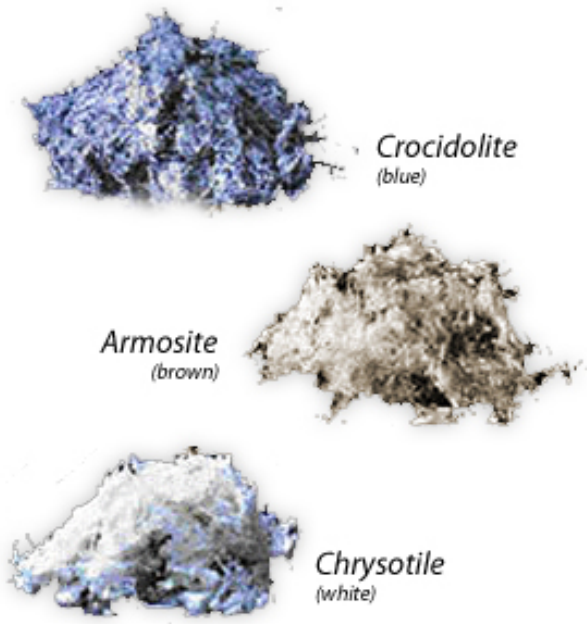
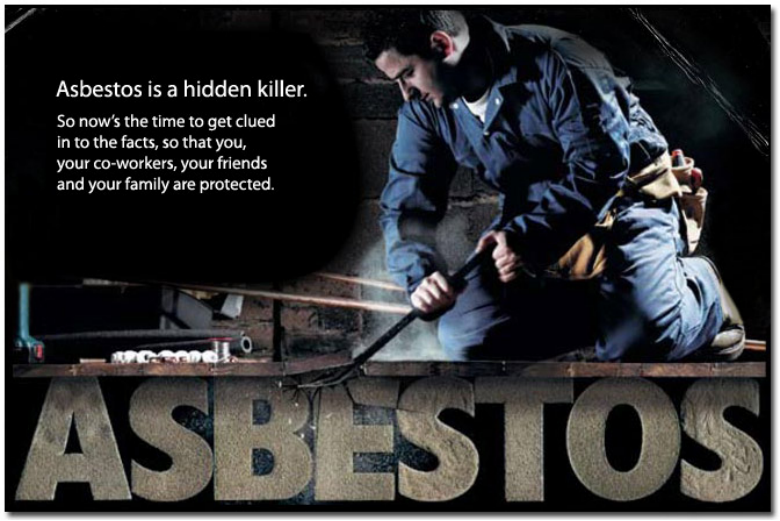
Asbestos

