SoBRA Subgroup – Ground Gas
Terms of Reference

Membership
Simon Cole (SoBRA Committee Sponsor)
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Jenny Ford
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Andrew Brunton
Rachael Tempest
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Details of the initiative
The focus of the group will be to improve the quality ground gas risk assessments delivered by the industry. Currently many assessors only consider gas monitoring results with little attention given to other equally important data. The availability of continuous monitoring with flow rates has the potential to change the way gas risk assessment is undertaken. It will also look at the potential cross over in approaches from ground gas assessment to vapour intrusion and vice versa.

The group should also generally promote SoBRA and the risk assessors accreditation scheme.

General Aims
The purpose of the Ground Gas SubGroup will be to

- To support technical excellence in the assessment, estimation & evaluation of risks associated with ground gas.
- To encourage best practice by delivering practical advice to support decisions regarding the appropriate management of ground gas risks;
- To develop guidance in a timely manner,
- To periodically represent SoBRA at conference in respect to the sharing of learning outcomes;
- To mentor and support one another.

The above are considered to align with the SoBRA core objectives:

- To encourage "good practice" in the practical applications of risk assessment to support decisions regarding the appropriate management of land contamination.
- To facilitate and widen access to the dissemination of knowledge regarding land contamination risk assessment.

Resource Expectations
All Members are anticipated to attend a minimum of 4 calls per year. Resource expectations will vary by individual and with delivery expectations. It is anticipated that 3-4 hours on average per month should suffice.

Proposed method(s) of working
1. Initial telecom to discuss expectations + confirm what we are trying to achieve
2. One day workshop to agree on methodology + outputs
3. Assign tasks
4. Follow on telecoms and workshops as required

Expected timescales
Details to be confirmed in 1st workshop. Target dates for completion will be established for each item.

Suggested outputs – to be discussed further and prioritised at next meeting

The inaugural meeting was held on 20 May 2020 (online). The following outputs from the group were suggested. These are in the order that they came up during the discussions and have not be prioritised.

Suggested output	Comments/details
Provide a road map or tool box of the guidance on ground gas investigation and assessment	The AGs are doing something similar for general contaminated land guidance and this should link in with that work What the tools are When to use them What to think about
Advice sheet on developing and using conceptual site models for gas	What should a CSM be and what should it include How to use the CSM to design the gas investigation Using the CSM to help design response zones for monitoring wells Using the CSM to show when gas monitoring is not necessary. This is particularly relevant to risks from off-site landfills/filled ground/infilled ponds. When should gas risks be considered (or further assessed by monitoring), when can potential sources be discounted. Far too many reports recommended gas monitoring on the basis of old filled ground/ponds located off-site which don't consider age of fill, size, local geology, management of the landfill gas, etc Will the development change the CSM? Effect of foundations, sub slab voids, etc
Advice sheet on when to increase from CS1 to CS2 based when HGFR are less than 0.07l/h but CH4 or CO2 concentrations are above 1% and 5% respectively	What you need to describe about the gas sources How to justify increasing or not increasing in a consistent manner Using Table F.1 from BS 8576:2013 which already provides a useful series of questions in regard of data sufficiency which may be utilised by the risk assessor in

Suggested output	Comments/details
	such scenarios Examples
Advice sheet on how to calculate gas mass flux rates and to screen out "no risk sites"	Simple standardised methods for mass flux calculations (for all gases) Advice on assessing uncertainty Advice on choosing appropriate values of permeability Using the results to screen out no risk sites Look at similar methods used in VOC assessment
Practical tips in ground gas risk assessment for early careers professionals	Simple tips or examples to help assess gas risk
Advice sheet on assessment of continuous flow data	Advice on methods that can be used to analyse continuous monitoring data and how to use the results in a gas risk assessment
Advice sheet on Data Quality Assessment	A checklist of things that should be considered when assessing whether data is of sufficient quality (and whether it should be used in a gas risk assessment) Eg well integrity Flooded wells Effects of humidity on chemical sensors (CO and H2S) – indicators that results are being influenced Cross sensitivity Explain how the methods used to collect data impact on data quality, Including monitoring methodologies in reports and important factors to record
A design or gas screening tool	Care needed that it would not result in a focus on just the gas monitoring data. The creation of a tool may take the assessors mind-set away from the importance of the CSM. Tools can and do have a place for the risk assessor however, the creation of one via the sub-group may send out a mixed message to the community. A flow chart may be sufficient to provide a steer to risk assessors
Practical tips for ground gas investigation	Bring out some of key points from BS8576 Designing the investigation – this is often missing from reports even though it is fundamental to allow the collection of appropriate data and to address uncertainties associated with the CSM Use of other techniques such as flux chambers
Advice on how to assess worst case	When is it appropriate to combine the maximum gas concentration and flow rate to use as worst case Using data from the same stratum Using data from similar depth wells Influence of well depth on gas monitoring results
Peat/alluvium	Should sites with natural peat/alluvium but no other gas sources be assessed/monitored or can they be screened out? Where elevated gas concentrations in peat/alluvium are recorded how can these concentrations be assessed/risks determined. (Most of the elevated gas concentrations in sites in central London seem to be associated with alluvium). Provide guidance on the mechanisms of gas storage and movement in Peat/Alluvium and explain it is immobile in

Suggested output	Comments/details
	most cases. H&S issues during construction of foundations are more of a concern than long term emissions.
Gas protection design	Advice on what "design" means Explain the inter relationship between gas risk assessment and gas protection design Explain that the scope of protection should be defined by the risk assessor It is not just about adding up points from the BS8485 tables

The group also discussed providing guidance on how to apply some parts of BS8485 relating to the design of protection measures. The design of the gas protection measures is inherently connected to ground gas risk assessment and the design should be undertaken by competent gas risk assessors. This could include advice on when a pressure relief system is or is not required, when the 40ml/m2/day/atm requirement for gas transmission rate can be relaxed.

Liaison with Executive Committee

1. SAW to email finalised TOR to EC once agreed by the group
2. SAW to update EC at 1/4ly EC meetings

Liaison with CL:AIRE and others

Steve Wilson to update Nicola Harries at Land Forum events, before deliverables are published and to engage with CL:AIRE.

Liaison with other stakeholders to be agreed during first meeting. Note: These discussions to be led by SoBRA Chair.

Data Storage

The subgroup is to maintain its own secure repository for the sharing of data (e.g. a Dropbox account). The Sponsor will annually transfer its contents to the SoBRA Dropbox that acts as a central repository of all Society-related efforts and communications.

By reminder, everyone who works for or volunteers with SoBRA has some responsibility for ensuring personal data is collected, stored and handled appropriately. Each member that handles personal data must ensure that it is handled and processed in line with this policy and data protection principles. When data is stored electronically, it must be protected from unauthorised access, accidental deletion and malicious hacking attempts as per the requirements of our privacy policy.