

Hazardous Material Survey & Management Plan

Canberra Brickworks
Yarralumla ACT 2600

February 2012



This report MUST NOT be used as a removal specification

Client: ACT Property Group

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Canberra Brickworks
Yarralumla ACT 2600

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1 PREFACE

This Hazardous Materials Survey and Management Plan (HMSMP) was commissioned by ACT Property Group in order to assure the occupants of Canberra Brickworks, Yarralumla the highest standards of occupational health and safety in relation to hazardous materials. The safe removal of hazardous materials must be undertaken by appropriately licensed and skilled personnel prior to the demolition of the premises.

The HMSMP contains sections covering the identification, evaluation and control of hazardous materials including asbestos containing materials (ACM), Lead Paint, Polychlorinated Biphenyls (PCB), Synthetic Mineral Fibre (SMF), Refrigerants and Fuel Storage Facilities (e.g. Underground Storage Tanks).

Robson Environmental Pty Ltd commenced the hazardous material survey on 27 February 2012. The information contained in this document will assist ACT Property Group in fulfilling their obligations under the latest editions of the following regulations/Acts:

- *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018 (2005)];
- *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)];
- Work Health and Safety Act 2011;
- Work Health and Safety Regulations 2011;
- Dangerous Substances Act 2004;
- Dangerous Substances (General) Regulation 2004;
- *National Code of Practice for the Safe Use of Synthetic Mineral Fibre* [NOHSC:2006(1990)];
- *National Standard for Synthetic Mineral Fibres* [NOHSC:1004(1990)];
- *Guide to Lead Paint Management, Part 2: Residential and Commercial Buildings* Standards Australia, AS 4361.2 - 1998;
- *Identification of PCB-Containing Capacitors; An information Booklet for Electricians and Electrical Contractors* ANZECC 1997; and
- *The Australian Refrigeration and Air-conditioning Code of Good Practice* Standards Australia, HB 40.1 – 2001.

2 EXECUTIVE SUMMARY

2.1 Purpose

This report presents the findings of a Hazardous Materials Survey conducted at Canberra Brickworks, Yarralumla. Robson Environmental Pty Ltd commenced this survey on the 27 February 2012 at the request of ACT Property Group. The safe removal of hazardous materials must be undertaken by appropriately licensed and skilled personnel prior to the demolition of the premises.

2.2 Scope

The Hazardous Materials Survey undertaken at Canberra Brickworks, Yarralumla was non-destructive and non-intrusive in nature. The extent of the survey was limited to the following areas:

- Interior and exterior of the building; and
- Roof, amenities and immediate surrounding land.
- UST filler points and breather vents.

The survey did not include the inspection or assessment of the following areas:

- Subterranean areas (e.g. infill/soil)
- Concealed cavities
- Formwork and subterranean electrical cable ducts and water pipe ducts

2.3 Survey Methodology

The survey involved a visual inspection of accessible, representative, construction materials and the collection and analysis of materials suspected of being potentially hazardous to human health.

Hazardous materials assessed included asbestos containing materials (ACM), synthetic mineral fibre (SMF), polychlorinated biphenyls (PCB), lead containing paint, ozone depleting substances (ODS) and fuel storage facilities, e.g. underground storage tanks (UST).

The visual site inspection performed by Robson Environmental Pty Ltd, which included the sampling of representative materials suspected of being hazardous, was undertaken in accordance with relevant Standards and Codes. The particular sampling methodology used for each hazardous materials type is provided below:

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Asbestos: The asbestos materials survey was conducted in accordance with the *Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)]*. It involved a visual inspection of accessible representative construction materials suspected of containing asbestos. Materials were not sampled from all areas due to the uniformity of the materials used throughout the building(s). Samples were analysed in a National Association of Testing Authorities (NATA) accredited laboratory for the presence of asbestos by polarising light microscopy and/or X-ray diffraction.

Lead (Pb) Based Paints: In accordance with AS4361.2-1998 representative paint samples were collected from various paint coated surfaces identified on site.

A spot sample consisting of a 25mm square of paint coating was removed using a knife to expose the base substrate. All scrapings and portions of the paint from within the square's area were collected and placed in a sealed and marked container. A total of three spot samples were collected for each suspected paint coating.

Samples were analysed for their lead (Pb) content by Envirolab Services Pty Ltd – NATA accreditation number: 2901 using ICP/AES techniques and in-house Method No.4.

Within the same building, wherever a paint coating had a similar surface texture, colour etc. to a paint coating that had already been sampled because of its suspected lead content, it was presumed that these paint coatings were identical.

SMF: Synthetic Mineral Fibre (SMF) materials were visually identified. Where visual identification of the sampled material was unable to determine the presence of SMF, representative sample(s) were collected. The representative samples were analysed in a National Association of Testing Authorities (NATA) accredited laboratory for the presence of SMF by polarising light microscopy and dispersion staining.

PCBs: The information (make, type, capacitance etc.) recorded for each representative fluorescent light fitting capacitor suspected of containing PCB was cross-referenced against *ANZECC Identification of PCB Containing Capacitors – Information Booklet for Electricians and Electrical Contractors - 1997*.

This identification booklet provides a list of electrical equipment that is known to contain PCBs, and a list of electrical equipment known not to contain PCBs. Where the information recorded from the capacitor case(s) correlated exactly with the information listed in the ANZECC Information Booklet for known PCB-containing capacitors it was determined that PCBs were present in the capacitor under analysis.

Wherever a capacitor could not be identified in either list, this was noted in the PCB register as being a capacitor '*Suspected to contain PCBs*' and a recommendation made that an identical capacitor be submitted for analysis to a laboratory NATA registered for PCB analysis.

Ozone Depleting Substances: Visual examination of refrigerant gas labels affixed to representative air-conditioning and refrigeration units. Information concerning the ASHRAE/ARI refrigerant designated R number was noted for later cross-reference to relevant air-conditioning and refrigeration industry Codes of Practice and Guidelines.

In addition, the condition of the plant was noted and comment made as to possible refrigerant or lubricant leaks.

Where refrigerant gas labels are absent from representative air-conditioning and refrigeration plant, an assessment is made as to the likelihood of the plant using an ozone depleting substance, based on its age and condition.

Fuel Storage Facilities: The survey included a visual inspection for above ground storage tanks (AST) and underground storage tank (UST) filler points and breather vents.

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2.4 Key Findings

Asbestos Containing Materials (ACM) located on site are noted in the table below:

Asbestos Findings

Table 1A: ACM, locations and required actions

TYPE	ACM	Locations	Action to be taken	
Bonded asbestos	Gasket	Kiln 2 - Top floor, heat exchange gasket	Maintain, inspect annually	
	Rope gasket	FH 1 & 2 - Duct flange joints		
	Sheet		Former canteen - Ceiling sheet	Conceal damaged sections
			BH, SS1, SS2, SS3, SS4 - Ceiling sheet	Remove damaged sections (see asbestos register) as soon as practicable
			SS4 - Shower wall sheet	Maintain, inspect annually
			A4 - Perimeter eave & soffit sheet	
	Moulded sheet	Tip area western side - Corrugated roof sheet and debris	Remove as soon as practicable	
	Sheet	A4 (room 6 only) - Ceiling sheet (presumed still present however, building was inaccessible)	Gain access & re-inspect	
	Hardened rope	B - Large brake pad to top of old brick making machine	Maintain, inspect annually	
	Gasket	B - Front corner, gaskets adjacent downpipe		
	Moulded sheet	M2& M3 - Flash guards to distribution board		
	Millboard	K2 - Top floor, debris to top floor (small amount left post removal)	Remove as soon as practicable	
	Sheet/ Moulded sheet	Various sections of sheet and moulded sheet debris scattered throughout site (see asbestos register)		
	Sheet	All Switchboard backing sheets throughout all buildings	Maintain, inspect annually	

Refer to Section 2.4 - Table 1B for presumed ACM and Section 3.2 for exclusions

Table 1B: Presumed ACM, concealed locations and required actions

TYPE	ACM	Locations	Action to be taken
The materials listed below while not identified on site, should be presumed to be present until a destructive survey confirms otherwise			
Presumed ACM	Insulation/pipe lagging	Inaccessible ducts, risers and ceiling and wall space cavities	<p>Destructive survey under controlled conditions prior to any refurbishment which is likely to disturb possible ACM in these areas.</p> <p>Until these areas are surveyed they should be presumed to contain asbestos.</p> <p>No access to unauthorised personnel should be given</p>
	Asbestos millboard lining	Interior of air conditioning ductwork adjacent to heater elements	
	Asbestos insulation and gaskets/joints	Within mechanical equipment concealed by outer metal cladding, structure or housing	
	Asbestos vinyl floor tiles, covering, cushioning underlay and adhesive	Found beneath carpets and vinyl flooring	
	Asbestos sheeting	Backing material to ceramic tiles (Roofs, floors and walls) and packers to building construction joints, such as gable end verge under cloaking	
	Asbestos cement sheet formwork and electrical cable duct / water pipe	Subterranean areas	

Prior to any planned demolition, refurbishment or maintenance, its effect upon any in situ asbestos must be established by reference to this document including amendments.

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Lead Paint

The analytical results of paint sampling at Yarralumla Brickworks, Yarralumla revealed that there was lead paint (>1.0% Pb) present.

It should be assumed that all similar paint throughout the building contains comparable percentages of lead.

Lead Content	Location	Paint Colour	Required action
Lead Paint (>1.0% Pb)	Paint to portable AST to building D	Yellow	Repaint

Synthetic Mineral Fibre (SMF)

SMF was identified in the following locations.

Type	Material	Location & Material	Required action
	Sisslation	To underside of roofs throughout	Defer action (Leave & maintain) change where applicable
	Fibreglass	SMF as insulation to pipes throughout	
		SMF as insulating batts to various ceiling spaces	

SMF was identified as insulation within ceiling space areas as insulating batts. Sisslation was located to the underside of various roofs and SMF was located to pipes in various locations throughout the site. It should be assumed that all inaccessible ceiling spaces and wall cavities contain similar SMF.

Polychlorinated Biphenyls (PCB)

PCB containing capacitors were identified to a number of the fluorescent light fittings.

Result	Make - Type	Location	Required action
PCB	AEE MP – PMN 5417 6 μ F	Former canteen ground floor	Leave & maintain
	Nichicon 1966 – SFSGLP 6 μ F	Building SS1	
	Dawco metal – BS 4017-1966 3.25 μ F	Building A4 1 tube	
	Ducon metal – APF 265CR 6.5 μ F	Building A4 2 Tubes	
	Ducon metal – APF 260CR 6 μ F	Building R1	
	Ducon metal - APF 280CR 6 μ F		
Non - PCB	Plessey plastic – 427/1/07503/006 10 μ F	North end of site	Leave & maintain
	AEE MP – PMN 5417 12 μ F	Building R2	
	RIC – LE 1 EB 6 μ F		
Presumed PCB	Unknown – Fire damaged	Building SS2	Remove as soon as practicable
	Unknown – Inaccessible	Building H	Leave & maintain

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Ozone Depleting Substances (ODS)

No ozone depleting substances were identified during the survey.

R Number	Location	Total	Required action
Non - Ozone Depleting Substances			
R-410A	To work area adjacent building F	1	-

Aboveground Storage (AST) & Underground Storage Tanks (UST)

Evidence of a UST and two dip points were located adjacent to building B. Further investigation is necessary.

A small portable AST was located to building D and is empty and appears to be abandoned.

