DISCUSSION FORUM

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Accreditation of sampling activities

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Abstract Since the introduction of ISO/IEC 17025 it is a requirement for all accredited laboratories to include sampling in their quality statements. It is well understood that sampling and handling of the sample are key factors in the validity of a result. The fact that many laboratories worldwide are not involved in sampling poses a challenge to accreditors' liability. This article describes the Israel Laboratory Accreditation Authority's (ISRAC) and other accreditors' approaches to sampling.

Keywords Sampling · Validity · ISO/IEC 17025

Introduction

"Sampling" is often used to describe different activities. It may include all or part of the following: collection of samples in different places to ensure proper representation of the whole, collection of samples based on statistical analysis, taking a sample from the location where the whole batch or entity is present, and handling of the sample until it reaches the laboratory.

All the above activities contribute to the validity and uncertainty of the result. The result is as good as the sample. Worldwide many laboratories are not involved in sampling, with some performing only parts of these activities. Working Group (WG) 25 appreciated the importance of sampling and handling of test items and devoted two subclauses of ISO/IEC 17025 [1] to these issues (5.7 and 5.8). In essence, a laboratory is required to have a sampling plan and procedures for sampling when "it carries out sampling of substances materials and products....." "Sampling plans shall, whenever reasonable, be based on appropriate statistical methods. The sampling process shall address the factors to be controlled to ensure the validity of the test and calibration results." A laboratory must therefore, according to the standard, be involved in the sampling at least for the statistical basis as well as the procedures even when it does not perform the sampling itself.

The most important criterion accreditors use to judge the appropriateness of a laboratory's activities is the transparency of the situation and avoidance of any misunderstanding by the consumer who makes decisions based on a laboratory's results.

In many cases, in all testing fields (environmental testing, medical, construction, etc.), sampling is executed by the customer or by a laboratory specializing in this area. Sometimes the body which performs the sampling is also responsible for issuing a statement concerning opinions and interpretations of the results. However, these situations might cause some problems.

The following are issues of concern in such cases:

- Integrity of the chain of custody of the sample
- Clear understanding of the key factors and needs of the analysts as well as the requirement for the sampling performers
- Awareness in the analytical laboratory of the actual sampling limitations/nonconformity to the initial plan or accepted procedures
- Transparency and accuracy of test result reports
- Proper consideration of all contributors to expanded uncertainty

Many surveys have pointed out that failures frequently occur in laboratory work in the pre-analytical stage [2]. These problems usually increase when two organizations are involved in a process where the flow of information may be jeopardized.

Role of accreditation

An analytical process starts with an entity in which we would like to evaluate one or more properties. It is well accepted that a laboratory performs stages (3) to (6) namely, processing, analyzing and reporting, but is not always involved in the first two stages. Being realistic, accreditors do not impose accreditation on the sampling process. Thus very often the laboratory (and the accreditor) might compromise the validity of test results. In all cases, accredited laboratories indicate that they are not responsible for sampling in the test report. Nevertheless, customers do not often pay attention to this fact. Some consumers, in fact, do not receive the test report and, therefore, might be misled. In our opinion sampling (stages 1 and 2) are part of the entire analytical process. Therefore, an organization performing sampling is considered as a laboratory in the same way as an organization that performs stages (3) to (6) is considered as a laboratory. This position leads us to conclude that one of these laboratories is in fact a subcontractor of the other. Thus both should be either accredited or one should make sure that the subcontractor complies with ISO/IEC 17025 requirements (Fig. 1).

It is the Israel Laboratory Accreditation Authority's (ISRAC) position that laboratories that perform sampling only, or sampling as well as giving opinions and interpretations, should be accredited. Regulators in the Israel Ministry of the Environment were convinced of this logic as well as the necessity for the accreditation of the sampling process to reduce their risk especially in court cases. ISRAC is now in the process of accrediting such laboratories for performing air sampling.

Worldwide situation

Two surveys were performed recently among accreditors in the European Accreditation (EA) and Asian Pacific Laboratory Accreditation Cooperation (APLAC). Twenty-four accreditation organizations responded to the surveys. Sixteen out of 24 organizations declared that they either accredit sampling laboratories that do not do any testing or they would if requested. Some of these organizations require that

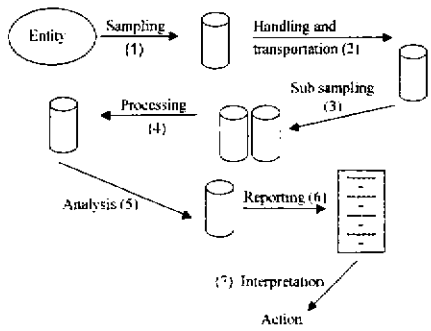

Fig. 1 Steps of the analytical process

the samples must be analyzed by an accredited laboratory.

Most organizations, with the exception of two, believed that the accreditation of sampling laboratories should be done according to ISO/IEC 17025. Two organizations suggested that they should be treated as inspection body organizations and be accredited according to ISO/IEC 17020.

The Technical Accreditation Issues Committee of the Internationnal Laboratory Accreditation Cooperation (ILAC) is also currently discussing this issue and will probably issue a guidance document for ILAC in the future.

References

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