

ARSENIC IN THE SOUTH WEST - HOW TO ASSESS NATURAL CONTAMINATION RISKS

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The SWCLF



- Set up in 2015
- two specific aims:
 - provide training events for brownfield professionals in the region; and
 - look at specific regional and technical issues and provide position statements on these matters in order to harmonise practices across the region.

Arsenic Protocol



- Toolkit for regional practitioners
- Improve customer experience
- Main document with annexes
- Organic document
- Summary and main protocol

Annexes include:

- A. AS in the SW - Sources, Forms and Background
- B. Toxicology
- C. Basic Characterisation
- D. Exposure
- E. Bioaccessibility
- F. Remediation
- G. Validation

Annex A – AS in the SW, Sources, Forms & Background



- Geology
- Primary Ores
- Mining & Arsenic processing
- Common Arsenic Compounds
- Background or 'Normal' Levels of Contamination
- Use of Background Data in risk assessment

Annex B – Toxicology

- Fate and transport discussed.
- Effect of arsenic considered over various exposure routes
 - Acute (14 days or less)
 - Intermediate (15–364 days)
 - Chronic (365 days or more)
- **LLTC or HCV?**
- **Valence – form identification**

Annex C – Characterisation



- Site history and source characterisation – P1
- Site sampling – P2
- RMT, Portable X-ray Fluorescence Spectrophotometry
- Chemical Analysis
- Extraction tests
- Statistical Analysis

Annex D – Exposure

- Generic Risk Quantitative Assessment
- CLEA exposure model preferred
- Detailed Quantitative Risk Assessment
- Regional plant studies for localised GQRA
- Plant uptake
- Bioaccessibility considered in own section!

Annex E – Bioaccessibility



- Bioavailability and Bioaccessibility
- **PBET or BARGE?**
- Uncertainties should be considered
- Sensitive pathway with Arsenic

Annex F – Remediation



- Remediation techniques compared
- Excavation and Disposal or Re-Use (Recovery)
- Simple and Engineered Soil Cover systems
- Solidification/Stabilisation Approaches
- Role of SUDS and Surface Attenuation
- Imported Soil Requirements

Annex G - Validation

- Should follow CLR 11
- Often Clean Cover Systems
- LA/EHO consultation
- Competent person
- Imported soil - sampling
- Duty of care documentation
- Site records

What Next?

- Some sections need completion and further consideration
- Technical editing and peer review
- Document needs to be useable!!
- Publish October??





QUESTIONS?