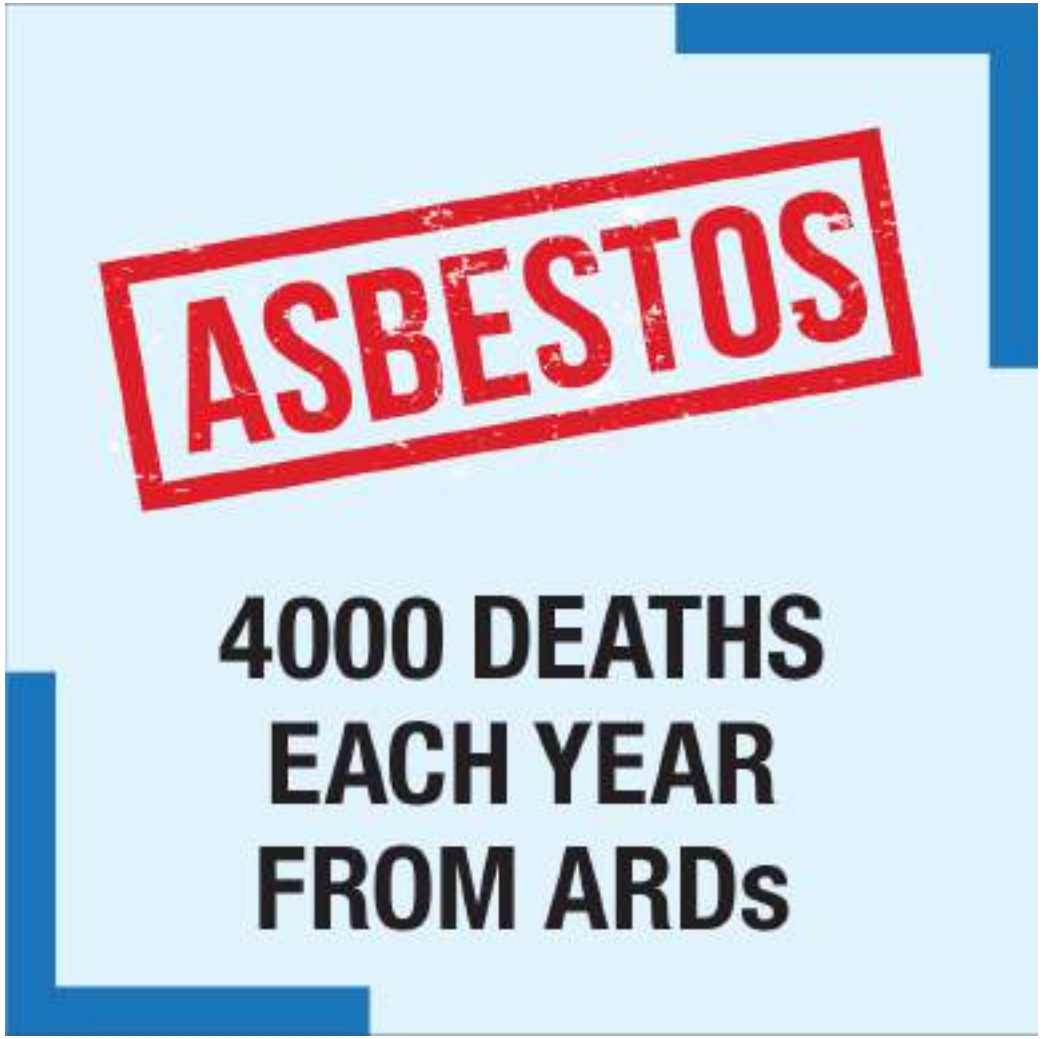
Welcome to Asbestos 2019

Thank you to our exhibitors

FAAM BOHS

Asbestos Management in Australia

Brian Eva
FAIOH
MFAAM
MFAMANZ



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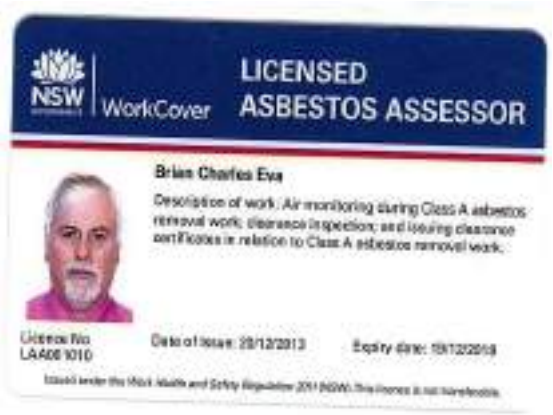
Asbestos Management in Australia

- There is no qualification requirement in Australia / New Zealand for persons conducting asbestos surveys or air monitoring during non- friable ACM removal.

- In some States, for friable asbestos removal, air monitoring and clearance, there a requirement to be a Licenced Asbestos Assessor. There is no rigour in the application process.



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Asbestos Management in Australia

- NATA (National Association of Testing Authorities) no longer performs individual assessment of analysts or field technicians

- NATA allows large consulting laboratories to issue endorsed test reports in fibres/mL even though they are not involved, or have control, of the field monitoring process.

- Based on their interpretation of ISO 17025

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Asbestos Management in Australia

- Asbestos removalists must be licenced for non-friable and friable asbestos removal works (National Competency).

- Supervisors must also be competent and hold competency.

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Introducing FAMANZ

FAMANZ provides a professional home for those practitioners providing services to the asbestos industry including: occupational hygienists, environmental consultants, asbestos removal contractors, building managers, Regulators (WHS and EPA), demolition contractors, C&D waste recycling industry, waste disposal industry, suppliers, and allied industries.

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FAMANZ

- Established as a not for profit Company
- Draft MOU's under discussion with the AIOH, NZOHS &FAAM
- Based on BOHS FAAM model but has a broader membership remit
- Two membership streams

  Risk Management

  Remediation

AIOH AUSTRALIAN INSTITUTE OF OCCUPATIONAL HYGIENISTS

NZOHS New Zealand Occupational Hygiene Society

FAAM

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The need for FAMANZ

- AIOH and NZOHS membership grades do not allow professional grade membership to most persons providing services in the asbestos industry
- Safety and environmental societies moving into the asbestos management field with little or limited training in asbestos risk management (asbestos in soil and air monitoring)
- To improve practices in asbestos management; assessment, management, removal and disposal of asbestos.

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Why establish FAMANZ

- Basis for establishment is to raise the Professional Practice of asbestos management in Australia and New Zealand.
- Standards in asbestos management have fallen with opportunistic operators entering the market in all areas from assessment through removal and disposal.

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Website www.famanz.org

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NEW INITIATIVE

WAMANZ

WOMEN IN ASBESTOS MANAGEMENT AUSTRALIA

- WAMANZ is a group for women in all areas of asbestos management and remediation.
- WAMANZ is a group for those new and already working in the industry to meet mentors and peers.
- WAMANZ is a group for networking and to find out about upcoming learning and career development opportunities.

To get this movement off the ground become a member of FAMANZ at https://famanz.org & email wamanz@famanz.org to register with us

WAMANZ is a subgroup of FAMANZ Faculty of Asbestos Management of Australia & New Zealand

Remember to spread the word to your colleagues

National strategic plan for asbestos awareness and management (NSP) 2019–2023

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A snapshot of the problem….

Australian Government
Asbestos Safety and Eradication Agency

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Since 2000, the National Health and Medical Research Council (NHMRC) has funded over $32 million on asbestos related research.

In 2018, the Australian Government announced the Australian Genomics Health Futures Mission.

This specifically includes lung cancer and mesothelioma research funding, for which up to $15 million over three years is available.

Australian Government
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ASEA's Aim

To assist the prevention of exposure to asbestos fibres in order to eliminate asbestos-related diseases in Australia by co-ordinating the implementation of the NSP.

Individual States & Territories can adopt the plan- its not mandatory.

