



# Asbestos in Soils Forum

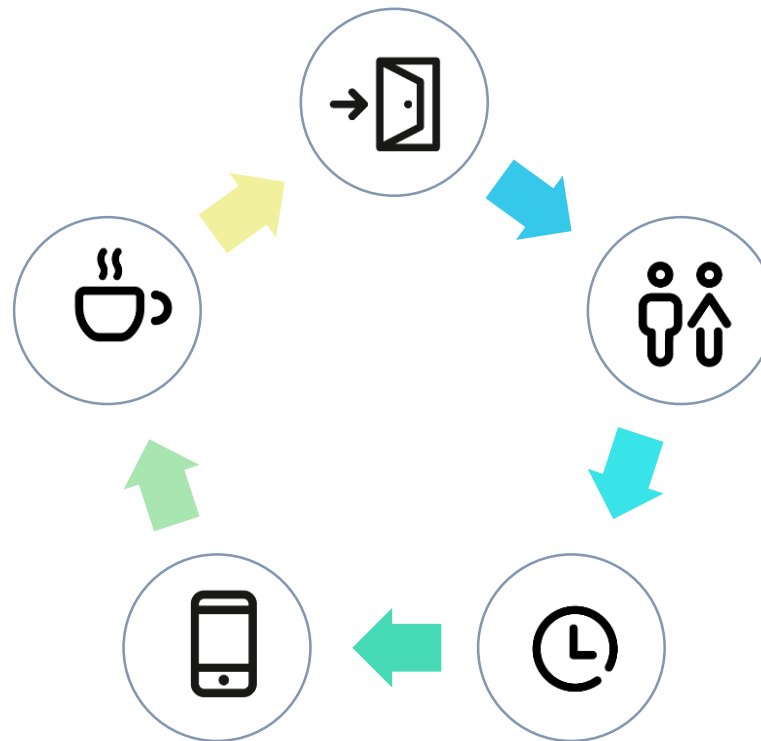
Second General Meeting

24 September 2019

# Acknowledgement

*We acknowledge the Traditional Custodians of the country on which we meet today, the Dharug people and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.*

# Housekeeping



# Membership Update

## Corporate Membership

**Consultancy** – For asbestos and hazardous materials consultancy.

**Non-Consultancy** – For organisations outside of a consultancy. Laboratories, Suppliers, Construction / Civil Contractors, Demolition / Removal Contractors etc.

## Non-Corporate Membership

For Government Department, Not-for-Profit Organisation, Association or Charities.

## Full Individual Membership

## Provisional Membership

# Congratulations

## Corporate Business Members (Consultancy)

EDP Consultants

EP Risk Management

OHMS Group

Progressive Risk Management

Property Risk Australia

EI Australia

## Corporate Business Members (Non-Consultancy)

Allens Industrial Products

Envirolab Services

## Non-Corporate Business Members

Ausgrid

## Full Individual Members

Cassandra Fernandez

Simon Butterfield

Fraser Elder

Stephanie Hall

Jason North

Jared Clifford

John Batty

Andrew Brabek

Leroy (Lee) Brown

Jessica Little

Mark Reggers

Nigel Johnson

Paul Paciullo

Peggy Trompf

Scott Bamford

A series of footprints are visible in the sand, receding into the distance. The footprints are dark and clearly defined against the light-colored sand. The perspective is from a high angle, looking down at the tracks.

# AHCA The Journey So Far

Name of event sits here

# Jill Gallagher

Jill Gallagher is the Manager Asbestos  
Coordination within the NSW Environment  
Protection Authority (EPA)



Encouraging best practice through  
consultation & knowledge sharing.



# Asbestos in NSW



# Contents

01

Introduction

02

National context

03

NSW context

04

CLM and Waste presentations





# NSW ASBESTOS COORDINATION COMMITTEE (NACC)



New South Wales  
Aboriginal Land Council



# National Context

## Asbestos Safety and Eradication Agency (Cth)

- Established in 2013
- National Strategic Plan
- Liaison with states
- Research



# National Context

- The use of asbestos was banned by the Commonwealth in October 2001, and came into effect on 31 December 2003, subject to limited exemptions
- “Use” = manufacture, supply, storage, sale, use, reuse, installation and replacement
- Exemptions
  - research/analysis
  - removal, handling and storage for disposal
  - when encountered during non-asbestos mining
- In situ asbestos may be removed
- Import and export ban through customs legislation

# NSW Context

- Work Health Safety legislation (WHS Act)
- Planning legislation (EP&A Act)
- Contaminated land framework (CLM Act)
- Waste framework (POEO Act)
- NSW Asbestos Plan and NACC

