

Course Title: CUSTOMS PROCEDURES

Coordinator: Ana Maulvault (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., aluisa@ipma.pt)

Moderator: António Marques (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., amarques@ipma.pt)

Teachers:

- Ana Maria Machado (Lisbon Border Control Post; Portuguese Directorate-General for Agriculture and Veterinary, DGAV, ana.machado@dgav.pt)
- Filipa Vassallo e Silva (DGAV - Portuguese Directorate-General for Agriculture and Veterinary, filipa.silva@dgav.pt)
- Pedro Nabais (ASAE - National Authority for Food Safety and Economic Activities, pmnabais@asae.pt)
- Narcisa Bandarra (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., narcisa@ipma.pt)
- Sónia Pedro (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., spedro@ipma.pt)
- Helena Lourenço (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., helena@ipma.pt)
- Maria João Botelho (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., mjbotelho@ipma.pt)
- Pedro Costa (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., prcosta@ipma.pt)
- Paula Ramos (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., pramos@ipma.pt)
- Amparo Gonçalves (Portuguese Institute for the Sea and Atmosphere, IPMA I.P., amparo@ipma.pt)
- Maria Leonor Nunes (Interdisciplinary Centre of Marine and Environmental Research, CIIMAR, nunes.leonor@gmail.com)

Course aims:

This course encompasses four modules and aims to deliver an overview of customs procedures specifically applied to seafood products in the European Union. This course will enable participants to get an overview of the various steps that occur along the trade of goods (intra- and extra-European Union), and to have a close contact with routine procedures of a State Laboratory that handles, on a regular basis, seafood samples subjected to inspection at the Border Control Posts (BCPs).

Intended learning outcomes:

- Learning outcome 1

Better understanding of the legal aspects and procedures involved in the trade of seafood products (live, fresh, frozen or processed) and feeds used in aquaculture, inside and outside the European Union.

- Learning outcome 2

Strengthen the knowledge on hygiene requirements and incompliances, microbiological criteria, as well as, on biological and chemical hazards of seafood products and seafood-based meals.

- Learning outcome 3

Get in touch with general procedures and analytical methodologies to evaluate the quality and safety of seafood products and seafood-based meals, giving participants the chance to actively participate in the discussion of different real-life case-studies.

- Learning outcome 4

Allow participants to explore the potential of innovative fast-screening technologies designed to determine, in loco, the authenticity and safety of seafood products.

Course contents

	Hours
Intra-Union and extra-Union trade	3.5
<p>As the world's biggest importer and exporter of foodstuffs, the European Commission works to ensure that Europe's food supply is the safest in the world and that the same standards of food safety apply to all products regardless of origin. This session provides useful information about legal aspects and procedures concerning the imports and exports of animal products, focusing on imports of seafood, including wild fisheries and aquaculture products.</p> <p>It will be provided information regarding export features, legal aspects and procedures for imports, border control posts (BCP), veterinary import checks, responsibilities of the national and third countries competent authorities and responsibilities of food importers/exporters. In addition, participants will have the opportunity to take a closer look at the work of the Portuguese Directorate-General for Agriculture and Veterinary inspectors at Lisbon's BCP.</p>	
The mission, role, responsibilities and action of a National Authority for Food Safety - The Inspector's Perspective	3.5
<p>This session provides a useful overview of the general principles and requirements stated by the food law in the European countries, specially focused on the seafood market. Food definition, precautionary principle, responsibilities of the food business operator and competent authorities, traceability, food safety requirements, protection</p>	



of consumer interests, will be some of the points discussed. On the second part of the session the participants will have the chance to will have the opportunity to increase their knowledge on the way official controls are implemented by ASAE, both in preventive and repressive aspects. Additionally, the National Sampling Plan will be described in more detail and presented the most relevant results of controls in recent years, mostly concerning seafood that has been placed on the market.

The mission, role, responsibilities and action of a Reference Laboratory - The Analyst's Perspective

2

The mission, organization and intervention of a Reference laboratory within the Fisheries and Aquaculture sector will be discussed. The Portuguese Institute of the Sea and the Atmosphere (IPMA) Reference Laboratories are located in Department of the Sea and Marine Resources, called DMRM, which is one of the Departments of Scientific Research. Organic law of IPMA is published in Decree-Law no. 68/2012 of 20 March. IPMA is a central service of the Ministry of Agriculture and the Sea, with its own legal personality, endowed with administrative and financial autonomy. The internal organization of the institute was established by Ordinance No. 304/2012 of 4 October and Order No. 5429/2018 of 5 June. The European Union (EU) has developed a series of rules and regulations to ensure that seafood products can be consumed as safely as possible. The Union has developed measures for all stages of the food chain from capture / production to the factory and the final consumer. Some of the tasks are performed by the industry but the European Commission and some of the member countries have bodies or agencies that control them. The Commission has a supervisory responsibility for ensuring that standards are applied equally across the Union. The EU also ensures that third countries exporting to the European market also have legislation and control the fishing sector in the same way as in Europe.

