



CIHEAM

International Centre for Advanced
Mediterranean Agronomic Studies
Mediterranean Agronomic Institute of Zaragoza



Food and Agriculture Organization
of the United Nations
Fisheries and Aquaculture Department



Transforming
Science into
Business

Advanced Course

SAFETY ASSESSMENT OF SEAFOOD PRODUCTS

Derio (Spain), 24-28 April 2017

1. Objective of the course

Safety assessment of seafood products is essential to ensure the provision of safe fish and fish products to consumers and to facilitate international trade. Seafood comprises a great diversity of species, including finfish species, molluscs, cephalopods and crustaceans. These originate from both capture fisheries and aquaculture. Different hazards are associated with each species and can occur at all stages of the value chain, influencing seafood quality and safety.

There are many food safety hazards associated with seafood and some, such as biotoxins and *Vibrio* spp., are exclusive to the aquatic environment. Monitoring and surveillance of these and other relevant hazards is a crucial component of any food control system and central to this task is accurate analytical assessment. This assessment provides the evidence base for any seafood safety management decisions.

This course gives participants a detailed review of hazards of public health significance covering biological (pathogen bacteria, histamine, viruses, parasites and biotoxins) and chemical (PAH, veterinary drugs, heavy metals, microplastics) contaminants. Standard and innovative methods for detection of these hazards are described and selected methods will be practised in laboratory exercises.

By the end of the course the participant will have:

- An awareness of those safety issues associated with seafood products in the wider context of local and international trade, regulatory frameworks and standards.
- A sound understanding of the occurrence of biological and chemical hazards that can be encountered in seafood and the risk associated with these.
- A profound knowledge of the appropriate methods for the assessment of seafood under differing conditions.
- Improved skills to perform or supervise relevant analytical techniques.

2. Organization

The course is jointly organized by the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (IAMZ), the Food and Agriculture Organization of the United Nations (FAO), through its Fisheries and Aquaculture Department, and AZTI (experts in marine and food innovation), with the collaboration of IES Escuela Agraria Derio.

The course will take place in Derio, at the IES Escuela Agraria Derio and in the AZTI laboratories, and will be given by well qualified

lecturers from international organizations, research centres and universities in different countries.

The course will be held over a period of one week, from 24 to 28 April 2017, in morning and afternoon sessions.

3. Admission

The course is designed for 25 participants with a university degree, and is aimed at professionals within the seafood industry and public institutions, such as members of the competent authorities for inspection, safety managers, private labs, technical advisors and professionals from R&D institutions dealing with seafood safety assessment.

Given the diverse nationalities of the lecturers, knowledge of English, French or Spanish will be valued in the selection of candidates, since they will be the working languages of the course. The Organization will provide simultaneous interpretation of the lectures in these three languages.

4. Registration

Application forms may be obtained from:

Instituto Agronómico Mediterráneo de Zaragoza
Avenida de Montañana 1005, 50059 Zaragoza (Spain)
Tel.: +34 976 716000 - Fax: +34 976 716001
e-mail: iamz@iamz.ciheam.org
Web: www.iamz.ciheam.org

Candidates should send the completed application form to the above address, accompanied by a detailed *curriculum vitae*, stating degree, diplomas, experience, professional activities, language knowledge and reasons for applying to the course. Copies of certificates should be enclosed with the application.

The deadline for the submission of applications is 10 February 2017.

Applications from those candidates who cannot present their complete records when applying, or those requiring authorization to attend the course, may be accepted provisionally.

Registration fees for the course amount to 500 euro. This sum covers tuition fees only.

5. Scholarships

Candidates from CIHEAM member countries (Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Turkey) and other FAO Mediterranean member countries

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See updated information at

www.iamz.ciheam.org

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may apply for scholarships covering registration fees, and for scholarships covering the cost of travel and full board accommodation. Applications from other FAO member countries may exceptionally be considered.

Candidates from other countries who require financial support should apply directly to other national or international institutions.

6. Insurance

It is compulsory for participants to have medical insurance valid for Spain. Proof of insurance cover must be given at the beginning of the course. Those who so wish may participate in a collective insurance policy taken out by the Organization, upon payment of the stipulated sum.

7. Teaching organization

The course requires personal work and interaction among participants and with lecturers. The international characteristics of the course favour the exchange of experiences and points of view.

The course has an applied approach. Formal lectures are delivered with applied examples and complemented with debate and hands-on laboratory practical work on the assessment of relevant seafood safety hazards. A guided visit to the facilities of AZTI will allow participants to understand the key role of this type of institution in the challenge posed by increased safety requirements. These activities will enable participants to put theory into practice and gain experience in safety assessment.

Participants are expected to present a poster describing the current situation of seafood assessment in their country, including the system structure and the challenges faced.

