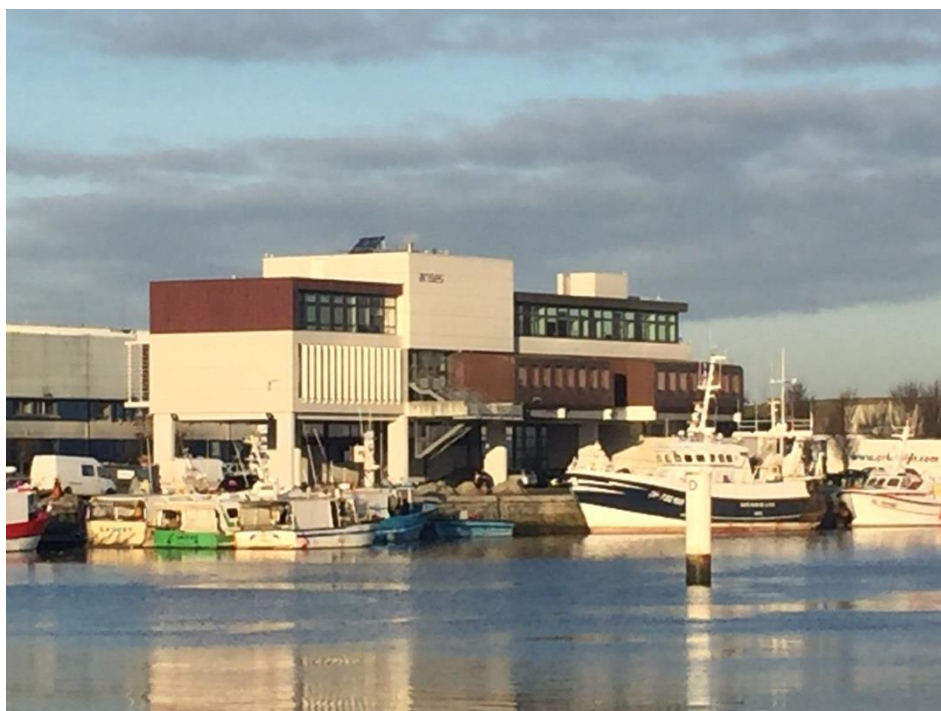


ANSES consolidates its presence in Boulogne-sur-Mer

***Inauguration of the extension to the Boulogne-sur-Mer site of
ANSES's Laboratory for Food Safety***

14 June 2018



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Press release

ANSES consolidates its presence in Boulogne-sur-Mer!

Inauguration of the extension to the Boulogne-sur-Mer site of ANSES's Laboratory for Food Safety

Centrally located in the port of Boulogne-sur-Mer, the Laboratory for Food Safety's site specialising in fishery and aquaculture products is expanding! This extension, financed jointly by the Hauts-de-France Region and the local community, underlines ANSES's scientific investment in Boulogne-sur-Mer and is fully consistent with regional research dynamics for the quality and safety of aquatic products. These new premises can henceforth accommodate scientists from the Biochemistry of Aquatic Products Unit of the University of the Littoral-Côte d'Opale, enabling capacities and resources to be pooled to address challenges specific to the sector of fishery and aquaculture products.

With a team of more than 20 people working on the quality and hygiene of fishery and aquaculture products, the Boulogne-sur-Mer site of the ANSES Laboratory for Food Safety develops methods for detecting, characterising and quantifying pathogens (micro-organisms and parasites) and chemical contaminants (biogenic amines, microplastics, etc.) found in fish, shellfish and crustaceans.

Strong ties with the Hauts-de-France academic and scientific community

Involved in numerous joint research projects with the University of the Littoral-Côte d'Opale, the Boulogne-sur-Mer site is a major partner of the MARCO State-Region plan contract (CPER) whose aim is to develop an original and innovative approach to the investigation of marine environments and their resources and the quality of aquatic products as part of a regional dynamic taking into account environmental impacts.