Handling the risk communication paradox



Dr Stephen Palmer
Medical Officer of Health

Presentation to Eco Design Advisors Workshop
August 2014

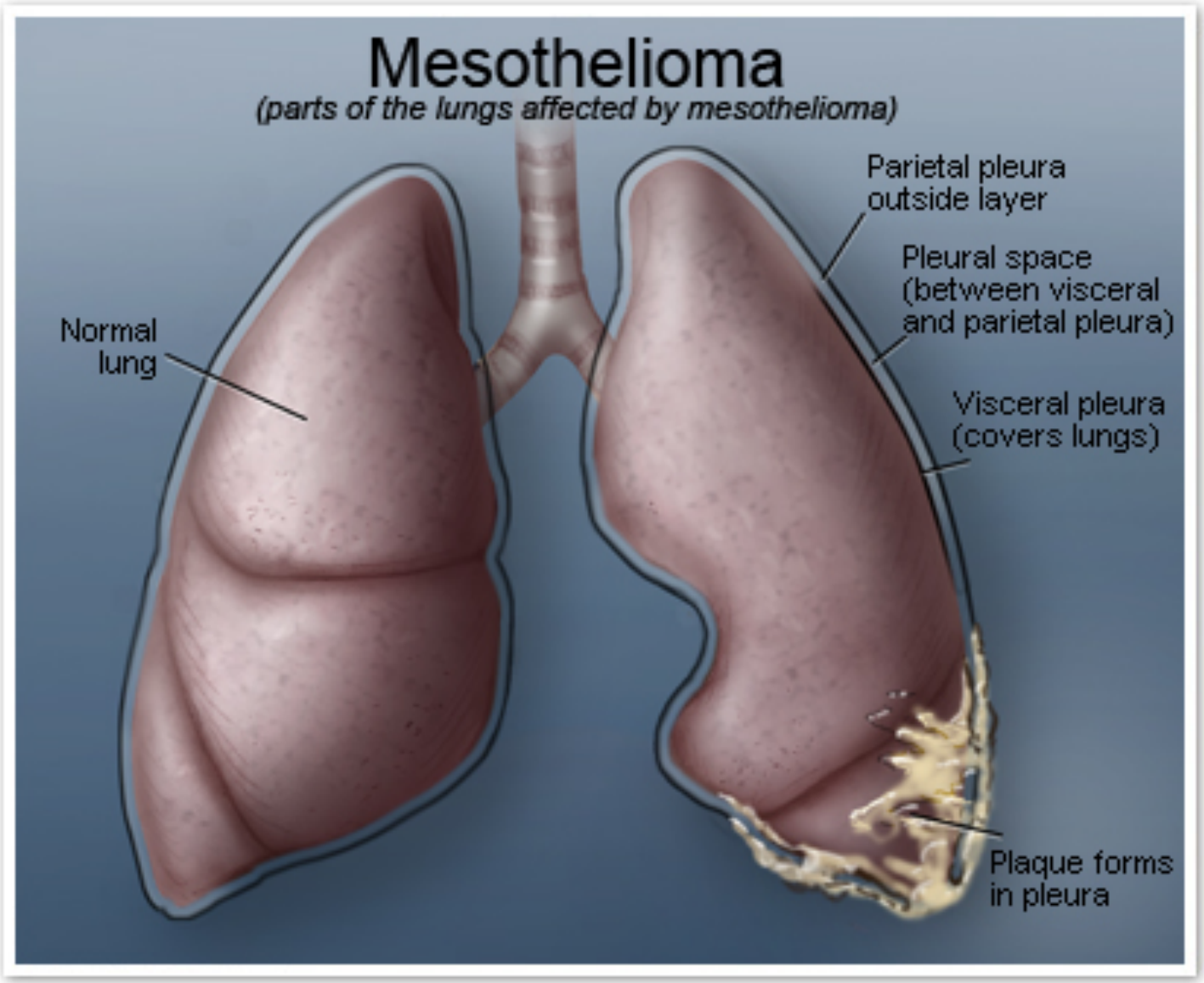


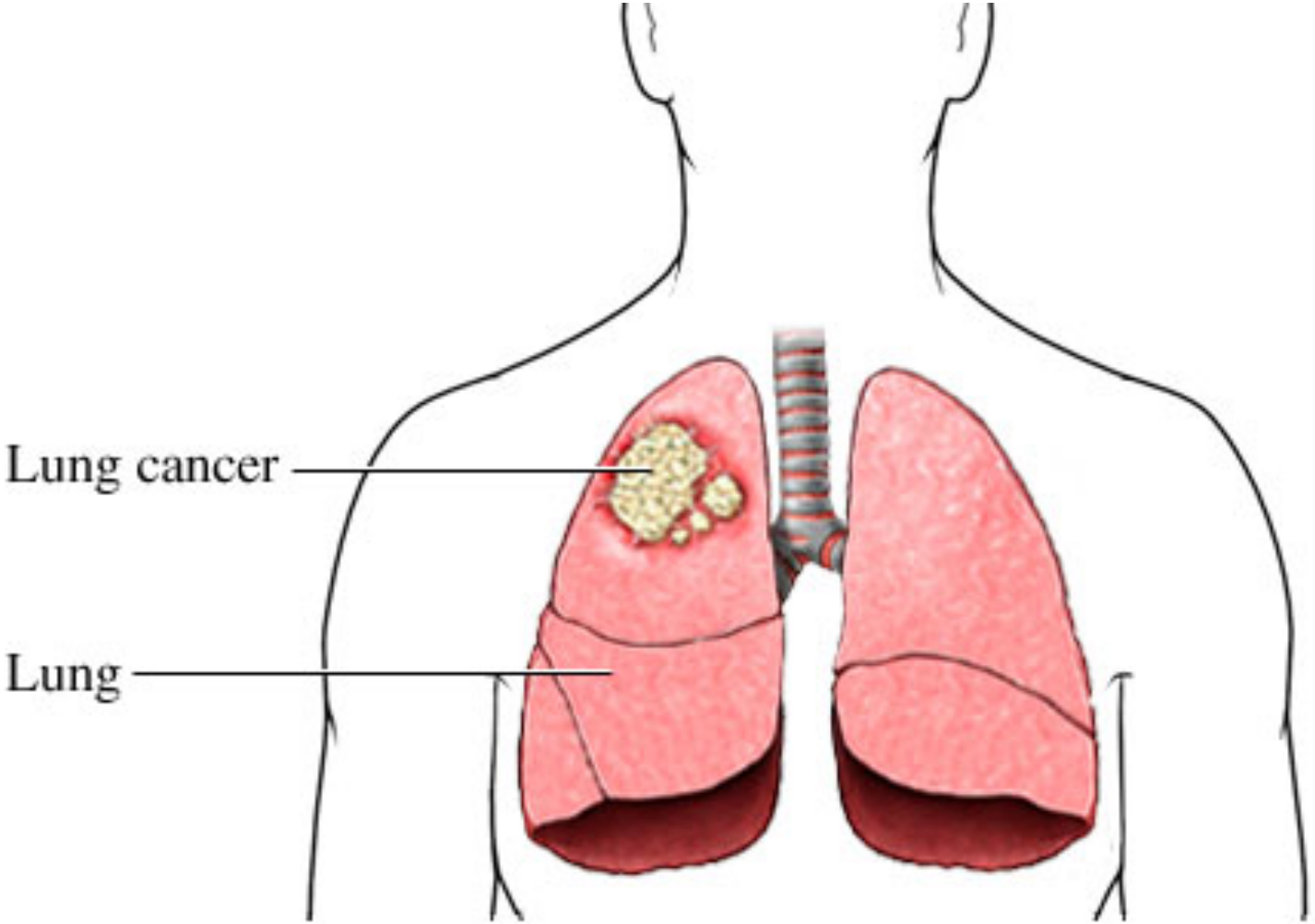
Public health perspective

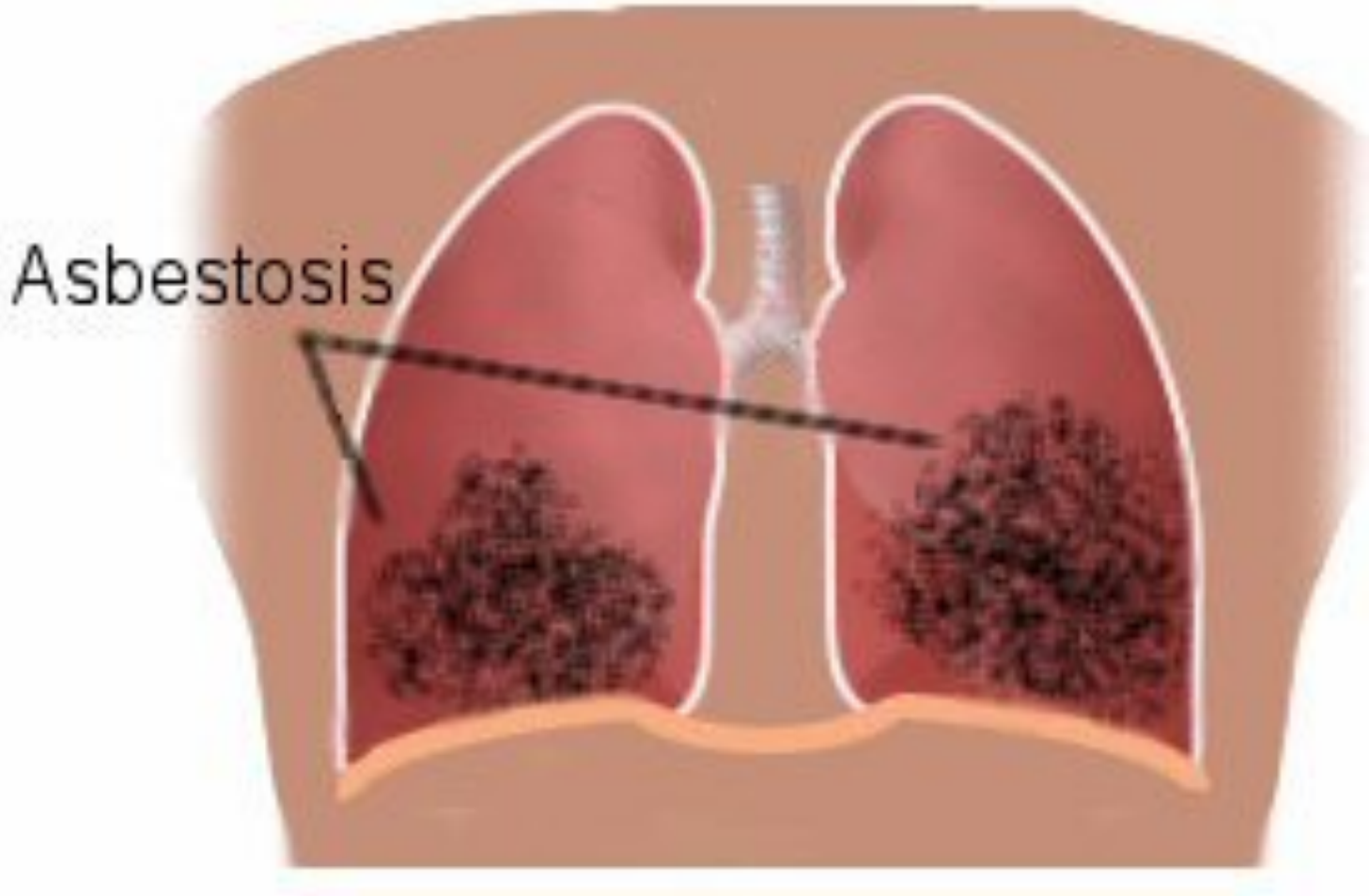
- Health risk analysis
  - With a focus on wider community
- Risk communication
- Risk management
- This presentation is designed specifically for Eco Design Advisors
  - Who predominantly work with home owners or occupants
  - Not intended for the workplace setting

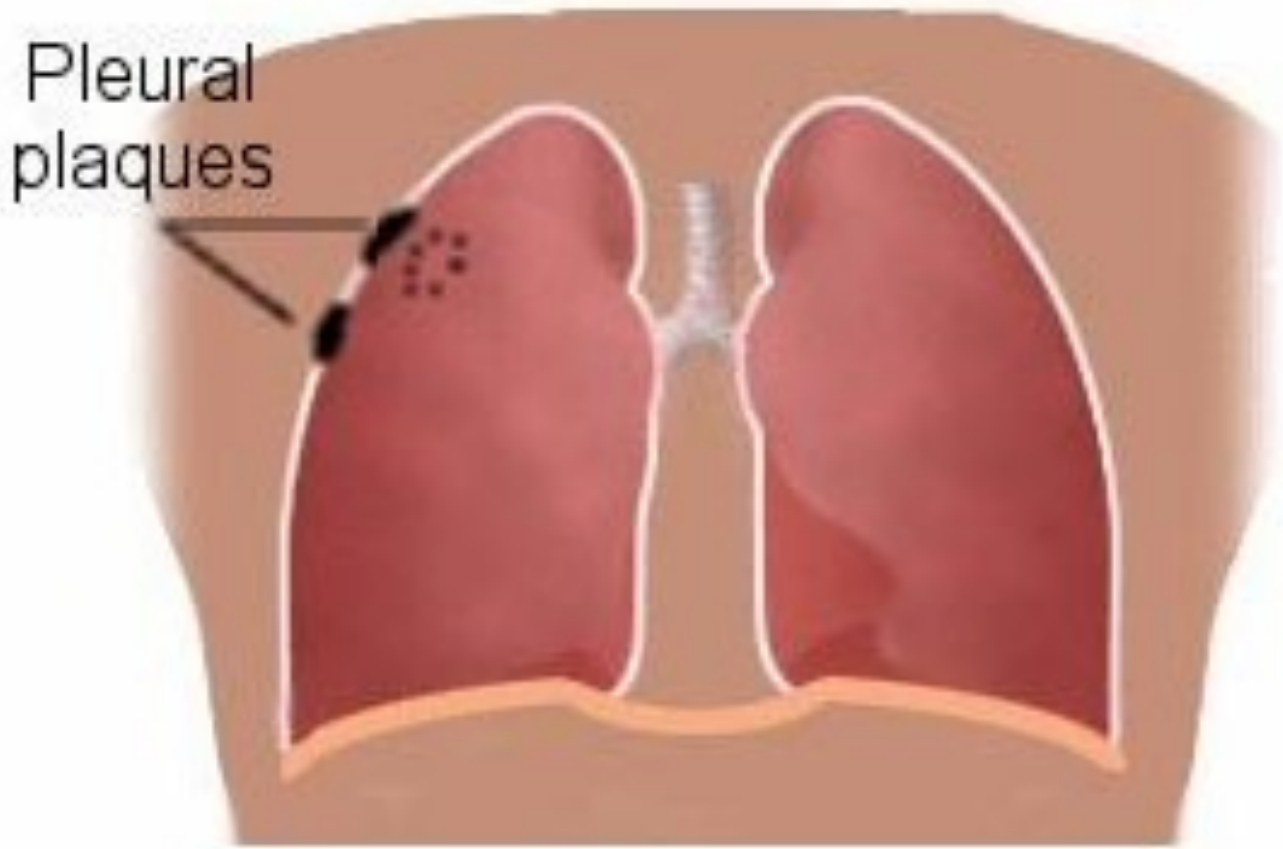
Asbestos - the silent killer

- Likely to exceed 300 deaths per year
  - Just under 1,000 deaths per year from all workplace disease
- Asbestos = biggest cause of work-related mortality
  - Mean latency = 40 to 46 years
  - Most cases today:
    - exposures during the late 1960s & 1970s,
    - peak period of asbestos use in this country
    - drop-off likely to be long & slow

