



DOWN TO EARTH DEMOLITIONS

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ASBESTOS AUDIT REPORT AND REGISTER



**ADDRESS: Cairns Square, cnr Shields and Abbott Streets
Cairns**

REPORT DATE: 15th December 2011

Audit Completed By: Rohan Murphy

License No: 1860386

NO ASBESTOS FOUND

REFER PAGES 3 & 4

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CONTENTS

1. PROPERTY DETAILS

- ✓ Property Type
- ✓ Specific Details
- ✓ Authority
- ✓ Date of Inspection
- ✓ Inspection Process

2. RECOMMENDATIONS

3. SPECIFIC ISSUES

- ✓ Areas not accessed
- ✓ Samples taken
- ✓ Test Method
- ✓ Type of Asbestos
- ✓ Administration

4. LABORATORY SAMPLE RESULTS

5. ASBESTOS REGISTER

6. ASBESTOS MANAGEMENT PLAN

7. PERMIT TO WORK

8. EXPLANATIONS

- ✓ General Condition Definitions
- ✓ Priority Ratings

9. INTRODUCTION TO ASBESTOS

- ✓ Preface
- ✓ Hierarchy of controls
- ✓ Responsibilities
- ✓ Management plan

10. BACKGROUND AND BUILDING HISTORY

11. GENERAL INFORMATION ON ASBESTOS

- ✓ What is Asbestos?
- ✓ Asbestos related diseases
- ✓ Asbestos risks

12. DEFINITIONS

13. LEGISLATION REFERENCES

APPENDIX A TYPES OF ACM

APPENDIX B. ASBESTOS USE, PRODUCTION AND SURVEILLANCE IN AUSTRALIA



1. PROPERTY DETAILS

Property Type : Commercial Retail

Client Name : Juniper Property Holdings

Address of Inspection : Cnr Shields and Abbott Streets , Cairns.

Buildings : One multi storey commercial building

Authority : This Asbestos Audit, Register and Report was requested by Kerrie Pickering from CBRE as a representative of the owner.

Date of Inspection: 15th November 2011

INSPECTION PROCESS :

This Asbestos Audit Report and Register has been prepared in accordance with the (NOHSC: 2018(2005)) National Health and Safety Commission – Code of Practice for the Management and Control of Asbestos in Workplaces. This Audit meets the requirements of the current Workplace Health and Safety Acts and Legislation in all Australian States, Territories..

To determine the existence of ACM on this site, the inspection process includes a non destructive investigation to identify Asbestos Containing Material by qualified, inspectors of site plans and drawings of building services where available, and consultation with the building owner / manager where available.

The Report outlines the areas inspected and that **ACM was not positively identified**. If renovation work is planned, personnel should be cautious and test when this takes place if any material is suspected of containing Asbestos and was not sampled during this audit. The inspection has been under taken in a non-destructive manner, and as such, there may be areas where ACM exists which have not been detected. Examples of such areas are obscured roof areas, under floors/slabs and floor coverings, wall cavities, within plant, hidden pipe work, encapsulated areas and other areas that would require penetrating walls for access.

Areas that were not accessed during the inspection must be considered in the event of future refurbishment or demolition work. It should be noted that a non-destructive inspection cannot be regarded as absolute, and all due care and caution must be exercised in the planning stages of any future building or demolition work.

It is not feasible to sample all materials suspected of containing asbestos. Where a sample been positively identified by laboratory analysis as containing asbestos, other similar materials are assumed to contain asbestos. Sampling and laboratory analysis of such materials that have been assumed to contain asbestos, should be undertaken prior to maintenance, refurbishment or demolition work if this assumption adds significant costs to such planned works.



In the specific case of laboratory analysis of vinyl floor and wall tiles, and vinyl floor sheeting, the analytical technique employed (Polarized Light Microscopy) should not be regarded as absolute.

This is due to the nature of the sample matrix. Therefore, where such samples are reported, as “no asbestos detected “, an independent analytical technique, such as Scanning Electron Microscopy, should be employed for an absolute result. As the asbestos content in vinyl materials is minimal and securely bound within the vinyl matrix, Scanning Electron Microscopy has not been utilized for the identification of asbestos in these materials, as this is a very costly procedure.

The inspection of the building was limited to the areas outlined in this report. Various areas of the building were not accessible at the time of the audit. Areas including wall cavities and underground services were not able to be inspected.

To the extent permitted by law, Down To Earth Demolition will not be responsible in tort, contract or otherwise for any loss or damage, including for any personal injuries or death, or any consequential loss, loss of markets and pure economic loss, suffered by the Customer, whether or not the loss or damage occurs in the course of performance by Down To Earth Demolition of this contract or in events which are in the contemplation of Down To Earth Demolition and/or the Customer or in events which are foreseeable by Down To Earth Demolition and/or the Customer

2. RECOMMENDATIONS

Site Specific:

1. No Asbestos was located during this audit. Continue with regular monitoring. Ensure the contractors are aware of the buildings possible ACM risk due to construction age during any future renovations.
2. Although no suspected Asbestos was located, the construction of the building was at a time when Asbestos was used in various products. Any Material that has not been sampled in this audit and appears suspect to any contractors or maintenance personnel, may need to be sampled to eliminate the risk before any renovation works take place in that area.
3. Site owners need to be aware that possibly Asbestos containing pipe work may have been used to carrying underground services. Test and follow the control plan if any excavations on site exposed ACM pipes.

Asbestos Generally:

4. Asbestos cement materials should not be purposely cut, sanded or broken as this will result in the possible release of asbestos fibres into the atmosphere and a risk of exposure. Avoid damage and abrasion of any ACM at all times.



5. Asbestos cement materials must not be reused or resold for any purpose once they are removed. Products must be sealed up and disposed of in a way that meets WPHS regulations.
6. Asbestos cement materials must not be cleaned by scrubbing or with high-pressure water cleaners. This may result in the risk of exposure to fibers.
7. All Cement sheeting in this building should be treated as Asbestos unless tested and proved otherwise.

The Asbestos Material Audit Report and Register must be updated to indicate any works undertaken on ACM (Asbestos Cement Material) in the space provided on the attached inspection register results. Monitor the condition of any ACM and report it to a licenced Asbestos removal company as soon as you are aware of it deteriorating for further advice.

3 SPECIFIC ISSUES

No Issues were encountered with this Audit

AREAS NOT ACCESSED

Underslab
Services underground
Under current floor coverings
Inside Plant and Air-conditioning equipment

RE AUDIT DUE: 15th December 2012

SAMPLES TAKEN

No samples were taken in this audit and only several visual inspections.

TEST METHOD: (When Required)

A Qualitative identification of Asbestos types in bulk samples in a NATA accredited Laboratory by polarized light microscopy, including dispersion staining techniques.

TYPE OF ASBESTOS:

No Asbestos was detected during this audit.