The MARCO project, entitled *"Marine and coastal research in Côte d'Opale: from environments to resources, uses and the quality of aquatic products"*, is a way to strengthen ties between various research and academic institutions to benefit the local area and preserve the diversity of its environments.

Essential support from local authorities

The Hauts-de-France Region and the Boulogne-sur-Mer Urban Community, which are long-standing partners of ANSES in Boulogne-sur-Mer, provided funding for an extension with suitable infrastructures able to accommodate scientists from the Biochemistry of Aquatic Products Unit of the University of the Littoral-Côte d'Opale. This research team, also linked to the Charles Viollette Regional Institute for Agrifood and Biotechnology Research of the University of Lille, now enables the skills of several organisations to be pooled and regional research capacities to be strengthened.

Capitalising on these multiple links with the universities and research institutions present in Hauts-de-France, the new building, bringing together around 40 scientists, technicians and administrative and financial staff members in total, will enable the teams to continue their mission to safeguard health and coordinate the research community in the area of fishery and aquaculture products.

These new premises will boost the local presence of ANSES's Boulogne-sur-Mer site, making it a leading centre of excellence for the quality and safety of aquatic products.

The ANSES Laboratory for Food Safety at the Boulogne-sur-Mer site

The Laboratory for Food Safety, with 150 staff members, has sites in Maisons-Alfort and Boulogne-sur-Mer. Its research is focused on the biological and chemical hazards that can affect food safety and quality. In its area of expertise, it helps accomplish ANSES's reference, research, monitoring, epidemiological surveillance and scientific and technical expertise missions.

The Laboratory for Food Safety provides scientific support to public decision makers, including general expertise on the quality and safety of foodstuffs as well as more specific expertise in the sector of fishery and aquaculture products throughout the production and processing stages. As a reference laboratory, it provides health administrations with scientific and technical support through the development and validation of analytical methods for chemical contaminants and microbiological pathogens, the training of recognised and accredited laboratories, the organisation of inter-laboratory tests and the coordination of laboratory networks.

Three of the laboratory's 13 national reference laboratory (NRL) mandates are held by the Boulogne-sur-Mer site, where more than 20 people study the quality and hygiene of fishery and aquaculture products. These are reference mandates for:

- *Vibrio*, a genus of bacteria that includes species that are pathogenic for humans,
- Histamine, the leading cause of food poisoning outbreaks associated with fishery products,
- Anisakids and parasites isolated from fish, in collaboration with the Laboratory for Animal Health in Maisons-Alfort.

For more information, see Annex 1.

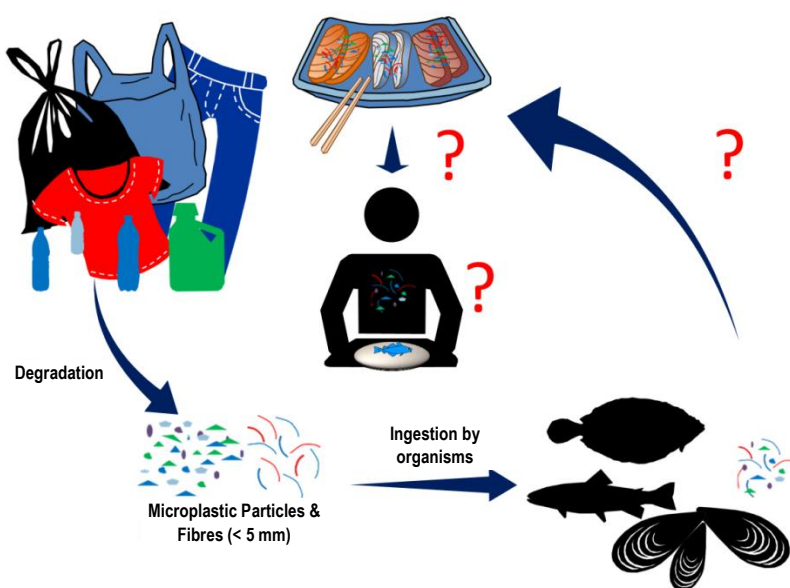
The Laboratory for Food Safety: key figures

