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AGS Benchmarking Initiative gets underway

After several false starts, the Business Practice WG has finalised plans for an AGS initiative to evaluate the quality of site investigations undertaken by Members. This will be the first time that an attempt has been made to qualify site investigation practice and the results are eagerly awaited.

The WG has identified 11 Key Performance Indicators (KPIs) and subsidiary headings:-

- Appointment (Personnel, Responsibilities)
- Preparation (Desk Study, Walkover Survey, Reports)
- Design (SI Design, Laboratory Testing)
- Risk Management (Risk, Availability of Information)
- Procurement (GI Procurement Route, SI Award, Method of Measurement, Conditions of Contract, Specification)
- Management (Project Management, Quality Management, Environmental Management)
- Supervision
- Reporting (Factual)
- Reporting (Interpretative Report, Ground Model)
- Outcome
- Client Satisfaction

All AGS Members have been invited to participate. The number of projects that each participant will be asked to score will depend on the number of companies that agree to take part but will not be more than 10 (and probably less). It will not be necessary to identify the project being scored and the score of individual projects will not be revealed.

It is intended that once the initial benchmark has been set the exercise will be repeated annually to monitor changes in standards.

It is not too late to register as a participant. Please contact Jo Pascoe (jo@ags.org.uk) for further details.

AGS Members' Day + AGM

Wednesday 22nd March 2006

British Geological Society, South Kensington

Start: 10.15am (coffee) 11.00am (programme)

Finish: 4.30pm (in time for the Rankine lecture at Imperial College)

Attendance is free to AGS Members.

Put the date in your diary now!

MCERTS

The Environment Agency's Monitoring Certification Scheme for the Chemical Testing of Soils: What it is. How it affects you. What you need to do.

MCERTS Monitoring Certification Schemes were first introduced in industrial sectors with regulated processes that resulted in stack emissions. The scheme requires those companies to deliver monitoring results that are "valid, reliable and accurate". To get to this position depends on using the appropriate resources – correct test methods, competent personal, accredited organisations and suitable equipment and planning.

The MCERTS scheme for chemical testing of soils was introduced by the Environment Agency to support their regulatory activities and make informed, quality assessments on the management of contaminated land under a number of regimes, including, *Part IIa of the Environmental Protection Act 1990*, *Pollution Prevention and Control Regulations 2000* and the *Waste Management Licensing Regulations 1994*.

The scheme is applicable to all testing laboratories and procurers of analytical services, where results generated for the chemical testing of soil are submitted to the Agency. In order to gain accreditation on the scheme, laboratories are required to have their processes, essentially test methods, in a quality management framework, by both the United Kingdom Accreditation Service (UKAS) to the international standard ISO 17025 and also MCERTS requirements.

There are increasing pressures on businesses to comply with Environment Agency regulations and European and international standards. Using a laboratory with MCERTS accreditation

alleviates some of this pressure because it guarantees the proper use of suitable methods, standards, services and equipment, trained and qualified personnel, quality assurance and quality control all leading to reliable data.

MCERTS accreditation also assures users that the laboratory meets performance standards set out in current international standards and the growing requirements of EC directives.

Failure to meet the regulations can be costly, both financially and to a company's reputation. An MCERTS accredited laboratory assures the user that they have met standards in a number of areas including:

- The selection and validation of test methods
- Sampling pre-treatment and preparation
- The estimation of measurement uncertainty
- Participation in proficiency testing schemes
- The reporting of results and information

The benefits of the scheme include:

- Providing assurance to stakeholders of the quality of data from testing
- A level playing field, based on the Agency's requirements, is established
- Identifying that the chemical testing of soil is a critical component in producing defensible data for regulatory purposes.

In order to guarantee reliable data from the chemical testing of soils and therefore reassurance that risks are minimised, procurers of testing should:

- Ensure the chemical analysis results submitted to the Agency for regulatory purposes conform to MCERTS requirements.
- Check that the laboratory conducting the testing has MCERTS accreditation for all the parameters requiring analysis. Accreditation is given on a parameter-by-parameter basis. If they do not have the correct accreditation sub-contracting of the test required to another MCERTS laboratory may be required. If a suitable laboratory does not appear to be available, contact the Environment Agency for advice.
- Check that the test methods employed by the laboratory are appropriate and fit for purpose in terms of the parameter, the Critical level of interest (CLI) and the matrix. The CLI may be a soil guideline value or a regulatory limit.
- Check with the laboratory that the sampling processes, preservation and transportation are appropriate.
- In collaboration with your chosen laboratory, have complete audit trails available that address aspects such as sample location, depth of sample, date and time of sample, reference identity and the laboratory used.

The MCERTS scheme for the chemical testing of soils was phased in, but has been fully operational since 1 March 2005. Therefore, all data for regulatory purposes should now be to the MCERTS standard. Laboratories and the procurers of testing need to work together to ensure that the test data provided meets the requirements and satisfies the needs of the ultimate client.

Cliff Billings, Group Technical & Quality Manager, STL UK

EA's position on MCERTS

From 1st March 2005, the Environment Agency has required accreditation to our Monitoring Certification Scheme (MCERTS) where laboratory soil testing results are submitted to us as part of a regulatory regime for which we have statutory responsibility.

We strongly recommend that MCERTS accredited methods are used for soil testing in activities to do with site remediation, whether carried out on a voluntary basis or to comply with planning requirements. This is particularly important in relation to any waste management issues on the site.

