

THE SOIL AND GROUNDWATER TECHNOLOGY ASSOCIATION

SAGTA REPORT 4 - LABORATORY ANALYSIS OF CONTAMINATED SOILS

Introduction

A risk-based approach to dealing with contaminated sites puts more emphasis on the appropriateness and quality of chemical analysis of contaminants. A series of presentations by problem owners, consultants and analysts identified several aspects of laboratory analysis at SAGTA's workshop on 27th September 1996 which are giving cause for concern. These can be summarised under the headings of:

- communication: insufficient communication between customer and analyst, results in data which is not fit for purpose;
- confidence: the use of inappropriate methods and poor QA/QC results in lack of confidence in the data supplied;
- cost effectiveness: very competitive market forces labs to quote unrealistically low prices (QA/QC goes to the wall). Cutting corners on site investigation is a false economy when compared to the costs of remediation.

Several of the workshop presentations described initiatives to address some of these problem areas:

- DoE research projects on: identifying the gaps for future research, analytical methods, validation protocols and QA/QC;
- British Gas's own scheme for evaluating laboratory performance;
- the CONTEST proficiency scheme of the Laboratory of the Government Chemist.

Feedback from Syndicate Sessions

Three syndicate sessions addressed the following issues: communication; confidence; and research needs and the international perspective.

1. Communication

- (i) Good three-way (customer, consultant and analyst) communication from the outset is vital.
- (ii) Get the analyst involved early, not after the samples have been collected.
- (iii) Build up trust through long-term relationships for the benefit of long-term projects (consistency of data).
- (iv) Develop a partnership that shares the risk.
- (v) Encourage regular dialogue throughout the process from defining the scope of work through to reporting.
- (vi) Outline precisely what is needed in the contractual agreement.
- (vii) In general, the poor labs are those who don't want to talk to the customer. They are not interested in and don't understand the problems, preferring to do conveyor belt analysis treating work as a "black box".

Areas of SAGTA Contributions:

- a best practice guide on how to select and work with analytical labs to best effect.

2. Confidence in the Data

- (i) Keys to confidence are:
trust, communication and learning together (customers/consultants/labs).
- (ii) Build up long-term relationships to ensure consistency of data now and in the future.
- (iii) Tools to ensure confidence include:
 - laboratory audits
 - proficiency testing schemes
 - random known samples and check analysis
 - intelligent customers need intelligent analysts who understand the problems
 - communication works both ways - customer must understand limitations of analyses available
 - exchange of lab and site staff where possible can help.
- (iv) There are no good labs, only good analysts. Quality today is not necessarily a guidance of quality tomorrow. All parties must keep working at it.
- (v) Don't leave all this to the consultant. Get involved yourself.

Areas of SAGTA Contribution:

- supply pragmatic performance criteria assessment;
- develop standard reporting format. What should be included and how;
- practice what we preach to drive quality upwards. Quality costs, but must be cost-effective. What are SAGTA members prepared to pay? Promote inclusive pricing;
- legal problems with SAGTA members sharing audit information.

3. Research Needs and The International Perspective

An overview of the whole structure of UK and EU regulations, guidance and best practice is needed.

(a) Research Needs

- (i) The risk assessment approach to contaminated sites requires that analysis should be risk driven. In the past, emphasis has been on measuring total contaminant concentrations. Methods are now required for measuring the bioavailable fraction.
- (ii) "Black box" measures such as total petroleum hydrocarbons (TPH) and total metals are inappropriate for risk analysis and should be replaced by methods which speciate individual components of concern.
- (iii) The tiered approach to site investigation requires robust methods for measuring contaminants in the field. There is a drive to do more and more analysis on-site to make the process more cost-effective. Robustness and simplicity are more important than accuracy for field methods.
- (iv) Protocols for preparation of reference materials.

(b) Funding

- (i) Who will fund methods development work? Not anticipated to be Research Councils. Need therefore to consider alternatives via Trade Groups, DTi and EU?

Areas of SAGTA Contribution:

- SAGTA is already involved in attempting to influence direction of R & D, but plethora of initiatives does not make this easy;
- SAGTA clinics for interested academics and funders;

- information dissemination via position paper and Web site.

(c) International Outlook

- (i) Expect analytical methods to follow the internationalization of risk assessment, but this will take time and good standard methods are required now. Gestation period of international methods is too long to meet short-term needs so gaps must be filled nationally in the short term.
- (ii) Standard methods help with creating the confidence that is vital to acceptance of the risk-based approach.

Areas of SAGTA Contribution:

- peer review of BSI and ISO drafts;
- influence through NICOLE.

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