Refer to Section Appendix C for the management of fuel storage facilities in the ACT.

2.5 Key Recommendations

Asbestos

- The ACM sheet and moulded sheet debris to the entire site should be removed.
- The ACM millboard to the top level of K2 has been removed however, some residual millboard debris remains. The area should be thoroughly checked and all debris should be removed.
- Damaged ACM ceiling sheet to SS1, SS2 & SS3 should be removed.
- The ACM corrugated roof sheet and debris to the tip area western side should be thoroughly checked and all found materials should be removed.
- Damaged ACM ceiling sheet to the former canteen should be repaired (conceal damage ideally by gluing a boards over the holes in the sheet).
- All Asbestos identified in this report that is in a good condition should be inspected on a yearly basis by a Class A asbestos assessor to ensure no deterioration of the ACM has occurred
- **As access could not be gained to all areas of the building, it should be presumed that any similar materials located within these areas could contain asbestos until proven otherwise. Strict controls should be put in place to brief all contractors.**
- Any asbestos containing material requiring removal must be removed by an ACT licensed Asbestos Removalist as per the Code of *Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

SMF

- If these materials are to be disturbed during refurbishment appropriate PPE should be worn. SMF materials being removed should be done so using effective dust control procedures. Refer to Section 15.3 Appendix C for further general information on SMF.

Lead Paint

- The lead paint is in a fairly poor condition and should be repainted. It should be assumed that all similar paint applications throughout the building would contain similar percentages of lead. Refer to Section 15.3 Appendix C for further general information on lead paint.

PCBs

- Any damaged light fittings containing capacitors with PCBs should be removed and be suitably disposed of in accordance with the ACT regulatory authorities. Refer to Section 15.3 Appendix C for the correct handling and disposal of PCB containing capacitors.

UST

- A dip point was found during the survey, however further investigation is required to establish whether or not a UST is still in place and its condition.
- The aboveground storage tank (AST) should be removed if there are no as hazardous waste.

Legislation and Guidelines (UST): With regards to Section 3.2 of AS4976 (2008) *The Removal and Disposal of Underground Petroleum Storage Tanks*, it is indicated that the out-of-service period for a UST should not exceed that laid down in any applicable regulation and should not normally be greater than twelve (12) months. Also, Section 6 (Decommissioning) of the ACT EPA (2009) *Environmental Guidelines for Service Station Sites and Hydrocarbon Storage* indicates that all decommissioned tanks must be removed unless there are specific operational or structural reasons as to why they must remain. These reasons must be outlined or substantiated by an experienced and competent person.

Demolition: *Robson Environmental Pty Ltd recommends that prior to any demolition, our office be contacted. Our Class A Asbestos Assessor can attend the site to observe the demolition process, advise as necessary and in the event of asbestos or other hazardous materials being located, assist with assessing the extent, type and condition of materials as required.*

Robson Environmental Pty Ltd also provides a range of occupational hygiene services in relation to the removal of asbestos material as well as contaminated land advice in relation to hydrocarbon contamination. To assist with the tendering process Robson Environmental could be engaged to attend the walkthrough to show the extent of ACM and to respond to questions of clarification.

3 INTRODUCTION

The following Hazardous Material Survey and Management Plan (HMSMP) has been designed to address the safe control of hazardous materials identified at Canberra Brickworks, Yarallumla. It covers current requirements for asbestos management as at 27 February 2012 only and must therefore be updated to comply with any future changes to legislative requirements. The safe removal of hazardous materials must be undertaken by appropriately licensed and skilled personnel prior to the demolition of the premises.

This HMSMP includes the following:

- a register of all identified hazardous materials;
- extent, form, condition and risks associated with nominated hazardous materials;
- labelling requirements for identified hazardous materials;
- a timetable for managing risks including priorities for removal or control of ACM and for reviewing risk assessments;
- responsibilities of all persons involved in hazardous materials management;
- procedures to address incidents or spillage involving ACM;
- safe work and removal methods; and
- guidelines on reviewing and updating the HMSMP and hazardous materials register.

3.1 Requirements for the HMSMP

This HMSMP must be held on site for ready access. All personnel undertaking any repair or maintenance work must be provided with a copy of the HMSMP before commencement of work.

Maintenance, trade and other personnel must be instructed not to remove or damage identified ACM. If ACM is identified in the area where work will be undertaken it must be removed before work begins.

Removal of ACM must be undertaken by an ACT licensed Asbestos Removalist in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

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3.2 Exclusions

The HMSMP commissioned by the client was to be non-destructive and non-intrusive in nature. This type of commission limits or restricts access to the building structure, some surfaces and materials.

The survey undertaken was limited to those areas available for access at the time of building inspection. Only the areas accessible to the surveyors at the time of the building inspection are included in this HMSMP.

Unless specifically noted, the survey did not cover exterior ground surfaces and sub-surfaces (e.g. infill/soil) or materials other than normal building fabric such as materials in laboratories or special purpose facilities.

At the time of survey no access was gained to materials and / or void areas located behind, above, or attached to any sampled or assumed ACM.

The HMSMP does not include the areas, locations and equipment items to which the surveyors could not gain access at the time of inspection.

Some other areas which *may* conceal asbestos include:

Material	Location
Asbestos millboard lining	Air conditioning duct work adjacent to heater elements
Asbestos insulation and gaskets/joints	Within mechanical equipment concealed by outer metal cladding
Asbestos insulation	Walls and cavities (e.g. as lagging to hot water pipes set into and sealed within masonry walls)
Vinyl floor tiles and floor covering	Beneath carpets
Sheeting	Backing material to ceramic tiles and as packers to building construction joints
Asbestos cement sheet formwork and electrical cable/water pipe duct	Sub-ground floor slab

No absolute determination can be made regarding the possibility of concealed or inaccessible hazardous materials or items in the areas, locations and equipment listed in the table above until access is gained to allow for inspection.

Materials and equipment in any non-accessed area should therefore be assumed to contain ACM, SMF, lead paint, PCB and ODS (the nominated hazardous materials) and be treated appropriately until assessment and sample analysis confirm otherwise.

Samples were not taken where the act of sampling would endanger the surveyor(s) or affect the structural integrity of the item concerned.

The presence of ACM to pipe work that is not readily visible, or that would require the full removal and replacement of overlying non-asbestos insulation to confirm, has not been investigated.

This HMSMP, although extensive, is not intended for and must not be used as a specification or method statement for any future asbestos removal project. In this instance detailed plans, quantities etc. would be required.

Before any refurbishment or hazardous material removal projects, the contractor(s) carrying out the work must fully acquaint themselves with the extent of the hazardous materials, particularly in those areas which may need full or partial demolition in order to determine the exact extent and location of such materials.

Care should be taken when demolishing or excavating to determine the existence or otherwise of hazardous materials. For example subsurface pipes and drains, revealed through excavation may be constructed of asbestos cement. Wherever a material is uncovered or revealed and it is suspected to be hazardous, it should be assumed to be hazardous and treated appropriately until such time as assessment and sample analysis of the material confirms otherwise.

Until this confirmation occurs the building work must cease in the immediate vicinity of the suspect material and a Class A Asbestos Assessor must issue a Clearance Certificate before the building work can recommence in the affected area.

To ensure contextual integrity, this HMSMP must always be read in its entirety and should never be referred to in part only.

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3.3 Limitations

This report is based on the information obtained by Robson Environmental Pty Ltd at the time of building inspection. Robson Environmental Pty Ltd will not update this report; nor take into account any event(s) occurring after the time that its assessment was conducted.

As both the range and use of manufactured products containing asbestos was extremely widespread, Robson Environmental Pty Ltd cannot accept responsibility for any consequential loss or damage that results from non-recognition of a material that may later be established to contain asbestos. For example, certain textured wall and ceiling finishes may contain small traces of asbestos fibre. In situ, textured finishes are often composed of assorted batches of product, or may have been repaired/patched at various times. It is therefore always a possibility that the samples collected may not always be representative of the entire material.

While Robson Environmental Pty Ltd has taken all care and attention to ensure that this report includes the most accurate information available, it has been unable to examine any inaccessible materials or materials hidden from view.

Under normal construction practices some materials are "built in" or "randomly applied". These materials are therefore not readily accessible and can only be exposed through demolition or damage to the structure or finishes. Access to a material may also be prevented or restricted by "in service" or operational equipment, or where to obtain access contravenes a relevant statutory requirement or code of practice. (e.g. electrical switchboards) Consequently, while all reasonable care and attention was taken in compiling this report no guarantee to its completeness can be given.

Robson Environmental Pty Ltd has taken all care to ensure that this report includes the most accurate information available, where it uses test results prepared by other persons it relies on the accuracy of the test results in preparing this report. In providing this report Robson Environmental Pty Ltd does not warrant the accuracy of such third party test results.

4 ASBESTOS SURVEY RESULTS

4.1 Survey Details

The survey of Canberra Brickworks, Yarralumla commenced on 27 February 2012. The survey included all accessible areas of the buildings. For further asbestos management information, refer to Appendix C.

4.2 Survey Methodology

The survey involved a visual inspection and subsequent sampling and analysis of suspect asbestos materials in a National Association of Testing Authorities (NATA) laboratory using polarising light microscopy and/or X-ray diffraction. Samples were a representative selection of materials suspected of containing asbestos. Samples were not taken from all areas due to the uniformity of the materials used throughout the building.

4.3 Sample Analysis

Table 2: Mineralogical Analysis of Samples for Asbestos using Polarising Light Microscopy

Sample reference	Sample location	Sample type	Asbestos type
2810 - 40 - A1	Kiln 2 - Top floor, millboard	Sheet	Chrysotile Asbestos (Removed)
2810 - 40 - A2	Kiln 2 - Top floor, thick insulation to central beam	Insulation	
2810 - 40 - A3	Kiln 2 - Top floor, heat exchange gasket	Gasket	Chrysotile Asbestos
2810 - 40 - A4	FH2 - Rope gaskets to ducting	Rope gasket	
2810 - 40 - A5	Former canteen - Ceiling sheet	Sheet	
2810 - 40 - A6	1 st level walkway to K2 - Floor covering	Covering	no asbestos detected
2810 - 40 - A7	SS3 - Ceiling sheet	Sheet	Chrysotile Asbestos
2810 - 40 - A8	SS4 - Shower wall sheet		
2810 - 40 - A9	A4 - Perimeter eave & soffit sheet		
2810 - 40 - A11	A3 - Corrugated roof sheet & debris	Sheet	Removed (07.11.10)
2810 - 40 - A13	Atop kiln 3 - External wall sheet		Consistent with asbestos (Removed)
3617 - 103 - A1	B - Large brake pad to top of old brick making machine	Hardened rope	Chrysotile Asbestos
3617 - 103 - A2	Debris to small chimney at site entrance	Sheet	Chrysotile Asbestos (Removed)

Sample reference	Sample location	Sample type	Asbestos type
3617 - 103 – A3	BH - Window caulking	Caulking	no asbestos detected
3617 - 103 – A4	B – Front corner, gaskets adjacent downpipe	Gasket	Chrysotile Asbestos
3617 - 103 – A5	FH1 - Rope gaskets to ducting	Rope gasket	
3617 - 103 – A6	M3 - Mastic to original distribution board	Mastic	no asbestos detected
3617 - 103 – A7	FH2 - Sheet debris to soil adjacent	Sheet	Chrysotile & Amosite Asbestos
M0097	Adjacent building H - Debris to ground	Sheet	no asbestos detected
M0098	M3 - Switch board backing sheet strip		
M0099 (a)	R2 - Debris to ground		
M0099 (b)	Adjacent 1 st level walkway to K2 - Debris to ground	Sheet	Chrysotile Asbestos
M0100	K2 - Debris to top floor	Millboard	
M0101	SS1 - Ceiling sheet	Sheet	Crocidolite, Amosite & Chrysotile Asbestos
M0102	Between tall chimney & K3 - Debris to ground		
M0103	Front of B - Moulded sheet debris to ground	Moulded sheet	

Legend

Chrysotile	=	white asbestos
Amosite	=	grey or brown asbestos
Crocidolite	=	blue asbestos

It should be noted that the above samples were a representative selection of materials suspected of containing asbestos.

