



SoBRA & RSC Toxicology Group Conference Current Issues in Contaminated Land Risk Assessment

Wednesday 16 December 2015

**The Library, Royal Society of Chemistry, Burlington House,
Piccadilly, London, W1J 0BA**

Topics that will be covered

- Update on Defra and EA's activities
- Risk assessment of waste to land
- Potential for airborne asbestos from soil contamination
- Vapour intrusion case study
- Human health risk assessment regarding contaminated land: state of the art
- Update on SoBRA sub-groups activities

The conference includes a poster display covering a range of key research topics and case studies.

Posters will be available for viewing during refreshment and lunchtime breaks.

We will also hold our AGM in the afternoon. The event will conclude with an early evening drinks reception.



For further information please visit our website at <http://www.sobra.org.uk/events/>.
Alternatively please e-mail info@sobra.org.uk



Workshop 2015 Uncertainty in Human Health Risk Assessment

SoBRA held the sixth of its series of summer workshops on the topic of “**Uncertainty in Human health Risk Assessment**” at the Mining Institute in Newcastle on 15th July 2015

The workshop was highly successful with over 80 delegates. Presentations were delivered in the morning by Andy Hart, Jonathan Welch, Simon Firth, Mark Cave and Camilla Pease.

The event was chaired by Chris Taylor.



FAST FACTS

80%

Speakers ranked as very good or excellent

90%

Well organised workshop

FOR MORE INFORMATION

Please visit our Past Events page at <http://www.sobra.org.uk/resources/SoBRA-presentations>

Afternoon working groups

- Conceptual site model
- Site investigation
- Bioaccessibility
- Exposure

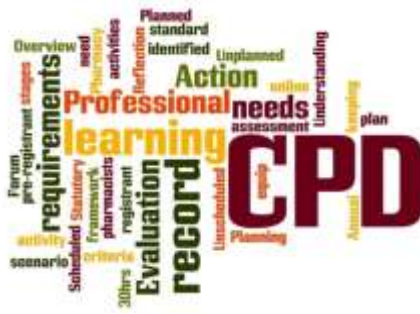
SoBRA would like to take this opportunity to once again thank all speakers, delegates, workshop facilitators, rapporteurs and organisers for making the 2015 workshop an interesting and successful event.

FEEDBACK

“A big thank you to everyone involved in hosting the event. I thought it was extremely well organised, the subject matter was interesting and I think some really intelligent discussions took place”.

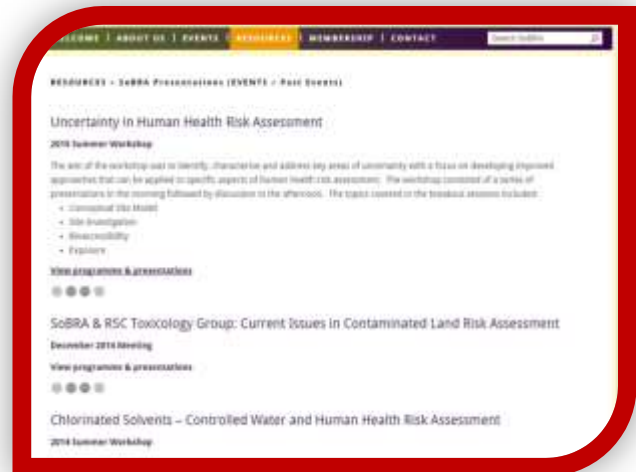
“Thank you for an informative and engaging workshop”

“Really interesting topic which isn't usually considered. Well worth attending”.



CPD certificates have been provided to those that requested one. As with previous events, SoBRA will be publishing a report based on the content of the workshop which will be finalised in early 2016.

Members will be notified when it is published and the report will be available for download in the members' area of the SoBRA website (free to SoBRA members). Copies of the presentation delivered at the event are now available on the website.



Please visit our website at <http://www.sobra.org.uk/events>

New Website Coming.....



The SoBRA Executive Committee commissioned a rebuild of our existing website in the summer to allow for the integration of our upcoming Register of Risk Assessors.

