Official Control Sampling of Shellfish

A Seafish training programme

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Introductions

Aims and Objectives, Overview, Format, Timetable and General Resources

Aims

- To inform Local Authority (LA) and Food Business Operator (FBO) understanding and competency in how to collect, process and transport shellfish samples for Official Controls purposes in accordance with Official Controls Guidance and the Seafish informal Occupational Standard.
- Support LA local governance, standard setting and verification of FBOs.
- Assuring consumer protection (Food Safety).
- Assuring UK compliance by LA, Central Competent Authority and FBOs with relevant EU Food Law – e.g., retained regulations (EU) 2017/625 on Official Controls & (EU) No 2019/627 - Laying down uniform practical arrangements for the performance of official controls on products of animal origin – inc. Shellfish.
- Assuring Capable Guardianship of shellfish waters sampling, monitoring and classification.
- Possible first step to approval by LA as an official sample collector.

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Learning outcomes

- Deliver knowledge and understanding
- Understand how to collect, process and transport samples for official control sampling (OCS)
- Build collection capability and capacity

The learner will	The learner can
1. Understand the purpose of official control samples	Describe the relationship between industry sampling, Local Authority sampling and samples taken for national monitoring or challenge testing purposes. List the various species for which official samples may be required. List the various contaminants that may be tested for.
2. Understand the need for consistency and conformity in the application of sampling methodology at all times	Explain why a consistent and agreed methodology for sampling is essential and the negative impact deviations from the "standard method" may have on the credibility of the process.

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Learning outcomes

The learner will	The learner can
3. Understand how to collect samples	Describe the planning and preparation required to collect samples. Explain when samples should be taken, how they should be collected, what equipment and other supplies are needed, and what constitutes an acceptable shellfish sample.
4. Understand how to store samples	Explain how samples should be prepared for storage, and stored prior to dispatch or transport, including the need to record and provide information with the sample.
5. Understand how to dispatch or transport samples	Describe how samples are to be transported including any time and temperature constraints, the nature of the packaging used and the need to keep stakeholders informed.
6. Understand how to collect, record and validate appropriate information	List the various types of information that should be recorded during the OCS process and describe how this data is recorded, validated and shared with stakeholders.
7. Understand the impact that other events may have on sampling and how to record and report these when appropriate	List the types of incidents or observations that should be recorded and reported. Describe how to report these observations/incidents to others.

Course timings

• Introduction	20 mins
• Understand the purpose of Official Control samples	20 mins
• Understand and Apply the Process of Official Control Samples	40 mins
• Avoiding Problems	30 mins
• Verification	20 mins
• Post Course Support	10 mins
• Discussions	10 mins

One or more breaks will be provided during the course.

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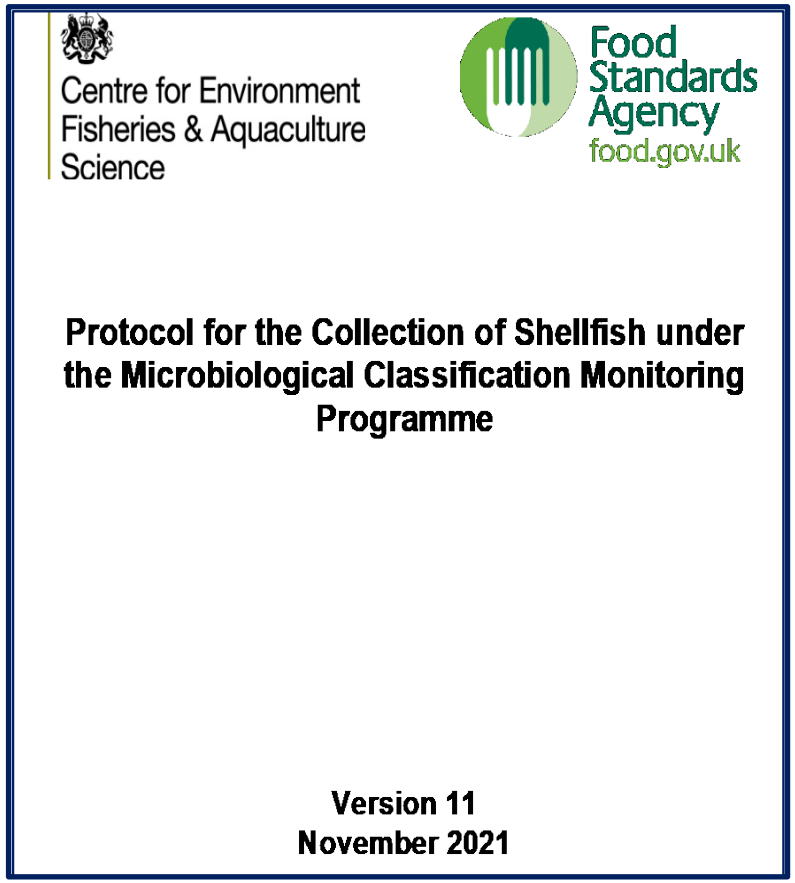
General guiding resources

