The exposure of emergency service personnel to asbestos

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Why study asbestos and emergency services?

- Asbestos can be found in around 1 in 3 Australian homes
- Asbestos dumping is increasing
- Minimal Australian research on asbestos in the emergency service context
- Asbestos exposure not immediate thought of emergency services
- Asbestos products not readily identifiable - can not be seen, felt or tasted
- Asbestos is a known cause of cancer
- Asbestos related illnesses: 20 - 40 years after first exposure
- Asbestos fibers No safe level of exposure
- No current ‘field’ test available for asbestos
- Recent incidents and disasters have raised asbestos risk
- Risk for emergency services, victims, bystanders and media

Research aims

Compare current Australian emergency services training, policies and procedures when the likelihood of exposure to asbestos is suspected or confirmed, ensuring they comply with Australian Standards and current Australian best practice policies.

What is asbestos?

Asbestos is a commercial and generic term for six fibrous silicate minerals, classed into two groups:

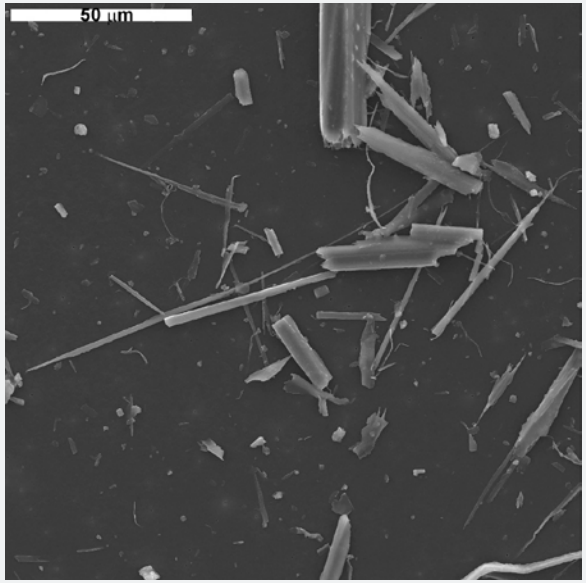
- **Serpentine** group - chrysotile, commonly known as white asbestos
- **Amphibole** group - amosite (brown asbestos) and crocidolite (blue asbestos), tremolite, actinolite and anthophyllite.

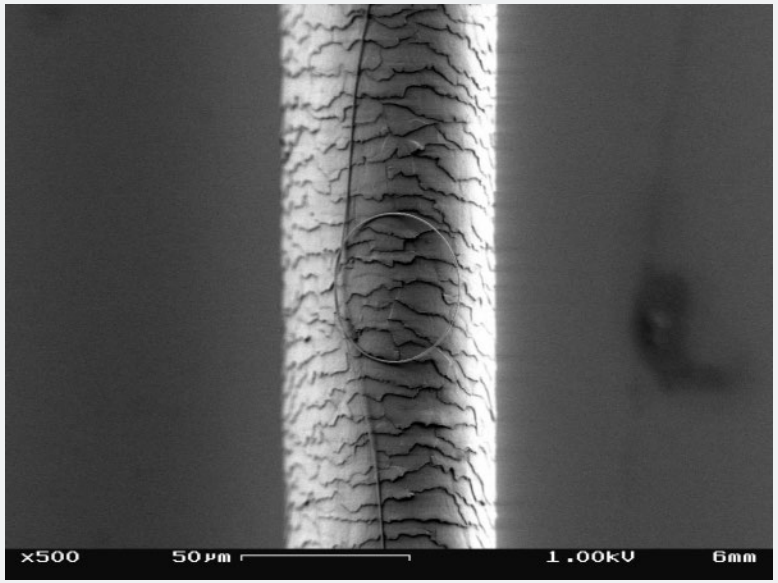
Photo R.Weller/Cochise Colleg

Asbestos = Inextinguishable / Unquenchable

Size of asbestos fibres

A comparison of asbestos fibers and a hair fiber at 50 micrometers using a scanning electron microscope (SEM)

