Food Standards Agency protocol for the collection and transport of water samples for the purpose of Official Control Monitoring of classified shellfish production areas in England & Wales

Final – Version 9

July 2022

For implementation from 01 August 2022

15 pages

Document classification:	Official
Document review date:	Not applicable
Date of issue of this version:	27/07/2022

1. INTRODUCTION

There is a current regulatory requirement to monitor classified shellfish production areas to check for microbiological contamination, marine biotoxins, harmful algae and chemical contaminants.

The official control (OC) monitoring programme for marine biotoxins is divided into two elements: flesh and water monitoring, where samples of commercially harvested shellfish and water samples are collected and tested from each active production and relaying area.

In England and Wales, The Food Standards Agency (FSA) is the Central Competent Authority (CAA) with overall responsibility for the implementation and delivery of the shellfish official control monitoring programmes. Cefas is the contracted laboratory with responsibility for the coordination of the toxin monitoring programme and the delivery of all associated shellfish and water testing. Water testing is undertaken by Cefas in Lowestoft. Water samples are analysed for the presence of potentially harmful algal (phytoplankton) species which may be responsible for the production of Amnesic Shellfish Poisoning (ASP) toxins, lipophilic toxins (including Diarrhetic Shellfish Poisons (DSP)) and Paralytic Shellfish Poisoning (PSP) toxins.

Local Enforcement Authorities (LEAs), the Competent Authorities (CAs), are responsible for collecting water (and shellfish) samples from the designated representative monitoring points in harvesting areas and sending these to Cefas for analysis.

This protocol is intended for use by authorised sampling officers (referred to as 'YOU' in this document), for the official control monitoring of shellfish production areas in England and Wales for the presence of potentially toxin producing algal species. Please note that a separate protocol for the collection of shellfish samples is available from the Cefas website.

You should use this protocol in conjunction with the Cefas sample submission form which is available on the Cefas website.

2. TIME OF SAMPLING

You must collect samples at the frequency specified by the FSA monitoring plans and policies, unless sampling can be rescheduled by agreement or where circumstances are outside of your control.

Please note that where a sample is assessed as unsuitable by the laboratory new samples will be requested by Cefas. You must comply with these requests, unless exceptional circumstances prevent the collection of these samples.

You should notify the Cefas programme co-ordinators (see details in section 8) of your **monthly sampling schedule before the start of each month or when additional sampling has been requested, before the end of each week.**

If you are unable to collect samples on the planned dates, please notify the Cefas programme co-ordinators with the reason and your revised sampling date.

Please be aware of the arrangements agreed with FSA for the submission and testing of samples around bank holidays and Christmas. Cefas will communicate these arrangements to all at the start of each calendar year. Late samples will not be accepted, unless discussed and agreed in advance with Cefas.

There are specific conditions which you must be aware of when collecting water samples:

a) You should ideally collect water samples at high tide (+/-1h), particularly at inshore sites. Sampling at low tide must be avoided.

b) You should collect water samples as close to the shellfish sampling date as possible to ensure a good correlation between flesh and water results.

c) It is recommended that you collect samples as early as possible in the week so that subsequent analysis and reporting of results can be completed within the same week. This is to enhance the capability of the algal analysis to provide an early warning mechanism for potential presence of biotoxins in shellfish. For this reason, it is suggested that you collect water samples from Mondays to Wednesdays for analysis at Cefas Lowestoft by Friday. Samples arriving on Friday will be analysed the next working day (usually the following Monday) and results reported the same day.

d) Sampling requirements may be suspended for sites with no harvesting activity. Please contact Cefas to discuss the site status and to agree a revised sampling regime before postponing any sampling.

e) Where shellfish testing is not performed weekly, we may request the collection of an additional water sample if algae concentrations reach the trigger levels shown in Table 1.

Table 1: Set phytoplankton trigger levels

Algal species	Toxins produced	Trigger level (cells/L)
Alexandrium species	PSP	40
Dinophysis species	Lipophilic toxins	100
Prorocentrum lima	Lipophilic toxins	100
Pseudo-nitzschia species	ASP	150,000

f) We may request a new sample if the sample you submitted was found to be unsuitable for analysis. A sample may be recorded as unsuitable if it has leaked, was not preserved properly, was contaminated, or contained high amounts of sediment.

