



APLAC T089 Proficiency Testing Programme "Determination of As,Cu,Pb and Cd in Laver"



# **APLAC Proficiency Testing Program**

**Determination of As, Cu, Pb and Cd in Laver** 

## 1. Objective

As, Cu, Pb and Cd are toxic metallic elements that are known to exhibit the respiratory, digestive and nerve apparatus injurious properties. The food containing them will accumulate the toxins and thus may pose a risk to human health when eaten. Because of the threat to human health, many countries have enacted regulations on the maximum permitted contents of As, Cu, Pb and Cd in various food categories. The testing of these toxins is very important to international food trade and protecting human health. This Proficiency Testing (PT) program proposed here is to evaluate the performance of laboratories for quantitative testing of As, Cu, Pb and Cd in laver. This program also intends to make an investigation on the measurement capacity of the laboratories in different countries and regions, understand the difference between the different laboratories, and help the specific laboratories to make improvement.

## 2. Organization and Responsibilities

This program is organized by China National Accreditation Service for Conformity Assessment (CNAS), with Technical Center of Shandong Entry-exit Inspection and Quarantine Bureau (SDCIQ) as the collaborator, under the auspices of Asia Pacific Laboratory Accreditation Cooperation (APLAC). During this proficiency testing program, CNAS would be responsible for proposing this program for approval by the APLAC Proficiency Testing Committee, inviting participants, circulating the draft report and final report to participants and acting as a contact point among APLAC, participating accreditation bodies / participants and Technical Center of SDCIQ. Technical Center of SDCIQ will be responsible for the preparing, packaging, dispatching samples, handling participants' queries, receiving the test results, receiving samples and make confirmation evaluation of the samples, statistical analysis, issuing interim and final report. Technical Centre of SDCIQ is accredited against ISO/IEC 17043.

#### 3. Points of contacts

The contact details are given below:

Coordinator in CNAS:

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Coordinator of SDCIQ:

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#### 4. 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 4 laboratories from your economy to participate in this program. Each of others is invited to nominate up to a maximum of 2 laboratories to participate. Note that preference will be given to laboratories that are accredited for the proposed tests.

#### 5. Description of PTIs

The laver powder samples will be sent to participant in sealed bottles with labels which are the same as the labels shown on the Result Sheet. The weight of each sample is approximately 25g. The identifier is labeled on each product clearly.

6. Properties Measured for Comparison and Requirement

As, Cu, Pb and Cd will be measured in this proficiency testing. Tests are asked to perform twice. The average results are required to be reported in mg/Kg, with three significant digits.

Uncertainty is required to be calculated and reported by the participating laboratories. The total uncertainty of each measured quantity shall be expressed in expanded uncertainty with a confidence interval of 95 % or a coverage factor k=2.

#### 7. Homogeneity & Stability Study

10 samples will be selected randomly from the prepared bottles of samples and analyzed in duplicate for determining the sample in homogeneity in accordance with the recommendation stipulated in ISO 13528:2005(Statistical methods for use in proficiency testing by interlaboratory comparisons).

Six samples will be taken randomly and be analyzed at room temperature for monitoring the stability of analytes between sample dispatch and after submission of results.

#### 8. Assign Values

Assigned values will be given by the medians derived from the results reported by participating laboratories.

### 9. Evaluation of the Performance

With ISO 13528 in reference, z value will be applied to evaluate the test results that given by the participants, as following:

$$Z = \frac{x - X}{\sigma}$$

Where x=the results reported by participant's,

X= the assigned value

 $\sigma$ =the standard deviation for proficiency testing, NIQR

The summary statistics, such as the assigned value and standard deviation for assessment, will be derived from the results reported by participating laboratories. The criteria of z-score assessment are:

(a)	$ z  \le 2.0$	Satisfactory	
<i>(b)</i>	2.0 <  z  < 3.0	Questionable	Warning Signal
(c)	$ z  \ge 3.0$	Unsatisfactory	Action Signal

## 10. Reporting to the Participants

After the results returning back to Technical Center of Shandong Entry-exit Inspection and Quarantine Bureau, statistical analysis of the results will be executed as soon as possible. With the approval of APLAC, the final report will be distributed.

## 11. Confidentially

Participants in the reports will only be indicated by the lab code.

### 12. Program Schedule

Event	Period	Responsible
Invitation of	Son Oct 2014	CNIAS
participants	Sep.–Oci 2014	CINAS
Dispatch of samples	Oct. 2014	Technical Center of SDCIQ
Submission of results	Dec. 2014	Technical Center of SDCIQ
Statistical analysis of	Dec.2014- Jan. 2015	CNAS/ Technical Center of
results		SDCIQ
Duaft final non ant	Feb. 2015-Mar.2015	CNAS/ Technical Center of
Drait final report		SDCIQ

## 13. Reference

- ISO/IEC 17043:2010, Conformity assessment General requirements for proficiency testing.
- [2] APLAC PT002-2003, testing interlaboratory comparisons.
- [3] ISO 13528:2005, Statistical methods for use in proficiency testing by interlaboratory comparisons.