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Notable dates – managing asbestos in Australia

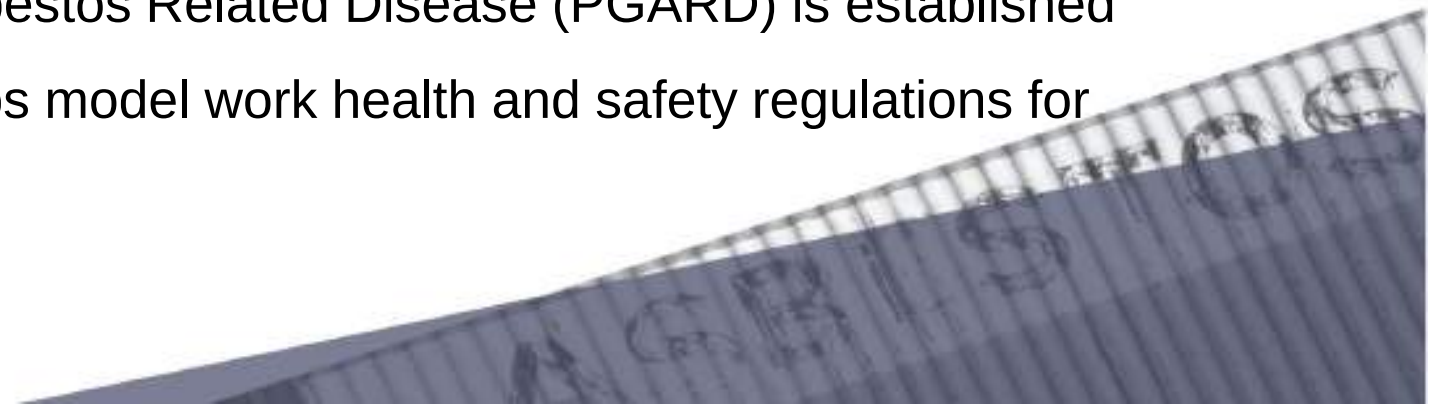
1999: NICNAS assessment of chrysotile asbestos is completed

2003: A national ban on importation and all uses of chrysotile asbestos came into effect

2005: Codes of practice for management control and safe removal of asbestos developed by NOHSC

2011: Parliamentary Group on Asbestos Related Disease (PGARD) is established

2011: Safe Work Australia develops model work health and safety regulations for codes of practice on asbestos



Australian Government
Asbestos Safety and Eradication Agency

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Notable dates – managing asbestos in Australia

2012: Asbestos Management Review is released

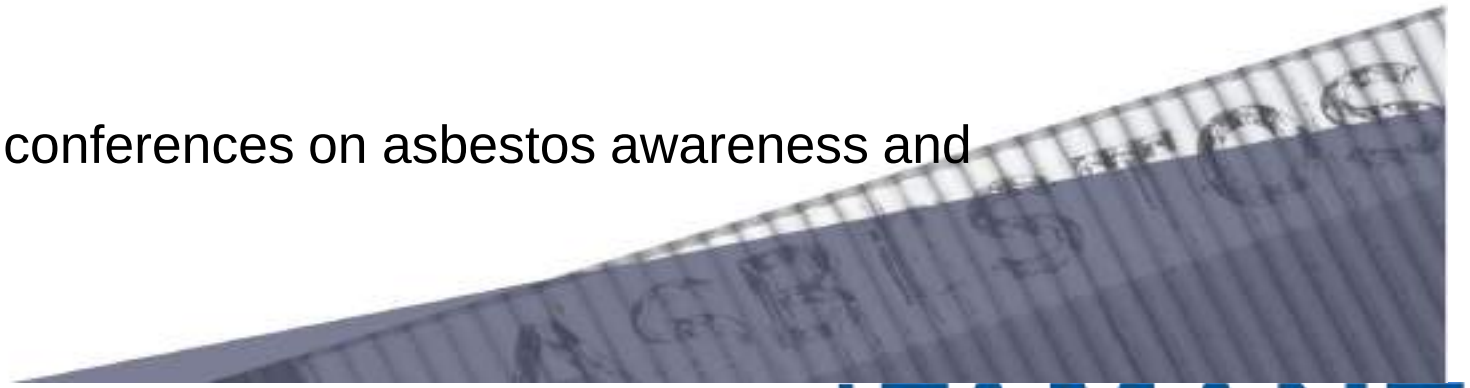
2013: Asbestos Safety and Eradication Agency and Asbestos Safety and Eradication Council are established

2015: National Strategic Plan for Asbestos Management and Awareness 2014-2018 is approved

2017: National Asbestos Profile is completed

2018: National Strategic Plan for Asbestos Management and Awareness 2018-2023 developed

2014-2019: Annual international conferences on asbestos awareness and management



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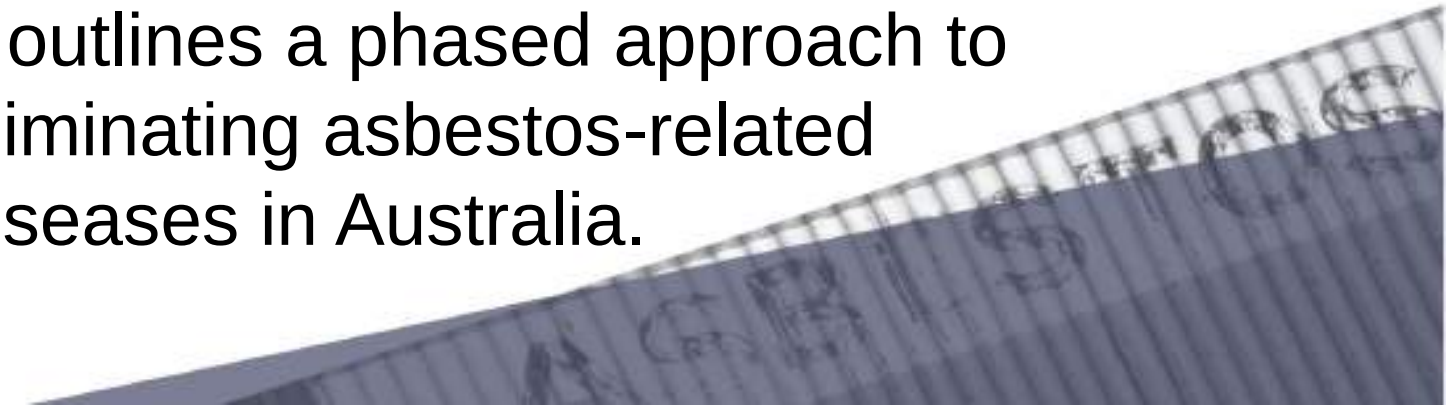
The National Strategic Plan

Australian Government
Asbestos Safety and Eradication Agency

- The NSP ensures there is a nationally consistent and coordinated approach to asbestos awareness, management and removal.
- It outlines a phased approach to eliminating asbestos-related diseases in Australia.



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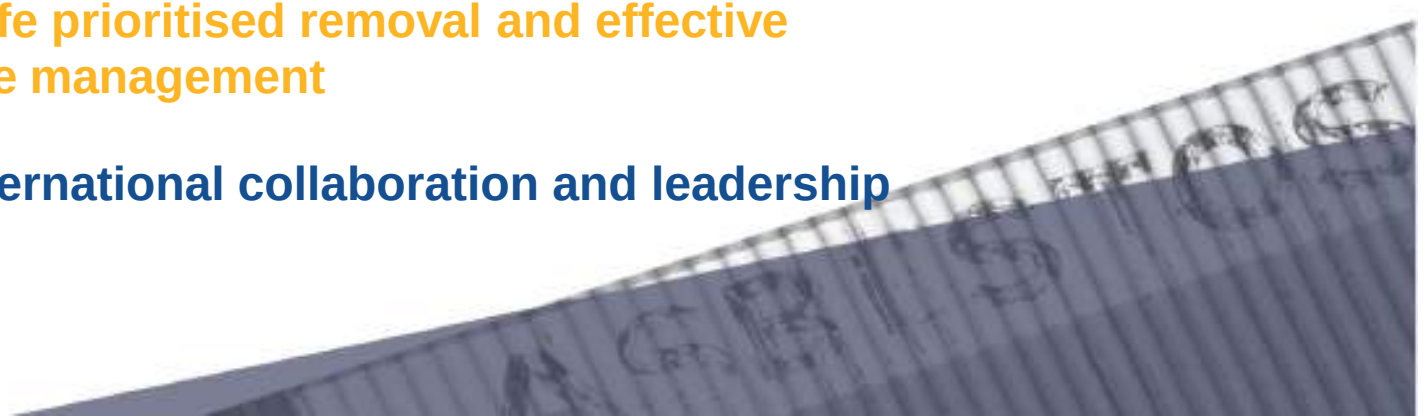
NSP 2019–2023 contains four national priorities which meet the requirements in the Act.

1. Improve asbestos awareness to influence behavioural change

2. Identification and effective legacy management

3. Safe prioritised removal and effective waste management

4. International collaboration and leadership



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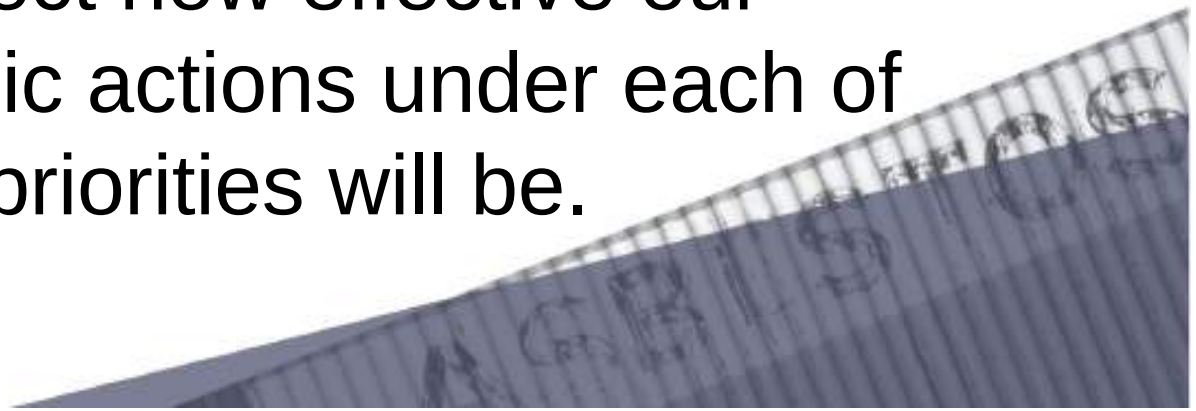
NSP 2019–2023

> contains nine new national targets to measure progress against the national priorities.