Notes:

- Additional samples or samples submitted for analysis too soon after the previous sample will not be analysed unless the samples were requested by the FSA or Cefas, or the revised sampling programme was agreed beforehand with Cefas.
- If there are obvious signs of contamination at the sampling site e.g. by oils, fuels, sewage, high sediment load etc, then, unless it is possible to avoid the contamination, sampling should be postponed and the Cefas plankton laboratory contacted for further advice (see section 8). **Please note that water samples deemed unsuitable will be rejected and an additional sample will be requested for testing.**

3. EQUIPMENT

The following equipment is required for water sampling and will be provided to you by Cefas. Please contact the laboratory (see contact details in section 10) if you are running low on sampling equipment.

a. Tube sampler or Water bottle sampler (pole sampler)
b. Labelled screw capped brown Nalgene plastic sample bottles*
c. Packaging
d. Sample submission form
e. Pre-paid special delivery return envelopes
f. In-date Lugol's iodine
g. Pipette

*Please note: Water samples must be submitted in the supplied brown nalgene sample bottles. Any sample arriving in a different container may be rejected

The following equipment should also be available (to be provided by LEAs):

a. Bucket (for mixing of sample)
b. Device for identification of fixed sampling points (e.g. GPS)
c. Temperature and salinity measuring equipment
d. Absorbent paper towel
e. Disinfectant (see section 9)
f. Pen

4. COLLECTION OF SAMPLES

Sampling location:

You must use the Representative Monitoring Point (RMP) location (as stated in the agreed sampling plans). FSA maintains the list of production areas currently classified on the FSA website and publishes updates when changes occur.

Sampling for water monitoring:

- You must collect your sample from the water RMP (or within the agreed *E.coli* tolerance for that point).

You will need to confirm on the sample submission form that you have complied with the protocol and that the sampling meets the above requirements. If you cannot comply with the sampling requirements for your water sample (for example, because of access issue or insufficient depth at the site), you must inform the Cefas programme co-ordinators. Discussions will take place with FSA so that monitoring arrangements can be amended and the sampling plan updated. This should take place before you collect a sample from the affected area.

Recording of actual sampling location:

You must record your *actual* location of sampling to a 10m accuracy in Ordnance Survey national grid reference (NGR) format i.e. AB 1234 5678. A suitable GPS device or Ordnance survey 1:25,000 map should ideally be used for this purpose. Alternatively, if samples are taken by boat then, instead of an OS map, an Admiralty Chart (or similar) should be used with position recorded in Degrees and decimal minutes format i.e. 00° 00'.001N, 000° 00'.001W (or E as appropriate). Please record locations to 3 decimal places (as in the example above) and indicate which datum is used (OSGB 36 or WGS 84) as positional errors of up to 200m can occur if the incorrect datum is reported.

Sampling method:

The aim of the water sampling method is to obtain samples which are representative of the algal community in the water body being sampled. The sampling method used will be dependent on the depth of water at the site.

Two methods may be employed in order to collect this sample:

1. a tube sampler (taking a depth integrated sample) is the preferred option – see method in paragraph **A (below)**.
2. When depth or access issue prevent the use of this method, then the collection of a more discreet sample from a shallower area using a water bottle (pole) sampler will be allowed – see method in paragraph **B (below)**

The use of buckets to collect surface water is discouraged as this method often does not collect samples which are representative of the water mass in which the shellfish are filter feeding.

The method to be used at each site will be discussed and agreed with you and the appropriate water sampler will be provided by Cefas Lowestoft. You will be expected to use the agreed sampling method for the site and you will need to confirm this on the sample submission form.

If the water sampler becomes damaged, you should contact the Lowestoft laboratory to seek a replacement at the first opportunity.

A. Sampling off-shore from a boat (or from a pier or jetty) using a tube sampler.

A1. You have been supplied with a simple polythene pipe water sampling system which will take an integrated sample from the surface to whatever depth the weighted end is lowered.

A2. If possible, take the sample from water depths of at least seven metres or more. If this is not possible, then you may need to shorten the pipe by removing the top plastic valve, cutting the pipe to the maximum length required and refitting the valve. The sample must be taken in the vicinity of the shellfish sampling site.

