

WP2 – Monitoring of environmental contaminants in seafood products with unknown information

WP2 Lead partner: IMARES

Other partners involved: IPMA, UGent, NVI, ICRA, DTU, ILVO, ICETA, IRTA, URV, AEIFORIA, ARVAM, Hortimare and Dan Salmon

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Summary

The main objective of this WP is to monitor priority contaminants, biotoxins and micro-plastics in selected seafood, and parameters that influence these concentrations. Several specific objectives have been set for WP2. In general, the specific objectives of WP2 do apply to all contaminant groups, but due to specific differences between the types of contaminants considered, some objectives apply specifically to one or more group of contaminants. The specific objectives are described below:

Objectives

1. Verify suitability of freeze-dried samples for all methods of analysis
2. Set-up analysis method for emerging biotoxins
3. Prepare in-house reference material for emerging biotoxins
4. Optimize detection and quantification methods of micro-plastics in water, sediment, particulate matter and seafood species, using blue mussel (*Mytilus edulis*) and European flounder (*Platichthys flesus*) as case studies.
5. Set-up a sampling plan for analysis of priority contaminants in seafood can be correlated to discriminative biological parameters.
6. Analyse the levels of priority contaminants, biotoxins and micro-plastics in selected seafood.
7. Investigate whether the levels of priority contaminants in seafood can be correlated to discriminative biological parameters.
8. Monitor the effects of origin (biological and chemical parameters) on priority contaminants levels within the same seafood species and between different species.
9. Evaluate the effect of food technologies on priority contaminant levels in seafood.

10. Improve analytical methods that require a lower LOQ and higher accuracy, with respect to relevant toxicological effect levels.
11. Analyse priority chemical contaminants, biotoxins and micro-plastics from all samples collected in other WPs (WP3-6)

Tasks

Task 2.1. Set-up of sampling protocol and plan for the collecting, processing and distribution of samples, and implementation of such plan.

Task 2.2. Analysis of priority contaminants in freeze-dried samples.

Task 2.3. Analysis of selected priority contaminants in a selected number of species from potential hotspots and from different trophic levels.

Task 2.4. Optimize the existing methods for micro-plastic quantification.

Task 2.5. Set-up of analysis method for emerging biotoxins.

Task 2.6. Preparation of in-house reference material for emerging biotoxins.

Task 2.7. Improve current analytical methods to obtain the required lower Limit of Quantification (LOQ) and higher accuracy.

Task 2.8. Monitor whether levels or type of priority contaminants, micro-plastics and biotoxins in seafood are affected by food preparation.

Task 2.9. Monitor whether levels of priority contaminants in seafood can be correlated to discriminative biological parameters.

Task 2.10. Monitor the effects of origin (biological and chemical) on the levels of priority contaminants in the same and different species of seafood.

Task 2.11. Fit a mechanistic model to the data on contaminant concentration gathered in micro-plastics, in the various environmental compartments (e.g. water, sediments) and in organisms.

Task 2.12. Monitor biotoxin profiles in food to describe metabolism of toxins.

Task 2.13. Analysis of all samples collected in other work packages.