Jackie Harrison, Environment Agency

Contaminated Land Working Group Meetings

In recent meetings of the Contaminated Land Working Group, it has been clarified that the EA is a consultee but not a Statutory Regulator for planning applications. This means that MCERTS data may not always be required at the planning stage. Although the EA recommend MCERTS, the final decision is up to the Local Authority.

Some AGS Members feel that all tests should be to MCERTS so that the reports can be used at a later date. At present, the EA is expected to take a pragmatic approach to historical data obtained before the introduction of MCERTS and take account of whether the laboratory is now accredited, and other relevant factors. However, this may not always be the case, particularly for data collected after March 2005, and the need to 'future proof' data should be seriously considered.

Chemical Safety Hot Line

The Benefits for Loss Prevention

The contaminated land market has always been one requiring a sophisticated comprehension of chemical knowledge. In the early days this was not regarded by practitioners as needing any more than applying laboratory data to look up tables to obtain the required decision triggers. As time marched on:

- increasing sophistication of analytical techniques;
- recognition that the number of substances that needed to be considered was growing; and
- the industry recognised that more than simple lookup tables were required and risk models such as CLEA 2002 were introduced.

All of this has led to a need to provide key information about potential chemical risk at an early stage; if for no other reason than to inform the safety risk assessments required of the site investigation process to protect workers on site.

Often adequate information about unknown substances, and trade mixtures, is not available at a time that is practical relative to the development of site safety plans. The same can also apply to the correct scheduling of laboratory testing and development of safety notices for the transit of samples. There may also be occasions when unknowns are unexpectedly found on site which can complicate matters further.

The Chemical Safety Hotline can assist with:

- identification of unknown substances on site, as a preliminary to laboratory involvement, (reducing standing time and potentially dangerous exposures);
- advice on the practicality of field testing, where appropriate;

- the provision of enhanced safety information relative to potential health impacts;
- assistance with laboratory test scheduling for non routine substances; and
- information required to allow advanced use of the Environment Agency's CLEA model for advisory limit setting.

Loss Prevention Measures

1. Ensure that current material safety data sheets are available for the chemicals of concern;
2. Ensure that this information is incorporated in site safety risk assessments;
3. Ensure that 'firstaiders' are equipped with the knowledge and equipment to deal with necessary first responses, even if this is only a mobile phone and the availability of clean water; and
4. Ensure that waste management procedures for spoil, generated during a site investigation, take into consideration any enhanced risk to workers, or the public, arising from potential exposure to buried material brought to the surface.

If you need to use any of the Chemical Safety Hotline services contact the hotline on:

0800 083 4610

TC White, Marquis & Lord

Meet NHBC Requirements with MCERTS

The NHBC welcomes MCERTs accredited testing and supports its use in association with robust and representative soil sampling strategies when investigating sites affected by contamination. It brings transparency and consistency to the analytical testing techniques and encourages discussion between the consultants and testing laboratories which can only be a positive step forward.

AGS Hotlines

Chemical Hotline (to answer questions about chemical safety issues)
Marquis & Lord 0800 083 4610 - ask for the Chemical Hotline.

Contracts Hotline (Free legal advice on Contractual matters)
Stephen Francis at Eversheds -
Tel: 0207 919 0925

Contaminated Land Analysis



Let's be honest, to most of us in the ground engineering community, chemistry is something of a black art. It's a subject we never properly understood at school and certainly not one we intended to revisit in our professional capacities. We can muddle through the uncertainties of soil mechanics and a few of us claim a vague understanding of finite element analysis. Imagine our horror therefore when chemistry abruptly re-entered our world in the form of contaminated land. Our inattention and tomfoolery at the back of class has suddenly come back to bite us. Hazy schoolday recollections of sodium fizzing around in the sink or the exploding magic green fountain aren't going to get us out of this one.

And it gets worse! Chemistry is no longer even just a disagreeable side issue for many of us and on many developments it sits, gloating, athwart our critical path, knowing full well that not only do we not know the answer, we are often unsure of the right questions to ask as well.

So where is our white knight, to whom can we turn for help and enlightenment? In the past we might have turned to our laboratory for help. However over the last 15 years or so there has been a complete rationalisation of the chemical testing market. Laboratories have tended to become bigger and more automated, offering cost effective analysis but consequently less consultancy support. Intense competition amongst the key players means that margins are so tight there is little room in modern production line chemistry for added value services. Testing has become a numbers game.

There are now several degrees of separation between the engineer and the chemist. Yet we are in fact very similar in one key respect and it is here that we close the circle. They don't understand what we do and we don't understand what they do.

Laboratories must adopt operating practices which enable them to make a profit under conditions of intense price competition. Their choices fundamentally affect the quality and reliability of the data they produce. We don't even know what questions to ask and many laboratories in turn are less than forthcoming in disclosing the limitations of their data. We work together in blissful ignorance even though our interaction (or lack of it) has a critical influence on the quality of the data they produce and we then use.

Accreditation schemes such as UKAS, compliance schemes (e.g. Contest, WASP) and the recently developed MCERTS scheme championed by the Environment Agency are all designed to address quality issues in laboratory testing. However all have significant limitations which are not readily apparent and are certainly not advertised to a largely ignorant consumer.

So what's the problem? Well the example in box 1 below illustrates this nicely. In it we have simulated total soil cadmium data from two simulated laboratories. One of the simulated laboratories is a reputable, highly regarded outfit with excellent quality control and in the case of our simulated sample it has in fact got an answer which approximates to the true value. The only downside is that quality costs and it charges £1 to undertake the analysis. The other laboratory has a less robust quality system and the cost savings allow it to charge just 50p for a cadmium determination. However its reported total cadmium concentration is in fact in this case woefully inaccurate. See if you spot the wrong answer.

