Proficiency testing
an important tool in the laboratorie's performance witnessing
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Laboratory testing of foods are the only real proof of safety and quality of the final product, but also real proof for the correctness of the applied processes.
Accreditation is the only real attestation of the competence of laboratories to perform specific tests.

Accreditation Body of Serbia (ATS), is the sole organization authorized to operate laboratory accreditation according to ISO/IEC 17025 standard in Serbia.
The essence of accreditation is to determine the competency of laboratories to perform tests mentioned in the scope of accreditation.

This is achieved by witnessing - observation of the laboratories carrying out conformity assessment services within requested/valid scope of accreditation.
Conformity assessment of a laboratories involves competence assessment of the entire operations of the laboratory, including competence of the personnel, adequacy of equipment, validity of the conformity assessment methodology and validity of the conformity assessment results.
Participation in interlaboratory comparison (ILC) and/or proficiency testing (PT) programmes is the only objective evidence of the correctness for the application of developed test methods.
The basic document for the implementation of these tests is standard ISO/IEC 17043:2010
(translated on serbian language as SRPS ISO/IEC 17043:2011):
Conformity assessment – General requirements for proficiency testing
There are also ILAC complementary documents:

- ILAC Policy for Participation in Proficiency Testing Activities (ILAC-P9:11/2010);
- ILAC Guidelines for the Requirements for the Competence of Providers of Proficiency Testing Schemas (ILAC-G13:08/2007);
Also EA complementary documents:

- Use of Proficiency Testing as a Tool for Accreditation and Testing (EA-03/04:2001);
- Guidance on the level and frequency of proficiency testing participation (EA-4/18:2010);
Another important document:

- Statistical methods for use in proficiency testing by interlaboratory comparisons (ISO 13528: 2005);
Among domestic documents, in addition to the obligation of participation in PT schemes stated in the standards (SRPS ISO/IEC 17025:2006 and SRPS ISO 15189:2008), ATS has released two documents that govern this area:

- Rules for the Participation in Inter-laboratory Comparisons and Proficiency Testing Schemes, ATS-PA02,
- Guidelines for the presentation of the scope of accreditation for proficiency testing providers, ATS-UP30
Typical purposes for interlaboratory comparisons include:

a) evaluation of the performance of laboratories for specific tests or measurements and monitoring laboratories' continuing performance;

b) identification of problems in laboratories and initiation of actions for improvement which, for example, maybe related to inadequate test or measurement procedures, effectiveness of staff training and supervision, or calibration of equipment;

c) establishment of the effectiveness and comparability of test or measurement methods;

d) provision of additional confidence to laboratory customers;

e) identification of interlaboratory differences;

f) education of participating laboratories based on the outcomes of such comparisons;

g) validation of uncertainty claims;

h) evaluation of the performance characteristics of a method – often described as collaborative trials;
DEFINITIONS

interlaboratory comparison
- organization, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories in accordance with predetermined conditions

proficiency testing
- evaluation of participant performance against pre-established criteria by means of interlaboratory comparisons

proficiency test item
- sample, product, artefact, reference material, piece of equipment, measurement standard, data set or other information used for proficiency testing
■ Successful result from PT schemas are an indication of laboratory’s technical competence and are essential part of accreditation.

■ Proficiency testing is a tool used by laboratories and accreditation bodies for monitoring test and calibration results and for verifying the effectiveness of accreditation process
From laboratory providers are required to have experience with the subject matter for proficiency testing, to know all its features, structure and interference that can be expected from the influence of the matrix.

Staff must also be familiar with the properties to be tested, test methods and techniques that are commonly used.

Provider’s competence proving by the application of standards ISO/IEC17025 or ISO 15189.
From providers are required:

- to investigate and confirm the homogeneity of the sample, the prepared samples packed in final form;
- safety packaging and transport (per sample and the environment);
- regulation of lodging conditions and sample storage prior to study;
- stability of the material in time in which the value of the parameter will not significantly change;
- storage conditions of the sample after testing.
- Statistical analysis of the data obtained from the participants, the provider shall analyze samples and mainly determined by Z-score:

<table>
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<tr>
<th>Z-score</th>
<th>Performance Description</th>
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<tr>
<td>$z \leq 2,0$</td>
<td>Indicates the “satisfactory” performance and does not give any warning;</td>
</tr>
<tr>
<td>$2,0 &lt; z &lt; 3,0$</td>
<td>Indicates the “suspicious” performance and provides a warning signal;</td>
</tr>
<tr>
<td>$z \geq 3,0$</td>
<td>Indicates the “unsatisfactory” performance and provides a signal to take action</td>
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On the basis of the scope of accreditation laboratory determines the sub-discipline, the level and dynamics of participation in PT activities, within the annual PT program.

Laboratories that submitted an application for accreditation are required prior to award accreditation to participate in at least one appropriate and accessible PT activities in a satisfactory manner.

Recommended minimum participation of accredited laboratories is once for each major sub-discipline within the field of accreditation for the period of validity of the accreditation (4 Year).
Today, in Serbia there are more developed schemes / programs for proficiency testing in different fields of test / control, involving accredited laboratories.

Some providers of these schemes have expressed the intention for accreditation.

ATS defined its policies and activities, and prepared the necessary documentation.
Each accredited laboratory is required to find a suitable provider for proficiency testing.

Within the ATS web site is the list of available foreign accredited providers proficiency testing schemas.

The fifth International Proficiency Testing Conference 2015 will be held in the period between 15th(16th) and 18th September 2015 in Timisoara (Romania).
The participation in the international PT schemes is associated with a number of problems:

- Unreasonably long the customs procedures affecting the time available for the completion of the tests and report results;
- Especially the big problems are in importing samples containing dangerous substances.
- Requires, for example, opening shipments for clearance or access to shipment, and it happens to pass the deadline for the consignment to be analyzed, and even to expiration of the consignment.
- It happens that the samples are stored improperly, and a participant in the proficiency testing sample arrives altered characteristics.
Problems with importing samples for proficiency testing can be solved in several ways:

a. Timely notification to the competent authorities on the arrival of the shipment - the sample for proficiency testing;

b. To ensure state regulations of faster throughput of samples for proficiency testing;

c. Organizing import patterns across an organization responsible for issues of import (importers of products similar to those used for testing, chemical importers, representatives of equipment manufacturers, and others), and then distributing them to the participants, while the results delivered directly to provider;

d. Accreditation of providers of proficiency testing in Serbia.
Acknowledgment

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Thank you for your attention