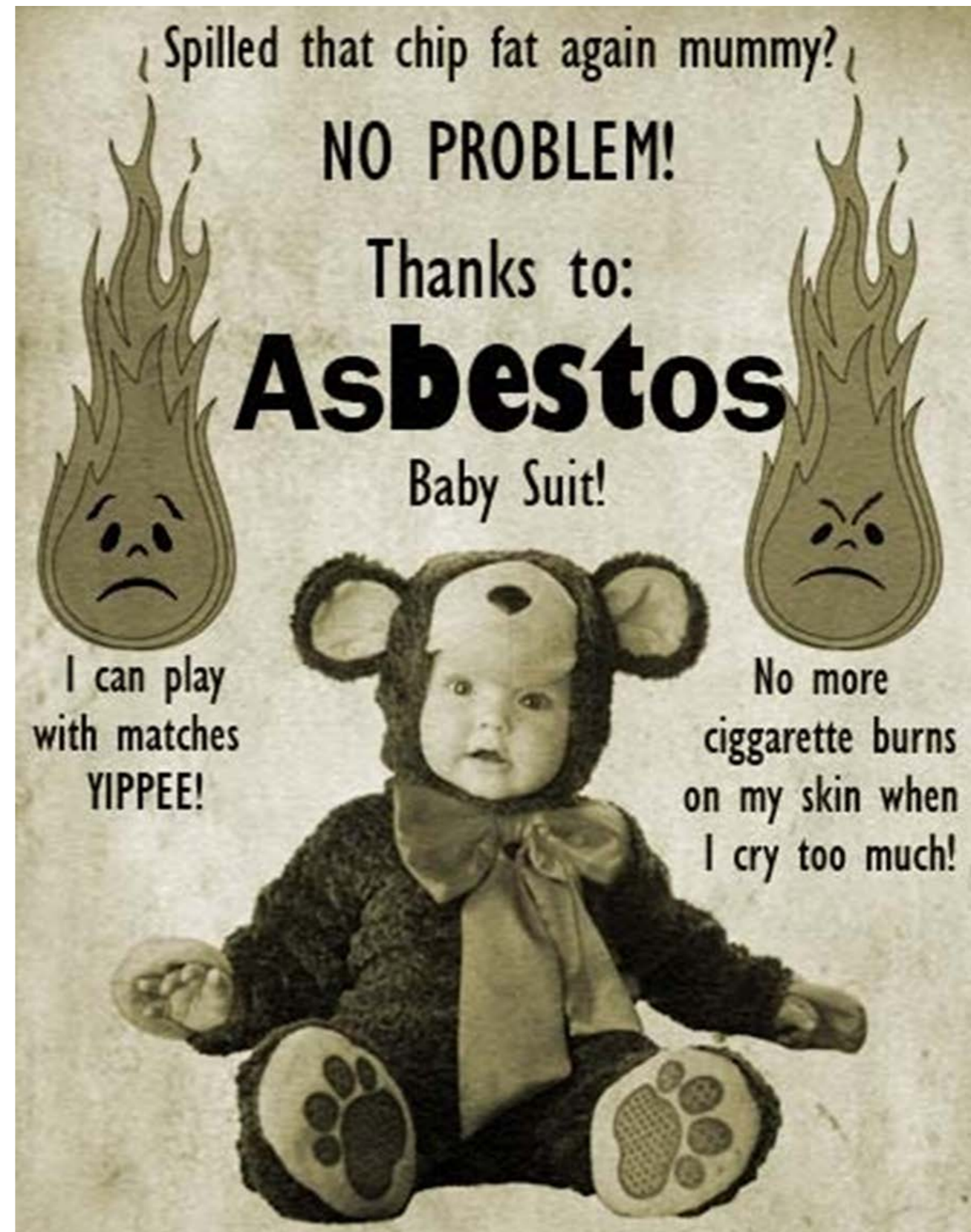
# Work of the NACC



- Community outcomes
- NSW Asbestos Plan
- State-wide behaviour change campaign
- Aboriginal communities make-safe program
- Other programs, driven by the plan

# Questions?

Jill Gallagher  
Manager Asbestos Coordination  
EPA  
(02) 9995 5562  
[jillian.gallagher@epa.nsw.gov.au](mailto:jillian.gallagher@epa.nsw.gov.au)



Name of event sits here

# Hamish Campbell

Hamish Campbell is the Unit Head of the James Hardie Legacy Sites team within the Contaminated Land Management section of the NSW EPA.



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# Asbestos in soils – Investigation under the CLM framework

For the Asbestos and Hazardous Materials Consultants Association (AHCA)

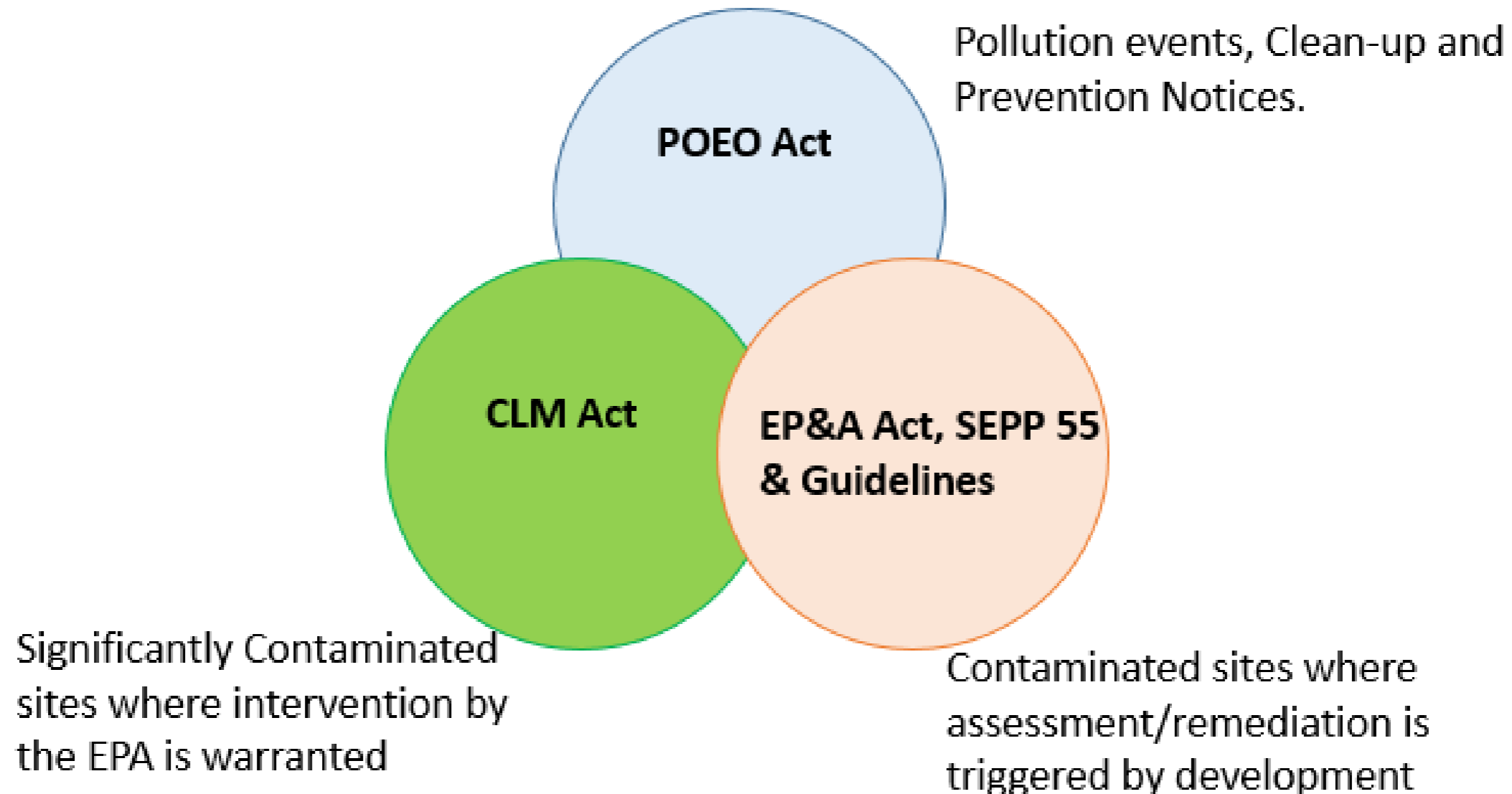
24<sup>th</sup> September 2019

# Overview

- Regulatory context and guidance
- What is ASBINS (what is not ASBINS)
- ASBINS Investigations
  - Criteria
  - CSM and Source
  - Planning and
  - Results interpretation



# Management of Contaminated Land in NSW



Also guidelines under Section 105 of the CLM Act

- Sampling Design Guidelines
- **Guidelines for consultants reporting on contaminates sites**
- Guidelines on the duty to report contamination under the CLM Act
- Guidelines for the NSW Site Auditor Scheme

# Duty to Notify NSW EPA?

Trigger for Asbestos (s 2.3.4 of Guidelines):

- friable asbestos is present in or on soil on the land, AND
  - the level of asbestos is equal to or above the health screening level
  - AND
  - a person has been, or foreseeably will be, exposed to elevated levels of asbestos fibres by breathing them.
- 
- Few sites declared as significantly contaminated because of asbestos in soil
  - Generally related to large scale disposal of friable asbestos. E.g. legacy tipping sites (manufacturers, power stations)