- these targets reflect how effective our combined strategic actions under each of the four national priorities will be.



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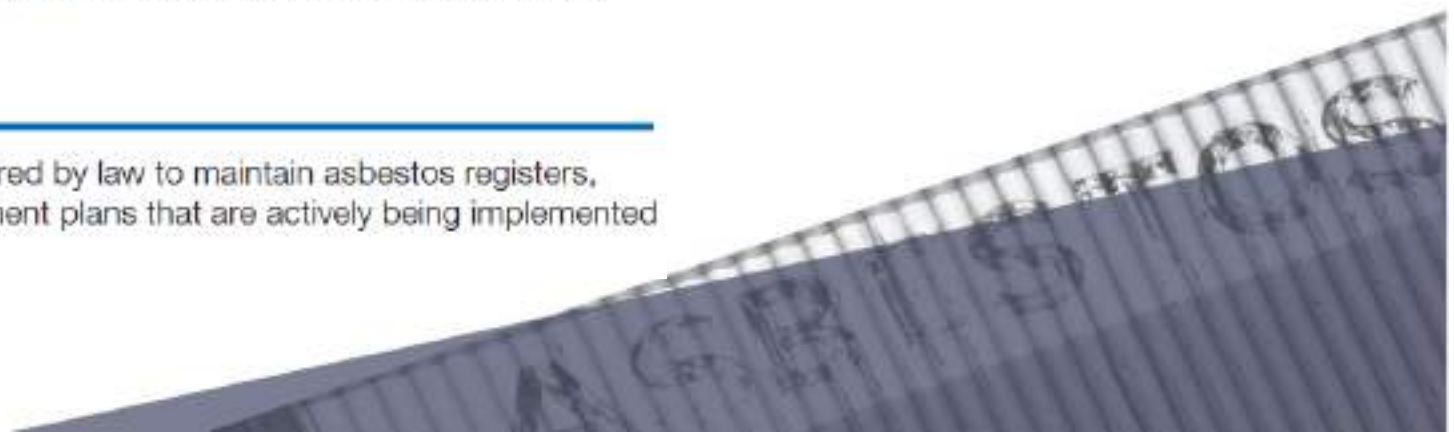
1. increased awareness of the health risks of ACMs and where to source information: all tradespersons whose work brings them into contact with ACMs; all workers in workplaces with ACMs; 80 per cent of homeowners and occupiers, 80 per cent of property managers and real estate agents

2. all governments have identified and assessed the risks associated with ACMs in publicly owned and controlled buildings, land and infrastructure

3. all jurisdictions have schedules and processes for the prioritised safe removal according to risk of ACMs from public buildings and infrastructure, and safe disposal of that material

4. all regulators have in place and have implemented asbestos compliance programs

5. all commercial buildings which are required by law to maintain asbestos registers, have up-to-date registers and management plans that are actively being implemented



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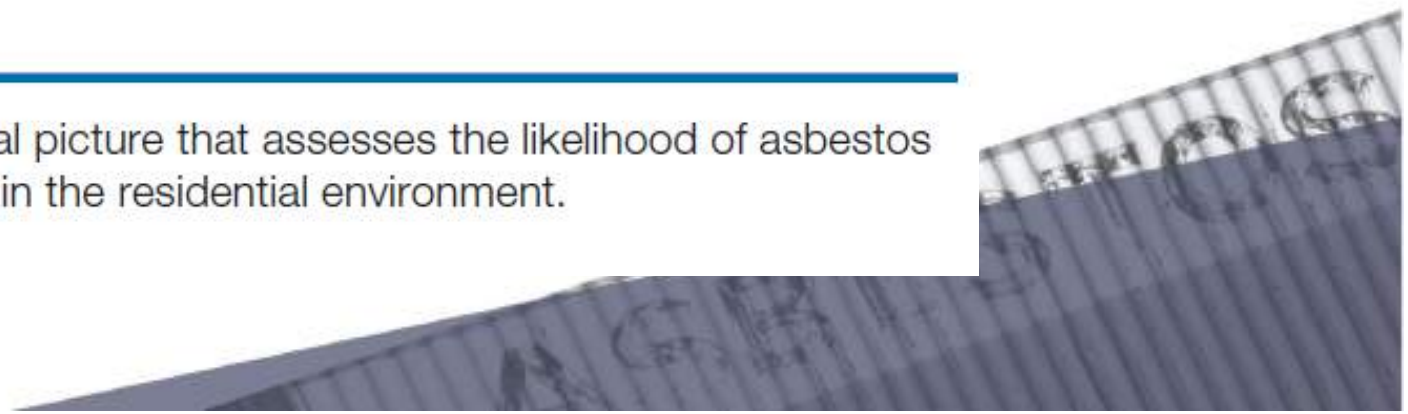
6 all regulators are investigating, prosecuting and penalising serious known breaches of asbestos-related laws including illegal waste disposal and importation

7 easier and cheaper disposal of asbestos waste

8 bans of asbestos production and use in South-East Asia and the Pacific have been influenced and progressed

9 develop an evidence-based national picture that assesses the likelihood of asbestos containing materials being present in the residential environment.



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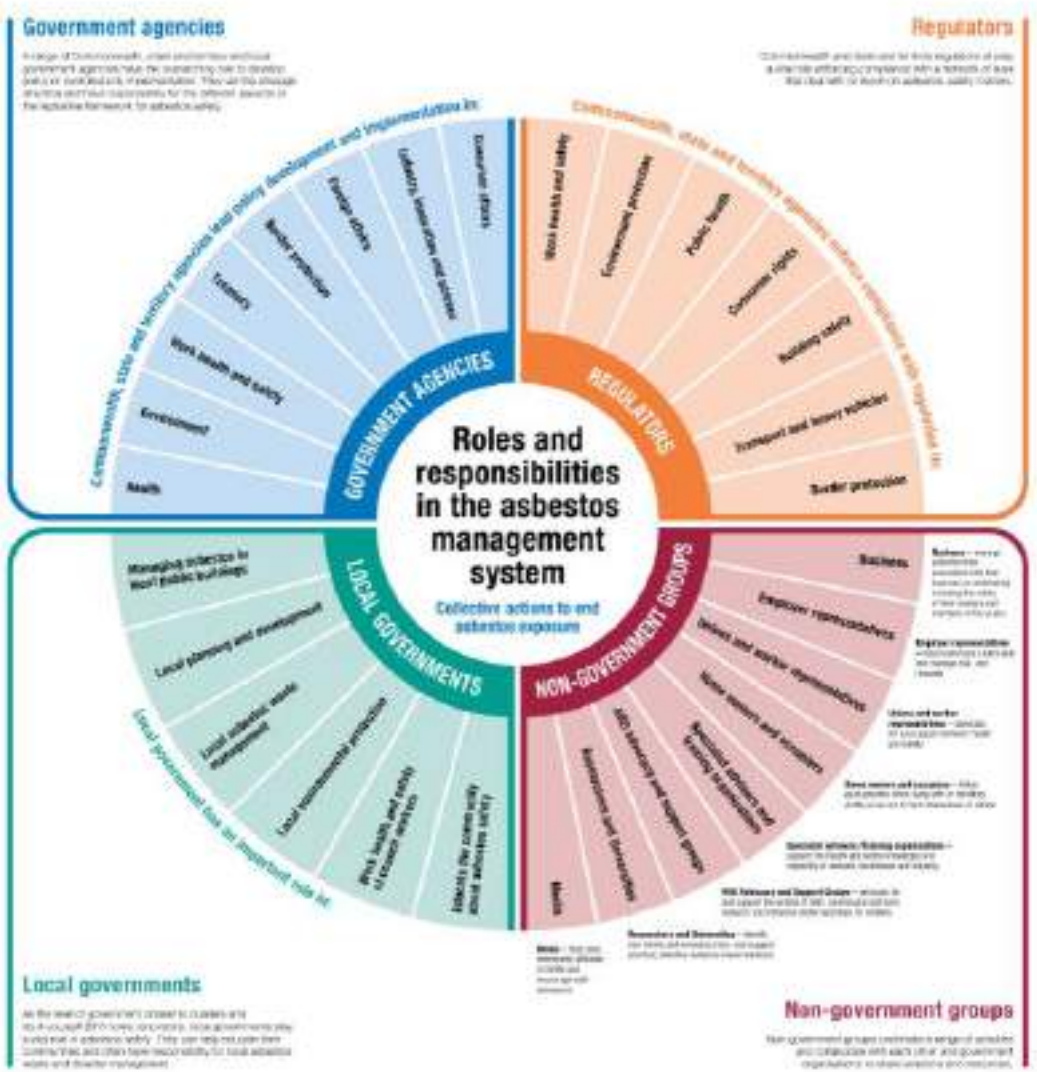

Roles and Responsibilities

- NSP 2019–2023 details the roles and responsibilities in the asbestos management system.

