

Challenges in Implementing Innovative Technologies & Approaches within Existing Contaminated Land Regulatory Frameworks

Adrian Heggie – WSP Australia
November 2018



What's the Issue?

- Innovation – inevitable & part of normal scientific, engineering & business practices
- Business & administrative practices usually make provisions to permit innovation
- But – guidance, enshrined within regulatory processes, can inhibit innovation

Innovation in investigation technologies and practices in Contaminated Land Assessment has become stymied by our CLM regulatory frameworks

A brief look at the history of innovations in CLM

Early 1990s: CLM in its formative age

- Minimal guidance – derived from USA and Netherlands
- Steep learning curve for consultants and regulators
- Learning “on the job”
- New methods & old methods were all ‘new’
- Little resistance to innovative methods
- Contaminated land EPA auditor scheme did not exist till 1999

A brief look at the history of innovations in CLM

2000s: CLM in its regulated age

- National guidance created – NEPM 1999
- State regulators' auditor schemes – 1999
 - processes regulated, but flexibility for methodologies
- Review of the first (1999) NEPM – 2007- 2013
- CRC CARE technical reports – form basis of revised NEPM
- NEPM 2013: Specifies recommended measurement methodologies
- NEPM linked to state regulations

The Genesis of Resistance to Change

- Auditors are obliged to initially accept only NEPM endorsed methods.
- Consultants must demonstrate alternative (new/different/non-endorsed) methods are valid & better than standard methods.
- & convince the auditor or regulator.
- Technical errors in guidance

Re: passive vapour sampling, NEPM 2013 states:

“The absorbed mass cannot be equated to a concentration because the volume of air associated with the absorbed mass is largely unknown.”

The Style of the Guidance Inhibits Innovation

- The guidance is too prescriptive for regulated guidance
- What may be accurate in 2009 can be old & redundant 5 or 10 years later
- Guidance should be worded to accommodate scientific and technological advancement

A Changing Australian Attitude

- Australian attitude to innovative measurement methodologies pre 2000 (pre growth of regulatory controls) was highly embracive of change
- Currently Australia is highly protective of existing regulated methods
- All currently endorsed methods were in place before regulatory guidance – what chance for new methods?

Embracing and Promoting Innovation

AIR QUALITY MEASUREMENT

METHODS AND TECHNOLOGY

APRIL 2-4, 2019 • DURHAM, NC



AIR & WASTE MANAGEMENT
ASSOCIATION

The premier conference covering latest advances in measurement technology,
quality assurance and data uses

Abstracts accepted through October 22

The Cases of Three Innovative Measurement Methods

- Passive soil vapour measurement (WMS_LU samplers)
- Passive mass flux (measuring vapour emission strengths)
- Headspace-in-vial soil vapour measurement

