stabilisation (i.e. over painting);
- Abatement (i.e. replacing, enclosing, removing); or
- A combination of these three management options.

8.2.1 Leave Undisturbed

Leaving lead paint undisturbed is applicable when lead paint is in sound condition and does not need to be disturbed. For example, where lead paint is not directly accessible or where the lead paint lies in underlying layers of paint that have been painted over with lead free paint. This option requires routine and scheduled inspection for deterioration.

8.2.2 Stabilisation

Stabilising lead paint is applicable when interim or long-term management is required. This can be achieved by over painting an existing lead paint with a durable, non-toxic and lead free paint or other protective sealant. This requires the existing paint surface to be examined so the effectiveness of the stabilization method determined. Issues such as chalking, poor adhesion, cracking, flaking, peeling and blistering need to be considered when determining the best stabilization method. This option requires routine and scheduled inspection for deterioration.

8.2.3 Abatement

Abating (i.e. replacing, enclosing or removing) lead paint is applicable when stabilisation is not a viable option due to location, surface area, condition, accessibility and/or the likelihood of ingesting/inhaling lead paint particles.

Replacing an item that contains lead paint is the least hazardous abatement option because the entire item is removed and replaced with new materials but it may generate or disturb lead dust. In the ACT, NSW and the NT, building waste painted with lead paint is classified as general building waste and may be disposed of without removing the lead paint. The heritage and historical significance of items must be determined before replacement is considered.

Enclosing the surface that contains lead paint has the lowest potential for lead dust generation but it leaves the lead paint in its existing location, usually behind a protective barrier. Materials used to enclose lead paint surfaces need to be durable, non-toxic and safe to install. All joins/seams should be dust tight. Prior to enclosure, the lead paint surface should be labeled and the location kept on the hazardous materials register to prevent future disturbance.

Removing lead paint has the greatest risk of generating dust and waste. Removal methods involving the heating/burning of paint, dust generation or the dispersion of paint flakes and waste are not suitable for removing lead paint from residential, public and commercial buildings. Should removal be chosen, a high degree of skill, preparation and risk minimisation is required to avoid lead exposure. Wet Scraping and Wet Sanding methods are amongst the safest methods available. Methods using chemical stripping and/or heat guns introduce additional hazards and should be avoided.

Strict adherence to the guidelines described in Australian Standard AS 4361.2 – 2017 will best ensure minimisation of risk. During this process personal protective equipment and waste

containment equipment is essential and children, pregnant women, women of child-bearing age and persons not directly engaged in the process should be excluded from the lead paint removal area.

Owners of buildings should engage a Lead Specialist to assist with all aspects of lead paint abatement work and should engage an accredited lead abatement contractor to carry out the work. All workers should be appropriately trained and competent in lead paint management. Competency may be demonstrated by successful completion of CPC30611 - Certificate III in Painting and Decorating through an RTO because it contains the unit of competency: CPCCPD3031A - Implement Safe Lead Paint and Asbestos Work Practices in the Painting Industry.

Where remediation is required it is important to minimise ongoing maintenance costs by ensuring that the works are undertaken by a professional who is able to give a significant time guarantee of the painted surfaces at the completion of the works. The following website lists contactors by postcodes that have been included based on their indicated skills and training in working safely with lead paint: http://www.lead.org.au/paintersall.html. Contractors should however be assessed by current performance prior to engagement.

Due to similarities between environmental cleaning methods for lead paint and asbestos containing materials, a Class B Licensed Asbestos Removalist may be engaged to remove lead paint from surfaces being reused or refurbished.

The main exposure risk associated with lead paint is when it becomes an airborne dust or fume. When paint deteriorates through chipping, cracking, bubbling and flaking, it is not becoming an airborne dust and cannot be easily inhaled. Regardless, lead paint surfaces must be maintained to minimize the exposure risk to workers, staff, students and members of the public.

8.3 ANU Responsibilities

According to Australian Standard AS 4361.2 – 2017 owners of residences or commercial buildings that may contain lead should:

- Manage the property in such a manner as to effectively control any health risk to occupants, contractors or others;
- Ensure occupants are sufficiently informed about and protected from the hazards associated with lead paint; and
- If management work is to be undertaken, inform immediate neighbours about the nature of the work.

8.4 Contractor Responsibilities

- Obtain appropriate accreditation to undertake the proposed level of remedial work involving lead paint and have the required level of specialized training; and
- Undertake the contracted work in such a way as to protect the health and safety of employees, tenants and the general public.

9. Synthetic Mineral Fibre (SMF) Management Plan

9.1 Introduction

SMF is a generic term used to collectively describe a number of amorphous (non-crystalline) fibrous materials including glass fibre, mineral wool (Rockwool and Slagwool) and ceramic fibre. Generally referred to as SMF, these materials are also known as 'Man-Made Mineral Fibres' (MMMF).

SMF products are used extensively in commercial buildings for thermal and acoustic insulation, and as a reinforcing agent in cement, plaster and plastic materials. In some specialised instances, SMF materials have also been used as alternatives to asbestos, especially where high temperature insulation properties are required.

There are two basic forms of SMF insulation; bonded and unbonded.

The bonded form is where adhesives, binding agents, facing/cladding, cement or other sealants have been applied to the SMF before delivery and the SMF product has a specific shape (e.g. a binding or sealing agents hold the SMF in a batt or blanket form). Some bonded SMF materials may also be clad in various coverings on one or more sides (e.g. a silver foil backing).

The unbonded form has no adhesives, binding agents, facing/cladding or sealants applied, and the SMF is a loose material (e.g. wet spray and loose fill).

Although glass fibre is classified as an irritant, levels of airborne fibreglass during routine occupation of the premises would be insignificant. During any large-scale installation or removal of fibreglass insulation however, SMF fibre suppression measures should be employed to minimise irritation and generation of dust and dispersion of waste.

The risk associated with occurrences of SMF should be assessed against the following guidelines by a competent person (i.e. Lead Specialist, Occupational Hygienist, Licensed Asbestos, Assessor, etc.).

9.2 Working with SMF

Although of negligible health risk if undisturbed, it is strongly recommended that if fibreglass is to be removed or otherwise disturbed the following procedures and safety measures should be adopted.

- Workers wear personal protective equipment to minimise dust inhalation and irritation to eyes and skin. The correct use of filter masks, goggles, gloves and disposable coveralls should prevent significant irritation. Workers must be clean shaven and respiratory protection must conform to Australian Standard 1715 – 2009 (Selection, use and maintenance of respiratory protective equipment). A minimum of P1 is essential but P2 respirators (i.e. masks) are preferred;
- Care should be taken to ensure minimal SMF or nuisance dust enters the occupied areas below the work area;
- If significant contamination of the occupied areas is likely, dust control measures such as the use of plastic screens and an effective extraction fan should be positioned to prevent such an occurrence; and
- Disposable suits and any removed insulation are to be appropriately bagged and disposed of as general waste.

10. Polychlorinated Biphenyls (PCB) Management Plan

10.1 Introduction

PCB is the common name for polychlorinated biphenyls. PCBs range in appearance from colourless, oily liquids to more viscous and increasingly darker liquids, to yellow then black resins, depending on the chlorine content of the PCB. PCBs are chemically stable synthetic compounds that do not degrade appreciably over time or with exposure to high temperatures.

The major use of PCBs was in the electrical industry as an insulating fluid inside transformers and capacitors. These transformers and capacitors have ranged in size from the very large transformers typically used by electrical supply companies, to the small capacitors used in commercial products. Capacitors containing PCBs were installed in various types of equipment including domestic appliances, motors and fluorescent light fittings during the 1950's, 60's and 70's.

These applications generally do not present an immediate risk to human health or the environment as the equipment is sealed and contains relatively small amounts of PCB. The equipment can continue to be used safely provided that the capacitors do not leak.

The Australian and New Zealand Environment and Conservation Council (ANZECC) in its PCB Management Plan of 2003 stipulate cessation dates for the generation of PCB scheduled waste, the use of articles containing PCB scheduled waste, and the disposal of PCB scheduled waste:

> *PCB scheduled waste means any PCB material that has no further use that contains PCBs at levels at, or in excess of, 50mg/kg and is of a quantity of 50g or more.*

Small equipment items and capacitors found in households and commercial buildings that contain scheduled PCBs (i.e. at or in excess of 50mg/kg) are to be disposed of as scheduled PCB waste. Where the aggregate weight of the items or capacitors exceeds 10kg, they must be notified to the relevant Commonwealth agency prior to their disposal.