A3. Taking the sample:

a) Secure the free end of the line to the boat/jetty to safeguard against losing the pipe.
b) Open the valve at the top of the pipe.
c) Slowly lower the weighted end of the pipe into the water until most of the pipe is immersed (the pipe must remain taut and vertical in order to take an even sample of the whole water column). Care must be taken to ensure that the weighted end of the tube comes no closer than 0.5m from the seabed to prevent contaminating the sample with sediment.
d) Close the valve at the top of the pipe.
e) Retrieve the bottom of the pipe using the attached line. Then empty all the contents of the pipe into a bucket by opening the top valve and if necessary lifting the valve end of the pipe up.
f) Rinse the pipe with fresh water.
g) See section 5 for fixing and sending the samples.

B. Sampling from the shore using a water bottle (pole) sampler.

B1. When sampling from the shore it is preferable that a water bottle (pole) sampler is used. This does enable several samples (at least 3) to be taken from various water depths (max 3m) over the harvesting area. These samples should be mixed in a bucket, using a figure of '8' motion, before taking a 500ml sub-sample from the homogenised water mixture and adding the preservative (Lugols Iodine).

There are two types of pole sampler available. The most commonly used type is a robust, stainless steel version of fixed length (either 1.5m or 2.0m). The second type has recently been introduced, to make transport easier, as it is made from aluminium which is lighter, and it is also extendable to a maximum of 3m. However, it is less robust and does need careful washing after each use, to prevent corrosion.

B2. Taking the sample:

Using the stainless steel pole sampler.

a) Remove the plastic cap from a 1 litre bottle provided with the sampler. Screw the bottle into the threaded plastic attachment at the base of the sampler. Make sure that it is screwed in fully to create a tight seal.
b) Make sure the plunger in the centre of the handle is pushed down as far as it will go. This prevents anything entering the sample bottle before the sample is taken.
c) If possible, tie the sampler handle to a secure point, to prevent loss of sampler.
d) Grip the sampler by the handle and the top of the shaft in order to support the weight of the sampler and bottle. Place the sample bottle in the water, holding the shaft of the sampler as close to vertical as is feasible from the sampling position.
e) Ensure that the plastic attachment piece at the end of the sampler is completely submerged.
f) While holding the sample bottle under the water, draw the plunger upwards as far as it will go. Bubbles should begin to rise from the holes in the plastic attachment piece. Hold the sampler in position until bubbles are no longer being released from the bottle. This shows that the bottle is full.
g) Push the plunger down as far as it will go to reseal the sample bottle and prevent contamination of the sample. Remove the sampler from the water.
h) Carefully unscrew the sample bottle from the end of the sampler and pour the water collected into a clean bucket.
i) Repeat steps a) to h) above, a minimum of 3 times. At each deployment, try to take water from a different depth (near bottom (>0.5m from bottom), mid water and near surface).

j) Gently mix the water in the bucket using a figure of ‘8’ motion before taking the sample.
k) Rinse the 1 litre sample bottle, bucket and pole in fresh water and dry thoroughly. This will prevent contamination of future samples and reduce corrosion of the sampler.
l) See section 5 for fixing and sending the samples.

Using the aluminium extendable pole sampler.

a) A 750ml plastic bottle (complete with its lid) should be placed in the holder at the bottom of the pole. There is a hole in the bottle lid and another one in the shoulder of the bottle to enable water to enter and air to escape. The bottle should be held tightly in place by tightening the screw on the plastic banding.
b) If possible, tie the pole sampler to a secure point, to prevent loss of sampler.
c) Adjust the length of the sampler pole according to the depth of water being sampled and adjust the angle of the bottle holder to ensure that the bottle is held vertically in the water as the sample is being taken.
d) Grip the sampler by the handle and the top of the shaft in order to support the weight of the sampler and bottle. Place the sample bottle in the water, to the selected depth. Bubbles should begin to rise from the hole in the bottle lid. Hold the pole in position until bubbles are no longer being released from the bottle.
e) Once the bottle is full, remove the sampler from the water and release the bottle from the holder by unscrewing the plastic banding.
f) Carefully unscrew the bottle lid and pour the water collected into a clean bucket.
g) Repeat steps a) to f) above, 3 times. At each deployment, try to take water from a different depth (near bottom (>0.5m from bottom), mid water and near surface).
h) Gently mix the water in the bucket using a figure of ‘8’ motion before taking the sample.
i) Rinse the 750ml sample bottle, bucket and pole in fresh water and dry thoroughly. This will prevent contamination of future samples and reduce corrosion of the sampler.
j) See section 5 for fixing and sending the samples.