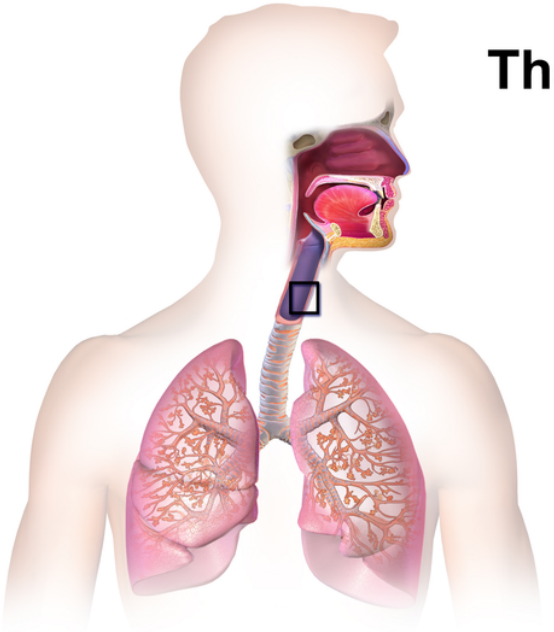

Mesothelioma
(parts of the lungs affected by mesothelioma)
Parietal pleura
outside layer
Pleural space
(between visceral
and parietal pleura)
Normal
lung
Visceral pleura
(covers lungs)
Plaque forms
in pleura


Lung cancer
Lung


Asbestosis

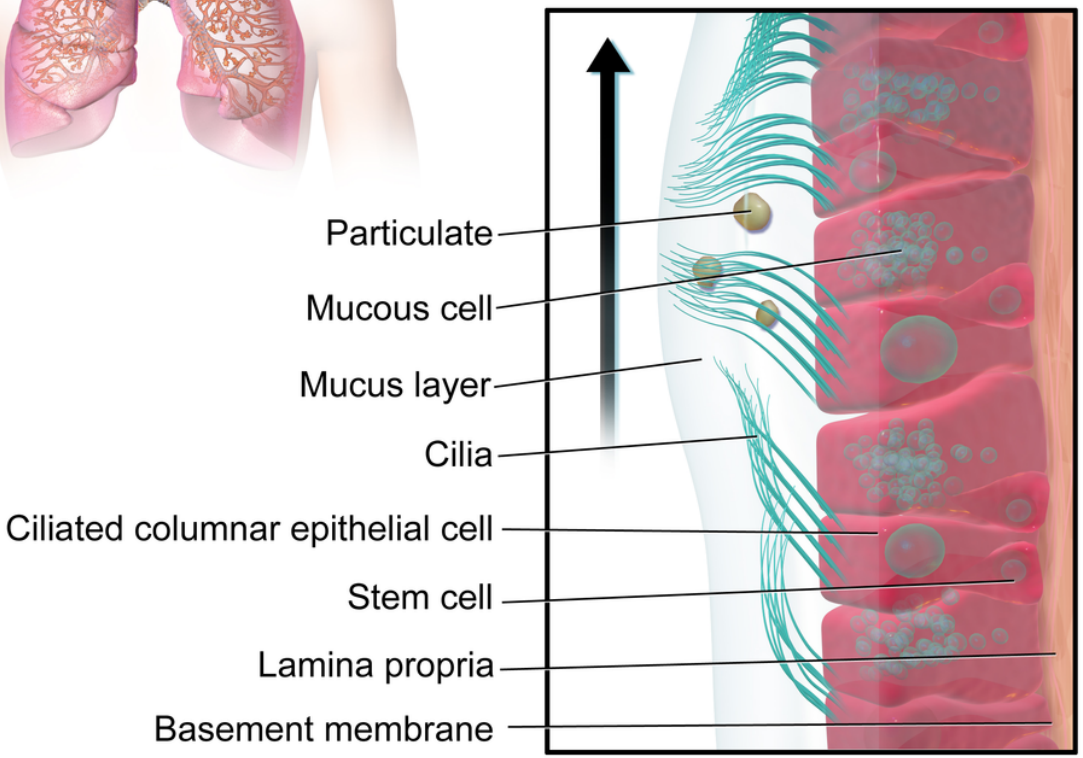

Pleural
plaques

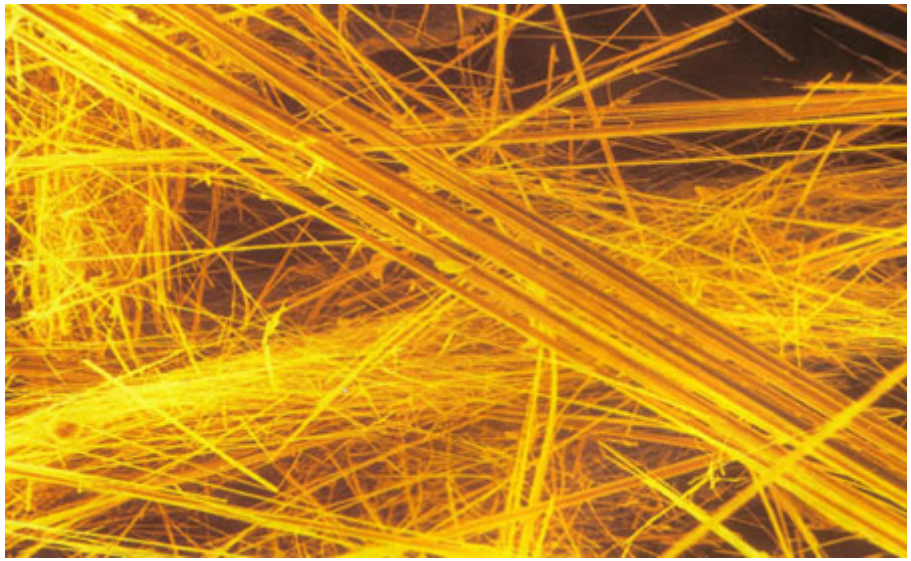
Respiratory Physiology

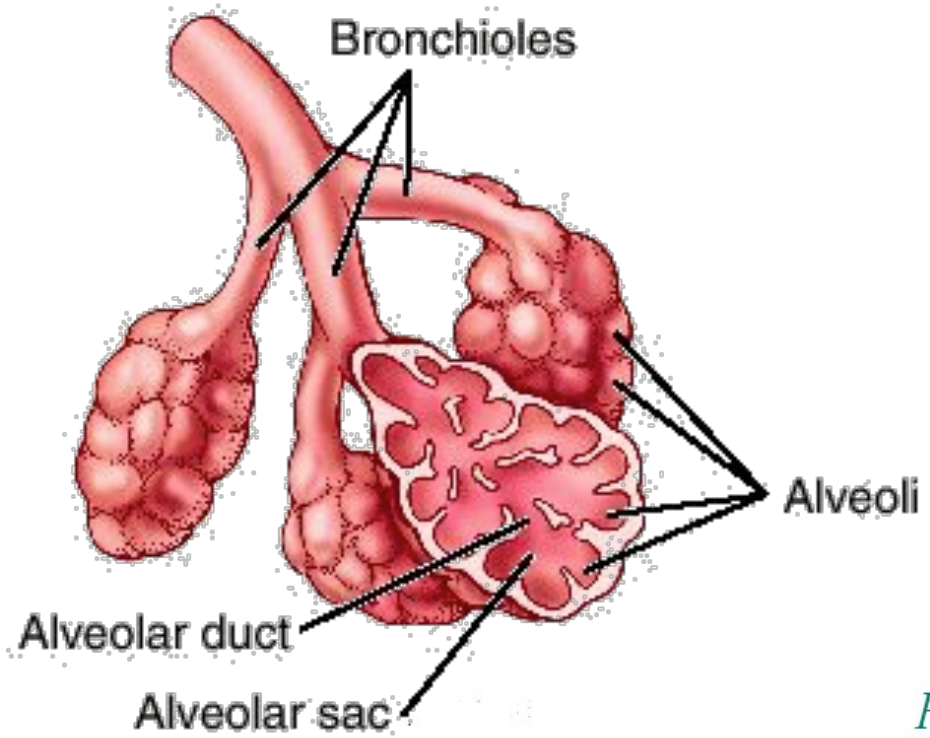


The Respiratory Epithelium

Movement of mucus to the pharynx







- Fibres can be deposited in the deepest parts of the lung
- Some fibres may move through the lungs and can remain in place for many years
- May never be removed from your body.
- Amphibole asbestos fibres are retained in the lung longer than chrysotile