Materials were not sampled from all areas due to the consistency of the materials used throughout the premises.

On-site inspections and an examination of the building register within this report should be undertaken prior to the commencement of any asbestos removal programme.

4.4 Risk Assessment

The purpose of the risk assessment is to enable informed decisions to be made concerning the control of ACM.

As per NOHSC: 2018(2005), the risk assessment should take account of the identification information in the Asbestos Register, including:

- type of ACM (bonded or friable)
- condition and location of ACM
- whether the ACM is likely to be disturbed due to its condition and location; and
- the likelihood of exposure

Types of ACM

Bonded ACM	<p>Bonded ACM is any material that contains asbestos bound into a stable matrix. It may consist of cement or various resins/binders and cannot be reduced to a dust by hand pressure. As such it does not present an exposure hazard unless cut, abraded, sanded or otherwise disturbed. Therefore, the exposure risk from bonded ACM is negligible during normal building occupation.</p> <p><i>Note: if bonded ACM is damaged or otherwise deteriorated, the risk assessment must be reviewed to reflect a higher potential for exposure to asbestos fibres. A Class A Asbestos Assessor should perform the risk assessment.</i></p>
Friable ACM	<p>Friable ACM can be crumbled or reduced to a dust by hand pressure when dry and can represent a significant exposure hazard. Examples of friable asbestos are hot water pipe lagging, severely damaged asbestos cement sheet, limpet spray to structural beams and electrical duct heater millboard.</p>

0393

ACM CONDITION RATING

1	Severe	Friable: Readily accessible, deteriorated surface in extremely poor condition
2	Poor	Friable: Unstable material that is relatively accessible Bonded: Readily accessible, deteriorated surface
3	Normal	Friable: Stable asbestos that is relatively inaccessible Bonded: Accessible surfaces in fair condition
4	Good	Bonded: Well sealed stable surfaces in accessible locations

ACM RISK RATING

A	Very High	Friable: Exposure to airborne asbestos as a consequence of extremely minor disturbance
B	High	Friable: Exposure to airborne asbestos occurs as a consequence of significant disturbance Bonded: Exposure to airborne asbestos likely as a consequence of significant disturbance
C	Medium	Friable: Exposure to airborne asbestos unlikely during normal building use Bonded: Exposure to airborne asbestos highly unlikely during normal building use
D	Low	Bonded: No exposure to airborne asbestos during normal building use

4.5 Asbestos Register

The Asbestos Register details the type, location, risk assessment and action required for all identified ACM. The register should be accessed to inform all decisions made concerning control of ACM. Action taken to control ACM must be recorded in this register in order to comply with the *Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018(2005)]*.

Table 3A: Asbestos Register

ACM ¹	Sample No.	Photo No.	ACM type	Locations	Condition Rating	Risk Rating	Approx Quantity	Recommended Management Action	Action Undertaken	Assessor/ Date assessed
Friable Asbestos	2810 – 40 – A1	-	Sheet	Kiln 2 - Top floor, millboard	-	-	40m ²	-	Removed	M. Robson
	2810 – 40 – A2	-	Insulation	Kiln 2 - Top floor, thick insulation to central beam	-	-	15m ²			
Bonded Asbestos	2810 – 40 – A3	1	Gasket	Kiln 2 - Top floor, heat exchange gasket	3	C	<1m ²	Maintain, inspect annually		
	2810 – 40 – A4, 3617 – 103 – A5	2	Rope gasket	FH1 & 2 - Duct flange joints	3	B	<1m ²			
	2810 – 40 – A5	3	Sheet	Former canteen - Ceiling sheet	3	C	20m ²	Repair and maintain		
	2810 – 40 – A7	4		SS3 - Ceiling sheet	2	C	10m ²	Remove		
	2810 – 40 – A8	5		SS4 - Shower wall sheet	3	C	6m ²	Maintain, inspect annually		
	2810 – 40 – A9	6		A4 - Perimeter eave & soffit sheet	3	C	10m ²			
	2810 – 40 – A11	-	Sheet	A3 - Corrugated roof sheet and debris	-	-	15m ²	-	Removed (07.11.10)	-
	2810 – 40 – A11	7	Sheet	Tip area western side - Corrugated roof sheet & debris	2	B	debris	Remove		
	RA M0102	8	Sheet	A4 (room 6 only) - Ceiling sheet (presumed still present however, building was inaccessible)	-	-	4m ²	Requires re-inspection to asses condition		
	2810 – 40 – A13	-	Sheet	Atop kiln 3 - External wall sheet	-	-	6m ²	-	Removed	M. Robson

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ACM ¹	Sample No.	Photo No.	ACM type	Locations	Condition Rating	Risk Rating	Approx Quantity	Recommended Management Action	Action Undertaken	Assessor/ Date assessed
Bonded Asbestos	3617 - 103 - A1	9	Hardened rope	B - Large brake pad to top of old brick making machine	3	C	<1m ²	Maintain, inspect annually		
	3617 - 103 - A2	-	Sheet	Debris to small chimney at entrance	-	-	<1m ²	-	Removed	M. Robson
	3617 - 103 - A4	10	Gasket	B - Front corner, gaskets adjacent downpipe	3	C	<1m ²	Maintain, inspect annually		
	3617 - 103 - A7	11	Sheet	Adjacent FH2 - Sheet debris to soil & scattered throughout site	2	C	10m ²	Remove		
	3617 - 103 - VA1	12	Moulded sheet	M2, M3 and F - Flash guards to distribution board	4	D	<1m ²	Label and maintain	F Flash guard Removed	M. Robson
	RA M0102	13	Sheet	SS4 - Ceiling sheet	3	D	4m ²	Maintain, inspect annually		
	M0099 (b)	14		Adjacent bridge to K2 - Debris to ground	2	C	<1m ²	Remove		
	M0100	15	Millboard	K2 - Top floor, debris to top floor (small amount left post removal)	2	C	<1m ²			
	M0101	16	Sheet	SS1 - Ceiling sheet	2	B	4m ²			
	M0102	17		Between tall chimney & K3 - Debris to ground & scattered throughout site	2	B	<1m ²			
	M0103	18	Moulded sheet	Front of B - Moulded sheet debris to ground & throughout site	2	B	<1m ²			
	RA M0102	19	Sheet	BH & SS2 - Ceiling sheet	2	B	6m ²			
7504 - 23 - VA2	20	Sheet	All switchboard backing sheets throughout site	3	D	4m ²	Maintain, inspect annually			

1. See Section 10 Asbestos management for management options
 2. Other mitigation actions only applicable if building is to remain in use
 3. VA = Visually assessed material
 4. RA = Referred to another sample as being the same material
Refer to Section 2.4 Table 1B for presumed ACM and Section 3.2 for exclusions

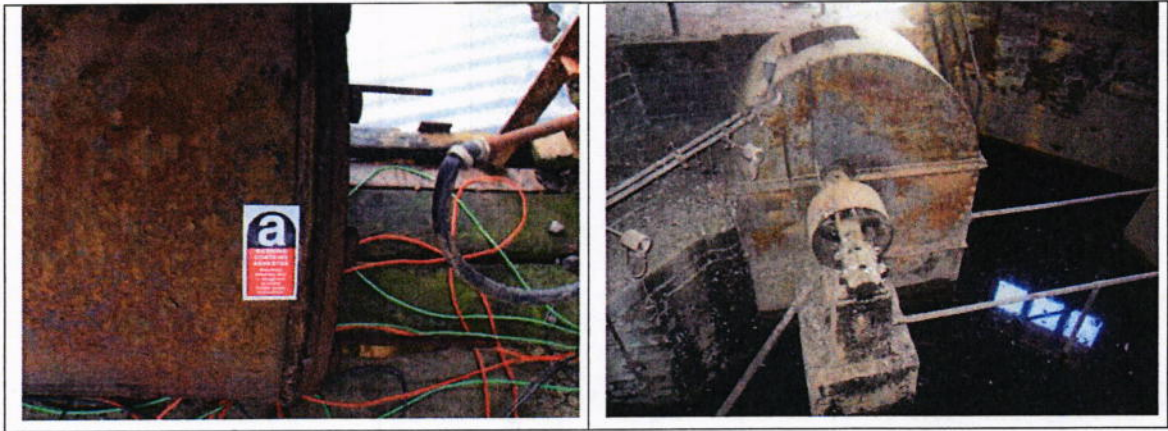
Table 3B: Register of Sampled materials (which have been confirmed as non ACM)

NON ACM SAMPLE REGISTER			
Sample number	Photo No.	Material	Locations
2810 - 40 - A6	-	Covering	1 st level walkway to K2 - Floor covering
3617 - 103 - A3	21	Caulking	BH - Window caulking
3617 - 103 - A6	22	Mastic	M3 - Mastic to original distribution board
M0097	-	Sheet	Adjacent building H - Debris to ground
M0098	23	Sheet	M3 - Switch board backing sheet strip (above switchboard backing sheet)
M0099 (a)	-	Sheet	R2 - Debris to ground

Refer to Section 2.4 - Table 1B for presumed ACM and Section 3.2 for exclusions

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4.6 Photographs of ACM



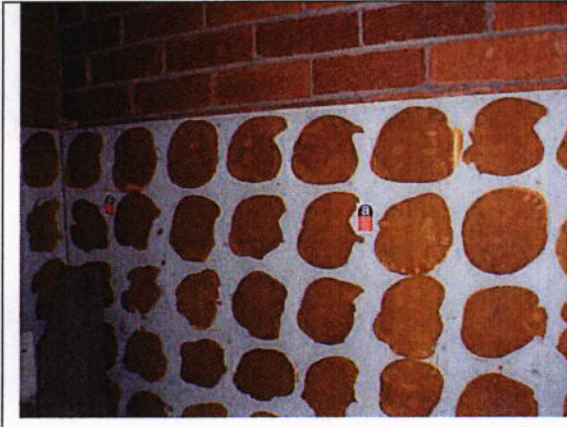
Photograph 1:
Kiln 2 - Top floor, heat exchange gasket
Refer Sample: 2810 – 40 – A3

Photograph 2:
FH1 & 2 - Duct flange joints
*Refer Samples:
2810 – 40 – A4 & 3617 – 103 – A5*