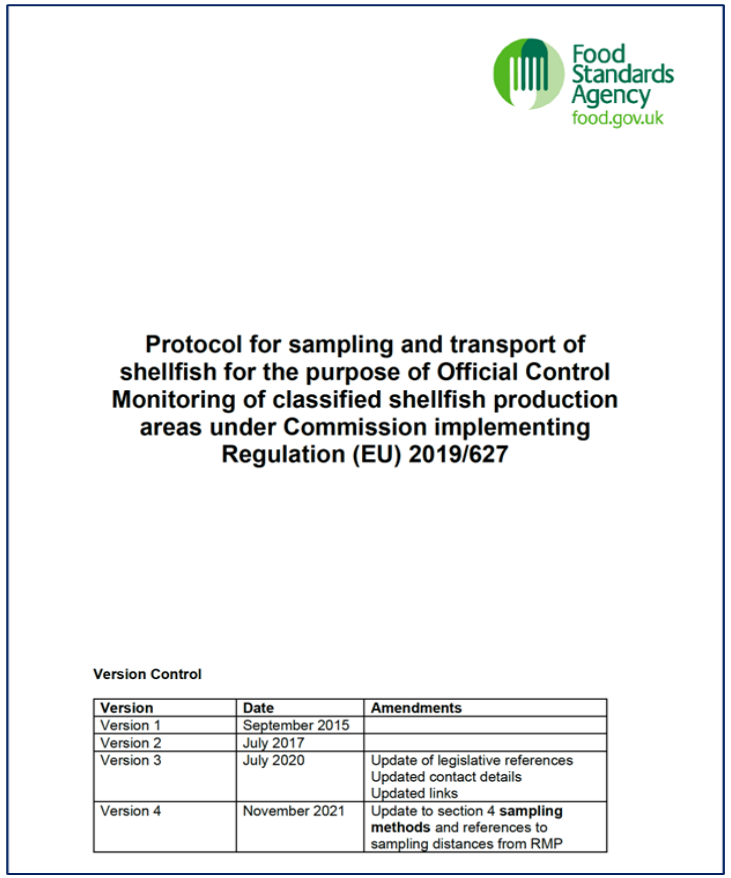


Centre for Environment Fisheries & Aquaculture Science

Food Standards Agency food.gov.uk

Protocol for the Collection of Shellfish under the Microbiological Classification Monitoring Programme

Version 11
November 2021



Food Standards Agency food.gov.uk

Protocol for sampling and transport of shellfish for the purpose of Official Control Monitoring of classified shellfish production areas under Commission implementing Regulation (EU) 2019/627

Version Control

Version	Date	Amendments
Version 1	September 2015	
Version 2	July 2017	
Version 3	July 2020	Update of legislative references Updated contact details Updated links
Version 4	November 2021	Update to section 4 **sampling methods** and references to sampling distances from RMP

Cefas

Food Standards Scotland
For safe food and healthy eating

HallMark Scotland

fera

SSQC

Food Standards Scotland protocol for appointed sampling officers for the collection and transport of shellfish samples for the purpose of Official Control Monitoring of classified shellfish production areas in Scotland

FINAL Version 6
For implementation from 4th January 2021

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Understand the purpose of Official Control samples