The risk associated with occurrences of PCB should be assessed against the following guidelines by a competent person.

10.2 Working with PCBs

Care must be taken when handling damaged capacitors to ensure that spillage does not occur. The person handling the damaged capacitor should take the following precautions:

- put on personal protective equipment and clothing before removing damaged or leaking components
- wear gloves that are made of materials that are resistant to PCBs, such as Viton, polyethylene, polyvinyl alcohol (PVA), polytetrafluoroethylene (PTFE), butyl rubber, nitrile rubber, or neoprene
- do not use gloves made of polyvinyl chloride (PVC) or natural rubber (latex)
- use disposable gloves
- wear disposable overalls made of Tyvek or made of materials with similar chemical resistant properties
- when working with overhead equipment (e.g. Fluorescent light fixtures), wear a full face shield and appropriate hair protection
- wash any non-disposable contaminated equipment with kerosene and collect the kerosene for disposal as a PCB contaminated solvent
- if PCB vapours are suspected (e.g. PCB leaks onto a hot surface in a confined space), wear a twin cartridge type respirator suitable for chlorinated vapours

- Workers must be clean shaven and respiratory protection must conform to Australian Standard 1715 – 2009 (Selection, use and maintenance of respiratory protective equipment)
- always ensure adequate ventilation
- Note: PCBs do not vapourise readily at room temperature
- do not smoke
- after handling PCBs, employ good personal hygiene practices, including washing hands in warm, soapy water before eating, drinking, smoking, handling food, or using the toilet.

10.3 Disposal of PCBs

It is advisable to check the current regulations in effect with the authority responsible for environmental protection authority in your State or Territory. In the ACT this is Environment Protection Authority.

Note: The absence of a capacitor from the ANZECC information booklet is not a guarantee that the capacitor does not contain PCBs: If there is any doubt as to whether a capacitor or any electrical equipment contains PCBs, treat the equipment as if it does contain PCBs.

11. Ozone Depleting Substances (ODS) Management Plan

11.1 Introduction

ODS are used for heat transfer in refrigeration and air conditioning systems, absorbing or releasing heat according to vapour pressure. Release of these substances to the atmosphere have the ability to cause long term atmospheric pollution that can lead to ozone depletion, global warming, petrochemical smog and acid rain.

The ozone depletion potential (ODP) of a fluorocarbon refrigerant gas, its global warming potential (GWP) and estimated atmospheric life (EAL) all contribute to its potential to deplete the stratospheric ozone layer and enhance the greenhouse effect (leading to global warming).

Ozone depleting substances (ODS) include:

- Bromochloromethane (BCM)
- Carbontetrachloride (CCl4)
- Chlorofluorocarbons (CFCs)
- Halons
- Hydrobromofluorocarbons (HBFCs),
- Hydrochlorofluorocarbons (HCFCs),
- Methylbromide (CH3Br)
- Methylchloroform (CH3CCl3)

ODS are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete the ozone.

Chlorofluorocarbons (CFCs) contain chlorine and possess a large ODP, high GWP and long EAL. They are generally found in refrigeration and air-conditioning systems e.g. Centrifugal Chillers.

Hydrochlorofluorocarbons (HCFCs) are less saturated with chlorine than are CFCs and the hydrogen within these compounds give the HCFCs a much shorter EAL and lower ODP. They are generally found

in refrigeration systems that are used for food display, cold stores and self-contained, split, multi-split and central plant chillers used for building air-conditioning.

Hydrofluorocarbons (HFCs) are a class of replacement gases for CFCs. They do not contain chlorine or bromine and therefore do not deplete the ozone layer. While all HFCs have an ODP of zero, some do have a high GWP (e.g. R-404A, R-407B, R-125 etc).

Halons are synthetic chemical compounds that contain one or two carbon atoms, bromine and other halogens. They have a long atmospheric lifetime and cause very aggressive ozone depletion when breaking down in the stratosphere. Halons were introduced into Australia as fire-extinguishing agents in the early 1970s and quickly replaced many previously accepted fire-fighting products because of their superior fire-extinguishing characteristics and ease of use.

Halon 1211 was commonly used in portable fire extinguishers, while fixed fire protection systems, such as those that protect computer rooms and ship engine rooms, commonly contained Halon 1301.

Halon 1301 has an ODP that is 10 times greater that of CFCs, while *Halon 1211* has an ODP 3 times greater than that of CFCs.

The Australian Strategy for Ozone Protection calls for personnel who handle, install, service, commission and decommission and maintain commercial and industrial refrigeration and air-conditioning equipment to be accredited, licensed, registered to work with ozone depleting substances.

Under the Federal Government's Ozone Protection and Synthetic Gas Management Act 1989 and its Ozone Protection and Synthetic Gas Legislation Amendment Bill 2003 it is illegal to vent an ODS (Scheduled Substances) to the atmosphere.

The risk associated with occurrences of ODS should be assessed against the following guidelines by a competent person.

11.2 Working with ODS

All refrigeration and air-conditioning plant should be regularly inspected for traces of leaking refrigerant and/or oil, and for signs of leak-indicating dye.

Whenever a system is charged with refrigerant and/or lubricant, the service person must clearly label the system with the refrigerant/lubrication type; name of service organization; and date of service. In addition, the ASHRAE/ARI refrigerant designated R number shall be clearly displayed.

A service person should be aware of the possibility that a refrigeration or air-conditioning system may have been incorrectly charged or incorrectly labelled. The type of refrigerant contained in the system must therefore be first established by checking the temperature/pressure relationship or by using other tests to verify that the labelling is correct.

11.2.1 Inhalation

The most significant exposure route for humans is through inhalation. Refrigerant gases displace oxygen in the air making breathing difficult.

Overexposure can cause central nervous system depression and oxygen deficiency. Effects of overexposure may include light-headedness, giddiness, shortness-of-breath, headaches, and in extreme cases, irregular heartbeats, cardiac arrest, asphyxiation and death.

Symptoms of overexposure at lower concentrations may include transient eye, nose and throat irritation.

11.2.2 Skin Contact

Contact with rapidly released refrigerant gas may cause frostbite. Symptoms of frostbite may include changes in skin colour to white or greyish yellow.

Other direct dermal contact may result in skin de-fatting, dryness, irritation or contact dermatitis.

Standard work clothes provide adequate protection of the skin but it is recommended that lined butyl gloves and goggles be used whenever handling liquid refrigerants.

11.2.3 Eye Contact

Eye contact with rapidly released refrigerant or air-conditioning gas may cause severe frostbite damage to eyes and eyelids. Eye irritation may occur if exposure occurs at lower concentrations.

11.2.4 Leak Testing

Various methods may be used for leak-testing, e.g. electronic leak detectors, halide lamp and or ultraviolet lamp.

Only a non-controlled refrigerant mixed with a pressurising substance such as dry nitrogen should be used to leak test refrigeration and air-conditioning systems.

Where an air-conditioning or refrigeration system is found to be leaking and needs to be repaired, the vapour and/or liquid must first be recovered from the leaking system.

Where pressurisation testing has determined that an air-conditioning or refrigeration system is not leaking, moisture and non-condensables must be evacuated from the system using dry nitrogen as the moisture absorber and either the deep or triple evacuation methods.

All refrigerants shall be recovered and either recycled, reclaimed or held for disposal in an approved manner.

It is highly recommended that a refrigerant charge monitor or leak detector be installed to alert equipment owners/operators of a refrigerant leak.

11.2.5 Recovery, Recycling and Disposal of Refrigerants

It is highly recommended, and in some cases mandatory, for recovery and/or recycling equipment to be used for the removal and recovery of refrigerant during service.

To avoid the danger of mixing different refrigerant types, the receiving containers shall be identified by the correct colour coding and labelling and shall only be used for the refrigerant type that is being transferred. The recovery containers shall conform to *AS 4484-2004, 'Gas Cylinders for Industrial, Scientific and Refrigerant use – labelling and colour coding'*.