ADMINISTRATION

This Asbestos Audit Report and Register should be administered by a Nominated Officer to ensure that maintenance and or contractors are able to reference the Asbestos Audit prior to any work being undertaken on the site. Where the work involves working in close proximity to, or the disturbance / removal of Asbestos Containing Material (ACM), the Nominated Officer



should issue an access permit. Where the removal / disposal of ACM is necessary, the Nominated Officer should also update the Asbestos Audit Report and Register with asbestos removal / disposal details.

Work involving the disturbance / removal of ACM must be carried out in strict accordance with current Legislative requirements and Advisory Standards. If Material given a 'High Risk' rating this area should be programmed for immediate attention, removal or 'making safe' as soon as is practicable. Advice regarding work of this nature can be obtained by contacting DOWN TO EARTH DEMOLITIONS. All other material in a stable condition should be monitored and / or scheduled for future planned removals.

NOTE: Under no circumstances should asbestos material in a friable (see definition in SECTION 6) condition be disturbed in any way. If in-situ ACM deteriorates to a friable condition, DOWN TO EARTH DEMOLITIONS should be contacted for professional advice or be engaged to provide a complete management or removal service. It should be noted that the removal and disposal of such materials must be undertaken by a " Certified Remover and Disposer of Asbestos from a Building Structure or Plant " (previously known as Class 5 Demolisher). Under the Environmental Protection Act 1994, all chemical forms of asbestos are classified as "Regulated Waste". As such, the transportation of all asbestos materials is an "Environmentally Relevant Activity" requiring the appropriate licensing.



4. LABORATORY SAMPLE RESULTS

sample no	Material	Location	Condition	Type	additional comments	risk level

5. ASBESTOS REGISTER

sample no :	Material:	Location:	Condition:	Type:	Additional comments:	risk level:	Works completed Who? Date? Licence No.



6 ASBESTOS MANAGEMENT PLAN (If Applicable)

Development of an Asbestos Management Plan

The purpose of an asbestos management plan is to help persons with control of premises to comply with the asbestos prohibition and prevent exposure to airborne asbestos fibres while ACM remain in the workplace.

General Principles of an Asbestos Management Plan

The following general principles must be applied in developing an asbestos management plan:

- The ultimate goal is for all workplaces to be free of ACM. Accordingly, consideration should be given to the removal of ACM during renovation, refurbishment and/or maintenance, where practicable, in preference to other control measures such as enclosure, encapsulation or sealing.
- Reasonable steps must be taken to label all identified ACM. Where ACM are identified or presumed, the locations must be recorded in a register of ACM
- A risk assessment must be conducted for all identified or presumed ACM
- Control measures must be established to prevent exposure to airborne asbestos fibres and should take into account the results of risk assessments conducted for the identified or presumed ACM
- If ACM are identified or presumed, there must be full consultation, involvement and information sharing during each step of the development of the asbestos management plan – i.e. during the identification, risk assessment and establishment of control measures
- The identification of ACM and associated risk assessments should only be undertaken by competent persons.
- All workers and contractors on premises where ACM are present or presumed to be present, and all other persons who may be exposed to ACM as a result of being on the management premises, must be provided with full information on the occupational health and safety consequences of exposure to asbestos and appropriate control measures. The provision of this information should be recorded.

Contents of the asbestos management plan

The asbestos plan should be broad-ranging, and should include the following information components:

- The workplace's register of ACM
- Details of any maintenance or service work on the ACM, including:
 - the company who is performing, or performed, the work;
 - the date/s the maintenance or service work was undertaken;
 - the scope of work undertaken; and
- Any clearance certificates.



- mechanisms for providing all relevant people with information about the location, type and condition of the ACM, the risks they pose and the control measures adopted to eliminate or minimise these risks;
- Decisions about management options (i.e. to maintain the ACM or replace them with non-asbestos alternatives), including the reasons for these decisions;
- A timetable for action, including priorities and date(s) for reviewing the risk assessment(s) and specific circumstances and activities that may impact timings (i.e. plant shut-down periods);
- monitoring arrangements;
- The responsibilities of all persons involved and the sections of the plan they are responsible for;
- Training arrangements for workers and contractors;
- A procedure for reviewing and updating the management plan and the register of ACM, including a timetable; and
- Safe work methods.

The asbestos management plan should be clear and unambiguous.

It should set out the aims of the plan, what is going to be done, when it's going to be done and how it is going to be done.

There should be clear lines of responsibility, with each person involved understanding their roles and responsibilities.

Relevant Australian Government, State or Territory OHS legislation should be checked for further information on individual obligations relevant to the management plan.

Implementing the asbestos management plan

Notwithstanding the ultimate goal of a workplace free of ACM, priorities should be set for effective control of the risks in the short term.

Control measures should be implemented in accordance with the hierarchy of controls shown in **Part 1** of this audit, with elimination of the ACM being the first choice and PPE the least preferred approach.

The NOHSC Code of Practice for the Safe Removal of Asbestos [NOHSC: 2002(2005)] should be referred to whenever removal is identified as the best control measure.

The control measures required for identified and presumed ACM should be determined from the risk assessment and should follow the following principles:

- If the ACM are friable and not in a stable condition, and there is a risk to health from exposure, they should be removed by an asbestos removalist as soon as practicable.
- If the ACM are friable but are in a stable condition and are accessible, serious consideration should be given to their removal. If removal is not immediately practicable, short-term control measures, such as sealing and enclosure, may be able to be used until removal is possible,



although some State and Territory OHS authorities do not permit the sealing or encapsulation of ACM.

- If the ACM are not friable and are in a good, stable condition, minimising disturbance and encapsulation may be appropriate controls. Again, however, some State and Territory authorities do not permit sealing or encapsulation, so the relevant authority should be consulted before these measures are considered.
- Any remaining ACM should be clearly labeled, where possible, and regularly inspected to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.
- ACM need to be removed before demolition, partial demolition, renovation or refurbishment if they are likely to be disturbed by those works, in accordance with the NOHSC Code of Practice for the Safe Removal of Asbestos [NOHSC:2002 (2005)].

If a material is proven or presumed to contain asbestos, it is essential to determine whether maintenance or service work can be done without disturbing the ACM.

For example, rather than drilling a hole through an AC sheeting wall to install electrical wiring, the wiring might be able to be routed over the wall. Similarly, if a ventilation flue or pipe has to be installed in an AC ceiling or roof, an alternative might be to run the flue or pipe through a non-asbestos wall.

Some States and Territories do not allow certain maintenance and service tasks to be carried out if identified or presumed ACM are present. The relevant State or Territory legislation should be checked to ensure that any proposed tasks are not prohibited.

Controlling maintenance work

The person with control should develop a system to control any maintenance work within a workplace that contains ACM.

Particular attention should be paid to controlling work activities that affect inaccessible areas listed in the register of ACM, such as wall cavities and ceiling spaces.

The control system may take one of several forms, depending on the size and complexity of the organisation. For example,

- Smaller organisations may prefer in-house controls, with one person being nominated to control all work carried out by maintenance workers and all contractors; and
- Formal, written safe systems of work, incorporating permits-to-work, may be used to control both maintenance workers and contractors.