- Physical effect rather toxic effect

Asbestos Register 1992-2012 & Cancer Registry

Notifications to asbestos disease register

Disease	Number of cases	Mean age at diagnosis	Mean latency (years)	Male/female
Mesothelioma	232	67	45	217/15
Lung cancer	124	69	46	122/2
Asbestosis	294	68	43	278/16
Pleural abnormalities	649	-	-	639/10

Diagnoses of mesothelioma – Cancer Registry

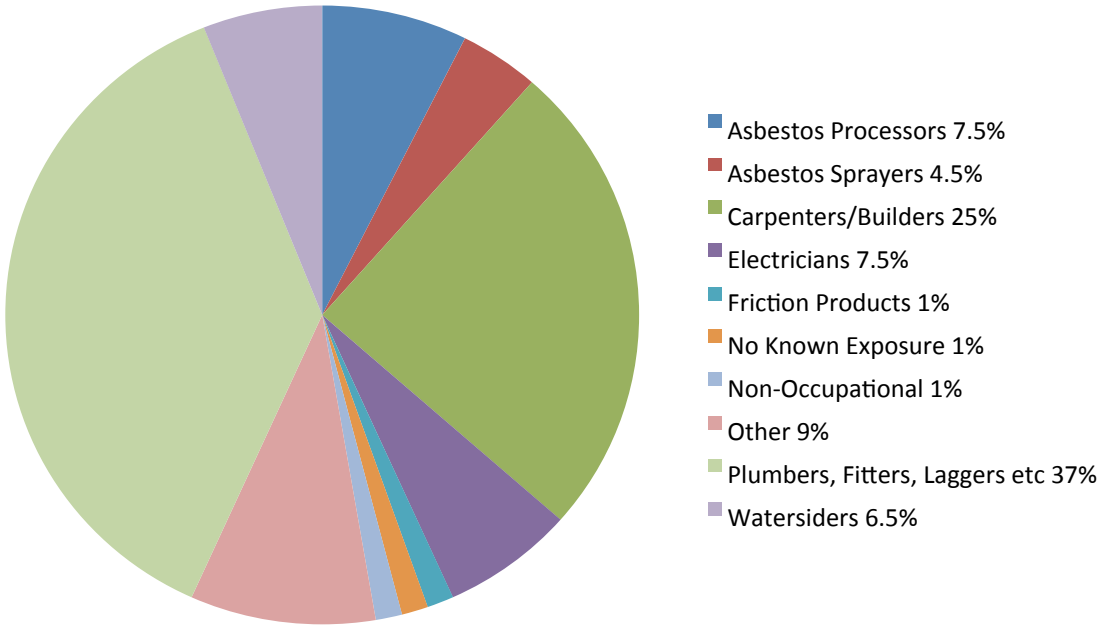
Year	Number
1954	2
1962	2
1970	1
1980	17
1990	29
2000	60
2003	81
2004	84
2005	103
2006	99
2007	91
2008	99
2009	91
2010	90

Mesothelioma cases by age group (1994 to 2010 only) – Cancer Registry

Gender	Age group						Total
	< 50	**50s**	**60s**	**70s**	**80s**	**90s**	
Female	13	26	38	48	35	5	165
Male	18	136	316	369	173	14	1026
Total	**31**	**162**	**354**	**417**	**208**	**19**	**1191**

Mesothelioma is very much a disease of old age with 49% of cases occurring to people aged 70 or over

Notified asbestos disease by occupation 1992-2012



Carpenters, plumbers and electricians are together responsible for 67% of all cases

Three Waves of Illness and Death

Third Wave

Non industrial users, mainly DIY home renovators who demolished asbestos cement products or structures during renovations

Unknown size

Second Wave

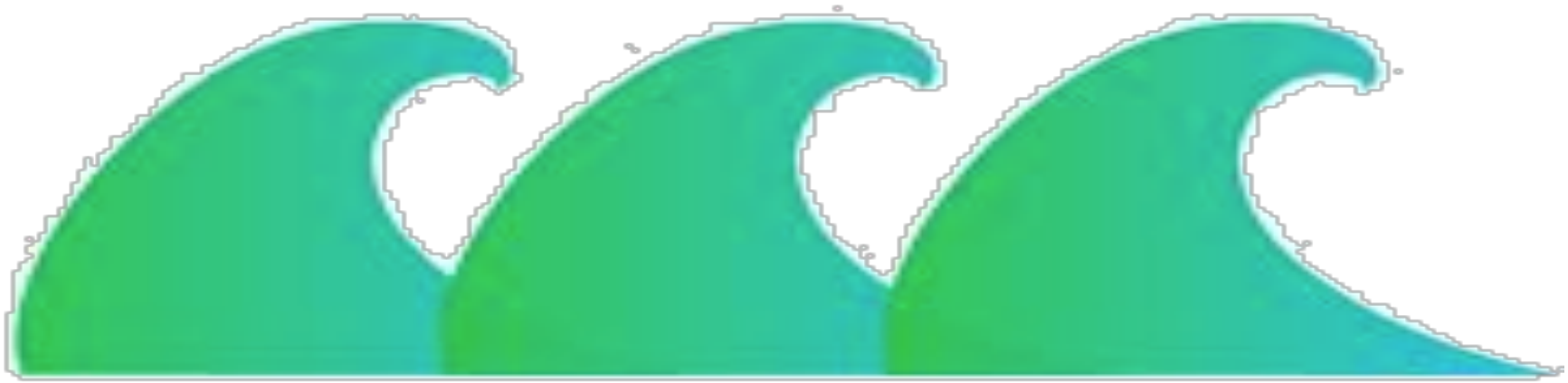
Asbestos disease, caused by exposures to asbestos in the years when asbestos was most used in NZ in the 1950s to 1970s

Much larger

First Wave

Use of asbestos in thermal plants such as railway boilers, ship engine rooms and power stations from 1920s

Relatively small



Australia = litigation & compensation!

Christchurch Earthquake Wave

- Seminar – December 2013
  - https://www.youtube.com/playlist?list=PLdMnoUgDRvLIy7AMlVo_6wbX3FdwVX0BR
- Risk to construction and demolition workers
- Presence of asbestos should be recorded on LIM report
- Helpful news media coverage???

In the construction sector

Exposure to asbestos is the main cause of workplace fatalities

Asbestos represents 76% of all fatal claims

It is important to note:

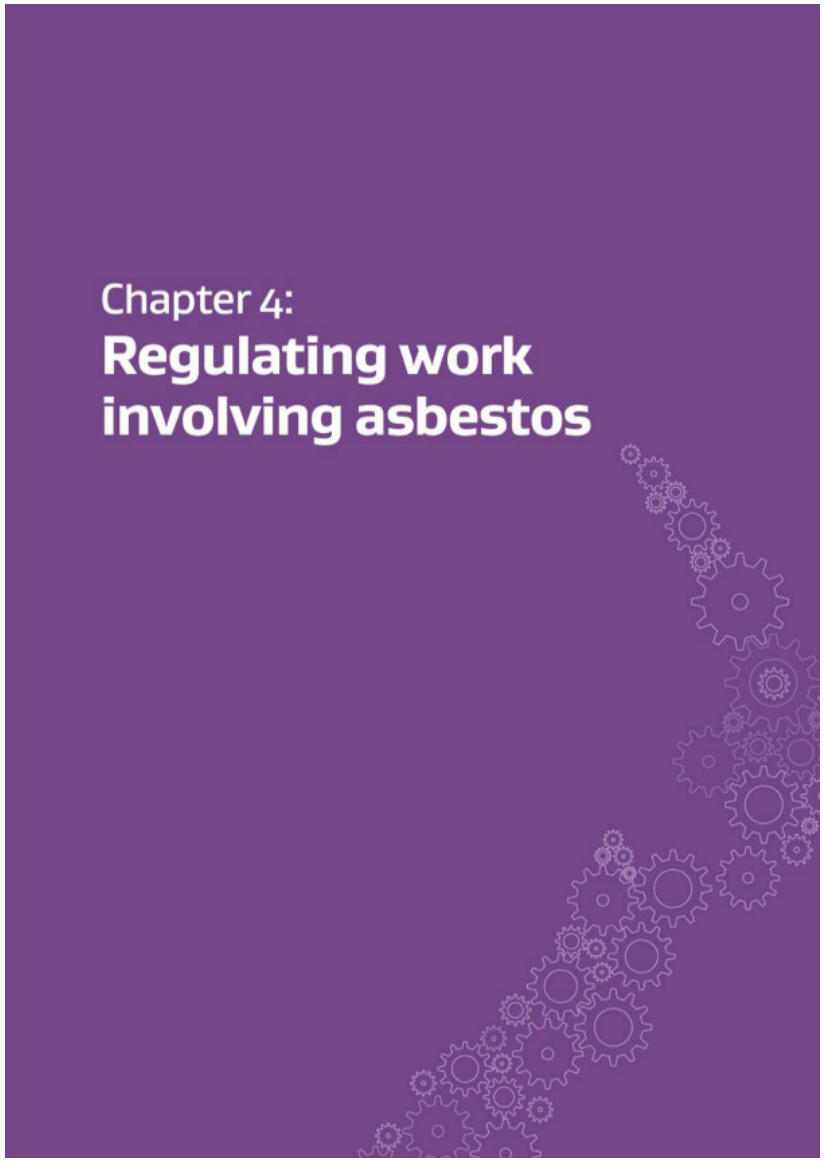
- **There are no safe exposure limit to asbestos fibres**
- You must ensure that any exposure to asbestos is kept and maintained as low as possible

Increasing regulatory control of asbestos in the workplace.