Photograph 3:
Former canteen - Ceiling sheet
Refer Sample: 2810 – 40 – A5

Photograph 4:
SS3 – Ceiling sheet
Refer Sample: 2810 – 40 – A7



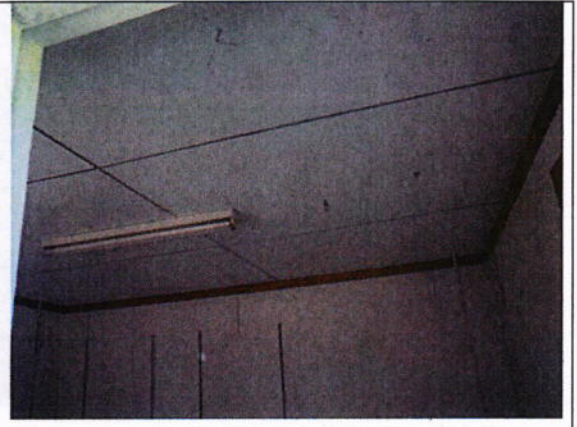
Photograph 5:
SS4 - Shower wall sheet
Refer Sample: 2810 – 40 – A8



Photograph 6:
A4 - Perimeter eave & soffit sheet
Refer Sample: 2810 – 40 – A9



Photograph 7:
Tip area western side –
Corrugated roof sheet & debris
Refer Sample: 2810 – 40 – A11



Photograph 8:
A4 (room 6 only) - Ceiling sheet (presumed
still present however, building was
inaccessible)
Refer Sample: RA M0102



Photograph 9:
B - Large brake pad to top of
old brick making machine
Refer Sample: 3617 - 103 - A1



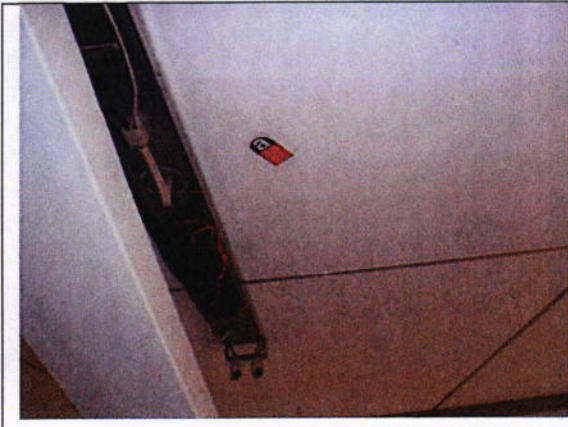
Photograph 10:
B - Front corner, gaskets adjacent
downpipe
Refer Sample: 3617 - 103 - A4



Photograph 11:
Adjacent FH2 - Sheet debris to soil
& scattered throughout site
Refer Sample: 3617 - 103 - A7



Photograph 12:
M2 & M3 - Flash guards to distribution
board *Refer Sample: 3617 - 103 - VA1*



Photograph 13:
SS4 - Ceiling sheet
Refer Sample: RA M0102



Photograph 14:
Adjacent bridge to K2 - Debris to ground
Refer Sample: M0099 (b)



Photograph 15:
K2 - Top floor, debris to top floor
(small amount left post removal)
Refer Sample: M0100



Photograph 16:
SS1 - Ceiling sheet
Refer Sample: M0101

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Photograph 17:
Between tall chimney & K3 –
Debris to ground & scattered throughout site
Sheet
Refer Sample: M0102



Photograph 18:
Front of B - Moulded sheet debris
to ground & throughout site
Refer Sample: M0103

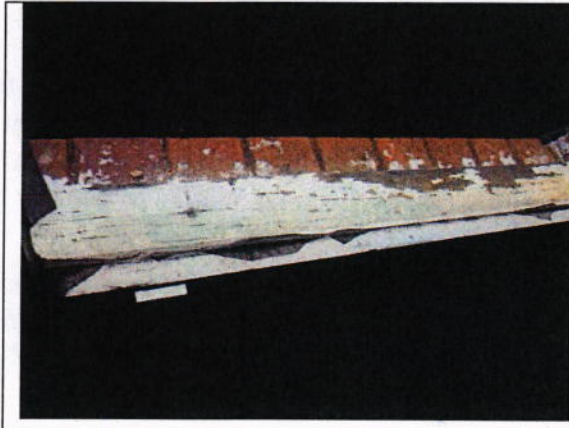


Photograph 19:
BH & SS2 - Ceiling sheet
Refer Sample: RA M0102



Photograph 20:
All switchboard backing sheets throughout
site
Refer Sample: 7504 – 23 - VA12

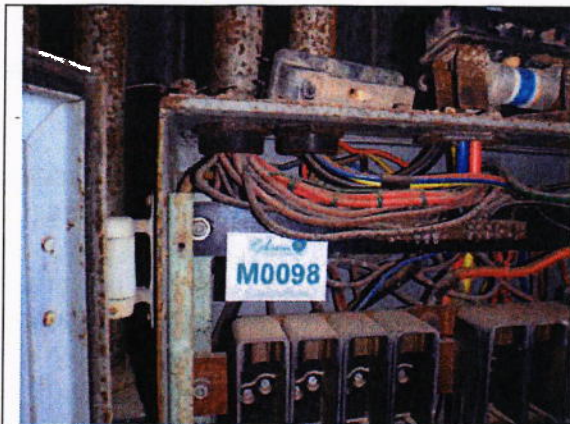
4.7 Photographs of NON ACM



Photograph 21:
BH - Window caulking
Refer Sample: 3617 – 103 – A3



Photograph 22:
M3 - Mastic to original distribution board
Refer Samples: 3617 – 103 – A6



Photograph 23:
M3 - Switch board backing sheet strip
(above switchboard backing sheet)
Refer Sample: M0098

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5 LEAD PAINT SURVEY RESULTS

5.1 Introduction

Lead paint is defined by the Australian Standard (AS 4361.2 – 1998 *Guide to lead paint management Part 2: Residential 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 1.0% by weight of the dry film as determined by laboratory testing.

Further, the Standard for the Uniform Scheduling of Drugs and Poisons (National Drugs and Poisons Schedule Committee July 2000) classifies paints having more than 0.25% lead as First Schedule Paint and prohibits their manufacture, supply or use.

It has been shown that the dust generated from dry sanding or abrasive blast cleaning of paints with a lead concentration of > 0.25% can have sufficient content to produce exposure levels that exceed those that define a 'lead task' in NOHSC 1012.

Therefore, paints with a lead concentration greater than 0.25% (if they are to be removed) must be treated as a lead paint (i.e. subject to the regulations in NOHSC 1012).

5.2 Results

Paint samples were collected from Canberra Brickworks, Yaral and analysed for lead content. Where paints were collected, samples were analysed by Envirolab – NATA accreditation number: 2901.

Table 4 presents lead composition in paints, with results presented as a percentage concentration of lead contained within the sampled materials. Despite the fact that sampling methodologies require that three (3) paint sub-samples be taken for each sampled product, only maximum values are presented below. Due to the inherent heterogeneity of lead concentrations in applied liquids this maximum reading is presented as it represents an upper level of lead concentrations throughout a heterogeneous product and aids in interpretation of risk assessment and management recommendations. For detailed results of analysed paint samples refer to Appendix A.

Table 4: Lead Composition in Paint by Inductively-Coupled Plasma Spectroscopy

Sample No.	Photo No's	Location and Colour of Paint Sample	Colour	Lead in Paint %
3617 - 103 – P1 a,b,c	24	Paint to portable AST to building M3	Yellow	6.4

Notes:

- Lead Paint (> 1.0% Pb)
- First Schedule Paint (> 0.25% Pb)
- Lead-free Paint (\leq 0.25% Pb)

5.3 Photographs of Lead Paint



Photograph 24:
 Portable AST to building M3
 Yellow paint
 Refer Sample: 3617 – 103 – P1

5.4 Discussion and Conclusion

The analytical results of paint sampling from Yarralumla Brickworks, Yarralumla, revealed that there **was lead paint (>1.0% Pb) present**. It should be assumed that all similar paint throughout the building contains comparable percentages of lead.

The lead paint is in a reasonably poor condition and should be repainted or the unit should be disposed of as hazardous waste.

Refer to Appendix C for safe lead paint and AST removal procedures.

6 SYNTHETIC MINERAL FIBRE (SMF) SURVEY RESULTS

6.1 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 and residential 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).

6.2 Sample Assessment

Table 5: Visual Assessment of Samples

Sample Reference	Photo No's	Sample Location	Sample Type	Form
3617 – 103 – S2	25	To underside of roofs throughout	Sisslation	Bonded
3617 – 103 – S3	26	SMF as insulation to pipes throughout	Fibreglass	Bonded
3617 – 103 – S4	27	SMF as insulating batts to various ceiling spaces	Fibreglass	Bonded

6.3 Results

SMF was identified as insulation within ceiling space areas & as pipe lagging to various pipes throughout the premises. It should be presumed that similar materials are present to any inaccessible areas.

- If building works is likely to significantly disturb the insulation the SMF materials should be removed using effective dust control procedures.

Refer to section Appendix C for safe SMF and asbestos handling and removal procedures.

6.4 Photograph of Synthetic Mineral Fibre (SMF)



Photograph 25:
To underside of roofs throughout
Refer Sample: 3617 – 103 – S2



Photograph 26:
SMF as insulation to
Pipes throughout
Refer Sample: 3617 – 103 – S3



Photograph 27:
SMF as insulating batts to
various ceiling spaces
Refer Sample: 3617 – 103 – S4

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7 POLYCHLORINATED BIPHENYLS (PCB) SURVEY RESULTS

7.1 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 as an insulating fluid inside transformers and capacitors. 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, State or Territory Government agency prior to their disposal.

7.2 Results

Representative samples of fluorescent light fittings were inspected for PCB capacitors. Six types of confirmed PCB containing capacitors, two presumed PCB containing capacitor and three different types of non-PCB containing capacitors were identified during the survey.

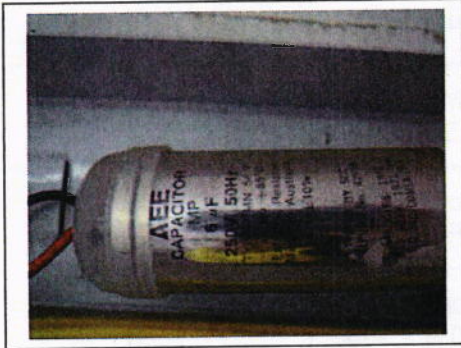
Table 6: PCB and Non-PCB Containing Capacitors Identified During Survey

Result	Photo No's	Location	Make - Type	Capacitance (µF)	Remarks	No. of capacitors
PCB	28	Former canteen ground floor	AEE MP – PMN 5417	6	PCB	5+
	-	Building SS1	Nichicon 1966 - SFSGLP	6	PCB	5+
	29	Building A4 1 Tube	Dawco metal – BS 4017 - 1966	3.25	PCB	1+
	-	Building A4 2 Tubes	Ducon metal – APF 265CR	6.5	PCB	2+
	30	Building R1	Ducon metal APF 260CR	6	PCB	5+
	-	Building R1	Ducon metal – APF 280CR	6	PCB	1+
Non-PCB	-	North end of site	Plessey plastic – 427/1/07503/006	10	No PCBs	20+
	-	Building R2	AEE MP – PMN 5417	10	No PCBs	10+
	33	Former canteen	RIC – LE 1 EB	6.5	No PCBs	2+
Presumed PCB	31	Building SS2	Metal – Unidentifiable due to fire damage	Unsure	Presumed PCB	1+
	32	Building H	Inaccessible	Unsure	Presumed PCB	1+

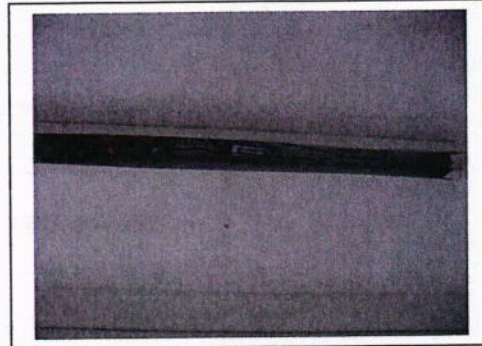
For further PCB management information refer to Appendix C.