Note: It may not be possible under all circumstances to use any of the above methods at every site. The reasons for this must be clearly explained to Cefas and either an alternative sampling site will be selected, where the preferred equipment could be used, or the use of a bucket may be permissible, in which case: Take a near surface sample of sea water using a bucket from as far from the shoreline as practicable and safe but in the same location as the shellfish sample is taken, or in the vicinity of the shellfish harvesting bed.

5. PREPARATION AND PACKAGING OF SAMPLES

You must follow this guidance to prepare each of your water samples:

a) Take a 500ml, brown plastic bottle (supplied) and fill in the site name, bed ID and date on the label.
b) Use a figure of eight motion to mix the sample within the bucket then immerse the brown bottle to take the sample, filling it just to the shoulder. Under no circumstances should the sample be allowed to settle within the bucket before filling the brown bottle, as the sample will no longer be representative of the algal content of the water.
c) Using the supplied dropper bottles, add 2 full squeezes of Lugols Iodine (preservative) to the sample. This is equivalent to 2.0ml. Ensure that there is still an air gap at the top of the bottle to enable mixing.
d) Close the bottle lid, and gently invert the sample bottle three times to ensure complete mixing of the preservative and seawater and place it in the box supplied.
e) Fill in the sample submission form and indicate on the form
f) the number of remaining jars you have left. This will allow for the next water sampling kit to be supplied to you in good time.
g) Ensure that the lid on the bottle is securely tightened and place the sample bottle in a return box and close securely. It is not necessary to tape the lid or to place the bottle in a plastic bag as these can cause the sample to 'sweat' on route, making the label difficult to read. Place the box and the water sample submission form in a special delivery envelope and affix a pre-printed delivery label.
h) Follow the instructions listed in Section 6 to send the samples to the laboratory.

Short term storage of samples prior to dispatch to laboratories:

There may be times when you cannot make the cut-off time for sample dispatch on the day of sample collection. In those circumstances, you should store the samples overnight at room temperature prior to dispatch the following day. The samples will not need repacking before despatch.

6. SAMPLE TRANSPORT

You must dispatch your prepared samples to Cefas Lowestoft as soon as practically possible after sampling. Samples should be sent using Royal Mail Special Delivery (unless alternative courier arrangements have been agreed) to

The Plankton Laboratory
CEFAS - Lowestoft Laboratory,
Pakefield Rd,
Lowestoft,
Suffolk, NR33 OHT

See section 5. for situations when you may be able to store samples prior to dispatch/delivery.

In case of emergency (for example in case of industrial action by Royal Mail or Post Office), the alternative courier service will be either TNT or Parcelforce. Cefas will advise you of the revised transport arrangements if contingency measures are required.

There may also be times when emergency situations affect the Cefas laboratory and when samples need to be directed to an alternative testing laboratory. Cefas will advise you of the revised arrangements if such emergency arises.

7. SAMPLE SUBMISSION FORM

An individual sample submission form must accompany each sample to the laboratory. The form must be completed in full and accurately. Incomplete or inaccurate collection forms may lead to the rejection of samples.

You must record the following information on the **Sample submission form**:

- Production area, Site Name, Cefas Bed ID, actual location of sampling (OS Grid reference)
- Date and time of collection
- Method of collection
- Name and contact details of sampling officer
- Seawater temperature
- Sample depth*
- Any other relevant information*

* See details below

Sample depth:
Depth at which the sample was collected (or average depth), not the depth of the water body at the site.

Any other relevant information:

In addition to the information requested, you should report unusual observations (e.g. weather, boating activity, dredging, animals in water, plankton bloom, etc.) which can help target investigations and possible remedial actions.