Box 1

Laboratory	A	B
Total Cadmium	617.2 mg/kg Cd	617.2 mg/kg Cd

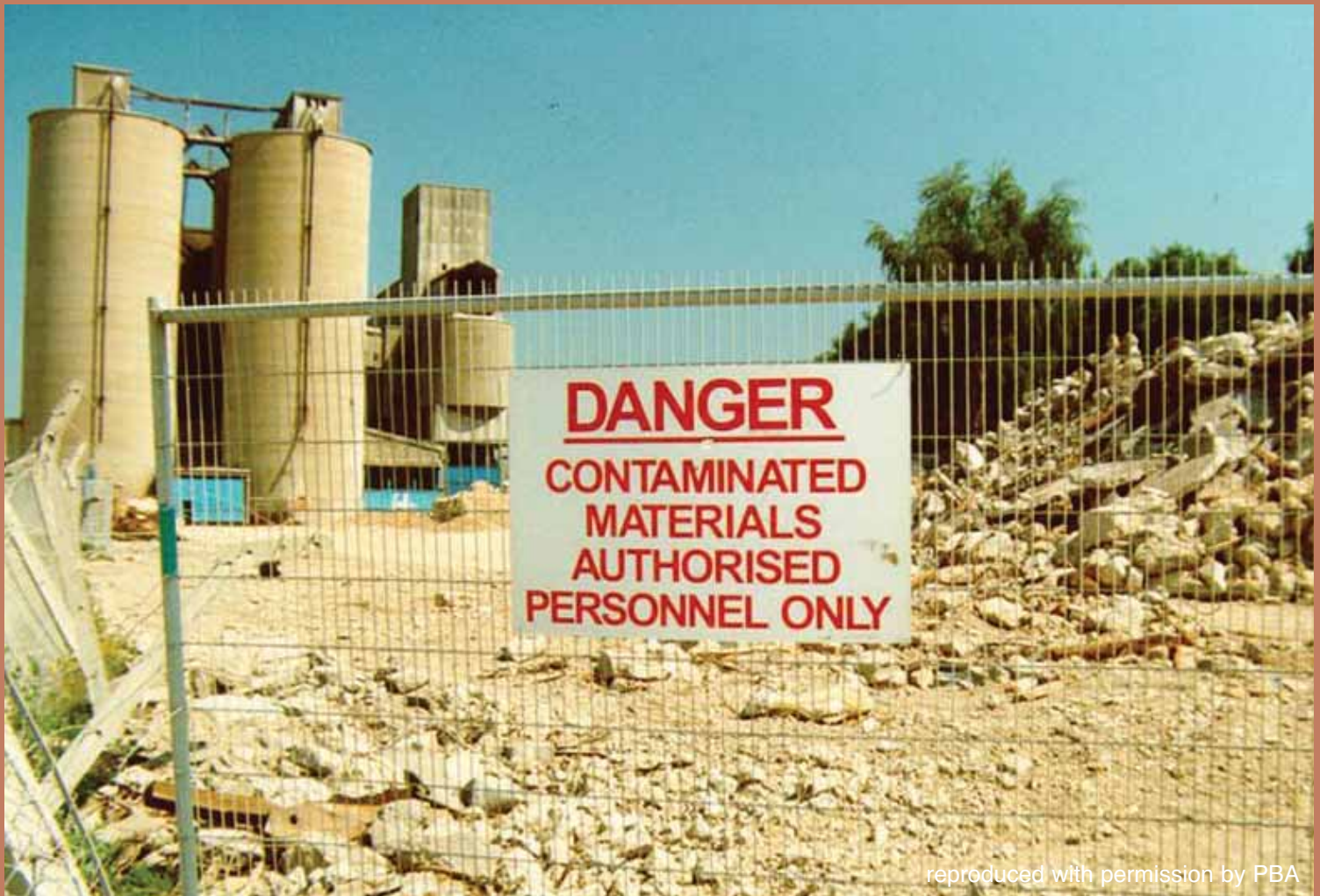
The problem is of course that you can't tell by looking whether data is reliable or not. Because buyers of chemistry are largely ignorant of chemistry, and the product we buy does not readily reveal its quality, then the key differentiator becomes price. Whilst there is an industry bottom line which we might say is policed by accreditation schemes such as UKAS, we should not be naive enough to believe that this is in any way a guarantee of a right answer. Now the punch line, and you fanatically precise engineers are not going to like this. We should recognise that even good data is not 'correct' in the right and wrong sense and that some degree of uncertainty is inherent in every result. Sometimes this uncertainty is very large indeed, 617.2 mg/kg could actually mean anything from about 80-1000 mg/kg and that should give us all some food for thought.

So what are the questions we should ask. Well here are some important ones for starters.

Basis, basis, basis

The basis on which you send your sample to the laboratory could be as follows. It is a cold and wet day. The wind is making life difficult and you are worried about getting caught in the traffic if you don't get off site soon. You shovel a couple of kilograms of rubble into the bag and leave the bag by the gate for the laboratory to pick it up sometime later in the week. In a couple of weeks the laboratory (UKAS accredited as the contract specified) reports back to you and you are relieved to see the thiocyanate content is 24.7 mg/kg, just below your limit of 25 mg/kg. You're in

Introducing Doubt Into An Uncertain World



the clear, you can sign the site off – or can you? Have you considered these questions?

- How was the sample prepared, and by whom?
- What is the precision and bias of the method used?
- On what basis are method precision and bias measured?
- On what basis is the data reported?
- On what basis is your acceptance criterion calculated?