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Asbestos Safety and Eradication Agency

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A review of the WA guidelines for the assessment, remediation and management of asbestos contaminated sites

• Note: The various State Regulators have varying requirements for the assessment of legacy asbestos in soil.

contaminatedsites@health.wa.gov.au
http://ww2.health.wa.gov.au/Articles/A_E/Asbestos-contaminated-sites

• For information on site contamination in general, contact DWER on 1300 762 982 or visit the following website: http://www.der.wa.gov.au/contaminatedsites

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Asbestos as a soil contaminant

Three separate categories used

- Fibrous asbestos – includes all friable material (whether originally friable or degraded to friable)
- ACM - non-friable for the purposes of WA guidelines
- Asbestos Fines – small debris, fibre bundles and fibres.

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Asbestos as a soil contaminant

- Does not affect environment
- Is not a health issue in soil – only air
- Release of airborne ‘respirable fibres’ depends largely on dust generating activity and presence free fibres throughout the soil.

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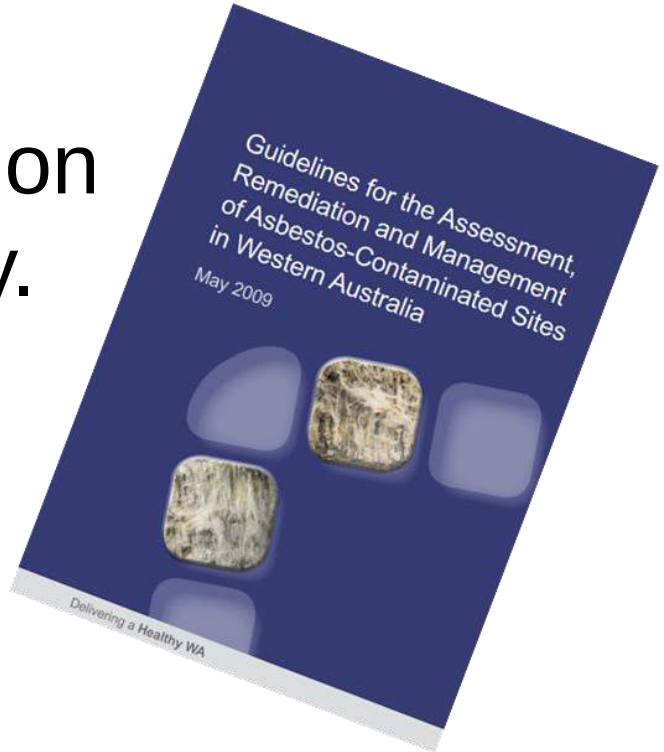
Why do we need guidelines for soil?

- The intent of the Guidelines remains the same:
  - to ensure that asbestos soil contamination is identified early and managed properly.
  - Need to record information about site contamination and protect future generations



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Ongoing need

- Contamination does occur and we need to be able to respond in a safe and consistent way.
- Need to manage contamination from
  - pre-regulation – legacy issues (brownfield sites)
  - Non-compliance with current regulations
  - Incidents

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What is being updated?

- New chapter on how guidelines fit with existing legislation
- Increased expectation on competency required to assess and manage contamination
  - Increase skills and breadth of knowledge
  - Bring in health or specialist knowledge

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What is being updated?

- Clarity regarding site inspection methodology and reporting requirements
  - ACM/FA as the main measure of contamination
- Use and interpretation of laboratory reports
- Tier 2/ health risk assessment
- Increased focus on effective and specific Site Management Plans

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Legislation and competency

Asbestos is a controlled substance, need knowledge of:

- OSH and Health Legislation
- National Codes of Practice
- Range of asbestos products historically used
- Sampling and analytical methodology and limitations

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Sampling and assessment

- Conceptual site models and focused sampling plans to aid early decision making and management.
- Site specific assessment, including site specific criteria and health risk assessment.

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Supplementary Guidance

Supplementary guidance will be provided for:

- Small-scale or simple surface impacts – low potential exposure
- Immediate Response Actions – high potential exposure
- Response to fires and other natural disasters
- Long term management of parks and reserves

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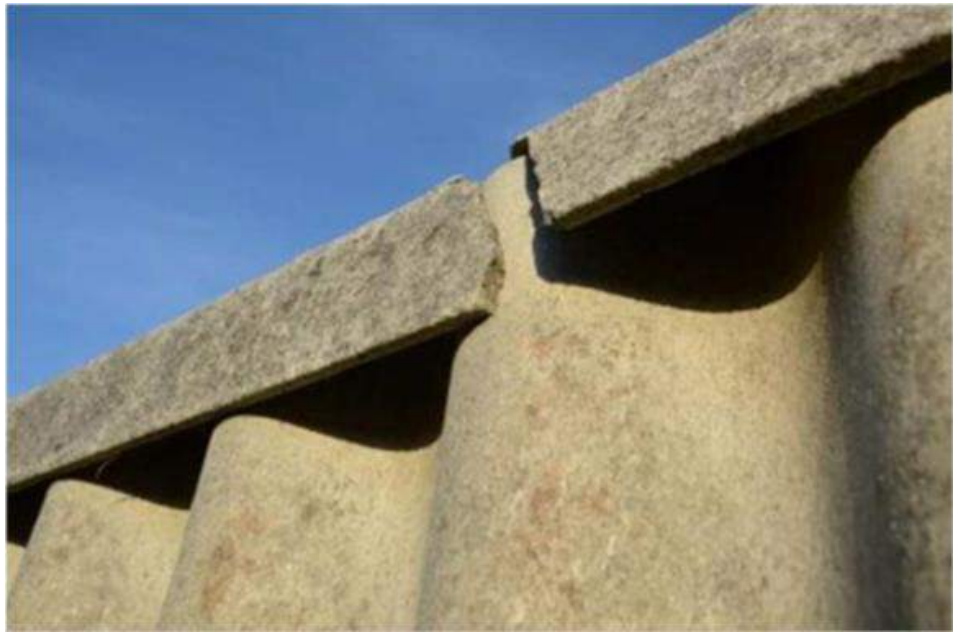
Conclusions

- Dealing with minor or ‘trivial’ contamination early and effectively.
- Greater focus on site specific conditions and exposure assessment.
- Refocus on the need for prioritised and compliant removal of “original” products with an understanding of potential contamination issues.



What’s next

- Consultation Draft released this month
- Workshops to be held early next year
- Final draft prepared
- Document published online

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Thank You

- Thank you to Stephanie Claydon of Australian Asbestos safety and Eradication Agency for providing advanced information for the National Strategic Plan 2019-2023 and

- Pierina Otness of the WA Department of Health for information on the revision of the assessment, remediation and management of asbestos contaminated sites guidelines.

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Consultants and the Criminal Law – How are they caught? Presentation to ASBESTOS 2019

Jon Cooper – Partner
Womble Bond Dickinson (UK) LLP

19 November 2019

Issues to be addressed

- Back to basics – duties under health and safety legislation
- The basis of liability on the part of consultants under criminal law
- Defences – for the employer and consultant

Basic Principles

- Duties imposed on employers under HSWA and Regulations are non-delegable
- Those obligations cannot be varied or diluted by contractual arrangements
- Duties can be discharged (but not delegated) through the use of consultants if that amounts to reasonable practicability

Section 3 HSWA – the route to criminal culpability on the part of Consultants

- Section 3 (1) – "*It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety".*
- Section 3 (2) – "*It shall be the duty of every self-employed person who conducts an undertaking of a prescribed description to conduct the undertaking in such a way as to ensure, so far as is reasonably practicable, that he and other persons (not being his employees) who may be affected thereby are not exposed to risks to their health or safety.*

The nature of consultancy/consultancy services

- In effect providing the entire health and safety function (often adopted by micro/small businesses)
- Providing a specific service in relation to certain health, safety and welfare requirements such as
  - Asbestos management
  - Legionella
  - HAVS monitoring

Potential defences

- *“But I am only a consultant ….”*
- *“But I engaged a consultant to take care of it….”*
- Reasonable practicability

How to establish reasonable practicability – employer

- Evidence of reasonable enquiries to establish competence and resource of contractor before appointment
- Monitoring performance of the contractor
- Evidence that recommendations made previously had been acted on.
- Evidence that health and safety matters not within the scope of the agreement with the consultant were properly managed

Reasonable practicability – the consultant

- Clear understanding of both parties of the scope of the engagement of the consultant
- Evidence that the employer was made aware of its statutory obligations not covered by the engagement and how those should be addressed
- Clear unequivocal advice
- Not turning a blind eye when recommendations/requirements for compliance on the part of the employer were not being followed

Consequences of getting it wrong

- Fines
- Custodial sentences
- Order under Section 42 HSWA?

