APLAC T104 Program Proposal

Objective

The aim of the program is to assess the ability of laboratories to competently perform water quality analysis and to enhance their quality assurance of measurements. This program will contribute to establishing mutual confidence in the comparability and traceability of testing in the Asia-Pacific region and consequently will support the removal of technical barriers to trade.

Organization and Responsibilities

This program is organized by Korea Laboratory Accreditation Scheme (KOLAS) with WQRC (Water Quality Research Center in K-water) as the provider.
During this proficiency program, KOLAS would be responsible for proposing this program for approval by the APLAC Proficiency Testing Committee, inviting participants, assigning confidential codes to participant laboratories, dispatching samples and result sheets, collecting test results, analyzing the data and preparing the report. K-water will be responsible for providing test samples, homogeneity and stability tests.

Points of Contacts

The contact details are given below:

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Application Fee

Free of charge.

Selection of Participants

APLAC members as well as other non-APLAC members will be invited to participate in the program. Invitations will be sent to all APLAC members and other accreditation bodies. Participating accreditation bodies will be asked to nominate laboratories to participate and indicate the accreditation status of the nominated laboratories for the test. Each accreditation body of APLAC members is invited to nominate up to a maximum of 8 laboratories from your economy to participate in this program, while a maximum of 4 for non-APLAC members. The total participating laboratoriesnts will be limited to 100., The nominations will be handled in the order of arrivals. However, all members could get a chance for nominations, although the maximum of 8 or 4 may not be reached due to the limit of the total number of 100.

Description of PT Samples

The sample to be tested is the heavy metals (Lead and Nickel) in water. Participating laboratories will be given one sample bottle labeled APLAC T104 (KOLAS PT-2016-18) from K-water. The bottle contains about 20 mL of a transparent and colorless mixture including heavy metals (Lead and Nickel) in water. Upon receipt of the sample, participating laboratories should carefully inspect the sample for any physical damages and defects. Participating laboratories shall promptly acknowledge receipt of the sample by returning the Receipt Form (for participating laboratories) through e-mail and fax to the contacts mentioned above. New samples will be replaced for any damaged claims. The intact sample is recommended to be stored in a secure environment at room temperature before use.

Homogeneity and Stability Study

The samples will be tested by K-water both before and after the circulation to check the homogeneity and stability of the samples according to ISO 13528:2015 Annex B.

The homogeneity of the test materials is a fundamental requirement for an inter-laboratory study. Thus, prior to all samples being distributed to K-water, they will be tested for homogeneity and stability to ensure that they are sufficiently homogeneous to be used in the proficiency program. The homogeneity test will be carried out to 12 samples and each sample will be analyzed twice. The parameters used in this test are the same as those performed by participating laboratories. The results of this homogeneity testing will be analyzed statistically using ISO 13528:2015 Annex B.

Besides homogeneity of samples, the stability of the material with respect to long

term storage has to be verified. The stability test will be carried out to 3 samples at least. This verification will be done subsequently as the testing deadline. The result of this testing will be analyzed statistically using ISO 13528:2015.
Results of the homogeneous test and stability test will be submitted to K-water for evaluation and a decision as to whether the samples are suitable or not suitable for distributing in APLAC proficiency test program will be made.

Test Procedures

The measurement should be conducted with a normal method used in an inter-laboratory comparison after 200 times dilution. All standard methods for Lead and Nickel in water can be used.

Reporting of Results

Participating laboratories are required to send the Results Sheet, before the deadline (July 15th, 2016). No other documentation is required. Uncertainties should be calculated using the method in the ISO Guide for the Expression of Uncertainty in Measurement.

Analysis of Results

KOLAS (Korea Laboratory Accreditation Scheme) and K-water will analyze the results and produce a report. K-water is the proficiency testing provider accredited by KOLAS for the design, preparation, and operation of PT schemes that meet the requirements of ISO/IEC 17043.

Assigned Value and Performance Assessment

There is a way of performance assessment.

z-score with the robust mean

The assigned value for the test material used in the round of this proficiency testing scheme is the robust mean of the results reported by all the participants in the round. Evaluation of the Performance with ISO 13528:2015 in reference, z-scores will be applied to evaluate the test results that were given by the participants, as following:

$$z = \frac{x_i - x_{pt}}{\sigma_{pt}}$$

Where x_i is the measurement value of the participant, x_{pt} is the robust mean (assigned value), σ_{pt} is the standard deviation for proficiency assessment.

The assigned value (x_{pt}) and SDPA for each item are derived from the results submitted by participants after eliminating the apparent blunders following Algorithm A in Annex C (normative) of ISO 13528.
The samples are from CRM (certified reference material) and a reference value from the provider is to be compared with the assigned value. The standard deviation for proficiency assessment is set with reference to data obtained from a round of proficiency testing scheme.

Interpretation of the report
For the evaluation of performance, the interpretation is as follow:
$|z| \leq 2.0$ Satisfactory
$2.0 < |z| < 3.0$ Questionable
$|z| \geq 3.0$ Unsatisfactory

Distribution of Samples
The samples are stored in rigid covered cases designed to restrict movement and prevent damage to the samples, includes Material Safety Data Sheet (MSDS) to meet transportation regulation requirement upon request.

Reporting of Results
The participants must send the result to K-water as well as your Accreditation body.

Reporting to the Participants
After the test results have been returned back to K-water, statistical analysis will be performed. With the approval of APLAC Proficiency Testing Committee, the final report will be distributed.

Program schedule

Event	Period	Responsible
Invitation of participants	May to June, 2016	KOLAS
Dispatch of PT samples	June 2016	K-water
Submit the results	July 2016	KOLAS/K-water

Draft final report	September to October 2016	KOLAS/K-water

Confidentiality

To preserve this confidentiality, participants receive reports giving all results for that assessment but without identifying individual laboratories. The code number (M-***) assigned to a participant in this program is made known to the contact person or authorized person of his laboratory and the respective nominating accreditation body when the application is accepted.

References

[1] ISO/IEC 17043:2010, Conformity assessment -General requirements for proficiency testing.

[2] ISO 13528:2015, Statistical methods for use in proficiency testing by interlaboratory comparisons.