Marine biotoxins in seafood

7

This session is divided in two tracks, and provides the necessary information to understand the natural contamination of seafood species by marine toxins and the issues, responsibilities, and procedures for seafood introduction in the markets under safety conditions. Marine toxins are naturally produced by certain microscopic algae or by bacteria. Under favourable environmental conditions the toxic microalgae may proliferate and reach notably higher levels in seawater and be available to filter-feeding organisms, such as bivalve molluscs. Marine toxins may then accumulate at great extent in bivalve molluscs and other seafood species, causing food poisonings to whomever consumes them. To pursue a high level of consumers' protection and minimize the risk of acute intoxications, several rules apply to the introduction of seafood species in the EU markets. Bivalve molluscs, which are the main vectors of marine toxins, are the target of intensive monitoring programs and Official Control. The aim of this session is to elucidate the risk posed by marine toxins and the measures taken to warrant the seafood safety at EU level. In Track 3.2.1., participants will be introduced to the environmental problematic posed by marine biotoxins, while providing an overview on the risks for consumers, and challenges for seafood business operators and agencies with regulatory responsibilities. The increasing threats posed by non-regulated toxins, as well as, the new research trends and innovative technologies for fast-screening, modelling and anticipating biotoxins contamination



will be tackled. Track 3.2.2. will present the mission and intervention areas of a National Reference Laboratory (NRL) for marine biotoxins, addressing: i) the Monitoring Program (species, sampling frequency, legislation); ii) the reference analytical methodologies, iii) decision-making, data management and communication strategy; and iv) IPMA's NRL current research projects, with a special focus on new technologies and the link between marine toxins and environmental pollutants, such as microplastics.

Seafood Microbiology

3.5

The microbiological quality of seafood products is an important issue in primary production, border-cross trade and European Union (EU) commerce. Over more than a decade, several legal documents have been prepared and published by the European Commission, in the format of Directives or Regulations, in order to ensure that hygiene and safety criteria are applied in a harmonized and systematic way among Member-States. In sub-module "Seafood Microbiology" the specificities of seafood microbiota, main seafood microbiological hazards, microbiological criteria and legislation applied to seafood products will be presented. The role of using accredited methods, according to ISO 17025, will also be discussed, using IPMA's accredited Laboratory of Microbiology as an example. Case studies will also be presented and examined.

Chemical hazards in seafood

3.5

The oceans and seas can be a potential source of energy, raw materials and biomaterials for the production of feed and food. However, in order for these potentialities to be exploited, marine systems have to be well known and how to protect them from damage caused by anthropogenic activities. One of the highest priority issues is pollution caused by chemicals. Marine ecosystems can receive various chemical pollutants through rivers, direct discharges or atmospheric deposition. These ecosystems are therefore the final destination for a large group of chemicals with potential associated ecological risks - and, by extension, also risks to public health. Consequently, pollutants can be present in marine foods through accumulation in the marine biota and in the marine food chain, with potential subsequent consequences for seafood safety. These dangers are nationally and internationally recognized by the scientific community and government administrations. Therefore, several international monitoring programs have been developed, such as the directives of the European Marine Strategy Framework. In addition, the European Food Safety Authority (EFSA) conducts risk assessments and writes scientific advice on a wide variety of chemicals in food. These chemicals can originate from different sources, such as food production and packaging, artificial activities or naturally occurring in the environment. Seafood is one of the most important foods consumed worldwide. It is recognized as being a healthy and high quality food. However, these products, like other types of food, can also be a source of harmful environmental contaminants such as polychlorinated biphenyls (PCBs), dioxins, pesticide residues and toxic elements. The presence of contaminants in these products for human consumption at levels above the regulatory level can have a negative impact on the health of consumers. Therefore, it is of utmost importance for the fisheries sector to know the presence of these chemical contaminants in the various seafood species and to know the maximum permitted levels. These maximum levels for a variety of contaminants are set out in legislation and monitoring programs ensure that seafood is regularly examined for the presence



of a selection of environmental contaminants. The focus has been mainly on well-known chemical pollutants, such as polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dioxins and certain toxic elements. In this context, the objectives to be achieved with this session are to know the various chemical contaminants present in seafood products, to know their origin, which are the limits allowed by European legislation and at the same time to present contents of some of these contaminants in seafood and some monitoring plans.