ANY QUESTIONS

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Surface Dust Sampling and the analysis of the asbestos content

Dr Garry Burdett

Summary of approaches used for asbestos

- Surface sampling methods:
  - Direct surface pick-up (damp filter papers, Sellotape, Post-it notes, forensic tape, spray-on – peel off coatings)
  - Multiple surface pick-ups (damp filter papers, tapes)
  - Surface area wiping (Ghost wipes, Clean room wipes, scrape samples),
  - Vacuuming (Micro-vacuum using a filter cassette or tubing on a cassette)
- Analytical methods:
  - Qualitative analysis: ID by PLM, SEM – EDXA
  - Quantitative analysis: Analytical TEM, SEM-EDXA, PLM point-counting
- Dust is composed of particles $\leq$ 1 mm and debris are particles >1 mm diameter (ASTM D5755). Debris is large enough to analyse by PLM.

Examples of ASTM International standards for sample collection from surfaces in workplaces and buildings (non-asbestos).

- ASTM E1728 "Wet" wipe Smooth surfaces Applicable to Pb sampling; regulatory applications
- ASTM D6966 "Wet" wipe Smooth surfaces Various wetting agents can be used; applicable to metals
- ASTM E1216 Adhesive tape Smooth surfaces Poor collection efficiency for ultrafines; may damage fragile substrates; multiple analytes
- ASTM D5438 Modified upright vacuum cleaner Floors Sampling from carpets; multiple analytes
- ASTM D7144 Sampling cassette with collection nozzle Rough, porous, uneven surfaces; fragile surfaces "Micro-vacuum" dust sampling for metals; may be applicable to other agents
- ASTM D7296 "Dry" wipe Fragile surfaces Applicable to beryllium only; special cases
- ASTM E1792 Pb wipe specification Smooth surfaces Applicable to Pb sampling; may use for other metals; regulatory applications
- ASTM D6661 Solvent-wetted wipe Smooth surfaces Applicable to sampling of organic compounds ASTM E2458 Swab sampler General surfaces Suspected biological agents in powders
- ASTM D6333 Polyurethane foam roller Floors Applicable to pesticide residues

ASTM International standards for sample collection from surfaces in workplaces and buildings (asbestos).

- D 5755, Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Surface Loading;
- D 5756*, Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Mass surface loading (* Withdrawn 2017) ; and
- D 6480, Test Method for Wipe Sampling of Surfaces, Indirect Preparation, and Analysis for Asbestos Structure Number Concentration by Transmission Electron Microscopy.
- Measures asbestos structures >5 µm long of all widths

ASTM D5755 Method

- ASTM D5755-09(2014) Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Surface Loading.
- The method determines the concentration of fibres collected on a filter from a 100 cm^2 area by microvacuuming at (1.06 m/s face velocity) with an angled tubing nozzle (6.3 mm dia.)attached to an air sampling cowl.
- Wash out with 50% water and alcohol, through 1 mm mesh and ultrasonic suspension at calibrated power for
- The standard detection limit for the method is about 1,000 fibres/cm^2 based upon seeing four (4) asbestos fibres in a specified number of TEM grid openings

ASTM D6480 – 19 Wipe Sampling

- **ASTM D6480 – 19** Standard Test Method for Wipe Sampling of Surfaces, **Indirect** Preparation, and Analysis for Asbestos Structure Number Surface Loading by Transmission Electron Microscopy
- The collection efficiency of this wipe sampling technique* is unknown and will vary among substrates. (*Particle free, continuous filament wipes e.g. SKC Ghost wipes pre-moistened with deionized water).
- This test method is generally applicable for an estimate of the surface loading of asbestos structures starting from approximately 1000 asbestos structures per square centimetre.

Limitations for use of ASTM D5755 & D6480

- 5.1 It is used to assist in the evaluation of surfaces in buildings, such as ceiling tiles, shelving, electrical components, duct work, and so forth. This test method provides an index of the concentration of asbestos structures per unit area sampled.
- 5.1.1 This test method does not describe procedures or techniques required for the evaluation of the safety or habitability of buildings with asbestos-containing materials, or compliance with federal, state, or local regulations or statutes. It is the user's responsibility to make these determinations.
- 5.1.2 At present, a single direct relationship between asbestos sampled from a surface and potential human exposure does not exist. Accordingly, the user should consider these data in relationship to other available information (for example, air sampling data) in their evaluation.
- 5.2 One or more large asbestos-containing particles dispersed during sample preparation may result in large asbestos surface loading results in the TEM analyses of that sample. It is, therefore, recommended that multiple replicate independent samples be secured in the same area, and that a minimum of three such samples be analysed by the entire procedure.

ASTM D 7390, Guide for Evaluating Asbestos in Dust on Surfaces by Comparison Between Two Environments

- This guide describes methods for comparing environments and does not draw any conclusions relating asbestos surface loadings to the potential safety or habitability of buildings.
- This guide does not address risk assessments or the use of dust sampling in risk assessment.
- Compares a control environment v test environment by taking random samples (equal numbers) in the two environments plus open and closed field blanks.
- TEM results are initially compared by calculating the 95% confidence intervals of the combined samples in the test with the control areas to see if they overlap. (assumes all samples have the same analytical sensitivity).

ISO 16000-27:2014 (Indoor air)

- ISO 16000-27:2014 Determination of settled fibrous dust on surfaces by SEM (scanning electron microscopy) (direct method).
- Based on VDI 3877 part 1: 2011-09, Indoor air measurement – Measurement of fibrous dust settled on surfaces, Sampling and analysis (SEM/EDXA).
- Adhesive tape sampling and SEM evaluation based on ISO 14966.
- The result can be specified in asbestos structures **(>0.2 µm width**) per unit area and/or classified into four different loading classes.
- Analytical sensitivity depends on the area examined and can be as low as 10 structures/cm^2.

Sampling: Tape,wipe or microvacuum?

- Surface wipe sampling is best on smooth surfaces: forensic tape & microvacuuming can be used on all surfaces.
- The efficiency of the sampling method is dependent on:
  - Material type (clothing, carpet, vinyl flooring, cement screed, cable tray)
  - Surface texture (rough or smooth)
  - Surface adhesion;
  - Electrostatic properties;
  - Dust particle size;
  - Amount of surface dust etc.
- Very few studies have compared the use of different sampling methods for asbestos.

Comparison of Micro vacuum and wipe samples (Kominsky J and Millette. J. Journal of ASTM International, Vol.8, No.5 Paper ID: JAI103477)

- Micro-vacuum and wipe samples were collected and analysed for asbestos using ASTM Methods D5756 and D6480, respectively.
- The surface type of 14 (of 15 contiguous) locations was concrete-masonry block;
- The average surface concentration reported by the micro-vacuum samples was numerically higher than the wipe samples, but the difference was not statistically significant (P=0.195).
- Both methods yielded an equal number of samples below the analytical sensitivity;
- The false-negative rates were the same for each method.
- Micro-vacuum and wipe sample concentrations were not correlated (R^2=0.207). The length and width of asbestos structures collected by wipe samples was significantly larger than by micro-vacuum samples (P=<0.001).

Interpretation of surface dust results

- A general yardstick among some US researchers was that TEM fibre concentrations for all fibres >0.5 µm long is that surface dust concentration (s/cm2) can be described as:
  - ~1000 = LOD
  - >100,000 = Contaminated
  - As method used and surface sampled can cause substantial variations in the sampling efficiency, and spatial variations between the areas sampled, it is difficult to subdivide into meaningful categories and use of the comparison method ASTM D7930 should be used.

Use of surface dust analyses to predict airborne levels if disturbed

- There has been attempts to link surface dust asbestos fibre levels to airborne concentrations or even use them as the basis of litigation to pay for the removal of ACMs from buildings in the US.
- Requires many temporal and spatial assumptions:
  - Ease of resuspension and type/s of disturbance;
  - Duration and frequency of the disturbance,
  - Scale and extent of the area disturbed,
  - Distribution of the settled dust on the surface and when suspended in air;
  - Room size and air changes per hour

Resuspension K-factors for asbestos

- Resuspension factor (k) = Concentration in air/Surface concentration.
- Value is disturbance specific.
- Units cm^{-1} and typical values from TEM measurements of asbestos are 10^{-5} to 10^{-6} for various cleaning and activity (basketball game in gym) disturbance types.
- General cleaning even dry broom sweeping *will give rise to airborne levels of <0.01 s/cm^3 if surface dust levels are less than 1000 s/cm^2
- Limited knowledge in terms of >5 µm long fibre index.

*Hayes S. and Millette J. Settled asbestos dust sampling and analysis CRC press 1999 p64).