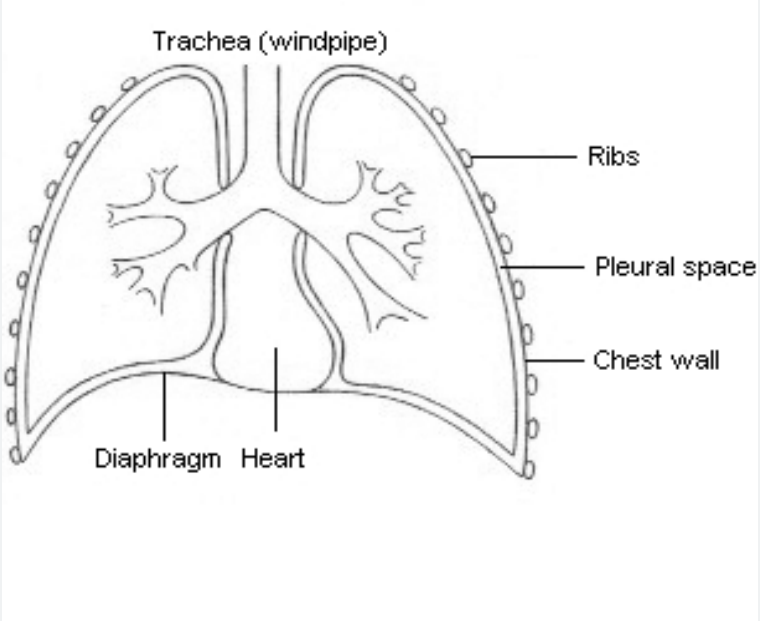


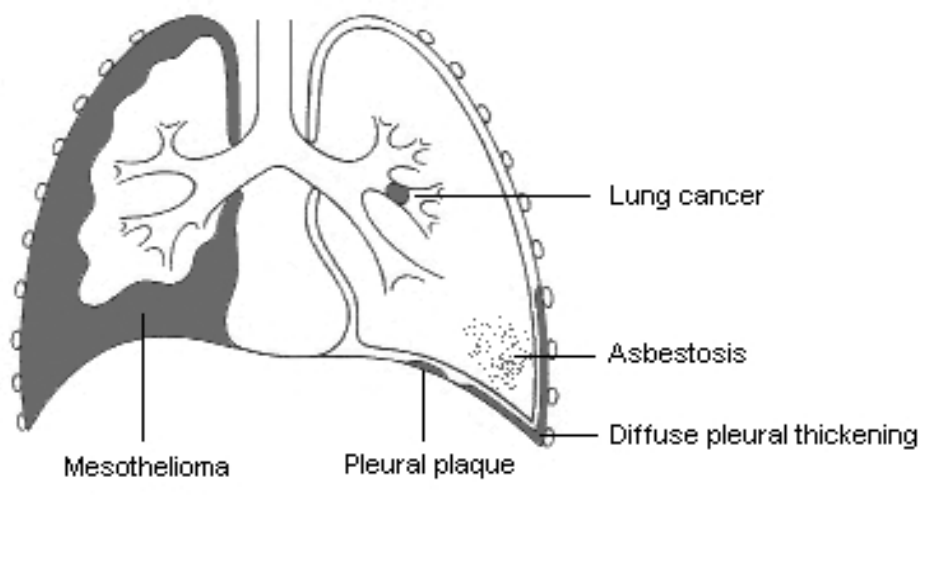


Why is asbestos dangerous?

Asbestos is a level one carcinogen, proven to illnesses including asbestosis, lung cancer and mesothelioma.

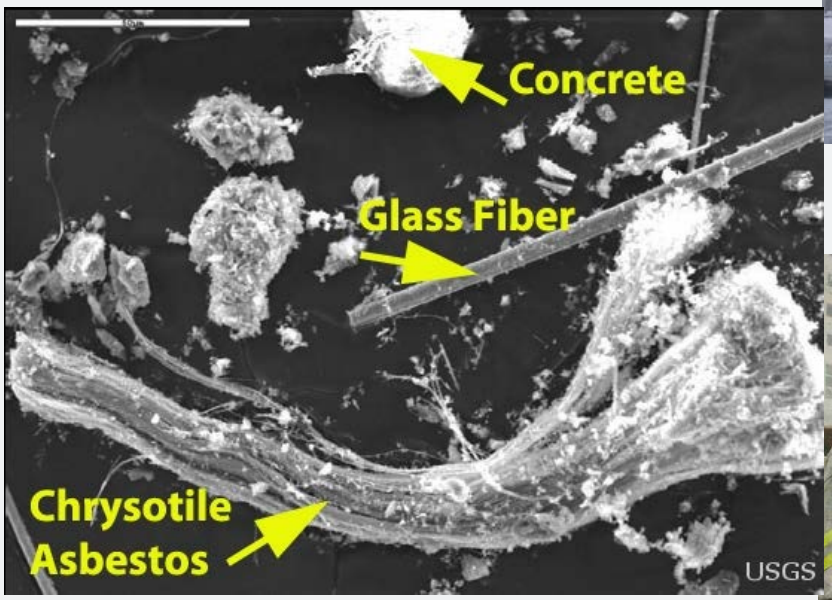
Easily inhaled and lodged deep into the alveoli of lungs due to the sharp ‘barb’ characteristic and microscopic size.