As chillers have large internal volume, it is important that all refrigerant vapour be recovered. A chiller at atmospheric pressure can still hold many kilograms of refrigerant vapour after the liquid has been removed.

When recovering refrigerant from a chiller the refrigerant should be recovered until the internal system pressure is reduced to 3 kPa absolute for low-pressure systems (e.g., R-11) and 70 kPa

absolute for positive pressure systems (e.g., R-12 and R-22). The internal pressure should then be taken up to atmospheric pressure with dry nitrogen if the chiller is to be opened. This will prevent moisture–laden air entering the system, which could lead to contamination and corrosion.

11.3 Advice to Equipment Users

Users are advised that persons who service refrigeration and air-conditioning equipment are required by legislation to observe the Code of Good Practice and not to 'top-up' or 'charge' systems known to be leaking refrigerant, or to service equipment unless it can be returned into service in a leak-free condition.

If a user does not have trained staff to undertake service or maintenance work, then it is recommended that a routine maintenance agreement for their plant be undertaken with a reputable service organization.

All users should monitor the operation of their installation weekly and call the service person immediately if any abnormal condition is found.

When a refrigeration system contains in excess of 50 kg of refrigerant, that system should be leak tested on a quarterly basis.

11.4 Disposal of Refrigerants

Unusable or surplus fluorocarbon refrigerant shall not be discharged to the atmosphere, but shall be returned to a supplier.

Empty residual refrigerant in a disposable container shall be recovered and the container disposed of at a recycling centre.

The utmost care must be taken to avoid mixing different types of refrigerants, as separation may be impossible and large quantities of refrigerant may be rendered unusable

11.5 Handling and Storage

Losses of refrigerant to the atmosphere can occur during the handling and storage of refrigerant containers. Service persons have a duty of care to avoid such losses.

There are numerous hazards associated with the storage of refrigerant. These include asphyxiation in confined space due to leakage from refrigerant containers; and fire, which may overheat and explode refrigerant containers or decompose refrigerant into toxic substances.

11.6 Alternative Refrigerants and Lubricants

With the introduction of HFC alternative refrigerants, alternative lubricants need to be considered to ensure system reliability. Some of these alternative lubricants tend to exhibit greater hygroscopicity than mineral oils, so care must be taken to ensure they are kept in sealed containers at all times.

Care must be taken to ensure that all components used in the refrigeration/air-conditioning system are compatible with the new refrigerant and lubricant.

11.7 Recovery of Fluorocarbons Mixed with other Refrigerants

A number of different refrigerants and refrigeration mixtures have been used to replace or to 'top up' fluorocarbon based refrigerants in refrigeration and air-conditioning systems.

In many cases the equipment in question may not be labelled to indicate that hydrocarbon or hydrocarbon mixtures have been used and as the operating pressures of these replacement refrigerants are usually similar to those of the original refrigerant, their identification in the field is extremely difficult.

It is not safe therefore to recover flammable refrigerant (hydrocarbon) using equipment designed only for non-flammable refrigerants such as R-12 and R-134a.

Should it be suspected that refrigeration or air-conditioning system contains an unidentified mixture or, if on asking the owner, examining the labels, and/or detecting instruments indicate that a hydrocarbon/fluorocarbon mixture or any other non-standard mixture of refrigerant may be present; the following procedure should be followed:

If a hydrocarbon or flammable mixture that contains hydrocarbon is suspected, use only equipment designed for the recovery of flammable gasses and recover the refrigerant into a specially marked container.

In the case of refrigerant mixtures, it is not advisable to use recovery equipment as many mixtures have very high condensing pressures, which could result in equipment failure and/or injury to persons operating, or near the equipment.

The safest method of recovery is to use an evacuated and preferably chilled container to depressurise the system.

Label the container to show that it contains a mixture or the suspected composition, if known, and deliver it to a supplier for recycling.

Purge the residual gas from the system with dry nitrogen before proceeding with any repairs.

12. Above and Underground Fuel Storage Tanks (A/UST)

12.1 Introduction

Prior to the introduction of natural gas, commercial premises generally utilised heating systems where boilers were fuelled by diesel or heating oils which were stored in USTs.

Heating oil and other petroleum products are classified as a Dangerous Substance under the ACT Dangerous Substances Act 2004. In the ACT, the management of fuel storage tanks is regulated by ACT WorkSafe who administers the Dangerous Substances Act 2004 and the Dangerous Substances (General) Regulation 2004.

In NSW, the management of fuel storage tanks is administered by the Local Councils under the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014 (UPSS Regulation) which aims to improve the environmental management of storage systems.

In the NT, the management of fuel storage tanks is regulated by NT WorkSafe who administers the Dangerous Goods Act 2012, the Dangerous Goods Regulations 2018 and the Petroleum (Environment) Regulations 2016.

The risk associated with occurrences of A/USTs should be assessed against the following guidelines by a competent person.

12.2 Abandoning or Removing Fuel Storage Tanks

The WHS Regulations require notification to the regulator when an underground, partially underground or fully mounded tank containing flammable liquids or flammable gases is to be abandoned. When the container no longer contains hazardous chemicals, placards and signs should be removed.

Any work on existing or abandoned underground tanks or associated pipework is potentially dangerous where residual levels of the flammable gases, liquids and vapours are present. Introducing an ignition source may cause an explosion or other dangerous occurrence unless suitable procedures are adopted.

Tar-like deposits and sludge may have accumulated in the tank and pipe work. Flushing with water may not remove them and vapour testing may not detect this. Exposure of these deposits to air and sunlight under normal temperatures, or work involving heat (e.g. use of grinders or oxyacetylene cutting), may release vapours creating a potential explosion hazard.

By following the steps listed below, the likelihood of dangerous occurrences can be minimized or even eliminated:

- Remove the tank from the ground and transport to a disposal area and arrange for the tank to be decommissioned.
- Fill the tank with an inert solid material like concrete or sand.
- If it is intended that the tank be used again (within two years), you can fill the tank with water and a corrosion inhibitor.

Australian Standard AS 4976-2008 (The removal and disposal of underground petroleum storage tanks) sets out procedures for the temporary decommissioning of tanks in situ and the removal, transport and off-site disposal of underground tanks that have contained flammable or combustible liquids. It also describes procedures for the abandonment of tanks in situ where removal is not feasible.

While AS 4976-2008 mainly applies to service stations, the procedures set out in the Standard are also applicable to underground storage systems in other oil industry premises and similar systems that have stored flammable or combustible liquids in other industrial situations.

The relevant regulatory authority detailed above determines the extent of application of AS 4976-2008.

13. Asbestos Containing Material (ACM) Management Plan

13.1 Introduction

Asbestos is a hazardous material that poses a serious risk to health by inhalation if the asbestos fibres become airborne and people are exposed to these airborne fibres. Breathing in asbestos fibres has been known to cause asbestosis, lung cancer and mesothelioma. The definitions of terms used in the management of ACM is at Appendix D.

Asbestos-containing materials were used extensively in Australian buildings and structures, plant and equipment and in ships, trains and motor vehicles during the 1950s, 1960s and 1970s, and some uses, including some friction materials and gaskets, were only discontinued on 31 December 2003. This was

the final prohibition for asbestos in the workplace and included manufacturing, supplying, transporting, importing, storing, removing, using and installing (Standards Australia, 2016).

The only recognised method used in identifying asbestos containing material (ACM) is to utilise competent persons to survey a building for materials likely to be ACM, sample the material and use a NATA accredited laboratory to identify if the material does contain asbestos fibres. If an area is inaccessible and is likely to contain asbestos containing materials, then it should be presumed that asbestos is present.

Where the risk assessment of ACM reveals a likelihood of exposure to asbestos fibres, all practical steps will be taken to ensure that all staff, students, visitors and workers are not exposed.

The well-known adverse health consequences of exposure to airborne asbestos fibres can be prevented if precautions are taken and appropriate procedures are followed. The risks posed by ACM depend on the nature and condition of the materials and the potential for exposure.