Whatever the method used, it should be effective in making all maintenance workers and contractors aware of the presence of ACM and preventing any work activity that might expose them, or others nearby, to airborne asbestos fibres.

There should be full consultation concerning any maintenance and service work that might disturb ACM. All people performing the work should receive all necessary training, and the work should be documented and supervised.

The asbestos work area must be isolated and access restricted to essential workers only. Barriers and warning signs may be required.



Personal protective equipment needs to be selected to prevent the contamination of clothing and provide adequate respiratory protection. The level of respiratory protection required will depend on the risk assessment. Respirators should be selected, used and maintained according to the relevant Australian Standard

Thorough decontamination of PPE, equipment and the asbestos work area should be carried out at the completion of the tasks. Consult DTE for more information on personal decontamination procedures.

Under the asbestos prohibition, wherever an asbestos component requires replacement the replacement product must be non-asbestos. It is illegal to reinstall or reuse any ACM.

All ACM must be disposed of correctly, in accordance with State and Territory laws. PPE used during maintenance and service work must also be disposed of in this way.

Reviews of the asbestos management plan

The asbestos management plan should be reviewed whenever the register of ACM is reviewed

These reviews should critically reassess all asbestos management processes and their effectiveness in:

- preventing exposure to airborne asbestos fibres;
- controlling maintenance workers and contractors;
- highlighting the need for action to maintain or remove ACM;
- raising awareness among all workers; and
- maintaining the accuracy of the register of ACM.

DOWN TO EARTH DEMOLITIONS can provide advice and information regarding all asbestos issues and can be engaged to provide a complete asbestos management/removal service as well as all regular maintenance activities. If required please phone (07) 4035 2555 to obtain any services you may require or some free advice for peace of mind.



ASBESTOS MANAGEMENT PLAN

CLIENT:	Juniper Property Holdings	BUILDING I.D.:	Cairns Square
CONTACT:	Kerrie Pickering	ADDRESS:	Cnr Shields and Abbott Street
DTE JOB I.D.:	6140		Cairns

SAMPLE I.D.:	LOCATION:	PRODUCT:	CONTROLS:	ADDITIONAL COMMENTS:
			Awareness of Asbestos	Ensure all employees/contractors have access to and awareness of the audit on site and confirm an understanding of hazards. Ensure All contractors understand the health risks of the product and they will comply with the permit to work system.
Possible under-ground pipework	Old conduits carrying services underground	Cement Pipe	Test conduits if the are exposed during any excavations	Dial before you dig. If service conduits will be exposed during any excavations engage a suitably qualified Asbestos removalist to test the product for the presence of Asbestos. Follow the above controls if the product tests positive for Asbestos.
			Removal of product when suitable or if product become excessively damaged or in a unacceptable deteriorated condition	Replace with non-asbestos product.



7 PERMIT TO WORK (If Applicable)

Building/maintenance work in areas known to possibly contain asbestos is prohibited, unless a "Permit to Work" has been completed, approved by the owner and issued back to the person conducting the work.

The Permit To Work is issued to the nominated recipient for the specific occasion stipulated below:

Work Permit No.	
Date:	
This permit is issued to:	
Department/Organisation:	
Contact telephone number:	
Location of works:	
Description of works:	
Duration of works:	
Permit expires:	

Asbestos containing materials have been identified in this building and all procedures listed within this audit must be followed for the health and safety of all occupants.

Before approval is granted to proceed with work, confirm the following:

1. Has the existing Asbestos containing Materials Register been examined jointly with the responsible person?	Yes/No
2. Has the area where the works are to be performed been examined jointly with the responsible person?	Yes/No
3. Are Asbestos containing material present in this area?	Yes/No
4. Will the works disturb the Asbestos containing Materials	Yes/No
5. If Yes to Question 4 above are the appropriate asbestos work procedures as outlined in the Asbestos Management Plan documented and understood	Yes/No

Asbestos containing materials are not to be disturbed without the approval of the responsible person. All works are to be performed in accordance with the special requirements outlined in the Asbestos Management Plan. If any unknown materials, or materials suspected of containing asbestos are encountered, work is to cease immediately and the responsible person notified.

I have read and understand the procedures described in the Asbestos Management Plan and this permit to work.

Signature of responsible person/building owner

Date: _____

Signature of Recipient

Date: _____



8. EXPLANATIONS

This Asbestos Audit Report and Register has been prepared in accordance with the (NOHSC) National Health and Safety Commission Code of Practice for the Management and Control of Asbestos in Workplaces.

Inspections are a visual interpretation and the following areas have been included for assessment.

- (a) The exterior of the building; gables, eaves,
- (b) The interior of the building; wall linings, bathrooms
- (c) The roof space; debris from roofs, concealed sheeting
- (d) The roof exterior; type of roof, condition of roof
- (e) The under floor space
- (f) The site; debris

This report is based upon and conditional upon the information provided by the person, employees or agents of the person requesting this report. Thus, any false or misleading information provided will exempt the company from any liability for decisions taken based on this report's recommendations, where such recommendations are based upon information provided to the company.

Down To Earth Demolitions shall not be liable for missing information due to the concealment, now or in the past, and/or apparent concealment of asbestos, defects or possible defects by the person, employees or agent of the person requesting this report, or the owner of the building now, in the past, or in the future.

If at a later date, materials are identified; Down To Earth Demolitions should be requested to investigate if any asbestos materials are present.

This report is not intended to be, nor is it to be construed as, a guarantee or warranty, nor as any form of insurance expressed or implied. The inspector will not be responsible for any repairs or replacements with regard to this property or the contents thereof.

CONDITION DEFINITIONS

Asbestos Containing Material - ACM.

✓ **Good**

✓ **Fair**

✓ **Poor**

PRIORITY RATINGS

✓ **Low** Low health risk

✓ **Medium** Medium health risk

✓ **High** High health risk



9. INTRODUCTION TO ASBESTOS

PREFACE

Asbestos is a hazardous material that poses a risk to health by inhalation if the asbestos fibres become airborne and people are exposed to these airborne fibres.

Exposure to asbestos fibres is known to cause mesothelioma, asbestosis and lung cancer.

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

Appendix A lists materials that have historically contained asbestos, and **Appendix B** provides further information on historical uses of asbestos and the Australian Mesothelioma Register.

National ban on the use of asbestos

On 17 October 2001, the National Health and Safety Commission (NOHSC) declared a prohibition on all uses of chrysotile (white) asbestos from 31 December 2003, subject to a very limited range of exemptions.

This prohibition, originally set out in the Amendments to Schedule 2 of the National Model Regulations for the Control of Workplace Hazardous Substances (Prohibition of Asbestos) 2001 and subsequently reflected in Australian Government, State and Territory occupational health and safety and hazardous substances legislation, also confirmed earlier prohibitions of the use of amosite (brown) and crocidolite (blue) asbestos.

(There are no known current uses in Australia of the other three forms of asbestos: actinolite, anthophyllite and tremolite.)

