Breathing City AQ & health metrics meeting
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Air quality metrics to inform health practice and policy – unresolved challenges and future opportunities

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Ambient air quality metrics

Outdoor sources → Location → Exposure → Health Impact

Regional
Transboundary
Local
Outdoor
sources

Heath
Impact
Exposure
Location
Metrics for ‘true’ exposure?

Indoor sources
- Cooking
- Heating
- Cleaning
- Materials

Outdoor sources
- Building design
- Ventilation
- Location
- Infiltration rate

Route
- Mode
- Infiltration rate

Home

Work / School

Travel

Exposure
- Dose

Heath Impact
- Sensitivity
- Age
- Ethnicity

Acute Effects
- Chronic Effects
- Quality of Life

Single pollutant
- Multi pollutant
- Noise

With images of buildings and urban environments, highlighting the sources and pathways of exposure.
Challenge 1 – Ambient metrics are a proxy for human exposure

- Evidence often based on ambient epidemiological evidence – this cannot be directly translated to exposure
- “Living in a location that experiences X ambient air quality results in Y elevated risk of harm”
- Therefore an ambient metric of 10 ug/m3 is not the same as an indoor metric of 10 ug/m3 in health terms.
Challenge 2 – this is a health issue

- Do metrics protect health, or create a distraction?
- Air quality management system is currently based on environmental quality, not health protection
Challenge 3: What is harmful?

- Can ambient evidence of harm be translated?
- Sources, pollutants and mixtures are very different
- Indoor PM2.5 <> outdoor PM2.5 (no WHO IAQ Guideline)
Challenge 4: How long is harmful?

- Indoor exposures can be extreme and transient
- Challenges both for assessment and health impact – chronic and acute
Challenge 5: Who’s responsible?
Challenge 6: How do you assess it?

• Real world, laboratory or theoretical?
  – Effective health protection requires a direct link to exposure
  – Metrics need to be measurable and practical

• Access to private spaces
  – Miniaturisation and sensors have data challenges

• Human behaviour has a disproportionately large influence
  – We’re all different so how do you scale up results?

• Ambient is impersonal, indoor isn’t
  – Ethics - how do you present very personal results?
Challenge 7: Who protects our health?

- Who polices and is responsible for assessing indoor AQ?
- Ambient largely devolved to LAs, indoor largely manufacturing and building industries
Opportunities and solutions

• More toxicological work to identify priority sources and pollutants
• Perfection isn’t necessary – what’s ‘good enough’ to inform and protect?
• Emphasis on intervention not observation
• The public is more engaged than ever, but they must feel empowered and not helpless or they will disengage
• SPF Wave 2 projects just starting are a big step forward, use them! (toxicology, behaviour, sources, NTAs, microplastics, bio PM etc)
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