Passive Mass Flux Chambers

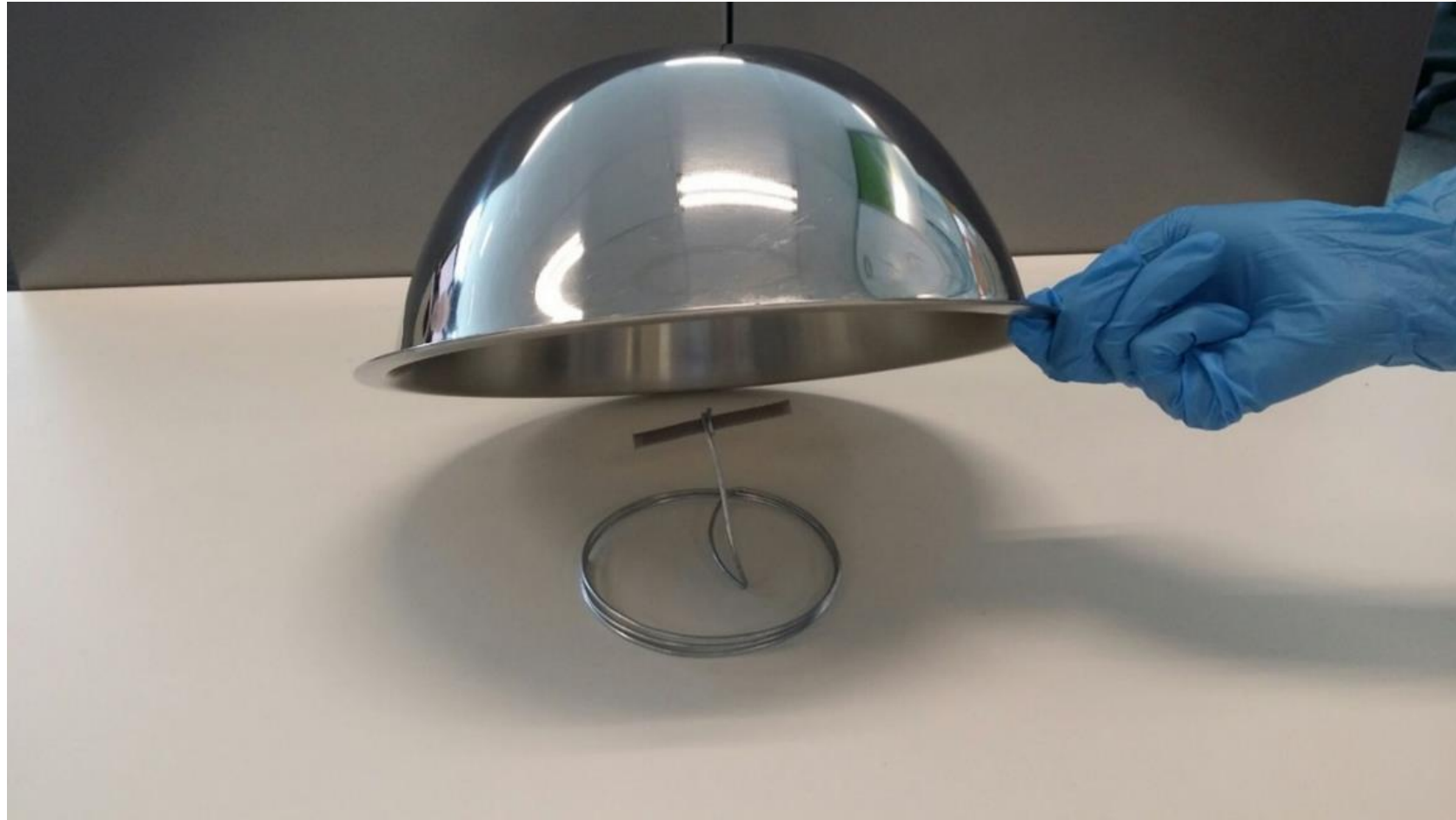
- Developed and launched in Australia
- Published in a refereed journal
- Used under developer's supervision on numerous Australian projects, and some Chinese projects
- Auditor and regulator acceptance - limited by inappropriate and incorrect wording in NEPM 2013 re use of surface vapour flux measurements
- Method is included in endorsed sampling methods in China

New Flux Method Published

11



New Flux Method



New Flux Method – in use now in Australia



Headspace-in-vial soil vapour measurement

- A recent local development / application of established measurement and analytical principles
- Regulator's position:
 - “Not published”
 - “..the method has merit as a screening tool..”*
 - “..evidence is lacking to demonstrate the method has been generally accepted as reliable and quantitative by industry and other jurisdictions.”*
- Auditors accept it as a screening tool

Headspace-in-vial Sampling

15



The outlook for acceptance of new methods

- May require a generational change
- A new generation of guidance?
 - with a new approach to the role and style of guidance
- Perhaps just more perseverance?

The Positive Spin

- Innovation is inevitable
- It can either be encouraged and supported or resisted
- Implementation of new methods is the best way to prove their usefulness
- Outward looking regulators & auditors are interested and accepting