Each state and territory maintains a register of Licensed Asbestos Assessors for their respective jurisdiction. In some instances, an Asbestos Assessor License holder may need to seek approval from the respective regulatory body to have their interstate license recognised in a different jurisdiction prior to performing work under their license.

The risk associated with occurrences of asbestos and ACM should be assessed against the following guidelines by a competent person (i.e. Occupational Hygienist, Licensed Asbestos, Assessor, etc.).

13.2 Labelling

All Identified and presumed ACM should be labelled with approved asbestos warning labels or signs. Labelling is only to be undertaken in accordance with Appendix E: ANU Asbestos Containing Materials Labelling Guidelines. The University has adopted strict administrative controls to ensure ACM is not subject to accidental damage.

13.3 Working with Asbestos – Licensed Asbestos Removal

To compliment ANU's consistent and standardised approach to the management of hazardous materials, this manual is compliant with legislation applicable to the ACT, unless more stringent state, territory or national legislation is in force. It is the intention for all ANU Campuses, regardless of location, to abide by the content of this manual.

All asbestos removal works should be conducted in accordance with the Work Health and Safety Regulations 2011 and the Work Health and Safety (How to Safely Remove Asbestos Code of Practice) Approval 2014.

All asbestos and ACM removal work requires an Asbestos Removal Licence:

- Class B Asbestos Removal License: Required to remove any non-friable asbestos or ACM and only the asbestos containing debris and dust (ACD) that is associated with the removal of non-friable asbestos.
- Class A Asbestos Removal Licence: Required to remove any friable asbestos from a workplace, asbestos containing debris and dust (ACD) that is not associated with the removal of non-friable asbestos and all types of asbestos able to be removed by a Class B Removal Licence.

Each state and territory maintains a register of all Class A and Class B Licensed Asbestos Removalists for their respective jurisdiction. In some instances, an Asbestos Removal License holder may need to

seek approval from the respective regulatory body to have their interstate license recognised in a different jurisdiction prior to performing work under their license.

ANU will engage a Class A licensed asbestos removal contractor to conduct works involving the removal of ACM within an ANU building or any other built environment element.

Where asbestos remediation work is required, ANU will nominate the Class A licensed asbestos removalist and a Licensed Asbestos Assessor. The Licensed Asbestos Assessor must be engaged to conduct clearance inspections on all asbestos removal work. The Licensed Asbestos Assessor must be totally independent of the asbestos removalist.

The Class A licensed asbestos removal contractor must submit an asbestos removal control plan (ARCP) for review by a competent person before work can commence. Attached at Appendix C is an example of what should be in an ARCP.

It is important to note that the Commonwealth require 5 working days notification/permit, submitted to the Regulator (Comcare) from the Class A licensed asbestos removalist prior to any removal work commencing – unless emergency conditions apply.

Contractors must ensure that all asbestos related works are carried out in accordance with:

- Work Health and Safety Regulations 2011;
- Work Health and Safety (How to Manage and Control Asbestos in the Workplace Code of Practice) Approval 2014;
- Work Health and Safety (How to Safely Remove Asbestos Code of Practice) Approval 2014; and
- The Guidance Notes on the Membrane Filter Method for estimating Airborne Asbestos Fibres [NOHSC: 3003 (2005)].

Air monitoring is mandatory during the removal or remediation of friable asbestos and should be considered during the removal or remediation of non-friable asbestos by an independent licensed Asbestos Assessor. Air sampling is to be undertaken in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres, 2nd Edition [NOHSC: 3003(2005)] and test certificates must be National Association of Testing Authorities (NATA) endorsed.

An independent licensed Asbestos Assessor must also be employed to undertake a Clearance Inspection of both friable and non-friable asbestos removal and/or remediation works. A satisfactory clearance certificate for the remediated areas must ensure that no visible asbestos or presumed asbestos remains, or that the ACM has been satisfactorily sealed or remediated. Additionally no asbestos fibres should be detected by laboratory analysis in any validation samples. All surfaces within the remediated area must be free of general dust and debris.

Once it has been established that the removal work has been completed satisfactorily, a Clearance Certificate and copy of the air monitoring certificate must be issued to provide assurance that the area is safe for normal reoccupation.

Any asbestos that remains in-situ following asbestos removal works must be communicated to ANU and the relevant register must be updated.

The following is a summary of ANU requirements for any asbestos removal work, these requirements are in addition to or compliment other ANU business requirements:

Contractor engagement:

- Notify and obtain approval from an ANU competent person of licensed asbestos removal contractor engagement and scope of work prior to any work beginning;
- Obtain copy of professional indemnity insurance of licensed asbestos removal contractor;
- Seek assurance of compliance with local regulatory requirements for asbestos removal;
- Review ARCP and SWMS submitted by Class A licensed asbestos removalist prior to work commencing for all work that involves, or is likely to involve, the disturbance of existing, known or suspected ACM; and
- Review licensed asbestos assessor services relating to any supervision, air monitoring and clearance inspections.

Works Notifications:

- Notify ANU prior to any work that involves, or is likely to involve, the disturbance of existing, known or suspected ACM;
- Notify all stakeholders who could be affected by the removal and/or remediation works;
- Immediately notify ANU if further confirmation testing is required for suspected ACM; and
- Stop work if ACM is suspected in the work area not previously identified.

13.4 Accidental Exposure to ACM

Where staff have been exposed to asbestos through an accidental event, but the Exposure Standards not breached (air monitoring required to prove this) they would not normally be required to undergo health surveillance monitoring, staff are to be made aware of their opportunity to consult ANU Health and Safety Staff for counselling or assessment.

If a member of staff, student or worker is concerned about possible exposure to asbestos from work activities, they are advised to consult their GP and ask for a note to be made in their personal record about possible exposure, including date(s), duration, type of asbestos and likely exposure levels (if known).

The Australian Government has created a National Asbestos Exposure Register (NAER) to record the details of members of the community who think that they may have been exposed to asbestos. The NAER is managed by the Asbestos Safety and Eradication Agency. If you think that you may have been exposed to asbestos either during the course of your employment, at home or in the community, you can register your details at https://www.asbestossafety.gov.au/national-asbestos-exposure-register.

13.5 Reporting ACM Incidents

Part 3 of the Work Health and Safety Act 2011 defines a notifiable incident and explains what is required should one occur. Under the Act, exposure to a substance is classed as a notifiable incident and must be reported to the regulator (Comcare) immediately.

ANU has developed a procedure to inform staff, students, contractors and visitors of mandatory reporting requirements for notifiable work health and safety incidents. In summary:

- The incident is to be reported by telephone to WEG;
- ANU online WHS Incident Notification MUST be completed; and
- Asbestos emergency procedures MUST be followed.

13.6 Reporting Excessive Air Monitoring Results – Asbestos Removal Work

Once the results of the air monitoring are received, ANU responsible person must use the table below to determine if any action is required. The Class A licensed asbestos removalist must take action

depending on the respirable asbestos fibre level. Where the results show that respirable asbestos fibre levels exceed the action levels outlined in Table 1, action must be taken immediately.

Action level	Control	Action
Less than 0.01 fibres/ml	No new control measures are necessary	Continue with control measures
At 0.01 fibres/ml or more than 0.01 fibres/ml but less than 0.02 fibres/ml	1. Review 2. Investigate 3. Implement	Review control measures Investigate the cause Implement controls to eliminate or minimise exposure and prevent further release
At 0.02 fibres/ml or more than 0.02 fibres/ml	1. Stop removal work 2. Notify ANU Facilities & Services 3. Notify WEG 4. Investigate the cause 5. Implement controls to eliminate or minimise exposure and prevent further release 6. Do not recommence removal work until further air monitoring is conducted	Stop removal work immediately Use the ANU, OHS online incident notification system ANU WEG will notify Comcare by phone followed by fax or written statement that work has ceased and send a copy of the results of the air monitoring. Conduct a thorough visual inspection of the enclosure (if used) and associated equipment in consultation with all workers involved with the removal work Extend the isolated/barricaded area around the removal area/enclosure as far as reasonably practicable (until fibre levels are at or below 0.01 fibres/ml, wet wipe and vacuum the surrounding area, seal any identified leaks (e.g. with expandable foam or tape) and smoke test the enclosure until it is satisfactorily sealed. Do not recommence until fibre levels are at or below 0.01 fibres/ml

Table 2 – Actions to Take with Excessive Air Monitoring Results

13.7 Health Monitoring

The ANU will arrange health monitoring where a member of staff or student is at risk of exposure to asbestos due to work on an ANU site that has exposed them to asbestos. Health monitoring must also be undertaken where there is a risk of exposure including for example ongoing unlicensed removal work, undertaking maintenance work on ACM regularly as part of another job (for instance, electricians or building maintenance staff in older buildings). The need for health monitoring for these people should be determined on the basis of:

- the potential for exposure;
- the frequency of potential exposure; and
- the duration of the work being undertaken.