Sample Preparation

We can't emphasise enough how important initial sample preparation is. If it is not right then everything that comes after is wrong. Unfortunately good sample preparation is expensive, labour intensive and very repetitive - it is simply not fashionable and therefore often neglected. You will almost always find the least qualified staff in a laboratory carrying out the most important function – sample preparation.

Accreditation schemes accredit results and sample preparation does not produce a result. It is debatable therefore whether sample preparation falls within the scope of accreditation. Imagine that - you use a UKAS accredited laboratory and their single most important operation is not actually capable of being accredited and is carried out by the least qualified personnel in the company.

The Quality Control Con

Laboratory quality control focuses on the instrumental side of the analysis. QC data is usually generated from a point after samples

have been prepared for analysis. Prepared QC samples or certified reference materials are finely ground, dry, inherently homogenous materials. Real samples are sun drenched, windswept, dirty, heterogeneous lumps. Don't believe, therefore, that quoted QC data will necessarily bear any resemblance to that achievable in your samples.

For example the QC data for samples which are normally analysed wet (like cyanide) may in fact be determined on dry, ground reference soils which are spiked immediately before analysis. Doing it this way ensures excellent QC data but doesn't really relate all that well to the true bias and recovery one might get from a mixed, wet contaminated soil.

Precision, bias, repeatability & uncertainty

Each measurement a laboratory makes is subject to any number of errors. Good laboratories minimise the impact of such errors by sound methodology and quality control procedures. You cannot however eliminate uncertainty altogether and a knowledge of uncertainty could be critical to your remediation scheme.

For example if you have a clean up criteria of 2500 mg/kg of mineral oil on a scheme and your sample shows a concentration of 2000 mg/kg you might be forgiven for breathing a sigh of relief. If you knew that the true precision of the analytical method is more like +/- 100% you might have cause to re-appraise your hasty signing off of the site.

Contaminated Land Analysis

Bias or recovery is, in simple terms, a measure of the amount you get out knowing what you originally put in. For example a laboratory quotes a UKAS accredited method recovery for DRO as 95%. Fine you think a 95% recovery is very good, and the method is UKAS accredited. What you don't appreciate is that the recovery is quoted on a reference sample that has been dried and finely ground. In other words the recovery quoted does not account for any volatiles lost during drying and grinding.

We can however welcome the (relatively) new MCERTS scheme championed by the Environment Agency in so far as precision and bias data should now accompany all results of analysis.

How is data actually reported

Understanding the basis for reporting is really, really critical. Some samples are analysed wet, some dry, some with stones removed, some without. Some data is reported dry and some wet, some whole and some just on the fines. Data on the same sample may be reported on a different basis. Do you know on what basis your samples are analysed and reported? Do you know on what basis the acceptance criteria you use (CLEA, Dutch) are generated?

The example below illustrates this point demonstrating the range of total mercury values you can get depending upon how you choose to express the data or how that laboratory chooses to prepare your sample.

A 100g sample of a contaminated clay is submitted for total mercury analysis. It contains 500ug of mercury, and is composed of the fractions set out below. For this example we assume (fairly reasonably) that all of the mercury is present in the fines. Our acceptance criteria are the CLEA Soil Guideline Values of 8 mg/kg Hg for residential uses with plants and 15 mg/kg Hg for residential uses without plants.

Soil fines (less than 2mm diameter)	30 grams
Stones (2-10mm diameter)	20 grams
Stones (greater than 10mm diameter)	25 grams
Water	25 grams

Data reported on:-	Result	CLEA 8 (mg/kg Hg)	CLEA 15 SGV SGV
Whole sample	5.0	pass	pass
Fines, dry	16.7	fail	fail
Whole, dry	6.7	pass	pass
<10mm, dry	10.0	fail	pass
<10mm, wet	6.7	pass	pass

The example illustrates a huge variation in 'right' answers which completely span the selected acceptance criteria. It also reveals that the same (or very similar answers) can be obtained by using completely different assumptions - a whole dry basis being very similar to a <10mm wet basis in this example. What is more worrying is that the fines dry result (arguably the most common way of determining mercury in soil) is over three times higher than the result expressed on the whole sample (arguably the true result).

Sample Homogeneity

We all know that reliable data depends upon the sample from which it was extracted. We all also know how difficult it can be to take representative samples from very mixed fill and contaminated ground. The apparent precision of laboratory data can be very misleading. In reality a result of 645.37 mg/kg lead (as Pb) doesn't actually mean that the horizon we sampled contains a concentration of 645.37 mg/kg lead. The problem is we don't know what it means because we haven't estimated the variability of the sampled horizon and we haven't got a clue about the limitations of the techniques the lab uses to prepare, extract, analyse and then correct the raw data to produce the reported result. Engineers who are used to dealing with relative certainties would be horrified to learn that the true precision of chemical data is very, very poor. In many cases the best you could expect might be orders of magnitude.

Conclusions - The Key Questions

There is no doubt that the reliability of the analytical data our industry routinely uses is seriously limited. There is also no doubt that many (perhaps most) practitioners don't realise this. This is not because the laboratories are producing poor quality work. Rather it is a combination of the uncertainty inherent in sampling and analysis coupled with the limitations a price driven market places upon laboratories. Factor in a lack of understanding on both sides of the effect (or even existence) of such limitations and it is easy to see that we can easily find ourselves skating on thin ice without even realising it.

What are the answers then? Well the answers are really a series of questions we should routinely ask ourselves when assessing our methods, our laboratories and their data.