Under the National Model Regulations for the Control of Workplace Hazardous Substances the chrysotile asbestos ban prohibits the use (i.e. manufacture, supply, storage, sale, use, re-use, installation and replacement) of chrysotile asbestos except for:

- bona fide research or analysis;
- removal, handling and storage for disposal;
- chrysotile asbestos encountered during non-asbestos mining; and
- a small number of time-limited exemptions for particular, specified uses for which substitution by an alternative to chrysotile asbestos is technically impossible or would create significantly greater health, safety and environmental risks.

Similarly, the use of brown and blue asbestos is prohibited except for:

- removal and disposal purposes; and
- situations where brown or blue asbestos occurs naturally and is not used for any new application.

The prohibition also includes a small number of time-limited exemptions which are restricted to specific products and uses where currently it is not:



- technically possible to substitute an alternative to chrysotile; or
- possible to substitute an alternative to chrysotile without creating a safety problem that has significantly greater health, safety and environmental risks than those presented by the use of chrysotile.

The prohibition does not extend to the removal of asbestos products in situ at the time prohibition took effect. These in situ asbestos containing materials (ACM) must be appropriately managed to ensure that the risks of exposure to airborne asbestos fibres are minimised.

The ultimate goal is for all workplaces to be free of ACM. Where practicable, consideration should be given to the removal of ACM during renovation, refurbishment, and maintenance, rather than other control measures such as enclosure, encapsulation or sealing.

Asbestos products which were in situ on 31 December 2003 may only be replaced by products which do not contain asbestos

Even when the use of asbestos is still permitted, in the very narrow circumstances listed above, it is subject to hazardous substances legislation, under which manufacturers, importers, other suppliers and employers must ensure that specified measures are properly

Preventing health risks from in situ asbestos-containing materials

Strong management and control of all in situ asbestos-containing materials (ACM) is essential.

The well-known adverse health consequences of exposure to airborne asbestos fibres can be prevented if precautions are taken and appropriate procedures are followed.

The risks posed by ACM depend on the nature and condition of the materials and the potential for exposure.

The main elements of managing the risks of ACM in workplaces are to:

- identify all ACM in the workplace, as far as practicable;
- assess the risks associated with all ACM; and
- introduce control measures to prevent, as far as practicable, the generation of airborne asbestos fibres and any exposure to airborne asbestos fibres.

A number of approaches for the control of ACM are outlined in the National Code of Practice for the Management and Control of Asbestos in Workplaces, but there may be specific applications where special approaches are required.

The removal and disposal of asbestos-containing materials

The removal of ACM poses significant additional hazards. Accordingly, the National Code of Practice for the Safe Removal of Asbestos [NOHSC:2002 (2005)] has been developed by NOHSC to supplement and support another Code of Practice for the Management and Control of Asbestos in Workplaces.

The transport and disposal of removed ACM are controlled by Australian Government, State Territory legislation and a range of authorities, including but not limited to environmental, waste disposal and occupational health and safety authorities. All relevant authorities should be consulted before transporting and disposing of ACM wastes.



If ACM material deteriorates or the removal of the ACM become an option consult Down To Earth Demolition for further advice.

HIERARCHY OF CONTROLS

The management and control of in situ ACM in workplaces, in compliance with the national prohibition, should be based on:

- identifying ACM
- assessing the risks posed by the ACM identified and
- implementing control measures to eliminate the risks arising from ACM and prevent exposure to airborne asbestos fibres.

These control measures should reflect the following **hierarchy of controls**:

- 1) Elimination/removal (most preferred);
- 2) Isolation/enclosure/sealing;
- 3) Engineering controls;
- 4) Safe Work Practices (administrative controls); and
- 5) Personal Protective Equipment (PPE) (least preferred).

A combination of these techniques may be required in order to adequately manage ACM.

A key tool in managing asbestos is the development and maintenance of an Asbestos Register and an Asbestos Management Plan .

Responsibilities

Persons with control of premises have a duty of care to:

- develop and implement and maintain an asbestos management plan
- investigate the premises for the presence or possible presence of ACM .
- develop and maintain a register of the identified or presumed ACM, including details on their locations, accessibility, condition, risk assessments and control measures.
- assess the condition of any ACM that are found and the associated asbestos risks.
- develop measures to remove the ACM or otherwise to minimise the risks and prevent exposure to asbestos and
- ensure the control measures are implemented as soon as possible and are maintained as long as the ACM remain in the workplace.

State and Territory legislation sets out specific requirements concerning ACM. Before commencing any work that may disturb ACM in the workplace, the relevant legislation should be checked to ensure there will be full compliance with these legal obligations.



Consultation

Australian Government, State, Territory occupational health and safety legislation requires persons with control of premises to consult with health and safety representatives and other workers at the workplace on occupational health and safety issues. This legislation sets out requirements for establishing these consultative processes.

As with all occupational health and safety issues, if ACM are present or thought to be present in a workplace, there must be full consultation, information-sharing and involvement by everyone in the workplace, including employers, workers, contractors and others, throughout the processes of identifying ACM, developing an asbestos management plan, assessing the risks and developing and implementing control measures.

Persons with control of premises must also consult with any other person who may be affected by the presence of ACM. For example, building owners must consult with their building's occupants and all relevant contractors.

Awareness training for workers, contractors and others

Information and training must be provided to workers, contractors and others who may come into contact with ACM in a workplace, either directly or indirectly.

Depending on the circumstances this asbestos awareness training may include:

- the purpose of the training;
- the health risks of asbestos;
- the types, uses and likely occurrence of ACM in buildings, plant and/or equipment in the workplace;
- the trainees' roles and responsibilities under the workplace's asbestos management plan
- where the workplace's register of ACM is located and how it can be accessed;
- the timetable for removal of ACM from the workplace;
- the processes and procedures to be followed to prevent exposure, including exposure from any accidental release of asbestos dust into the workplace;
- where applicable, the correct use of maintenance and control measures, protective equipment and work methods to minimise the risks from asbestos, limit the exposure of workers and limit the spread of asbestos fibres outside any asbestos work area;
- the NES and control levels for asbestos; and
- the purpose of any air monitoring or health surveillance that may occur.



10. BACKGROUND AND BUILDING HISTORY

Asbestos-based materials were used in the construction of many buildings/structures built prior to 1987. A natural, fibrous mineral valued for its durability, fire resistance and excellent insulating properties, it was used in the Australian building industry between the 1940s and late 1980s.