The rebuild will also revamp existing content, allow easier viewing of the website on mobile phones and should future proof the website for the next 5 years. We hope to go live with the new website in early 2016.



Meeting Report ISO TC190, Vienna

By Mike Quint, Environmental Health Sciences Ltd



Thanks to having my travel costs part-funded by a SoBRA bursary award, I attended the 2015 meeting of the International Standards Organisation (ISO), Technical Committee (TC) 190 (Soil Quality)¹. The meeting took place between 5th and 9th October 2015, in Vienna, Austria, and was hosted by Austrian Standards. ISO is the international equivalent of the British Standards Institution (BSI).

I attended the meeting as the UK's principal expert on Sub-Committee 7 (SG 7 - Soil and Site Assessment), Working Group 4 (WG 4 - Human Exposure), having been nominated by BSI's EH/4 Committee (Soil Quality)², on which I represent SoBRA. In so doing, I learnt of the following documents/initiatives that may be of interest to SoBRA members (DIS = Draft International Standard; WD = Working Draft; NWIP = New Work Item Proposal):

Update on documents/initiatives

- **ISO/DIS 11504 "Soil quality – Assessment of impact from soil contaminated with hydrocarbons"**. This provides info on TPH fractions etc, similar to TPHCWG. Proceeding to publication.
- **ISO/WD 17924 "Soil quality – Assessment of human exposure from ingestion of soil and soil material – Procedure for the estimation of the human bioaccessibility / bioavailability of metals in soil"**. This will put the UBM method into an ISO standard. Document set to be finalised by the end of November 2015, for DIS voting by December 2015. At the meeting there was also a presentation on the German standard DIN 19738 bioaccessibility test method "Soil quality – Absorption availability of organic and inorganic pollutants from contaminated soil material", for which an inter-laboratory trial is planned for 2016.
- **ISO/DIS 19204 "Soil quality – Procedure for site-specific ecological risk assessment of soil contamination (TRIAD approach)"**. This had significant SoBRA involvement, via Samantha Deacon of Ramboll.

¹ For info, see:

http://www.iso.org/iso/standards_development/technical_committees/other_bodies/iso_technical_committee.htm?commid=54328.

² For info, see: <http://standardsdevelopment.bsigroup.com/Home/Committee/50001294>.

- Revision being planned to ISO/NWIP 15800 "Soil quality – Characterization of soil with respect to human exposure".
- NWIP - "Soil quality — Guidance on establishing conceptual site models for potentially contaminated sites".
- Revision being planned to ISO 15799 "Soil quality -- Guidance on the ecotoxicological characterization of soils and soil materials".
- Revision to ISO 15175 "Soil quality -- Characterization of soil related to groundwater protection" (DIS goal is December 2016).
- ISO/DIS 18504 - "Guidance on Sustainable Remediation". In preparation and due for release in November 2015.
- ISO/DIS 19258 - "Soil quality — Guidance on the determination of background values". In preparation and due for release in November 2015.

Note that as well as being designed for global use, ISO standards can also be implemented at the European level, via the European Committee for Standardization (CEN - which also produces its own standards), and in the UK, via BSI.



Anyone wishing to find out more about the above and / or get involved in developing BSI, CEN or ISO standards relevant to land contamination risk assessment, should join SoBRA's Standards sub-group, by emailing info@sobra.org.uk, Geraint.Williams@alcontrol.com or mike.quint@ehsciences.com.

Asbestos in soil – respirable fibres in respirable dust – the missing link for risk assessment

By Hazel Davidson, DETS

Introduction



Source: <http://lucion.co.uk/>

In recent years, the testing of soil for asbestos has become commonplace, often for purposes of risk assessment on brownfield sites. The most common analysis for this purpose is presence and identification of asbestos, followed by quantification of the percentage mass of asbestos in the soil. The problem with this approach is that percentage mass of asbestos does not directly relate to the risk posed. As a simple example, 0.1% asbestos bound within an ACM, such

as asbestos cement, presents a much lower immediate risk than 0.1 % of free fibres within the soil, as the risk to human health comes from airborne, respirable fibres.