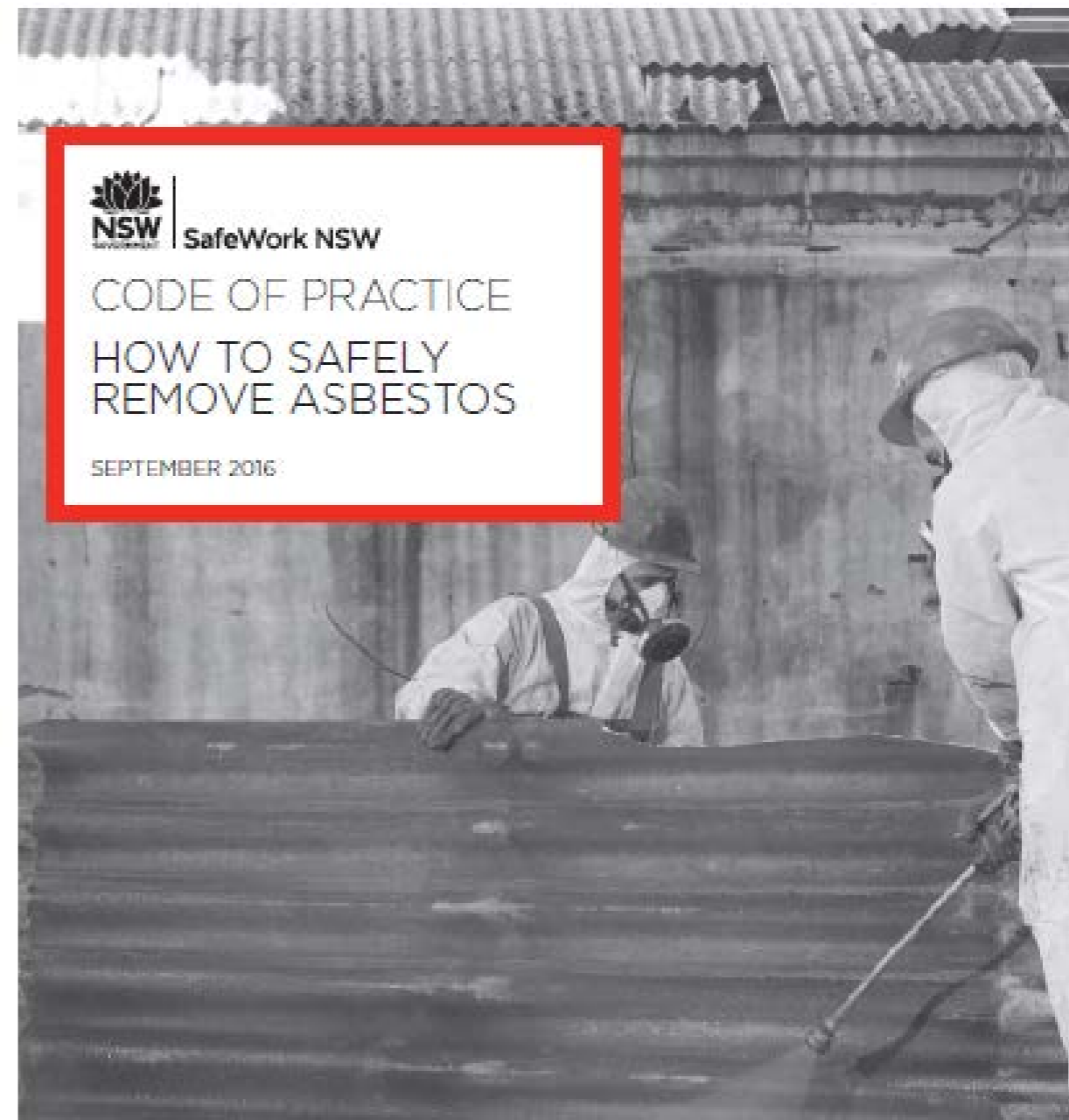
# Regulatory Framework and Guidelines

- **WorkCover 2014** (Now SafeWork NSW) - managing asbestos in or on soil guidance (NSW guidance)
- **NEPM 2013** - National environmental protection (Assessment of site contamination) measure 1999, Schedules B1 and B2, NEPC (2013) (National guidance)
- **WA DOH 2009** - Guidelines for Asbestos Contaminated Sites (State guidance) + **WA DOH 2018 Summary Update**
- **enHealth 2005** - The Management of Asbestos in a non-occupational environment (National guidance)



# Asbestos Removal and Asbestos in Soils

- SafeWork NSW guidelines
- Also relevant when working on contaminated sites:
  - When air monitoring is required
  - Asbestos Removal Control Plan
  - Clearance certificates
  - Licenced Asbestos Assessor (LAA)
  - Class A vs Class B removalist



# This is not ASBINS

When asbestos is part of the building fabric or intact building materials



Factory Roof, Photo – SafeWork SA



Sewage Treatment Plant, Confidential Site

# Asbestos in Soils – Friable and Bonded (non-friable)

**Bonded Asbestos Containing Material (bonded ACM)** – where asbestos is bound in a cement or resin matrix, in sound condition, restricted to materials that cannot pass through a 7mm x 7mm sieve.

**Fibrous Asbestos (FA)** consisting of loose fibrous material or severely weathered material, insulation products and woven asbestos; and/or

**Asbestos Fines (AF)** which consists of free fibres, fibre bundles and fragments of less than 7mm; and/or asbestos containing materials (ACM) which can be broken or crumble under hand pressure to generate free fibres.



Google



Confidential Site

# ASBINS Terminology

Table 6 Equivalency of terms used in the NEPM, WA DoH (2009) and Work Health and Safety legislation and guidelines

NEPM terminology (based on WA DoH 2009)	Work Health and Safety terminology
Bonded asbestos-containing-material or 'bonded ACM' ( <i>referred to as ACM in WA DoH 2009</i> )	Bonded asbestos/non-friable asbestos
Fibrous asbestos, FA	Non-bonded/friable asbestos
Asbestos fines, AF	

Terminology – NEPM refers to WA DOH (2009)

From a risk perspective FA and AF are considered Friable- *'material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by **hand pressure** when dry, and contains asbestos*

# Tier 1 Assessment Criteria

Table 7. Health screening levels for asbestos contamination in soil

Form of asbestos	Health Screening Level (w/w)			
	Residential A <sup>1</sup>	Residential B <sup>2</sup>	Recreational C <sup>3</sup>	Commercial/ Industrial D <sup>4</sup>
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF <sup>5</sup> (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1. Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
2. Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
3. Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
4. Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.
5. The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures (refer Section 4.10). This screening level is not applicable to free fibres.

