

Agenda

Yorkshire Contaminated Land Group Technical Meeting – Recent Advances in Risk Assessment and Remediation.

University of Sheffield, 15th February 2013

09:45 Welcome and Introduction

10:00 Prof. Paul Nathanail, University of Nottingham and Land Quality Management Ltd. “The risks of using of iron nanoparticles in groundwater remediation: an evolving tale of epistemic and aleatory uncertainty”

Nano particles are a contested topic and their potential for use in groundwater remediation involves managing aleatory uncertainty and minimising epistemic uncertainty. Recent literature reviews show that the reliability of claimed epistemic uncertainty needs to be carefully evaluated before being accepted and used as justification for further studies. The ‘why are you studying this’ should be legitimately answered if scarce resources are to be allocated. Such challenges are not new nor currently unique. They do however highlight the need for objective evidence based decision making by practitioners, their clients and the regulators.

10:25 Richard Gill, University of Sheffield. "Electrokinetic enhanced bioremediation of organic contaminants in groundwater"

Electrokinetics is a promising remediation technology that can remove and/or destroy contaminants in the subsurface, such as heavy metals, organic compounds and radionuclides. It uses an electrical field to induce certain mass transport processes independent of hydraulic conductivity, namely the movement of ions and pore fluid. When coupled with in-situ bioremediation, electrokinetics can be used to enhance bioavailability and bioaccessibility by mobilisation of contaminants and bacteria. The focus of this project is to develop the application of electrokinetics to migrate electron acceptor substrates (such as nitrate) to enhance bioremediation within a zone contaminated with LNAPL-derived dissolved contamination.

10:50 Dr Brian Bone, Bone Environmental Consultants Ltd. “PRB - innovative or established?”

Innovative approaches to PRB technologies have been developed in the UK and taken forward to full-scale implementation. These developments, although small in number, utilise a variety of reactive media to address a range of contaminants, including mixed contaminant



plumes, and have been well disseminated as CL:AIRE Technology Demonstration Projects. However, many stakeholders remained uncertain over the performance of a PRB, particularly in the long-term. This presentation provides an overview of an extensive review of published literature to answer the question “PRB – established or innovative?”. Lessons learned from established systems span over nearly two decades and some of the broad learning points can be applied to new and evolving designs. The prospect of system ‘failure’ should therefore be becoming less likely for sites that are well-characterised and systems designed using high quality information, as advocated in the UK guidance documents.

11:15 Tea/coffee (sponsored)

11:30 Charlene Timmen, Arup. “Interpretation of ground gas purge-and-recovery tests”.

Gas purge and recovery tests are currently used in vadose zone ground gas investigations as an indication of active gas generation at a site. This is done by purging a borehole with an inert gas and monitoring the rate at which the gas re-enters the well. This study analysed the validity of this method for determining an advective gas flowrate. Gas recovery profiles from the purge and recovery tests were analysed, and the resulting conclusion was that the recovery profiles were found to be diffusion based rather than advective. The analysis was carried out by calculating the diffusion coefficient from the observed data of over twenty purge and recovery tests and then fitted to modelled diffusion curves. The correlation between the observed curves and modelled curves was very high and indicated that the purge and recover tests can be explained by diffusion. From this, the resulting diffusion coefficients could be used to calculate the effective porosity of the ground conditions surrounding the borehole.

11:55 Dr. Phil Studds, Ramboll. “Asbestos in Soils”.

On many brownfield sites there is always the distinct possibility that asbestos will be present in soils. It is important to understand whether the asbestos is present at concentrations that could pose an unacceptable risk during site works and/or to the proposed future land use. A case study is presented to demonstrate the difficulties in accurately assessing risks associated with asbestos in soils and how proposed future guidance may assist.

12:20 Closing remarks.

12:30 End of meeting

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