Case Study – WTC 2001

World Trade Center - 2001



Case Study - WTC 2001

World Trade Center – 2001

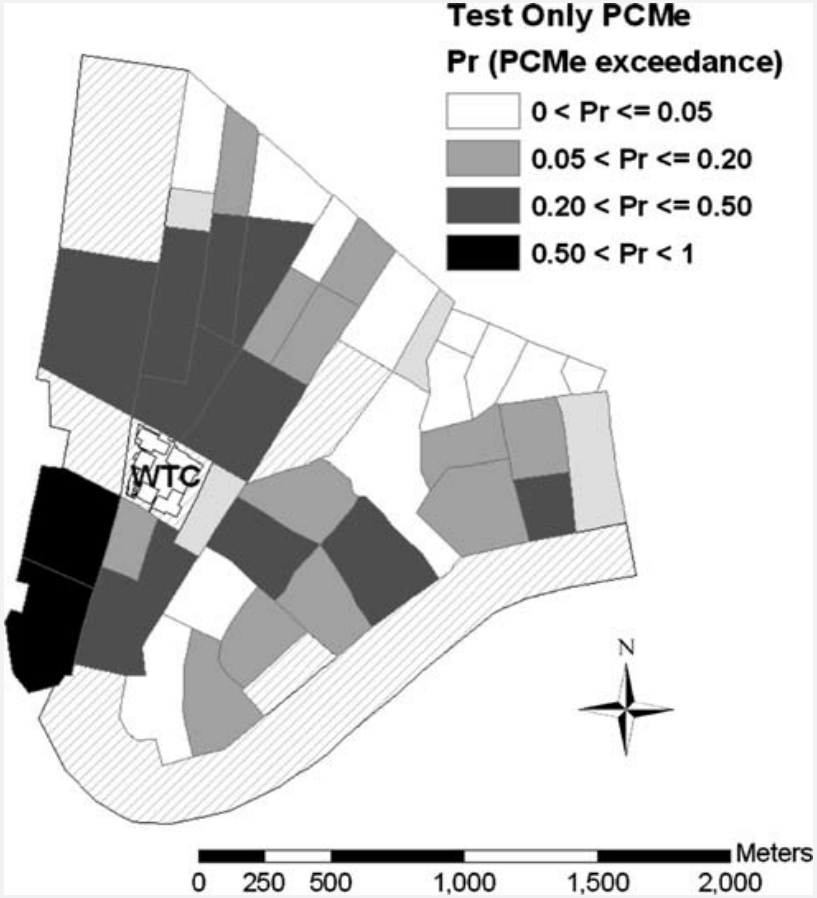
Approx. Asbestos Spread

1500m North

2000m East

1500m South

500m West



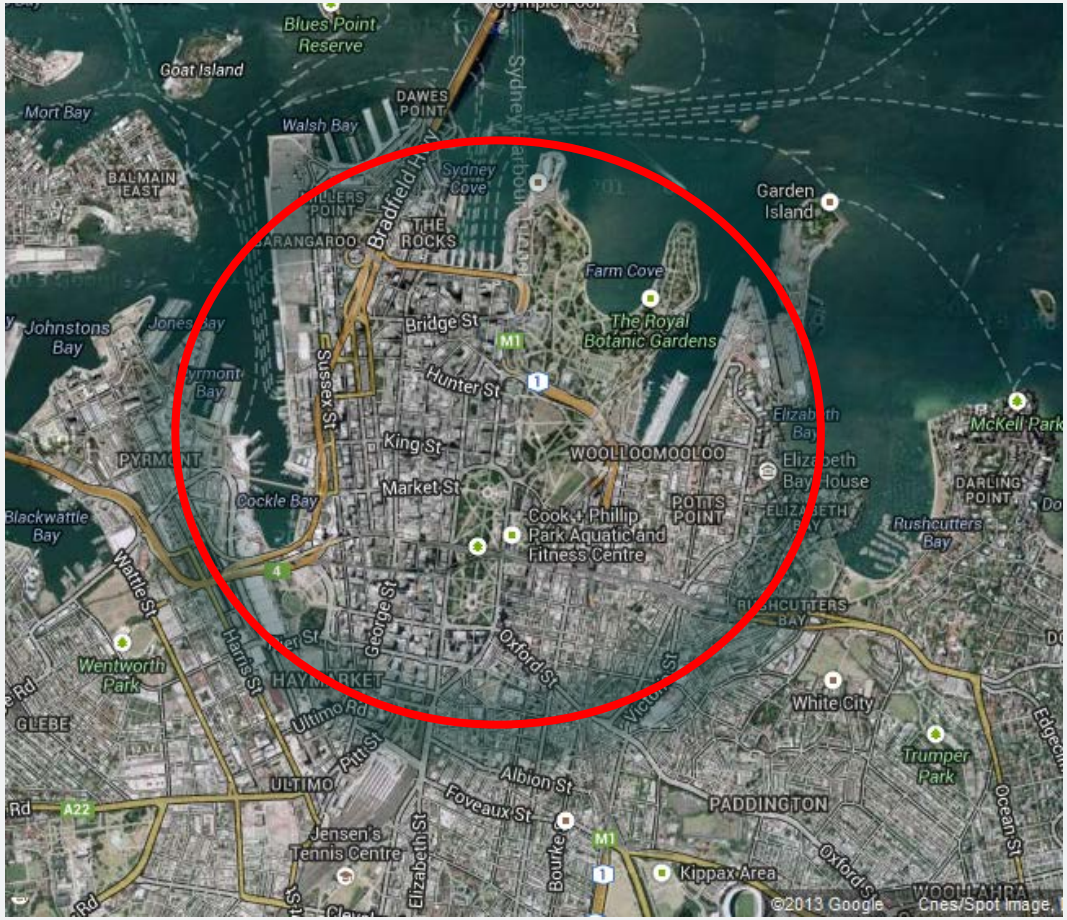
Thayer, W. C., Griffith, D. A., & Diamond, G. L. (2007). Geography of asbestos contamination near the World Trade Center site. Stochastic Environmental Research and Risk Assessment, 21(5), 461-471.