- > **150** staff members including **12** PhD students
- > **13** NRL mandates and **two** EURL mandates
- > **15** inter-laboratory proficiency tests organised
- > **17** analytical methods for contaminants developed or revised
- > **33** scientific proposals submitted under competitive calls for projects
- > **16** competitive research projects selected
- > **62** publications in international peer-reviewed scientific journals (A+ and A)

Focus on work undertaken on microplastics

First described in 1972 but only actually studied since 2004, microplastics are small plastic particles between 100 nm and 5 mm in size. They can be found everywhere in the environment including in air, water courses, soil and oceans, where 90% of plastics end up. Depending on the type of microplastics and their density, they can float on the surface, be found at a range of depths or even settle on the ocean floor. All living species, from the smallest (e.g. zooplankton) to the largest (e.g. whales), can ingest them. Currently, the plastics most commonly found in the environment are polyethylene (plastic bottles), polypropylene (plastic boxes) and polystyrene (packaging materials). Microplastics can be hazardous due to their specific composition, especially the various additives used to manufacture them, and through the chemical (heavy metals, toxins, pesticides, etc.) and biological (bacteria) contaminants that adhere to their surface.

Since 2015, ANSES has been investigating the issue of microplastics in food through various questions: How can microplastics be quantified in food? What is the level of human exposure to these particles via food? If humans are exposed, what are the risks to their health?



In the framework of an ANR research project entitled “Nanoplastics”, ANSES is improving the means (tools and methods) to identify the smallest microplastics.

Work is also being undertaken in parallel on the theme of plastics additives. These are compounds added to plastics during their manufacture to provide them with desired properties such as flexibility, rigidity or fire resistance. Under certain conditions, they can be released into the environment. ANSES is therefore seeking to better understand the possible release of these additives and of plastic polymers when microplastics are consumed with food.

Local partnerships essential to regional dynamism

Since it moved into the Boulogne-sur-Mer site, ANSES has received support from key local partners to address food safety issues in the fishery and aquaculture sector.

An agreement of understanding and cooperation with the **Hauts-de-France Region** gave rise to a strategic programme, enabling ANSES to further contribute to the regional dynamic by developing and strengthening regional research capacities. This consists of the *Campus de la Mer* project, the AQUIMER competitiveness cluster, and projects in the context of the State-Region plan contract on marine and coastal research in Côte d'Opale for the investigation of marine environments, their resources and the quality of aquatic products (the MARCO CPER, see Box and Annex 2). This support provides co-funding for the hosting of PhD students, the acquisition of research equipment and materials, exchanges of scientists from various institutes and the organisation of scientific events.

Regarding its priorities and key issues, the **Boulogne-sur-Mer Urban Community** supports the development of the Fishery network of excellence. It has thus been a loyal partner of ANSES since it moved into the port district of Boulogne-sur-Mer, actively supporting research projects and the funding of infrastructures.

In light of the prospects and objectives of world-class research in the fishing and aquaculture sector, these partnerships provided, among other things, co-funding for the building extension project on the Boulogne-sur-Mer site.

The laboratory, partner of the MARCO State-Region plan contract (CPER)

The objective of the MARCO multi-partner project on *“Marine and coastal research in Côte d'Opale: from environments to resources, uses and the quality of aquatic products”* is to develop an original and innovative approach to the investigation of marine environments and their resources and the quality of aquatic products, as part of a regional dynamic taking into account environmental impacts for the suitable management of marine resources ensuring the quality and safety of aquatic products for consumers.