One proposed solution to this problem (the fibre release test) is to attempt to agitate a dried soil sample, and carry out air tests under controlled conditions to try to estimate what the fibre release rate might be. There are however problems with this approach too.

- Collecting the dust as well as the fibres causes issues with identification and counting
- It is difficult to standardise – different soil matrices may require different agitation periods, as do different asbestos types
- Cleaning the equipment between samples is difficult
- There are Health and Safety issues in deliberately creating an asbestos dust cloud
- The lengthy duration of the test gives rise to unacceptable costs
- Relating the data to anything meaningful in terms of site risk is difficult, if not impossible

Alternative methodology



Respirable Fibres in Respirable Dust test

- Dust monitoring focuses on PM₁₀ concentrations - that is, the amount of particles with a diameter of less than 10µm.
- Therefore, a more useful test would be to calculate the possible asbestos concentration in this fraction of the sample, in terms of fibres per mg (f/mg PM₁₀)

Effectively, we are able to carry out a test equivalent to the asbestos air test on the respirable portion of the soil. This means that we can provide an estimate of three key indicators of risk that were not possible to calculate before:

1. The fibres per ml of asbestos in air at a given level of dustiness (0.5 mg m³ for example)
2. The dustiness level on site that would need to be reached before the clearance indicator of 0.01 f/ml would be breached
3. The dustiness level on site that would need to be reached before the control limit of 0.1 f/ml would be breached

We have applied for accreditation to ISO 17025 for this method.

The test is performed by collecting a sample of PM10 material onto a filter and performing a fibre count, using the same fibre counting rules as specified in HSG248 for asbestos air testing. The data from this fibre count can then be used to calculate the fibres / mg of PM₁₀ material, the fibres/ml in air at a dustiness of 0.5mg/m³ (the OEL for dust), and the dustiness that would be needed to reach the asbestos clearance indicator of 0.01 f/ml and control limit of 0.1 f/ml in air.

Advantage of the method

- The results provide a good indication of whether site activities are likely to give rise to airborne fibres, and to what levels
- The results allow a decision to be made about the level of air monitoring that will be required, based on the requirements of the Control of Asbestos Regulations
- The results allow informed decisions about dust suppression to be made
- By removing factors that affect the release of fibres from soil, such as soil type, particle size and moisture content, the risk can be assessed more accurately
- Once a result has been calculated for the likely fibre content of the respirable dust, the on-site measurements could then focus on the levels of dust being generated on-site, which is much cheaper than asbestos air testing.
- Cost – The test is significantly less expensive than the fibre release test, and can be scheduled as well as, or instead of, quantification. Also, no extra equipment, and only minimal additional training would be required for laboratories already performing quantitative analysis.
- This test eliminates the safety issues associated with deliberately agitating a dry sample that is known to contain asbestos, and with the cleaning of the equipment after each test.

The recent SOBRA (Society for Brownfield Risk Assessment) document on airborne asbestos fibre monitoring is of interest to work with this method – it discusses asbestos air testing and dust monitoring, and this test provides the missing link between the two:



<http://www.sobra.org.uk/content/reports/Dust-Monitoring-Protocol-Earthwork-Activities-Brownfield-Sites.pdf>

The test has been validated for a range of asbestos types at a range of concentrations, and has been shown to give consistent results, and has been submitted to UKAS for accreditation to ISO 17025. A small number of field trials demonstrated useful and meaningful data, but this is not yet published data, due to client confidentiality issues, so cannot be included here. For further information, please contact hazel.davidson@dets.co.uk

What's NICOLE other than a name?



It's the 'Network for Industrially Contaminated Land in Europe', although potentially subject to a name change soon!

It is a network in which service providers such as consultants and laboratories meet with industry and academia to share ideas, exchange good practice and scientific knowledge, and to identify and co-ordinate research to address industry needs. This is done through various working groups including emerging contaminants, regulatory, operating windows for ISCO and nano-remediation, and sustainable remediation.

The overall objective of NICOLE is to proactively enable European industry to identify, evaluate and manage contaminated land efficiently, cost effectively and within a sustainability framework.



The most recent event was attended by two members of our executive committee who thought it would be useful to share some notes with SoBRA. The event focussed on the Environmental Liability Directive (ELD) and included sub-group meetings.

