

Overview of the current Australian Asbestos Regulatory Framework and NEPM Review update

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“Contaminated Soil” assessment

- Common principle – 0.001% w/w for impacted soils
- For “free fibre” asbestos
- Issue is for bonded asbestos materials – how to consider this in the context of “free fibres”
- Some consideration of “bonded” asbestos materials, with a higher trigger of 0.01% w/w

The role of risk assessment

- Some states will accept (QLD, VIC), although the “rules” for the assessment have a heavy reliance on published information to provide the framework
- “Appetite” for risk assessment tempered by “liability” and “insurance” issues
- Tendency to go with published information, regardless of how conservative it may be.

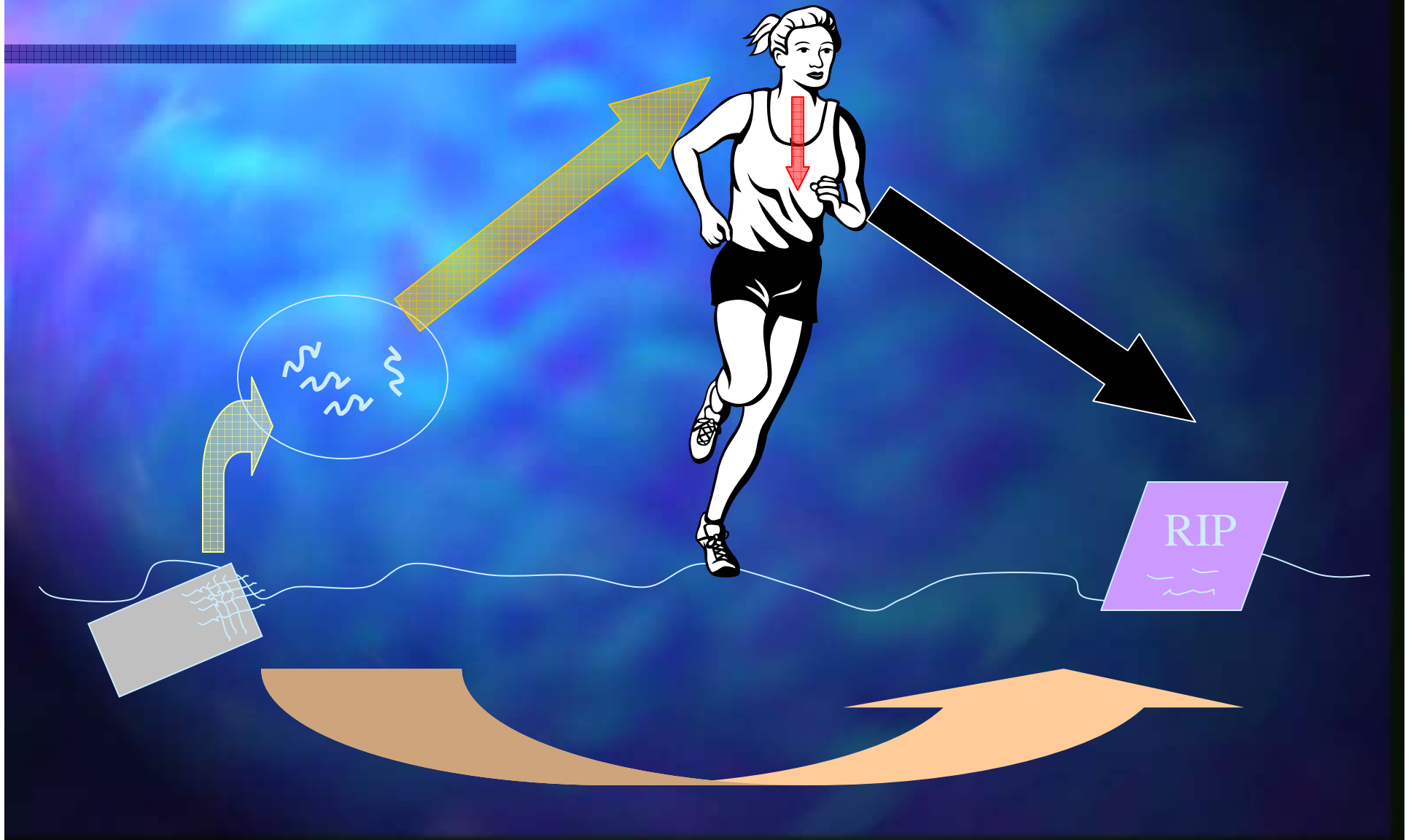
NEPM (Assessment of Site Contamination) Review

- Recommendation 12
- The NEPM be revised to provide more information, based on existing documentation, relating to the investigation and assessment of various forms of asbestos.

Statements that drive current thinking on asbestos risk

- “one fibre can kill”
- “there is no safe – or threshold – dose for asbestos”

The Exposure and Dose - Response Scenario



Taking a more rigorous approach

- “a number of (dose response studies) indicate that there may be a threshold for the effects of asbestos, casting doubt on the belief that ‘one fibre can kill’.
- “The data from published occupational studies generally show there is a direct relationship between exposure and risk for all industries and fibre types, although the estimates of risk vary between studies.”