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7.3 Photographs of PCB and Presumed PCB Containing Capacitors



Photograph 28:
Former canteen ground floor
AEE MP – PMN 5417



Photograph 29:
Building A4 1 Tube
Dawco metal – BS 4017 - 1966



Photograph 30:
Building R1
Ducon metal APF 260CR



Photograph 31:
Building SS2
Metal – Unidentifiable due to fire damage



Photograph 32:
Building H
Inaccessible

7.4 Photographs of NON PCB Containing Capacitors



Photograph 33:
Former canteen
RIC – LE 1 EB

0090

8 OZONE DEPLETING SUBSTANCES SURVEY RESULTS

The buildings at Canberra Brickworks, Yarralumla were surveyed for the presence of air conditioning and refrigeration units that contain ozone depleting substances.

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).

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.

8.1 Results

Ozone Depleting Substances (ODS) were **not** located during the survey at Yarralumla Brickworks, Yarralumla.

Table 7: Chemical Properties of Ozone & non-Ozone Depleting Substances located during survey

R Number	Photo No's	Location	Chemical type and name	ODP	GWP	EAL
Non-Ozone Depleting Substances						
R410A		To workshop adjacent building F	R410A			

For further refrigerant management information refer to section Appendix C.

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9 FUEL STORAGE FACILITIES & DANGEROUS GOODS RESULTS

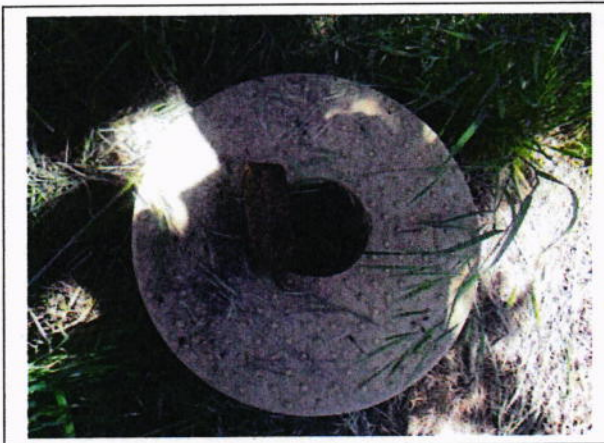
It is important to note that prior to the introduction of natural gas in the ACT in the 1980's, commercial premises generally utilised heating systems where boilers were fuelled by diesel or heating oils which were stored in USTs.

9.1 Results

Evidence of an underground storage tank (UST) was identified during the survey suggesting an underground storage tank is present. A dip point was found, refer to plans for location.

An AST was located and should be disposed of as hazardous waste.

Refer to Section Appendix C for the management of fuel storage facilities in the ACT.



Photograph 34:
Dip point to probable UST



Photograph 35:
Portable AST to building M3

10 ASBESTOS MANAGEMENT

10.1 Control Measures

General requirements

- ACM identified as representing an exposure risk (see [Table 3A Asbestos Register](#)) should be removed or otherwise controlled.
- Any ACM that is not scheduled for immediate removal should be labelled with appropriate warnings and maintained in good condition.
- The location of ACM must be entered into the Asbestos Register.
- Maintenance and other personnel must be made aware of the location of ACM.
- The Asbestos Register must be freely available.
- Unless they have valid ACT Asbestos Removal licence, maintenance workers, trades or occupants shall not remove or knowingly damage identified ACM.
- Before any planned demolition, refurbishment or maintenance, its effect upon any in situ asbestos must be established by reference to this document, including amendments.

Accidental damage to ACM

If ACM is damaged or degraded through accident, ageing or misuse, the building manager should apply the following protocols.

- Determine if the damage is likely to affect nearby occupants through the release of asbestos dust (this may require advice from a licensed Class A Asbestos Assessor).
- Gently wet down the damaged section and cover with a heavy plastic sheet or equivalent to encapsulate the ACM. Close nearby windows if the ACM is to the exterior.
- If the damage is significant (i.e. the material is shattered or abraded) the ACM should be replaced as soon as is practicable. Minor damage (i.e. small cracks or holes) may be repaired in the short term using a sealant.
All repairs or removal must be undertaken by a licensed Asbestos Removalist.
- Register the event in the HMSMP.

10.2 Management of ACM

The options for short to medium-term management of ACM are outlined below.

1. Defer action

✓ Appropriate when	* Not appropriate when	✓ Advantages	* Disadvantages
Negligible risk of exposure and Asbestos inaccessible and fully contained or Asbestos stable and not liable to damage	Possibility of deterioration or damage Airborne dust exceeds recommended exposure standard	No initial cost Cost of removal deferred	Hazard remains Need for continuing assessment Asbestos management program required

2. Encapsulate or seal¹

✓ Appropriate when	* Not appropriate when	✓ Advantages	* Disadvantages
Removal difficult or not feasible Firm bond to substrate Damage unlikely Short life of structure	Asbestos deteriorating Application of sealant may cause damage to material Water damage likely Large areas of damaged asbestos	Quick and economical for repairs to damaged areas May be an adequate technique to control release of asbestos dust	Hazard remains Cost for large areas may be near removal cost Asbestos management system required Eventual removal may be more difficult and costly

1. Seal through application of paint, lacquer or PVA spray

3. Removal

✓ Appropriate when	✗ Not appropriate when	✓ Advantages	✗ Disadvantages
<p>Surface friable or asbestos poorly bonded to substrate</p> <p>Asbestos is severely water-damaged or liable to further damage or deterioration</p> <p>Located in air conditioning duct</p> <p>Airborne asbestos exceeds recommended exposure standard</p> <p>Other control techniques inappropriate</p>	<p>Located on complex and inaccessible surfaces</p> <p>Removal extremely difficult and other techniques offer satisfactory alternative</p>	<p>Hazard removed</p> <p>No further action required</p>	<p>Increases immediate risk of exposure especially to removal workers</p> <p>Creates major disturbance in building</p> <p>Often highest cost, most complex and time-consuming method</p> <p>Removal may increase fire risk in building; substitute required</p> <p>Possible contamination of whole building if removal is done poorly</p>

10.3 Management Decision Record

Option 1: Defer action

Item no.	ACM and Location	Reason	Authorisation	Date

Option 2: Encapsulate or seal

Item no.	ACM and Location	Reason	Authorisation	Date

Option 3: Removal

Item no.	ACM and Location	Reason	Authorisation	Date

10.4 Timetable for Action

The timetable for action should be administered to ensure management has a clear plan for all works which may affect ACM in the workplace. This includes maintenance work, scheduled removal work and risk assessment reviews, which may impact ACM.

Table 8: Timetable for action

ACM removal/ work	Date of scheduled works	Details	Authorisation	Date
Asbestos review/audit	Date of scheduled review	Details	Authorisation	Date

0036

11 RESPONSIBILITIES

11.1 Asbestos - Provision of Information

The building manager must:

- ensure the ACM register and all relevant information pertaining to asbestos in the workplace is freely available upon request
- provide occupants with up-to-date information relating to the condition and relative risk of ACM in the workplace
- provide information on the control measures in place to contain ACM-related risk, and
- provide information to staff and contractors on measures to be taken to ensure that they are not exposed to asbestos in the workplace, either through accident or negligence.

Management Action Record

Record all communication activities undertaken to inform staff/occupants of ACM in the workplace.

Action	Authorisation	Date

11.2 Updating the Risk Assessment

The *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018 (2005)] Section: 9.3.1 requires:

The register of ACM, including any risk assessments, should be reviewed every 12 months or earlier where:

- a risk assessment indicates the need for reassessment; or
- any ACM has been disturbed or moved

A visual inspection of identified ACM should be undertaken as part of any review.

The Dangerous Substances (General) Regulations 2004 requires the review of the Asbestos Survey Management Plan to be carried out, at intervals determined by the criteria set out in Chapter 3, Part 3.4, Section 326 of the Dangerous Substances (General) Regulations 2004; the maximum interval being 5 years. The new requirements state that an Asbestos Management Plan and Risk Assessments are required in addition to an Asbestos Register and Survey. Class A Asbestos Assessors at Robson Environmental Pty Ltd are able to produce these documents to comply with your obligations.

Each review should critically assess all asbestos management procedures and their effectiveness in:

- preventing exposure to asbestos fibres
- controlling access to asbestos
- highlighting the need for action to maintain or remove ACM, and
- maintaining the accuracy of the ASMP.

Details of any mitigating actions must be recorded in the Asbestos Register (Refer Table 3A).

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11.3 Key Personnel

This section outlines the responsibilities of all persons involved in the safe management of ACM.

1. Building manager

Name:	
Contact details:	
Responsibilities:	<i>e.g. provision of information</i>

2. Occupational Health and Safety Representative

Name:	
Contact details:	
Responsibilities:	<i>e.g. keeping occupants informed of any changes to the status of ACM in the workplace</i>

3. Facilities Management (if applicable)

Name:	
Contact details:	
Responsibilities:	<i>e.g. arrange removal and repair works as required; maintaining the HMSMP</i>

4. Other

Name:	
Contact details:	
Responsibilities:	

12 ASBESTOS REMOVAL WORKS

12.1 Management Responsibilities

Where it has been determined that ACM is to be removed, management or the client must ensure that a risk assessment is performed before the removal work commences and that the removalist takes this risk assessment into account. The risk assessment must include the possibility of uncovering previously concealed ACM, and that concealed ACM is subsequently identified by a Class A Asbestos Assessor.

The client should provide a detailed scope of works prepared by a Class A Asbestos Assessor for the removalist, including potential hazards, details on areas, which contain asbestos and arrangements for clearance inspections and airborne fibre monitoring.

NOHSC: 2018(2005) describes the minimum requirements to be observed during any asbestos removal operation.

12.2 Removalist Responsibilities

Before the commencement of removal work, the licensed removal contractor must:

- Provide a site-specific Asbestos Removal Control Plan (ARCP)
- Ensure the removal is adequately supervised and carried out in a safe manner
- Ensure that the equipment used in the project is appropriate for the task
- Ensure all persons carrying out the removal are competent and trained for the type of work being carried out, and
- Demonstrate that they have a health surveillance program in accordance with the requirements of NOHSC: 2002(2005).

12.3 Licensing Requirements

All Asbestos Removalists in the ACT are licensed by the ACT Planning and Land Authority (ACTPLA).

As a minimum the holder of an ACT Asbestos Removal Licence is required to demonstrate practical experience in the industry for at least three years and possess a full and complete understanding of the requirements of:

- *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018 (2005)];
- *Code of Practice for the Safe Removal of Asbestos* [NOHSC: 2002 (2005)];

- Work Health and Safety Act 2011;
- Work Health and Safety Regulations 2011;
- Dangerous Substances Act 2004;
- Dangerous Substances (General) Regulation 2004;

ACTPLA specify requirements for authorising certifiers and builders as well as the respective requirements of ACT WorkSafe and ACT NOWaste for the removal and transport of ACM.

