The Geological Society

CONFERENCE 2025

CONTAMINATED LAND 'HOT TOPICS'

2nd April 2025

Burlington House, London and Online

https://www.geolsoc.org.uk/contamland

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Contaminated Land Group

Contaminated Land 'Hot Topics'

Schedule

9:30-10:00 - Tea/Coffee Networking

10:00 – 10:10 Intro & Welcome

10:10 -11:30 Session 1 – Sustainability *chaired by Chris Swainston*

- 10:10 – 10:40 – Evolving Sustainability Guidance in the UK and Internationally: *Chris Swainston (AGSSM)*
- 10:40 – 11:10 – Case Study in Applying Sustainability Initiatives in Remediation of a UK Petrol Filling Station to Deliver CO2 saving and Additional Benefits: *Lauren Hunt, Emma Evans and Jay Hall (Arcadis)*
- 11:10 – 11:40 – Sustainable Remediation and the SURE Tool: *Eleanor Brown (Ramboll)*

11:40-12.00 - Break

12:00-13:30 – Session 2 – Emerging Contaminants *chaired by David Dyson*

- 12:00 – 12:30 – An Introduction to Microplastics in Contaminated Land: *Ben Stride (Ramboll)*
- 12:30 – 13:00 – Implementing the SOBRA Asbestos Risk Assessment Methodology: *Barry Mitcheson (WSP)*
- 13:00 – 13:30 – The geology and chemistry of PFAS land contamination risk management: *Geraint Williams (HKA) and Paul Nathanail (LQM)*

13:30-14:15 – Lunch

14:15-16:00– Session 3 - Regulations and Guidance *chaired by Theresa Cory*

- 14:15 – 14:45 – Introduction to the OEP and the EIP Progress Report, and Developing Contaminated Land Interests and Initiatives: *Darren Watson (OEP)*
- 14:45 – 15:15 – An Update on Environment Agency Initiatives Impacting Land Quality: *Theresa Cory (EA)*
- 15:15 – 15:45 – Updated guidance for Piling on Land Affected by Contamination: *Amy Juden (EPG)*

15:45 - 16:00 – Break

16:00 – 16:50 - Interactive Hot Topics Workshop *chaired by Matt Wright*

16:50 – 17:00 - Wrap up and close

17:10 – 18:30 – Drinks Reception/Networking

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SUBMIT QUESTIONS AND RESPOND TO SURVEY FOR THE 'HOT TOPICS' WORKSHOP

Scan or Click on the QR code

Or

Join at menti.com | use code 7118 7876

Or

click the link below

https://www.menti.com/alwejzktfghh

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Speaker Biographies

Chris Swainston (AGSSM)	*Over 30 years in the business having graduated from Portsmouth Polytechnic with honours in Geology before wandering up to Aberystwyth to do a PGCE in chemistry, geology and balanced science and now a CGeol, Fellow, Mentor and periodic assessor for the Geological Society of London. Extensive practical experience in geoenvironmental engineering, assessment and modelling, primarily within the fields of site investigation, monitoring, risk assessment and reporting including related remediation activities as a CLAire QP. Significant experience of a wide range of works and activities across the UK in and around the contaminated land field including particular specialisms in site investigation, monitoring, waste, exposure and CSM assessment and modelling, sustainability, environmental impact assessment, standards (former chair EH/4 Soil Quality), hydrogeology (MIAH), environmental management systems (ISO14001 Auditor and former champion), UXO and asbestos as a practitioner, advisor, mentor, field worker, writer, presenter and trainer. Also, long time member of AGS (Representative, award winner and Specialist Member) and privileged to have been one of the founding members of SoBRA.*
Lauren Hunt (Arcadis)	*Lauren has over 5 years' experience within the Site Evaluation and Restoration team at Arcadis working on a variety of contaminated land projects. This has involved planning and delivering ground investigations, groundwater and gas monitoring, construction support and other ongoing environmental monitoring work across multiple different sectors. She has a passion for sustainability and stewardship and looks to embed sustainable solutions into every project she works on.*
Eleanor Brown (Ramboll)	*Ellie is a Senior Geo-Environmental consultant with approximately seven years of experience within the contaminated land and environmental management industry, with her expertise being in combined geo-environmental and geotechnical ground investigations. She has led numerous site investigations for landmark development projects and in 2023 she was shortlisted for the Brownfield Awards Best Early Careers Professional award. Ellie Graduated from the University of Southampton in 2017 where she qualified with an MSci in Geology, receiving a first-class grade for her Masters dissertation, which analysed the impacts of paleoclimate change on sediments. Ellie is passionate about equality within the construction industry and wrote Ramboll's Code of Conduct for Site Work, a policy focused on inclusion of all members of staff working on sites. She also has a strong focus on sustainability and is a key member of their Sustainable Network Committee (SC4).*
Ben Stride (Ramboll)	*Ben has previously studied the fate and transport of microplastics for four years during his PhD in Engineering at the University of Warwick and is the first name author of multiple publications to high impact Q1 journals. Ben has given numerous presentations regarding the toxicity, fate and transport of microplastics and is the leader of the microplastic working group for Ramboll*