And more

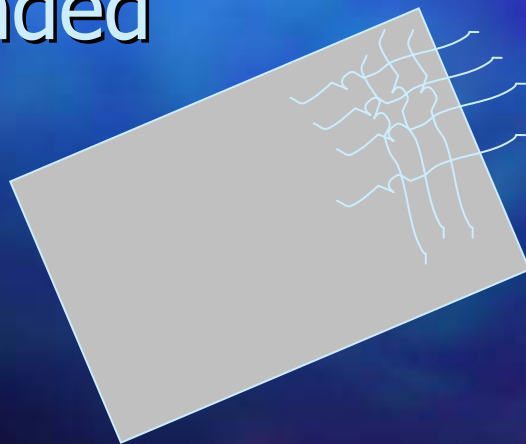
- “Thus short-term exposures to low concentrations of airborne asbestos in the non-occupational environment are associated with very low health risks.”

Form and type of asbestos

- Form

- Friable

- Bonded



- Type

- "Blue" – crocidolite

- "Brown" – amosite

- "White" - chrysotile

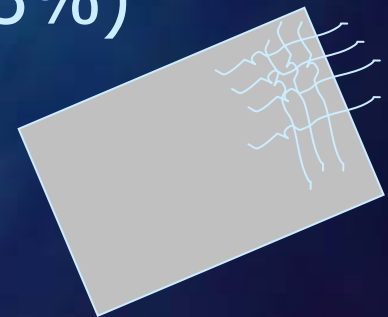
The fibre character is important

- Respirable airborne asbestos fibres of 5–100 μm in length, with diameters less than 1.5–2 μm , and with aspect ratios of more than 5:1, appear to have the greatest adverse effect

(Doll & Peto, 1985 as reported in enHealth, 2005)

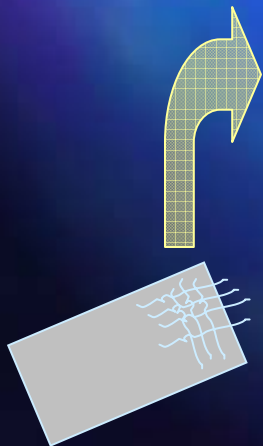
- “asbestos fibres less than 5 μm in length constitute the majority of fibres (67.3%) released from ABM”

(as reported in ASCC, 2008)



Likelihood of fibres being liberated

- Likelihood of:
 - Material being at the surface
 - Soil chemistry conditions that break down bonded asbestos
 - Mechanical breakdown

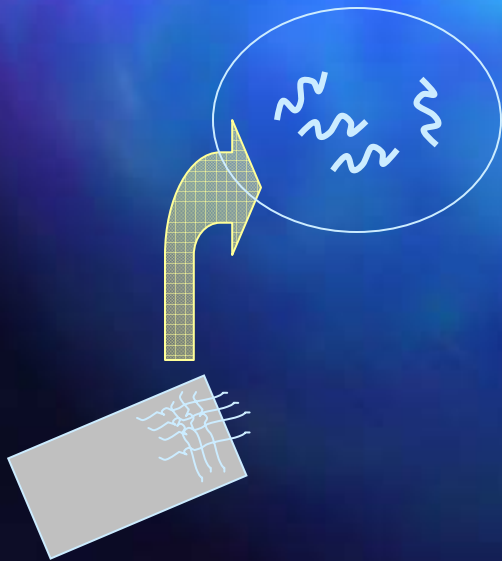


“The broad consensus from the studies and reports reviewed is that the release of asbestos fibres is exceedingly small from non-friable ABMs as a result of aging, weathering and/or corrosion.”

(as reported in ASCC, 2008)

Likelihood of free fibres becoming airborne

- What is the likelihood that bonded asbestos materials in soil will generate (say) 0.1 fibre / ml air for extended period of times?



- Number of fibres free in soil
- Whether they are bonded to soil particles or not (capacity to become airborne)
- Wind intensity and duration to generate sustained fibres in the air

Dose - response

- “Asbestos fibres are widespread in the environment, but the incidence of asbestos-related disease is extremely low, except in cases of high occupational or para-occupational exposure. This means everyone breathes in asbestos fibres during their lifetime. The small burden of fibres resulting from this background exposure appears to be tolerated.”