Case Study – WTC 2001

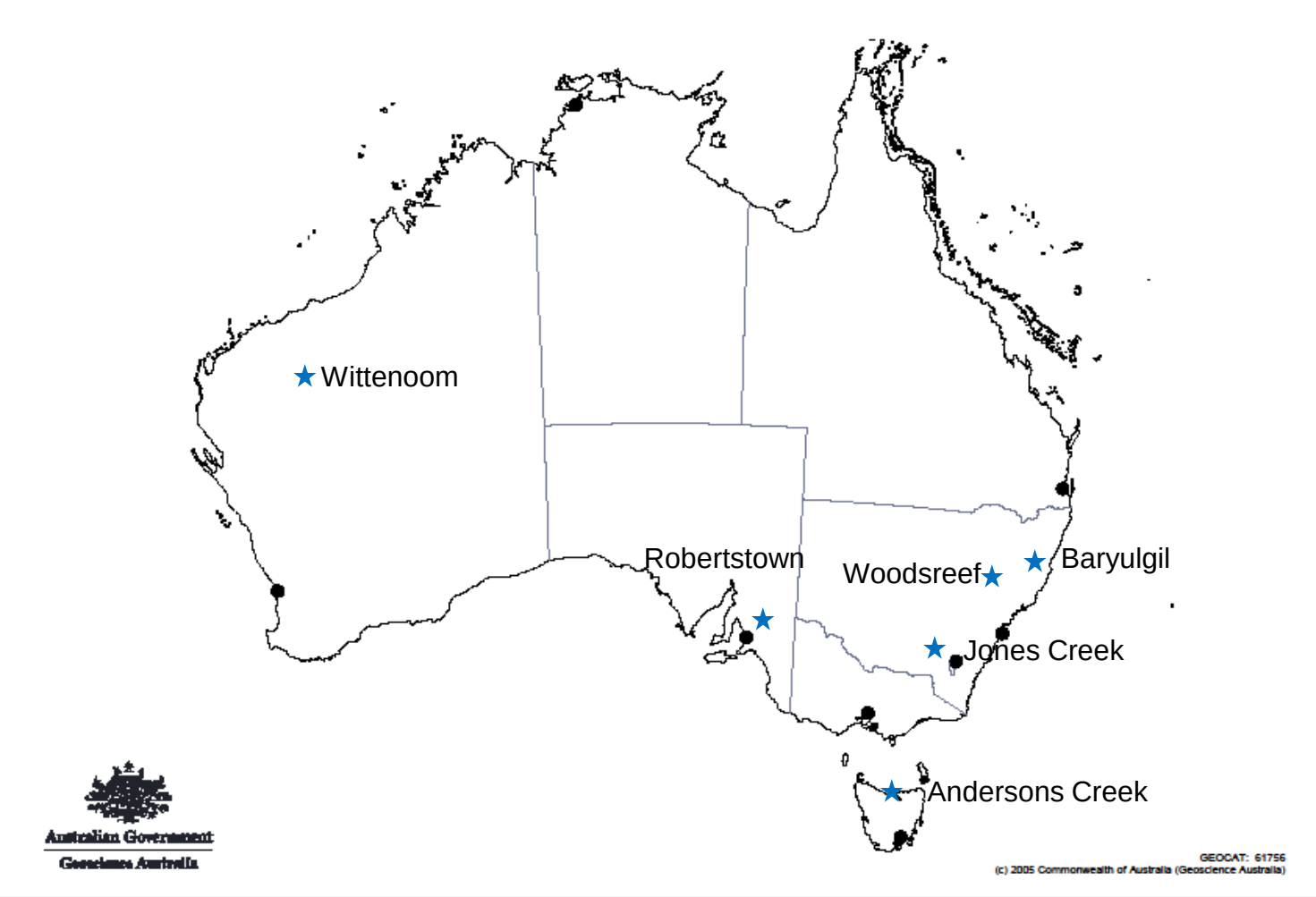
In Sydney Context

Ground Zero = Centrepoint

North= Circular Quay
East= Elizabeth Bay
South = Hyde Park
West = Darling Harbour



Asbestos in Australia



Asbestos in Australia

Production and imports of asbestos in Australia, 1930 – 1983

	Chrysotile		Crocidolite		Amosite	
Years	Production	Imports	Production	Imports	Production	Imports
1930–1939	1200	–	400	–	50	–
1940–1949	3000	–	5600	–	750	–
1950–1959	11,500	314,100	63,250	2800	1	107,500
1960–1969	8850	329,000	86,550	–	–	81,450
1970–1979	394,350	388,000	–	–	–	87,900
1980–1983	160,400	64,650	–	–	–	8500

Note: Data have been rounded off to the nearest 50 tonnes.
Source: Based on data from the Bureau of Mineral Resources and modified from Leigh, J., Driscoll, T. *Int. J. Occup. Environ. Health*, 9, 206–17, 2003.

Production, imports, exports and apparent consumption in tonnes of asbestos for Australia, 1930 - 1985

Years	Production	Imports	Exports	Apparent Consumption
1930–1939	1600	51,550	1200	52,000
1940–1949	9350	140,000	2400	146,900
1950–1959	74,750	314,100	51,400	337,400
1960–1969	95,400	434,700	44,700	485,400
1970–1979	394,350	555,600	45,500	704,450
1980–1985	160,400	104,300	109,800	154,950
Total	740,300	1,602,800	450,000	1,888,000

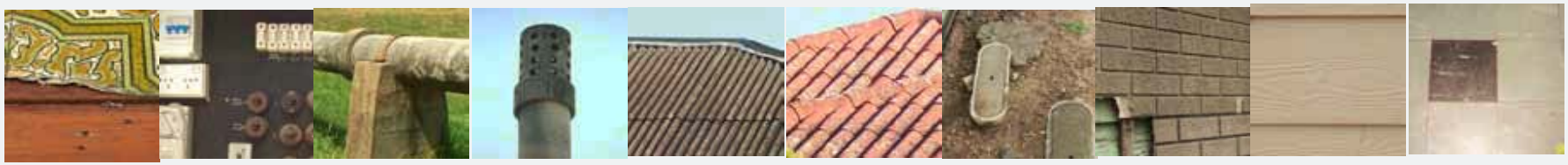
Note: Values have been rounded off to the nearest 50 tonnes and therefore may not add up exactly.
Source: Based on data from the Bureau of Mineral Resources and modified from Leigh, J., Driscoll, T. *Int. J. Occup. Environ. Health*, 9, 206–17, 2003.

Hammar, S. P., & Dodson, R. F. (Eds.). (2011). *Asbestos: Risk assessment, epidemiology, and health effects*. CRC PressI Llc