HEALTH AND SAFETY REFORM BILL
KEY CONCEPTS

Introduces a number of key concepts:

1. Places duties on people in best position to control risks
2. Places primary duty of care on all PCBUs
3. Encourages greater worker engagement and participation
4. Defines works and their specific health and safety duties
5. Places specific duties on PCBUs 'upstream' in the supply chain
6. Duty to consult when overlapping health and safety duties
7. Places a due diligence duty on officers of a PCBU
8. Establishes a tougher and more effective enforcement regime
9. Creates a stronger legislative framework



Pause

Questions & Discussion

The News Media - Asbestos

- Asbestos is deadly
- When found an emergency should be declared
- You are advised to panic as you have already been poisoned
- Big government is not taking responsibility
- No one can be trusted

- Examples:
  - Sommes Island
  - Christchurch rebuild

- Also:
  - Patea freezing works fire
  - Broadcasting house fire

But WAIT!
What does the Ministry of Health say?

How much asbestos is safe, if any?

- Risk of disease depends on how much exposure occurred and over what time period

  - Exposure to all forms of asbestos at sufficiently high concentrations of airborne fibres over long periods increases the risk of asbestos-related diseases
  - People who are frequently exposed to asbestos, and who smoke, are at a much greater risk of lung cancer
  - Most people who develop asbestos-related disease have had occupational exposure to asbestos
  - In developed countries like New Zealand, most concerns about asbestos are for people who were heavily exposed to asbestos in their workplaces, prior to the 1980s

Ministry of Health continued

- The risk from exposure to asbestos in the non-occupational setting is generally considered to be low
  - because the concentrations of airborne asbestos fibres are low
  - and people are not exposed very often
  - this is different to asbestos workers who may be exposed to significant amounts of asbestos on a daily basis
- People who have developed asbestos-related disease but who do not appear to have been exposed at work, nearly all seem to have either been
  - regularly exposed to asbestos brought home on the work clothing of someone else
  - or to have undertaken maintenance or renovation on asbestos-containing materials.

US - Agency for Toxic Substances and Disease Registry
(part of CDC)

ATSDR

Toxicological Profile & Public Health Statement & ToxFAQs

- Asbestos minerals are widespread in the environment
- Low levels of asbestos can be detected in almost any air sample.
  - 10 fibres are typically present in a cubic meter (fibers/m^3) of outdoor air in rural areas (= 0.00001 fibres/mL)
  - Typical levels found in cities are about 10-fold higher
  - Levels are much higher near asbestos mines or factories
    - levels may reach 10,000 fibres/m^3
  - Levels could also be above average:
    - near a building that contains asbestos products and that is being torn down or renovated
    - near a waste site where asbestos is not properly covered
  - In indoor air
    - concentration of asbestos depends on whether asbestos was used for insulation, ceiling or floor tiles, or other purposes
    - whether these asbestos-containing materials are in good condition or are deteriorated and easily crumbled
    - concentrations measured in homes, schools, and other buildings that contain asbestos range from about 30 to 6,000 fibres/m^3

What happens to all the fibres we breath in?

- Some of the fibres will be deposited in the air passages and on the cells that make up your lungs

- Most fibres are removed from your lungs
  - by being carried away or coughed up in a layer of mucus to the throat, where they are swallowed into the stomach
  - usually takes place within a few hours.
  - fibres that are deposited in the deepest parts of the lung are removed more slowly.

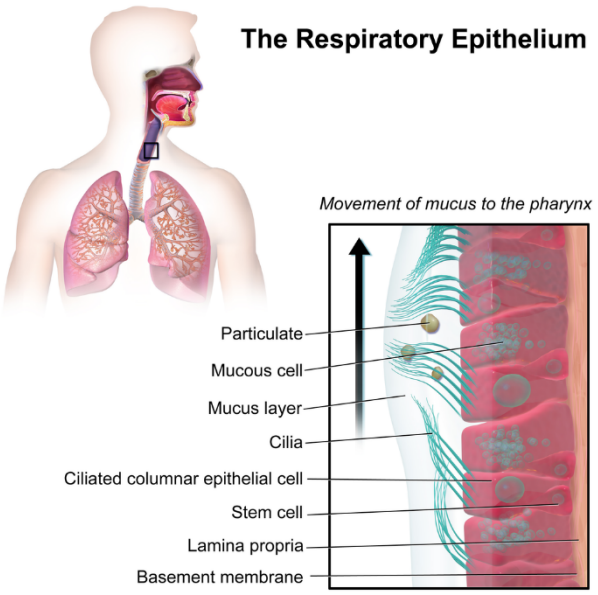


Figure 3-1. Levels of Significant Exposure to Asbestos - Inhalation - Human studies (*continued*)

Chronic (≥365 days)