In buildings, asbestos fibres are found either firmly or loosely bound in a number of products. Firmly bound, or "non-friable", asbestos can be found in:

Flat or corrugated sheeting (commonly called "fibro" or "AC sheeting")

Water or flue pipes

Roof shingles

Flexible building boards

Imitation brick cladding

Plaster patching compounds

Textured paint

Vinyl floor tiles

The backing of linoleum floor coverings

Loosely-bound, or "friable", asbestos may be found in a few older forms of insulation used in domestic heaters and stoves. It is unlikely ceiling insulation used in domestic buildings will have asbestos - it was most commonly used in commercial buildings

In recognition of this fact and against a background of increased public concern over the health risks resulting from the presence of asbestos in buildings and other structures where people spend their working day, the National Occupational Health and Safety Commission (NOHSC) Produced the **Guide to the Control of Asbestos Hazards in Buildings and Structures**. The guidance note outlines a blueprint for the identification, evaluation and control of hazards posed by in-situ asbestos in the working environment. The NOHSC recommends that an asbestos management program, which identifies, evaluates and controls asbestos hazards, in conformity with the Guide should be part of an organizations/building owners overall approach to the identification and control of all workplace hazards.

Following this early Guide, the National Health and Safety Commission (NOHSC) produced codes of Practice called "Code of Practice for the Management and Control of Asbestos in Workplaces" (asbestos management code), and "National code of Practice for the Safe Removal of Asbestos", (asbestos removal code). These codes were updated in April 2005.

Subsequently, State Governments have implemented amendments to their Workplace Health and Safety Acts and Regulations to follow these codes.

In accordance with these Codes and State Regulations, Down To Earth Demolitions have completed an Asbestos Annual Audit at the Cairns Square building, cnr Shields and Abbott Street, Cairns, and it meets the requirements of these Codes and State Health and Safety Regulations. As per the Codes and Regulations, it is important that the Report is readily available for perusal at an easily accessible location on the site.



11. GENERAL INFORMATION

What is Asbestos?

Asbestos is a naturally occurring silicate mineral with long, thin fibrous crystals. The word asbestos (ασβεστος) is derived from a Greek adjective meaning inextinguishable. The Greeks termed asbestos the miracle mineral because of its soft and pliant properties, as well as its ability to withstand heat.

Asbestos is toxic. The inhalation of asbestos fibers can cause serious illnesses, including malignant mesothelioma, lung cancer, and asbestosis (a type of pneumoconiosis). Since the mid 1980s, many uses of asbestos have been banned in several countries.

Asbestos became increasingly popular among manufacturers and builders in the late 19th century because of its resistance to heat, electricity and chemical damage, its sound absorption and tensile strength. When asbestos is used for its resistance to fire or heat, the fibers are often mixed with cement or woven into fabric or mats. Asbestos was used in some products for its heat resistance, and in the past was used on electric oven and hotplate wiring for its electrical insulation at elevated temperature, and in buildings for its flame-retardant and insulating properties, tensile strength, flexibility, and resistance to chemicals.

In accordance with relevant State Workplace Health and Safety Acts and Regulations, the owner of the building must give a copy of this Asbestos Audit Report and Register to any contractor or employee engaged to undertake any maintenance, building, refurbishment or demolition work on this site. The owner of the building must display a notice in a prominent place in the building, stating that there is an Asbestos Audit Report and Register completed for the building, and where it can be inspected.

The buildings owner should ensure that any contractor preparing to work on ACM (Asbestos Containing Material) develops a written Workplace Health and Safety Plan in detailed risk assessments and abides by the regulations contained within the current Workplace Health and Safety ACT.

Asbestos Related Diseases

Inhalation of asbestos fibres can cause death. Asbestos has been linked to the following main diseases:

Asbestosis – is a chronic inflammatory medical condition affecting the parenchymal tissue of the lungs. It occurs after long-term, heavy exposure to asbestos, e.g. in mining, and is therefore regarded as an occupational lung disease. Sufferers have severe dyspnea (shortness of breath) and are at an increased risk regarding several different types of lung cancer.

Mesothelioma - is a form of cancer that is almost always caused by exposure to asbestos. In this disease, malignant cells develop in the mesothelium, a protective lining that covers most of the body's internal organs. Its most common site is the pleura (outer lining of the lungs and internal chest wall), but it may also occur in the peritoneum (the lining of the abdominal cavity), the heart, the pericardium (a sac that surrounds the heart) or tunica vaginalis.

Lung cancer. - is a disease of uncontrolled cell growth in tissues of the lung. This growth may lead to metastasis, which is the invasion of adjacent tissue and infiltration beyond the lungs. The vast majority of primary lung cancers are **carcinomas of the lung**, derived from epithelial cells.



Lung cancer, the most common cause of cancer-related death in men and the second most common in women (after breast cancer) is responsible for 1.3 million deaths worldwide annually. The most common symptoms are shortness of breath, coughing (including coughing up blood), and weight loss.

Exposure may also relate to other cancers, however, there is no conclusive evidence to support this. The three identified diseases are characterized by long latency periods, that is, 20 – 40 years from exposure to the onset of disease.

Asbestos Risks

Asbestos fibres can pose a risk to health if airborne, as inhalation is the main way that asbestos enters the body. Small quantities of asbestos fibres are present in the air at all times, and are being breathed by everyone without any ill effects. Most people are exposed to very small amounts of asbestos as they go about their daily lives and do not develop asbestos-related health problems. Finding that your home or workplace is made from fibro products does not mean your health is at risk. Studies have shown that these products, if in sound condition and left undisturbed, are not a significant health risk. If the asbestos fibres remain firmly bound in cement, generally you do not need to remove the fibro.

People who have suffered health effects from exposure to asbestos have generally worked in either the asbestos mining or milling industry, worked in industries involved in making or installing asbestos products, or are from the immediate families of these people. In all of these situations there was exposure to high levels of airborne dust, from either the processes involved or from the clothes of the workers.

12. DEFINITIONS

Accredited Laboratory means a testing laboratory accredited by the National Association of Testing Authorities, Australia (NATA) or a similar accreditation authority, or otherwise granted recognition by NATA, either solely or in conjunction with one or more other persons.

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. 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)]

Airborne Asbestos Fibres means any fibres of asbestos small enough to be made airborne. For the purposes of monitoring airborne asbestos fibres, only respirable asbestos fibres (those fibres less than 3 µm wide, more than 5 µm long and with a length to width ratio of more than 3 to 1) are counted.

Note: Airborne asbestos fibres are generated by the mechanical disintegration of Asbestos-Containing Materials (ACM) and subsequent dispersion of the fibres into the air from activities such as mining and the use, removal and disposal of asbestos and ACM. Airborne dust has the potential to contain respirable asbestos fibres.

ALARP means As Low As Reasonably Practicable. The exposure of workers and others to asbestos must be eliminated or otherwise kept as low as reasonably practicable, and in all circumstances must be kept below the NES.

Asbestos means the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite (brown asbestos), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos), tremolite, or any mixture containing one or more of the mineral silicates belonging to the serpentine and amphibole groups.

Asbestos Cement (AC) means products consisting of sand aggregate and cement reinforced with asbestos fibres (e.g. asbestos cement pipes and flat or corrugated asbestos cement sheets).



Example of ACM Roofing – Bonded

Asbestos-Containing Material (ACM) means any material, object, product or debris that contains asbestos.

Asbestos Removalist means a competent person who performs asbestos removal work.