Key findings

- Emerging contaminants group has a draft PFOS and PFOA 2 page summary for use by NICOLE members and new toxicological data has also recently been published on the ATSDR website
- Sustainable remediation group would like more case studies demonstrating use of the NICOLE roadmap
- Regulatory group referenced a Welsh case where the damage had been caused post 2007 when the regulations came into force and even though it was not implemented in the UK until 2009, the courts decided the ELD applied. Also a note that France has started the process of an ISO for conceptual models. A future ISO will also be provided on 'reuse of excavated soil and materials'. A lot of debate regarding soil and now seems to be development of a Soil Strategy rather than The Soil Framework Directive. The 4th and 5th December is World Soil Day.
- Damage cases often focus on biodiversity damage. Average remediation prices £1.2 million for the 142 ELD cases across Europe. This average is skewed by five projects >£1million with the average of the remaining 137 projects being £42k

- The Spanish government has developed risk assessment tools for evaluating the economic damage to an ecosystem so if anyone is involved in such a project this may be a useful reference
- Thought provoking economic, social and environmental discussion 'how 1 euro spent on preventing/remediating produces an overall benefit able to justify the expenditure of 1 euro less for other public purposes'

NEXT EVENT

The next event will be in the Spring, likely May in Vienna, and will be on remediation technologies focussing on lessons learnt. For further information on NICOLE please click on the link below <http://www.nicole.org/>

SoBRA Register of Risk Assessors



The ability to demonstrate that you are competent in your field of work is important to us all. The multi-disciplinary field of land contamination assessment and management means there are many different routes that practitioners may enter the sector, such as geology,

chemistry, engineering and environmental science. Risk assessment is a critical element in the evaluation of land affected by

Get Accredited

contamination and provides the cornerstone for wider decision making in the management of contaminated sites. To date there has been no single industry-wide scheme to demonstrate competence as a risk assessor.

The '**SoBRA Register of Risk Assessors**' has been developed to fill this gap, recognising and rewarding the technical skills associated with land contamination risk assessment.

Inclusion on the **SoBRA Register of Risk Assessors** does not demonstrate that an individual is an expert but it does show that the individual possesses the technical, scientific and communications skills required to design, perform and critically evaluate land contamination risk assessments. The scheme is focussed on the technical detail associated with risk assessments but also requires that applicants have a broader understanding of the context and impact of risk assessment on the management of land affected by contamination.



The SoBRA Register of Risk Assessors will have **two grades of membership to reflect an individual's experience and skills.**

Registered Grade	Fully Accredited Member Grade
Individuals who are capable of undertaking and/or reviewing routine generic quantitative risk assessments without supervision but who are likely to need some assistance or guidance in conducting more complex risk assessments	Individuals with a thorough understanding of land contamination risk assessment, with experience of carrying out and/or reviewing more detailed and site specific risk assessments.
On admission to the register, individuals will be permitted to use the post-nominal signature designations of RSoBRA and MSoBRA respectively.	

The advanced register entry is the Fully Accredited Member Grade which as many risk assessors have differing levels of experience in different practice areas such as human health risk assessment or assessing risks to water environment receptors. Therefore registration entries are linked to their specific areas of competence.

In very broad terms the two grades have been designed to be consistent with the Level 3 and Level 4 of the SiLC Skills Framework.



The application procedure will require the submission of written evidence to demonstrate competency, attested by referees and attendance at an interview. There is also a strict requirement for all register entrants to maintain membership of a professional body and a requirement for those seeking the Fully Accredited Member Grade to be chartered.




The SoBRA Register of Risk Assessors is a standalone scheme. However, the scheme presents an opportunity for its members to demonstrate to a SQP, under the Land Forums upcoming National Quality Mark Scheme, that they are sufficiently competent to support the SQP in undertaking or reviewing the risk assessment element of their project.



The first tranche of applications are anticipated to be accepted in **Spring 2016**. If you are interested in being included on the register, then visit www.sobra.org.uk for full details on the application requirements and start gathering your evidence for your written submission.