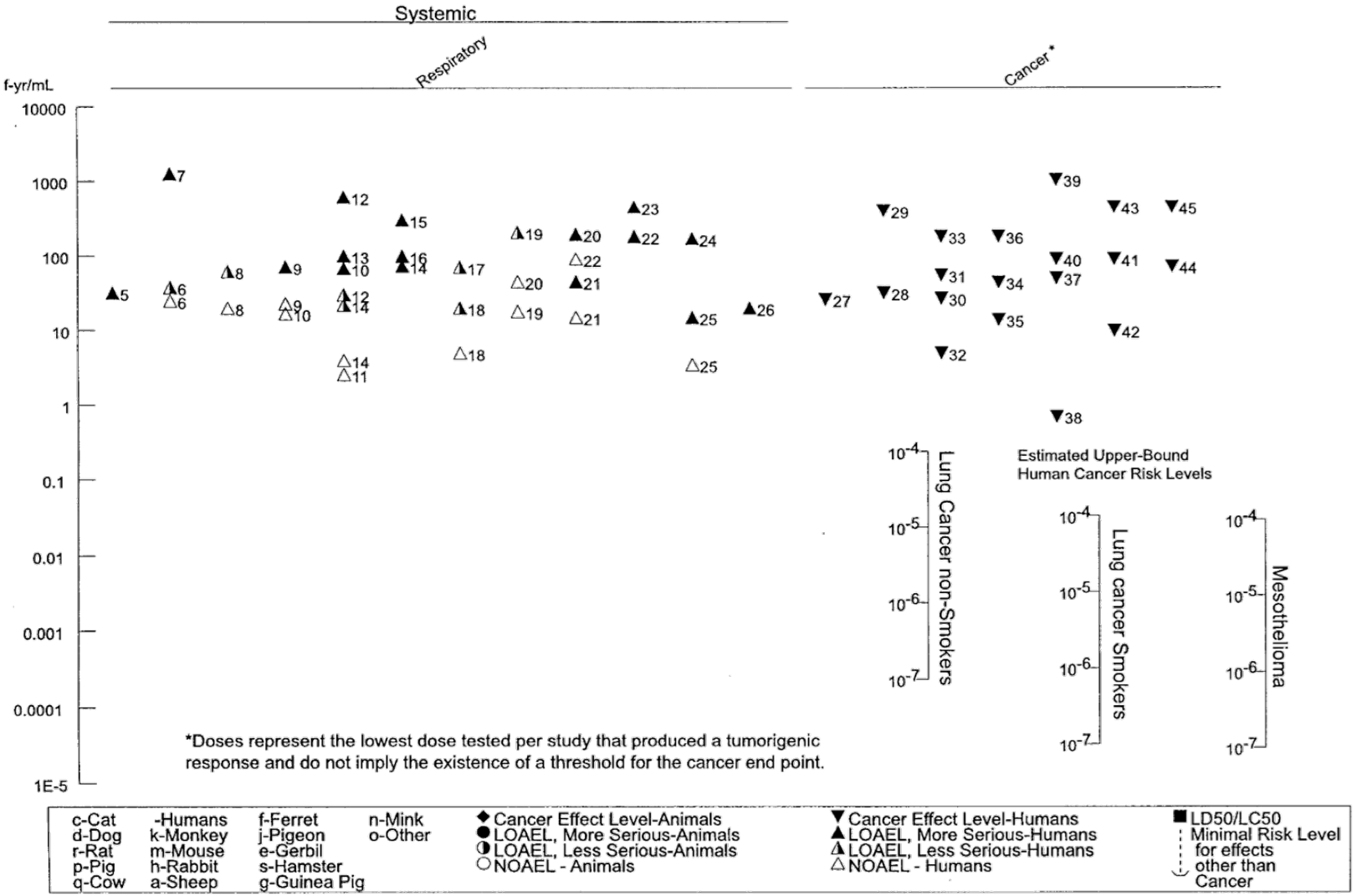
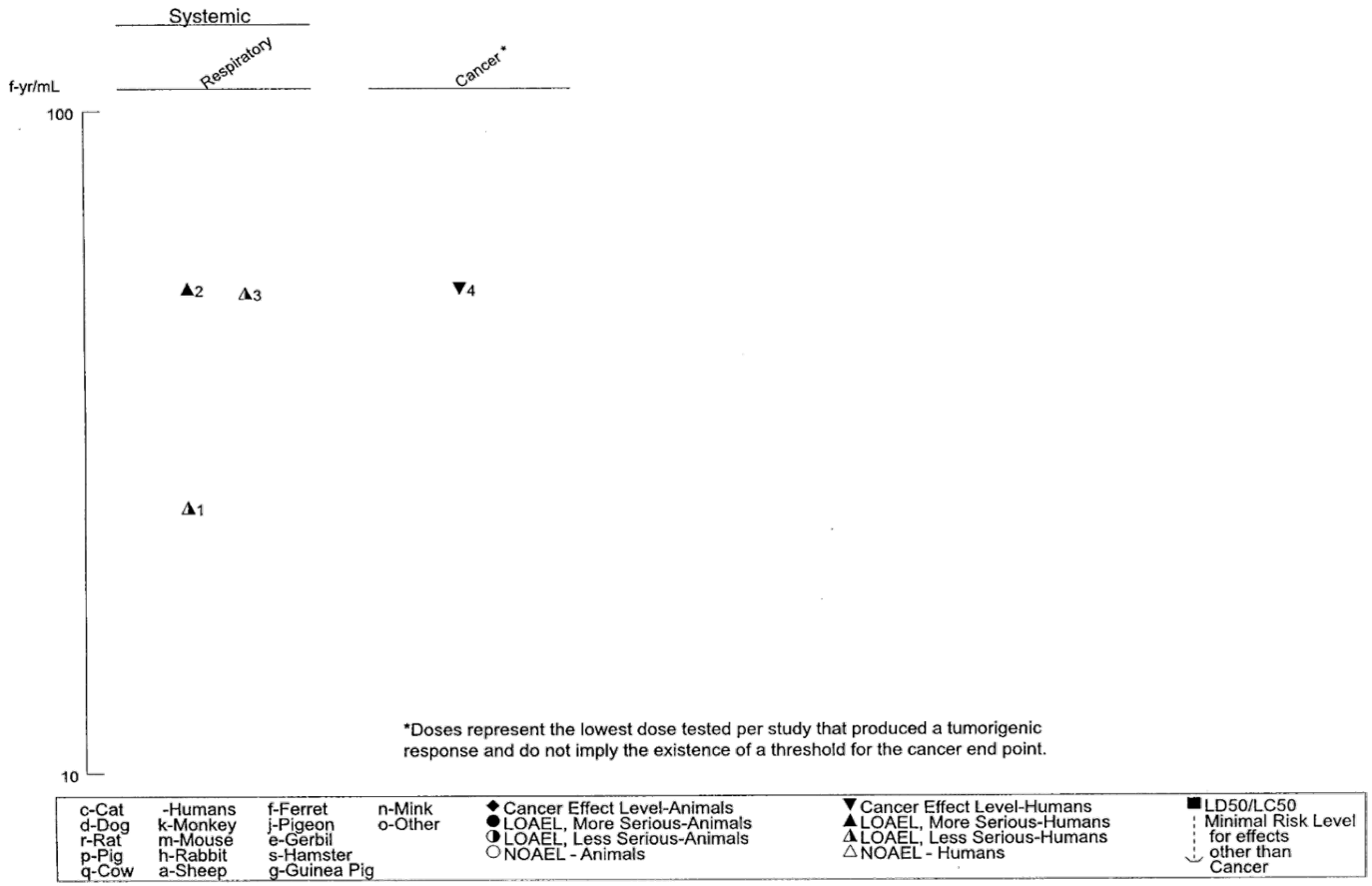


Figure 3-1. Levels of Significant Exposure to Asbestos - Inhalation - Human studies

Intermediate (15-364 days)



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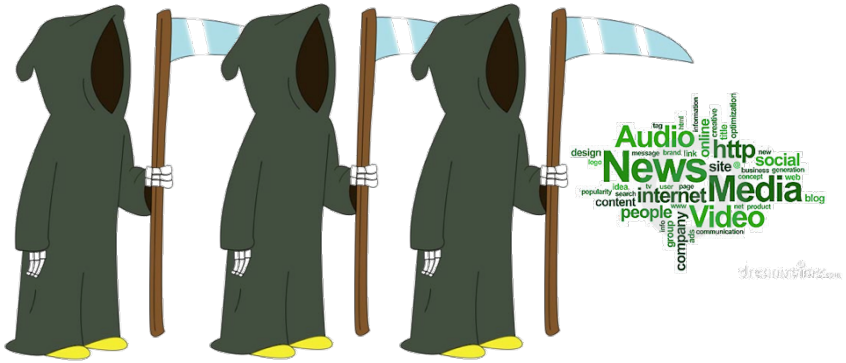
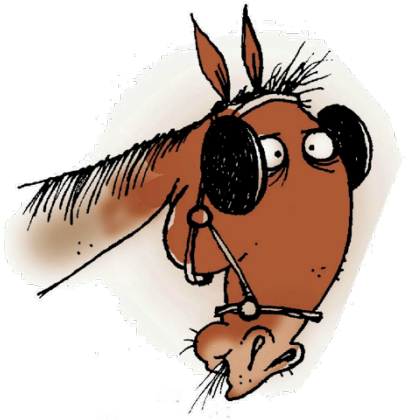
Most workers that are exposed to Asbestos do not ever develop an asbestos-related disease!

The PARADOX

What side are Eco Design Advisors on?

ACC Worksafe Unions News Media





Public Health

Left to deal with the collateral damage

How do people respond to risk?

Risk = Hazard + Outrage

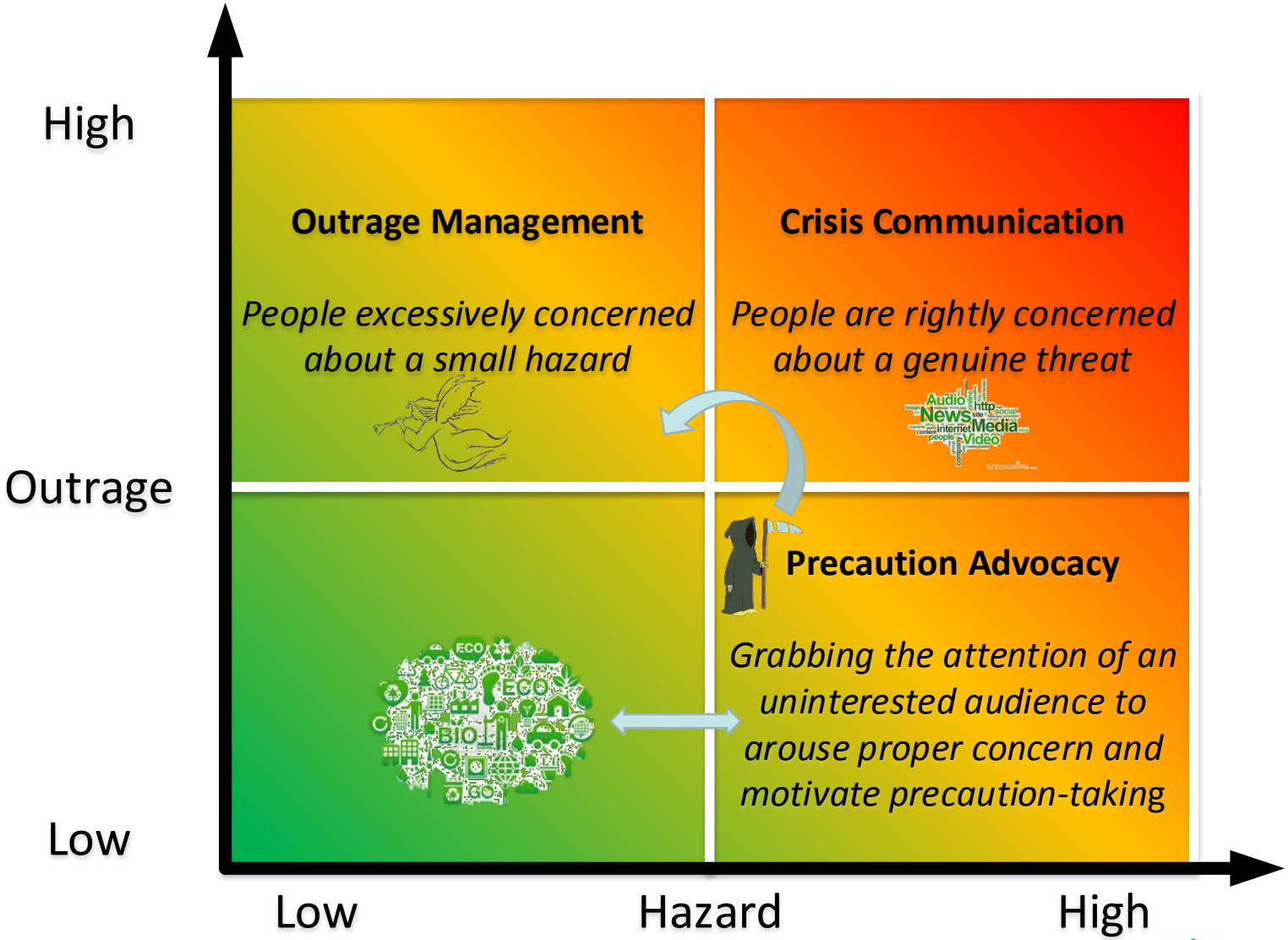
Hazard is the objective, technical aspect of the risk; the probability and extent of damage possible