12.4 Approval to Begin Asbestos Removal Works

- All removal methods and procedures are required to be undertaken in accordance with NOHSC: 2002(2005).
- Building management in conjunction with a licensed Class A Asbestos Assessor where required, will inform the asbestos removalist of the 'Scope of Works'.
- The licensed Class A Asbestos Assessor will be required to provide a clearance certificate on satisfactory completion of the works.

12.5 Work in Areas Containing Asbestos – Trades Personnel

- Work must not proceed under any circumstance without first contacting the building manager or authorised person.
- Refer to this HMSMP (including amendments) to determine if asbestos material is likely to be encountered in the general work area. If no asbestos is located in the area of intended work, the area may be entered by all relevant personnel on an unrestricted basis.
- Work in areas where asbestos will or is likely to be disturbed will only be given to persons licensed by ACTPLA and all access and works will be undertaken in accordance with the requirements of NOHSC: 2002(2005).

12.6 Emergency Work in Areas Containing Asbestos

- If emergency access is required contact the building manager.
- If the building manager determines that asbestos is likely to be disturbed, all works must be undertaken in accordance with the requirements of NOHSC: 2002(2005) that is, a licensed Asbestos Removalist must be contracted to undertake any asbestos removal works.
- A licensed Class A Asbestos Assessor will be required to provide a clearance certificate on satisfactory completion of the works.

12.7 Monitoring Arrangements

Control air monitoring should be performed when indicated by a Risk Assessment to ensure the control measures are effective.

All air monitoring must be performed by a competent person accredited by the National Association of Testing Authorities (NATA) to perform air sampling for asbestos. Sampling should be performed in accordance with the *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC: 3003 (2005)].

It is the Asbestos Removalist's responsibility to ensure that the maximum fibre levels throughout asbestos removal and associated works does not equal or exceed the minimum practical detection limit of 0.01 fibres per millilitre of air (F/mL). If the airborne fibre levels are observed at or exceeding those specified below, the licensed Class A Asbestos Assessor will instruct the contractor to take the appropriate control /action as per NOHSC:2002(2005).

Table 9: Control levels and required actions

Control Level (airborne asbestos fibres/mL)	Control/Action
< 0.01	Continue with control measures
≥ 0.01	Review control measures
≥ 0.02	Stop removal work and find the cause

Source: [NOHSC: 2002(2005)]

12.8 Clearance Inspections

Following removal work, a licensed Class A Asbestos Assessor must undertake a clearance inspection before re-occupation of an asbestos work area.

All barriers and warning signs should remain in place until the area has been cleared.

12.9 ACM removal/maintenance record

The Asbestos Register, Section 4.5, Table 3A is to be completed by the building manager after receiving appropriate clearance certification from a licensed Class A Asbestos Assessor.

The 'Work Performed' and 'Asbestos Control Measure' Tables on the following page are required to be completed by the building manager.

1. Work Performed

Company name	Contact details	Date of work + job no.	Scope of work

2. Asbestos Control Measures

Work performed	Air monitoring/ decontamination	Clearance certificate issued	Other

3. Additional Information

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13 SAFE ASBESTOS REMOVAL PROCEDURES

13.1 Friable ACM

The licensed Asbestos Removalist must provide a 'Safe Work Method Statement' (SWMS) and an 'Asbestos Removal Control Plan' (ARCP). An overview of the basic requirements for removal of friable ACM is provided here. Should any removal of friable asbestos be undertaken, specific work practices will be required.

Wet Removal

- i. Obtain approval from the building manager to begin asbestos removal works.
- ii. Inform the building occupants of intended asbestos removal works.
- iii. Relocate all occupants in immediate and adjacent areas affected by the works.
- iv. Rope or barricade the area adjacent to the removal area and place appropriate signage at the perimeter of the area for the removal of friable ACM.
- v. Set up the removal area with appropriate materials (plastic, tape, etc.) and decontamination area to enable effective control of dust generated during removal of the friable asbestos (i.e. negative air units and wet decontamination facilities would be required for this type of removal).
- vi. Protective clothing and a full face Power Air Purifying Respirator (PAPR) with a fitted P3 particulate filter (cartridge) respirator conforming to AS/NZS 1715:2009, a compressor with appropriate filters, airlines and associated equipment must be used during bulk removal of *dry friable* ACM. A particulate filter (P2 cartridge) powered air purifying respirator – (PAPR) conforming to AS/NZS 1715:2009 may be worn during wet removal and at the final clean and vacuuming stage.
- vii. The ACM must be kept moist with a water mist spray during the removal of the material except where an electrical hazard exists.
- viii. Hand tools are preferred over power tools, and high-speed abrasive power tools should not be used. If low-speed power tools are used they should be fitted with local exhaust ventilation dust control. The ARCP must detail the proposed decontamination method when power tools are to be used within the removal area.
- ix. Removed asbestos and other materials are to be packed into plastic bags or containers marked as asbestos waste.
- x. Asbestos products must not be re-used.
- xi. All surfaces within the removal area to be thoroughly vacuumed to remove any asbestos residue.
- xii. All surfaces must be Polyvinyl Acetate (PVA) sprayed to seal any microscopic asbestos fibres or wet-wiped (oil/solvent or water-soaked rag) to remove asbestos fibres.
- xiii. Remove all asbestos containing material and all asbestos contaminated material from site for disposal in the approved manner.

- xiv. Obtain a visual clearance certificate from a licensed Class A Asbestos Assessor.

Note: Air monitoring is required during the removal of friable ACM. The locations and frequency should be determined by a licensed Class A Asbestos Assessor.

13.2 Bonded ACM

The ACT licensed Asbestos Removalist must provide a SWMS and an ARCP. An overview of the basic requirements for removal of bonded ACM is provided here.

- i. Obtain approval from the building manager to begin asbestos removal works.
- ii. Inform the building occupants of intended asbestos removal works.
- iii. Relocate all occupants in immediate and adjacent areas.
- iv. Rope or barricade adjacent to the removal area and place appropriate signage at the perimeter.
- v. Set up the removal and decontamination areas with appropriate materials (plastic, tape, etc.) to enable effective control of dust generated during removal of bonded ACM.
- vi. Using protective clothing and a half face particulate filter (cartridge) respirator conforming to AS/NZS 1715:2009 remove ACM.
- vii. Hand tools are preferred over power tools and high-speed abrasive power tools should not be used. If low-speed power tools are used they should be fitted with local exhaust ventilation dust control. Asbestos cement sheeting should be wetted during removal where safe.
- viii. Removed contaminated materials are to be packed into disposal crates or wrapped in plastic sheeting.
- ix. Asbestos products must not be re-used.
- x. All surfaces within the removal area to be thoroughly vacuumed to remove any asbestos residue.
- xi. All surfaces must be Polyvinyl Acetate (PVA) sprayed to seal any microscopic asbestos fibres or wet-wiped (oil/solvent or water-soaked rag) to remove asbestos fibres.
- xii. Remove all asbestos containing material and all asbestos contaminated material from site for disposal in the approved manner.
- xiii. Obtain a visual Clearance from a licensed Class A Asbestos Assessor.

Note: Air monitoring may be required during the removal of bonded ACM. The need frequency and location should be determined by a licensed Class A Asbestos Assessor.

14 FURTHER INFORMATION

14.1 Further Reading

Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)].

Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC: 2002(2005)].

Asbestos Legislation Amendment Act 2006 (A2006-16), ACT Parliamentary Counsel.

Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003(2005)].

Dangerous Substances Act 2004 (A2004-7), Republication No 20, November 2006, ACT Parliamentary Counsel.

Dangerous Substances (General) Regulations 2004 (SL2004-9), Republication No 13, April 2010, ACT Parliamentary Counsel.

Environment Protection Act 1997 (A1997-92), Republication No 15, January 2006, ACT Parliamentary counsel.

Work Health and Safety Act 2011

14.2 Related Websites

Legislation www.legislation.act.gov.au

Safe Work Australia Council www.safeworkaustralia.gov.au (for Codes of Practice)

ACT NOWaste www.nowaste.act.gov.au

WorkSafe ACT www.worksafe.act.gov.au

Commonwealth Government website on asbestos-related diseases
[www.healthinsite.gov.au/topics/Asbestos and Cancer](http://www.healthinsite.gov.au/topics/Asbestos_and_Cancer)

14.3 Useful Contacts

Additional information on asbestos can be obtained from the following organisations and agencies.

**ACT Planning & Land Authority
(ACTPLA)**

Ground floor north
Dame Pattie Menzies House
16 Challis Street
Dickson ACT 2602
Phone: 02 6207 6309
Internet: www.actpla.act.gov.au

ACT Government

Phone: 13 22 81
Internet: www.asbestos.act.gov.au

ACT WorkSafe

255 Canberra Ave
Fyshwick
ACT 2609
Phone: 02 6205 0200
Email: worksafe@act.gov.au
Internet: www.worksafe.act.gov.au

**Australian Safety and Compensation
Council (formerly NOHSC) and now
Safe Work Australia**

64 Northbourne Ave
Canberra City ACT 2601
Phone: 02 6121 6000
Email: info@ascc.gov.au
Internet: www.safeworkaustralia.gov.au

**National Association of Testing
Authorities (NATA)**

PO Box 7507
Silverwater NSW 2128
Phone 02 9736 8222
Email: corpcomm@nata.asn.au
Internet: www.nata.asn.au

Robson Environmental Pty Ltd

Unit 1, 140 Gladstone St
Fyshwick ACT 2609
Phone: 02 6239 5656
Email: admin@robsonenviro.com.au

Standards Australia

286 Sussex Street
Sydney, NSW, 2000
Phone: 02 8206 6000
Email: sales@sai-global.com
Internet: www.saiglobal.com

15 APPENDICES

15.1 APPENDIX A – Laboratory Reports

Asbestos



EnviroLab Services Pty Ltd
 ABN 37 112 535 645
 12 Ashley St Chatswood NSW 2067
 ph 02 9910 6200 fax 02 9910 6201
 enquiries@envirolabservices.com.au
 www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 47547

Client:
 Robson Environmental Pty Ltd
 PO Box 112
 Fyshwick
 ACT 2600

Attention: Michael Robson / Ged Keane

Sample log in details:

Your Reference:	3617-103, Yarralumla
No. of samples:	7 Materials
Date samples received:	28/10/10
Date completed instructions received:	28/10/10

Analysis Details:

Please refer to the following pages for results and methodology summary.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.
 Note, even after disintegration it can be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and dispersion staining. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Report Details:

Date results requested by:	4/11/10
Date of Preliminary Report:	Not Issued
Issue Date:	2/11/10

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 This document is issued in accordance with NATA's accreditation requirements.
 Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Asbestos was analysed by Approved Identifier:	Matt Mansfield
Asbestos was authorised by Approved Signatory:	Matt Mansfield

M. Mansfield
 Matt Mansfield
 Approved Signatory



EnviroLab Reference: **47547**
 Revision No: **R 00**

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0079

Client Reference: 3617-103, Yarralumla

Envirolab Ref:	Sample ID:	Date analysed	Sample Description	Asbestos ID in materials
47547-1	3617-103-A1	1/11/2010	4x2.5x1mm Fibrous gasket	Chrysotile asbestos detected
47547-2	3617-103-A2	1/11/2010	42x14x7mm Fibre cement fragment	Chrysotile asbestos detected
47547-3	3617-103-A3	1/11/2010	18x3x2.5mm Compressed mastic	No asbestos detected
47547-4	3617-103-A4	1/11/2010	16x4x1.5mm Fibrous gasket	Chrysotile asbestos detected
47547-5	3617-103-A5	1/11/2010	4x3x1mm Fibrous insulation	Chrysotile asbestos detected
47547-6	3617-103-A6	1/11/2010	10x4x3mm Compressed mastic	No asbestos detected
47547-7	3617-103-A7	1/11/2010	21x14x4mm Fibre cement fragment	Chrysotile asbestos detected Amosite asbestos detected

Envirolab Reference: 47547
Revision No: R 00



Page 2 of 3

Client Reference: 3617-183, Yarralumla

Method ID	Methodology Summary
AS4564-2004	Asbestos ID - Qualitative identification of asbestos type fibres in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques.