ANSES is coordinating and participating in the MARCO CPER for the themes in the “Quality and safety of aquatic resources” dimension. For the first two planning phases, from 1 July 2016 to 31 August 2019, the Boulogne-sur-Mer site is thus supporting four scientific actions:

- **RECOMANCHE action** on “Food web and contaminants in Manche”, which aims to link the individual biological parameters of the target species (trophic level, sex or age) to levels of certain bacteriological, parasitic and chemical contaminants having an impact on public health.
- **VIBBAR action** on the “Impact of seabass (*Dicentrarchus labrax*) farming practices on microbial flora and populations of *Vibrio* spp. of interest for animal and public health”, which studies the persistence of *Vibrio* on surfaces, especially in biofilms associated with aquaculture farming.
- **“Spoilage - Freshness” action** which aims to gain a better fundamental understanding of spoilage in the fish matrix stored at 4°C and spoilage induced by freezing, and develop tools that can be used by the *Nouvelles Vagues* Innovation Platform to measure this spoilage.
- **“Microplastic” action**, which studies trophic transfer and potential contamination of seafood products by synthetic microplastic particles that are potential emerging hazards for marine organisms and consumers.

As part of the actions supported by ANSES and the University of the Littoral-Côte d'Opale's contracted unit (ULCO-USC), funding was used to acquire the heavy equipment required to perform the work. Lastly, the teams at the Boulogne-sur-Mer site will coordinate the “Quality and safety of aquatic resources” dimension of the 3rd planning phase at the end of 2018.

Joint research projects between ANSES and the University of the Littoral-Côte d'Opale (ULCO)

Capture fisheries and aquaculture produce around 100 million tonnes of fish worldwide. France is number three in terms of European fishery production, and in 2014, capture fishing and aquaculture accounted for around 700,000 tonnes of fish in France. The consumption of fishery products has been on the rise for the past few years with changes in consumption patterns. The safety of fishery and aquaculture products is thus a key issue.

This is the context in which ANSES's Boulogne-sur-Mer site and the University of the Littoral-Côte d'Opale (ULCO) are undertaking their research work on the safety and quality of fishery products. A joint ANSES – ULCO research programme dealing with two major themes is part of a regional dynamic around seafood products. These themes take into account future issues and possible changes in the fish sector, especially with the marketing of imported products and species not previously fished on French coasts, the introduction of new treatments and techniques for the processing of aquatic products, and the emergence of new ways of consuming seafood products such as consuming raw or undercooked products. Lastly, given the decline in fishery resources, the development of sustainable aquaculture is a major challenge for the future that should take into consideration the impact on the development of marine ecosystems.

There have always been scientific synergies and consistency between the work on fishery products undertaken by the ANSES and ULCO laboratories, with the same objective of controlling the safety and quality of aquatic products. This common objective prompted the two laboratories to work together more closely.

In order to continue and strengthen synergies between the two teams, a contracted unit (USC) called the **Biochemistry of Aquatic Products Unit, which became part of ULCO's research unit at ANSES, was created in 2014**. Moreover, on **1 January 2015**, ULCO's team became a component of the **Charles Viollette Regional Institute for Agrifood and Biotechnology Research**, thus joining its Food Quality and Safety team. The creation of this USC has helped strengthen skills and human resources on the site and identify a critical mass of scientists required to access research programmes and conduct large-scale national and international projects in its areas of expertise. The agreement drawn up between ANSES and ULCO formalised the relations between the two structures recognised as host teams by the Doctoral School for Material, Radiation and Environmental Sciences.

The agreement also provided for the **onsite accommodation of ULCO's permanent scientists** from this contracted unit, PhD students and trainees and for the **implementation of research activities on ANSES's premises**.

Research on the identification and **characterisation of physico-chemical and microbiological contaminants** is being undertaken by ANSES's units in collaboration with the Biochemistry of Aquatic Products Unit of the University of the Littoral-Côte d'Opale.