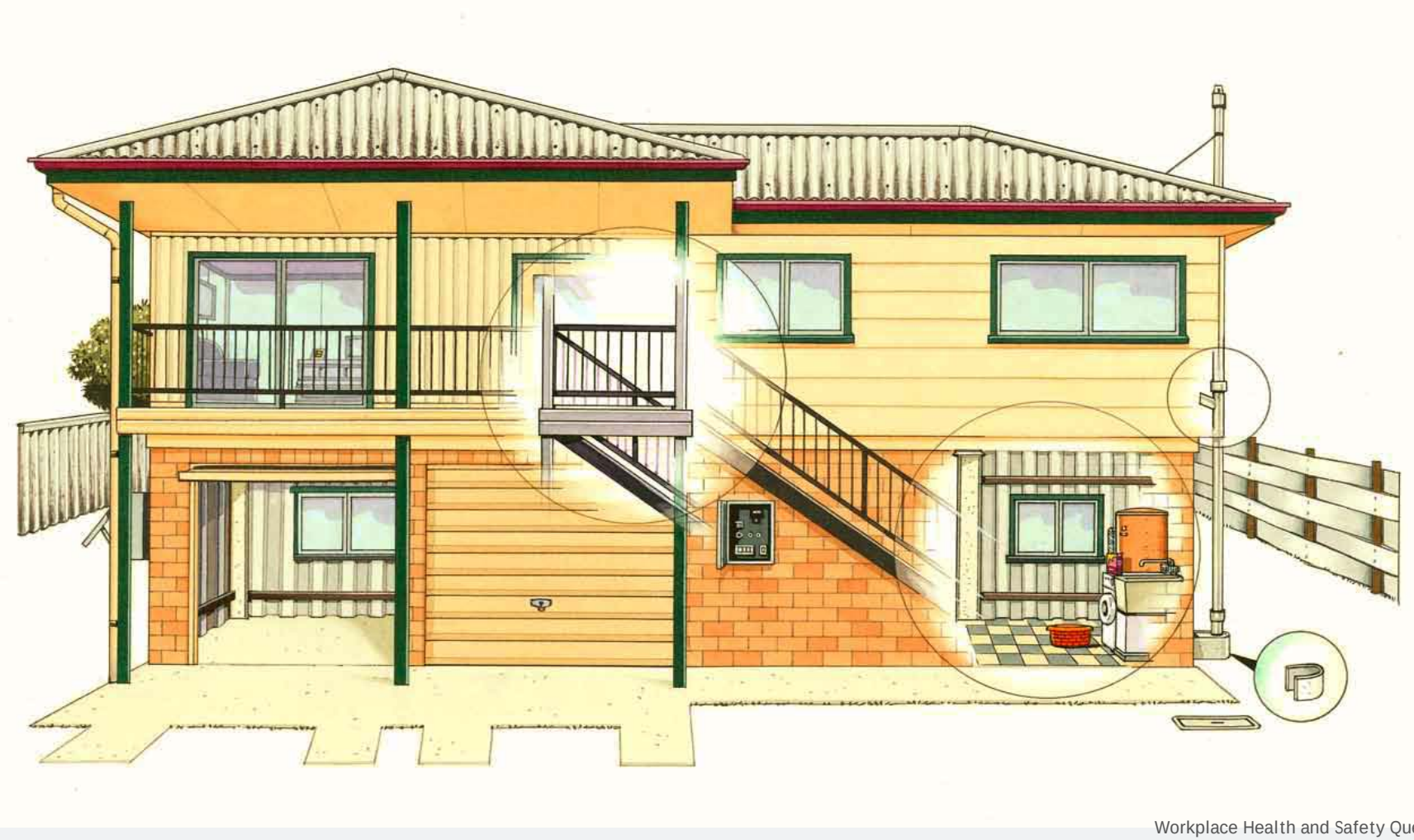
Asbestos containing material

Asbestos was used as a result of the durability, fire resistance, insulation properties and low production cost.

Can be located in over 3,000 products including automotive, housing, boating and household items.



Location of asbestos



Workplace Health and Safety Queensland

Location of asbestos

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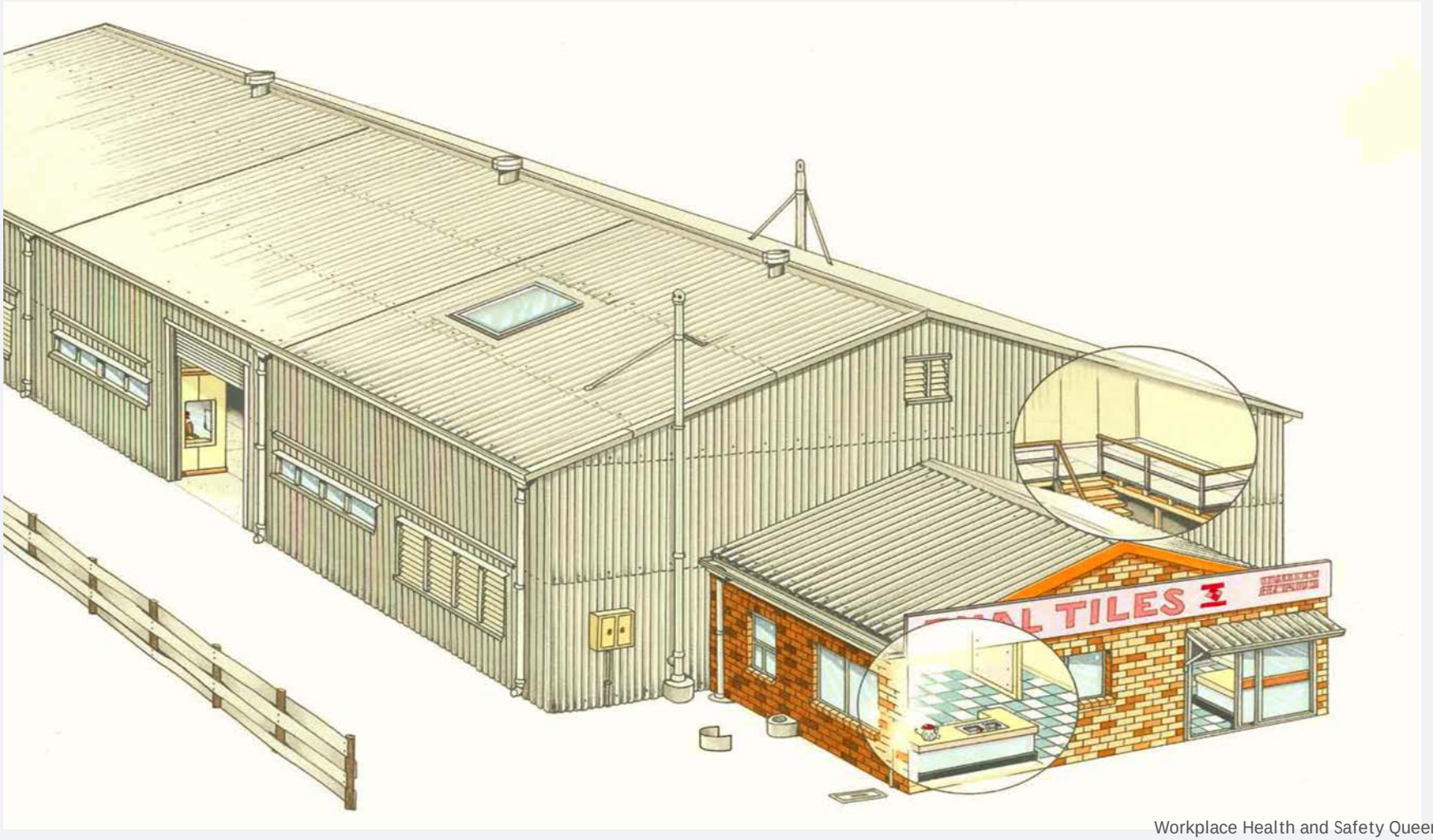
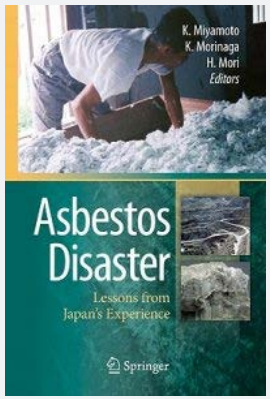


Workplace Health and Safety Queensland

How was ‘best practice’ determined?



STANDARDS Australia

Who participated

All Australian emergency services were invited to submit policies and procedures when the likelihood of exposure to asbestos is suspected or confirmed whilst attending and incident or operational duties.

