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Early Careers Risk Assessment Workshop: How to be a Better Risk Assessor

19th June 2018

Programme

9:30	<i>Registration</i>
9:45	Chair's Introduction and the risk assessment framework - Alex Lee, WSP
09:55	Demystifying Human Health Risk Assessment - Simon Firth, Firth Consultants <ul style="list-style-type: none"> • Generic Assessment criteria, S4UL and C4SL - what are they? • The key model assumptions and easy changes that may be made to a model • The common on mistakes eg better %SOM, incorrect CSM, bioavailability – What can you do?
10:15	Reducing Uncertainty in Controlled Waters Risk Assessment - Alex Lee, WSP <ul style="list-style-type: none"> • The tools; • The assessment limits – key observations on their misuse: • M-Bat and the derivation of Site specific EQS • The parameters that drive our Risk assessment models and that should be our focus • What can we do to reduce uncertainty and increase confidence in your risk projection
10:35	Getting the most from your Ground Gas Risk Assessment - Sarah Mortimer, EPG <ul style="list-style-type: none"> • The guidance • Data sufficiency and other common mistakes • Examples and limitations • What can we do to reduce uncertainty and increase confidence in your risk projection
10:55	Q&A Chaired by Geological Society Contaminated Land Group
11:05	Break
11:20	Developing your Vapour Risk Assessment – John Andrews, RSK <ul style="list-style-type: none"> • The guidance • Data sufficiency and other common mistakes • Examples and limitations • What can we do to reduce uncertainty and increase confidence in risk assessment
11:40	Meeting the Challenge of Asbestos Risk Management – Steve Edgar, Vertase F.L.I. <ul style="list-style-type: none"> • Identification of asbestos on site (touch on H&S, legal) • The guidance for risk assessment • Data sufficiency and other common mistakes (the CSM) • Examples and limitations • What can we do to reduce uncertainty and increase confidence in your risk projection
12:00	Risk assessment and remediation – Andrew Morgan, Geosyntec The Remsoc framework
12:20	Q&A Chaired by Remsoc – Andrew Morgan, Geosyntec
12:30	Why become chartered and/or accredited – Anna Hitchmough, RSK & TBC <ul style="list-style-type: none"> • An overview of the Chartered Geologist and Scientist schemes • An overview of the SoBRA accreditation Scheme

	<ul style="list-style-type: none"> A discussion on why and advice on submissions
12:45	<i>Lunch</i>
13:30	<p>Workshops Delegates will be divided into groups to undertake workshops. Each group will have a facilitator.</p> <p>Group 1: Risk register awareness session (Remsoc)</p> <p>Group 2: Choosing the right GAC (SoBRA)</p> <p>Group 3: Improving risk assessment from field to desk (Geol Soc)</p>
15:15	<i>Refreshment break</i>
15:35	Workshop Groups report to meeting
16:30	<p>Round up of the day and meeting close Chair</p>



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SoBRA



The Society of Brownfield Risk Assessment (SoBRA) has been established to support the growing number of professionals working in land contamination risk assessment. It is a learned society for individuals, with membership drawn from the private, public, voluntary and academic sectors. Its goals are to improve technical knowledge in risk-based decision-making related to land contamination applications and to enhance the professional status and profile of practitioners.

Geological Society Contaminated Land Group



The Contaminated Land group has the following aims:

- to hold meetings, conferences, seminars, training courses and workshops;
- to represent and promote the Geological Society and its science strategy in respect of land contamination issues;
- to promote and support those seeking chartership (CGeol or CSci) as land contamination specialists;
- to promote and support those seeking to join the SiLC, RoGEP and SoBRA registers and taking part in the Land Forum backed 'National Quality Mark Scheme

Remsoc



Remsoc has been established by a group of professionals and practitioners, all working in the remediation sector. Remsoc seek to promote the safe and technically sound implementation of remediation techniques and technologies and provide a knowledge sharing platform amongst professionals and practitioners with a focus on the development of early career professionals. Their objectives are to promote good practice in remediation.....in essence..... to do remediation right.....



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Directions to the Royal Geological Society

Burlington House is on the north side of Piccadilly midway between Piccadilly Circus and Green Park underground stations. The entrance to the Geological Society is directly opposite Fortnum and Mason.

