

# AFTLC Bulletin



ASEAN FOOD TESTING LABORATORY COMMITTEE

4<sup>th</sup> ISSUE (2022)

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### **Acknowledgements**

## Preface

The 1st bulletin of the ASEAN Food Testing Laboratory Committee (AFTLC) was published in the year 2019 with the main objective of describing the activity output and impact of AFTLC and ASEAN Food Reference Laboratories (AFRLs). The first bulleting also described the development and progress of laboratories in Member States which are do not have AFRL. This bulletin also creates a channel of communication between AFTLC's ASEAN Member States, other committees in ASEAN, as well as experts in the field. It was decided to publish these bulletins annually to showcase the activities of AFRLs, and also disseminate advanced technologies in the field.

Presently, the 4th issue of the AFTLC bulletin has been focused on 3 ASEAN member states which are Thailand, Lao PDR and Malaysia. This 4th issue has invited our stakeholders International Life Sciences Institute Southeast Asia Region (ILSI-SEAR) and Physikalisch-Technische Bundesanstalt (PTB) who have been supporting AFTLC activities to highlight their cooperation.

The Summary reports of 19th and 20th AFTLC meetings together with the achievement of AFRL for Heavy Metals and Trace Elements and AFRL for Genetically modified organisms (GMOs) will be concluded for the period of 5 years, and Lao food safety laboratory and lab network activities, these topics provided information related to activities in the AFTLC session. Furthermore, other topics are “crisis to opportunity: roles of food testing laboratories during COVID-19 Pandemic, Thailand Experience” and “National Committee On Food Analysis of MALAYSIA” shared information can be useful for ASEAN Member States, other countries and other organizations. Hopefully, this information is very much valuable to readers.

## ABBREVIATIONS

<b>ACCSQ</b>	<b>ASEAN Consultative Committee on Standards and Quality</b>
<b>AFRL</b>	<b>ASEAN Food Reference Laboratory</b>
<b>AFSN</b>	<b>ASEAN Food Safety Network</b>
<b>AFTLC</b>	<b>ASEAN Food Testing Laboratory Committee</b>
<b>AMS</b>	<b>ASEAN Member State</b>
<b>ARASFF</b>	<b>ASEAN Rapid Alert System for Food and Feed</b>
<b>CRM</b>	<b>Certified Reference Material</b>
<b>ISO/IEC</b>	<b>International Organisation for Standardisation/ International Electrotechnical Commission</b>
<b>NFRL</b>	<b>National Food Reference Laboratory</b>
<b>PFPWG</b>	<b>Prepared Foodstuff Products Working Group</b>
<b>PT</b>	<b>Proficiency Testing</b>
<b>RM</b>	<b>Reference Material</b>

## Summary reports of AFTLC meetings

### 19th ASEAN FOOD TESTING LABORATORY COMMITTEE MEETING

The 19th Meeting of the ASEAN Food Testing Laboratory Committee (AFTLC) was held on 27-28 September 2021 through video conference. The Meeting was chaired by Mrs. Nur Nisrinah Hj Awg Yusof, Chief Scientific Officer, Head of Health Sciences Division, Department of Scientific Services, Ministry of Health, Brunei Darussalam and vice chaired by Mr. Chea Eakkhim, Laboratory Director, CCF Under the Ministry of Commerce, Cambodia.

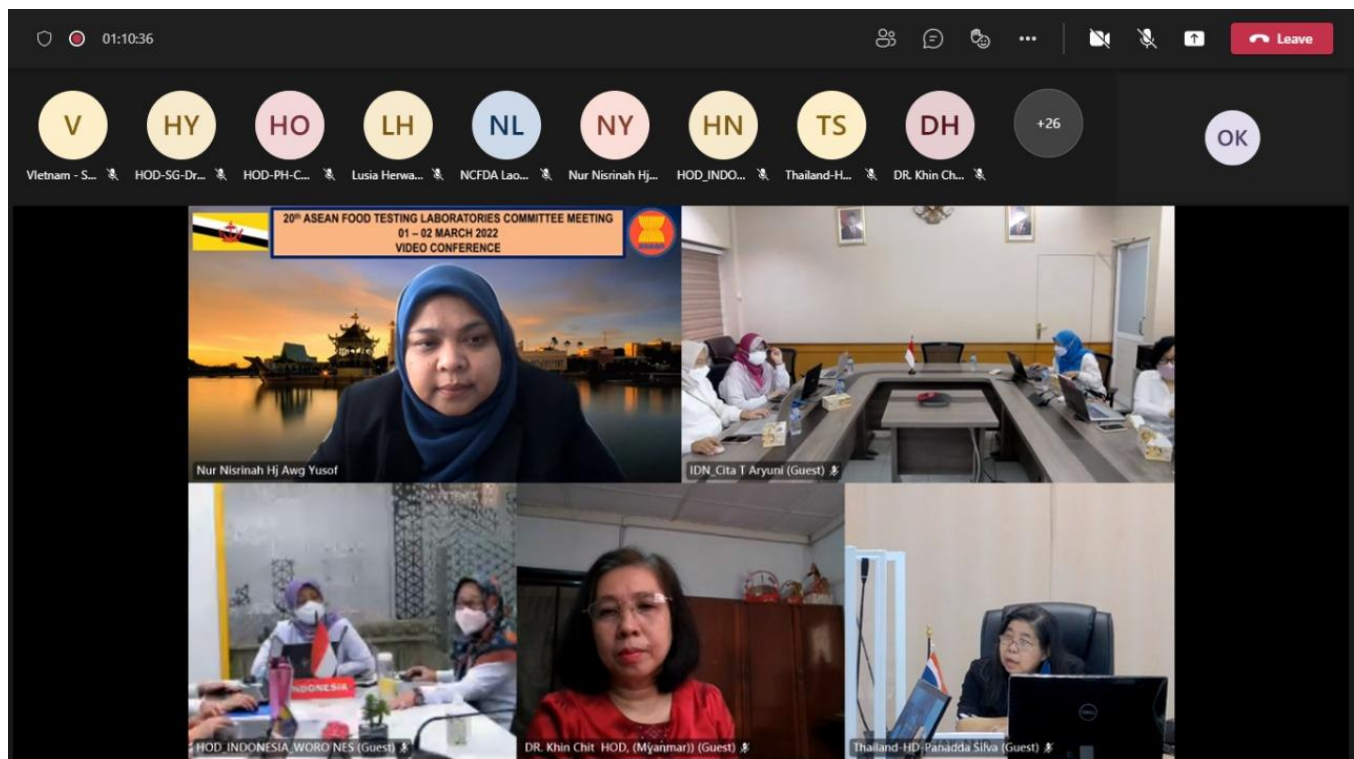
The Meeting was attended by delegates from Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam and the ASEAN Secretariat. The representatives from the Physikalisch-Technische Bundesanstalt (PTB) Germany and International Life Sciences Institute Southeast Asia Region (ILSI-SEAR) were in attendance for the specific session. The agenda of the meeting included the yearly progress report presentation by 10 ASEAN Food Reference Laboratories (AFRLs), observations on the on-site visit for the both AFRL for GMO and role of AFRL for Food Microbiology in the current pandemic situation.

The meeting also deliberated upon the survey template to be used for collecting the necessary background information to be considered for the establishment of new AFRL. Activities supported by PTB Germany and ILSI were considered. The draft bulletin was discussed, and Indonesia, Philippines, Cambodia, Viet Nam were given the task to contribute and coordinate the development of the 3rd AFTLC bulletin.

## 20th ASEAN FOOD TESTING LABORATORY COMMITTEE MEETING

The 20th Meeting of the ASEAN Food Testing Laboratory Committee (AFTLC) was held online on 1-2 March 2022. The Meeting was chaired by Mrs. Nur Nisrinah Hj Awg Yusof, Chief Scientific Officer, Head of Health Sciences Division, Department of Scientific Services, Ministry of Health, Brunei Darussalam and vice chaired by Mr. Che Ratana, Chief of Bureau Food Additive Analysis Laboratory, CCF Directorate General, Ministry of Commerce, Cambodia.

The Meeting was attended by delegates from Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam and the ASEAN Secretariat. The representatives from the Physikalisch-Technische Bundesanstalt (PTB) Germany and International Life Sciences Institute Southeast Asia Region (ILSI-SEAR) were in attendance for the specific session. The meeting discussed several important topics of AFTLC including discussing the possibility to conduct the on-site assessment, revising AFTLC manual and pool of experts. Reports from non-AFRLs members (Brunei Darussalam, Cambodia, Lao PDR and Philippines) were presented on their activities on food safety. The Meeting updated steps for the establishment of new AFRLs in the AFTLC manual, and also discussed the contents of the 4th Bulletin. Furthermore, the Meeting discussed training needs assessment and training activities which were supported by PTB Germany and ILSI.



# ASEAN Food Reference Laboratory (AFRL) for Heavy Metals and Trace Elements in Food



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## Introduction of the Host Department

The Department of Medical Sciences (DMSc) was founded in 1942 under the auspice of the Ministry of Public Health, with a main objective in promoting strategies to resolve these national and public concerns, particularly in research and development. Initially, the DMSc was responsible for four areas i.e. drug quality control, vaccine production, medical laboratory diagnosis, and food analysis. In the past 60 years, occasional reorganisation of the departmental structure has taken place to improve its efficiency and responsibilities to serve the public.



The Bureau of Quality and Safety of Food (BQSF) was established in 2002 due to the Government Administration Act, (issue 5) B.E. 2545 (2002), according to the Royal Decree Organising of Department of Medical Sciences (DMSc), Ministry of Public Health. The BQSF is the national reference laboratory for the assessment of quality and safety of food according to the regulations under the Thai Food Act and resides the ASEAN Food Reference Laboratory (AFRL) for Heavy Metals and Trace Elements. The BQSF also has main responsibilities for developing and setting-up of standard methods for food analysis, researching in the areas of food safety, providing trainings/workshop, proficiency testing (PT) schemes and food testing services.

## Introduction to the AFRL for Heavy Metals and Trace Elements

The ASEAN Food Reference Laboratory (AFRL) for Heavy Metals and Trace Elements was established in 2004 by Expert consultation on Strategies for Strengthening Food Testing in ASEAN in the framework of the Food Sub-Programme of the EC-ASEAN Economic Cooperation Programme on Standards, Quality and Conformity Assessment. The AFRL for Heavy Metals and Trace Elements has continuously strengthen and increased the technical capabilities of its medical scientist, as well as conducted many activities, such as PT provision and training courses in order to enhance food testing laboratory capacities, to promote collaborations and the networking among ASEAN region.





Figure 1: Team medical scientists of the AFRL for Heavy Metals and Trace Elements, led by Miss Kannika Jittiyossara

In January 2020, the team medical scientists responsible of the AFRL for Heavy Metals and Trace Elements (Figure 1) were re-assessed by the panel of experts appointed by the ASEAN Food Testing Laboratory Committee (AFTLC).

The finding report showed that the AFRL conformed to the ToR for AFRLs and consequently, was endorsed by the 31<sup>st</sup> PFPWG in November 2020 for the renewal for another term of five years.

## Regional technical trainings/workshops

The AFRL for Heavy Metals and Trace Elements is a centre of expertise for analysis of metals in food and water. The laboratory is well equipped, including GF-AAS, Hydride Generation-Flame-AAS, ICP-OES, LC-ICP-MS, Mercury analyzer and Ion chromatograph (IC), for the quantifications of a wide range of metals and minerals in food and water. The provision of trainings in the area of expertise is one of the roles and functions, according to ToR of AFRLs. The first regional technical training on the application of food testing in heavy metals and trace elements, financed by European Union (EU), was organised on September 2007 at the BQSF, Thailand; there were 17 participants from 7 ASEAN Member States (AMSS). Since then, the trainings/workshops have been organised for the national food reference laboratory (NFRLs) among AMSS and on ad-hoc basis, in order to enhance food testing capabilities. The table 1 showed regional technical trainings/workshops conducted in the last eight years (2015-2022).

Table 1: Regional technical trainings/workshops conducted by the AFRL for Heavy Metals and Trace Elements

Year	Training/Workshop	Participating agency
2022	On-site workshop on the metals and mineral analysis by ICP-OES and ICP-MS (Figure 2)	Department of Scientific Services, Brunei Darussalam
2022	On-line workshops on method validation and estimation of measurement uncertainty	National Center for Food and Drug Analysis (NCFDA) Lao PDR
2022	On-line trainings on ISO/IEC 17025:2017 requirements, risk management in laboratory, statement of conformity and decision rule	National Center for Food and Drug Analysis (NCFDA) Lao PDR
2017	On-site workshop on a sample preparation and quantification of heavy metals by AAS and ICP-MS in oils and fats	Quality Testing of Goods, Directorate of Standardization and Quality Control Indonesia
2016	On-site workshop of the ASEAN-PTB Project on Strengthening Food Safety in ASEAN at Agri-Food & Veterinary Authority (AVA) of Singapore, Singapore	18 participants from 9 AMSS: Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.
2015	On-site workshop of the ASEAN-PTB Project on Strengthening Food Safety in ASEAN at Department of Medical Sciences (DMSc), Thailand (Figure 3)	18 participants from 9 AMSS: Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam





Figure 2: Workshop on the metals and mineral analysis by ICP-OES and ICP-MS in 2022



Figure 3: Workshop of the ASEAN-PTB Project on Strengthening Food Safety in ASEAN in 2015

### Proficiency testing provider (PTP)

In order to assist in the development of ASEAN member countries' capacities, the AFRL for Heavy Metals and Trace Elements has organised the PT schemes, financed by Thai Government budget, for testing laboratories in AMSs since 2005 until 2022, as a total of 11 schemes (Table 2). Over the years, the number of the participating laboratories of our PT schemes has gradually increased (Figure 4). The aim of the PT scheme is to provide an independent assessment of the competence of participating laboratories for analysis of metals in food. Together with the use of validated method and calculation of uncertainty measurement, the PT is an essential element of laboratory quality assurance. The operation to provide the PT schemes followed and met the requirements of ISO/IEC 17043; the PT scheme of metals organised by the AFRL for Heavy Metals and Trace Elements has been accredited complying with ISO/IEC 17043 since 2021.

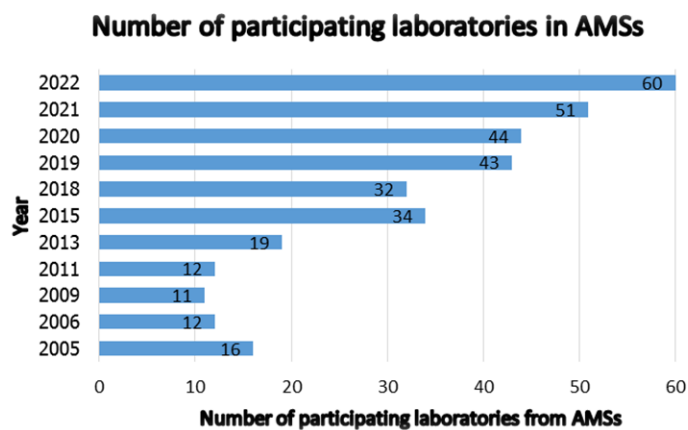


Figure 4: An increased in the number of the participating laboratories of the PT schemes organised by the AFRL for Heavy Metals and Trace Elements from 2005 to 2022



Table 2: Regional PT schemes organised by the AFRL for Heavy Metals and Trace Elements from 2005 to 2022








Date	Matrix/	Analytes	Details of participating labs e.g. No of labs and country
July 2022	Fish powder	total As, Cd, Pb, Mn, total Hg, and Zn	60 participating labs from 9 AMSS
July 2021	Fish	total As, Cd, Cr, Cu, Fe, Pb, Mn, total Hg, Ni and Zn	51 participating labs from 9 AMSS
July 2020	-Test solution -Seaweed	total As, Cd, Pb, total Hg, Cu, Zn, Mn and Fe	44 participating labs from 9 AMSS
July 2019	Milk powder	Cd, Pb total Hg and total As	43 participating labs from 9 AMSS
April 2018	Rice Flour	Cd and total As	32 participating labs from 8 AMSS
September 2015	Drinking water	Fe, Cd, Cu, Pb and Zn	34 participating labs from 9 AMSS
September 2013	Dried seafood	Pb, Cd, total As, total Hg, Cu, Zn and Fe	19 participating labs from 7 AMSS
June 2011	Chilli powder	total As and total Hg	12 participating labs from 7 AMSS
August 2009	Whey powder	Pb, Cd, total As and total Hg	11 participating labs from 7 AMSS
June 2006	Mussel powder	Cd and Pb	12 participating labs from 5 AMSS
December 2005	Graham flour	Cd and Pb	16 participating labs from 7 AMSS

## ASEAN Laboratory Network on Metals and Trace Elements

The establishment of a functioning ASEAN network of food testing laboratories of Heavy Metals and Trace Elements is among the duties of the AFRL. The AFRL for Heavy Metals and Trace Elements collected the contact data of the National Food Testing Reference Laboratories (NFRLs) and Food Testing Laboratories within the ASEAN Member States (AMSS), through the questionnaires and the participation in the PT schemes. The mandated NFRLs were identified and provided by the AFTLC Focal Point of each AMS. The list of ASEAN Laboratory Network on Metals and Trace Elements is shown in Table 3.

Table 3: Regional PT schemes organised by the AFRL for Heavy Metals and Trace Elements from 2005 to 2022

Member State	Agency name
 Brunei Darussalam	<ul style="list-style-type: none"> <li>Department of Scientific Services, Ministry of Health (NFRL)</li> </ul>
 Cambodia	<ul style="list-style-type: none"> <li>Science, Technology and Innovation National Laboratory (STINL) (NFRL)</li> </ul>
 Indonesia	<ul style="list-style-type: none"> <li>National Quality Control Laboratory of Drug and Food (NQCLDF) (NFRL)</li> <li>Balai Besar Industri Agro (Center for Agro-Based Industry/CABI) (NFRL)</li> <li>Balai Besar POM di Mataram</li> <li>Balai Besar POM di Bandar Lampung</li> <li>Balai Besar POM di Semarang</li> </ul>

Member State		Agency name
		<ul style="list-style-type: none"> <li>● Fish Quarantine and Inspection Standard Testing Laboratory (FQI-STL)</li> <li>● Laboratory for Quality Testing of Goods</li> <li>● TIU Regional Fish Quarantine and Inspection Agency Manado</li> <li>● TIU Regional Fish Quarantine and Inspection Agency Denpasar</li> <li>● TIU Regional Fish Quarantine and Inspection Agency Medan 1</li> <li>● Testing Laboratory of Main Center for Freshwater Aquaculture, Sukabumi</li> </ul>
	Lao PDR	<ul style="list-style-type: none"> <li>● National Center of Food and Drug Analysis (NCFDA) (NFRL)</li> </ul>
	Malaysia	<ul style="list-style-type: none"> <li>● Department of Chemistry Malaysia (NFRL)</li> <li>● National Public Health Laboratory Sungai Buloh</li> <li>● Perlis Food Safety and Quality Laboratory</li> <li>● Kelantan Food Safety and Quality Laboratory</li> </ul>
	Myanmar	<ul style="list-style-type: none"> <li>● Food Chemical Laboratory (Nay Pyi Taw), Department of Food and Drug Administration (NFRL) Agricultural Products Analytical Laboratory (APAL)</li> <li>● Food Chemical Laboratory, Yangon</li> </ul>
	Philippines	<ul style="list-style-type: none"> <li>● Food and Drug Administration- Common Services Laboratory-Alabang Testing and Quality Assurance Laboratory (NFRL)</li> </ul>
	Singapore	<ul style="list-style-type: none"> <li>● National Centre for Food Science, Singapore Food Agency (SFA) (NFRL)</li> </ul>
	Thailand	<ul style="list-style-type: none"> <li>● Bureau of Quality and Safety of Food, Department of Medical Sciences, MOPH (AFRL &amp; NFRL)</li> <li>● 15 Regional Medical Sciences Centers located in prominent provinces throughout Thailand, including Trang, Udon thani, Chonburi, Samut songkhram, Nakhon ratchasima, Khonkaen, Ubon ratchathani, Nakhonsawan, Phitsanulok, Chiangmai, Surat thani, Songkhla, Chiangrai, Phuket, and Nonthaburi</li> </ul>
	Viet Nam	<ul style="list-style-type: none"> <li>● National Institute for Food Control (NIFC) (NFRL)</li> <li>● Quality Assurance and Testing Center 3 (QUATEST 3)</li> </ul>

## Collaborations, study visits and participation in international forums

The AFRL for Heavy Metals and Trace Elements has networked not only with national food reference laboratories in ASEAN, but also with other relevant agencies. Besides providing the trainings and PT schemes to AMSs, medical scientists from the AFRL for Heavy Metals and Trace Elements involved in various international collaboration and participated in international forums, in forms of study visits (to exchange experiences, skills, tacit and explicit knowledge among laboratory staff) and of Memorandum of Understanding among inter-ministries of health.

2021-2022 Collaboration between Department of Medical Sciences (DMSc), Ministry of Public Health, Thailand and National Center for Food and Drug Analysis (NCFDA), Ministry of Health, with the support of ARISE Plus: the implementation of ISO/IEC 17025:2017 quality system into NCFDA chemical food testing laboratory of heavy metals and mycotoxins in food.

2019 Collaboration between Department of Medical Sciences (DMSc), Ministry of Public Health, Thailand and National Health Laboratory, Maldives Food and Drug Authority (NHL-MFDA), Republic of Maldives, with the support of WHO: the DMSc identified gaps and provided the training course focused on food analysis and laboratory quality system for testing pesticide residues, heavy metals and antimicrobial residues in food (Figure 5).



*Figure 5: Collaboration between DMSc and NHL-MFDA in 2019*



*Figure 6: Oral presentation by Dr. Sirichai Sunya at Food Testing Laboratory Capacity Building Workshop in Beijing, China, in December 2019*

2019 Food Testing Laboratory Capacity Building Workshop with the theme of strengthening laboratory capacity building cooperation and improving laboratory testing performance, funded by Chinese Asia Pacific Economic Cooperation Fund: Dr. Sirichai Sunya presented a talk on “ASEAN-PTB Project on Strengthening Food Safety in ASEAN” (Figure 6).

2018 – Two-day study visit of the AFRL for Heavy Metals and Trace Elements by two senior researchers from Food and Nutrition Research Institute (FNRI), Department of Science and Technology, Philippines.

2016 - Two-day study visit of the AFRL for Heavy Metals and Trace Elements by three top managers from National Institute of Food and Drug Safety Evaluation, Busan Regional Food & Drug Administration and Consumer Risk Prevention Bureau of the Ministry of Food and Drug Safety (MFDS), Republic of Korea.

2015 to 2022 Participation as a delegate in the Codex Committee on Contaminants in Foods (CCCF)

2015 to 2022 Participation in the submission of contaminants monitoring data (heavy metals and mycotoxins) to the Global Environment Monitoring System (GEMS). The BQSF, acting as National Food Reference Laboratories (NFRL) together with other food testing laboratories in Thailand, have regularly provided the monitoring and surveillance data which are collected by the National Bureau of Agricultural Commodity and Food Standards (ACFS), and then submitted to GEMs in supporting the establishment of Codex Maximum Limit for contaminants.

## Achievements in Quality Management Systems

The laboratory of Bureau of Quality and Safety of Food has been accredited complying with ISO/IEC 17025 and the requirements of the Bureau of Laboratory Quality Standards (BLQS) since 2007 in the field of Food Testing. The scope of testing has been continuously expanded in response to Thai Food Act and to international standards.

The AFRL for Heavy Metals and Trace Elements, as the Proficiency Testing Provider (PTP), has organised the PT scheme of metals in food for ASEAN Member States since 2005 and the PTP of metals in food and water has been accredited to ISO/IEC 17043.

The Department of Medical Sciences (DMSc) has been certified to ISO 9001:2015 – Quality Management Systems in view of its ability to consistently provide products and services that meet customer and regulatory requirements. In addition, The DMSc has been certified complying with ISO/IEC 27001:2013 - Information security management systems – for the scope of management of information security applied to the provision of IT services for laboratory information system.

## On-site visit of the AFRL for Heavy Metals and Trace Elements

The on-site visit of ASEAN Food Reference Laboratory (AFRL) for Heavy Metals and Trace Elements was conducted on January 9th, 2020 by Expert Panel Team as representatives of the AFTLC. The Expert Panel Team comprised Ms. Yat Yun Wei from Singapore Food Agency, Singapore and Mr. Mulhaquddin Sastrayuninrat from Center for Agro-Based Industry, Indonesia. The on-site visit covered the verification of compliance with the Term of Reference (ToR) of AFRLs, e.g. commitment of the top management to supporting AFRL activities including allocation of required resources for regional capacity building purposes, accreditation status and competency in the specific field, and the scope of application and application documents. The expert panel also witnessed laboratory's technical competence (Figure 7).



Figure 7: On-site visit of the AFRL for Heavy Metals and Trace Elements by AFTLC Expert Panel Team in January 2020

The assessment findings revealed that the AFRL conformed to the Term of Reference (ToR) of AFRLs. The on-site visit report had been submitted and reviewed at the 17th AFTLC Meeting. The latter had endorsed the reports and agreed to submit the recommendations to the 31st PFPWG, in November 2020, which was then endorsed for the renewal of the AFRL for Heavy Metals and Trace Elements for another term of 5 years.



## Challenges in the analysis of metals in food

Food is one of the main sources of consumer exposure to heavy metals. An increased dietary metals intake may contribute to the development of various disorders, there is a necessity for monitoring of these substances in the human diet which are frequently present in trace and ultra-trace quantities. Therefore, an analytical technique with sufficient sensitivity is required for the accurate determination of the heavy metals and trace elements in food samples. The major techniques employed for heavy metal analysis are graphite furnace atomic absorption spectrometry (GF-AAS), flame atomic absorption spectrometry (Flame-AAS), cold vapor atomic absorption spectrometry (CV-AAS), inductively coupled plasma optical emission spectrometry (ICP-OES), and inductively coupled plasma mass spectrometry (ICP-MS).

In comparing the data from the ASEAN PT schemes of metals, organised by the AFRL for Heavy Metals and Trace Elements, in 2013 and 2022, the changes in the type of instruments used in determining cadmium, lead and arsenic are explicitly observed (Figure 8). ICP-MS and ICP-OES are mostly employed by food testing laboratories in ASEAN in 2022, whereas the ASS technique (GF-AAS and Hydride-AAS) was used, in majority, in 2013. This reveals that the food testing laboratories tends to use the instruments which can measure simultaneously multiple elements in a single analytical run. ICP-OES has the advantages of being less expensive, more matrix-tolerant, and generally easier to operate than ICP-MS, however ICP-MS provides lower detection limits (ppt vs. ppb for ICP-OES) and is also capable of quantifying anions.

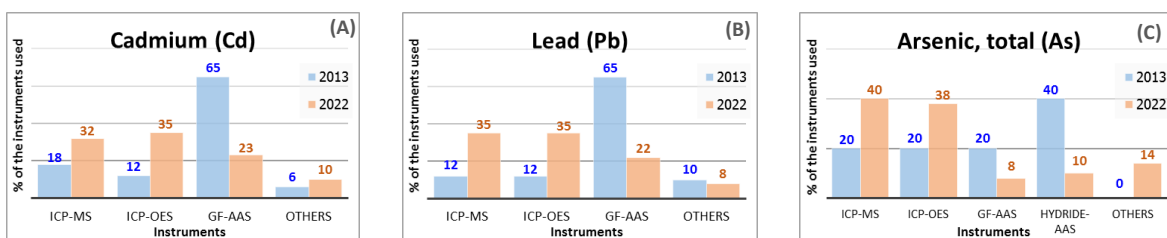


Figure 8: Comparison of the percentage of the instruments used in determining cadmium (A), lead (B) and arsenic, total (C)

Considering the Codex Standards for contaminants, the Codex Committee on Contaminants in Foods (CCCF) has reviewed, in priority, the Maximum Levels (ML) of the Codex standards which was established or reviewed  $\geq 25$  years ago. The proposed new MLs for metals in certain food categories, which are generally lower than the current MLs, have also been considered. For example, a lower ML for lead of 0.02 mg/kg for cereal-based foods for infants and young children has been generally supported by the CCCF delegates, however some delegates raised the clarification on an availability of suitable method of analysis to meet the performance criteria to enforce an ML of 0.02 mg/kg.

Therefore, the choice of the instruments is important, depending on the nature of the samples, required limit of quantitation (LOQ), the available budget to afford an instrument, national/international regulatory limits etc. If you plan to determine multi-elements and you have sufficient funds, and anticipate future expansion to measurements of other trace elements with very low LOQs, ICP-MS would be the best investment; however, it generally demands for more operator's skills.

## Contact details

Bureau of Quality and Safety of Food, Department of Medical Sciences, Ministry of Public Health,  
88/7 Tiwanon Rd. Amphoe Muang, Nonthaburi 11000 Thailand

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Website: <http://bqsf.dmsc.moph.go.th/bqsfWeb/index.php/afri/>

# ASEAN FOOD REFERENCE LABORATORY (AFRL) FOR GENETICALLY MODIFIED ORGANISM (GMO)

*AFRL for GMO since 2004.*

*Location: Jalan Sultan, 46661 Petaling Jaya, Selangor,  
Malaysia*



## Introduction

The Department of Chemistry Malaysia ([KIMIA Malaysia](#)), an agency under the Ministry of Science, Technology and Innovation (MOSTI), aims to provide scientific solution to ensure nations well-being through the highest level of competency, impartiality, professionalism, integrity and confidentiality. KIMIA Malaysia was accredited by the Unified National Laboratory Accreditation Scheme, Department of Standards Malaysia since 1994. The GMO Section at KIMIA Malaysia has been designated as the ASEAN Food Reference Laboratory (AFRL) for GMO since 2004. KIMIA Malaysia is fully committed to continue supporting the GMO laboratory as an AFRL and for their respective role and responsibilities in strengthening the technical competency of laboratory in the ASEAN region and national level, by providing scientific leadership and capacity building programmes.

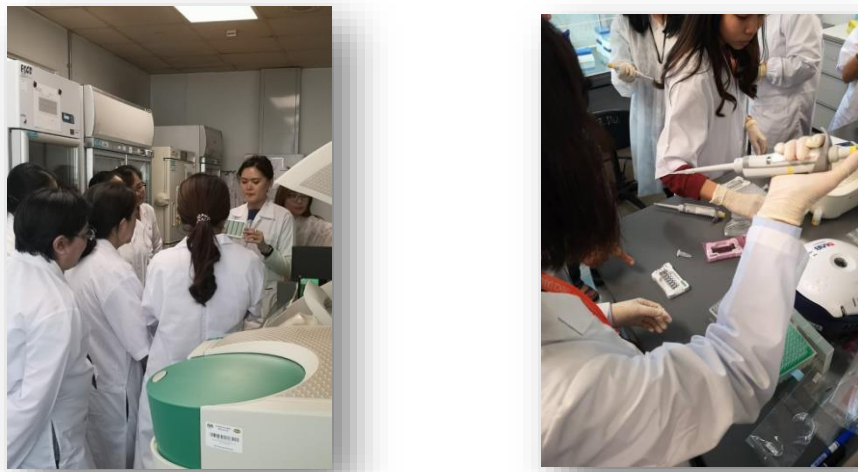
The GMO laboratory is well-equipped with basic and advanced instruments such as Real time PCR, Droplet Digital PCR and 3500 Genetic Analyzer, for the detection and identification of GM events. As an ISO/IEC 17025:2017 accredited laboratory, the test methods used are validated, verified and accredited according to the Standards Malaysia Accreditation System.





## AFRL Activities

As an AFRL, the laboratory has been conducting capacity building activities for international, ASEAN and National GMO laboratories over many years. The training course on ASEAN Quantitative Droplet Digital PCR (ddPCR) was held from 22-23 April 2019, back-to-back with the 16<sup>th</sup> Meeting of the ASEAN Genetically Modified Food Testing Network (ASEAN GMFNet). This hands-on training involved 16 participants from eight (8) ASEAN Member States (AMS) including Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam. The purpose of the training was to introduce an alternative method for quantitation in GMO analysis, strengthen and enhance the technical skills on new techniques in GMO detection as well as knowledge sharing and create networking among AMS. The core concepts covered during the training programme include principles of absolute quantitation, application of ddPCR and comparison of real-time PCR and ddPCR.



*Figure 9: Hands-on training during ASEAN Quantitative Droplet Digital PCR (ddPCR) 2019*

The GMO Section has also conducted in-house capacity building activities on ddPCR and other trainings on GMO analysis to enhance and improve the capabilities and technical expertise of laboratory personnel. Besides training programs, the laboratory was also actively involved in road shows and exhibitions to create awareness and educate the public with information on issues of GMO in food.



*Figure 10: In-house training on Droplet Digital PCR (ddPCR) 2018*



Figure 11: Minister from the Ministry of Science, Technology and Innovation (MOSTI) visiting KIMIA Malaysia booth during a road show in Johore State



Figure 12: Briefing visitors on GMO awareness during KIMIA Malaysia open day in Selangor State

Since its establishment over 18 years, KIMIA Malaysia's GMO Section has developed more than 60 accredited test methods. It continues to develop more detection methods especially on new crops and GM events such as alfalfa and papaya using Real-time PCR. KIMIA Malaysia's GMO Section is the designated laboratory for the development of event specific detection methods for the National Biosafety Board (NBB) approval as stated in the Biosafety Act 2007. As part of the approval process, the laboratory is responsible for the development of detection methods of these newly approved GMO events. Development of detection methods is important to assist enforcement agencies for monitoring and enforcement of food products that contain GMO in our markets.

**Table 3: The list of test methods based on matrix accredited during 2019-2021**

Year	Matrix	Test Method
2019	Maize	Event-Specific Method for the Detection of Maize MZHGOJG using Real-time PCR
	Oilseed Rape	Event specific method for the detection of oilseed rape line Ms8 using Real-time PCR
	Soybean	Event-Specific Method for the Detection of event DAS-81419-2 Soybean using Real-time PCR
	Processed Food	DNA Extraction and Purification Using foodproof® Sample Preparation Kit III
2021	Maize	Event-Specific Method for the Detection of Maize 98140 by Real-time PCR
		Event-Specific Method for the Detection of Maize DP-004114-3 using Real-time PCR
	Cotton	Taxon Specific Method for the Detection of Alcohol dehydrogenase C gene (AdhC gene) in cotton using Real-time PCR

Year	Matrix	Test Method
		Event-Specific Method for the Detection of Cotton Line 'LLCotton25' using Real-time PCR
		Event-Specific Method for the Detection of Cotton GHB119 using Real-time PCR
		Event-Specific Method for the Detection of Cotton GHB614 using Real-time PCR
		Event specific method for the detection of cotton T304-40 using real time PCR

As part of the terms of reference as an AFRL, the GMO laboratory has been organising Proficiency Testing (PT) programmes in GMO analysis since 2014 for Malaysia and ASEAN national GMO laboratories. Three (3) PT schemes have been provided from 2019-2021, which were GMF in Flour (2019), GMF in Soybean Grit (2020), and GM Feed in Animal Feed (2021). A summary of the PT results obtained are shown in table below.

**Table 4: List of PT schemes organised free of charge for ASEAN Members States (2019-2021)**

No.	Year	Scheme ID	Matrix/ Test Materials	Details of participating labs. (e.g. No of labs. and country)	Summary of PT results (e.g. % of satisfactory scores)
1	2019	GMF GMO 1 - 19 (Qualitative)	GMF in Flour	No. of labs: 8 Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam.	8/8 (100 % satisfactory)
2	2020	GMF GMO 2 - 20 (Qualitative)	GMF in Soya Grit	No. of labs: 10 Malaysia, Philippines, Singapore, Thailand and Viet Nam.	10/10 (100 % satisfactory)
3	2021	GMF GMO 3 - 21 (Qualitative)	GM Feed in Animal Feed	No. of labs: 8 Malaysia, Brunei, Indonesia, Malaysia, Philippines, Singapore, and Viet Nam.	6/8 (75 % satisfactory)

The AFRL for GMO has always been an active member of the ASEAN GMFNet and has contributed in many ways to the activities organised and planned by the AMS. In order to support ASEAN GMFNet 2018-2025 plan of action to move towards harmonization of accreditation, inspection and certification, the AFRL for GMO had prepared three (3) guideline documents. The three (3) documents prepared were i) ASEAN Guideline on GMO Method Validation and Verification; ii) ASEAN Guideline on Genetically Modified Organism Proficiency Testing; and iii) ASEAN Guideline for Collaborative Trial on GMO Analysis. All three guidelines have been endorsed by the ASEAN GMFNet.

## Challenges faced during the COVID-19 pandemic

On 18 March 2020, Malaysia declared a Movement Control Order (MCO) to curb the spreading of the SARS-CoV2 virus. At that time, face-to-face training programmes had to be cancelled and laboratory work force were reduced to carry out only essential services. Due to the pandemic, many training activities planned for the year 2020 and 2021 had to be cancelled. However, some of the activities that were carried out despite the MCO include PT programmes and development of GMO detection methods. Beginning of 2nd quarter of 2022, the Malaysian government announced the reopening of international borders. With this, it is our hope that AFRL activities can be planned and carried out as scheduled.



# Lao Food Safety Laboratory and Lab Network Activities

## I. Introduction

### 1. National Center of Food and Drug Analysis (NCFDA)

- NCFDA is a technical organization of the Lao Ministry of Health (MOH), under the supervision of the Food and Drug Department (FDD). It has the roles to test and analyze the quality of food, drug, health products, cosmetics, vaccines, narcotic and psychotropic drugs, toxic from food and pharmaceutical products; calibrate analytical instruments; and conduct the scientific research on food and drug testing.
- In response to the high demands of customers, the infrastructure has been improved, while the analytical capacity has also been built continuously.
- The NCFDA management has committed to the quality management system in accordance with the requirements of ISO/IEC 17025:2017 and WHOPQ. In order to meet the requirements, NCFDA has defined responsibilities and authorities of all personnel whose work affecting the laboratory activities.

### 2. Plant Protection Center (PPC)

PPC is a center under the Department of Agriculture, Ministry of Agriculture and Forestry. It has the role to protect and modify the plants to promote the food production food processing for internal consumption and export according to the green agriculture, “safe and environmental friendly concept”. Its main responsibilities are plant protection; surveys, analysis of fertilizers, seeds and pesticide residues in vegetables and fruits. PPC consists of five units such as Plant pathology, Entomology, Weed and Invertebrate, Integrated pest management, and Pesticide and Plant nutrient.

### 3. Natural Resources and Environment Research Institute (NRESRI),

NRESRI is directly under the Ministry of Natural Resources and Environment. It has the role to analyze the quality of environment; permit the business registration license for environmental laboratory, technology, management of natural and environmental resources; develop the model for research and provide services of remote sensing technology and information system in order to maintain, supply and exchange the information about natural resources and environment; and certify the scientific validity of environmental data of development program.

## II. Laboratory Activities

The laboratories carry out their activities in order to protect the consumers as follow:

1. PPC conducts the training on pesticide residues test by GT-Pesticide Residual test kit. Importantly, PPC conducts the surveys on pesticide residues in vegetables and fruits throughout the country to ensure the import and export Agro food products of Lao PDR in accordance with international and regional standards.
2. the laboratories have attempted to meet the requirements of the ISO/IEC 17025:2017 through the following activities:



- NCFDA Lab has prepared its readiness for the ISO/IEC 17025: 2017 accreditation for (1) food microbiological testing (e.g. Coliform, *E. Coli* in water, Total bacteria and Yeast and Mold in Food); (2) food chemical testing of heavy metals (e.g. Pb, As, Cd, Fe, Cu, Mn, Hg) in water by AAS and Aflatoxin B<sub>1</sub>, B<sub>2</sub> and G<sub>1</sub>, G<sub>2</sub> in Corn by HPLC-Post column/FLD.
- NRESRI has recently been assessed by the external audit for the ISO/IEC 17025:2017 accreditation for testing of heavy metals (e.g. Ca, Mg, Na, K, Cd, Cr, Cu, Ni, Pb, Fe, Zn, Mn) in water by using AAS.
- NCFDA and PPC participated in the virtual trainings as follow:
  - o Training on analysis of heavy metals by AAS/ICP and Aflatoxin B&G in Food by HPLC, method validation and verification, measurement uncertainty, ISO/IEC 17025:2017, risk management and decision rules, organized by DMSc Thailand, under the support of ARISE-Plus.
  - o Workshop on analysis of pesticide residues in fruits and vegetables by GC-MS and LC-MS, supported by ARISE-Plus,
  - o AFTLC online workshop on implementing ISO/IEC 17043, supported by PTB.
- NCFDA and NRESRI have regularly participated in the proficiency testing schemes from regional and international PT providers such as Quatest 3, IFM, DMSc, etc. The results were mostly satisfactory.

Food chemical testing



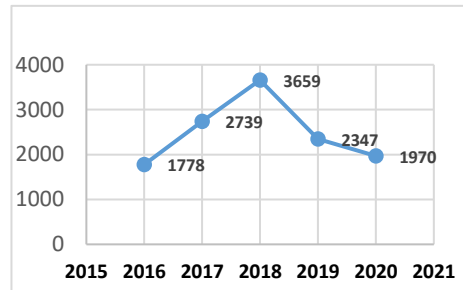
Training on Pesticide residues by GCMS and LCMS

Microbiology testing



Collected sample at the fields

Number of food samples received



Training on pesticide residues by GT kit test



Collect water sample at the river



Heavy metal testing by AAS



Air quality monitoring station



Figure 13: Pictures of sample testing and Training activities

# Strengthening Quality Infrastructure in ASEAN:

## PTB partners with AFTLC to improve food safety in ASEAN

PTB is Germany's National Metrology Institute, a scientific and technical higher federal authority falling under the competence of the German Federal Ministry for Economic Affairs and Climate Action. Founded in 1887, PTB ranks today among the world's leading institutes of metrology (metrology = the science of exact measurement) and employs approximately 2200 employees in Braunschweig and Berlin. As the basis for its work, PTB conducts fundamental research and development in the field of metrology in close cooperation with universities, other research institutions, and industry worldwide.

PTB's International Cooperation Group is designated an implementing organisation of official German development cooperation, contracted by the German government as well as the European Union. It promotes the improvement of framework conditions for economic, social, and ecological action and supports developing and emerging economies in the development and use of a needs-based and internationally recognised quality infrastructure.

PTB has had a long-standing cooperation with ASEAN since 2001 and with the ASEAN Consultative Committee on Standards and Quality (ACCSQ) since 2009. In support of this cooperation, the 4-year joint ASEAN-PTB project "Strengthening Quality Infrastructure in ASEAN" has been running since 2019, funded by the German Ministry for Economic Cooperation and Development (BMZ).

A functioning quality infrastructure is indispensable to establish and implement effective food safety systems. Food safety is not a specific component within a quality infrastructure, but it relies on all pillars of the quality infrastructure to be effective. It is essential for consumer protection and to ensure confidence in related trade.

The Work Plan of the Initiative for ASEAN Integration also addresses the need to enhance food safety and, in this context, refers to the Sustainable Development Goals of the United Nations, namely goal 2 (zero hunger), goal 3 (good health and well-being) and goal 6 (clean water and sanitation). Because of the importance of the food sector to ASEAN (especially for Cambodia and Lao PDR) domestically, for exports, and for employment, the ASEAN-PTB cooperation project has initiated collaboration with the ASEAN Food Testing Laboratory Committee (AFTLC) as part of the Prepared Foodstuff Product Working Group.

Proficiency Testing (PT) in food testing laboratories is an important tool for quality control to demonstrate competency, monitor laboratories' performance over time, create trust in reliability and credible results, and underline the validity of test results. In the context of the ASEAN-PTB cooperation, the area of PT was a particular focus in the second half of the project in 2021/2022.

More than 90 participants from ASEAN Member States have attended the two regional capacity building programmes on the provision of PT Schemes in accordance with ISO/IEC 17043:2010. A regional workshop focused on all requirements of the international standard and also placed some emphasis on statistical and data processing aspects as well as the guidance given in ISO 13528:2015. Participation in this workshop was quite diverse.



While there are a number of operational PT Schemes in some countries, other Member States have no (accredited) PT providers to date. This is the reason why the ASEAN-PTB project established another workshop series that was held online in January and February 2022 to focus more on the basics of performing PT and how to set-up PT schemes.

This four-part training series focused on data analysis and performance evaluation, statistical design and assigned values, as well as the design and planning of PT schemes. Delegates from organisations who were setting up PT schemes for the first time were particularly encouraged to participate in this programme. The third part of the programme was completed by a comprehensive presentation from Dr Shima Hashim (Director of the Chemical Metrology Division) and Ms Farahani Nasir (Scientific Officer) from the Department of Chemistry Malaysia, KIMIA. With 14 laboratories across Malaysia, KIMIA currently offers 40 PT schemes and reference material to local and international chemical testing laboratories. Another presentation was made by Ms. Subadra Jayasinghe in her function as PT Coordinator of the Association of Testing Laboratories in Sri Lanka. The presentation focused on how the association was founded, which considerations were made, and steps taken to set-up the first accredited PT scheme.

In 2021, first steps were taken by the ASEAN-PTB project to conduct two regional Proficiency Tests in Microbiology under the auspices of AFTLC. Following a consultation process with relevant food laboratories to select suitable PT parameters and matrix options, PTB commissioned QUATEST 3 in Viet Nam to conduct the two regional proficiency tests. In July 2022, 40 samples were sent out to 23 laboratories in all 10 ASEAN Member States to detect *Salmonella* ssp. in Milk Powder and *Escherichia coli* in Aquatic Product samples. The evaluation workshop is scheduled for September 2022.

Finally, a baseline survey was conducted in the second quarter of 2022 among selected National Food Reference Laboratories (NFRLs) or potential NFRLs to assess the laboratories' capacities and to identify further needs for training provision by the ASEAN food testing laboratories. The questionnaire covered, inter alia, the functions of NFRLs, management systems, validity of results, human resources, infrastructure, equipment, sampling management, test parameters, as well as test methods. The report will be presented to AFTLC in the third quarter of 2022. Hence, as the next ASEAN-PTB project phase is scheduled to start in January 2023, the survey report will come at a convenient time for the future ASEAN-PTB cooperation and will enable the cooperation with AFTLC to build on identified training needs, with a particular focus on addressing the development gap as laid down in the Work Plan of the Initiative for ASEAN Integration.



Figure 14: Pictures of PT samples



Figure 15: PT Training

# Achievement of supporting AFTLC

## International Life Sciences Institute (ILSI)

### About the organization:

The International Life Sciences Institute (ILSI) is a non-profit, worldwide foundation based in Washington DC, USA. It was established in 1978 to advance the understanding of scientific issues relating to nutrition, food safety, toxicology, risk assessment and the environment. The regional branch, ILSI Southeast Asia Region (ILSI SEA Region), established in 1993, facilitates and coordinates scientific programs and research, and shares the latest science and knowledge in nutrition, food safety and sustainability in Southeast Asia, Australia and New Zealand. ILSI SEA Region works with public and government agencies such as ASEAN, and has been supporting ASEAN's food, nutrition and safety program.

### ILSI SEA Region's Support for AFTLC:

In 2019, testing laboratory capacity was identified as one of the priority areas for the ASEAN Prepared Foodstuff Product Working Group (PFPWG). ILSI SEA Region, as a knowledge partner of PFPWG, was requested to support this area. To better understand the landscape of food testing laboratories in the ASEAN countries, a survey was conducted to identify the challenges, gaps and the support needed by the national laboratory authorities (the Survey). The key findings and recommendations of the Survey, in particular those relating to technical challenges and topics of interest for both chemical and microbiological testing capacity were shared with AFTLC, and capacity building strategies were proposed.

The planned hands-on workshop to address analytical science topics was postponed due to travel restrictions amid the COVID-19 pandemic. Instead, a webinar was organized in collaboration with the National Institute of Metrology Thailand (NIMT), in May 2021, to address the specific concerns regarding the transition of ISO 17025, 2007 to 2015 version, particularly on the measurement of uncertainty and risk integration to the lab management systems. More than 210 participants from 10 ASEAN member states were brought together for this webinar, which included interactive discussions held between speakers and participants.

The recommendations from this webinar will be incorporated into the planning of the next webinar, which will focus on addressing microbiological testing in food to be held in 2022.

### Output and outcome:

The Survey successfully outreached to technical staff in the various countries; their feedback collated through the Survey resulted in a productive capacity building program that was able to address specific concerns raised.

# Crisis to Opportunity: Roles of Food Testing Laboratories during COVID-19 Pandemic, Thailand Experience

Coronavirus disease 2019 (COVID-19) pandemic has spread to 221 countries and territories around the world. It disrupted human well-being, transportation, and socio-economy as well as food production chain. COVID-19 contamination in frozen food and potential of the virus to infect humans has been reported from China, raising concerns of WHO and many countries. Moreover, there have been reports on COVID-19 infections in workers in food production chain. These reports raised public concern on safety of food. Authorities and academics had to address the issue by feeding the public with scientific information, placing prevention and control measures to ensure food safety.

During the time of crisis, the unforeseen pandemic of COVID-19, Ministry of Public Health and relevant agencies such as provincial offices are overwhelmed with multiple tasks to contain the disease as well as many activities to support and relief affected people. Economy is devastated around the world; only food production industry is less affected, able to maintain food security and income to Thailand. Public health laboratory both public and private are distressed with diagnostic samples. It is the time that food testing laboratories to contribute their capacity to help the country. Ministry of Agriculture and Cooperatives (MOAC) and Ministry of Public Health (MOPH) in Thailand have policy to examine food products for COVID-19 contamination. Some food testing laboratories and animal health diagnostic laboratories in Thailand extended their roles to share national burden during COVID-19 epidemic.

## Technical Development

Bureau of Food Quality and Safety (BQSF), Department of Medical Sciences, the national reference laboratory for food analysis in Thailand, has developed a method for the detection of genetic material of SARS-CoV-2, by real-time-PCR, in food and food packaging. To ensure the quality of the testing, the laboratory performance was validated by successfully participating in the Proficiency Testing programs organized by LGC group, UK. The BQSF testing laboratory was audited in compliance with ISO/IEC 17025 in August 2021 by Bureau of Laboratory Quality Standard, recognized by International Laboratory Accreditation Cooperation (ILAC).

In addition, a guideline for sample collection and operation on the detection of COVID-19 in food was prepared, describing the key practices such as sample collection by aseptic technique, precaution, recommendation of sample delivering to the laboratory. The knowledge dissemination of the method for the detection of COVID-19 in food are planned, in 2022, to disseminate knowledge to twelve Regional Medical Sciences Centres, located around the country in order to expanding and strengthening laboratory capability in Thailand.





*Figure 16: Food Testing Laboratorie*

## Implementation

Quality of meat and meat products originating from animal are under responsibility of Department of Livestock Development (DLD)). The DLD laboratory network, including National Institute of Animal Health, Bureau of Quality Control of Livestock Products, Regional Veterinary Research and Development Centers have been actively involved in COVID-19 detection in livestock products using RT-PCR with the protocol recommended by WHO. Samples which are chicken, pork, beef, some fishery products, as well as, packing materials, surface swabs, are routinely collected and sent to DLD laboratories by DLD provincial staffs or by veterinarian-in-charge of the slaughterhouses. More than 5,000 samples have been tested so far; none of the samples was positive for COVID-19. Results were communicated with local health authority in case further actions was required.

Fishery products are regulated by Department of Fisheries (DOF). The initial survey of COVID-19 contamination in fishery products was carried out in October 2019 in collaboration with National Institute of Animal Health. The survey covered in fish and fishery products such as fish, shrimp, mollusc and cephalopods and also fishery product's packaging.

Department of Medical Sciences (DMSc), together with other relevant agencies, i.e. Thai Food and Drug Administration, Department of Fisheries, Federation of Thai Industries, Fishery Cooperatives and private companies, jointly monitored SARS-CoV-2 in Seafood. Samples of seafood and packaging (e.g. salmon, tuna, bream, mackerel, king mackerel, false trevally, barracuda, shellfish, squid, shrimp, cans and paper boxes had been randomly collected. This monitoring revealed absence of SARS-CoV-2 in all samples.

The DMSc has provided testing services of the coronavirus, by RT-PCR, in aquatic animals, ready-to-eat foods, fruits and vegetables, and food packaging since November 2020, in order to ensure the quality of foods produced and/or consumed in Thailand.

## Continuing and future activities

Although the development of new vaccines and mass vaccination effectively reduce COVID-19 severity, the ending of this pandemic cannot be forecast. Thai government has passed the national budget to support COVID-19 testing in food for the fiscal year 2022. Laboratories involved in detection of the virus contamination in food will continue the activity, as well as continue research to develop new tests or test kit to reduce time and cost.

## Challenge

Although global economy is damaged, food industry in Thailand is less affected, able to maintaining food security and national income. Public health laboratory both public and private are overwhelmed with diagnostic samples. It is the time that food testing laboratories to contribute their capacity to help the country. Collaboration is crucial in this situation, for example, within Ministry of Agriculture and Cooperatives, DLD and DOF did the initial surveyed fishery products together, and DLD routinely accepted some fishery products for COVID-19 test. For inter-Ministerial collaboration, DMSc as a national reference laboratory for human health provided training and technical consultation. DMSc also accepts samples from livestock and fishery producers.

Secondly, Public-Private-Partnership is essential in the time of pandemic. For government sector, annual budget proposal has to prepare 2 years ahead, general speaking, it is almost impossible to have budget prepared for the unexpected incidence. In case, Thailand testing for COVID-19 in food is co-funded by government and industry.

In summary, food testing laboratories have a critical role to help the country during the pandemic. Results from the laboratories not only ensure food safety and support trade, but also indicate if further actions are needed to protect the public. The pandemic is undeniable a disaster but it also gives us opportunity to learn our strength and weakness. So far Thailand has proven itself to be agile and resilient in order to overcome the encountered problems by collaborative efforts and public-private-partnership. Thailand would like to share its experiences with other ASEAN food testing laboratories and continue our collaboration especially in the time of crisis.



## NATIONAL COMMITTEE ON FOOD ANALYSIS OF MALAYSIA

Laboratory analysis is an integral part of a national food control system. Monitoring and surveillance data from various stakeholders along the supply chain provide scientific evidence and principal inputs in establishing food control strategic plans. Malaysia's food safety legislation incorporates science and risk-based approach in the continuous process of revision and updating the legislations to determine the acceptable level of control. Consequently, Malaysia acknowledges the importance of laboratory analysis to support and provide scientific evidence in food safety and quality activities.

As the Competent Authority for food safety in Malaysia, Food Safety and Quality Division (FSQD), Ministry of Health Malaysia is committed and continuously supports ASEAN activities to strengthen food safety laboratories in Malaysia. In this regard, FSQD is responsible as the country Focal Point for ASEAN Food Testing Laboratories Committee (AFTLC).

Laboratories activities in Malaysia are coordinated through the National Committee on Food Analysis (NCFA) that was established in 5 February 2002 by the National Food Safety and Nutrition Council (NFSNC).

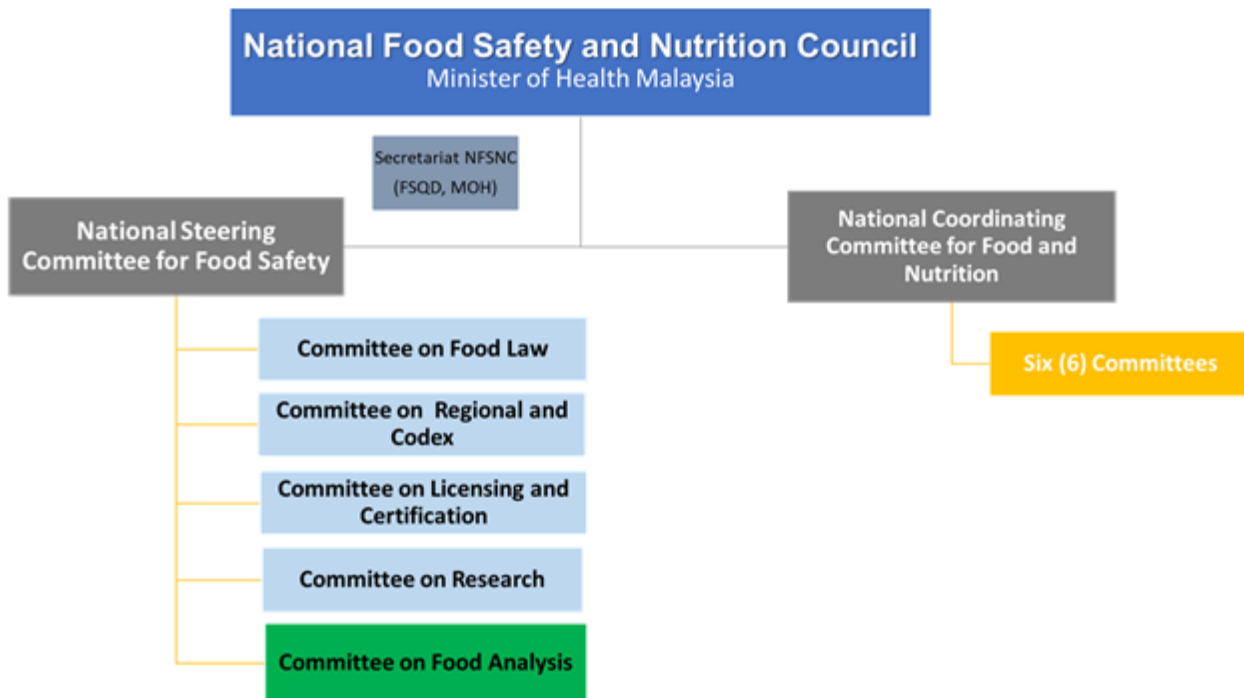


Figure 17: Structure of Malaysia's National Food Safety and Nutrition Council (NFSNC)

NFSNC is the country's highest advisory body dealing with all matters related to food safety and nutrition. This council meeting is chaired by the Honourable Minister of Health Malaysia and composed of ministries, government agencies, food manufacturers, consumer associations, institution of higher learning and related stakeholders along the food supply chain with FSQD as main secretariat for the meeting.



*Figure 18: Minister of Health Malaysia chaired the National Food Safety and Nutrition Council meeting*

NCFA is coordinated by FSQD and consists of representatives from various food testing laboratories in government agencies and institutions of higher learning. Its main function is to coordinate the development and expansion of food analysis method capabilities in Malaysia to meet continuous challenges in food analysis to cater food safety and quality issues.

There are twelve (12) Technical Working Groups (TWG) under NCFA purview that has been tasked to implement NCFA activities based on specific areas of food analysis.

The scope of TWG are:

- ✚ Studying issues related to the development of food analysis methods in the relevant fields.
- ✚ As a platform for the National Reference Laboratory (NRL) to conduct capacity building activities such as training for all TWG members.
- ✚ As a platform for the NRL to disseminate information provided by the ASEAN Food Reference Laboratory (AFRL) or any other technical program to all TWG members.



## NCFA responsibilities:

- Coordinate and encourage cooperation between government agencies and institutions of higher learning involved in food analysis on development of food analysis methods, especially in terms of standardization and capacity building.
- Provide technical advice and reports to NFSNC regarding matters related to food analysis set based on the Food Act 1983 and the Regulations under it, in addition to the occurrence of a food crisis or current needs.
- NCFA monitors and evaluates activities of each Technical Working Groups (TWG) and National Reference Laboratory (NRL)

Other TWG responsibilities are:

- ✚ Coordinating and distributing method development work according to priority to reduce overlap/ duplication of work between the agencies involved.
- ✚ Ensure that food analysis methods are harmonized among all TWG members and are in line with international standards.



*Figure 19: National Food Safety and Nutrition Council meeting*

Each of these TWG has their own NRL's that has responsibilities to:

- i. Share their expertise and knowledge in the field of analysis related to all members of the TWG including generating and coordinating programs in their respective fields.
- ii. Provide training to all TWG members in relevant analysis fields.
- iii. Attend training conducted by the AFRL or any other technical program and encourage the participation of TWG members in these programs.
- iv. Participate in Proficiency Testing (PT) and encourage the participation of TWG members in these programs



Figure 20: National Food Safety and Nutrition Council meeting

### Involvement with ASEAN

NCFA encourage participation of NRLs and TWG member in any training and PTs provided by AFRL to increase capabilities and competencies of Malaysia laboratories in their related field of expert. To date, Malaysia has participated 6 PT schemes organized under AFRL namely for microbiology and additive.

Department of Chemistry Malaysia as the NRL on Genetically Modified Organisms has been appointed as an AFRL for Genetically Modified Organisms. Presently, Malaysia is waiting for approval for Nuclear Malaysia to be appointed as AFRL on Radionuclides.

Malaysia will continue to support AFTLC activities and will work in close cooperation with each other to assure the reliability of food analyses in ASEAN and be able to provide sound scientific evidence that supports AMS's national food control system.



Figure 21: National Food Safety and Nutrition Council meeting

# Acknowledgements

From the Editorial Team

AFTLC Bulletin, Fourth Issue (2022)

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Finally, the editorial team wishes to thank all readers for taking time to read through this bulletin. We hope that you will be updated on the capacity building activities accomplished in ASEAN.

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