OSHA reply to proposal for use of surface dust sampling to assess airborne exposure. (7/10/2015)

- **Question:** Would OSHA consider an assessment finding from "my protocol", when it meets the EPA's standard, as sufficient "objective data" under the OSHA asbestos construction standard's?
- **Protocol:** Where upon receipt of analytical results from your air and dust samples, your protocol makes specific calculations to average sample results and factor for room volumes. The calculated results are then compared with the asbestos airborne clearance level of 0.01 fibre per cubic centimeter (f/cc)
- **OSHA Reply:** No.

Asbestos Dust/Wipe Sampling –ALG appendix

- Appendix 4/17 Minutes of the 19th meeting of the ALG Technical Working Group, 17 October 2017 .
- The detection of a few individual asbestos fibres in surface dust does not provide a reliable measure of exposure or risk. Individual fibres present an inconsequential amount of asbestos. Fibres on some surfaces (eg high level surfaces) may have been present for a long period of time (possibly even years). In the absence of any other evidence of the presence of asbestos (eg debris or suspect material), the dust would generally not even merit any specialist remedial action.

Asbestos Dust/Wipe Sampling –ALG appendix

- Speculative dust sampling is not advised particularly where there is no incident, debris or suspect material.
- Sampling for asbestos in dust may have some practical application where it is linked to a recent suspected disturbance or incident or a known source of contamination.
- It is not recommended that dust samples be collected as wipe samples on adhesive tapes, wet wipes or filters, due to unreliability in collection efficacy and as the types of asbestos present can be difficult to identify using the standard procedures.

Barking up the wrong tree?

Hart et al. J Environ Public Health. 2009; doi: 10.1155/2009/189509

- In 2007/2008 EPA contractors collected bark samples from forested areas surrounding the former mine site (Libby) and found AA bark contamination ranging from less than the limit of detection (LOD) to 20 million s/cm^2. AA contamination on tree bark extends several kilometres (km) from the mine site outside of the EPA restricted zone.
- The pre- and post- travel vehicle wipes collected for the FS 4872 vehicle driving activity simulations revealed concentrations below the AS for both the November and July trials.
- AA was detected on the chainsaw bar after all of the simulation activities. In terms of structure counts reported by the laboratory, 12 of 15 fibres were less than 5 μm long.

Summary of current practice

- Building inspection: Survey for damage to ACMs and debris released.
- Incident inspection: Determine spread using visual inspection and surface dust analysis (if appropriate).
- Clearance inspection: Survey area is clean and free of debris, low angle light beam to look for dust and debris.
- Clearance sampling: Carry out worst case disturbance (sweeping surfaces with broom and brush or leaf blower) to measure air concentration inside the enclosure.
- Final clearance: Look for remaining debris in area after enclosure removed and transit areas. (was area pre-cleaned before removal)

FACULTY OF ASBESTOS ASSESSMENT AND MANAGEMENT

The D Suite

Colette Willoughby
FAAM Deputy Registrar
BOHS Principal Examiner (Asbestos)

The Background

- BOHS Asbestos Qualifications
- Technical Focus
- P Modules
- P400 – P404
- Analysts & Surveyors

The Background

- What about Asbestos Management?
- P405 – Management of Asbestos in Buildings
- P407 – Management of Asbestos in Premises (The Duty Holder Requirements)
- All sorted
- Or was it??

The Review

- P405 – Very Technical
- P407 – Policy & Management Plan
- The GAP !

The Actions

- Development and Changes Specific to Duty Holders & Responsible Persons

- New Suite - Clarification

The D Suite

- The D SUITE
- D407
- Advanced Development Qualification
- 3 day course

"The D407 qualification builds on the knowledge gained by candidates in P405 – Managing Asbestos in Buildings by going into more detail on asbestos management, including how to produce, develop and implement an asbestos management plan, and how to carry out checks on its effectiveness. Additionally, they will learn how to compile an incident report if any asbestos-containing material is disturbed."

FAAM

The D Suite

- The D413

Asbestos Management Practicalities & Awareness

Who is it for?

- Responsible persons, estates and contract/project managers, facilities managers, caretakers, etc.
- Day to day management of asbestos

- 2 day course

FAAM

The D Suite

- The D412
- Senior Management Responsibilities for Managing Asbestos

Who is it for ?

- People who are responsible at a high level of management and have financial authority and access to board members for example and hold influence.
- Those who have high level roles & responsibilities delegated to them by the duty holder.

- ½ to 1 day course

FAAM

Availability

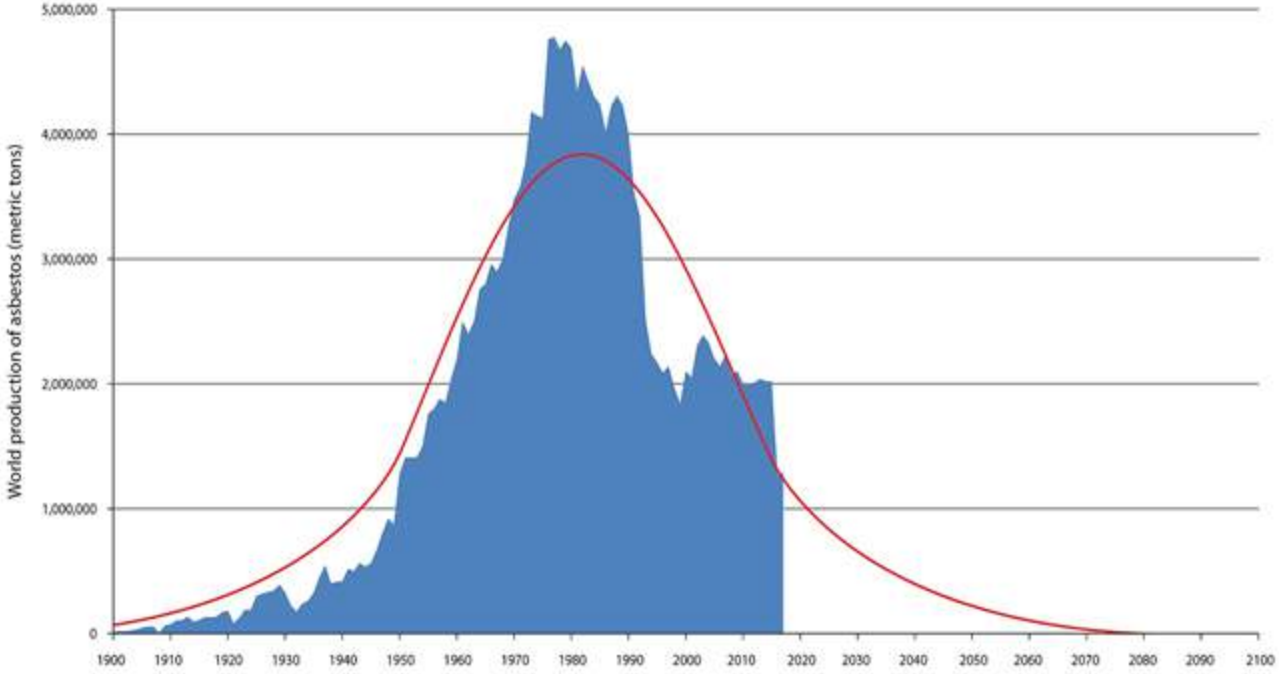
- D407 – January
- D413 – pilot in December
- D412 – pilot in November/December

Any Questions?

Today's Asbestos Industry: Commercial Interests Trump the Truth

"Approved by Donald Trump. 45th President of the United States."

Global Asbestos Production



- Still an industry
- Half the size it was in 1975
- Now just chrysotile
- Projected to continue till 2060 - 2070?

"Every 20 tons of asbestos produced and consumed kills a person somewhere in the world" (Furuya et al, 2018)

Fibre Types

Amosite - South Africa

- accounted for 97% crocidolite production
- and virtually all amosite production
- last asbestos mine closed in 2002 with a legal ban in 2008
- Why? Mines closed due to declining market caused by health concerns

Australia

- The Wittenoon crocidolite mine closed in 1966 (for economic reasons)

Todays producers - Russia / Kazakhstan / China / Others

- Produce only chrysotile

"Since asbestos is the major cause of mesothelioma and chrysotile constitutes 95% of all asbestos use world wide. it can be concluded that chrysotile asbestos is the main cause of pleural mesothelioma in humans."