Health monitoring must be carried out under the supervision of a registered medical practitioner with the relevant competencies. Prior to deciding who the registered medical practitioner will be, the ANU will consult the person.

14. Silica

Silica (also known as crystalline silica) is silicon dioxide. It is naturally occurring and can be found in rocks, soils, sand, concrete and mortar.

14.1 Where Silica is used

Silica is used to make products including:

- composite stone used to fabricate kitchen and bathroom benchtops
- bricks
- tiles
- some plastics.

There are non-crystalline and crystalline forms of silicon dioxide.

The most common type of crystalline silica is quartz.

14.2 When Silica is dangerous

When silica becomes airborne and is inhaled by a worker it is extremely dangerous.

Silica dust is generated in workplace processes such as:

- crushing
- cutting
- drilling
- grinding
- sanding.

Silica dust can be generated and found:

- during manufacturing and construction
- when mining or tunnelling
- in waste or sand-based products
- in materials brought to your workplace
- during fabrication and installation of composite (engineered or manufactured) stone countertops
- excavation, earth moving and drilling plant operations
- clay and stone processing machine operations
- paving and surfacing
- mining, quarrying and mineral ore treating processes
- tunnelling
- construction labouring activities
- brick, concrete or stone cutting; especially using dry methods

- abrasive blasting (blasting agent must not contain greater than 1 percent of crystalline silica)
- foundry casting
- angle grinding, jack hammering and chiselling of concrete or masonry
- hydraulic fracturing of gas and oil wells
- pottery making
- concrete cutting
- dry sweeping respite facilities
- demolition activities.

Some dust particles can be so small that they are not visible, these are referred to as respirable particles. Respirable silica dust particles are small enough to breathe in and penetrate deep into the lungs causing permanent damage that can lead to serious illness or death.

14.3 Silica-related diseases

If a worker is exposed to silica and breathes it in they can develop:

- chronic bronchitis
- emphysema
- acute silicosis
    - can develop after a short exposure to very high levels of silica dust, within a few weeks or years, and causes severe inflammation and an outpouring of protein into the lung
- accelerated silicosis
    - can develop after exposures of 3 to 10 years to moderate to high levels of silica dust and causes inflammation, protein in the lung and scarring of the lung (fibrotic nodules)
- chronic silicosis
    - can develop after long term exposure to lower levels of silica dust and causes fibrotic nodules and shortness of breath
    - can include progressive massive fibrosis where the fibrotic nodules in the lung aggregate
- lung cancer
- kidney damage
- scleroderma
    - a disease of the connective tissue of the body resulting in the formation of scar tissue in the skin, joints and other organs of the body.

14.4 What duty holders need to do

14.4.1 Employee duties

Persons conducting a business or undertaking (PCBUs - employers) or duty holders need to implement control measures to eliminate or minimise generating silica dust in the workplace.

Officers, such as company directors, have a duty to ensure the business or organisation has and uses appropriate resources and processes to eliminate or minimise the risks of working with silica and silica containing products. This includes:

- identifying the hazard of silica dust
- controlling the risk of exposure to silica dust
- conducting air monitoring
- providing health monitoring for workers.

As an employer, when discussing health and safety matters with workers, you should take a consultative approach to allow workers a reasonable opportunity to express views before any decision is made.

14.4.2 Worker duties

Workers have a duty to take reasonable care for their own health and safety and they must take reasonable care that their actions or omissions do not adversely affect the health and safety of other people.

As a worker, you must:

- comply, as far as reasonably able, with any work health and safety instruction from the employer
- cooperate with any reasonable policy or procedure relating to work health and safety that your employer puts in place
- wear personal protective equipment as instructed by the employer and participate in health monitoring, if you have been told about it beforehand. If you refuse, the employer may take action to meet its duties under work health and safety laws – including removing you from the source of exposure.

14.5 Workplace exposure standards

Exposure to substances or mixtures in the workplace can occur through inhalation, absorption through the skin or ingestion. Most exposure occurs through the inhalation of vapours, dusts, fumes or gases. For some chemicals, absorption through the skin may also be a significant source of exposure.

Exposure standards have been established in Australia for around 700 substances and mixtures. The standards are updated occasionally and may not always reflect the latest research or state of knowledge on the hazardous effects of chemicals.

Exposure standard means an exposure standard listed in the Workplace exposure standards for airborne contaminants (WES) and represents the airborne concentration of a particular substance or mixture that must not be exceeded. There are three types of exposure standards:

1. eight-hour time-weighted average (TWA)
2. short-term exposure limit (STEL)
3. peak limitation.

The WES for respirable crystalline silica in the Comcare jurisdiction is a TWA of 0.05 mg/m^3. The exposure standard was halved from a TWA of 0.1 mg/m^3 on 1 July 2020 following agreement by jurisdictional work health and safety ministers and an extensive review by Safe Work Australia.

14.6 Hierarchy of controls

Managing risks and worker exposure to silica can be achieved by the following controls:

- **Substitution** – such as sourcing composite stone benchtops with a lower percentage of silica.

- **Isolation of the hazard** – using principles of safe work design to designate areas for tasks that generate dust and appropriate worker positioning during these tasks, using enclosures and automation to conduct dust generating tasks.
- **Engineering controls** – that minimise the risk of exposure to generated dust, for example, local exhaust ventilation, Misting or halo sprays water suppression (wet cutting) or using tools with dust collection attachments.
- **Administrative controls** (should a risk still remain) – including good housekeeping policies, shift rotations and modifying cutting sequences.
- **Personal protective equipment** (should a risk still remain) – including appropriate respiratory equipment (generally a minimum of a P2 efficiency half face respirator) that has been fit-tested by a competent person and work clothing that does not collect dust.

More than one control will normally be required to adequately protect workers.

15. Combustible Cladding

Cladding is one type of building material that can be used on the outside skin of a building. It is used to provide thermal insulation and weather resistance, and to improve the appearance of buildings. While there are many different types of cladding, certain types of cladding can burn rapidly if they catch alight and melt at relatively low temperatures – these are known as combustible cladding. There are generally two types of combustible cladding that are of concern:

- Aluminium Composite Panels (ACP) - sandwich type panels are usually between 2-5mm thick, which consist of two aluminium outer layers and a core material.
- Expanded Polystyrene Systems (EPS) - external wall systems comprised of bulk foam insulation that is fixed to a structural frame and then sealed, rendered, and painted.

It may be difficult to identify combustible cladding visually because it can look like rendered brick or concrete, and not all aluminium cladding products are combustible.

Reference/Source of Information:
ACT Government – Major Projects Canberra
https://www.act.gov.au/majorprojectscanberra/act-cladding-program/property-owner-information/what-is-combustible-cladding

15.1 Aluminium Composite Panels (ACP)

15.1.1 What are Aluminium Composite Panels

An aluminium composite panel (ACP) consists of two foil-coated aluminium sheets (typically around 0.5mm in thickness) bonded to a core (around 2 to 5mm thick). Depending on the panel, this core may be aluminium, mineral, or a thermoplastic polymer (usually polyethylene).

Due to their strength and light weight, ACPs are used frequently in construction for insulation, partitions, false ceilings and external cladding. When used externally, cladding may be found on walls, balconies, palings, decorative features and around walls. It may be matte or colourless. When installed in compliance with the National Construction Code, ACPs are not unsafe as building materials. However, the incorrect use or installation of ACPs may pose a risk in the event of a fire. It is important to note that the presence of external combustible cladding on a building

does not necessarily mean it is a fire hazard. It depends on where the cladding has been applied and the building's overall fire safety measures.