## A Tiered Approach for the Assessment of the Human Health Risks of Asbestos in Soils

FRANK A. SWARTJES<sup>1</sup> AND PETER C. TROMP<sup>2</sup>

<sup>1</sup>National Institute for Public Health and the Environment, Bilthoven, The Netherlands

<sup>2</sup>TNO Environment and Geosciences, Apeldoorn, The Netherlands

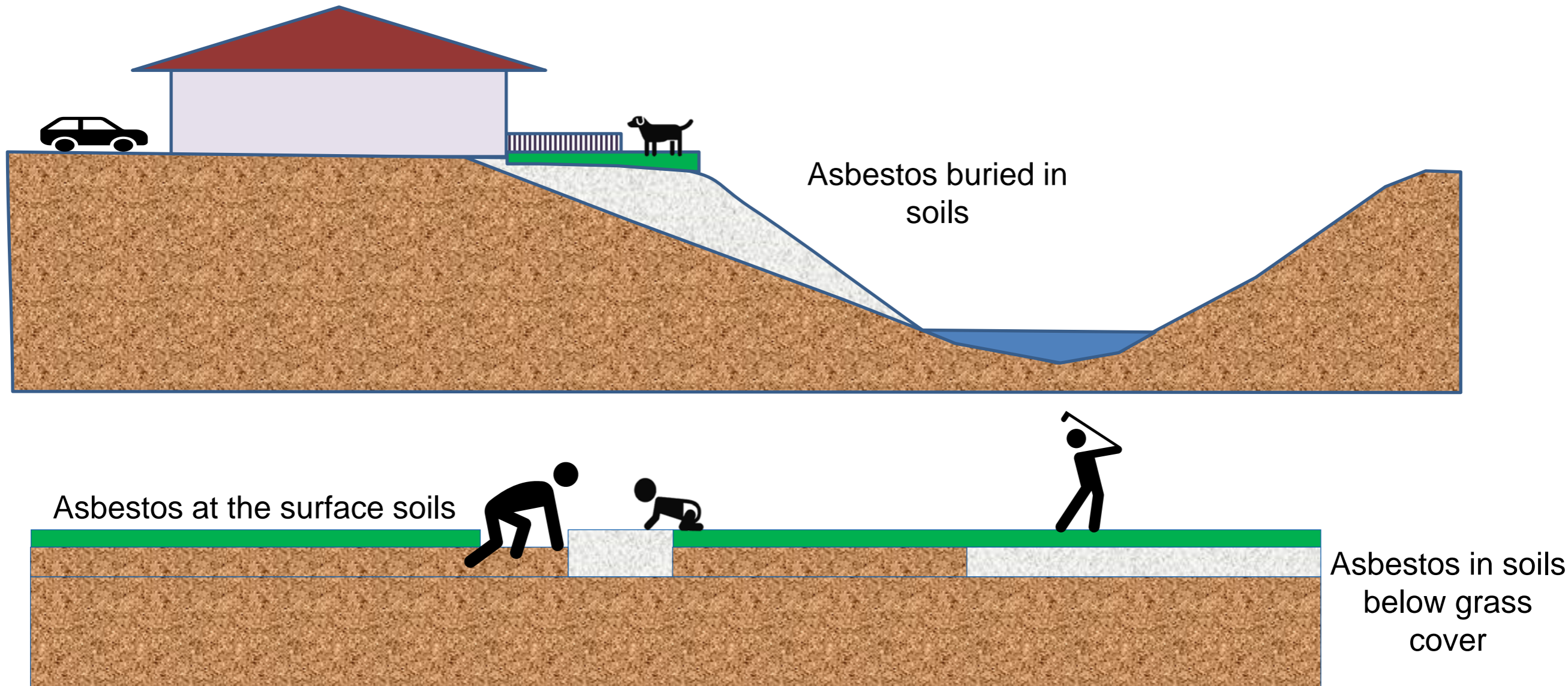
*A tiered approach for the assessment of human health risks of soil contamination with asbestos has been developed. When in a specific tier the human health risk can not be rejected, the assessment in the following tier has to be performed. Because the risks of asbestos are caused by inhalation of asbestos fibers, the emission of fibers from soil to air is the determining factor. In Tier 0 of the tiered approach a generic soil quality standard is used. This Intervention Value is 100 mg/kg<sub>soil,dw</sub> asbestos equivalents (0.01% by weight), i.e. the sum of the concentration of chrysotile asbestos and ten times the concentration of amphibole asbestos, for bound (non friable) as well as for friable asbestos. Tiers 1 to 3 are site-specific. Tier 1 concerns a simple qualitative testing procedure, in which the potential or probability for emission of asbestos fibers from soil to air is assessed. In Tier 2 the respirable fraction in the soil and house dust, which relates to the potential site-specific exposure to humans, is determined and tested. Finally, when the risk can not be excluded, the concentration of asbestos fibers in outdoor and/or indoor air has to be measured and tested according to a standardized procedure, in Tier 3.*

# ASBINS Site Investigation Guidance

- Refer to Workcover 2014 and NEPM Schedule B2  
*“All soil asbestos investigation and management work should be conducted by a **competent person**”*
- NEPM B2 references B1 and WADOH – use in combination
- PSI (site history, desktop, walkover)
- DSI (sampling based on PSI)
- Management Strategy
- 2 x Case Studies in NEPM



# Typical Conceptual Site Model



Source (?) – Pathway (?) – Receptor (?)

# CSM - SOURCE

*Don't overlook the basics – Robust CSM*

**What are the potential asbestos sources on-site (?)**

- weathered building materials
- poor demolition
  - Residential scale (building materials)
  - Industrial scale (equipment, building materials, pipework)
- dumped asbestos contaminated fill / illegally dumped waste
- poor quality imported fill
- neighbouring property?
- recent fire or bushfire?



# Detailed Site Investigation – Sample Planning

Contaminated Sites Management Series – Development of Sampling and Analysis Programs (2001) – Appendix C.<sup>1</sup>

Minimum Sampling Points Required for Site Characterisation Based on Detection of Circular Hot Spots Using Systematic GRID Sampling Pattern

This table has been modified from *Contaminated Sites Sampling Design Guidelines* (NSW EPA, 1995)

Area of the Site AND/OR Excavations ha (m <sup>2</sup> )	Number of Sampling Points Recommended	Equivalent Sampling Density (POINTS/ha)	DIAMETER OF THE HOTSPOT THAT CAN BE DETECTED WITH 95% CONFIDENCE(m)	grid size (m)
0.05 (500)	5	100.0	11.8	9.5
0.1 (1000)	6	60.0	15.2	12.9
0.2 (2000)	7	35.0	19.9	16.9
0.3 (3000)	9	30.0	21.5	18.2
0.4 (4000)	11	27.5	22.5	19.1
0.5 (5000)	13	26.0	23.1	19.6
0.6 (6000)	15	25.0	23.6	20
0.7 (7000)	17	24.3	23.9	20.3
0.8 (8000)	19	23.8	24.2	20.5
0.9 (9000)	20	22.2	25.0	21.2
1.0 (10 000)	21	21.0	25.7	21.8
1.5 (15 000)	25	16.7	28.9	24.5
2.0 (20 000)	30	15.0	30.5	25.4
2.5 (25 000)	35	14.0	31.5	26.7
3.0 (30 000)	40	13.3	32.4	27.4
3.5 (35 000)	45	12.9	32.9	27.9
4.0 (40 000)	50	12.5	33.4	28.3
4.5 (45 000)	52	11.6	34.6	29.3
5.0 (50 000)	55	11.0	35.6	30.1

Notes: 1. The provision in this table of the number of sampling points does not imply that minimum sampling is good practice for a given site. The investigator should be prepared to justify the appropriateness of applying this table or any other sampling rationale.

