

Approximately 30 years old, environmental testing is still a relatively young industry. As the sector has developed, it has evolved significantly. Here, Nicola Vosloo, European Market Development Leader, PerkinElmer, Inc. explores the latest developments in this industry and considers how commercial testing companies are rising to emerging challenges.

Increasingly, environmental testing is outsourced to third party contract testing laboratories. For these companies, ensuring the highest quality analytical services is vital in order to gain a competitive advantage. Sample throughput must be optimised to meet the varying project turnaround times requested by clients. To maintain and grow a prominent market position, tangible evidence of high accuracy levels is also essential. Achieving lower limits of detection (LOD) and seeking quality accreditation, now essential for attracting work from prominent clients, are increasingly popular routes to differentiation, as the following worked example demonstrates.

“Concrete covered land, for example, is subject to fewer guidelines than garden or allotment soil, which people frequently come into contact with”

Author Details:

Dr Nicola Vosloo
European Market Development Leader
PerkinElmer, Inc. Chalfont Road, Seer Green,
Beaconsfield, Buckinghamshire, HP9 2FX, UK
Tel: +44 (0) 1494 874 515
Fax: +44 (0) 1494 679 331
Email: nicola.vosloo@perkinelmer.com
Website: www.perkinelmer.com

Enhancing Environmental Testing

CONTAMINATED LANDSCAPES

Chemtest is a leading supplier of high quality, fast response analytical services. As the UK's premier contaminated land testing laboratory, Chemtest is focused on maintaining market leading service levels. Continuous investment in processes and technology ensures optimal reliability and confidence in the company's results. In the early days of environmental testing, work was carried out by simpler methods due to the less demanding legislation then in force. Customers are now looking for increasingly higher levels of information. In response, Chemtest has adopted more sophisticated analytical techniques, including full speciation analysis. Today, the company uses GC/FID, GC/ECD, GC/MS, ICP/OES and ICP/MS instruments to identify and quantify a wide range of contaminants in soil and water samples.

Regional and local authorities issue their own guidelines concerning environmental sampling and testing within their jurisdiction, which in turn draw upon Environmental Agency (EA) regulations and guidance. In addition, the EA has developed its own standards for the analysis of airborne emissions, soils and waters under its Monitoring Certification Scheme (MCERTS). EA guidance encourages site investigators to use laboratories accredited to MCERTS in preference to unaccredited competitors. It is therefore the role of the environmental testing laboratory to help customers meet these requirements. While existing guidelines do not specify LOD requirements, providing a low LOD is one way in which laboratories can provide the performance that customers demand.



LOWERING THE LIMIT OF DETECTION

In analytical chemistry, the LOD is the lowest quantity of a substance that can be distinguished from the absence of that substance (a blank value) within a stated confidence limit. At Chemtest, LOD requirements differ from customer to customer, according to the contaminant and type of sample being analysed. Concrete covered land, for example, is subject to fewer guidelines than garden or allotment soil, which people frequently come into contact with. Nevertheless, in both cases, there is a constant drive to lower the LOD for each type of sample and matrix. The promise of more accurate analysis is a strong selling point for all environmental testing laboratories. Chemtest utilises over 45 PerkinElmer instruments at its laboratory in Newmarket. By investing in instrumentation that provides greater sensitivity, the company is continually expanding its analytical capabilities and delivering desired limits of detection.

RISING REGULATORY TRENDS

Environmental testing is not subject to regulation regimes like those familiar to the pharmaceutical industry, such as MHRA and FDA. However, quality accreditation to ISO standard 17025 and MCERTS, where applicable, is now seen as essential for environmental testing laboratories by their most influential customers.

Initially issued by the International Organisation for Standardisation in 1999, ISO 17025 is the main standard for testing and calibration laboratories. It provides formal accreditation of laboratories in accordance with European and international standards. The standard was revised in 2005 to bring it more closely in line with the generic management standard ISO 9001.



Fulfilment of the requirements of ISO 17025 demonstrates that a laboratory meets the technical competence and management system requirements for it to consistently deliver accurate results. It is therefore apparent why there is a rising trend for contract testing laboratories to seek accreditation. By guaranteeing analytical results, a commercial testing facility can maintain its competitive edge. It also means that results generated can be used for reporting to regulatory bodies as required.

The Environment Agency MCERTS scheme is an additional accreditation that specifies a number of critical testing requirements and parameters, most prominently accuracy and precision limits relevant to each test. These must be demonstrated through method validation before accreditation is granted and then used for monitoring ongoing method performance. This in turn provides assurance to all stakeholders (including industrial process operators, laboratories, regulators and the public) of the reliability of data from tests. As part of its ongoing drive to integrate quality assurance and control into all processes and results, Chemtest has received a wide range of MCERTS accreditations for the testing it offers. It was one of the first UK laboratories to offer testing of trade effluents and sewage effluents to MCERTS (waters) standard. These quality accreditations are a crucial differentiator for Chemtest, providing demonstrable evidence of service and quality.

In addition to ISO 17025 and MCERTS, there is also an increased interest towards ISO standard 14001 which Chemtest also holds. This standard provides a framework to assess and control the impact of laboratory activities on the environment. It would be pertinent for an environmental testing organisation to limit its own impact on the environment while delivering results in a timely and cost-effective manner.

PROFITABLE PARTNERSHIPS

With Chemtest's laboratories providing tens of thousands of results daily, maximising instrument uptime is also critical in meeting client deadlines. Meeting >98% of turnaround times across all service levels, Chemtest needs to ensure that instruments are serviced quickly and efficiently in order to optimise sample throughput. A PerkinElmer OneSource® service contract that covers all analytical instrumentation, regardless of type or manufacturer, provides the company with the assurance that sample throughput will not be compromised. Fast repair rates ensure laboratory productivity is maximised, as systems are back on line with minimal disruption to work flow. Instrument capacity is maintained, regardless of any unexpected breakdowns. This ultimately helps Chemtest to provide a faster, more efficient analytical testing service.

SUMMARY

Environmental testing is a growing industry. As standards rise, testing laboratories face increased scrutiny and competition. Delivering the highest possible levels of quality and service has never been more vital. At present, factors such as low LODs, quality accreditations and rapid sample throughput can help laboratories to grow their share of this expanding marketplace and cement relationships with existing customers.