Underground – the nearest stations are Green Park or Piccadilly Circus.

Buses – Number 9, 14, 19, 22 & 38 all stop near Burlington House.

The Geological Society
Burlington House
Piccadilly
London W1J 0BG

T: +44(0)20 7434 9944

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Summer Workshop Pre-attendance Notes

Biography of Simon Firth, Firth Consultants

Simon is an independent environmental consultant with 23 years' experience in land contamination. Starting out as a hydrogeologist Simon has since developed significant expertise in human health and environmental risk assessment both in the UK and internationally. He has particular interest in the use and development of models to predict contaminant fate and transport and exposure. Simon routinely conducts and peer reviews land contamination risk assessments and is an experienced trainer on this subject. Simon has been instrumental in the development of UK generic soil and groundwater screening values for protection of human health and has contributed to various UK guidance documents on risk assessment. Simon was one of the founders of the UK's Society of Brownfield Risk Assessment and is now a scrutineer for SoBRA's risk assessors' accreditation scheme.

Abstract - Demystifying Human Health Risk Assessment

This presentation provides an introduction to human health risk assessment, focussing on the first two tiers of assessment: the preliminary risk assessment and generic quantitative risk assessment. Simon will provide a simple explanation of the Contaminated Land Exposure Assessment (CLEA) model and how this is used to derive generic soil screening values such as the SGV and C4SL. Simon will discuss common mistakes and omissions made in human health risk assessment and how these can be avoided.

Biography of Alexander Lee, Technical Director, WSP UK Ltd

Alexander has over 20 years' experience in the assessment of land quality. He is a Chartered Geologist, Chartered Scientist and European Geologist together with Accredited Risk Assessor. He is elected Chair of The Society of Brownfield Risk Assessors (SoBRA). He represents SoBRA on the UK Land Forum and the National Land Quality Mark (NQMS) steering group. He has previously been employed by WSP Remediation Ltd, Environmental Resources Management (ERM) and British Nuclear Fuels (BNFL). He is an author in both domestic and international publications and a regular presenter and chair at conferences. He has completed projects encompassing problem holder legislative responsibilities, divestiture and audit together with strategy development and resource assessment. He acts regularly as an expert witness.

Abstract: Reducing Uncertainty in Controlled Waters Risk Assessment

Uncertainty in the delivery of risk assessment comes in many forms including conceptual, data, model and parameter uncertainty. Some forms of uncertainty have a greater effect on risk projections than others. Identifying and understanding the key sources of uncertainty can lead to better and more confident projections of risk. Furthermore, such an understanding helps us to better direct our efforts in the field and office towards what is most important. Often even small and easy changes in data capture can lead to greater confidence in model projections. This presentation will discuss and share those key factors that exert greatest control over the outputs of controlled water risk assessments. It will also seek to share easy and transferable learning that may assist in the delivery of better risk assessment by field awareness.

Biography of Sarah Mortimer, Environmental Protection Group

Sarah is an Associate at the Environmental Protection Group Limited (EPG). She has 18 years' experience in the investigation and assessment of contaminated sites. Sarah has a degree in Engineering Geology & Geotechnics and is a Chartered Geologist. Sarah has been responsible for investigating and assessing some of the most challenging gassing sites in the UK. Sarah is one of the authors of CL:AIRE Research Bulletin 17, which underpins the assessment of gassing sites using organic carbon data and outlines an approach to understanding gas generation in fill materials. She has been at the forefront in applying this approach to manage earthworks operations for development sites. She is currently working on several sites where she has developed the approach to include verification of earthworks using surface emissions data.

Abstract – Getting the Most from Gas Risk Assessment

This presentation will focus on highlighting the main UK guidance for the assessment of permanent gas risks and how this can be applied in real-terms on 'typical' sites. Using some real-site examples we will discuss data sufficiency and the most common mistakes which are made by Consultants. We will discuss the limitations of gas monitoring and how to successfully use a 'multiple lines of evidence approach' in order to assess gas risks, reduce uncertainty and increase data confidence. Throughout the presentation 'watch-points' will be highlighted, the aim of which are to highlight key learning points for delegates which will help them to deliver more robust gas risk assessments going forward. Delegates should feel free to think about their sites in advance of the gas risk presentation and raise their hands in the following Q&A session!