8. Programme

1. **Context of food safety for seafood (4 hours)**
 - 1.1. Global seafood production, major markets and trade flows
 - 1.2. Rejections data for major markets by category (microbiological, chemical, documentation, etc.) and trends
 - 1.3. Impacts on food safety: climate change, demographics, new consumption trends, etc.
 - 1.4. Codex Alimentarius: how it works
 - 1.5. European regulation
 - 1.5.1. Requirements for exporting countries: competent authorities
 - 1.5.2. Border Inspection Posts (BIPs)
 - 1.5.3. Rapid Alert System for Food and Feed (RASFF)
 - 1.5.4. Analytical procedure-related regulation
 - 1.6. Solutions for the Seafood Industry
2. **Physicochemical safety assessment in the seafood chain (5 hours)**
 - 2.1. Overview of physicochemical hazards
 - 2.2. Analytical methods: performance criteria and legal requirements
 - 2.3. Environmental contamination – pesticides, heavy metals
 - 2.4. Processing contaminants – dioxins, acrylamides, PAH
 - 2.5. Veterinary drugs – antimicrobial resistance, antibiotics, antifoulings, antiparasites
 - 2.6. Emerging contaminants: microplastics
 - 2.7. Innovative tools for the monitoring of chemical contaminants in seafood
3. **Microbiological safety assessment in the seafood chain (7 hours)**
 - 3.1. Overview of microbiological hazards
 - 3.2. Analytical methods: performance criteria and legal requirements
 - 3.3. Bacteria
 - 3.3.1. *Listeria monocytogenes*
 - 3.3.2. *Vibrio* spp.
 - 3.3.3. Salmonella
 - 3.3.4. Other relevant bacteria and microbial indicators
 - 3.4. Viruses
 - 3.4.1. Sample preparation and extraction
 - 3.4.2. Norovirus
 - 3.4.3. Hepatitis viruses
 - 3.4.4. Other relevant viruses
 - 3.5. Microbial intoxications: Clostridia and histamine
 - 3.6. Innovative tools for the monitoring of microbial contaminants in seafood
4. **Parasite safety assessment in seafood (2 hours)**
 - 4.1. Overview of parasites: non-zoonotic and zoonotic parasites in fishery products
 - 4.2. Cestodes
 - 4.3. Nematodes
 - 4.4. Trematodes and other relevant parasites
 - 4.5. Analytical methods: performance criteria and legal requirements
 - 4.5.1. For inspection
 - 4.5.2. For parasite identification
 - 4.6. Innovative tools for the monitoring of parasites in seafood
5. **Allergens in seafood (2 hours)**
 - 5.1. Overview of allergens
 - 5.2. Analytical methods: performance criteria and legal requirements including labelling
 - 5.3. Anisakis allergenicity
 - 5.4. Crustaceans allergenicity
 - 5.5. Innovative tools for the monitoring of allergens in seafood
6. **Biotoxins in seafood (2 hours)**
 - 6.1. Overview of biotoxins
 - 6.2. Shellfish poisoning: neurotoxic, paralytic, diarrhoeatic, amnesic
 - 6.3. Analytical methods: performance criteria and legal requirements
 - 6.4. Ciguatera
 - 6.5. Tetrodotoxin as a climate change indicator
 - 6.6. Other intoxications
 - 6.7. Innovative tools for the monitoring of biotoxins in seafood
7. **Round table discussion: seafood safety surveillance and public health – are we getting the impact we expect for the money we spend? (2 hours)**
8. **Technical visit to AZTI facilities (1 hour)**
9. **Practical work (12 hours)**
 - 9.1. Good laboratory practices
 - 9.2. Visual detection by UV transillumination of *Anisakis simplex* in hake, blue whiting and tuna
 - 9.3. Anisakis detection by qPCR techniques in complex seafood products
 - 9.4. Measurement of histamine in tuna fish
 - 9.5. Investigation of *Listeria monocytogenes* in anchovies
 - 9.6. Measurement of cadmium in canned anchovies
 - 9.7. Murder in the sushi bar: in silico analysis of a pufferfish and an escolar fish related intoxications

GUEST LECTURERS

F. AMÁRITA, AZTI, Derio (Spain)
A. BARRANCO, AZTI, Derio (Spain)
L. BOTANA, Univ. Santiago de Compostela, Lugo (Spain)
C. CUELLAR, Univ. Complutense Madrid (Spain)
A. DALSGAARD, Univ. Copenhagen (Denmark)

M.A. GÓMEZ-MORALES, EU Reference Laboratory for Parasites, Rome (Italy)
S. LE GUYADER, Ifremer, Nantes (France)
G. LORENTZEN, Nofima, Tromsø (Norway)
J. RYDER, FAO, Rome (Italy)
S. RAINIERI, AZTI, Derio (Spain)