Outrage is the extent that people are upset, frightened or angry

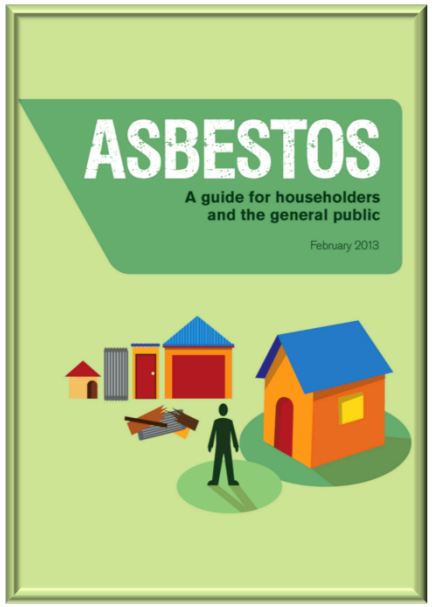
Outrage (and fear) Factors
How NORMAL people assess most hazards

Safe	Risky
Natural	*Industrial*
Voluntary	*Involuntary*
Controlled by self	*Controlled by others*
Trustworthy sources	*Untrustworthy*
Responsive process	*Unresponsive process*
Not memorable	*Memorable*
Familiar	*Unfamiliar*
No moral relevance	*Moral relevance*
Not dreaded	*Dreaded*
Chronic	*Catastrophic*
Knowable	*Not knowable*
Fair	*Unfair*

Three Risk Communication Tasks



Risk Assessment



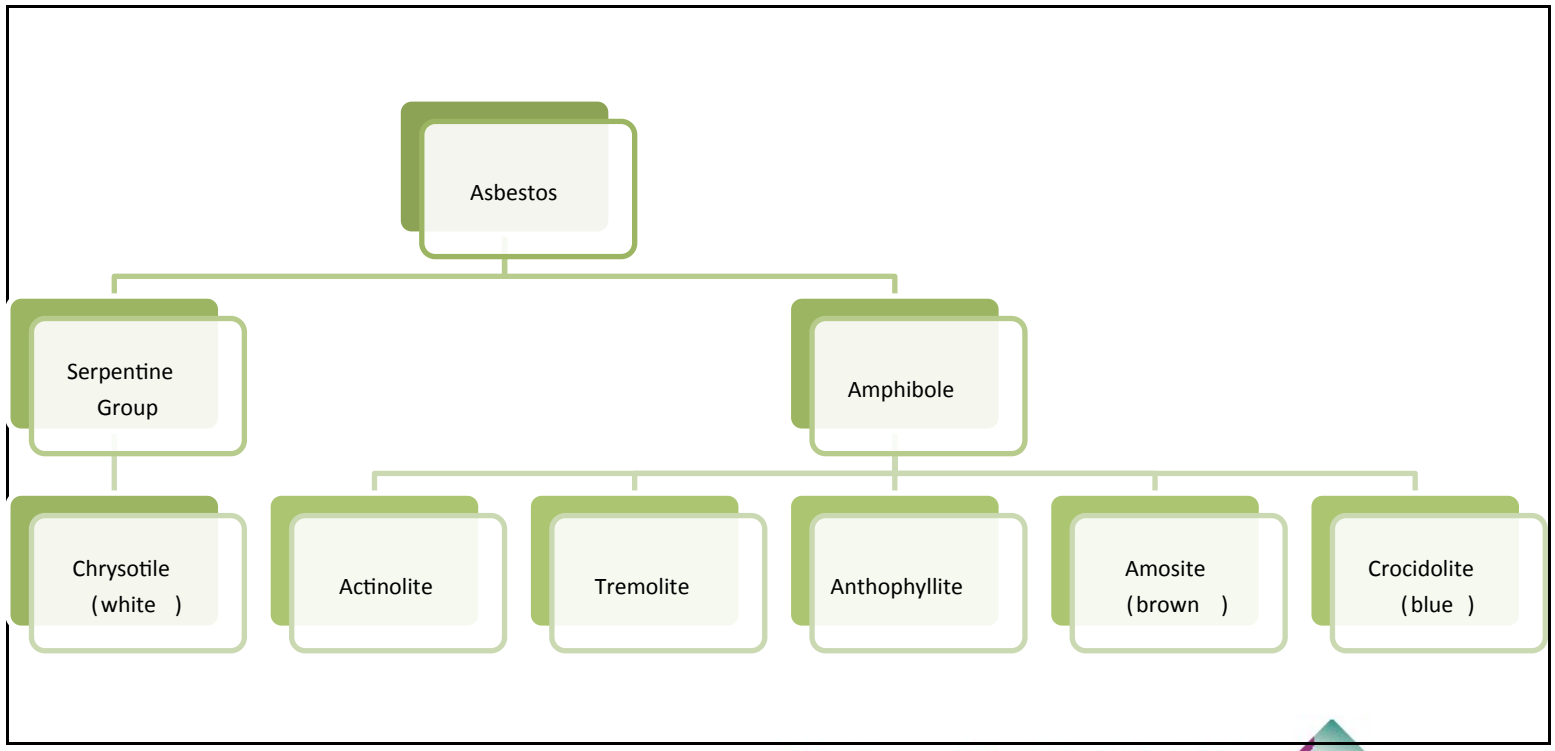
http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-enhealth-asbestos-may2012.htm

Pause

Questions & Discussion

What is asbestos?

- Group of naturally occurring minerals that take the form of long thin fibres and fibre bundles



WHERE ASBESTOS MAY BE FOUND IN A TYPICAL HOME

exterior

— flat, patterned and corrugated wall and roof sheeting, roof guttering, ridge capping, imitation brick cladding and lining under eaves

bathroom, toilet and laundry

— asbestos cement sheet walls, ceilings and floors, backing to wall tiles

living areas

— insulation in wood heaters, asbestos cement sheeting in walls, ceilings and beneath wood-heater hearths

kitchen

— walls, splashbacks, ceilings, in vinyl floor tiles, backing of vinyl sheet flooring, underlay sheeting for ceramic tiles

other

— backing of electrical meter boards, old ironing-board covers, heatproof mats, brake and clutch linings, some plaster sealants, filters and adhesive products, and hot-water pipe insulation set into masonry walls

– low-density asbestos fibreboard wall and ceiling panels (especially in high-humidity areas)

roof cavity

– loose fill insulation (not common)

backyard

— fences, garden sheds, garages, outside toilets, carports and dog kennels

– buried and dumped waste materials

Regional Public Health
Better Health For The Greater Wellington Region

Asbestos–containing products used in houses

Bonded asbestos products

The vast majority of asbestos-containing products used in houses were bonded asbestos cement materials, including:

- roofing
- shingles and siding (villaboard and similar)
- exterior and interior wall cladding
- eaves
- fencing
- thermal boards around fireplaces
- water or flue pipes

- asbestos cement materials will become friable when they are sufficiently damaged, badly weathered or otherwise deteriorated

Asbestos–containing products used in houses

Friable asbestos products

Some friable asbestos products may also be found in houses, including:

- asbestos-rope door gaskets in wood stoves
- loose fill roofing insulation (not common)
- spray-on insulation or soundproofing
- low-density asbestos fibre board
- insulation on hot-water pipes, domestic heaters and stoves (e.g. lagging)
- backing material on floor tiles and vinyl flooring
- carpet underlay (not common)
- textured paints, decorative ceiling coatings
- heat-resistant fabrics
- brick and plaster sealants, fillers and some adhesive products
- hail or fire damaged, or badly weathered asbestos cement materials

Typical older style houses that are likely to contain asbestos

Many older terraced houses, townhouses and units have very close neighbours who might be affected when asbestos is disturbed

Asbestos cement sheeting in eaves

... and in the gable end of a garage

Friable asbestos lagging on pipes

Typical old vinyl floor tiles that might have asbestos in the backing material

Asbestos cement 'brick' cladding

Asbestos cement shingles

Broken asbestos cement materials from a demolition

... and in a disused outbuilding

Asbestos cement flue and cowl

Asbestos cement corrugated roofing

If you are not sure if a product in the house contains asbestos, play it safe and assume that it does.
Alternatively, you can get advice from a certified asbestos contractor or have the product tested at a laboratory.