- Sampling Analysis and Quality Plan (SAQP)
- Set your Data Quality Objectives (DQOs),
- Build on PSI understanding
- Asbestos source/type/condition?
- Sampling Density:

NEPM WADOH NSW EPA  
Sampling Design Guidelines

up to 2 x numbers of samples are recommended depending on the likelihood of asbestos (*Table 1 WA*



# Sampling/Investigation Methodology

Guidance in NEPM B2 – method should consider asbestos source/type

- Handpicking/emu pick/raking
- Tilling/manual collection
- Screening
- Testpits and trenches preferred to boreholes:
  - greater subsurface area exposed
  - What is practical?
  - WHS considerations



*Confidential Site*



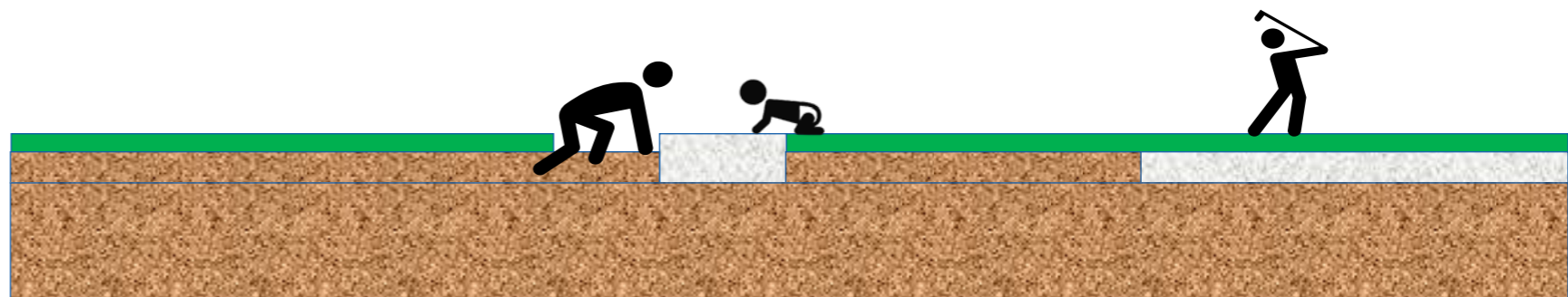
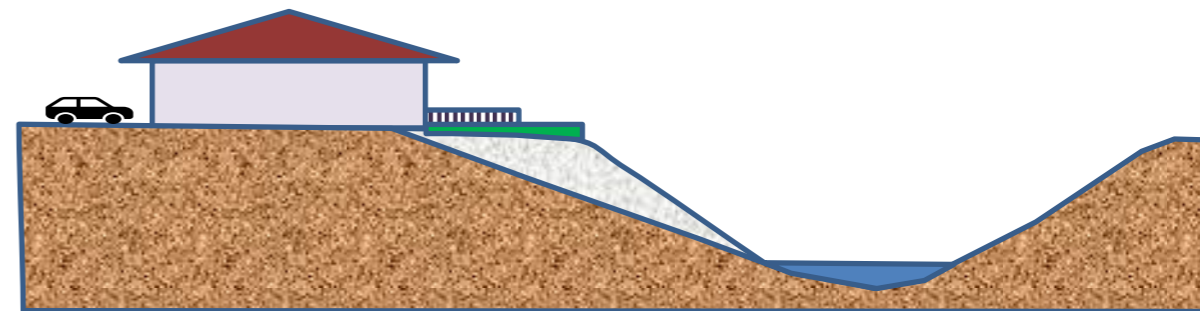
# Investigation Tips

- Fill/natural boundary very important
- Samples
- Suspected asbestos and soil
- Location is critical – lateral/vertical/layers, proximity to potential source
- Surface soils vs 0.1 – 0.2 m below surface?
- Extend sampling 30cm below potential contamination or extent of future disturbance
- Contingency – where suspected contamination is identified/delineation required



# Interpretation of the Results

- Weight of evidence approach should be taken
- Comparison to tier 1 HSLs
- Understand the nature and extent of the contamination
- Occurrence of asbestos vs potential sources (from PSI)
- Determine SPR linkage and risk:
  - Type of asbestos
  - depth of asbestos exceedance
  - ground cover
  - landuse setting
  - Refine the CSM



# Contaminated Land Management Updates?

Sign up for future updates!

[https://cloud.mail.epa.nsw.gov.au/newsletter-subscription?bid=Contaminated%20Land%20Management%20Updates&sub=Contaminated\\_Land\\_Management\\_Updates](https://cloud.mail.epa.nsw.gov.au/newsletter-subscription?bid=Contaminated%20Land%20Management%20Updates&sub=Contaminated_Land_Management_Updates)

Have your say on the draft guidelines –

<https://engage.environment.nsw.gov.au/consultants-reporting-on-contaminated-land>

Name of event sits here

# Alan Ly

Alan Ly is a Senior Project Officer in the Resource Recovery Policy branch of the EPA..



Encouraging best practice through  
consultation & knowledge sharing.