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	UK. Over this past year at Ramboll, Ben has supported colleagues in a wide range of projects both within site solutions and across service lines. Most of Ben's work involved site investigations, remediation, and emerging contaminants (mainly PPPs, PFAS, and Microplastics). Ben was also an Academic All-American and a NCAA Division 1 scholarship athlete (Tennis) over six years during his BSc (in Environmental Science) and MSc (in Geoscience) in the United States.
Barry Mitcheson (WSP)	*Barry Mitcheson is a risk assessment practitioner at WSP. He has over 25 year experience in the contaminated land section and have been involved in developing methodology in the SOBRA Asbestos Subgroup.*
Geraint Williams (HKA)	*Geraint is Associate Technical Director at HKA, a global consultancy in risk mitigation, dispute resolution, expert witness and litigation support. Geraint is chair of the AGS's Contaminated Land Working Group. Along with Paul and Judith Nathanail, he was co-author of C819, CIRIA's good practice guidance on some PFAS in soil and the water environment.*
Paul Nathanail (LQM)	*Paul is director of Land Quality Management Ltd, a specialist environmental advisory, research and training consultancy operating in the UK, across Europe, and the rest of the world. He co-chairs the NICOLE PFAS Working Group. Paul advises clients on PFAS-related contamination issues from fire stations and airports to factories and fuel depots.*
Darren Watson (OEP)	*Darren Watson is a chartered environmentalist with over 25 years' experience in environment and public health. He holds master's degrees in environmental science and contaminated land management.* *Prior to the OEP, he worked on environmental management in construction projects and gas and electricity infrastructure with National Grid where he also led the development of the company's climate adaptation reports for Defra. At Severn Trent Water, he worked on the public health response to water quality incidents and led two river restoration partnerships within the national Catchment Based Approach scheme. In local government, he led the implementation of Coventry Council's contaminated land strategy after previously working at a consultancy. He currently sits on the CIWEM contaminated land panel.* *At the OEP leads on environmental indicators, methodological statement and our application of the UKSA code of practice for statistics within our EIP assessment work. He also specialises in waste, resources and circular economy.*
Theresa Cory (EA)	*Theresa Cory joined the Environment Agency's Herts & North London as a Groundwater Protection and Contaminated Land specialist in 1999, after working on a hazardous landfill site for 4.5 years.* *Career highlights include working in the PPC Strategic Permitting Group, on the clean up after the Buncefield incident, Thames Tideway tunnel, working on the*

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	2012 Olympics amongst the regular spatial planning, Part 2A and Environmental Permitting work. *She is a Senior Advisor in the Environment & Business Land Contamination team and C.Geol, CSci, ASoBRA, SILC and SQP.*
Amy Juden **(EPG)**	*Amy leads of the growing Geoenvironmental team at EPG. Amy is a chartered geologist and contaminated land specialist who has been working in brownfield redevelopment since 2012. She is passionate about determining the most sustainable (and therefore cost-effective) solutions for development on contaminated sites. Amy is a committee member for the Yorkshire Contaminated Land Forum, and was previously on the inaugural committee for the Geological Society Contaminated Land Group, contributing strongly to the success of their early career initiatives. She is author of 2023 NHBC guidance on hazardous ground gases and provides training for CL:AIRE on ground gas risk assessment. Amy previously contributed to the SoBRA working group for Asbestos in soil and is a past winner of the Best Young Brownfield Professional (2019).*

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Abstracts - Session 1 – Sustainability

Evolving Sustainability Guidance in the UK and Internationally

Chris Swainston (AGSSM)

Chris Swainston gives his personal and professional experiences following up on his previous presentations to the Geological Society, Environment Agency and AGS on Sustainability and Standards to give an overview of the topic as currently understood and applied as well as how it continues to evolve. This includes documenting and reporting on the discussions, policies and procedures being undertaken by various industry and related groups to advance the topic in terms of its utility in the particular fields of site development and investigation. In addition, there are some more personal reflections on how this is being practically adopted and developed by the construction industry, site investigation and megaprojects in particular, with consideration of the issues and potential conflicts this can give rise to, which should reinforce why Sustainability will remain a hot topic for some considerable time.