15.1.2 What makes ACPs combustible

The combustibility of ACPs depends on the amount of polymer used in the core. Cores containing over 10% polymer have a high potential to spread fire, with the most dangerous cores being 100% polymer. Polymer is combustible, while the thin aluminium sheets conduct heat easily and melt under high temperatures. This means in a fire ACPs can ignite and spread the fire between interconnected sheets up and around the building. Polymer cores may also melt under high temperatures, causing the molten core to drip to the ground below and further spread the fire. ACPs can fall from the building, potentially spreading spot fires, blocking exits or causing injury to occupants.

Reference/Source of Information:
ACT Government - EPSDD-Aluminium-Composite-Panels-Factsheet
https://www.act.gov.au/__data/assets/pdf_file/0008/1693502/EPSDD-Aluminium-Composite-Panels-Factsheet-2020.pdf

15.2 Expanded Polystyrene

15.2.1 What is Expanded Polystyrene

Expanded polystyrene is a type of thermoplastic cladding that has been widely used in the Australian building industry over the past 20 years. It has been favoured for its light weight, low cost, ease of installation and thermal insulating properties, but is not considered suitable for most multi-story buildings. It is typically covered with render to look like rendered concrete.

15.2.2 What is the fire risk posed by Expanded Polystyrene

Expanded polystyrene is highly combustible, and has the potential to ignite, melt or warp when exposed to temperatures of 230 degrees Celsius or higher. With a typical building fire burning at around 800 degrees Celsius, expanded polystyrene can be very dangerous and quickly spread fire to other parts of a building. While chemical fire retardants can be added to expanded polystyrene, they are often ineffective in large fires and can leach over time.

Reference/Source of Information:
ACT Government - EPSDD-Expanded-Polystyrene-Factsheet
https://www.act.gov.au/__data/assets/pdf_file/0009/1693503/EPSDD-Expanded-Polystyrene-Factsheet.pdf

Appendix A: ANU Site locations

The ANU owns or leases properties throughout Australia and a list of locations are noted below:

AUSTRALIAN CAPITAL TERRITORY (ACT)

Canberra City, Acton:

- Australian National University (ANU) Acton Campus
- ANU Exchange

ACT, other than Acton:

- Mt. Stromlo Observatory and associated facilities
- Boat Shed (Yarralumla)
- ANU Library Store at Hume (Leased by the University)
- Gowrie Hall, Northbourne Avenue
- Western Creek Plantation
- Canberra Hospital
- Black Mountain, Paleomagnetic Lab and associated facilities
- Western Creek, Block 7 Section 96
- Spring Valley Farm

NEW SOUTH WALSES (NSW)

NSW Country:

- Cooma Hospital, 24 Murray Street
- Goulburn Base Hospital
- Mongarlowe (near Braidwood)
- Siding Spring Observatory (near Coonabarabran)
- Young, 73 Lynch Street

NSW South Coast:

- Batemans Bay Clinical School
- Bega Hospital
- Kioloa (London Foundation)
- Mossy Point, 6 River Road

VICTORIA

- Melbourne, 52 Collins Street

NORTHERN TERRITORY

- NARU (North Australia Research Unit)
- Warramunga Seismic Station (Tennant Creek)
- Tennant Creek, 3 Caroline Street
- Lot 604, Cnr West Road and Second Street (Yuendumu)

WESTERN AUSTRALIA

- Exchange Tower (Perth

Appendix B: ANU Hazardous Materials Register Format

Australian National University

Site Location: SV01
Howards Cottage
Spring Valley Farm
Assessor: Brett McPherson

Inspection Date: 25/11/2020
Reinspection Date: 25/11/2025

Sample No.	Results	Photo ID	Building	Level	Room	Space Numbering	Description	Location	Asbestos Type	Condition	Accessibility	Airborne Potential	Exposure Potential	Risk Score	Action Priority	Quantity (m, m2, m3)	Actions/Comments
Asbestos Containing Materials																	
JL1574 -1	Chrysotile	Refer Agon report	SV01	L1	Ext	SV01_L1_1.Ext	Cement Sheet	Eaves Lining	1	2	2	1	1	4	L	60 m2	Monitor And Maintain remove prior to any demolition
JL1574 -3	Chrysotile	Refer Agon report	SV01	L1	Ext	SV01_L1_Ext	Cement Sheet	External Wall lining adjacent 1.07	1	2	2	1	1	4	L	16 m2	Monitor And Maintain remove prior to any demolition
JL1574 -8	Chrysotile	Refer Agon report	SV01	L1	1.07	SV01_L1_1.07	Cement Sheet	Ceiling lining to lounge 1.07	1	2	2	1	1	4	L	28 m2	Monitor And Maintain remove prior to any demolition
No Asbestos Detected																	
JL1574 -2	NAD	Refer Agon report	SV01	L1	Ext	SV01_L1_Ext	Infill Panel	Infill panels	-	-	-	-	-	-	N	20m2	No Further Action required
JL1574 -4	NAD	Refer Agon report	SV01	L1	Ext	SV01_L1_Ext	Cement sheet	Infill panel base of building	-	-	-	-	-	-	N	2m2	No Further Action required
JL1574 -5	NAD	Refer Agon report	SV01	L1	Ext	SV01_L1_Ext	Putty	Window putty all elevations	-	-	-	-	-	-	N	4m2	No Further Action required
JL1574 -6	NAD	Refer Agon report	SV01	L1	1.08	SV01_L1_1.08	Cement sheet	Wall lings to Study	-	-	-	-	-	-	N	60m2	No Further Action required
JL1574 -7	NAD	Refer Agon report	SV01	L1	1.07	SV01_L1_1.07	Cement sheet	Wall lings to lounge	-	-	-	-	-	-	N	12m2	No Further Action required
Lead Paint Systems (Sampled materials found to be above the threshold criteria of 0.1% by w/w)																	
JA0888-SV01	.18%	Refer Agon report	SV01	L1	Ext	SV01_Ext	White Paint	External weather board cladding	-	-	-	-	-	-	M	100m2	Remove and repaint during any maintenace avoid creating dust
JA0888-SV01	.48%	Refer Agon report	SV01	L1	Ext	SV01_Ext	White Paint	External windows	-	-	-	-	-	-	M	30lm	Remove and repaint during any maintenace avoid creating dust
JA0888-SV01	1.9%	Refer Agon report	SV01	L1	Int	SV01_Int	White Paint	Skirtings and Door Frames	-	-	-	-	-	-	L	30lm	Use caution during maintenace avoid creating dust
Lead Free Paint Systems (Sampled materials found to be below the threshold criteria of 0.1% by w/w)																	
All samples taken above the threshold																	
No lead dust was noted																	
Lead Free Dust																	
No Lead Free Dust Samples Taken.																	
Lead Soils (Sampled materials found to be above the ASC NEPM (2013) HIL A site assessment criteria of 300 mg/kg)																	
No Lead Soil Samples Taken.																	
Lead Free Soils (Sampled materials found to be below the ASC NEPM (2013) HIL A site assessment criteria of 300 mg/kg)																	
JA0888-SV01	63 mg/kg	Refer Agon report	SV01	L1	Ext	SV01_Ext	Soil	Southern elevation	-	-	-	-	-	-		-	No Further Action required