# Asbestos in soils – Waste framework

Alan Ly  
Senior Project Officer

Resource Recovery Policy

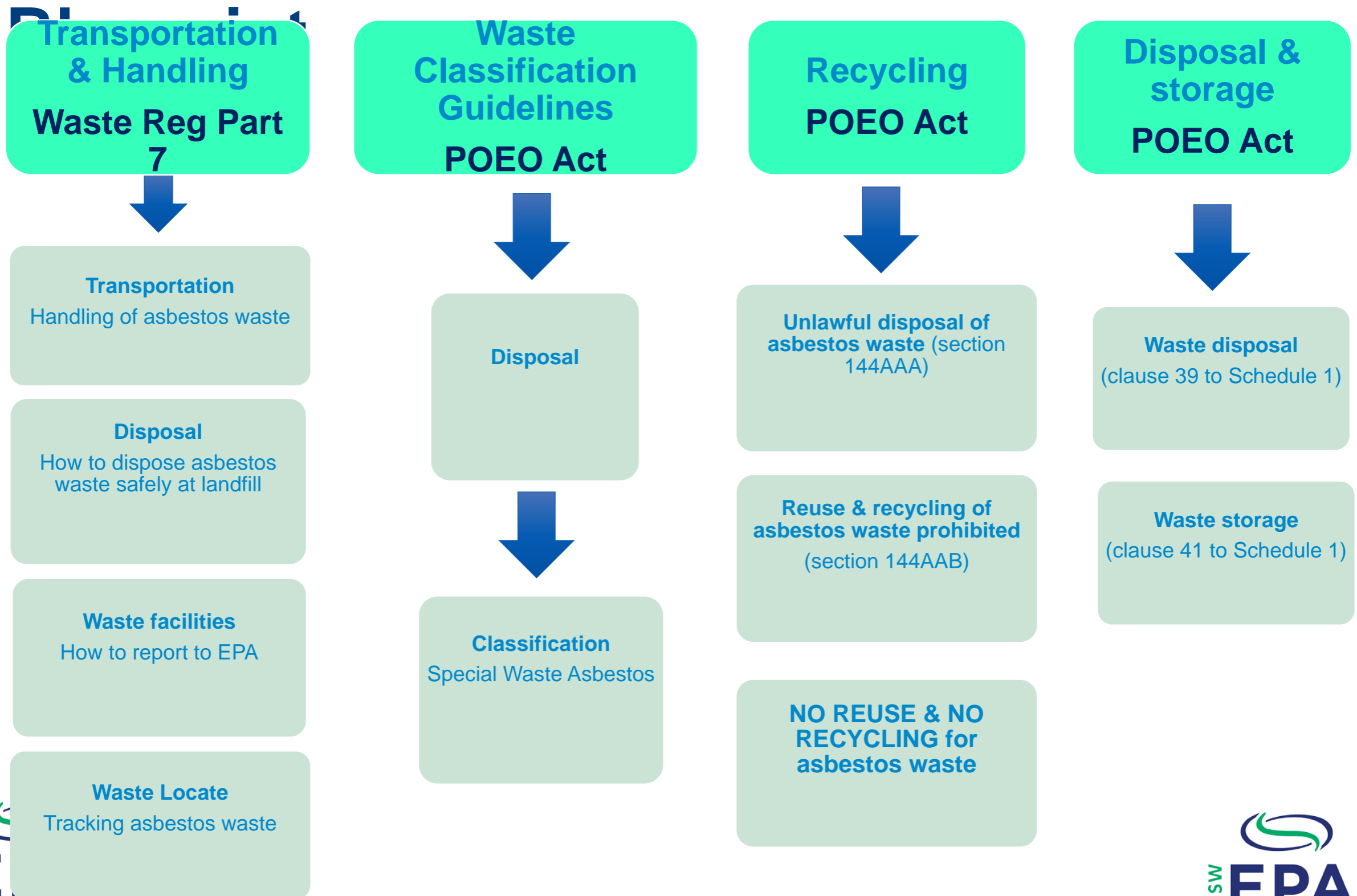


[www.epa.nsw.gov.au](http://www.epa.nsw.gov.au)

# Overview

- Waste regulatory framework overview
- Onsite Vs Offsite
- Application – asbins scenarios

# The asbestos waste framework -



# Is the activity 'onsite' or 'offsite'?

Onsite



VS

Offsite



# Where does 'offsite' come from?



New South Wales

Protection of the Environment  
Operations Act 1997

POEO Act 1997

Schedule 1

Schedule 1 lists all of the activities the EPA regulates

There are 8 'waste' scheduled activities in NSW

Common trigger for these scheduled activities are... "waste received from **offsite**"

# How do you determine if something is offsite or onsite?

- Lot and DP is very useful
- Development application
- Environment Protection Licence
- Seek legal advice. Can be very complex.
- Contact the EPA if you are unsure.



# Application - asbins scenarios

# Scenario 1 – Onsite vs Offsite

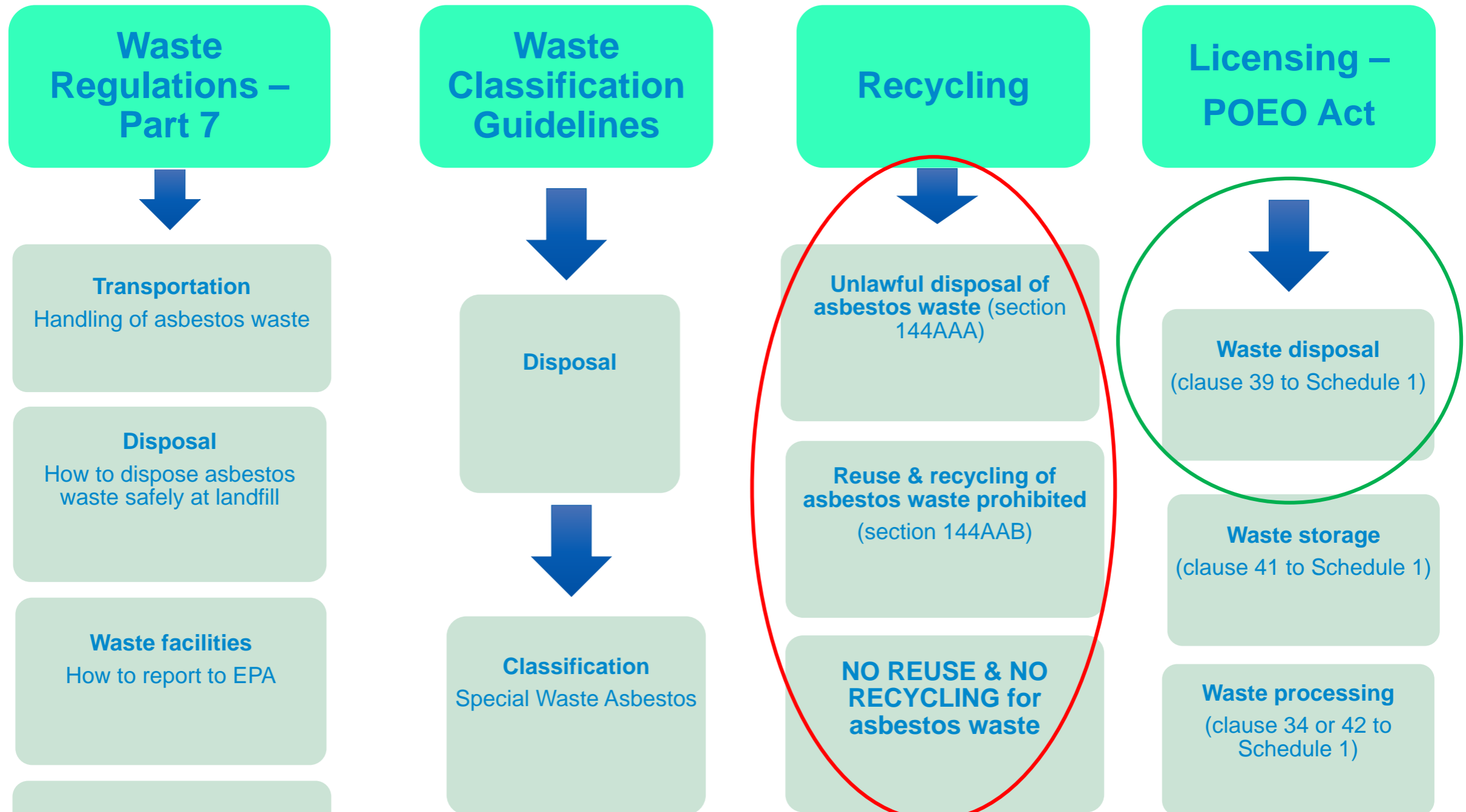
A client of yours has found asbestos in soil on a site. They would like to excavate this soil and take it to an **adjacent site** which they own, and build a containment cell to ‘cap and contain’ the asbestos soils.

They have asked you, what are the lawful requirements?