Envirolab Reference: 47547
Revision No: R 00

Page 3 of 3

Fibre Identification Certificate of Analysis

Report Number: 7504-23 Date of Report: 28.02.2012 Samples Taken by: Robson Environmental Page 1 of 2

Client Details	Laboratory Details
Client: ACT Property Group	Address: 140 Gladstone Street, Fyshwick, Canberra 2609
Attention: Peter Ozols	Manager: Ian Welsh
Received: 27/02/2012	Telephone: 02 6239 5656
Client Reference: Canberra Brickworks	Fax: 02 6239 5669
Email/Tel.No:	Email: fibroid@robsonenviro.com
Test Specification(s) Employed: AS4964 (2004) & In-House Procedure No.2	

Methodology Summary

Samples of material are examined to determine the presence of asbestos fibres using AS4964 (2004) & In-House Procedure No.2 i.e. Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by Polarised Light Microscopy (PLM) in conjunction with Dispersion Staining (DS). Unequivocal identification of asbestos minerals present is made by assessing fibre properties to see whether the values are typical and consistent with published data. This provides a reasonable degree of certainty to determine whether a fibre under investigation is asbestos or not. Careful application of the test procedure provides sufficient diagnostic clues to allow unequivocal identification of asbestos types, and so, to determine whether a sample contains asbestos or not. If sufficient diagnostic clues are absent, then positive identification of fibrous asbestos is not possible.


Client Supplied Samples

Robson Environmental is not responsible for the accuracy or competence of sampling carried by third parties. Sample location(s) and/or sample type(s) of third party samples delivered to the laboratory are given by the client at the time of delivery. Under these circumstances, Robson Environmental cannot be held responsible for the interpretation of the results shown. When the test certificate indicates that bulk samples were taken by the client, they are outside the scope of our NATA Accreditation for sampling. Robson Environmental takes responsibility of information reported only when a staff member takes the sample(s).

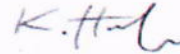
Reporting of Results

'Asbestos Detected': Asbestos detected by Polarised Light Microscopy (PLM), including Dispersion Staining (DS)
 'No Asbestos Detected': No Asbestos detected by Polarised Light Microscopy (PLM), including Dispersion Staining (DS)
 'UMF Detected': Mineral fibres of unknown type detected by Polarised Light Microscopy (PLM), including Dispersion Staining (DS). Confirmation by another independent analytical technique may be necessary.
 "Hand-picked" refers to small discrete amounts of asbestos unevenly distributed in a large body of non-asbestos material.
Limit of Detection & Reporting Limit
 Known limitations of the test procedure using Polarised Light Microscopy (PLM) are:
 • PLM is a qualitative technique only;
 • It does not cover identification of airborne or water-borne asbestos;
 • The less encountered asbestos mineral fibres actinolite, anthophyllite and tremolite exhibit a wide range of optical properties that preclude unequivocal identification by PLM and Dispersion Staining (DS). Thus, the method is used to positively identify the three major asbestos minerals: amosite ("brown"), chrysotile ("white") and crocidolite ("blue");
 • Valid identification requires that the sample material contains a sufficient quantity of the unknown fibres in excess of the practical detection limit used (in this case, PLM and Dispersion Staining, which has a calculated practical detection limit of 0.01-0.1% equivalent to 0.1-1g/kg (AS4964-2004:App.A4).
 Results relate only to the sample(s) submitted for testing.
 Test report must not be reproduced except in full.
 Test report issued in accordance with NATA's accreditation requirements and compliance with ISO/IEC 17025.

Sample No.	Client Ref.	Location	Physical Structure	Sample Description	Analysis of Fibrous Content
M0097	-	Opposite canteen - debris	Sheet material	<1g	No Asbestos Detected
M0098	-	K3 - switchboard backing	Tar board	<1g	No Asbestos Detected
M0099a	-	Small shed - debris	Fibrous sheet material (pink)	20g	No Asbestos Detected
M0099b	-	Small shed - debris	Fibrous sheet material	30g	Chrysotile Asbestos
M0100	-	K2 - top floor debris	Fibrous sheet material	8g	Chrysotile Asbestos
M0101	-	Shed - ceiling sheet	Fibrous sheet material	3g	Chrysotile Asbestos



Kyle Hulme
Approved Identifier

Kyle Hulme
Approved Signatory

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Fibre Identification Certificate of Analysis					
Laboratory Report Number: 7504-23		Analyst: Kyle Hulme		Page 2 of 2	
M0102	-	Between chimney & K3 Debris	Cement sheet material	9g	Crocidolite Asbestos Amosite Asbestos Chrysotile Asbestos
M0103	-	Front of main building Debris	Cement sheet material	>15g	Crocidolite Asbestos Amosite Asbestos Chrysotile Asbestos

K. Hulme

Kyle Hulme
Approved Identifier



K. Hulme

Kyle Hulme
Approved Signatory

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7504-23_Fibre ID res_20120128

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Lead Paint



EnviroLab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 47544

Client:
Robson Environmental Pty Ltd
PO Box 112
Fyshwick
ACT 2609

Attention: Michael Robson

Sample log in details:

Your Reference:	3617-103, Yarralumla Brick Works
No. of samples:	3 Paint Samples
Date samples received:	28/10/10
Date completed instructions received:	28/10/10

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	4/11/10
Date of Preliminary Report:	Not issued
Issue Date:	3/11/10

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Alison Morgan
Alison Morgan
Reporting Supervisor

EnviroLab Reference: 47544
Revision No: R 00



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Client Reference: 3617-103, Yarralumla Brick Works

Lead in Paint Our Reference: Your Reference Type of sample	UNITS	47544-1 3617-103-P1a Paint	47544-2 3617-103-P1b Paint	47544-3 3617-103-P1c Paint
Lead in paint	%wt/w	5.5	6.4	3.9

Envirolab Reference: 47544
Revision No: R 00



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Client Reference: 3617-103, Yarralumla Brick Works

Method ID	Methodology Summary
Metals 4	Digestion of Paint chips for Metals determination by ICP-AES/MS.

Envirolab Reference: 47544
Revision No: R 00



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Client Reference: 3617-103, Yarralumla Brick Works

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Lead in Paint						Base Duplicate 1 %RPD		
Lead in paint	%w/w	0.05	Melbis.4	-0.05	47544-1	5.5 5.7 RPD: 4	LCS-1	98%

EnviroLab Reference: 47544
Revision No: R 00



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Client Reference: 3617-183, Yarrakulla Brick Works

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job
Asbestos counting was analysed by Approved Counter:	@ERROR
Asbestos counting was authorised by Approved Signatory:	@ERROR

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
< Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

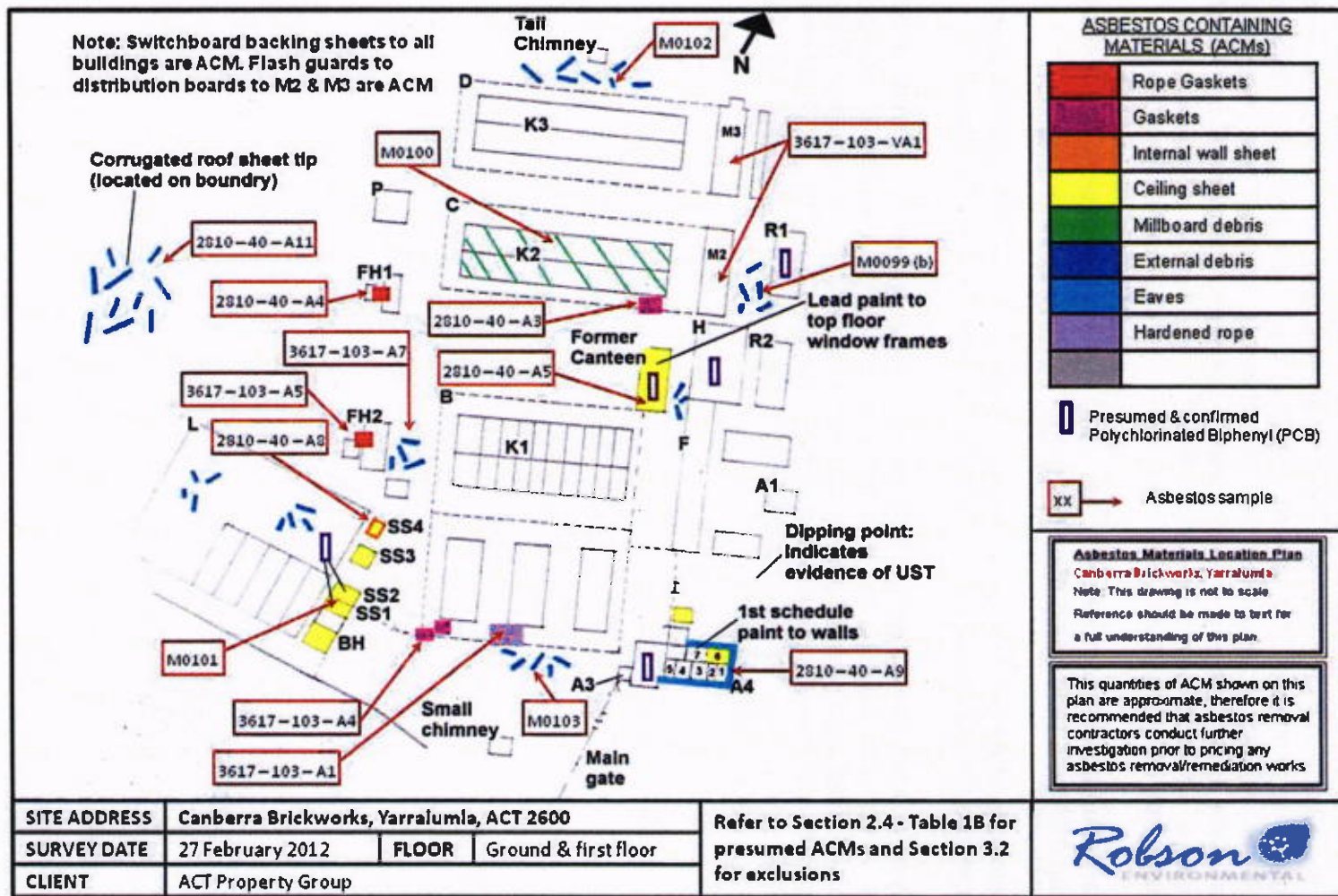
Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
 Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

EnviroLab Reference: 47544
 Revision No: R 00



15.2 APPENDIX B – Plans



15.3 APPENDIX C – Hazardous Material Management Information

ASBESTOS

Some 3000 products have been manufactured using asbestos, of which cement sheeting, pipe insulation, textiles, gaskets, vinyl floor tiles and fire door cores are the most commonly encountered. The mineral asbestos (i.e. Crocidolite, Chrysotile and Amosite and other forms) is classified by the National Occupational Health and Safety Commission as a Category 1 carcinogen. If respirable asbestos fibres are inhaled they may cause an inflammatory response, which in turn may lead to asbestosis (scarring of the lung), mesothelioma (cancer of the pleura or peritoneum) or lung cancer.