Note: An asbestos removal licence is required in all State and Territory jurisdictions for the removal of friable ACM. Some States and Territories also require a licence for removal of specified quantities of ACM, regardless of whether they are friable, and relevant OHS authorities should be consulted prior to any removal work.

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

Asbestos Waste means all removed ACM and disposable items used during the asbestos work, such as plastic sheeting used to cover surfaces in the asbestos work area, disposable coveralls, disposable respirators, rags used for cleaning.

Asbestos Work Area means the immediate area in which work on ACM is taking place. The boundaries of the asbestos work area must be determined by a risk assessment.

Note: The asbestos work area should include the boundaries of an enclosure or barriers set up to warn or restrict access to the area where the asbestos work is being undertaken.

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

Clearance Inspection means 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.

Note: A clearance inspection should only be carried out when the asbestos work area is dry.



Examples of ACM Ceiling – Bonded



Examples of ACM switchboard

Clearance Monitoring means 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.

Note: Static or positional samples are taken at fixed locations which are usually between one and two metres above floor level,

Competent Person means a person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work. Note: A licence may be required for some of the tasks described in this document as requiring a competent person.

Control Level means the airborne concentration of a particular substance which, if exceeded, indicates a need to implement a control, action or other requirement. Control levels are generally set at no more than half the NES for the substance. Control levels are occupational hygiene ‘best practice’, and are not health-based standards.

Note: The first Control Level for Asbestos is set at 0.01 fibres/mL of air.

Control Monitoring means 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.

Note: Static or positional samples are taken at fixed locations which are usually between one and two metres above floor level,

Dust and Debris means visible particles, fragments or chunks of material, large and heavy enough to have settled in the work area, that are likely to have originated from ACM.

Exposure Monitoring means air monitoring 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 NES.

Note: Exposure monitoring includes airborne asbestos fibre sampling, analysis, estimation of time-weighted average exposure and interpretation. Samples are taken within the breathing zone and are usually obtained by fastening the filter holder to the worker’s jacket lapel.

Friable (Asbestos) means asbestos-containing material which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure.

Note: This may include ACM that have been subjected to conditions that leave them in a state where they meet the above definition, such as weathering, physical damage, water damage etc.



Examples of ACM Insulation – Material

Hazard means any matter, thing, process or practice that may cause death, injury, illness or disease.

Health Surveillance means the monitoring of a person to identify any changes in their health as a result of exposure to a hazardous substance. It does not include exposure monitoring.

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

In situ means fixed or installed in its original position, not having been moved.

Inaccessible Areas means areas which are difficult to access, such as wall cavities and the interiors of plant and equipment.

Membrane Filter Method (MFM) means the technique outlined in the NOHSC Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003 (2005)]

National Exposure Standard (NES) means an airborne concentration of a particular substance, within the worker's breathing zone, which according to current knowledge, should not cause adverse health effects or undue discomfort to nearly all workers. NES are established, from time to time, by the National Occupational Health and

Safety Commission (NOHSC) and are published on the NOHSC website (see **Appendix J**).

Note: The NES for all forms of asbestos is 0.1 fibres/mL of air, measured using the Membrane Filter Method (MFM).

Person with Control means, in relation to premises, a person who has control of premises used as a workplace. The person with control may be:

(a) the owner of the premises;



(b) a person who has, under any contract or lease, an obligation to maintain or repair the premises;

(c) a person who is occupying the premises;

(d) a person who is able to make decisions about work undertaken at the premises; or

(e) an employer at the premises.

Personal Protective Equipment (PPE) means equipment and clothing that is used or worn by an individual person to protect themselves against, or minimise their exposure to, workplace risks. It includes items such as facemasks and respirators, coveralls, goggles, helmets, gloves and footwear (see **Appendix C**).

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

Risk means the likelihood of a hazard causing harm to a person. Note: Risk relates to illness or disease arising from exposure to Airborne Asbestos Fibres.

Settled Dust Sampling means the sampling and analysis of settled surface dust to provide an indication of cleanliness following disturbance of ACM. Settled dust sampling does not provide an indication of risk to health. Sampling techniques include the use of adhesive tape, wipe or micro-vacuum (using an air sampling pump and filter). Analysis can be by polarised light microscopy (PLM) or transmission electron microscopy (TEM).

Note: Contamination may occur as a result of deterioration of, or work processes involving ACM.

Shadow Vacuuming means the operation of an asbestos vacuum cleaner that is either directly attached to a tool or hand-held by a second worker as close as possible to the source of released asbestos fibres throughout the use of the tool.

Structure means any construction, whether temporary or permanent.

Note: A structure includes a bridge, erection, edifice, wall, chimney, fence, earth works, reclamation, ship, floating structure or tunnel.

Work means any activity, physical or mental, carried out in the course of a business, industry, commerce, an occupation or a profession.

Worker means a person who does work, whether or not for reward or recognition.

Note: 'Workers' include persons working under contracts of employment, apprenticeships, traineeships and other contracts of service, but they also include other persons subject to direction by persons with control, such as volunteers and work experience students.

Workplace means any place where a person works.



13. LEGISLATIVE REFERENCES

The following documents provide additional information on asbestos management and control:

1. Health and Safety Executive (HSE) (1999), Controlled Asbestos Stripping Techniques; For Work Requiring a Licence, Her Majesty's Stationery Office, Norwich, England
2. Health and Safety Executive (HSE) (1999), Selection of Suitable Respiratory Protective Equipment; for Work with Asbestos, Her Majesty's Stationery Office, Norwich, England
3. Health and Safety Executive (HSE) (1999), Working with Asbestos Cement (2nd Edition), Her Majesty's Stationery Office, Norwich, England
4. Health and Safety Executive (HSE) (1999), Working with Asbestos in Buildings, Her Majesty's Stationery Office, Norwich, England
5. Health and Safety Executive (HSE) (2001), Asbestos Essentials Task Manual: Task Guidance Sheets for the Building Maintenance and Allied Trades, Her Majesty's Stationery Office, Norwich, England
6. Health and Safety Executive (HSE) (2001), Introduction to Asbestos Essentials; Comprehensive Guidance on Working with Asbestos in the Building Maintenance and Allied Trades, Her Majesty's Stationery Office, Norwich, England
7. Health and Safety Executive (HSE) (2002), A Comprehensive Guide to Managing Asbestos in Premises, Her Majesty's Stationery Office, Norwich, England
8. Health and Safety Executive (HSE) (2002), Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulation Board (4th edition), Her Majesty's Stationery Office, Norwich, England
9. Health and Safety Executive (HSE) (2002), Work with Asbestos which does not normally require a licence (4th edition), Her Majesty's Stationery Office, Norwich, England
10. National Occupational Health and Safety Commission (NOHSC) (2005), Code of Practice for the Safe Removal of Asbestos [NOHSC:2002(2005)], NOHSC, Canberra, Australia.
11. National occupational health and safety commission (nohsc) (2005), code of practice for the management and control of asbestos in workplaces. NOHSC, Canberra, Australia.
12. National Occupational Health and Safety Commission (NOHSC) (2005), Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)], NOHSC, Canberra, Australia.
13. Victorian Asbestos Removal Industry Consultative Committee (VARICC), Standard Specification for Asbestos Removal from Buildings, Structures, Ships, Plants and Workplaces, Australia
14. National Exposure Standards for hazardous substances can be found utilising the NOHSC Hazardous Substances Information System (HSIS) at <http://www.nohsc.gov.au/applications/hsis/>
15. Workplace Health and Safety Act 1995 Queensland
16. Workplace Health and Safety Regulation 2008