In addition, ANSES and ULCO are involved in the MARCO CPER and are responsible for Dimension 4 entitled **“Quality and safety of aquatic products”**. In this context, specific scientific actions managed jointly by these two are being implemented under the planning phases with the funding of pooled materials and resources (*see Box p. 6 and Annex 2*).

A building extension with shared funding to respond to scientific challenges

To carry out all of the research work sponsored jointly by ANSES and ULCO, it was necessary to expand the building inaugurated in 2008 and make adjustments in order to accommodate administrative and technical staff members, scientists, PhD students and trainees from ULCO and ANSES in satisfactory conditions, and have laboratory zones tailored to various activities.




The building project was developed with the Werner Stutz architecture firm and ANSES's own architect to meet needs and adapt to the constraints of the existing structure. **The two-storey horizontal extension** to ANSES's initial building provides the advantage of increasing the surface area of the laboratory zone on the 1st floor and the office zone on the 2nd floor while ensuring continuity and consistency with the pre-defined existing zones. In addition, this expansion will enable most of ANSES's and ULCO's research activities to be merged in identical laboratory zones with the **pooling of space and equipment**. As for office space, the aim was to promote exchanges between scientists, especially ANSES and ULCO PhD students, thus bringing together university and Agency scientists according to their topics and areas of expertise.

The enlargement of the tertiary zone enabled communal and office areas to be created. Scientific activities now benefit from a **larger laboratory zone** with the reconfiguration of spaces to optimise sharing of the existing and new areas. Among other things, it was necessary to:

- resize and **accommodate molecular biology activities**, which have increased in the past few years and are carried out as part of the research work of the three units dedicated to bacteriology, parasitology and chemistry,
- recreate a **zone for flourishing parasitology activities**, in particular the national platform for the identification of fish parasites,
- create a space for **aquatic product characterisation and cellular biology activities**,
- create a space for the **accommodation of "heavy" analytical equipment**, financed partly by the MARCO CPER (for chromatography and sequencing),
- create **spaces for storing samples, in particular for storage in negative temperature conditions**,
- increase the **surface area of changing rooms and sanitary facilities** for laboratory workers.

The extension fits in the framework of the strategic scientific programme between ANSES and the ULCO-USC as part of the Charles Viollette Institute. Thanks to the support of the Hauts-de-France Region and the Boulogne-sur-Mer Urban Community, this programme provides a way to strengthen and stimulate research with the main goal of ensuring the safety of seafood products with an integrated approach to the entire food chain, from production to consumption.

Breakdown of funding

Funders	Total funding (excl. tax)	
 Région Hauts-de-France	€575,000	50%
 anses Connaître, évaluer, protéger	€492,000	42%
 Communauté d'agglomération de Boulogne-sur-Mer www.agglo.boulogne.fr	€90,000	8%
TOTAL	€1,157,000	100%



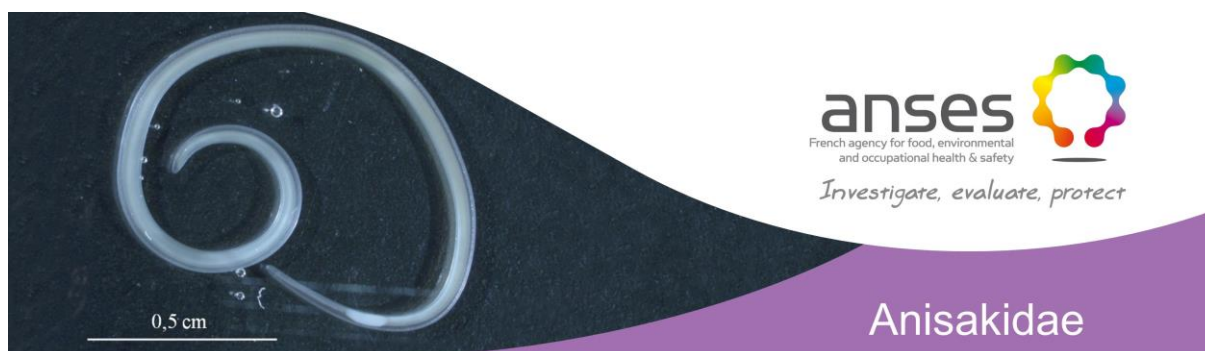
Learn more about the architecture firm and the architectural concept