It is illegal under Commonwealth, State and Territory legislation to manufacture asbestos building materials or to reuse asbestos products.

Asbestos sheeting or 'fibro' is bonded into a stable matrix and as such does not present an exposure hazard unless it is cut, abraded, sanded or otherwise disturbed.

Any type of work on or removal of sheeting has the potential to release asbestos fibres, which in turn can be inhaled. It is therefore critical to maintain the integrity of these materials. If damage is inevitable through physical impact, the asbestos material must be removed or otherwise encapsulated with reference to the *Code of Practice for the Safe Removal of Asbestos* [NOHSC:2002(2005)] and ACT WorkSafe and ACT Planning and Land Authority requirements.

LEAD PAINT

Introduction

Lead 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 content in paint, levels of below 1 percent are still permitted and industrial application of high-lead paint to residential/commercial dwellings may still continue.

Lead-base paint may be a health issue if it becomes mobile in the environment or if ingested. For this reason sealing or safe removal of paint is strongly recommended particularly where it is flaking or exposed to the elements.

Assessment Criteria

Lead paint is defined by the Australian Standard (AS 4361.2 – 1998 *Guide to lead paint management Part 2: Residential 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 1.0% by weight of the dry film as determined by laboratory testing.

Further, the Standard for the Uniform Scheduling of Drugs and Poisons (National Drugs and Poisons Schedule Committee July 2000) classifies paints having more than 0.25% lead as First Schedule Paint and prohibits their manufacture, supply or use.

It has been shown that the dust generated from dry sanding or abrasive blast cleaning of paints with a lead concentration of 0.25% can have sufficient content to produce exposure levels that exceed those that define a 'lead task' in NOHSC 1012.

Therefore paints with a lead concentration greater than 0.25% (if they are to be removed) must be treated as a lead paint (i.e. subject to the regulations in NOHSC 1012).

Lead Paint Management and Recommendations

The following information uses Australian Standard (AS 4361.2 – 1998) as the primary reference. Lead paint and first schedule paints in residential and commercial premises may be managed in one of four ways:

- Leave undisturbed;
- Stabilised (i.e. over painting or encapsulation);
- Abated (i.e. removed); or
- A combination of the three management options may be required.

Should removal be chosen, a high degree of skill, preparation and risk minimisation is required to avoid lead exposure, as dry sanding of lead levels as low as 0.25% can generate high lead dust. Therefore the Wet Scraping and Wet Sanding methods are amongst the safest methods available.

Strict adherence to the guidelines described in AS 4361.2 – 1998 will best ensure minimisation of risk. During this process personal protective equipment and waste containment equipment is essential and children, pregnant women and persons not directly engaged in the process should not be present. General workers may undertake this process providing they adhere strictly to the guidelines, however, a specialist lead paint removal contractor is recommended for extensive paint removal works.

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> These contractors should however be assessed by current performance prior to engagement.

Lead Paint Removal and Containment

- Avoid dry sanding or any actions which create dust;
- Place ground sheets around the work area ensuring all paint debris are contained. Remove accumulated debris frequently to prevent its spread into surrounding areas using a vacuum cleaner fitted with a HEPA filter;
- Minimise the spread of debris, dust and fumes by avoiding dust-generating activities during windy conditions. Seal all windows and heating/cooling system duct registers to prevent dust or fumes from contaminating adjacent areas. Use negative air pressure for interior work;
- Use personal respirators according to AS/NZS 1715 [2009];
- Use disposable clothing; and
- Wipe down all surfaces using a wet cloth and dispose of all clothing, equipment and plastic used during paint removal as Hazardous Waste.

Responsibilities of Owners and Contractors

According to AS 4361.2 – 1998 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.

Contractors should:

- 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.

SYNTHETIC MINERAL FIBRE

SMF refers to man-made mineral fibrous materials commonly used for their insulating and reinforcing properties. The amorphous (non-crystalline) materials include glass fibre, mineral wool and ceramic fibre products.

Discussion

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, providing SMF fibre suppression measures as defined below are employed, exposure standards for SMF fibre would not normally be exceeded.

The following Risk Assessment is based on the requirements of the document:

- Worksafe Australia, Worksafe Australia, Sydney 1990, *Synthetic Mineral Fibres: National Standard and National Code of Practice*.

SMF Risk Assessment

According to Worksafe Australia 1990 (p 9) health risks associated with SMF are "significantly less potent ... than white asbestos (Chrysotile) fibres" and that "...the possibility of lung cancer is eliminated at an exposure standard (time weighted average) of 0.5 respirable fibres per millilitre of air for all types of synthetic mineral fibres...." (p V).

To reduce the possibility of skin, eye and upper respiratory tract irritation a maximum exposure standard of 2 milligrams per cubic metre of inspirable dust is recommended. These two standards are designed principally for the manufacture and end user industries in which significant dust clouds would be generated.

The same document also states: "The overall conclusion based on available animal experiments and epidemiology is that provided work is carried out in accordance with (NOHSC 1990), and compliance is maintained with the exposure standards, then there is a negligible health risk associated with exposure to SMF under present-day manufacturing and usage patterns."

Recommendations

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;

- 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.

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PCBs

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 chlorine content of the PCB.

Discussion

The major use of PCBs in the electrical industry has been 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 fluorescent light fittings during the 1950's, 60's and 70's.

Risk Assessment

Small quantities of PCBs are usually found in sealed containers known as capacitors. PCB-containing capacitors are unlikely to pose a health risk, unless they become damaged and leak.

PCBs can enter the body in three ways:

- absorption through the skin
- inhalation of PCB vapour
- ingestion, e.g. by contamination of food or drink

The most commonly observed symptom in people exposed to high levels of PCBs is a condition known as chloracne. This is a severe, persistent acne-like rash due to repeated and prolonged contact of PCBs with skin. This condition has also occurred in people who have accidentally ingested PCBs orally.

Very high exposure to PCBs may also cause liver damage and damage to the nervous system.

There is the possibility that PCBs may cause cancers.

The likelihood of becoming sick from PCB exposure increases with the length of time and the amount of material that a person might come in contact with.

Recommendations

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
- 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

Disposal

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 WorkSafe ACT and Environment Protection and Heritage.

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.

OZONE DEPLETING SUBSTANCES

Introduction

Ozone depleting substances (ODS) are compounds that contribute to stratospheric ozone depletion. They are widely used in refrigerators, air-conditioners, fire extinguishers, in dry cleaning, as solvents for cleaning, electronic equipment and as agricultural fumigants.

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.

Ozone Protection Strategy

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.

Best Management Practices

In Australia a 'Code of Good Practice' has been drawn up with the objective of assisting the reduction of emissions into the atmosphere of substances that deplete the ozone layer and contribute to global warming.

The Australian Refrigeration and Air-conditioning Code of Good Practice (HB 40.1 – 2001) recommends best practice for the maintenance, design, servicing, labelling and manufacture of refrigeration and air conditioning systems towards this objective.

Legislation

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.

General Maintenance

- 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.

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.

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.

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.

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.

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.

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.

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

Health Effects

In addition to causing environmental degradation certain ozone depleting substances may present a risk to human health when they are improperly handled or released in to a poorly ventilated area.

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.

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.

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.

FUEL STORAGE FACILITIES

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*.

Heating oil and other petroleum products are classified as a Dangerous Substance under the ACT Dangerous Substances Act 2004.

The Dangerous Substances (General) Regulation 2004 – Division 2.4.2-233 *Decommissioning* (applies to a container used to store a dangerous substance) states the following:

'The container is thoroughly cleaned so that the container is in the condition it would be in if it had never contained the substance';

This would be difficult to achieve therefore it is advantageous to remove the tank.

In the ACT, Environment Protection and Heritage prefers underground fuel storage tanks be removed once they are no longer in use, unless there are extenuating circumstances i.e. their removal undermines permanent infrastructure. This is also emphasized in the Code of Practice for *The Removal and Disposal of Underground Petroleum Storage Tanks* (Australian Institute of Petroleum CP22 –1994).

Further, the ACT Environment Protection Authority (Environment Protection and Heritage) which administers the Environment Protection Act 1997 which contains contaminated land provisions responsible for the development of policy and guidelines to facilitate best practice when it comes to the management of contaminated land.

Environment Protection and Heritage deems all sites known to have had fuel storage facilities as potentially contaminated until investigated and assessed and shown to be free of contamination.

Based on this information and for the long-term management of the sites with fuel storage tanks, Robson Environmental Pty Ltd recommends that the USTs be removed in accordance with the requirements of ACT WorkSafe and Environment Protection and Heritage.

Removal of the UST does require approvals from relevant ACT Government agencies which include:

- ACT Planning and Land Authority (ACTPLA)
- ACT WorkSafe - Dangerous Goods Unit.

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16 GLOSSARY

ACM	<i>See asbestos containing material</i>
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. <i>Note: Air monitoring should be undertaken in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003 (2005)]</i>
Airborne asbestos fibres ²	Any fibres of asbestos small enough to be made airborne. For the purposes of monitoring airborne asbestos fibres, only respirable asbestos fibres (those less than 3µm wide, more than 5µm long and with a length to width ratio of more than 3 to 1) are counted.
Amosite	Grey or brown asbestos
AR	<i>See Asbestos Register</i>
Asbestos Containing Material	Any material, object, product or debris that contains asbestos.
Asbestos Register	Inventory of ACM by type, form, location, risk and required action.
Asbestos Removalist ²	A competent person who performs asbestos removal work. <i>Note: an asbestos removal licence is required in all State and Territory jurisdictions for friable ACM.</i>
Asbestos Survey and Management Plan	Document covering the identification, risk evaluation, control and management of identified asbestos hazards, developed in accordance with NOHSC: 2018(2005).
Asbestos ²	The fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite or any mixture containing one or more of the mineral silicates belonging to the serpentine and amphibole groups.
Asbestos-cement (AC) ²	Products consisting of sand aggregate and cement reinforced with asbestos fibres (e.g. asbestos cement pipes and flat or corrugated asbestos cement sheets).
ASCC	<i>See Safe Work Australia Council</i>
Bonded asbestos	ACM that is bonded into a stable matrix and cannot be reduced to a dust by hand pressure.
Chrysotile	White asbestos
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.
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.
Crocidolite	Blue asbestos
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.
HMSMP	<i>See hazardous material survey and management plan</i>
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 identification and assessment of asbestos and provide recommendations on its safe management.
Licensed Class B Asbestos Assessor	Person who is qualified to undertake the identification of asbestos.
Membrane	A flexible or semi-flexible material, which functions as the waterproofing component in a roofing or waterproofing assembly.
NATA	National Association of Testing Authorities (NATA)
NOHSC (<i>now SWA</i>)	National Occupational Health and Safety Commission (<i>now known as Safe Work Australia</i>)
Safe Work Australia Council (SWAC)	A council that provides a national forum for State and Territory governments, employers and employees to consult and participate in the development of policies relating to OHS and workers' compensation matters, and promote national consistency in the OHS and workers' compensation regulatory framework.
SWMS	Safe Work Method Statement
UST	Underground Storage Tank (fuel)

1. Definition sourced from: NOHSC: 2018(2005).
 2. Definition sourced from: NOHSC: 2002(2005).

17 REFERENCES

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