APPENDIX A. EXAMPLES OF ASBESTOS-CONTAINING MATERIALS

(This is not an exhaustive list)

A

Air-conditioning ducts: exterior or interior acoustic and thermal insulation
Arc shields in lift motor rooms or large electrical cabinets
Asbestos-based plastics products - as electrical insulates and acid-resistant compositions or aircraft seat
Asbestos ceiling tiles
Asbestos cement conduit
Asbestos cement electrical fuse boards
Asbestos cement external roofs and walls
Asbestos Cement in the use of form work when pouring concrete
Asbestos cement internal flues and downpipes
Asbestos cement moulded products such as gutters, ridge cappings, gas meter covers, cable troughs and covers
Asbestos cement pieces for packing spaces between floor joists and piers
Asbestos cement (underground) pits, as used for traffic control wiring, telecommunications cabling, etc
Asbestos cement render, plaster, mortar and coursework
Asbestos cement sheet
Asbestos cement sheet behind ceramic tiles
Asbestos cement sheet internal over exhaust canopies such as ovens, fume cupboards, etc.
Asbestos cement sheet internal walls and ceilings
Asbestos cement sheet underlays for vinyl
Asbestos cement storm drain pipes
Asbestos cement water pipes (usually underground)
Asbestos-containing laminates (e.g. formica) used where heat resistance is required, e.g. ships
Asbestos-containing pegboard
Asbestos felts
Asbestos marine board, e.g. marinate
Asbestos mattresses used for covering hot equipment in power stations
Asbestos paper used variously for insulation, filtering and production of fire resistant laminates
Asbestos roof tiles
Asbestos textiles
Asbestos textile gussets in air-conditioning ducting systems
Asbestos yarn
Autoclave / steriliser insulation

B

Bitumen-based water proofing such as malthoid, typically on roofs and floors but also in brickwork
Bituminous adhesives and sealants
Boiler gaskets
Boiler insulation, slabs and wet mix
Brake disc pads
Brake linings



C

Cable penetration insulation bags (typically Telecom)
Calorifier insulation
Car body filters (not common)
Caulking compounds, sealant and adhesives
Cement render
Chrysotile wicks in kerosene heaters
Clutch faces
Compressed asbestos cement panels for flooring, typically verandas, bathrooms and steps for demountable buildings
Compressed asbestos fibres (CAF) used in brakes and gaskets for plant and automobiles

D

Door seals on ovens

E

Electric heat banks - block insulation
Electric hot water services - normally not asbestos but some millboard could be present
Electric light fittings, high wattage, insulation around fitting (and bituminised)
Electrical switchboards – see Pitch-based
Exhausts on vehicles

F

Filler in acetylene gas cylinders
Filters - beverage; wine filtration
Fire blankets
Fire curtains
Fire door insulation
Fire-rated wall rendering containing asbestos with mortar
Fire-resistant plaster board, typically on ships
Fire-retardant material on steel work supporting reactors on columns in refineries in the chemical industry
Flexible hoses
Floor vinyl sheets
Floor vinyl tiles
Fuse blankets and ceramic fuses in switchboards

G

GalbestosTM roofing materials (decorative coating on metal roof for sound proofing)
Gaskets - chemicals, refineries
Gaskets - general
Gauze mats in laboratories / chemical refineries
Gloves - asbestos



H

Hairdryers - insulation around heating elements
Header (manifold) insulation

I

Insulation blocks
Insulation in electric reheat units for air-conditioner systems

L

Laboratory bench tops
Laboratory fume cupboard panels
Laboratory ovens - wall insulation
Lagged exhaust pipes on emergency power generators
Lagging in penetrations in fireproof walls
Lifts shafts - asbestos cement panels lining the shaft at the opening of each floor, and asbestos packing around penetrations
Limpet asbestos spray insulation
Locomotives - steam; lagging on boilers, steam lines, steam dome and gaskets

M

Mastics
Millboard between heating unit and wall
Millboard lining of switchboxes
Mortar

P

Packing materials for gauges, valves, etc., can be square packing, rope or loose fibre
Packing material on window anchorage points in high rise buildings
Paint, typically industrial epoxy paints
Penetrations through concrete slabs in high rise buildings
Pipe insulation including moulded sections, water-mix type, rope braid and sheet
Pitch-based (e.g. zelemite, asbestos, lebah) electrical switchboard
Plaster and plaster cornice adhesives

R

Refractory linings
Refractory tiles
Rubber articles - extent of usage unknown

S

Sealant between floor slab and wall, usually in boiler rooms, risers or lift shafts
Sealant or mastic on windows
Sealants and mastics in airconditioning ducting joints
Spackle or plasterboard wall jointing compounds



Sprayed insulation - acoustic wall and ceiling

Sprayed insulation - beams and ceiling slabs

Sprayed insulation - fire retardant sprayed on nut internally, for bolts holding external building wall panels

Stoves - old domestic type; wall insulation

T

Tape and rope - lagging and jointing

Tapered ends of pipe lagging, where lagging is not necessarily asbestos

Tilux sheeting in place of ceramic tiles in bathrooms

Trailing cable under lift cabins

Trains - country - guards vans - millboard between heater and wall

Trains - Harris cars - sprayed asbestos between steel shell and laminex

V

Valve, pump, etc. insulation

W

Welding rods

Woven asbestos cable sheath



APPENDIX B. ASBESTOS USE, PRODUCTION AND SURVEILLANCE IN AUSTRALIA

Historical uses of asbestos

Asbestos is the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals.

The most significant types are crocidolite (blue asbestos), amosite (brown or grey asbestos) and chrysotile (white asbestos). Other mineral forms of asbestos include actinolite, anthophyllite and tremolite, but these were not widely used.

As a naturally occurring mineral fibre, asbestos is mined and then broken down from mineral clumps into groups of loose fibres.

Asbestos has excellent fire resistance, insulation properties, fibre strength, durability and flexibility. As a result, it was used in more than 3,000 products, including heat-resistant textiles (cloth, padding and board), asbestos cement products (sheets and pipes), special filters for industrial chemicals, thermal insulation products (pipe and boiler insulation), friction materials (clutch plates, brake linings), gaskets, floor tiles, roofing materials, packing materials, paints and protective paper (see **Appendix A**).

A major historical use was as sprayed thermal insulation on steel beams for fire protection. This sprayed or 'limpet' asbestos poses the greatest health risk, because of its highly friable nature.