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Biography of John Andrews, RSK Environment

John is currently an Associate Technical Director at RSK and a multidisciplinary contaminated land consultant with over 26 years of combined consultancy and organic chemistry research experience. As primarily in a technical role, John works on challenging contaminated land projects in the UK and mainland Europe, with specialism in conceptual model development, human health risk assessment, vapour intrusion into buildings and development of soil, vapour and groundwater remediation strategies.

John is an accredited risk assessor for vapour intrusion with SOBRA and is the RSK technical lead on vapour intrusion. John was an active steering group member for the development of CIRIA C682: The VOCs Handbook, and is currently a member of the SOBRA sub group for the development of soil vapour GAC and a BSI committee to develop a test method/specification for soil sampling for the determination of VOCs.

Abstract: Developing your vapour intrusion risk assessment

The presentation will summarise the key principles of vapour migration from the sub-surface to indoor environments and development of robust vapour intrusion conceptual site models. The main focus will be on common areas of uncertainty in site data and modelling that can have significant implications for investigation methodology and vapour intrusion risk assessment. The differences between chlorinated solvent and petroleum hydrocarbon VOC will be discussed, together with the importance of consideration of biodegradation in vapour intrusion risk mitigation. The aim of the presentation is to provide attendees with a good technical background and greater level of confidence in vapour intrusion decision making.

Biography of Steve Edgar, Vertase F.L.I

Steve is a director at Vertase FLI, one of the leading technical contaminated land contractors active in the UK and has over 20 years industry experience. He is the former Chairman of the CL:AIRE Technology and Research Group as well as a founding member of the RemSoc steering committee and was involved in the release of the recent Asbestos in Soils industry guidance published by CL:AIRE (CAR-SOIL(TM)). As well as being a board Director at Vertase FLI he has many years of hand on experience of technology and earthworks based remediation, specialising in more complex multi technology remediation projects in addition to overseeing and directly managing remediation projects such as former tar and chemical manufacturing sites, coking works, pesticide manufacturing sites, asbestos impacted sites, chlorinated solvent spillages, radiological contamination and Part 2A sites.



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Abstract: Meeting the Challenge of Asbestos Risk Management

Steve will first set out the context of Asbestos in the industry and where we are in general with respect to risk assessment and remediation. He will then try to identify common mistakes made when gathering data, undertaking risk assessment (both Human health and workers) in relation to asbestos. He will talk about identifying asbestos on site including some discussion around health and safety and legal aspects before trying to get some discussion and key points across on risk assessment, CSM's and data gathering for asbestos. All this of course from a "contractors perspective" not a risk assessor but from one whom oversees and reviews a lot of work around asbestos in the contaminated land and remediation sector.

Biography of Andrew Morgan

Andrew is a Chartered Geologist with over 17 years' experience focussed in the treatment of soils and groundwater using a variety of in-situ or ex-situ treatment methods. Andrew currently is a lead member of the RemSoc steering committee. Mr. Morgan has significant experience in all aspects of remediation engineering including remediation options appraisal, laboratory and field scale feasibility testing, along with detailed full scale design, installation and verification evaluation. Mr. Morgan has extensive experience using a number of standard technologies for the remediation of soils and groundwater including soil vapour extraction; air/ozone sparging; biosparging; dual/multi-phase extraction; LNAPL recovery; enhanced reductive dechlorination; conductive heating; steam injection; surfactant flushing and in-situ chemical oxidation/reduction. These technologies have been commissioned as stand-alone systems or combined to provide a multi-phased, integrated solution to tackle more complex sites. Mr Morgan has been part of the transatlantic team which successfully completed a STAR feasibility study in Belgium and has recently completed an in-situ ISCO pilot in the uniquely challenging site conditions of Greenland. Of particular note, project management duties currently include the completion of a complex laboratory scale EK TAP study for a site in the UK.