When filling in the sample submission form:

- **Please use black ink and capital letters, where possible.**
- **All dates must be recorded as dd/mm/20yy and times in 24h clock.**
- **All OS NGR must be recorded to 10 m accuracy minimum (e.g. NS12345678)**
- **All temperatures must be recorded in °C.**
- **All depths must be recorded in meters (m).**

8. CONTACT INFORMATION

Enquiries relating to the FSA monitoring programmes (including monitoring points, frequency of sampling, actions in case of breach of pre-defined levels) should be referred to the following FSA contacts:

FSA contacts
England: **shellfish@food.gov.uk** **Wales:** **shellfish.wales@food.gov.uk**

General queries should be referred to Cefas Programme Co-ordinators: biotoxinmonitoring@cefas.co.uk

For specific enquiries related to sample collection/delivery, request for further packaging/postage or other specific laboratory queries, please contact the Plankton Laboratory on 01502 524432 or e-mail planktonlab@cefas.co.uk.

Sampling schedules (and their updates when changes have been agreed or made on the day of collection) must be submitted to biotoxinmonitoring@cefas.co.uk and planktonlab@cefas.co.uk.

9. HEALTH, SAFETY & BIOSECURITY ADVICE

You must comply with the Health and Safety policies and procedures of your organisation. This includes compliance with all safety measures prescribed in risk assessments relevant to you travelling to the agreed sampling locations and the collection and handling of water samples from such areas for the purpose of the FSA monitoring programmes. The risks associated with the use and handling of Lugol's iodine should be covered by a COSHH assessment. A copy of the Cefas COSHH assessment is sent to each local authority with the sampling equipment, to assist each LA when producing its own COSHH assessment. The drafting, implementation and review of all relevant H&S documentation are the responsibility of the Competent Authority.

When undertaking sampling duties, you must be mindful of the risks of introduction or transfer of aquatic pathogens and invasive species to the areas being visited, through your sampling activities. You must comply with biosecurity measures such as cleaning and disinfection of instruments, equipment and shoes/boots between sites and not drive/park onto beaches or in close proximity to shellfish beds. All disposable items should be treated as clinical waste. Advice on suitable disinfectant and disinfection procedures are available from the Cefas Fish Health Inspectorate (FHI) (see details below). As a minimum, Cefas recommends the use of Virkon S or Virkon Aquatic S at 1% and with a minimum contact time of 15 min (or spray onto clean surface and leave to dry). A list of other suitable disinfectants is available at: http://www.defra.gov.uk/aahm/guidance/disinfectant/list/. Disinfection regimes should include all sampling equipment however it is recognised that this is difficult to achieve for pole and tube samplers. Equipment should also be rinsed with freshwater.

You must be mindful of the health status of the sites that you visit and schedule your visits to ensure that the risk of transfer of pathogens and invasive species from site to site is minimised. Details of sites under specific designations and for which specific movement controls do apply are available from the Cefas FHI and up to date lists and maps of designated areas are published on the aquatic animal health and movements page of the Defra website

It is recommended that you familiarise yourself with biosecurity plans operated by the farmers in the harvesting areas and with rules that apply to site visitors.

Where new risks of transfer of specific fish or shellfish pathogens are identified, the requirement for implementation of additional biosecurity measures will be discussed with you as soon as reasonably practicable following notification by the Cefas FHI.

For further advice on biosecurity measures, please contact:

Fish Health Inspectorate
Cefas
Barrack Road
The Nothe
Weymouth
Dorset DT4 8UB
Tel: 01305 206700
Email: fish.health.inspectorate@cefas.co.uk

Change record

Version	Date released	Change
8	June 2020	New front page and document QC/approval section Remove reference to EU regulation Change to use of toxin RMP as monitoring point for phyto Update to links throughout document Minor editing updates to text in all sections Addition of change record to document
9	July 2022	Full protocol reviewed and all sections updated and reworded for consistency with FSA shellfish sampling protocol. Content updated throughout for compliance with accessibility legislation Removed reference to FSS DVD, now archived Change to requirement re. sampling location specification New reference to confirmation of compliance with sampling plan when filling in the submission form and what to do if the sampling plan cannot be adhered to. Addition of text relating to recording of actual sampling location Update to laboratories, FHI and FSA contact details Addition of a note that samples must be returned in the Nalgene bottles provided.

List of abbreviations used in this document:

CA:	Competent Authority
CCA:	Central Competent Authority
Cefas:	Centre for Environment Fisheries and Aquaculture Science
FBO:	Food Business Operator
FSA:	Food Standards Agency
GPS:	Global positioning system
Lat/Long:	Latitude and Longitude coordinates
LEA:	Local enforcement authority
Min.:	Minimum
OC:	Official control
RMP:	Representative monitoring point