Case Study in Applying Sustainability Initiatives in Remediation of a UK Petrol Filling Station to Deliver CO2 saving and Additional Benefits

Emma Evans, Lauren Hunt and Jay Hall (Arcadis)

The presentation will describe the application of sustainability initiatives during remediation of a petrol filling station in Watford, Greater London, with particular focus on i) transport of materials off-site, and ii) reduction of carbon emissions during installation of remedial wells.

The project provides examples of practical techniques which can be employed to reduce the carbon footprint of a site investigation.

The potential to embed sustainable solutions was a focus of the remedial well installation works. The project provides examples of practical techniques which can be employed to reduce the carbon footprint.

Activities such as transport, welfare, security and fuel were identified as having the potential to generate carbon emissions, with measurable benefit considered possible through thoughtful design of the scheme and sourcing of alternative equipment.

The presentation will discuss the reduction of CO_2 emissions during the site demolition and 12-week remediation well drilling project, which also delivered an estimated 4% cost saving when compared with diesel-operated equivalents. Carbon savings were calculated for site equipment using manufacturer estimates and standard conversion factors for the CO_2 emissions saved vs the equivalent diesel operated equipment.

The presentation will discuss how remediation project design with sustainability in mind can lead to real and meaningful decreases in a project's carbon footprint, while also realising other positive impacts such as cost savings.

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Sustainable Remediation and the SURE Tool

Eleanor Brown (Ramboll)

Whilst interest in Sustainable Remediation began over a decade ago, application of sustainable thinking in remediation option selection is still inconsistent. Technical guidance on sustainability is plentiful, however, the process of selecting more sustainable approaches has to be simple, understandable and transparent to gain public acceptability.

Impacts of the climate crisis, reduction in biodiversity and socioeconomic challenges from years of austerity have led to greater urgency for sustainability to be embedded in decision making when selecting options for land remediation. Ramboll has therefore developed SURE, a free online tool for sustainable remediation assessment, communication and reporting.

The tool creates project specific assessments by allowing the user to select relevant indicators, enabling evaluation of the impacts to assist in ranking options, and generating an assessment. This allows users to optimize environmental, social and economic value through assessment of sustainability at all stages of a remediation project. It draws on over 70 sustainability indicators and their contribution to 17 United Nations Sustainable Development Goals (UN SGs) to enable identification of more sustainable and resilient remediation approaches.

The communication stage of the assessment allows for collaboration with stakeholders including regulators and clients by requesting feedback, which can then be incorporated to create a more resilient assessment.

This is just the beginning for SURE; the tool is continuously undergoing development as it grows in usage and as we gain more user feedback. This presentation will introduce you to SURE, provide a walkthrough of the process and work through an example project.

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Abstracts - Session 2 – Emerging Contaminants

An Introduction to Microplastics in Contaminated Land

Ben Stride (Ramboll)

Most research regarding transport and fate of microplastics (MPs) has focused on marine ecosystems, with less focus on fluvial ecosystems and even less on groundwater systems. The hypothesis that MPs are transported to sea by groundwater through submarine groundwater discharge has yet to be proven and most MP groundwater studies are in the preliminary stages of identification and distribution.

A review of the latest research regarding MPs in soils and groundwater was undertaken with the aim of providing insight into the physical processes that govern their transport and fate within these domains. Possible sources, pathways, and receptors were identified and potential toxicity of human exposure have been discussed. Because of their smaller size and long-persistent nature, MPs have the potential to move vertically and laterally via pore water to groundwater table. MPs in groundwater are influenced by their physical characteristics such as size, shape, density, and surface properties of the particles, but also the physical hydrogeological processes of the groundwater body such as aquifer heterogeneity, hydraulic conductivity, groundwater chemistry, flow velocity, and co-presence of other contaminants.

The concentration of MPs in groundwater varies widely across different aquifer systems worldwide and emerging evidence suggests MPs can be found in groundwater sources with variable concentrations irrespective of source and transport processes. To achieve greater comparability between sites it is essential to establish defined protocols for sampling, extraction, and quantification.