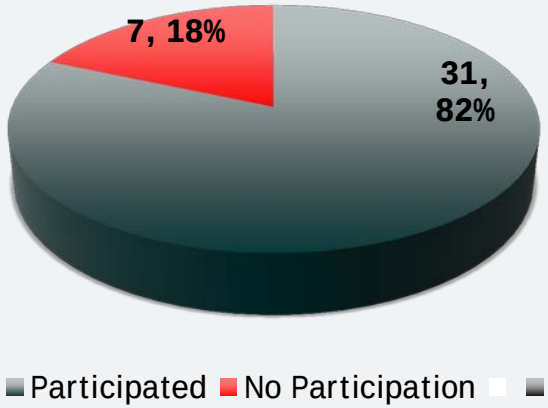
Emergency services defined as:

Police (State, Territory and Federal)

Ambulance (State and Territory)

Fire Services (State and Territory) [Metropolitan and Rural]

State Emergency Services (State and Territory)



Method / Results

Each agencies policy was analysed and scored against the model asbestos policy which identified 16 factors including:

Explaining asbestos

Risk assessment

Cease work

Minimise any exposure

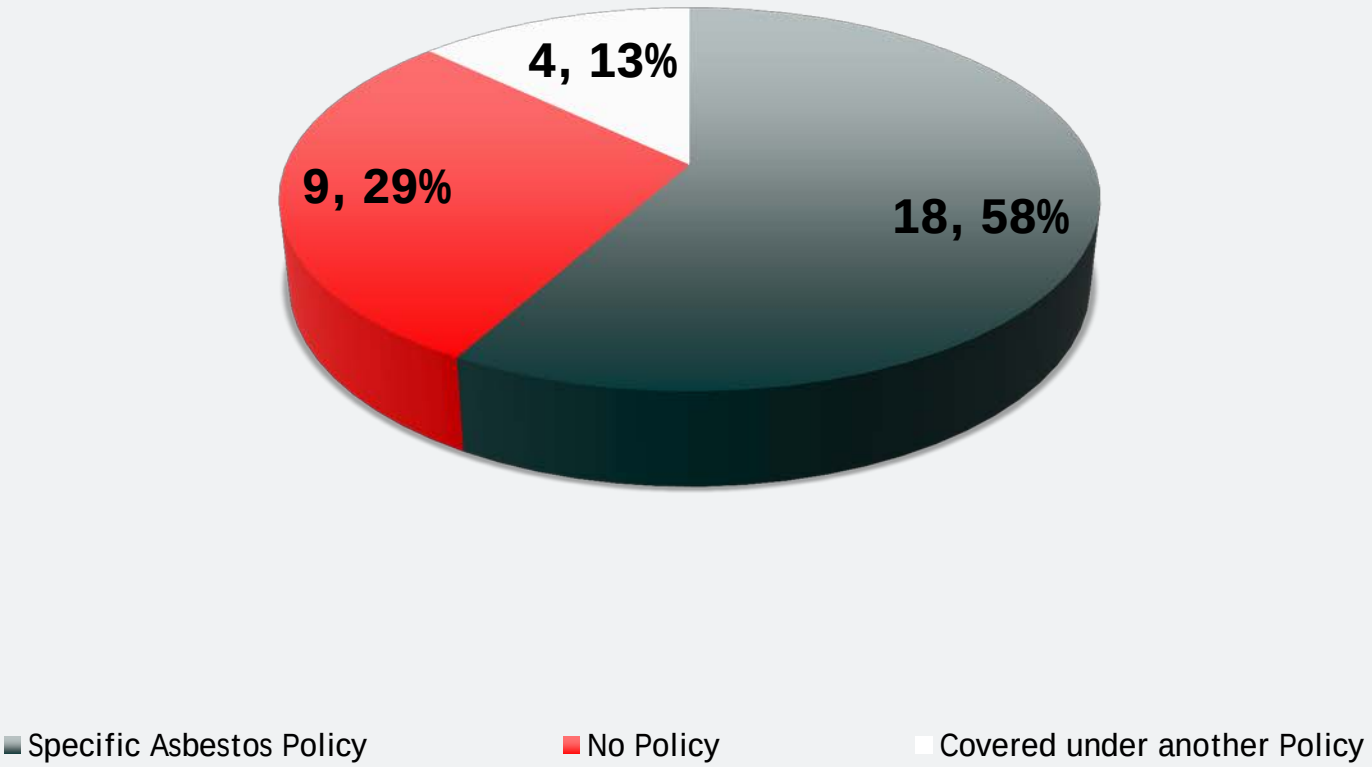
Keep asbestos damp

Avoid disturbing asbestos

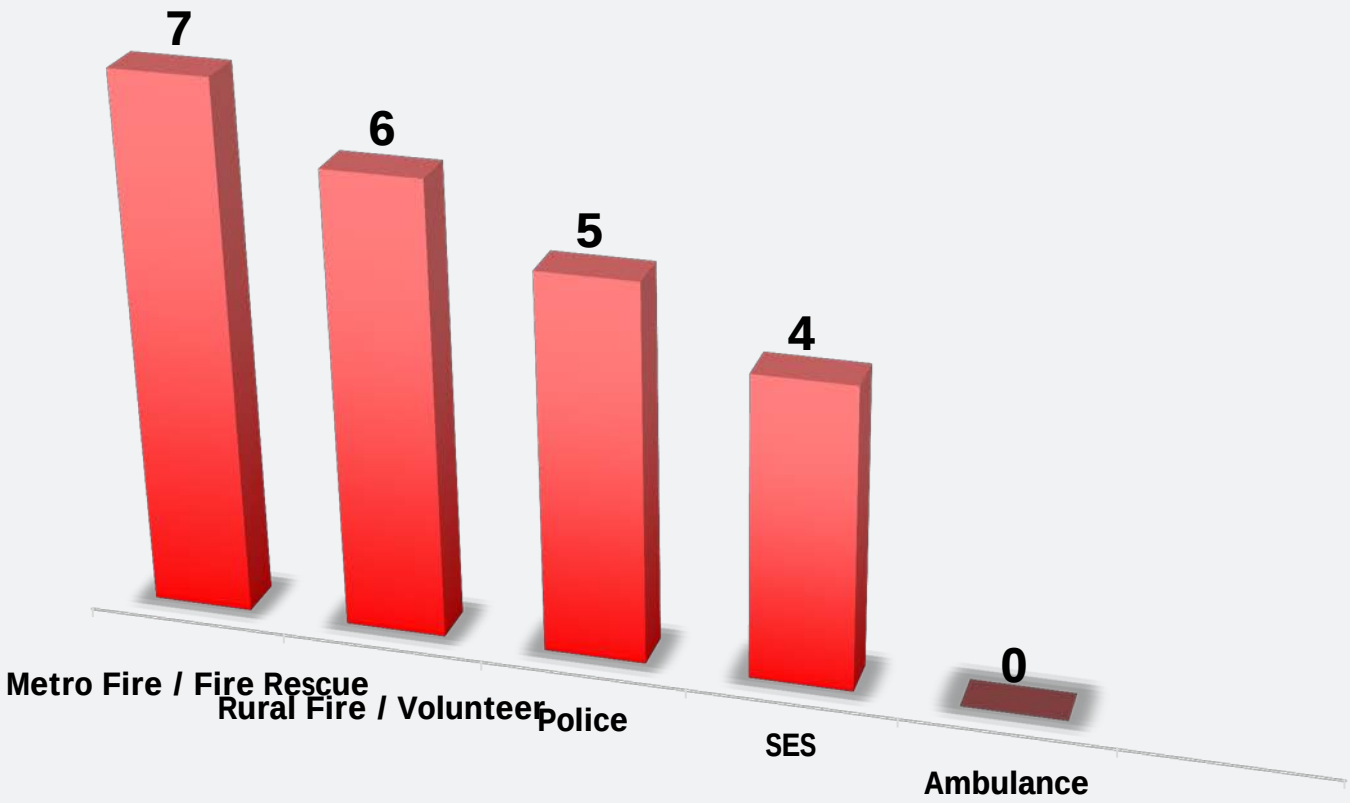