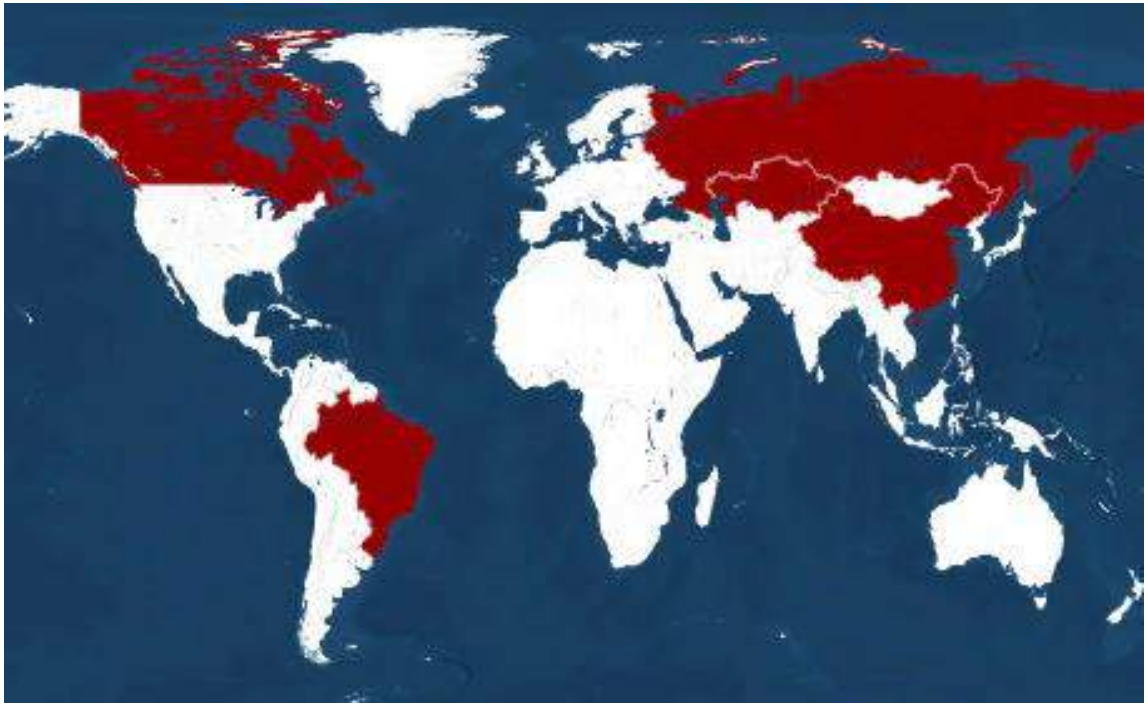
Relative dangers of the fibre types:

Chrysotile: 1

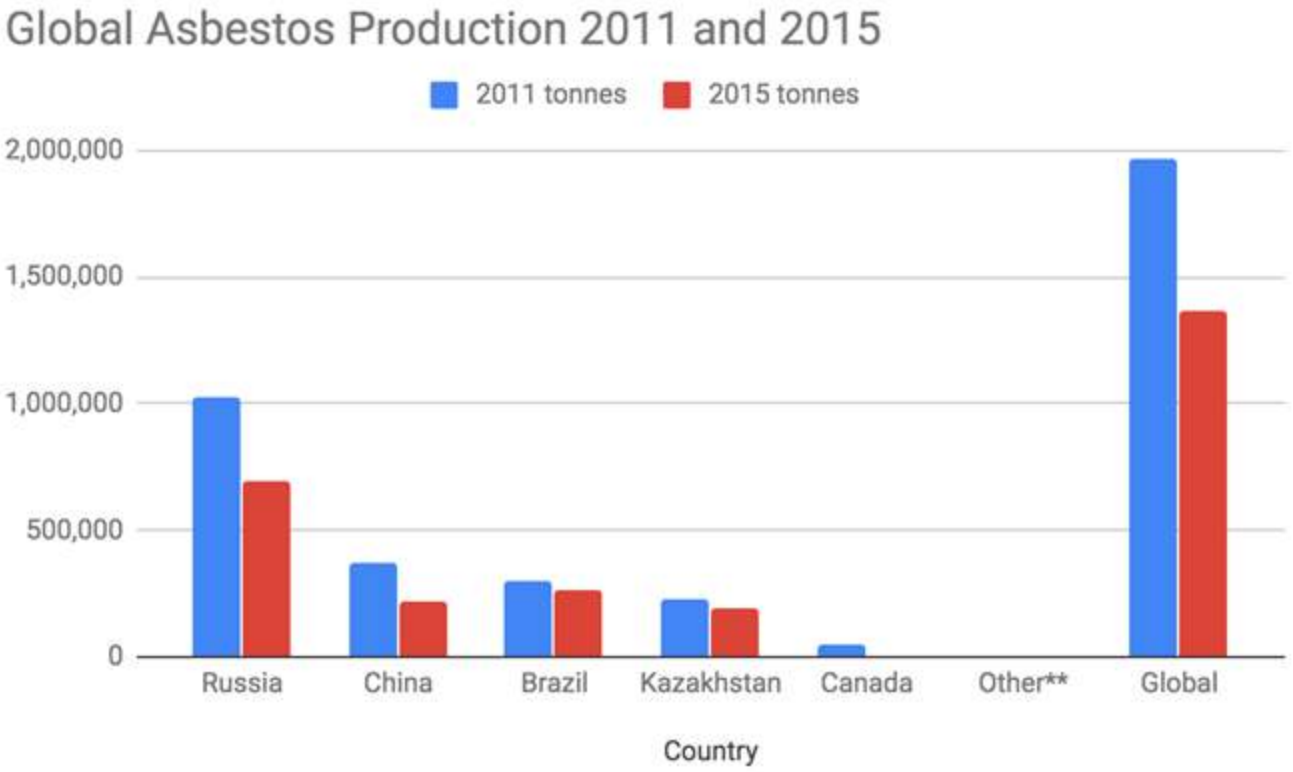
Amosite: 100

Crocidolite: 500

Global Asbestos Production 2013 - Where?

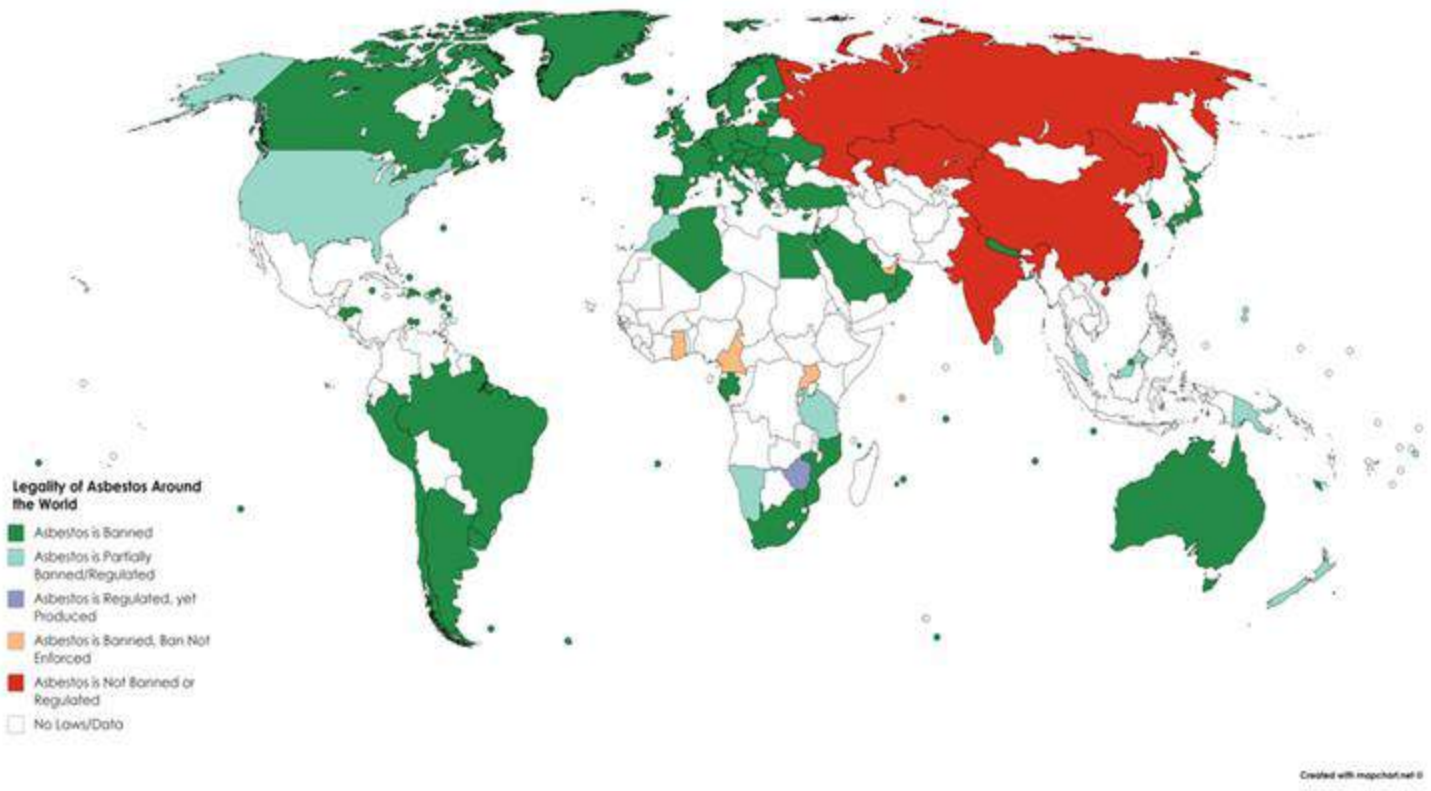


Recent Global Asbestos Production - Tonnages



- Canada: Stopped mining chrysotile in 2018
- Brazil: Ceased chrysotile mining in 2017
- 30% reduction between 2011 and 2015

Asbestos Use 2018 - Where?