This presentation will introduce you to MPs and provide a walkthrough of their potential toxicity and transport processes in soils and groundwater.

Implementing the SOBRA Asbestos Risk Assessment Methodology

Barry Mitcheson (WSP)

This presentation considers when risk assessment for modelling for asbestos in soil may be useful to support and assessment, why a generic assessment criteria for asbestos was not developed and the stages involved in using the SOBRA Risk Assessment methodology for assessing the risks to people from asbestos in soil

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The Geology and Chemistry of PFAS Land Contamination Risk Management

Geraint Williams (HKA) and Paul Nathanail (LQM)

PFAS - per- and polyfluorinated alkyl substances - are a large family of synthetic substances characterised by fully or partly fluorinated carbon chains with or without other functional groups some of which can transform from less to more persistent and toxic forms in the ground. Analytical laboratories can measure the concentration of a few tens of individual targeted PFAS and provide aggregate but low-discernment organic fluorine or precursor level data.

PFAS are released into soil and water during manufacture, use in other processes or as spills and widespread dispersion, for example to fight certain types of fire. They are constituents in many materials routinely used during a site investigation. Efforts are needed to prevent false detections of PFAS through cross contamination. Once in the ground many, especially long chain, PFAS will sorb onto the organic and clay fractions of soil. Most acid PFAS will dissociate at typical environmental conditions and be present in the ionic form. Some will degrade but too slowly to offer sufficient risk reduction.

Risk management can involve in situ immobilisation of PFAS onto sorptive media or ex situ concentration followed by destruction. Effective assessment and if necessary remediation of PFAS risks requires a multi-disciplinary approach including chemistry and geology.

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Abstracts - Session 3 – Regulations and Guidance

Introduction to the OEP and the EIP Progress Report, and Developing Contaminated Land Interests and Initiatives

Darren Watson (OEP)

The Office for Environmental Protection (OEP) was established 3 years ago. We are a public body that protects and improves the environment by holding government and other public authorities to account. Our functions include reporting on Governments progress with its Environmental Improvement Plan (EIP), monitoring the implementation of environmental law, providing advice to government on proposed changes to environmental law and investigating suspected serious failures to comply with environmental law by public authorities.

In January 2025 we laid our third annual progress report in Parliament which assessed progress across all ten EIP goal areas and their respective targets and commitments. These included those related to contaminated land, particularly in the chemicals, waste and resources goals. We also examined cross-cutting themes, including green finance and presented our overarching recommendations alongside opportunities to improve progress across the EIP.

We continue to develop our approach to contaminated land and wider brownfield, waste and circular economy issues. We consider that government soil policy should not be limited to agricultural and peat soils and that brownfield land offers significant opportunities to regenerate communities and deliver wider environmental benefits including remediating chemical contamination.

This presentation will introduce you to the OEP, our EIP progress reports and provide a view on our developing interest in contaminated land and wider brownfield work.

An Update on Environment Agency Initiatives Impacting Land Quality

Theresa Cory (EA)

Update from the EA on a range of initiatives including External Consultations and Recent Publications, and a look forward to 2025/26 including updates on the State of Contaminated Land Report (SOCL), Voluntary Remediation Times & Material Scheme, Quality Protocols, PFAS lines of evidence, Standard Rules Permits, H5 – Site Condition Reports, National policy and much more. The presentation will also provide updates to EA associated national policy and guidance including the Land use framework consultation and the Corry Review (Defra), Reform of the Statutory Consultee System and Brownfield Passport (MHCLG), and the Planning and Infrastructure bill.

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Updated guidance for Piling on Land Affected by Contamination

Amy Juden (EPG)

CL:AIRE Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, authored by Amy Juden and Steve Wilson from EPG Ltd. (Publication imminent)

The report presents guidance on assessing risks associated with, and preventing pollution from, piling and penetrative ground improvement methods, with focus on their use on land affected by contamination. It also covers some specific aspects that are not solely related to contaminated sites, including the issues of turbidity from piling and the risk of it affecting water quality at abstraction wells, as well as the use of support fluids.

This version of the guidance provides a significant update since the original publication from 2001, capturing the latest research into the effect of piling on contaminant migration supplemented by literature review and industry consultation.

An updated framework for foundation works risk assessment is presented allowing low risk piling methods and scenarios to be quickly screened out and allowing consultants to focus the assessment on potential pollution scenarios that are higher risk.

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