Safe exposure standard

Decontamination

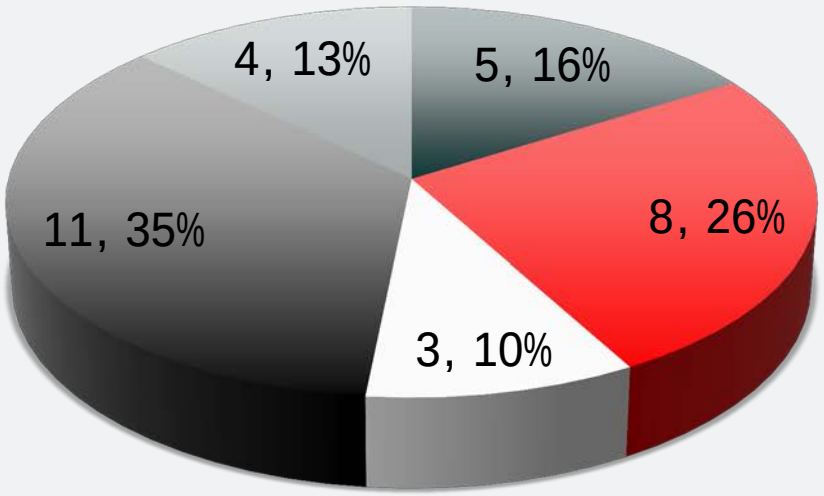
Who had asbestos policies



Who had asbestos policies



The use of respiration devices



P1 versus P2

Whilst the Australian Standard recommends a P1 for chrysotile asbestos particulates, it is not rated for other conditions that emergency service personnel are subjected to such as bushfire smoke, industrial fumes and micro organisms.

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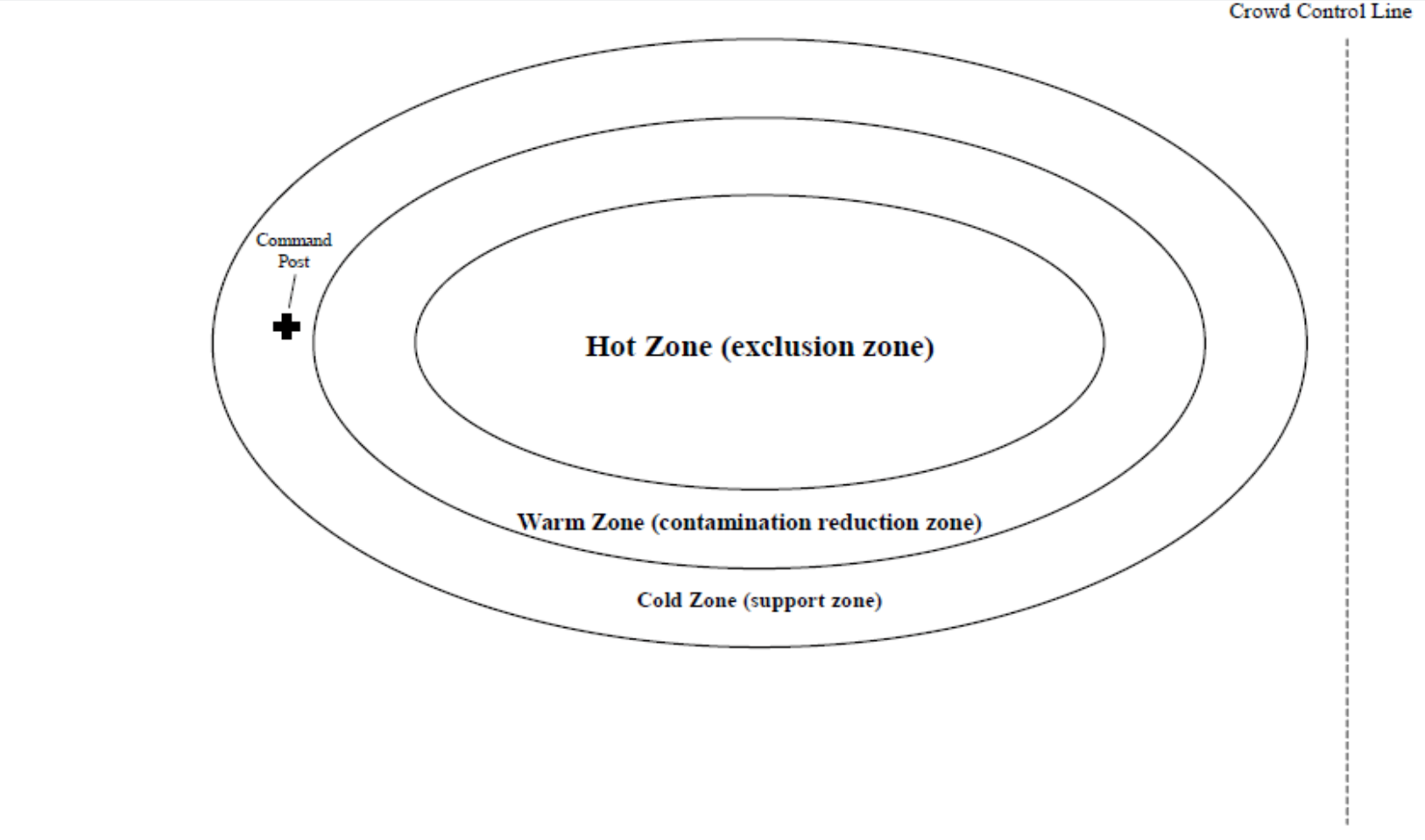
Use of ‘Hot Zones / Exclusion Zones’