Asbestos only poses a risk to health when asbestos fibres are breathed in

- Undisturbed asbestos cement materials in good condition do not pose a health risk
  - because the asbestos fibres are bound together in solid cement.
- Fibres are released into the air if the material is
  - friable (damaged or crumbling)
  - disturbed by breaking, cutting, drilling or sanding
- Friable asbestos products
  - such as spray-on insulation or asbestos-rope gaskets in wood stoves and heaters
  - also produce airborne fibres during normal use or ageing
- Crumbling bonded materials, and all friable products
  - must be carefully managed to prevent the release of fibres into the air.

Indoor vs Outside

- Indoor contamination = much greater risk to occupiers

- Outside
  - Dilution effect
  - Equilibrates with background levels within 1m or so!

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Asbestos cement corrugated roofing

Only two indoor examples

Mostly outside:

- Pose much less risk

Six steps for reducing risk

Know where asbestos-containing products could be in the house. If in doubt

- get products tested
- or for safety's sake assume it is asbestos

Maintain asbestos-containing products in good condition

- use of paint
- or other surface finishes, enclosures and capping

Replace asbestos cement materials

- if they are damaged
- or are being temporarily dismantled for any reason
- ensure all friable asbestos is removed

Plan ahead to prevent disturbing and releasing asbestos fibres

- particularly when renovating
- or demolishing a structure

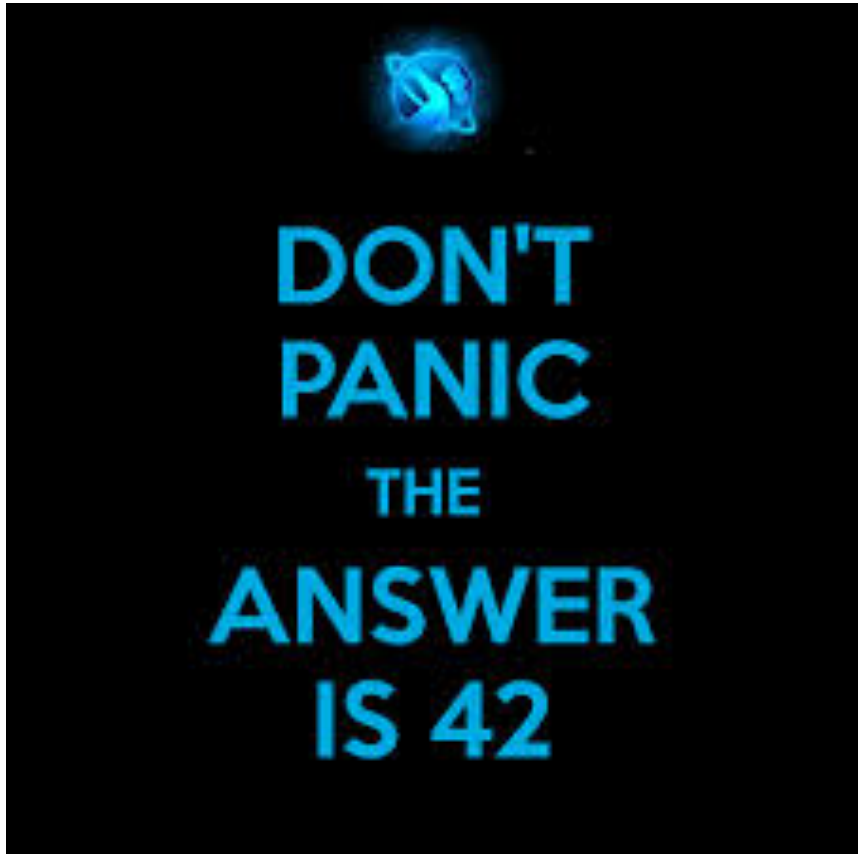
Get advice from

- local Public Health Unit
- ? Territorial Authority
- Worksafe certified contractor

Engage Worksafe certified contractor

- when undertaking major home renovations
- or demolitions

Always keep things in perspective



Asbestos is not an emergency!

Most people that are exposed to Asbestos do not develop an asbestos-related health problem!

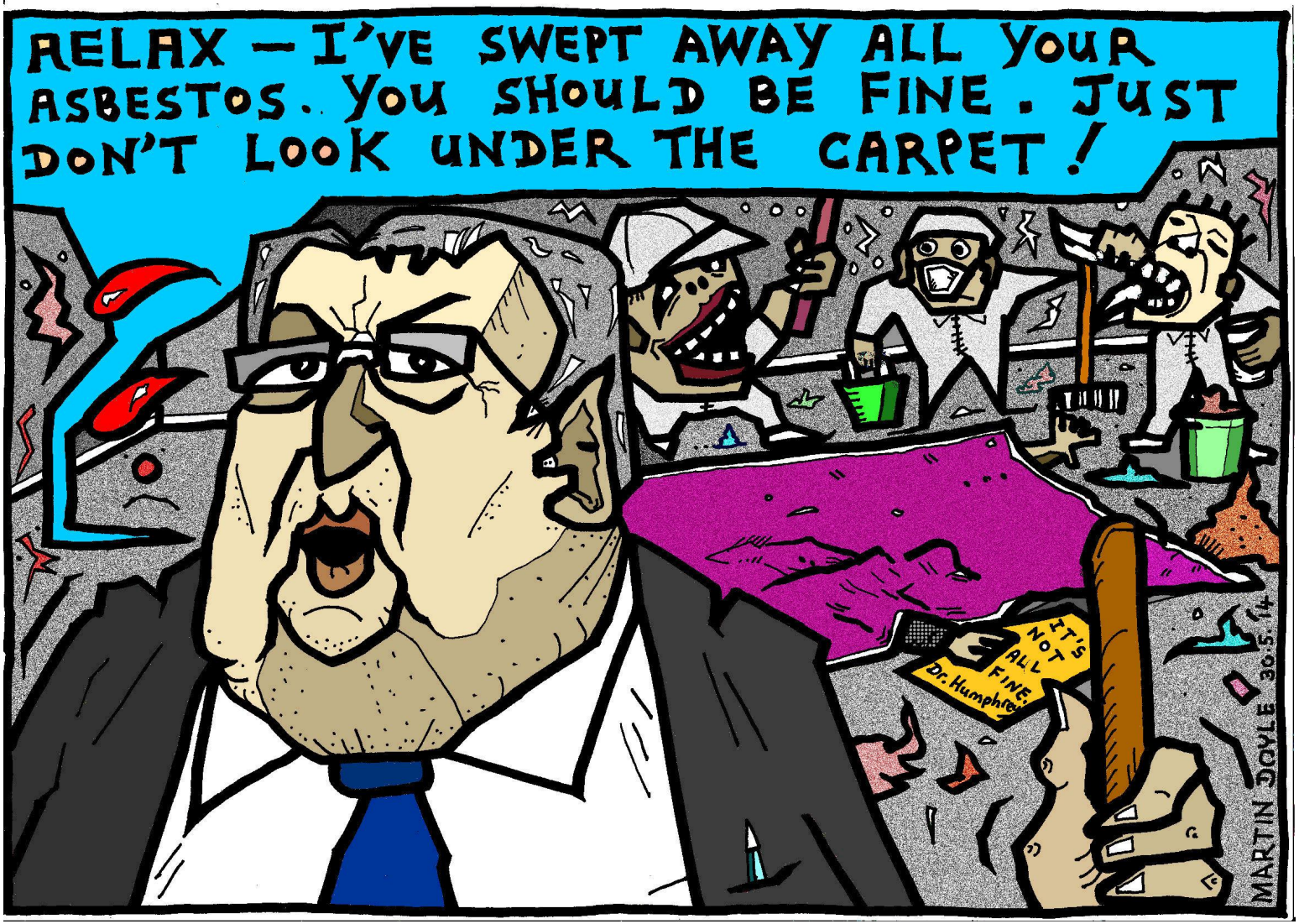
But remember the 3rd wave!

Risk = Hazard + Outrage

- People respond more to Outrage than Hazard!
- Peoples emotions about asbestos:

Upset	Grief - their lifesaving investment is contaminated
Frightened	Convinced that they have been poisoned and will almost certainly die from asbestos exposure
Angry	Guilt – they have poisoned their children Their lifesaving investment now significantly dropped in value Government has failed them and cannot be TRUSTED!

- Anxiety can cause more harm?



How to lose TRUST and enhance Outrage!

End

Questions & Discussion