Biography of Anna Hitchmough, RSK Ltd

Dr. Anna Hitchmough is a Principal Consultant at RSK Ltd where she is Technical Lead for NAPL and Head of Profession for Geosciences. She has a degree in Geology, an MSc in Engineering Hydrology and a PhD in Hydrogeology. Anna has been working in contaminated land for 17 years and is currently a committee member of the Geological Society of London Contaminated Land Group where she has a particular interest in promoting and facilitating CGeol and CSci Chartership. This interest is carried over into her role as a volunteer scrutineer for Geol Soc and responsibilities for facilitating Geol Soc Chartership within the RSK group of



companies. She was previously secretary of the Geological Society of London's Hydrogeology Group. Anna spends a lot of her working life carrying out quantitative risk assessment and is Accredited as a Controlled Waters Risk Assessor with SoBRA.

Abstract: Why become chartered and/or accredited

The presentation will outline the benefits of Chartership and accreditation with particular emphasis on the Geological Society of London and SoBRA. The mechanism of applying for Chartership with Geol Soc will be outlined and some hints on gaining Chartership will be provided.

Suggested workshop reading notes

Baker K., Hayward H., Potter L, Bradley D, MacLeod D (2009). The VOCs Handbook. Investigation, assessing and managing risk from inhalation of VOCs at land affected by contamination C682, CIRIA. London.

BS 8576 Guidance on investigation for ground gas – Permanent gases and Volatile Organic Compounds (VOCs).

BS 10175:2011+A2:2017 Investigation of potentially contaminated sites – Code of Practice

Contaminated Land: Applications in Real Environment (CL:AIRE) (2014). 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010.

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Construction Industry Research and Information Association. Report C733 – Asbestos in soil and made ground: A guide to understanding and managing the risks. CIRIA. London, 2014. ISBN 978-0-86017-737-1.

CONSIM Software v2.5 Golder Associates <http://www.consim.co.uk/>

Environment Agency 2008. Compilation of data for priority organic pollutants for derivation of soil guideline values. Science report SC050021/SR7. ISBN 978-84432-964-9. Environment Agency.

Environment Agency 2009a. Human health toxicological assessment of contaminants in soil. Science Report Final SC050021/SR2. Environment Agency, Bristol, UK.

Environment Agency 2009b. Updated technical background to the CLEA model. Science Report SC050021/SR3. ISBN: 978-1-84432-856-7. Environment Agency.

Environment Agency 2006c. Carey, M.A., Marsland, P.A., Smith, J.W.N., 2006. Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination. Environment Agency
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Hers, I., R. Zapf-Gilje, P. Johnson and L. Li 2003. Evaluation of the Johnson and Ettinger model of indoor air quality Groundwater Monitoring and Remediation 23, 119-133.

Johnson C.C., Ander E.L., Cave M.R., Palumbo-Roe, B. 2012. Normal background concentrations (NBCs) of contaminants in English soils: Final project report. Commissioned Report CR/12/035.

<http://nora.nerc.ac.uk/id/eprint/19946/1/CR12035N.pdf>

Johnson, P., Ettinger R., 1991. Heuristic model for predicting the intrusion rate of contaminant vapours in buildings. Environmental Science and Technology, 25, 1445-1452.

Nathanail, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathanail, J. F. (2015), *The LQM/CIEH S4ULs for Human Health Risk Assessment* (Nottingham: Land Quality Press). <http://www.lqm.co.uk/publications/s4ul/>

NHBC/RSK. Guidance on Evaluation and Development Proposals on Site Where Methane and Carbon Dioxide are Present. Report No.4 Amersham: NHBC/RSK, 2007.

SoBRA, 2015. Uncertainty in Human Health Risk Assessment. ISBN 978-0-9568241-9-6. The Society of Brownfield Risk Assessment. <http://sobra.org.uk>

SoBRA 2016. Site Investigation and Risk Assessment for Historic Landfill Redevelopment. The Society of Brownfield Risk Assessment. <http://sobra.org.uk>

SoBRA Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater (2017). <http://sobra.org.uk>

SoBRA 2017. Vapour Intrusion to Support Sustainable Risk Based Decision Making. ISBN: 978-0-9568241-8-9. The Society of Brownfield Risk Assessment.

<http://sobra.org.uk>

Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

Wilson S. 2008. Modular approach to analysing vapour migration into building in the UK. Land Contamination and Reclamation, 16 (3) p223-236

Wilson S., Oliver S., Mallett, H., Hutching H., and Card, G. Assessing risks posed by hazardous ground gases to buildings. CIRIA C665. CIRIA London, 2007