Yeung, R. S. D., Chan, J. T. S., & Ho, S. T. (2002). Prehospital response to Hazmat incidents. *Hong Kong J Emerg Med*, *9*(2), 90-4.

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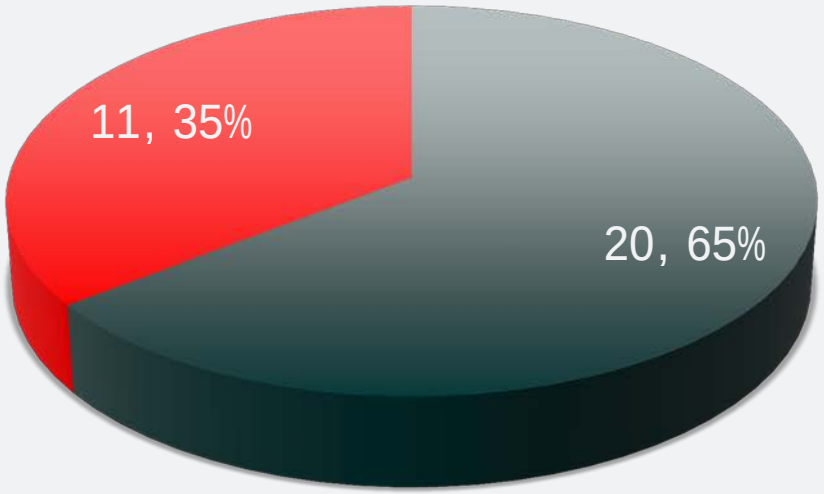

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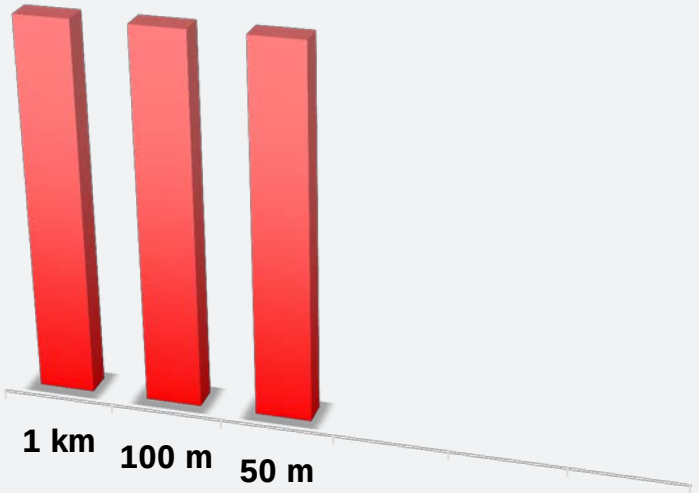

Case Study
Lennox Head

Photographer: Brendan Radke

Case Study
Exercise Explorer

Research recommendations

1. National asbestos policies for each emergency service to ensure standardisation of procedures.
2. Awareness workshops for emergency services – especially police, ambulance and volunteer agencies.
3. The need to expand 'Hot Zones / Exclusion Zones'
4. The use of P2 masks over a P1
5. Training in use and fitting of P2 masks
6. The need to carry sufficient P2 masks in vehicles
7. Media to be made aware of asbestos danger – need to have adequate protection at incident scene
8. Decontamination of all persons at incident scene
9. Potential identification of structures and facilities with asbestos in pre incident planning and agency databases

Research recommendations

10. Acknowledgment that asbestos is a Hazardous Material (HAZMAT) and treated accordingly given the lengthy latency period for illness and inability to see / taste / smell/ touch fibres.
11. Local / State Government to assist in recovery phase of asbestos structures in a timely manner to prevent secondary exposures
12. Consideration of asbestos sub plan of disaster plans (DisPlan) to ensure all agencies are aware of duties to avoid confusion
13. Emergency service personnel to be proactive in reporting asbestos incidents

Phase two of research

- Creation of 'Asbestos Awareness Workshop' for use by all emergency services – adaptable to specific policies and procedures
- Creation of asbestos exposure hotspot database – determine areas of concern and the incidence of asbestos exposures for emergency services to assist in risk management
- Several peer reviewed journal articles on asbestos and emergency services based on research results

In conclusion

- Asbestos is still prevalent in metropolitan and rural areas
- The current generation have little knowledge of asbestos products
- Where is the approx. 2 million tonnes of asbestos?
- A rethink is required on how emergency services operate during incidents where asbestos may be present
- Does your emergency service have an adequate asbestos policy?
- Would you be confident in declaring an asbestos incident?

Acknowledgments

Paul Hannen – Police Association NSW

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AFAC

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Bushfire CRC

Charles Sturt University – Australian Graduate School of Policing

National Centre of Asbestos Related Diseases

Police Federation of Australia

All emergency services that participated and provided information

Thank you kindly for attending!

Questions?

 @AsbestosStudy