

**THE ASEAN FOOD TESTING LABORATORY COMMITTEE (AFTLC)**

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**GUIDELINE FOR ASEAN FOOD  
REFERENCE LABORATORIES**

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## **Foreword**

This Guideline has been prepared in order to provide a reference document for ASEAN Food Reference Laboratories (AFRLs) and it may be used as the guideline for National Food Reference Laboratories (NFRLs), where appropriate. The intentions of the Guideline are to provide the performance criteria for AFRLs as well as to ensure they understand their responsibilities, roles and key activities within the ASEAN Network of laboratories supporting the food sector.

The Guideline also provides references to internationally accepted standards, its associated requirements, and specific technical requirements of food reference laboratories. The Guideline also provides a common understanding of the technical terms and methodologies used in food reference laboratories.

More definitive information which applies to laboratories is included in the international standard, ISO/IEC 17025 - "General requirements for the competence of testing and calibration laboratories".

## **Glossary of Abbreviations**

ACCSQ	ASEAN Consultative Committee on Standards and Quality
AFSN	ASEAN Food Safety Network
AMS	ASEAN Member State
AOAC	Association of Official Analytical Chemists
AFRL	ASEAN Food Reference Laboratory
ARASFF	ASEAN Rapid Alert System for Food and Feed
BAM	Bacteriological Analytical Manual
CAC/GL	Codex Alimentarius Commission/Guideline
CEN	Committee for European Standardization
CRM	Certified reference material
GMO	Genetically Modified Organism
GHP	Good Hygiene Practice
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Point
NFRL	National Food Reference Laboratory
ISO/IEC	International Organisation for Standardisation/International Electrotechnical Commission
IUPAC	International Union of Pure and Applied Chemistry
PFPWG	Prepared Foodstuff Products Working Group
PT	Proficiency testing
PTP	Proficiency testing provider
RM	Reference material
VIM	International vocabulary of metrology

## **1. Introduction**

Effective national food control systems are essential to protect the health of consumers. They are also critical in enabling countries to ensure the safety and quality of their food.

The ASEAN Member States (AMSs) in recognizing these facts have, in moving towards an ASEAN Economic Community by 2015, focussed on building a regional food safety infrastructure which comprises of the followings:

- ASEAN Common Requirements for Food Control, Food Hygiene and Food Labelling
- Guidelines and training tools for the application of Good Hygiene Practice (GHP), Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point (HACCP) in the industry;
- ASEAN Rapid Alert System for Food and Feed (ARASFF)
- Network of ASEAN Food Reference Laboratories (AFRLs) covering areas, such as Genetically Modified Organism (GMO), heavy metals and trace elements, veterinary drug residues, pesticide residues, mycotoxins, microbiology, and other areas related to food.

This Guideline deals with the development of the network of AFRLs to meet the needs of the regional food safety infrastructure and to satisfy subsequent legislation and policies in Food Control Systems.

## **2. Terms and definitions**

Terms and definitions used in this document are referred to those identified in internationally recognized organizations, such as Codex Guidelines on Analytical Terminology (CAC/GL 72-2009), Conformity assessment - Vocabulary and general principles (ISO/IEC 17000), and International vocabulary of basic and general terms in metrology (VIM). Other specific definitions used in this document are defined below.

***ASEAN Food Reference Laboratories (AFRLs)*** are government testing laboratories competent in the specific areas of expertise designated by ACCSQ PFPWG.

***National Food Reference Laboratories (NFRLs)*** are testing laboratories in the specific areas of expertise designated by the governments of ASEAN Member States. The NFRLs shall be members of the network led by AFRLs.

***Government laboratory*** is a laboratory which reports directly to the government through the command line and it is the government which controls and administers the laboratory policy and functions.

***Accreditation*** means the third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks.

***Proficiency testing (PT)*** means a periodic assessment of the performance of individual laboratories and groups of laboratories that is achieved by an independent testing body of typical materials for unsupervised analysis by the participants. (ISO/IEC 17043: Conformity assessment - General requirements for proficiency testing)

***Method validation*** means the confirmation by examination and the provision of objective evidence that the particular requirements for the specific intended use are fulfilled.

The process of proving that analytical method is acceptable for its intended use.

## **3. General requirements for the AFRLs**

An AFRL shall be an ISO/IEC 17025 accredited government laboratory **and the management shall have clear policy in supporting AFRL activities including capacity building and resource allocation**. It is designated mainly to provide technical support in the area of competence. The details of roles and responsibilities of AFRLs are described in the Terms of Reference of AFRL in Annex II-Part 3 - Technical Competence of ASEAN Food Reference Laboratories as shown below.