1. Laboratories broadly use the same analytical equipment. What gives to allow some laboratories to be a lot cheaper than others?
2. What are the limitations of the selected analytical method? There are always limitations. Do they matter in this case?
3. Absolutely critical. What is the basis on which my data is reported? Does it match the basis on which my acceptance criteria are calculated?
4. Is the laboratory QC data realistic or has it been generated in ideal conditions using ideal samples which are unlikely to represent the conditions on my site?

If you can make a reasonable attempt at answering these questions you will be a long way to understanding the basis on which your data has been generated and in turn you will be reasonably confident when interpreting your data and able to take due account of the uncertainty that exists in your data.

If you can't immediately answer these questions then you don't know the basis on which you are interpreting your data/running your computer model/applying your acceptance criteria/remediating your site/providing your client with a collateral warranty. And it's as fundamental as that.

Peter Puttock, Partner;
Michael Dinsdale, Associate,
Peter Brett Associates

CIRIA seeks funding for UXO Guide

In the last AGS Newsletter, Richard Thomas from Peter Brett Associates, expressed his concern at the frequency with which companies undertaking threat assessments for unexploded ordnance (UXO) recommend further expensive precautionary measures during investigation and development.

Picking up on this theme CIRIA have prepared a proposal for a Clients Guide for assessing the risk on UXO sites. Funding is being sought, but a further £10K is needed before work can commence. This has been the position for the last 6 months and the project cannot go ahead unless funding is in place.

AGS Members have been invited to contribute. Normally substantial amounts are expected and it is clear that not all AGS Members are in a position to contribute four figure sums, although there is general agreement that the document will provide valuable guidance. In view of this, it has been agreed with CIRIA that in order to close the funding gap AGS Members may make a smaller contribution in return for representation on the steering group through a single AGS nominee. Contact D. Jennings for further information.

(Note: This project has not received core funding, therefore CIRIA Core Members have NOT contributed through this route.)

The Proposal

Objectives

To provide good practice guidance on the assessment of risk to construction projects in areas at risk of historical wartime bombing. The guide will also ensure that all construction clients and professionals are putting a similar level of effort and resource into assessing the risk from UXO.

The guide will explain:

- Which areas of the UK require assessment in relation to UXO risk.
- Current best practice methodology for carrying out a phased or tiered assessment of risk of encountering UXO during in-ground works.
- How to appoint specialists to prepare desk study threat assessments for at-risk sites (including issues relating to the preparation of specifications for specialists).
- How to ensure independence of advice between the risk assessor and the investigator or clearance professionals.
- How to balance the risk of UXO with other technical and construction risks.

Good case studies will be used to illustrate good practice.

Eurocode EC7 National Application Document NAD

The Ground Forum has received a report that work to prepare a National Application Document (NAD) for Eurocode 7 (EC7) has been delayed and impeded because of lack of funding.

This could have serious implications for the UK if the NAD for EC7 is not available by January 2007, then EC7 will have to be used in the UK in its current format. This will mean that all geotechnical design in the UK will have to be undertaken using all of the published design methods in EC7. Also, each of these design methods will have to use the general European design parameters, not parameters that have been calibrated for UK design and construction practice, and for UK ground conditions.

The benefit of having the NAD for EC7 will be to reduce the number of design methods applicable for the UK. This will have the obvious result

that design time, and thus cost, will be lower with the implementation of the NAD, than without it.

In addition, without UK specific design parameters published in a NAD for EC7, it is likely that designs will either be more safe compared to those produced by current design practice (resulting in uneconomic designs for UK clients) or will be less safe compared to those produced by current design practice (resulting in potential construction failures and associated loss of confidence by the public and UK clients).

It is the view of The Ground Forum that the publication of a National Application Document for EC7 is essential before January 2007.

PID Instruments: Read the Manual – Understand the Risks

The use of Photo Ionisation Detectors or PIDs to delineate hydrocarbon, or solvent, plumes is common practice these days. Since its introduction to the UK in the early 90s the technique has won common acceptance and many equipment hire companies have offerings from various manufacturers.

Many practitioners recognise the need for achieving adequate calibration of the instrument relative to the material being tracked. The commonly recognised difference is that of the response factors between petrol mixtures and diesel fuels. The later material responds far less strongly even to high energy lamp instruments and the results need to be interpreted accordingly. Most manufacturers publish correction factors that can be applied to the instruments response relative to other solvents such as those historically used as dry cleaning or degreasing fluids.

For general purpose use there may not be a major risk in terms of business loss prevention; provided plume delineation can be achieved, professional judgements can be applied in the normal way in terms of the area of ground affected. However, there is one operational risk that may be problematic, and poorly understood by a lot of users, this is the impact of humidity.

RAE systems, the makers of a commonly used instrument, assert that at 60% humidity only 80% of the true atmospheric response may be achieved. Clearly this is problematic if the instrument is being used to provide safety critical data during drilling, other ground works, or if the solvent/substance being studied is a 'low responder'.

There are, of course, other factors which need to be taken into consideration in this respect, such as: extension tube length; and the creation of critical alarm set points for mixtures of solvents.

