

Achieving zero pollution of our waters: Shellfish as bioindicators



Picture : Sébastien Husté

**Position paper of the French Shellfish farming sector on the
Review of the lists of pollutants affecting surface waters and
corresponding regulatory standards**

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The **French National Shellfish Farming Committee** (Comité national de la conchyliculture – CNC) represents the **French shellfish sector** (breeders, processors and distributors). The CNC is an active member of the Aquaculture Advisory Council and founding member of the European Mollusc Producers Association (EMPA). The French shellfish farming sector is the **largest in Europe**, with an annual production value of around **660 million euros**. The sector employs up to **15,000 people** and supports over **2,200 companies**. France is the EU's leading oysters producer, exporter and consumer and second largest mussels producer in value. The European shellfish production is overall estimated to 584,000 tonnes for a total value of 1.17 billion euros (in 2020).

The European Green Deal and the Farm to Fork Strategy underline the potential of farmed seafood as a source of protein for food and feed with **a low-environmental footprint**. The sector has an important role to play in building **a sustainable food system**. Shellfish farmers are also increasingly working into **multi and low-trophic aquaculture** models by integrating **seaweed farming** in their cultures, as encouraged by the EU's aquaculture strategic guidelinesⁱⁱ and the EU's algae communicationⁱⁱⁱ.

Shellfish and seaweed farming directly depends on the quality of the EU waters.

Both wild and cultivated **shellfish**, and more specifically bivalve molluscs, as well as seaweed, are **keystone elements of coastal ecosystems** providing essential ecosystem services to their environment.

Bivalve molluscs **filter water**, feed from nutrients present in the water and act as **bioindicators of the concentration of pollutants** in a body of water. By filtering water, they contribute to decreasing water turbidity, which encourages, for example, the growth of zostera seagrass, home to a wide variety of marine species. At the same time, by accomplishing their **biofilter role**, they are however vulnerable to **harmful substances accumulation** that can compromise their viability, their growth and/or their hygienic-sanitary quality.

Chemical contaminants such as dioxins, polychlorinated biphenyls, heavy metals (particularly lead, mercury, cadmium and arsenic) and polycyclic aromatic hydrocarbons, as well as micro and nanoplastics, from the surrounding waters are also problematic for shellfish health and their sanitary quality.

Knowledge is however still lacking to completely grasp the direct or indirect impacts of pollutants, especially of micropollutants, on shellfish. Research on the impact of some substances and their combinations and accumulation in varying conditions on marine life, in particular at low trophic levels, is greatly needed. However, science is progressing fast, **and we already have clear warning signals** that should be considered in the revision of the list of pollutants in waters.

At the same time, **climate change increases pressures on water and aquatic life** with changes in temperature, precipitations, ocean acidification, hypoxia incidence and prevalence and sea levels. It only **reinforces the need for an update of the list of pollutants** and the need for **adequate and swift review procedures** which can take into account the most up to date data and research findings.

The French Shellfish Farming Committee (CNC) therefore welcomes the European Commission's proposal to update the list of pollutants affecting surface waters and the corresponding environmental quality standards (EQS). The CNC would like to share the following recommendations with the co-legislators.

Our recommendations:

Cocktail effect

- It is of utmost importance that the EQS take into account the 'cocktail effect' in all its dimensions. **Individual substance thresholds are not sufficient** to prevent negative impacts on the environment. Thresholds by groups of substances should be defined, taking into account the toxicity and potency.
- In line with the Water Framework Directive, and when scientific evidence is pointing towards a **specific effect of a substance (or of a combination of substances) on shellfish or their habitats, more stringent maximum concentration levels** should be defined to be applied to shellfish farming waters, i.e. in areas designated for the protection of economically significant aquatic species^{iv}.

Watch List

- The CNC **welcomes that a watch list for pollutants** of emerging concern is maintained for surface waters.
- The number of pollutants included in the watch list should however **not be limited**.
- The cost of monitoring additional substances should be borne by chemicals producers, in line with the Polluter Pays Principle, through **extended producer responsibility schemes**.
- We also welcome the inclusion of **microplastics** on the watch list and call for the inclusion of nanoplastics.