- 3.1 The AFRLs shall be accredited by internationally recognized accreditation bodies based on ISO/IEC 17025 General Requirement for the Competence of Testing and Calibration Laboratories.
- 3.2 The AFRLs shall participate and demonstrate competence in the relevant international proficiency testing for the respective designated area of expertise.
- 3.3 The AFRLs shall have adequate facilities to conduct training, including competent personnel with adequate training experience in the analytical techniques applied in their area of competence.
- 3.4 The AFRLs shall provide/coordinate PT programme according to ISO/IEC 17043, ISO/TS 22117 or interlaboratory comparison as appropriate.
- 3.5 The AFRLs shall be the resource center for provision of information for certified reference materials (CRMs) or reference materials (RMs).

#### **4. Key activities of the ASEAN Food Reference Laboratories (AFRLs)**

There are many activities that AFRLs shall perform in the specific areas in order to serve food testing laboratories in AMSs. Key activities of AFRLs are elaborated as shown below.

##### **4.1 Provision of training in relevant areas of expertise**

To strengthen capabilities of NFRLs of AMSs, AFRLs should conduct the training in the specific areas of expertise as appropriate, when:

- 4.1.1 PT results obtained by the AMSs laboratories are not satisfactory.
- 4.1.2 new technology or methodologies are introduced.
- 4.1.3 requested by AMSs.

Ideally, the training should consist both theoretical and practical sessions.

##### **4.2 Proficiency testing provider (PTP)**

This is the only independent means by which a laboratory's competence (proficiency) can be demonstrated. It is of utmost importance that the NFRLs and other AMSs laboratories take part in relevant PT.

Therefore, AFRLs shall provide and/or coordinate proficiency testing (PT) in the ASEAN region and provide pertinent information on proficiency testing or interlaboratory comparisons held by other relevant organizations.

PT scheme should be conducted according to ISO/IEC 17043 Conformity assessment – General requirements for proficiency testing. The microbiological PT scheme should also comply with ISO/TS 22117 – Microbiology of food and animal feeding stuffs – specific requirements and guidance for proficiency testing by interlaboratory comparison.

In case PT scheme is not available, AFRL should conduct interlaboratory comparison.

##### **4.3 Resource of information**

The AFRLs will provide information on:

- certified reference materials (CRMs) or Reference Materials (RMs);
- PT programme provider;
- test methods;
- experts in the specific areas;
- NFRLs of AMSs;
- reference laboratories in other regions.

#### **4.4 Selection of test methods**

4.4.1. AFRLs should suggest suitable official test methods elaborated by internationally recognised organizations such as Codex, ISO, BAM, CEN, AOAC, IUPAC, etc. The suitable test methods should be selected by using the criteria approach, such as described in the Codex Procedural Manual or other appropriate criteria of relevant internationally recognised organizations. Further details are shown in Annexes IV and V.

#### **4.4.2. Method Validation**

In case existing methods are not suitable, AFRLs should develop and validate test methods by collaborative trial according to international recognized protocol. Approaches to be used for method validation include single-laboratory method validation and collaborative (inter laboratory) study. Further details are described in Annex VI.

#### **4.5 Coordinating and networking of NFRLs**

Each AFRLs should establish their own networking in specific areas of expertise among the AMSs in order to strengthen food testing laboratories in the region.

### **5. References**

CODEX ALIMENTARIUS COMMISSION PROCEDURAL MANUAL, 20<sup>th</sup> Edition. Rome, 2011

Commission Decision 2002/657/EC of 12 August 2002 Implementing Council Directive 96/23/EC Concerning the Performance of Analytical Methods and the Interpretation of Results

Guidelines for Collaborative Study of Procedures to Validate Characteristics of a Method of Analysis, J. AOAC Int., 1995, 78(5) 143A-160A

ISO/IEC 17025:2005, General Requirements for the Competence of Testing and Calibration Laboratories

ISO/IEC 17043:2010, Conformity Assessment - General Requirements for Proficiency Testing

ISO/TS 22117 – Microbiology of Food and Animal Feeding Stuffs – Specific Requirements and Guidance for Proficiency Testing by Interlaboratory Comparison

ISO 5725-2: Accuracy (Trueness and Precision) of Measurement Methods and Results - Part 2: Basic Method for the Determination of Repeatability and Reproducibility of a Standard Measurement Method

JCGM 200:2008, International Vocabulary of Metrology – Basic and general concepts and associated terms (VIM), 3rd Edition

The International Harmonized Protocol for the Proficiency Testing of Analytical Chemistry Laboratories, Pure Appl. Chem., 2006, Vol. 78, No. 1, pp. 145-196