Werner Stutz Collectif Architecture was created in 1984. A clear approach to architectural design and rigorous project monitoring helped win the loyalty of demanding clients and gave rise to a specific core business for projects in the tertiary, scientific research, public health and industry sectors. Since the 1990s, its achievements have been consolidated thanks to a highly qualified permanent team that has acquired experience through numerous projects by designing highly specialised buildings (dedicated to research & development, production, logistics) and/or buildings in particular areas (health, food safety, pharmacology, biology, microbiology, biotechnology, chemistry, nanotechnology etc.). The works supervision contract with Werner Stutz Collectif Architecture, the designer and prime contractor of the current building, was signed in March 2015. The proposal submitted on 29 July 2015 included a horizontal extension of 281 m² in floor area adjacent to the current building (1160m² gross floor area), featuring the volumetric principles of the existing building as well as the structural framework required by its port location: the building is supported by a concrete structure with columns every 12 metres and the two floors sit on a portal structure arranged perpendicularly to the port and overlooking the quay.






The companies involved in the project

Area of intervention	Company
Project management assistance	VERDI CONSEIL NORD DE FRANCE
Works supervision	
Commissioned architect	Werner Stutz Collectif Architecture
Scientific consultant	2BCONCEPT CONSULTING
Engineering firm	TPF Ingénierie
Economist	ETAC (scheduling, steering and coordination)
Other participants	
Control office:	QUALICONSLT
H&S coordinator:	DEKRA
PREPARATORY WORK, FOUNDATIONS, STRUCTURE	CONSTRUCTION CONCEPT LITTORAL
WATERPROOFING	GECAPE
INSULATING OUTER FACING AND COPPER CLADDING	EFITEK
EXTERIOR WOODWORK, METALWORKING, LOCKSMITHING, CLOSURES	SA ROGER DELATTRE
INTERIOR WOODWORK	BARA MENUISERIE
PLASTERBOARD ELEMENTS, FALSE CEILINGS	SAS IPC
FLEXIBLE FLOORING, FLOOR TILING, WALL TILING, INTERIOR AND EXTERIOR PAINTING	SARL NOVIGO, then DUFOUR
HEATING, VENTILATION, AIR-CONDITIONING	THERMOCLIM SERVICES
PLUMBING, SANITARY FACILITIES, SPECIALITY GASES	MISSENARD CLIMATIQUE
HIGH- AND LOW-VOLTAGE ELECTRICITY	DEMOUSELLE
SPECIFIC LABORATORY EQUIPMENT, BENCHES, FUME CUPBOARDS	DELAGRAVE

Annex 1 - Focus on three of ANSES's scientific themes in Boulogne-sur-Mer



Anisakids are zoonotic nematodes whose larvae can be found in more than 200 fish species and more than 25 cephalopod species. They inhabit all of the world's oceans and seas. These parasites can cause digestive and/or allergic diseases.

<p>Anisakids can be found in:</p>  raw fish  cephalopods	<p>Food poisoning</p> <ul style="list-style-type: none"> For digestive diseases, unsafe products include anadromous and catadromous wild marine and brackish-water fish and cephalopods consumed raw or under-processed. For allergic reactions, since the allergens are resistant to freezing and sometimes cooking, all wild fish and cephalopods are considered to be unsafe. The number of cases in France and Europe is largely underestimated. The average incidence is estimated at 20 cases per year and per European country with a high level of variability depending on eating habits. 	<p>Symptoms</p> <p>Incubation period of one hour to five days after ingestion</p>  Abdominal pain, diarrhoea  Nausea, vomiting  Allergic reactions (digestive or respiratory, urticaria, anaphylactic shock)
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THE LABORATORY'S ACTIVITIES