Appendix C: Contents of an Asbestos Removal Control Plan

Heading	Building & Structures		Plant & Equipment	
	Friable	Non-Friable	Friable	Non-Friable
Notification				
Notification requirements have been met and required documentation will be on site (e.g. removal licence, control plan, training records)	Yes	Yes	Yes	Yes
Identification				
Details of asbestos to be removed (e.g. the locations, whether asbestos is friable/non-friable, its type, condition and quantity being removed)	Yes	Yes	Yes	Yes
Preparation				
Consult with relevant parties (HSR's; workers; person who commissioned the removal work, licensed assessors)	Yes	Yes	Yes	Yes
Assigned responsibilities for the removal	Yes	Yes	Yes	Yes
Program commencement and completion dates	Yes	Yes	Yes	Yes
Emergency plans	Yes	Yes	Yes	Yes
Asbestos removal boundaries, including the type and extent of isolation required and the location of any signs and barriers	Yes	Yes	Yes	Yes
Control of other hazards including electrical and lighting installations	Yes	Yes	Yes	Yes
PPE to be used including RPE	Yes	Yes	Yes	Yes
Removal				
Details of air-monitoring program Control and clearance	Yes	Yes (as per ANU Policy)	Yes	No
Waste storage and disposal program	Yes	Yes	Yes	Yes
Method for removing the asbestos (wet and dry)	Yes	Yes	Yes	Yes
Asbestos removal equipment (e.g. spray equip, asbestos vacuum cleaners, cutting tools)	Yes	Yes	Yes	Yes
Details of required enclosures, including their size, shape, structure etc, smoke testing enclosures and the location of negative pressure exhaust units	Yes	No	Yes	No
Details on temporary buildings required by the asbestos removalist (e.g. decontamination units) including water, lighting and power requirements, negative pressure exhaust units and the locations of decontamination units	Yes	May be required depending on the job	Yes	May be required depending on the job
Other risk control measures to prevent the release of airborne asbestos fibres from the area where asbestos removal is undertaken	Yes	Yes	Yes	Yes

Heading	Building & Structures		Plant & Equipment	
	Friable	Non-Friable	Friable	Non-Friable
Decontamination				
Detailed procedures for workplace decontamination, decontamination of tools and equip, personal decontamination and decontamination of non-disposable PPE and RPE	Yes	Yes	Yes	Yes
Waste Disposal				
Method of disposing of asbestos wastes, including details on: • the disposal of protective clothing	Yes	Yes	Yes	Yes
• the structures used to enclose the removal area	Yes	No	Yes	Yes
Clearance and air monitoring				
Name of the independent licensed asbestos assessor or competent person engaged to conduct air monitoring (if any)	Yes	Clearance only	Yes	Clearance only
Consultation				
Consult with any people who may be affected by the removal work, including neighbours	Yes	Yes	Yes	Yes

Appendix D: Asbestos Definitions

Asbestos Terminology	Definition
Abatement	To remedy or repair
Air monitoring[1]	Air Monitoring means airborne asbestos fibre sampling to assist in assessing exposures and the effectiveness of control measures. Air monitoring includes exposure monitoring, control monitoring and clearance monitoring.
Airborne asbestos fibres[2]	Means any fibres of asbestos small enough to be made airborne. For the purposes of monitoring airborne asbestos fibres, only respirable fibres are counted.
Analysis	Detailed examination of the structure. Statement of results from the sample taken on site.
Asbestos[2]	Means the asbestiform varieties of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals, including actinolite asbestos, grunerite (or amosite) asbestos (brown), anthophyllite asbestos, chrysotile asbestos (white), crocidolite asbestos (blue) and tremolite asbestos.
Asbestos Assessor	Means a person who holds an asbestos assessor licence.
Asbestos Containing Material (ACM)	Means any material or thing that, as part of its design, contains asbestos.
Asbestos Contaminated Dust or Debris (ACD)	Dust or debris that has settled within a workplace and is, or is assumed to be, contaminated with asbestos.
Asbestos Register	Inventory of ACM by type, form, location, risk and required action.
Asbestos Removal Control Plan	An asbestos removal control plan is a document that identifies the specific control measures a licence holder will use to ensure workers and other persons are not at risk when asbestos removal work is being conducted. It is similar to a Job Safety Analysis (JSA) but is focused on the specific control measures necessary to minimise any risk from exposure to asbestos.
Asbestos Removalist[2]	Means a person conducting a business or undertaking who carries out asbestos removal work.

[1] *Note: Air monitoring should be undertaken in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 2003 (2005)]*

[2] *Note: A 'Class A' asbestos removal licence is required for removal of all friable ACM.*

Asbestos Terminology	Definition
Asbestos removal licence	Means a Class A asbestos removal licence or a Class B asbestos removal licence.
Asbestos Management Plan (AMP)	Document covering the identification, risk evaluation, control and management of identified asbestos hazards, developed in accordance with Current legislation
Asbestos Vacuum Cleaner[3]	Asbestos vacuum cleaners should comply with the Class H requirements in Australian Standard ***AS/NZS 60335.2.69 Industrial vacuum cleaners*** or its equivalent. Asbestos vacuum cleaners should not be used on wet materials or surfaces. Attachments with brushes should not be used as they are difficult to decontaminate.
Asbestos waste	Means asbestos or ACM removed and disposable items used during asbestos removal work including plastic sheeting and disposable tools.
Bonded asbestos	ACM that is bonded into a stable matrix and cannot be reduced to a dust by hand pressure.
Clearance inspection[2]	An inspection, carried out by a competent person, to verify that an asbestos work area is safe to be returned to normal use after work involving the disturbance of ACM has taken place. A clearance inspection must include a visual inspection, and may also include clearance monitoring and/or settled dust sampling.
Clearance monitoring[2]	Air monitoring using static or positional samples to measure the level of airborne asbestos fibres in an area following work on ACM. An area is 'cleared' when the level of airborne asbestos fibres is measured as being below 0.01 fibres/mL.
Comcare	Agency responsible for workplace safety, rehabilitation and compensation in the jurisdiction of the Australian Commonwealth (i.e. Federal) Government
Competent person[2]	A person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work.
Control monitoring[2]	Air monitoring, using static or positional to measure the level of airborne asbestos fibres in an area during work on ACM. Control monitoring is designed to assist in assessing the effectiveness of control measures. Its results are not representative of actual occupational exposures, and should not be used for that purpose.

[3] *Filters for these vacuum cleaners should conform to the requirements of* ***AS 4260-1997 High efficiency particulate air (HEPA) filters – Classification, construction and performance*** *or its equivalent.*

Asbestos Terminology	Definition
Exposure monitoring	Air monitoring in the breathing zone to determine a person's likely exposure to a hazardous substance. Exposure monitoring is designed to reliably estimate the person's exposure, so that it may be compared with the National Exposure Standard.
Exposure standard	For asbestos is a respirable fibre level of 0.1 fibres/ml of air measured in a person's breathing zone and expressed as a time weighted average fibre concentration calculated over an eight-hour working day and measured over a minimum period of four hours in accordance with: • the Membrane Filter Method • a method determined by Comcare.
Friable asbestos[2]	Means material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry, and contains asbestos.
In situ[2]	Fixed or installed in its original position, not having been removed.
Inaccessible areas	Areas which are difficult to access, such as wall cavities and the interiors of plant and equipment.
Licensed Class A Asbestos Assessor	Person who is qualified to undertake the sampling and risk assessment of asbestos and provide recommendations on its safe management.
Membrane	A flexible or semi-flexible material, which functions as the waterproofing component in a roofing or waterproofing assembly.
NATA-accredited laboratory	Means a testing laboratory accredited by the National Association of Testing Authorities (NATA), Australia, or recognised by NATA either solely or with someone else.
Non-friable asbestos	Means material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound.
Respirable asbestos fibres	Means an asbestos fibre that: • is less than 3 microns (µm) wide • is more than 5 microns (µm) long • has a length to width ratio of more than 3:1.
Respiratory protective equipment (RPE)	All workers engaged in removal work must wear RPE conforming to the requirements of **AS/NZS 1716:2009** ***Selection, Use and Maintenance of Respiratory Protective Devices***

Asbestos Terminology	Definition
Safe Work Method Statement (SWMS)	A detailed summary prepared by the contractor before any work commences detailing how the contractor will remove/repair or work with a property containing ACM to reduce the risk of exposure

Appendix E: Asbestos Containing Material Labelling Guidelines

This document was created to help the Australian National University (ANU) adopt a consistent approach to their Asbestos Containing Materials (ACM) labelling practices at the ANU Acton Campus and other ANU properties. It is applicable to both positively identified ACM and presumed ACM materials.

This document is to be read in conjunction with:

- The respective building's Hazardous Material (HazMat) Report / Register.
- Current and document controlled version of ANU's Hazardous Materials Management Manual (i.e. QMS-FS-MAN-20-018).