Parasites in seafood

3.5

The presence of parasites, including Anisakis larvae in fishery products, jeopardizes their safety and quality which is a matter of concern for official authorities and food businesses operators; and a potential risk to consumers. The overall objective of this session “Parasites” is to train and instruct professionals to recognize macroscopically observable parasites and promoting the implementation of parasite identification methodologies in the industry, according to the European Union legislation concerning parasites in fishery products.

Sensory analysis applied to seafood products

4

Consumers are becoming increasingly more demanding, informed and selective when it comes to their food choices. Hence, presently, one of the greatest challenge of the seafood industry is to create attractive, nutritious, high quality, convenient and affordable seafood products in order to meet consumers’ preferences and upgrade the competitiveness of the sector in relation to other food commodities (like, chicken, beef and pork). This session will provide an overview of the seafood sensory attributes (appearance, odor, taste and texture) that influence consumers' choice and how they are affected by different key factor (shelf time, storage conditions, processing and cooking, among others). Participants will get in touch with different methods to evaluate quality changes and learn how to perform a sensory evaluation.

Fast-screening methods

4

Fish and other seafood products, both from fisheries and aquaculture, play a vital role in a nutritional and balanced diet, and their consumption has long been associated with several health benefits. Indeed, these products provide a high number of nutrients, including protein, long-chain omega-3 polyunsaturated fatty acids, and a number of indispensable vitamins and minerals. However, seafood products are highly perishable, due to their high-water activity (aw), neutral pH, low content of connective tissue, and the presence of autolytic enzymes which cause rapid development of undesirable odours and flavours. The interest of stakeholders in seafood quality has increased significantly in recent decades, due in part to changes in eating habits, consumer needs and behaviour, and the increased industrialization and globalization of food supply chains. Quality is frequently described using terms related to nutritional value, freshness, microbiological, biochemical, and physicochemical characteristics, but none of these feature’s terms serve as adequate indices of quality and, therefore, consumers’ acceptance must be included. However, none of these features alone qualifies quality and most methods are not fast enough to make decisions right away. In addition, identification of fish and shellfish species reveals mislabelling of important seafood products. This situation affects commercial transactions, industries related to fisheries and aquaculture sectors as well as consumers. This session will focus on the



different aspects of seafood quality and safety, addressing not only the traditional aspects, but giving particular emphasis to the issues of the authenticity of species and seafood products and the application of fast methods for quality screening and qualification. In addition to a discussion of the most used methods, particular attention will be paid to the issues of the authenticity of species and products and the application of quick methods for quality qualification. Moreover, this session has been designed to help seafood professionals to improve their knowledge on quality and safety and provide new insights on new techniques and present as well the European limits and guidelines.

Course structure:

Week 1:

- Self assessment
- Units self-paced+ discussion on:

Intra-Union and extra-Union trade

The mission, role, responsibilities and action of a National Authority for Food Safety - The Inspector's Perspective

The mission, role, responsibilities and action of a Reference Laboratory - The Analyst's Perspective

Marine biotoxins in seafood

Seafood Microbiology

Chemical hazards in seafood

Parasites in seafood

Sensory analysis applied to seafood products

Fast-screening methods

- Learning forum
- Additional resources

Week 2:

- Webinars and discussion on:

Intra-Union and extra-Union trade

The mission, role, responsibilities and action of a National Authority for Food Safety - The Inspector's Perspective

The mission, role, responsibilities and action of a Reference Laboratory - The Analyst's Perspective



Marine biotoxins in seafood

Seafood Microbiology

Chemical hazards in seafood

Parasites in seafood

Sensory analysis applied to seafood products

Fast-screening methods

- Additional resources
- Learning forum
- Learning webinars
- Final Self-assessment

Course material:

The materials to be used during the course will comprise interactive multimedia presentations integrated with tutorial videos, virtual tours and other visual aids (images, diagrams), as well as, external links (EC regulations, Scientific Opinions, links to relevant webpages).

Teaching method:

Two approaches will be used: a) e-Learning with access to interactive presentations, tutorial videos and virtual tours; and b) face-to-face sessions (webinars), where participants will practice on real-life case studies and will have the opportunity to consolidate the knowledge previously acquired in the e-Learning platform.

Assessment method and criteria:

Tests, oral assessments, case-studies.

Notes and prerequisites:

More than 2 years of professional experience in the seafood sector; or Academic background in food science and technology, veterinary or marine biology.