RAE Systems publish a host of free literature which enhances the safety critical and other uses of data obtained from PID instruments in general; as well as their own products. This information can be found at: http://www.raesystems.com/AppTech_Notes/TN

Loss Prevention Measures

The following are some loss prevention measure which should be considered:

1. Obtain, and study, the manufacturer's supplementary product literature.
2. Do not rely entirely on what the hire company has provided; they will only supply what is needed to ensure the equipment operates as intended. The instrument output is for user interpretation.
3. Ensure that members of staff using the equipment have read, and understand, the instrument manual.
4. Ensure that staff members using the equipment are qualified to deal with the information in the instrument manual and supplementary information (this can often be chemical in nature).
5. Where staff are not adequately qualified provide adequate supervision to ensure that safety critical work is properly carried out.
6. Ensure that the calibrations performed, and any correction factors adopted, are relevant, and adequate, for the task being performed; and the end use of the data.
7. Ensure that the mission critical nature of the results, and the potential for inaccuracies, have been recognised in your safety risk assessments.
8. Contact the AGS Loss Prevention - Chemical Safety Hot Line for further information, if required.

TC White, Marquis & Lord

A National Archive of Site Investigation Data

As aired at the recent AGS Format discussion session following the presentation by Jeremy Giles from BGS, the concept of a national archive of site investigation data is unquestionably an excellent resource. However, the users of this facility are frequently frustrated by the 'unavailability' of some of the archive due to confidentiality agreements that require the BGS to not release such information to third parties. Searches by BGS against a specific location requested by a user, provide neighbouring site investigation information and print-outs of such references together with a location map indicating their sites. The user can then request either a postal or first hand study at Keyworth of a selection of such data. At this point BGS may not be able to provide all data as some of it is reserved for their exclusive use in improving the national understanding of this field of study.

Jeremy Giles agreed this was an issue but that BGS was powerless to circumnavigate such agreements. On an occasion when it had been found to have inadvertently issued such confidential data, the original sender of information had recalled all its previously lodged records! In a converse situation, a searcher of the records cited an occasion where, having found some data 'blocked' by BGS, contacted the original depositing

company who quickly agreed to remove such exclusivity. The additional desk study information was subsequently released to the searcher following a formal letter from the depositor to BGS.

It was suggested that there should be some time bar attributable to such confidentiality agreements so that after an agreed time, the information was then allowed to be available to all. Thus AGS members may like to consider the incorporation of a common clause into their contracts stating that unless the Client expressly refused permission, the site investigation information would be sent to BGS and, after a period of time, become publicly available under normal BGS arrangements. The obvious debate to be had before this could be forwarded as a suggestion to BGS, is to define an agreed period of time.

The Client would presumably wish have a period of confidentiality so as to secure their commercial objective in obtaining the information. It is suggested that most AGS practitioners would not be too concerned as to the time period, other than easing the real problem of archiving! A period of six years may be appropriate, as much of the site investigation work in the UK is effectively carried out under hand, rather than sealed, contracts.

John Hislam, Applied Geotechnics

Environment Agency Update

September 2005

CLEA

The work on CLEA UK is progressing well and the CLEA UK Beta Version User Evaluation was issued in November for evaluation by users. We have listened to the comments received so far on the performance of the software and we expect that the new version will run faster than previously. Instead of around 30 mins per contaminant you should be able to run 10 contaminants in 10 minutes.

We accept that the SGV programme has progressed more slowly than we had hoped but that the prioritisation of delivery has been reassessed and more resources have been made available. In particular Ian Martin has returned to the Agency as a key member of the CLEA team.

The SGV report on phenol was published in September 2005 and can be downloaded in pdf format from the CLEA pages on our web-site. SGVs for Benzene, Xylene and Naphthalene have been circulated for feedback before issue.

Since April 2005 we have undertaken to produce a quarterly CLEA update. The second Bulletin is now available on our web-site. However, if you want to receive the update quarterly by e-mail then you can e-mail clea@environment-agency.gov.uk with the subject of CLEA update.

Also note that Defra have now issued a CLAN on SGVs on their web-site which gives further guidance of the use of SGVs in relation to formal determinations of contaminated land. This guidance can be found at www.defra.gov.uk/environment/land/contaminated

Essentially the main issue is that determinations based on contaminant concentrations equal to or just in excess of the SGV cannot be said to meet the legal test set out in Table B under Part IIA. Under the direction of the SGV Task Force, a team has been set up to make further recommendations on this.

Bioaccessibility of Arsenic

The position on bioaccessibility of arsenic remains as stated in our Science update on the subject dated February 2005. Essentially the Agency is not currently in a position of recommending the use of bioaccessibility testing in risk assessment. If practitioners are going to use them then they should be approached with caution and supported by a body of evidence. In particular the testing should be shown to be robust and suitable for the site and contaminants of concern. All uncertainties associated with the method should be understood and accounted for in the recommendations made.

Planning

The 'Environment Agency Guidance on Requirements for Land Contamination Reports' or as it's more commonly known the 'Developers Guide' is also finalised and available on our web-site via the following link:-
www.environment-agency.gov.uk/subjects/landquality/113813/887579/1101611

Other publications of interest

In conjunction with English Heritage we have recently published a guidance document on assessing contaminated land in respect of archaeology. The report is titled '*Guidance Assessing the Risk posed by Land Contamination and its Remediation on Archaeological Resource Management*' Science Report P5-077/SR. Copies are available from our National Customer Contact Service.

Indicators for Land Contamination - Looks at both chemical and radiological contamination and examines the legacy of a long industrial past in England and Wales, to improve understanding and assist in identifying the need for and managing the process of remediation. The project was carried out by the Environment Agency, Defra and the Welsh Assembly Government. A copy of the report is available as a PDF download from the Environment Agency Website at publications.environment-agency.gov.uk. A Science Summary is also available from the Environment Agency Website at publications.environment-agency.gov.uk

Waste Management

The Agency is currently reviewing its approach to the licensing of mobile plant in relation to land contamination remediation activities. We are looking at improving the current system so that we can carry out our duties and responsibilities in line with our approach to modernising regulation. It is hoped the new approach will reduce the regulatory burden on industry whilst maintaining the appropriate levels of environmental protection. In principle the improved process should ensure we have a number of competent officers around the country dedicated to producing licences so that we can maintain consistency. We are also looking to introduce a 'deployment form' so that the waste operators can operate a number of treatment activities under one Mobile Treatment Licence.