Due to the emotion and stigma associated with asbestos and to avoid malicious damage to ACM, on occasion, labelling may not be applied or may be applied in a discrete manner. The labelling practices for the typical locations below were subject to an ANU Safety Workshop. Terms used in the following table include:

- Direct labelling: Labels are applied to a material. If discrete labelling is not required, this will be in a visually obvious place on the material (i.e. at eye level and with 360° visibility).
- Discrete labelling: Labels are applied to a material in a less-obvious place (i.e. upper corner of door).
- Indirect labelling: Labels are applied in a place other than on the material itself (i.e. on door of room, on ceiling space access hatch, etc.). Note: It may be more appropriate for a sign to be used instead of a label in certain locations (i.e. at roof access points from which ACM roof sheeting is accessible).

It is proposed that labeling be adopted for "Asbestos Free" materials. Benefits for ANU include:

- Helps avoid confusion regarding any material (i.e. ACM, presumed ACM and non-ACM) with no label, a missing, damaged or illegible label, and a material not included in the HazMat Building Report/Register.
- "Asbestos Free" labels are not as emotive as ACM warning labels and do not have the same stigma associated with them.
- If a "No Label – No Work" policy is adopted, it will better protects personnel from an accidental ACM exposure and better prevent an incident involving an ACM material if works involving an un-labelled ACM material is mistaken as non-ACM.

This document is for internal use only and references the following documents:

- Australian Capital Territory Work Health and Safety (How to Manage and Control Asbestos in the Workplace Code of Practice) 2014
- Australian Standard AS 1319-1994 Safety signs for the occupational environment
- Australian Standard AS 1345-1995 Identification of the contents of pipes, conduits and duct

Typical Location of Identified ACM and/or Presumed ACM	Direct Labelling	Indirect Labelling	Discrete Labelling	Label Type
Plant Insulation • Labels to be placed upon the plant so that there is 360° visibility (i.e. at least one label is visible from all angles). • Labels should be placed upon the plant at a height of 1500mm (i.e. average person's eye level), if possible. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	Yes	Yes	N/A	A
Lift Motor Brakes • Labels to be placed upon the lift motor housing so that there is 360° visibility (i.e. at least one label is visible from all angles). • Labels should be placed upon the lift motor housing at a height of 1500mm (i.e. average person's eye level), if possible. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	Yes	Yes	N/A	A
Pipe Lagging • Labels to be placed next to all junctions, valves, service appliances, bulkheads and wall penetrations. • Spacing between labels must be no greater than eight (8) metres along the length of pipe. • Where multiple pipes exist, each pipe is to be labelled. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	Yes	Yes	N/A	C

Typical Location of Identified ACM and/or Presumed ACM	Direct Labelling	Indirect Labelling	Discrete Labelling	Label Type
Plant Gasket • Warning tape to be placed around the external perimeter of the flange. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	Yes	Yes	N/A	D
Plant Joint Mastic • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	N/A	B
Roof Sheeting • Labels to be placed at all internal/external roof access points from which the roof sheeting is accessible. • Labels to be placed at all internal ceiling space access points from which the underside of the roof sheeting is accessible.	No	Yes	N/A	F
Ceiling Space Debris • Labels to be placed at all internal ceiling space access points from which the underside of the roof sheeting is accessible.	No	Yes	N/A	E
Eave Sheeting • Labels to be placed at all internal/external roof access points from which the eave sheeting is accessible.	No	Yes	N/A	B
Cement Sheet Wall • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	Yes	I

Typical Location of Identified ACM and/or Presumed ACM	Direct Labelling	Indirect Labelling	Discrete Labelling	Label Type
Cement Sheet Ceiling • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	Yes	I
Cement Sheet Partition to Toilet Cubicle • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible. • Labels to be placed in upper corner adjacent to the wall on both internal and external side of the partition.	Yes	Yes	Yes	A
Cement Sheet Door to Toilet Cubicle • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible. • Labels to be placed in upper corner above the door hinge on both internal and external side of the partition.	Yes	Yes	Yes	A
Flooring (Note: May include visible or hidden tiles, sheeting and/or adhesives) • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	N/A	B
Electrical Mounting Board • Labels to be placed on both the external and internal sides of the electrical switchboard door/cover. Note: Labels should not be placed upon a live electrical mounting board. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	N/A	A

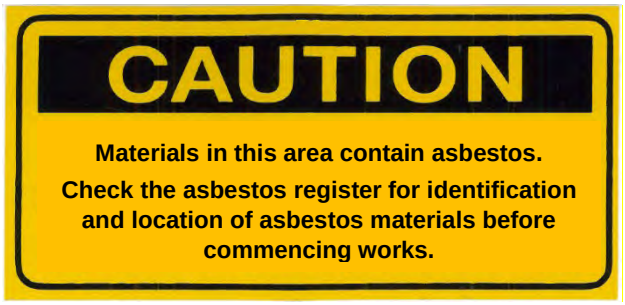
Typical Location of Identified ACM and/or Presumed ACM	Direct Labelling	Indirect Labelling	Discrete Labelling	Label Type
Fire Retardant Mastics (Walls / Penetrations) • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	N/A	I
Window Frame Mastic • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	No	Yes	N/A	I
Fire Door Core Insulation • Labels to be placed on both the external and internal sides of the fire door. • Labels to be placed in upper corner above the door hinge on both internal and external side of the door.	Yes	No	Yes	A
Heat Resistant Aluminum Signage required for harsh environments and parts of non-insulated pipes and boilers. E.g. Gaskets Harsh Environments • Hot, wet & humid environments and/or corrosive surfaces Uninsulated Pipes • Labels to be placed next to all junctions, valves, service appliances, bulkheads and wall penetrations. • Spacing between labels must be no greater than eight (8) metres along the length of pipe. • Where multiple pipes exist, each pipe is to be labelled. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	Yes	Yes	Yes	J & K

Typical Location of Identified ACM and/or Presumed ACM	Direct Labelling	Indirect Labelling	Discrete Labelling	Label Type
Boilers • Labels to be placed upon the boiler housing so that there is 360° visibility (i.e. at least one label is visible from all angles). • Labels should be placed upon the boiler housing at a height of 1500mm (i.e. average person's eye level), if possible. • Labels to be placed on the door of all entry points to the room at a height of 1500mm (i.e. average person's eye level), if possible.	Yes	Yes	Yes	J & K
Asbestos Related Incident • Labels to be placed in accordance with ANU's incident barricading procedure (i.e. along perimeter of barricading, at all access points, etc.). ANU Danger Tag	Yes	Yes	N/A	L
Asbestos Related Incident • Labels to be placed in accordance with ANU's incident barricading procedure (i.e. along perimeter of barricading, at all access points, etc.). ANU Caution/ Out Of Service Tag	Yes	Yes	N/A	M
Asbestos Related Incident • Signage to be placed in accordance with ANU's and F&S's Reporting ACM Incidents processes and Asbestos emergency procedures (i.e. along perimeter of barricading, at all access points, etc.).	No	Yes	N/A	WEG Signage Danger. Asbestos Containing

WEG Signage: Danger - Asbestos Containing Materials In This Area - Authorised Staff Only.				Materials In This Area. Authorised Staff Only.
Non-Asbestos Gaskets • Green “Asbestos Free” tape to be placed around the external perimeter of the flange.	Yes	No	N/A	H
All other Non-Asbestos Items • Green “Asbestos Free” labels to be placed upon the item so that there is 360° visibility (i.e. at least one label is visible from all angles). • Green “Asbestos Free” labels should be placed upon the item at a height of 1500mm (i.e. average person’s eye level), if possible. Note – Non-Asbestos Item to be confirmed by ACT licensed Asbestos Assessor with sampling documentation to be filed for reference.	Yes	No	N/A	G

Please Note: These labelling guidelines are for guidance and direction purposes and have been designed to help and assist to positively identify ACM and presumed ACM materials at the ANU Acton Campus and other ANU properties.

Although consistency is paramount for this type of labelling and signage, the installers’ professional judgment must always prevail at times of abnormalities.

Type A	
Type B	
Type C	
Type D	
Type E	

Type F	
Type G	
Type H	
Type I	
Type J	

	
Type K	
Type L	 Danger Tag - (Example Only)

Type M	 Caution - Out Of Service Tag (Example Only)

DANGER

Asbestos containing material in this area.

AUTHORISED STAFF ONLY

For access or information contact: