**CALL FOR CANDIDATES**

*Laboratory Capacity Building Program for
African Food Regulatory Laboratory Experts*

International Food Safety Training Laboratory (IFSTL)

*October 2020*

1. **Background**

With support from the United States Agency for International Development (USAID) and the United States Department of Agriculture (USDA) the [Food Risk Analysis and Regulatory Excellence Platform](https://parera.ulaval.ca/) (PARERA) of Université Laval (ULaval) is collaborating with the Department of Rural Economy and Agriculture (DREA) of the African Union Commission and the Sub-Saharan Africa Section of the Association of Official Analytical Chemists (AOAC) International to improve food regulatory laboratory testing capacity in African countries, through a targeted laboratory training initiative.

The training will include on-line and practical training sessions related to the analysis of residues of pesticides and targeted organic contaminants in food, such as mycotoxins.

The one-year training initiative will use both **on-line training** features as well as **a practical training program** in a laboratory facility affiliated with PARERA’s International Food Safety Training Laboratory (IFSTL).

The training program has been designed to adapt to the current restrictions imposed by the Covid19 global pandemic. It will target up to 80 senior food analysts and other analytical scientists from the African continent for the online component. Up to 8 food analysts will be selected on the basis of the results of the assessments conducted for the on-line training, to follow the practical training in the IFSTL facilities.

1. **Call for candidates to follow the online training**

This call is open to candidates from African Union Member States interested in following the planned online food safety laboratory training.

The training will be implemented from Dec 1st, 2020 to May 2021 and will cover:

* Principles of readiness and operation of instrumental analytical methods, useful for pesticide residue and mycotoxin determination
* Rapid techniques for the detection and quantification of mycotoxins in food matrices

The online training material will attempt to reproduce some face to face training, with access to the equipment and demonstration of its use, through on-line videos. The training will also include a component on Quality Assurance/quality Control (QA/QC) approaches

All material will be made available on an e-learning platform for access by trainees.

A tentative program for the planned modules is appended to this document.

Interested candidates to enroll in the e-learning program, are requested to fill the form attached, with the relevant information.

Eligibility to the e-learning and subsequent practical training program include:

* Training in food analytical disciplines, with a focus on food chemical analysis as demonstrated by a degree, certificate and other attestations e.g. publications in the scientific literature
* Current work in a food analytical laboratory with contribution to testing for food regulatory purposes e.g. compliance verification, enforcement, etc.
* Support from immediate supervisor and higher management to follow the training, including the subsequent face-to-face training should the candidate be selected on the basis of results of the on-line sessions.
* The ability to follow the training in English with the acknowledgement that some material may be available in French as well, including the support provided by the training instructors.
* Advantage: Contribution to a food analytical community nationally or regionally, such as affiliation with AOAC International or the Sub-Saharan Africa Section of AOAC International

Interested and eligible candidates are invited to fill the enrolment candidacy form for evaluation.

Successful candidates will be contacted and be provided with specific details related to the training.

**Interested candidates are invited to fill and send the Candidate Enrolment Document attached at** **parera@fsaa.ulaval.ca** **with the mention : “IFSTL2020-2021 Training” in the subject line**

**Candidacies can be submitted until November 27th, 2020 at midnight GMT.**

**CANDIDATE ENROLMENT FORM**

**Last name:** Click or tap here to enter text.

**First name:** Click or tap here to enter text.

**Affiliation** (institution of work)**:** Click or tap here to enter text.

**Address:** Click or tap here to enter text.

**Country:** Click or tap here to enter text.

**Educational background (clearly indicate if you have training in food analysis, with emphasis on food chemical analysis)?:**

Click or tap here to enter text.

**Attestations and Credentials Provided**

Click or tap here to enter text.

**Current position/function:**

Click or tap here to enter text.

**Please briefly described your professional duties (in particular those related to food analysis):**

Click or tap here to enter text.

**Is your food analysis activity carried out to support food/feed regulatory function?**

Select Yes or No

**If yes, please explain how?**

Click or tap here to enter text.

* + - * **No**

**Are you or have you been involved (in the last 5 years) in activities which include the following techniques or fields?**

* *Liquid chromatography:*

Make a selection

* *Pesticides analysis:*

Make a selection

* *Mycotoxins analysis:*

Make a selection

* *Mass spectrometry-based methods (LC-MS or GC-MS):*

Make a selection

* *ELISA-based methods:*

Make a selection

* *Veterinary drugs or residues analysis:*

Make a selection

* *Proficiency test programs:*

Make a selection

**Provide any additional information that can attest to your experience associated with food analysis and/or food chemical analysis in particular:**

Click or tap here to enter text.

**Would you be able to secure the support of your Supervisor/Senior management to follow both the on-line training and the practical (face-to-face) training, if selected\***

Make a selection

***\*you may be asked to provide a letter showcasing such support if/when selected.***

**Would your laboratory be able to host training of other peers / colleagues, where you would assume the role of trainer, based on the training you will have received\***

Make a selection

***\*you may be asked to provide a letter showcasing the ability to do so, with the support of your management, if/when selected.***

**Interested candidates are invited to fill and send the Candidate Enrolment Document attached at** **parera@fsaa.ulaval.ca** **with the mention : “IFSTL2020-2021 Training” in the subject line**

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**PROPOSED TRAINING DELIVERY APPROACH**

**Phase 1: On-Line Training Program**

*6 months (suggested timing December 2020 – May 2021)*

This phase will include:

* The design and mounting of dedicated training material related to:
	+ Rapid techniques for the detection and quantification of mycotoxins in food matrices
	+ Principles of readiness and operation of instrumental analytical methods, relevant to the techniques that are to be demonstrated in person

The on-line training material will attempt to reproduce some face to face training, with access to the equipment and demonstration of its use, through on-line videos. The training will also include a component on QA/QC approaches

All material will be made available on an e-learning platform to be made accessible to trainees.

**Phase 2: In-Laboratory Training**

*7 days (location TBC, May 2021 COVID-19 permitting)*

The second phase includes the face to face training in the IFSTL laboratory in Quebec City, Canada or an affiliated IFSTL laboratory in Europe or Africa.

This second phase will be planned for up to a 7-day in laboratory training on the instrumental analytical methods selected (primarily multi-mycotoxin methods) and will be supported by an evaluation of the performance of the candidates, at the end of the training.

All prospective trainees will be asked to commit to be part of PT program, subsequent to the various training phases, at their own laboratory.

The choice of the location of this training will be determined based on the easing travel restrictions for African citizens to Europe / other parts of Africa and North America, with a preference to conduct the training at ULaval, Quebec, Canada.

IFTSL will designate an affiliated facility equipped with the same analytical technologies available at the Quebec IFSTL facility.

The project will fund the trainees travel and subsistence at the training location.

Efforts will be made to reach up to 8 trainees for face to face training, with additional financial support being investigated and sought from other partners.

**Phase 3: Verification Phase**

*3 – 6 months (On-line approach, June to October 2021)*

All trainees will participate in a continuous improvement program, where they are asked to deploy the analytical method / technique acquired, at their own/home laboratory facility fulfilling “fit-for-purpose” requirements.

All trainees will also be involved in a mentoring program with other food laboratory analysts in their country / city.

This phase will be accompanied by IFSTL scientists and mentors, using on-line engagement platforms, such as Zoom / MS Teams / Skype etc…

**Phase 4: Proficiency Testing Phase**

*2 months (October – December 2021, unchanged from the previous plan)*

All training recipients are to take part in targeted PT for the method /technique acquired to test and demonstrate competency of the associated laboratory on the acquired techniques and analytical methodology.

**PROPOSED ON-LINE LABORATORY TRAINING CURRICULUM**

 *Subject: Confirmation Methods for Food contaminants*

*Number of Modules: 9*

*Level: Beginner and Intermediate*

**Methods for Analysis of Food Contaminants**

*Rapid Screening and Confirmatory Techniques*

## **Module 1: General Background on food contaminants and food regulatory management**

## *Learning objectives:*

* Understand the requirements of testing in the context of food regulatory requirements and international trade
* Understand sample preparation procedures used in the determination of specific food contaminants and in multi-residue methods

*Lessons:*

* Lesson 1: Introduction to Food contaminants as a food hazard
* Lesson 2: Main international regulatory requirements for mycotoxins in food
* Lesson 3: “Fit for purpose determination”

## **Module 2: Principles of ELISA**

## *Learning objectives:*

* Understand the principles and important parameters of rapid analytical methods used for screening and early detection of food contaminants
* Practice of rapid analysis and interpretation of results for identification, confirmation and/or quantitation of different food contaminants.
* Understand the potential limitations of rapid methods

*Lessons:*

* Lesson 1: Introduction to ELISA techniques
* Lesson 2: Introduction to the variation of ELISA-based methods
* Lesson 3: Applications in the determination of different food contaminants
* Lesson 4: Troubleshooting

## **Module 3: Lateral Flow Device (LFD) Based Methods/ Kits**

## *Learning objectives:*

* Understand the principles and important parameters of rapid analytical methods used for screening and early detection of mycotoxins, with a focus on LFD
* Practice of rapid analysis and interpretation of results for identification, confirmation and/or quantitation of food contaminants.
* Understand the potential limitations of LFD techniques

*Lessons:*

* Lesson 1: Introduction to LFD
* Lesson 2: Applications in the measurement of different food contaminants
* Lesson 3: Troubleshooting

## **Module 4: Principles of Liquid Chromatography Techniques**

## *Learning objectives:*

* Understand the principles of analytical methods used for the confirmation of specific food contaminant presence

*Lessons:*

* Lesson 1: General chromatography
* Lesson 2: Liquid chromatography
* Lesson 3: Detection techniques for food contaminants separated by LC

*Waters modules:*

* 750002013 General Liquid Chromatography (LC) eLearning Track
* 750002002 HPLC eLearning Track

## **Module 5: Principles of Gas Chromatography Techniques**

## *Learning objectives:*

* Understand the principles of analytical methods used for the confirmation of pesticides presence

*Lessons:*

* Lesson 1: General chromatography
* Lesson 2: Liquid chromatography
* Lesson 3: Detection techniques for pesticides separated by GC

## **Module 6: Principles of Mass Spectrometry (MS)**

## *Learning objectives:*

* Understand the principles of analytical methods used for the confirmation of food contaminants presence

*Lessons:*

* Lesson 1: Introduction to mass spectrometry
* Lesson 2: Instrumentation in mass spectrometry
* Lesson 3: Applications in the measurement of different food contaminants

*Waters module:*

* 750002012 LC/MS Principles and Concepts eLearning Track

## **Module 7: Analytical Instrumentation Operation**

## *Learning objectives:*

* Understand the main parameters of analytical methods used for the confirmation of food contaminants presence
* Acquire knowledge about troubleshooting
* Practice the analysis and interpretation of results for identification, confirmation and quantitation of specific food contaminants.

*Lessons:*

* Lesson 1: Important parameters in LC
* Lesson 2: Important parameters in UV, fluorescence and diode array detection
* Lesson 3: Important parameters in MS

## **Module 8: AOAC Methods by HPLC and LC/MS/MS**

## *Learning objectives:*

* Understand the main parameters of analytical methods used for the confirmation of food contaminants presence
* Acquire knowledge about troubleshooting
* Practice the analysis and interpretation of results for identification, confirmation and quantitation of specific food contaminants.

*Lessons:*

Lesson 1: Single residue methods

Lesson 2: Multi-residue methods

Lesson 3: Multi-residue methods by LC/MS/MS

Lesson 4: Introduction to high-resolution mass spectrometry methods

*Waters modules:*

750002032 Empower 3 SW FR2: Advanced Topics - Processing

750002024 Empower 3 SW: Fundamentals of the QuickStart Interface

## **Module 9: Quality Assurance**

## *Learning objectives:*

* Understand the importance of GLP
* Adoption of quality measures

*Lessons:*

* Lesson 1: What is validation?
* Lesson 2: Single laboratory validation of an official method
* Lesson 3: Validation of method extension