Asbestos-containing materials (ACM) may still be encountered throughout public and private buildings and structures, especially those built between the 1950s and the late 1970s to early 1980s. Some uses of ACM continued until 2003, notably in friction materials (brakes) and gaskets.

Asbestos production and use in Australia

In Australia, more chrysotile than amphibole asbestos was mined until 1939.

With the commencement of mining at Wittenoom in Western Australia in 1937, crocidolite dominated production until the final closure of this mine in 1966.

New South Wales, the first State to mine asbestos, produced the largest tonnages of chrysotile (until 1983), as well as smaller quantities of amphibole (until 1949).

Australian asbestos production and exports declined after the closure of the Wittenoom mine, and imports of chrysotile also started to decline. Consumption peaked in about 1975, at 70,000 tonnes/year.

The main sources of raw asbestos imports were Canada (chrysotile) and South Africa (crocidolite and amosite). Australia also imported many manufactured asbestos products, including asbestos cement articles, asbestos yarn, cord and fabric, asbestos joint and millboard, asbestos friction materials and gaskets. The main sources of these products were the United Kingdom, the USA, the Federal Republic of Germany and Japan.

In Australia, the asbestos cement manufacturing industry was responsible for over 60% of all production and 90% of all consumption of asbestos fibre. From about 1940 to the late 1960s all three types of asbestos were used in this industry. The use of crocidolite was gradually phased



out from 1967, but amosite was used until the mid-1980s. Much of this industry output remains in service today in the form of 'fibro' houses and water and sewerage piping.

Between 1945 and 1954, 70,000 asbestos cement houses were built in New South Wales alone (52% of all the houses built in that State). In Australia as a whole, until the 1960s, 25% of all new housing was clad in asbestos cement.

By 1954 Australia was number four in the Western world in gross consumption of asbestos cement products, after the USA, the UK and France, and clearly first on a per capita basis.

Exposures to asbestos dust

In the past exposure to airborne asbestos fibres was very high in some industries and jobs. For asbestos pulverisers and disintegrators in the asbestos cement industry exposure levels were up to 25 million particles per cubic foot (150 fibres/mL), and baggers at the crocidolite mine at Wittenoom experienced exposures of up to 600 fibres/mL.

In comparison, State and Territory laws now apply a NES of 0.1 fibres/mL for all forms of asbestos.

National ban on the use of asbestos

On 17 October 2001, the National Health and Safety Commission (NOHSC) declared a prohibition on all uses of chrysotile from 31 December 2003, subject to a very limited range of exemptions.

This prohibition also confirmed earlier prohibitions of the use of amosite and crocidolite asbestos.

Under the National Model Regulations for the Control of Workplace Hazardous Substances the chrysotile asbestos ban prohibits the use (i.e. manufacture, supply, storage, sale, use, re-use, installation and replacement) of chrysotile asbestos except for:

- bona fide research or analysis;
- removal, handling and storage for disposal;
- chrysotile asbestos encountered during non-asbestos mining; and
- a small number of time-limited exemptions for particular, specified uses for which substitution by an alternative to chrysotile asbestos is technically impossible or would create significantly greater health, safety and environmental risks.

Similarly, the use of brown and blue asbestos is prohibited except for:

- removal and disposal purposes; and
- situations where brown or blue asbestos occurs naturally and is not used for any new application.

The prohibition also included a small number of time-limited exemptions which are restricted to specific products and uses where currently it is not:



- technically possible to substitute an alternative to chrysotile; or
- possible to substitute an alternative to chrysotile without creating a safety problem that has significantly greater health, safety and environmental risks than those presented by the use of chrysotile.

The prohibition does not extend to the removal of asbestos products in situ at the time prohibition took effect. These in situ asbestos containing materials (ACM) must be appropriately managed to ensure that the risks of exposure to airborne asbestos fibres are minimised.

The ultimate goal is for all workplaces to be free of ACM. Where practicable, consideration should be given to the removal of ACM during renovation, refurbishment, and maintenance, rather than other control measures such as enclosure, encapsulation or sealing.

Asbestos products which were in situ on 31 December 2003 may only be replaced by products which do not contain asbestos

Even when the use of asbestos is still permitted, in the very narrow circumstances listed above, it is subject to hazardous substances legislation, under which manufacturers, importers, other suppliers and employers must ensure that specified measures are properly used, installed and maintained to control the risks associated with exposure to asbestos.

The Australian Mesothelioma Surveillance Program and Register

Mesothelioma is a malignant cancer of the outer covering of the lung (the pleura) or the abdominal cavity (the peritoneum). Once rare, mesothelioma is increasing in incidence throughout the industrial world and is most often associated as a result of past exposures to asbestos. It is usually fatal. Australia has the world's highest incidence rate of mesothelioma in the world.

The first reported case of mesothelioma, from Wittenoom, was in 1962 (McNulty, 1962). A retrospective search later identified 658 cases (535 male, 123 female) occurring in Australia from between 1945- and 1979 (Musk et al, 1989).

The Australian Mesothelioma Surveillance Program (Ferguson et al, 1987) began on 1 January 1980. (Ferguson et al 1987). Formal but voluntary notification of cases was actively sought from a network of respiratory physicians, pathologists, general and thoracic surgeons, medical superintendents, medical records administrators, State and Territory departments of occupational health, cancer registries, compensation authorities or any other source. A full occupational and environmental history was obtained for each case, either from the patient or from their next-of-kin. The history taking was non-directive but included specific questions on asbestos exposure. Estimates of occupational and environmental exposure were based on the opinions of two experienced hygienists. The diagnosing pathologist was requested to provide slides and/or tissue specimens and these were circulated among a pathology expert panel for a confirmation of the original diagnosis. Post-mortem examination was actively sought in every case, in order to confirm the diagnosis and to obtain lung tissue free of tumour for lung fibre content analysis.

From 1 January 1986, a less detailed notification system has operated, with a short questionnaire on exposure history, which is followed up by mail. In the case of all WA and most of the NSW notifications (comprising— constituting 60% of the total all Australian notifications), — detailed occupational and environmental exposure histories from interviews are available from



the WA Mesothelioma Register and the NSW Dust Diseases Board. Only histologically confirmed cases are accepted, but there is no pathology panel diagnosis confirmation.

This is now known as the 'Australian Mesothelioma Register' and is a continuation of the Australian Mesothelioma Surveillance Program. Cross checks with State cancer registries are regularly carried out. Annual incidence reports are published (NIOHS (AGPS) 1989-00). These reports include data on cases notified to the register and diagnosed since 1986 (NIOHS (AGPS) 1989-1996; NOHSC (AGPS) 1997-2003). Full reconciliation with all State cancer registries has been carried out. Recent reviews are available (Leigh 2004a, 2004b; Leigh and Driscoll, 2003; and Leigh et al, 2002a,2002b). Full analysis of incidence in 2002, 2003 and 2004 awaits reconciliation checks with State cancer registries. However, notifications for 2002, 2003 and 2004 were 322, 331 and 219 respectively (to 30 June 2004).