Research

- Development and validation of tools for the identification and detection of **Anisakids**
- Examination of factors influencing the distribution of **Anisakids** in fishery products
- Investigation of **bacteria/parasite interactions**
- Assessment of the zoonotic potential of other parasites

Reference

- Associate laboratory to the NRL for Food-borne parasites** (Laboratory for Animal Health, ANSES)
- Detection in fishery and aquaculture products and larval identification

Monitoring

- Epidemiological studies on the **distribution** of these parasites in fish
- Surveillance programme for **products at the distribution stage**
- Platform for the **identification** of fish parasites



Laboratory for Food Safety,
Maisons-Alfort and Boulogne-sur-Mer sites



Histamine is one of the biogenic amines, compounds that are biologically active on the central nervous system and vascular system and in the stomach. The formation of histamine in food depends on three key factors: the free histidine content, the presence of bacteria able to synthesise histidine decarboxylase, and the conditions allowing their growth and the production of active enzymes (mainly temperature and pH).

<p>Histamine can be found in:</p> <ul style="list-style-type: none"> Canned fish and fish in brine Fish in the Scombridae family (tuna, mackerel) Long-keeping cheeses 	<p>Food poisoning</p> <ul style="list-style-type: none"> Histamine poisoning is the leading cause of foodborne illness associated with the consumption of fishery products in France. In France, in 2014, seven outbreaks (3%) and 36 cases (1%) of histamine poisoning were reported, the large majority of which were caused by the consumption of fish, especially tuna. In Europe, histamine has been responsible for a few food poisoning outbreaks (80 outbreaks and 437 cases in 2015) associated with the consumption of fish (84%) in particular but also cheese. <p>SPF 20114, EFSA 2015</p>	<p>Symptoms</p> <p>Incubation period from a few minutes to one hour after ingestion</p> <ul style="list-style-type: none"> Redness of the face and neck, skin rash, facial oedema, hot flushes Nausea, vomiting
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THE LABORATORY'S ACTIVITIES

Reference

- **NRL for histamine** in fishery products
- Detection and quantification in food
- Investigation of **health alerts**, in collaboration with supervisory ministries

Monitoring

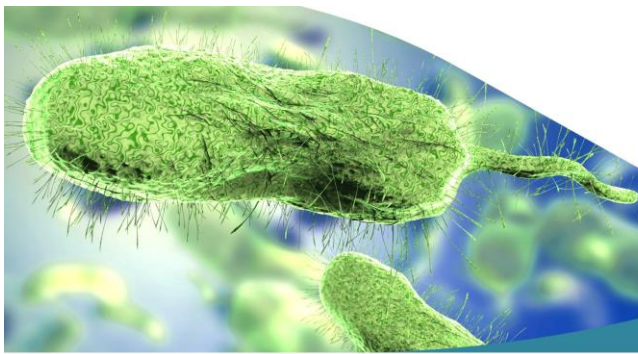
- Surveillance programme for histamine and biogenic amines in the **fishing sector**

Research

- Histamine and biogenic amines, definition of health indicators
- Synergistic or antagonistic effects of various biogenic amines in food (histamine, putrescine, cadaverine, tyramine)



Laboratory for Food Safety,
Maisons-Alfort and Boulogne-sur-Mer sites



Vibrio parahaemolyticus

V. parahaemolyticus naturally lives in estuaries and coastal environments all over the world. This bacterial species is commonly found in sediment, plankton, fish, crustaceans and bivalve molluscs, especially oysters and mussels.

V. parahaemolyticus infections are primarily foodborne and occur following the consumption of raw or undercooked fish or seafood.