# Scenario 1 – Onsite vs Offsite



# Scenario 1 – Answer



**Answer:** Unlawful to deposit asbestos waste offsite via containment cell. But lawful if there is an environment protection licence

# Scenario 2 – Disposal of asbestos waste

A client of yours is undertaking development works, and found soils contaminated by asbestos. They would like to dispose of this material. What are the lawful requirements



**Answer:** Waste classification, Waste Regs (part 7), & licensing to ensure facility can receive asbestos waste

OFFSITE – Waste framework

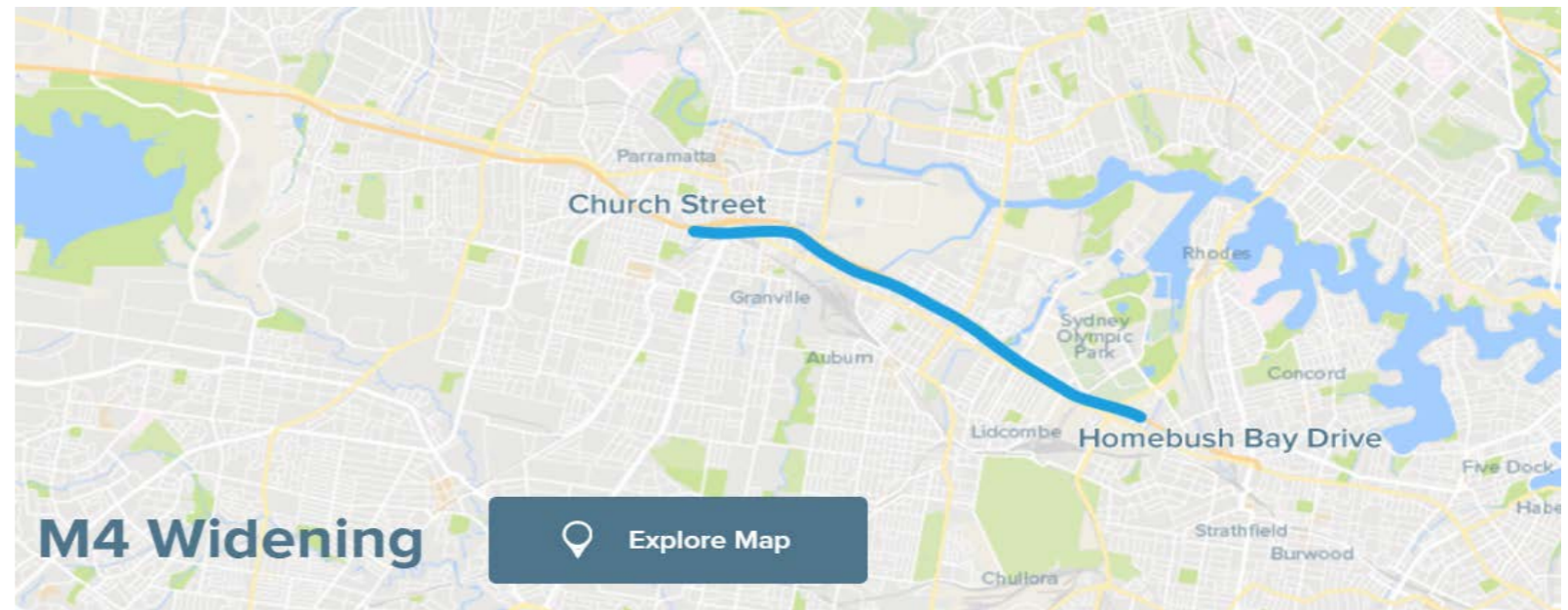
Waste  
Regulations –  
Part 7

Waste  
Classification  
Guidelines

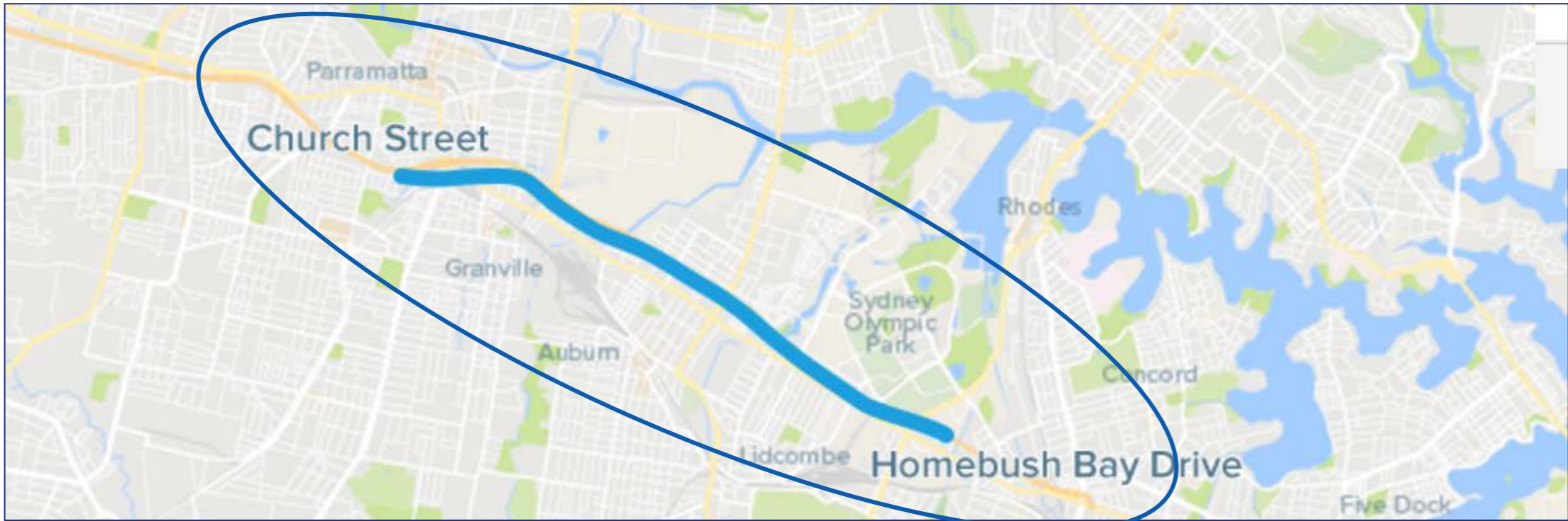
Licensing –  
POEO Act

## Scenario 3 – Asbestos waste

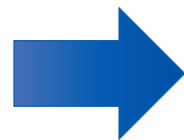
A client of yours found soils contaminated by asbestos on their site. They would like to take this soil to another part of the site and bury it. Onsite or Offsite?



# Scenario 3 – Answer



- EPA licence defines the boundaries of the site
- Asbestos soils deposited and buried anywhere within the licence is considered 'onsite'.
- Contaminated land framework applies



**Contaminated Land**

**NEPM**

**Contam  
G.lines**

# Scenario 4 – Stockpile of asbestos soil

A client has contacted you about a stockpile of asbestos soil on a site. The client wants to apply this soil onto the site, and has asked you what the lawful requirements are for this stockpile. Is this offsite or onsite?