Comments on specific substances

Shellfish are bioindicators of water quality. The Marine Strategy Framework Directive^v actually considers the level of contaminants in seafood for human consumption as a descriptor of the good environmental status of marine waters. **Coherence between environmental quality standards and the sanitary norms** for seafood products should be pursued, including in the case of shellfish.

- The CNC **regrets the deletion of article 16 of the Water Framework Directive**, which *de facto* weakens the **phasing-out obligation and deadline for priority hazardous substances** such as cadmium, mercury, polyaromatic hydrocarbons which are accumulated in bivalve molluscs and subject to food product maximum concentration levels.

- As the food legislation is about to be revised to set up a maximum level of inorganic arsenic in seafood^{vi}, the CNC calls for the insertion of **inorganic arsenic** on the list of priority substances in surface water and for the definition of an EQS.
- While research on the direct impact of **glyphosate** on shellfish has increased over the past five years, data is lacking at this point. However, research clearly indicates a **negative impact of glyphosate on the biodiversity of phytoplanktons** (from which shellfish feed) and significant **impacts on algae**. The CNC would therefore welcome the inclusion of glyphosate on the list of priority substances and the definition of an EQS threshold.

Regular review and update of the list of pollutants and corresponding EQS

The CNC welcomes the grounds laid for the introduction of an effect-based monitoring (EBM) of mixture effects in the future assessment of chemical status.

- We call for the Commission to be given the adequate means to require the effective use of EBM through delegation of powers.
- The CNC also recalls that bivalve molluscs are bio-indicators of the water quality. Ecotoxicology tests using bivalve molluscs' mortality as an indicator to monitor and understand the impact of contaminants and cocktail effects on the aquatic environment would be a relevant solution, especially in protected shellfish farming areas under the Annex IV of the Water Framework Directive^{vii}.

The shift to a **six-yearly review of the EQS is however unsuitable to tackle the challenges of water pollution** and does not reflect the rapidity of changes linked to climate change, innovations (substances withdrawal and replacement by others) and of scientific findings on the impact of chemicals on the aquatic life.

- The CNC therefore calls for a **review every four years**.

Key messages

- The 'cocktail effect' should be considered in all its dimensions.
- The additional pressure on water and aquatic life caused by climate should also be considered to list priority substances and the frequency of review.
- When scientific evidence points to direct and/or specific effect of a pollutant on shellfish or their habitats, more stringent concentration levels should be applied to protected shellfish farming waters.
- The CNC welcomes the establishment of a watch list, and in particular the inclusion of microplastics. The number of substances to be monitored should not be limited and monitoring costs should be borne by chemicals producers through extended producer responsibility schemes.
- A phasing-out obligation for priority hazardous substances should be maintained.
- Coherence between environmental quality standards and sanitary legislation for foodstuff should be ensured. Inorganic arsenic should be added to the list of priority substances in surface waters.
- The CNC welcomes the inclusion of glyphosate on the list of priority substances.
- The list of priority substances should be reviewed every three years.

ⁱ Proposal for a Directive amending Directive 2000/60/EC establishing a framework for Community action in the field of water policy, Directive 2006/118/EC on the protection of groundwater against pollution and deterioration and Directive 2008/105/EC on environmental quality standards in the field of water policy

ⁱⁱ Strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021 to 2030.

ⁱⁱⁱ Communication 'Towards a strong and sustainable EU algae sector'.

^{iv} Directive 2000/60/EC establishing a framework for Community action in the field of water policy, article 6 paragraph 1

^v Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy , Annex I, Descriptor 9.

^{vi} Commission Regulation (EU) 2023/915 of 25 April 2023 on maximum levels for certain contaminants in food and repealing Regulation (EC) No 1881/2006.

^{vii} Directive 2000/60/EC establishing a framework for Community action in the field of water policy.