Is our logic on asbestos contaminated soil correct

- We are able to accept:
 - Airborne asbestos fibres in an occupational context (eg. 100,000 fibres per m³ of air for continuous periods up to 8 hours)
 - Being surrounded by asbestos building materials in a residential setting
- Yet seem unable to accept:
 - The presence of relatively small amounts of fibres or asbestos building materials in soils

Communication of risk is key in getting a more pragmatic approach

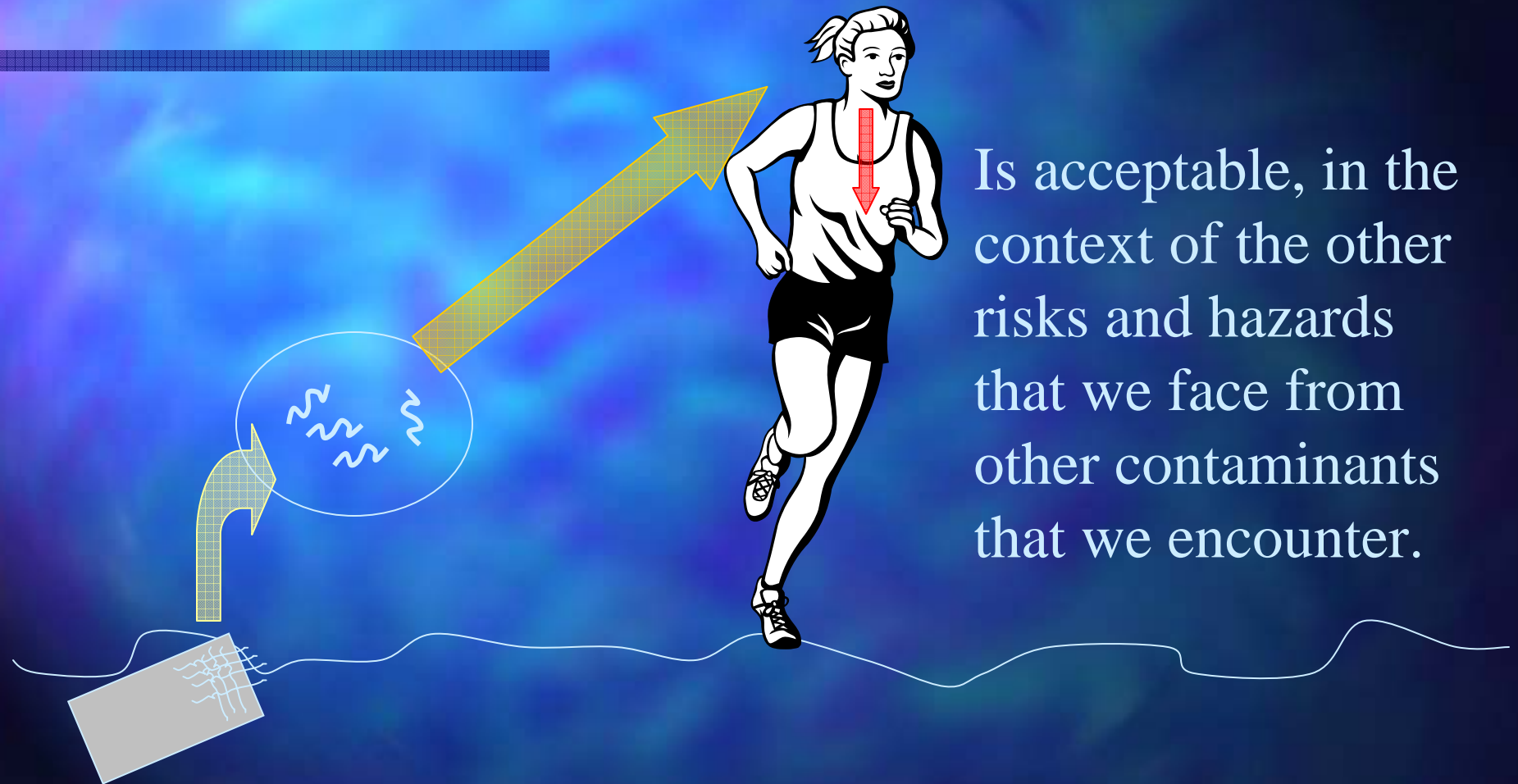
- “The belief in the community that one fibre can kill compounds the problem of risk communication. While this claim is not supported by scientific evidence, it underpins the fear and anxiety about asbestos exposure.”
- “Effective communication is integral to managing asbestos risk. Any affected individual or community should be involved and kept informed at each step of inspection, risk assessment and risk management.”

enHealth 2005, Management of asbestos in the non-occupational environment

Challenges

- Can we agree a risk based approach for site specific assessment that is representative of the full source – pathway – receptor chain?
- Can “trigger levels” be set for asbestos in soil, particularly bonded asbestos, that better reflects the likelihood of it causing illness (a similar framework to other contaminants)?
- What is required to better gain acceptance by community, insurance companies and others of revised triggers and risk assessment and risk management approaches?

The Exposure and Dose - Response Scenario



Is acceptable, in the context of the other risks and hazards that we face from other contaminants that we encounter.

Key references used

- enHealth 2005: "Management of asbestos in the non-occupational environment"
- Australian Safety and Compensation Council, 2008: "A Literature Review of Australian and Overseas Studies on the Release of Airborne Asbestos Fibres From Building Materials as a Result of Weathering and / or Corrosion"
- Swartjes F.A. and Tromp P.C, 2008: "A tiered approach for the Assessment of the Human Health Risks of Asbestos in Soil" *Soil and Sediment Contamination*, 17:137-149.