Jackie Harrison
Environment Agency

Management of Risk Associated with Ground Reports

Michael Joyce, a chartered engineer, chartered geologist and chartered arbitrator, has written to the AGS in connection with some of our observations about the effectiveness of arbitration in the AGS document *Management of Risk Associated with the Preparation of Ground Reports*.

In brief terms, the authors of the document (at paragraph 4.4.9) express a preference for litigation because of the legal expertise of judges, their increasing technical understanding and, most importantly, their willingness to deal swiftly and decisively with unsustainable negligence allegations raised simply as a means of avoiding or delaying payment to a specialist. Mr Joyce points out that most arbitrators nowadays have had some legal training and have the benefit, over judges, of being qualified technically in the subject area of the dispute. In his experience, arbitrators will take a robust and harsh line with those presenting bogus negligence claims as a way of circumventing a specialist's entitlement to his fee for the work undertaken.

Mr Joyce's views demonstrate, at the very least, the dramatic differences in the views of some lawyers and engineers regarding the relative merits of arbitration and litigation. AGS members should therefore be aware that although the authors of the AGS *Guidelines for the Preparation of*

the Ground Report generally prefer litigation to arbitration, many experienced practitioners have the opposite opinion.

Steven Francis, Eversheds LLP Solicitors, Chairman
AGS Loss Prevention Working Group

Guidelines for the Preparation of the Ground Report / Management of Risk Associated with Ground Reports

These documents form the two parts of the latest AGS publication and form an invaluable guide for everyone involved in the preparation of Ground Reports.

Copies have been distributed to all Members and further ones can be purchased for £12.50 (including p+p).

BRE SDI:2005

Implication for SI & Specifications

The Building Research Establishment (BRE) has recently revised Special Digest 1 "Concrete in aggressive ground". This new edition (SD1: 2005), funded by The Concrete Centre, was published as a single volume in June, following the completion of a four year research programme on combating the thaumasite form of sulphate attack (TSA) . There are two key changes to the procedure for assessing the ground;

1. The limits of the design sulphate classes based upon 2:1 water/soil extract tests on soil have been reduced to bring sulphate classifications based on 2:1 water/soil extract tests and on groundwater into parity. This will result in some sites being rated as more aggressive to concrete than hitherto.
2. High magnesium levels are no longer taken into account for natural ground.

There are five key changes to the procedure for the specification of concrete;

1. The recommended maximum water/cement ratios and the minimum cement contents have been revised.
2. A new classification for cements and blended cements has been introduced to harmonise with European standards.
3. The recommended concrete quality now caters for the inherent possibility of exposure to an external source of the carbonate required for TSA.
4. The number of additional protective measures to be applied at higher sulphate levels has been reduced, in general by two.
5. The use of the concept 'intended working life' replaces that of 'structural performance level' to harmonise with European standards.

BRE has told FPS that the take up of its revised SD1 would likely be slow as it has received no funding to mount a promotional campaign. It is relevant to note that currently some of the on-line information services are still

offering just the SD1:2003 version, some 6 months after publication of the latest edition. Also, even if professionals do know of the existence of SD1:2005, they may not feel obliged to use it at the moment as the current edition of BS 8500 *Concrete* refers to SD1:2003. BS 8500 will unlikely to be updated before the latter part of 2006.

It is often not clear which version of SD1 has been used to classify the ground and the concrete.

The members of the Federation of Piling Specialists (FPS) are supplied with numerous site investigation reports and Engineer's Particular Specifications every working day. Currently it is often not clear in these which version of SD1 has been used to classify the ground and the concrete. It is the exception when clear reference is made to say SD1: 2005.

FPS requests that in future all site investigation reports and Particular Specifications make clear reference to SD1: 2005. Our Clients can then be confident that piling concrete is provided in accordance with the latest requirements by eliminating the potential for misunderstanding to enter into the specification process.

Grout is a different material to concrete and SD1:2005 is only applicable for concrete.

In addition, FPS also requests that where the foundation solution may comprise minipiles, ground anchors, soil nails, grouting, base or shaft grouted piles, permanent sleeves to piles, or cross-hole sonic logging of piles, i.e. any case where grout is likely to be used either in lieu of, or in addition to, concrete, that reference is not made to SD1: 2005 for these options. This is due to the fact that grout is a different material to concrete and SD1: 2005 is only applicable for concrete.

Tony Suckling,
Technical Development Manager, Stent Foundations Ltd

Chair Technical Committee
Federation of Piling Specialists

Clan 02/05

In September 2005, the Cabinet Office led Soil Guidance Value (SGV) Task Force issued its first (and long awaited) public pronouncement – Contaminated Land Advice Note No. 2 [CLAN 02/05]. This Note has far reaching consequences and effectively signals a change of interpretation (if not policy) at the Environment Agency/ DEFRA.

[www.defra.gov.uk/environment/land/contaminated/pubs.htm].

The SGV Task Force was set up following a 'stakeholder workshop' in November 2004, at which the AGS was well represented. Simon Edwards (Merebrook) and Seamus Lefroy Brookes (LBH Wembley) have since attended Task Force meetings on behalf of the AGS – and the views of the AGS were canvassed by means of a 'Mirror Group' and via the normal meetings of the Contaminated Land Working Group.

