

Using Simplicity to Address Contaminant Problems Under Conditions of Uncertainty, AKA “Keeping It Simple”

LSPs and other practitioners work to obtain information from subsurface investigations in support of reducing or removing contamination during remediation efforts. However, certainty of fate, transport, and attenuation can seldom be achieved because of unknown or unanticipated subsurface conditions. At some sites, cost benefit analyses may even indicate that a complex, expensive, and time-consuming effort will not yield an outcome better than a simpler approach.

Course Agenda

(45 minutes)

Introduction: Why Uncertainty Proves to be Much Greater Than Inferred from Local Hydraulic Testing

- Subsurface heterogeneities that control Darcy’s Law
- Why field studies provide limited information
- The role of geochemical tracer tests in showing where groundwater flow paths actually go

(60 minutes)

Setting the Challenge: The Major Causes of Subsurface Uncertainty

- Scale dependency
- Refraction of flow lines
- Plunging plumes
- Nested flow systems

30 Minute Break

(60 minutes)

Using Simplicity in Analysis within Probable Error Bars of Uncertainty

- Hydraulics: How long does it take for airborne PFAS to move from the soil zone to the water table?
- Remediation of BTEX: Unappreciated effectiveness of ternary diagrams.
- Solvent biodegradation: Log-log plots to evaluate mixing, dispersion and dehalogenation.

(60 minutes)

Case Studies: Practicing What You Learned and Recap

- Case Studies
- Summary and Conclusions
- Q&A