Asbestos sub-group activities update

The sub-group data collection initiatives are going well:

- **Typical background levels** – Defra project SP1014, being undertaken by a consortium led by CL:AIRE, involves sampling soil across England and Wales to ascertain the typical dispersed asbestos fibres in soil owing to atmospheric deposition and historic use of asbestos. Reading University has nearly finished collecting soil samples from across the UK. Analysis is underway and the project findings should be available late 2015 / early 2016
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- **Brownfield levels** – we have 10-15 projects upon which asbestos in soil and air data has been collated across the UK and chemical laboratories providing raw data to demonstrate the number of samples in which asbestos is found and at what levels. We would really appreciate more data from sites that have been undertaken with dust monitoring and in accordance with SoBRA protocols so please provide your data via the [CL:AIRE website](#)
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- **Naturally occurring asbestos** – the BGS holds information on which rock types naturally occurring asbestiform minerals (NOAM) may be found. The BGS plans to illustrate the distribution and likelihood of NOAM that may be present in soil across England and Wales to aid stakeholder engagement. The BGS is aware of the need to work with stakeholders to develop accurate information and communicate this sensitive information effectively owing to public perception associated with asbestos.
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2015/16 Scholarship Award

SoBRA is pleased to announce that the 2015/16 Scholarship was awarded to Rebekka McIlwaine of Queens University, Belfast. Rebekka's research considers the sources, concentrations and mobility of potentially toxic elements in soil, and focuses on these factors within urban environments. The project aims to create a new methodology for identifying local diffuse sources of contamination and the relationships between historical urban development and groups of potentially toxic elements.



A number of methods will then be utilised to calculate background concentrations of these potentially toxic elements in urban soils. Geochemical data from Belfast (Tellus data) will be used to develop the methodology, which will then be tested on Sheffield as part of the G-BASE programme. Rebekka's research is under the supervision of Dr Siobhan Cox and Dr Rory Doherty of Queens University, along with Dr Mark Cave from the British Geological Survey. We wish Rebekka all the best with her research, the results of which will be shared with SoBRA members in due course.



SoBRA's photography competition

The SoBRA's photography competition is a new addition, aiming to celebrate the artistic, unusual and often extraordinary characteristics of brownfield sites.

The competition is opened to all SoBRA members and all abilities. We want to get your creative juices flowing and invite you to submit a photograph fitting the description of unexpected and inspiring brownfield site. The winning photo will be judged on impact as well as its ability to illustrate Pathways to Regenerative Sustainability of Brownfield sites.



The winner will be announced at the AGM ceremony on 16 December in the Royal Society of Chemistry, Burlington House, London, and will receive a prize of one year's SoBRA membership. Subject to the popularity of the contest, a shortlist of images will be picked for inclusion in a 2016 calendar.

You should submit your photographs and entry form to info@sobra.org.uk with the subject heading '**SoBRA's Brownfields photo competition**'.

Entry is free and you may submit up to five images.

Closing date for entries: Thursday 10 December 2015.



North West Regional Group Meeting

Forthcoming talk of the Vice Chair of SoBRA on Asbestos

Thursday 3rd December 2015

Venue: The Centre, Chadwick Place, Birchwood Park, Warrington, WA3 6YN

Asbestos: How to investigate a brownfield site safely?

Lucy Thomas

Time: Prompt 6:30pm start

CPD: *These events may be considered for contributing to a recognised Continuing Professional Development (CPD) scheme as part of personal development. Delegates should check their individual scheme requirements. For further information contact the Group Secretary, Nik Reynolds at: geologicalsociety.northwest@gmail.com*

Joining the Society – how, when?

We welcome applications for membership from individuals that have an interest in risk assessment. You can join at any time of the year and at any stage of your career. For further please visit our website at <http://www.sobra.org.uk/membership>



Members can renew their annual membership on-line and will be sent a reminder email to do so two weeks before their subscription is due. If at any stage you forget your password click on the link below the log-in box in the top left hand corner of the SoBRA website and follow the instructions you receive on the email that you will then receive.



If you have an idea for an article or would like to include an event listing in the next SoBRA newsletter, or on our website at please contact us at info@sobra.org.uk

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