Recent bans:
Brazil
Canada

Current Use:
Russia
China
India
Kazakhstan
Others
>36% of global population

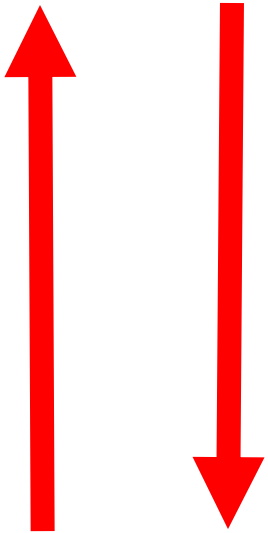
The Inverse Relationship Between Exposure and Consequence

Exposure Needed to Contract:

Asbestosis
Lung Cancer

Diffuse Pleural Thickening
Pleural Plaques

Mesothelioma



Consequence Of Condition:

Mesothelioma

Lung Cancer
Asbestosis

Diffuse Pleural Thickening
Pleural Plaques

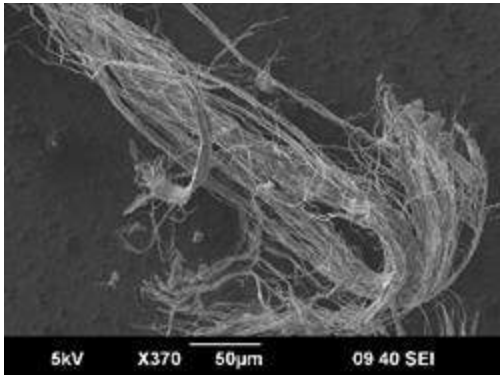
Chrysotile is Dangerous!
Why: High Level Exposure...

- During mining, milling, manufacture and installation, chrysotile can not be made and handled safely
- Causes lung cancer, asbestosis

- No evidence that modern practice controls fibre levels better than earlier practice
- Higher control = lower profit

Mortality in chrysotile asbestos workers in China (2013).

"Mortality rates for lung cancer and nonmalignant respiratory diseases in both asbestos workers and miners are four and three times higher, respectively, than expected, which are greater than those seen in studies from western countries, likely a reflection of heavier exposures and less effective protection for workers. An increased risk of gastrointestinal cancer was also detected in chrysotile miners. There have been surprisingly few reported cases of mesothelioma, however, which could, at least partially, indicate a problem in diagnosis".



Chrysotile Causes Mesothelioma

- Chrysotile alone causes mesothelioma

- "Modern" Chinese chrysotile: up to 10% Tremolite
- Tremolite contamination increases the mesothelioma from "chrysotile" exposure?
- The Hodgson and Darnton Model:data from Quebec and Italy, tremolite contamination is therefore accounted for

*"...crocidolite presents the highest asbestos related mesothelioma risk. The risk associated with sodic **tremolite** (winchite) appears to be similar. **In chrysotile miners and millers, the mesothelioma risk has been linked with exposure to asbestiform tremolite.**". (recent Chinese Study)*

Legislation, Control Measure and Enforcement - Chinese Chrysotile Exposure

"The guidelines that China's government has put forward to protect workers do in fact offer workers protection. But the challenge is Chinese officials don't have any way to effectively implement them. Factories flagrantly fail to respect Chinese law."

Control Measures and Enforcement
Chrysotile Mining

Then - Quebec
Asbest, Russia

Now -

Control Measures and Enforcement
Mining Chrysotile:

Then - Quebec

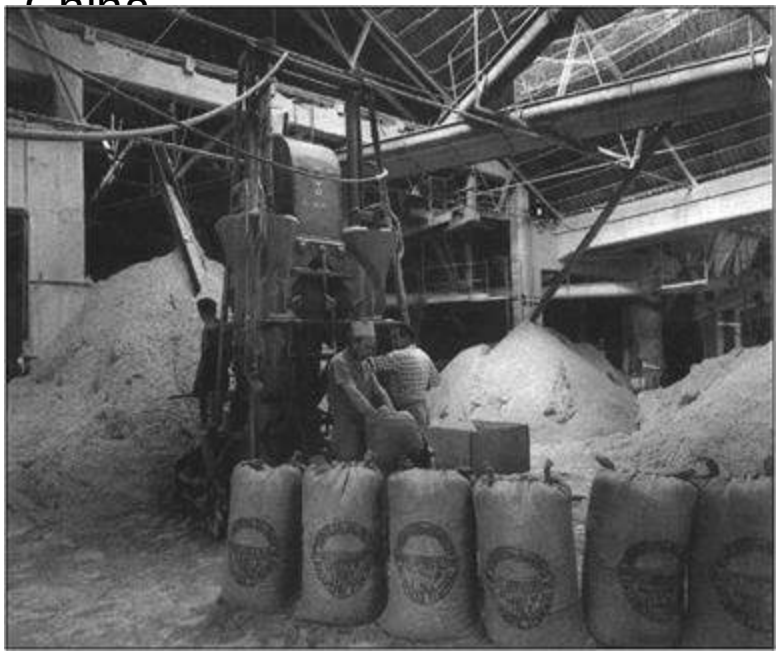
Drilling 40-Foot "Down Holes" for Primary Blasting at the Mine at Asbestos, Quebec

Now -

Control Measures and Enforcement

Bagging Chrysotile:

Then - Italy



Now - China

International Legislation and Protocol

Rotterdam Convention

- Requires unilateral agreement to come into force - a problem
- Amphiboles banned
- Chrysotile not banned
- India agreed to list chrysotile in 2011, but reversed this in 2013
- Russia, Kazakhstan, India, Kyrgyzstan, Pakistan, Cuba, and Zimbabwe currently oppose inclusion of chrysotile

As chrysotile contains tremolite, should it be included in the Rotterdam Convention?

Russian Chrysotile - Economic Context

- Economic Collapse: “From 1989 to 1998, **Russian output dropped 45%**,.”
- “In 2017, gas made up 59% of Russia's exports and 25% of its total revenue.”
- 400,000 employed, $800 million revenue / year in Russian and Kazakhstan
- 80% of Russian chrysotile is sold abroad
- Canada’s GDP roughly twice that of Russia’s, yet Canada only ceased chrysotile mining in 2018
- It is not banned in the USA

“He (Putin) promised to support Russian producers of chrysotile, especially in situations where we find ourselves under political pressure at the international level.” (Andrei Kholzakov, chairman of the Uralasbest union and the International Trade Unions Alliance for Chrysotile)

“We are for chrysotile”

Russian Chrysotile “Information”

Then in Europe

- “The less dangerous white type, if carefully handled does more good than harm”(Sir Richard Doll, 2004)
- EU only banned chrysotile in 1999
- *“The risk to health from asbestos in buildings is usually very low, if it remains undisturbed” (EU, 1999)*

Now in Russia

- “People face little risk of developing cancer from working with chrysotile if they stick to international safety rules”(2019).
- “A series of scientific studies found no evidence of a link between exposure to the substance and the disease”(2019).
- “….workers still live long, happy and safe lives engaged in chrysotile production”. (Valery Yustus)

“Cost of asbestos disease and death in Europe and USA: 0.7% of GDP” (Furuya et al, 2018)

“It is difficult to get a man to understand something when his salary depends upon his not understanding it” (Upton Sinclair)

Explaining Indian Imports

- State Political and Financial Collusion:
  - "There is a political consensus in India to promote asbestos at any human cost," he wrote in India Together in 2006.
  - "With asbestos firms being owned by politicians or the state itself, the government seems to be following a classic ostrich policy," Krishna wrote.
- Public Information, from UAL Industries Website, 2019:
  - "Dr F.D. Pooley's Report of 2004 concludes "asbestos fibres locked in to high density products like asbestos-cement have been rendered safe by the attendant chemical process …. "
  - "governments have stepped in and laid down pollution control regulations and the mechanisms to enforce their compliance. Compliance with these regulations re-assure the workers in asbestos-cement industries of a risk-free environment."

Conclusions

- The global asbestos industry continues
- Asbestos usage is restricted to chrysotile (white) asbestos
- Asbestos production has fallen sharply in last decade
- Can reasonably expect another 40-50 years production
- Ban new production- control does not work
- Current control measures insufficient for asbestos in-situ

"All you really need to know about the root causes, the cover-ups, and the human impact of occupational cancer you can learn from the example of asbestos. It tells you everything you need to know about the reality of our economic system, what it values and what it fails to protect. It teaches about the collusion between government and industry. It addresses the issue of so-called "junk science" and how the powers that be control information and public health policy…." (Jim Brothy, Carcinogens at Work, 1999)

"The more things change, the more they stay the same" (Jean-Baptiste Alphonse Karr, 1848)