# Scenario 4 – Answer

**Contaminated Land**

OR

**OFFSITE – Waste framework**

**Answer:** Not enough information provided. Ask questions. Be very careful, could be Waste or Consite framework

**Section 144AAB**

Asbestos must not be reused or recycled

Corporation  
**\$2M**  
Individual  
**\$500k**

**Section 144AAA**

Unlawful disposal of asbestos waste

Corporation  
**\$2M**  
Individual  
**\$500k**

**Section 143**

Unlawful transport & deposit of waste

Corporation  
**\$2M**  
Individual  
**\$500k**

**Section 144**

Use of land as unlawful waste facility

Corporation  
**\$2M**  
Individual  
**\$500k**

**Section 115**

Disposal of waste that causes harm

Corporation  
**\$5M**  
Individual  
**\$1M/ 4-7yrs**

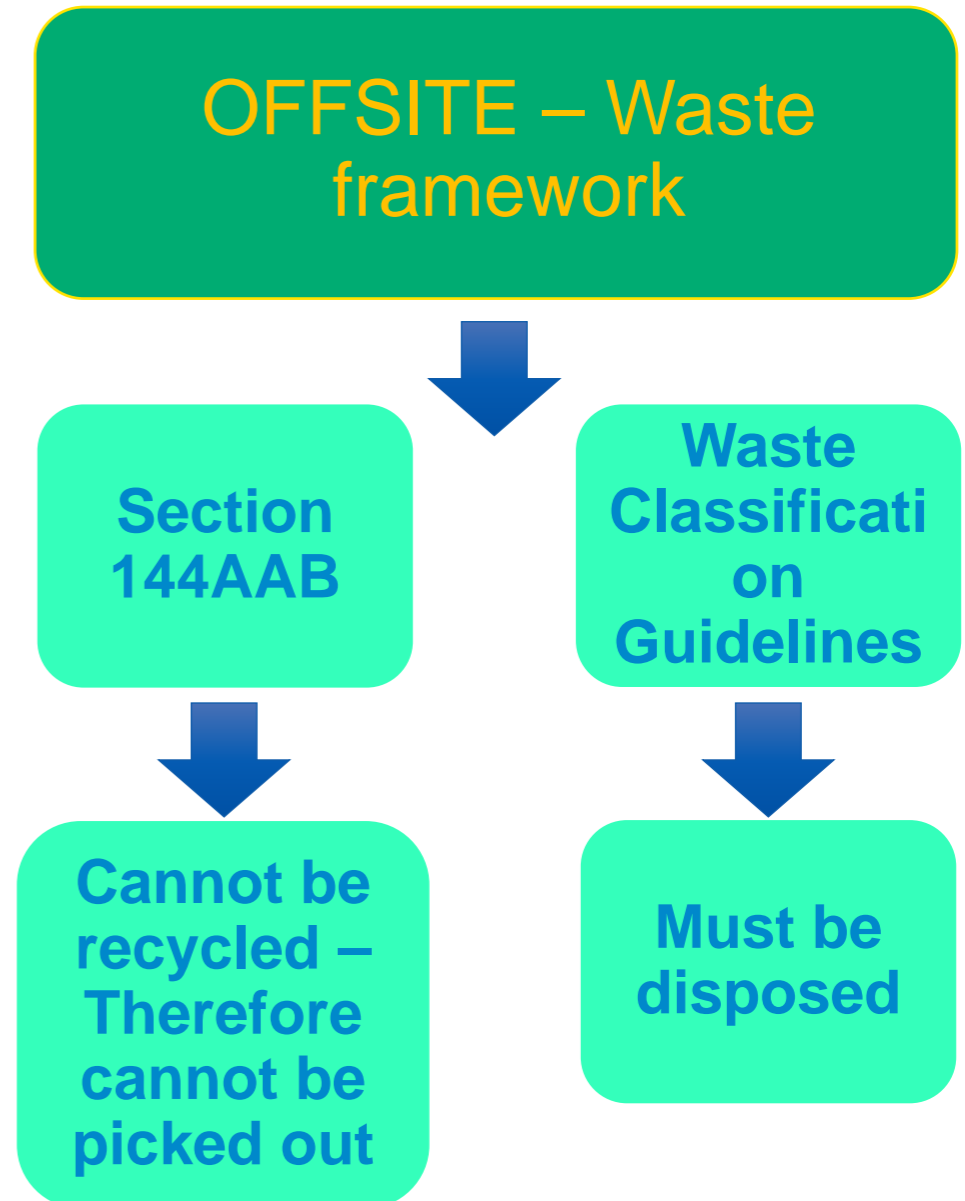
# Scenario 5 – Processing of asbestos waste

A client of yours found asbestos onsite. They would like to 'pick out' bonded asbestos from soil, and take the soil to landfill as GSW not Special Waste Asbestos.

Onsite or Offsite? Is this lawful?

Answer: OFFSITE – Waste framework. Not lawful

Answer



# Scenario 6 - Segregation of asbestos waste

A client has a large stockpile of soil with some pieces of bonded asbestos. They don't want to dispose as Asbestos Waste because of cost. They seek your advice about what to do.

Answer: ONSITE and/or OFFSITE

Segregation programme - bonded

Spreading & inspecting in 100 mm layers  
Sampling & testing soil - bonded & friable



Asbestos impacted



No asbestos

## Handy tips:

- Keep loads small for spreading
- If a small load contains asbestos, then only a small load is condemned
- If a large load contains asbestos, then a large load is condemned
- Take photographs
- Have good record keeping
- **INCREASE YOUR LINES OF EVIDENCE**

# Summary

- Understanding if the waste is generated 'onsite' or received from 'offsite' is key when addressing asbestos in soil issues
- Be familiar with the above asbestos waste scenarios

# Questions?

Environment Line: 131 555

Email: [waste.exemptions@epa.nsw.gov.au](mailto:waste.exemptions@epa.nsw.gov.au)

Subscribe: [waste.updates@epa.nsw.gov.au](mailto:waste.updates@epa.nsw.gov.au)

## **Future Activities**

**Asbestos in Soils Round Table Event – Business Member Reps  
Tuesday 22 October 2019**

**Asbestos in Soils – Laboratory Analysis & Round Table Debrief  
Tuesday 26 November 2019**

# AHCA - Membership Survey

[Click here for to fill out Members Survey](#)

# Expression of Interest – Asbestos in Soils Driving Committee

[Click here to fill out yur expression of interest](#)

**AHCA - Membership Survey**

The AHCA Executive Committee have prepared this online survey, which will ask you questions that will assist the Executive Committee to understand what you would like the AHCA to focus on and assist your professional development.

The survey should only take a few minutes to complete.

**\*Required**

**Email address \***

Your email address \_\_\_\_\_

What issues or hot topics would you like the AHCA to focus on and prioritise? Click on 3 hot topics/ issues below that you would like the AHCA to address

- Asbestos air monitoring
- Asbestos in dust
- Asbestos in soil
- Imported asbestos products
- Lead dust

**Expression of Interest**

Asbestos in soils driving committee

Would you like to be part of the asbestos in soils driving committee?

- Yes
- No
- Maybe

Why would you like to be part of the driving committee?

Your answer \_\_\_\_\_



Thank You





**Encouraging best practice  
through consultation &  
knowledge sharing.**

Become a Member today:  
[ahca.org.au/memberships](http://ahca.org.au/memberships)