The remit of the Task Force is very wide, embracing matters as diverse as the continuing professional development of those involved in contaminated land through to the detail of toxicological risk assessment.

It has been recognised by industry for some time that some of the published SGVs were at concentrations at or around background concentrations. There must be very few working in this area who have not struggled with the benzo(a)pyrene question! However, the initial view of the Health Protection Agency (HPA) and Environment Agency regulators were that these were very hazardous chemicals and exposure should therefore be kept as low as possible. A year of persuasion has now borne fruit in the form of CLAN 02/05 which formally recognises that there is a big difference between the published SGVs and the concentrations of contaminants in the soil which would be capable of presenting a real hazard to people living on that land – in the terminology "a significant possibility of significant harm" [or SPOSH – how we love our acronyms!].

In some of the key sections, this Note, comments that:

- SGVs mark the concentration of contamination in soil where tolerable or minimal risks would result from exposure
- Exceedence of the SGV indicates further assessment or remedial action may be needed
- Concentrations at or marginally above SGVs would not necessarily meet the legal tests [in Circular

02/2000], for determining Contaminated Land (as defined in Part IIA of the Environmental Protection Act 1990).

Of course, helpful as these statements are, one key question now begs to be answered. Namely, how far above the SGV does the concentration have to be to meet the "unacceptable intake" test. In the deadpan language of Sir Humphrey, CLAN 02/05 says that "at the present time the published Defra/Environment Agency technical guidance on risk assessment does not address this issue". Clearly, the publication of such guidance is critical. No timetable has been set by the Task Force, but the clamour from both regulator and regulated for urgent resolution, surely can not be ignored.

Of course one has to ask where this leaves all those affected by sites designated by local authorities as "Contaminated Land" on the basis of marginal exceedence of SGVs.

The work of the SGV Task Force continues, no longer under the auspices of the Cabinet Office, but under English Partnerships' Brownfield Strategy, under the chairmanship of Jane Forshaw (CEO of CL:AIRE {Contaminated Land: Applications in Real Environments}). There is no doubt that pressure from industry and political determination at the Cabinet Office has at last made real progress but much remains to be done. In addition to the thorny issue of what constitutes soil concentrations capable of providing an unacceptable intake, progress on the publication of the SGVs themselves remains painfully slow.

The Agency has recently released the updated version of the CLEA UK risk assessment model for a trial period until April 2006 [www.environment-agency.gov.uk]. Formal ratification and publication of that model remains high on industry's agenda.

It is clearly vital that the momentum needed to make progress in all these areas, which has started to develop as a result of the Task Force, must continue. The AGS will of course continue to support its work but it is vital that the absence of the Cabinet Office does not allow Defra/the EA and the HPA to return to the previous snail's pace.

Hugh Mallett
Enviros

Copyright Regulations

Potential Loss Risk or a Hidden sources of Revenues

Every document issued in the pursuit of producing site investigation information is in some way affected by:

Copyright and Related Rights Regulations 2003 SI No. 2498

Many people are unaware of the important changes in the law brought about by the enactment of these regulations in October 2003. The key point of note with respect to site investigation work is the changes in the law regarding the copying of documents for research. This is a key factor in the production of desk studies.

There is a useful document available for download from the Copyright Licensing Agency (CLA) at:
<http://www.cla.co.uk/support/business/guidance-for-business.pdf>

It states in this document that:

"...under the old law, copying undertaken for research or for private study was an exception; provided that the copying could be classed as 'fair dealing' ..."

It goes on to say that:

"Under the new law, any copying for research or private study, which is carried out for a commercial purpose, will require prior permission from the copyright owner or a CLA license to permit certain copying."

Conversely documents produced by business are now better protected and rights to further payments for multiple reproductions of reports are inherently supported more strongly by the change in the law.

There may be exceptions to the regulation where the documents being produced incorporate copies of other works are expressly for the use of a court of law or recognised arbitration body. However, individual circumstances should be checked as there may be case specific exceptions.

The CLA operates a free help line to answer queries about copyright and the need for licenses:
0800 085 6644

Loss Prevention Measures

1. Obtain a copyright license relevant to your business.
2. Where an item is not covered by the license obtain permission to copy from the author, or rights owner.
3. Study CLA guidance in this area.
4. Protect your own copy right, where appropriate.
5. When producing documents consider what reasonable charge you might make for its reproduction in advance of being asked.
6. If you chose to allow reproduction seek legal advice on the reliance others may place on it as a result of you granting permission for copying and distribution.

TC White
Marquis & Lord

Disappointing Contractual Approach By Member

Members are warned to read and appreciate the contents of so called standard agreements that they are routinely asked to accept. Recently, a Personnel Member was asked to sign up to sub-contact terms that were said to be the usual terms readily used elsewhere throughout the offices of the larger consultant who was also a member firm. These include a "fitness for purpose" requirement, onerous warranty and indemnification clauses, assessment of any variations and additional works by the larger consultant rather than by joint agreement and a low addition to the base rate for late payment. Fortunately the member was able to appreciate the potential implications and sought legal guidance where more equitable terms

were drafted. These were offered to the major consultant and were immediately accepted without further question.

This incident raises two key points for members. Firstly be sure to read and appreciate what you are being asked to accept and don't be pressurised into accepting an onerous standard document because it is said to have been used elsewhere. Secondly, it is disappointing to learn that member firms of AGS are still seeking to impose such terms on others when they are clearly contrary to the aims of the association and would not be acceptable to the organisation itself.

Chris Hoskins, CH Consultancy Ltd