

Biotoxin and phytoplankton monitoring

The risks of marine biotoxins and phytoplankton that infect shellfish and what food businesses can do about them.

Marine biotoxins are poisonous substances which can accumulate in the tissues of live bivalve molluscs. This can be as a result of feeding on biotoxin producing phytoplankton.

There are currently three groups of regulated biotoxins for shellfish. These can cause:

- paralytic shellfish poisoning (PSP)
- amnesic shellfish poisoning (ASP)
- diarrhetic shellfish poisoning (DSP) caused by lipophilic toxins

The process of monitoring marine biotoxins identifies if there is an increased risk of shellfish becoming contaminated.

It allows businesses to take appropriate steps to ensure the shellfish they are placing on the market are safe to eat.

When biotoxins in shellfish are detected over the legal limit we and your Local Authority take action to ensure the affected areas are closed for harvesting.

Risks of marine biotoxins

These species are filter feeders or feed exclusively on filter feeders. This means they are more likely to pick up and accumulate biotoxins or bacterial contaminants.

Eating shellfish contaminated with these biotoxins can lead to serious illness which means that these species can only be commercially harvested from approved production areas. These areas are monitored to ensure they meet the biotoxin and microbiological criteria.

Biotoxin levels

The maximum permitted levels of biotoxins in shellfish are:

- PSP at 800 micrograms/kilogram of saxitoxin (STX)
- ASP at 20 milligrams/kilogram of domoic acid (DA)

DSP is caused by a group of Lipophilic toxins and the levels are:

- OA/DTXs/ Pectenotoxins (PTXs) at 160 micrograms of Okadaic acid equivalents/kilogram
- Yessotoxins (YTXs) at 3.75 milligram of yessotoxin equivalent/kilogram
- Azaspiracids (AZAs) at 160 micrograms of azaspiracid equivalents/kilogram
- DSP applicable for species not tested by LC-MS - DSP toxins must not be present

Important

References to EU legislation in FSA guidance

Directly applicable EU legislation no longer applies in GB. EU legislation retained when the UK exited the EU became assimilated law on 1 January 2024, published on legislation.gov.uk. References to any legislation in FSA guidance with 'EU' or 'EC' in the title (e.g. Regulation (EC) 178/2002) should now be regarded as assimilated law where applicable to GB. References to 'Retained EU Law' or 'REUL' should now be regarded as references to assimilated law.

For businesses moving goods from Great Britain to Northern Ireland, information on [the Windsor Framework](#) is available on GOV.UK.

The Windsor Framework was adopted by the UK and EU on 24 March 2023. The Framework provides a unique set of arrangements to support the flow of agrifood retail products from Great Britain (GB) to Northern Ireland (NI), allowing GB standards for public health in relation to food, marketing and organics to apply for pre-packed retail goods moved via the NI Retail Movement Scheme (NIRMS).

Northern Ireland

PDF

[View Protocol for sampling and transport of shellfish for Northern Ireland as PDF\(Open in a new window\)](#) (316.35 KB)

[Protocol for the collection and transport of shellfish samples for England & Wales](#) (PDF on Cefas.co.uk, 577 KB)

Biotoxin test kits for industry

This guide includes information on toxin kits available for FBOs and advice on how to carry out End-Product Testing (EPT).

Northern Ireland

PDF

[View Shellfish end product test Northern Ireland as PDF\(Open in a new window\)](#) (470.7 KB)

Phytoplankton monitoring

Some phytoplankton are toxin producing algae.

Water samples are collected from selected sites within classified shellfish growing areas and analysed for various species of phytoplankton including:

- Alexandrium
- Dinophysis
- Pseudo-nitzschia

Monitoring for phytoplankton provides an early warning of toxic events. It can also help you make decisions on additional monitoring activities.

Northern Ireland

PDF

[View Protocol for sampling and transport of water samples for Northern Ireland as PDF\(Open in a new window\)](#) (141.99 KB)

[Protocol for the collection and transport of water for England & Wales](#) (PDF on Cefas.co.uk, 271 KB)

Harvesting in high concentrations of Phytoplankton

You need to take the necessary precautions if you want to harvest areas with alert level conditions.

The alert level Phytoplankton concentration for each species is:

- Alexandrium (Saxitoxin), it is greater than or equal to 40 cells/litre of Alexandrium - Responsible for PSP
- Dinophysis (Okadaic Acid), it is greater than or equal to 100 cells/litre of Dinophysis, and by historical data – Responsible for DSP
- Pseudo-nitzschia (Domoic Acid), it is greater than or equal to 150,000 cells/litre of Pseudo-nitzschia, and historical data – Responsible for ASP

Biotoxin and phytoplankton results

Biotoxin and phytoplankton results for England, Wales, and Northern Ireland are held on our dedicated data website, as well as by CEFAS.

- [Biotoxin and phytoplankton results for England and Wales](#)
- [Biotoxin results for Northern Ireland](#)
- [Phytoplankton results for Northern Ireland](#)
- [AFBI phytoplankton annual report for 2024](#)
- [AFBI biotoxin annual report for 2023](#)

Biotoxin and phytoplankton sampling plans

England and Wales

EXCEL

[View Biotoxin and phytoplankton sampling plans for England and Wales as Excel\(Open in a new window\)](#) (312.73 KB)

[Biotoxin sampling schedules for Northern Ireland](#)

[Phytoplankton sampling schedules for Northern Ireland](#)

Shellfish and water sample submission form for Northern Ireland

Northern Ireland

PDF

[View Shellfish and water sample submission form for Northern Ireland as PDF\(Open in a new window\)](#) (44.61 KB)

Scallop (Pectinidae) monitoring

Under assimilated Regulation (EC) 853/2004, scallops can be harvested from unclassified areas. Harvesting of wild scallops can be permitted if the controls in this regulation are followed and ensure that the end product is safe to eat.

Closures

For details of any temporary closure notices and warning notices, please contact your Local Authority Environmental Health Officer for advice.

Not having any information doesn't mean the area is free of biotoxins. It is the responsibility of FBOs to ensure that their products comply with all relevant requirements. This includes checking that biotoxins are below the regulated levels.

Live updates

Last updated 06 October 2023.

Current closures in place for marine biotoxins in England and Wales:

For further details on results, please visit [Biotoxin and phytoplankton results](#)

French shellfish results

It is important that you are aware of biotoxin results for all areas that you harvest from to make sure the product is safe. This includes French waters.

You need to be aware of the [phytoplankton and flesh results and alerts from French production areas](#).

Once opened the red markers show areas where results have breached phytoplankton trigger levels or flesh action limits.

We recommend that the website is opened using Google Chrome to take advantage of the translation function that is available.