Building confidence

Hendrik Emons

Published online: 12 May 2012
© Springer-Verlag 2012

All of us regularly have to take various decisions in our private and professional lives, and we need considerable information in order to be able to make them in a qualified manner. Such information is based in many cases on measurements, and we need trust in the reliability of their results. Therefore, building confidence in measurement results has not only become the official label of several metrology institutes (and is explicitly or indirectly the mission of all of them), but has led to the design of (analytical) quality assurance systems and the so-called quality infrastructure for measurements. In this context, the transition from trusting information because of the ‘designated competence’ of the provider (‘it is the officially authorised institution for such measurements’) to the recognition of ‘demonstrated competence’ is an important development.

Measurement laboratories in many sectors have accepted that a first-party assessment (by themselves, i.e. self-declaration) or a second-party assessment (by their customer) is no longer sufficient for convincing potential customers, peers or regulators about their competence. Third-party assessment, in particular via accreditation, has become widely accepted as the mechanism for ensuring confidence in the capabilities of a laboratory. Therefore, the term ‘accreditation’ in the title of this journal has gained much more importance in recent years, and it would be desirable if this is increasingly reflected in the published papers. They may deal with the extension of accreditation schemes to new areas such as genetic testing or the characterisation of engineered nanoparticles. Also the need and the progress in the preparation of further guidance or explanatory documents for specific topics, such as the

purity assessment of chemicals or the identification of pathogenic microorganisms, could be discussed. Moreover, it is obvious that the impact, reputation and acceptance of accreditation as one of the core means for ensuring confidence depend heavily on the competence of the people involved. Therefore, it seems to be advantageous to share experiences on developing further the common understanding of the interrelations between metrological concepts and quality management principles, on educating technical assessors and how ‘to calibrate’ them at national and the global scale. For instance, we are all very aware that concepts such as metrological traceability within the chemical measurement field are still interpreted in many different ways [see also this journal (2008) 13:1–2 and (2011) 16:1–2].

The design and implementation of quality assurance systems also has to take into account the significantly increased staff dynamics in analytical laboratories, including the public ones. The technical competence of personnel is a crucial, usually the most crucial, influence factor for the performance of a specific laboratory. Therefore, laboratories should consider that the frequency and scope of quality assurance measures have to be set up to take this into account. This relates to internal quality control instruments such as the frequency of control charting or internal audits, but also to proficiency testing. How often should a laboratory participate in similar proficiency testing exercises [see also this journal (2006) 11:105–106]—or how long is such a demonstrated competence valid? Which capabilities are demonstrated by the participation in a specific (or a series of complementary) interlaboratory comparison(s)? The CCQM (Consultative Committee on the Amount of Substance—Metrology in Chemistry) is currently performing a corresponding strategy discussion for its so-called Key Comparisons for

H. Emons (✉)
Geel, Belgium
e-mail: JRC-IRMM-ACQUAL@ec.europa.eu

National Metrology Institutes. And, we cannot neglect another aspect: how to keep the balance between ensuring sufficient confidence in measurement results and the resource needs for the related quality assurance activities. At the end, the related judgment has to consider the economic aspects of quality assurance efforts versus the risks of wrong decisions (based on potentially unreliable measurement data) and the reputational risks. Analytical laboratories are invited to use this journal as a platform for the communication exchange about their quality assurance concepts and experience in building confidence in their measurement services.

Finally, it is worth noting that confidence-building activities such as third-party assessment have also been integrated into the scientific publishing process for more

than 100 years. Peer review of submitted manuscripts is the core principle of many journals. It is a demanding procedure for all parties involved, from the authors via the reviewers to the editors and publishers. We are aware of its potential problems, shortcomings and even occasional failures, but peer review is still the most advanced approach for quality assurance in scientific publishing. Also *Accreditation and Quality Assurance* depends on the scientific integrity of its authors and the availability and thoroughness of competent reviewers to ensure the confidence in published articles.

Hendrik Emons

Editor-in-Chief