☐ **Vibrio can be found in:**



shellfish:
oysters, mussels



crustaceans:
prawns, crabs



fish

☐ **Food poisoning**

- Sources of contamination are natural environments, contamination transfer during handling, contamination by rinsing with contaminated seawater and recontamination after cooking.
- In France, as in other European countries, cases are difficult to recognise, especially the least severe forms, since these are not notifiable infections.
- In Europe, *Vibrio* have been responsible for a few food poisoning outbreaks (four outbreaks and 29 cases in 2015, i.e. 0.2% of all outbreaks).

EFSA 2015

☐ **Symptoms**

Incubation period of 12 to 24 hours after ingestion



Abdominal pain,
diarrhoea



Nausea,
vomiting



Moderate fever

THE LABORATORY'S ACTIVITIES

Research

- Molecular characterisation of *Vibrio parahaemolyticus* and of the TDH and TRH pathogenicity factors
- Identification of the *Vibrio cholerae* species and detection of pathogenicity factors (cholera toxin A and B sub-units) using molecular and serotyping methods

Monitoring

- Characterisation of circulating strains in the **fishing sector**
- Development of emergence with **global warming** and rising water temperatures

Reference

- **NRL for *Vibrio* spp** in fishery products
- Detection in food and characterisation of strains
- Investigation of **health alerts**, in collaboration with the NRC



Laboratory for Food Safety,
Maisons-Alfort and Boulogne-sur-Mer sites

Annex 2 - About the MARCO State-Region plan project

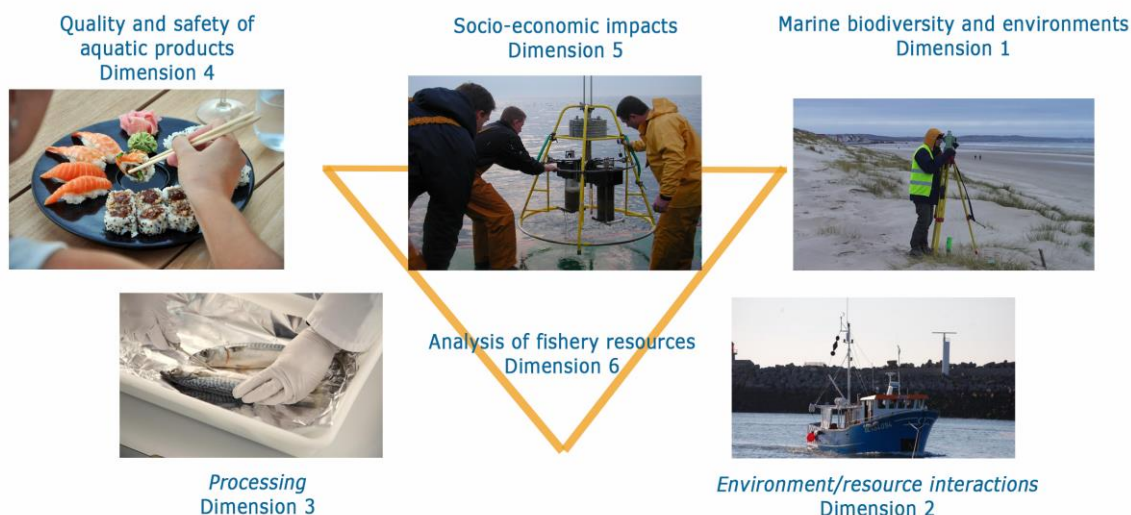


Marine and Coastal Research in Côte d'Opale Resources and uses of aquaculture environments Quality of aquatic products



The MARCO State-Region plan contract (CPER) is a multi-disciplinary and multi-laboratory project. The main objective is to provide data to improve the management of marine environments, aquatic resources and related products. The purpose of MARCO is to protect the environment, resources and consumers and take into account related societal aspects.

Budget of €11 million	4 funders (Hauts-de-France Region, French State, Europe (ERDF) and Ifremer)
5 partner institutions	8 laboratories, i.e. around 200 staff members
    	6 scientific dimensions



MINISTÈRE
DE L'ÉDUCATION NATIONALE,
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

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