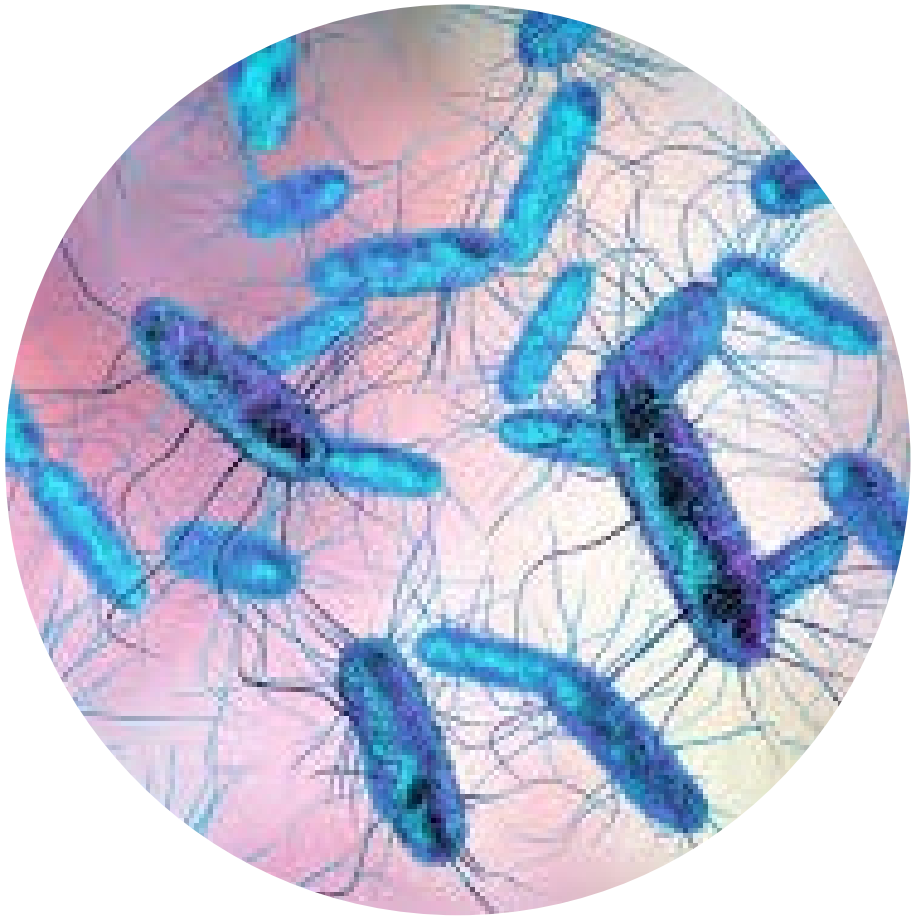
Key learning outcome - 1

- Understand that there needs to be consistency and conformity of sampling with the Official Controls Guidance otherwise sampling may not accurately classify shellfish waters.

Overview – Understand the purpose of Official Control shellfish samples

- Epidemiology of shellfish (food safety)
- Limits of depuration
- Legal context and duties
- Consequences of errors
- Routine activity theory
- Capable guardians

Epidemiology – Outbreaks of shellfish associated foodborne illness



- Raw oysters are responsible for 3% of UK food related norovirus cases (Source FSA).
- 12,000-14,000 (UK estimated) people per year experience sickness and diarrhoea after eating seafood, usually norovirus associated with raw oysters (Source CEFAS).
- Cedar Key Salmonellosis outbreak (USA 2023), eight people affected in Florida, Georgia and Alabama. Trade withdrawal of oysters.

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Epidemiology:- Summary hazard analysis and identification

- Live bivalve molluscs are filter feeders and effectively concentrate waterborne contamination = effective vectors of foodborne illness.
- Source = human sewage effluent, agricultural & natural run-off.
- Enterobacteriaceae – E. coli (inc. STEC) & Salmonellae, Viruses inc. Norovirus and Hepatitis A.
- Epidemiological Contributory Factor = Presence (P) i.e., contamination in the growing waters.
- Shellfish growing waters must be classified according to the trends in the bacteriological quality of the growing waters. Sampling is vital for classification.

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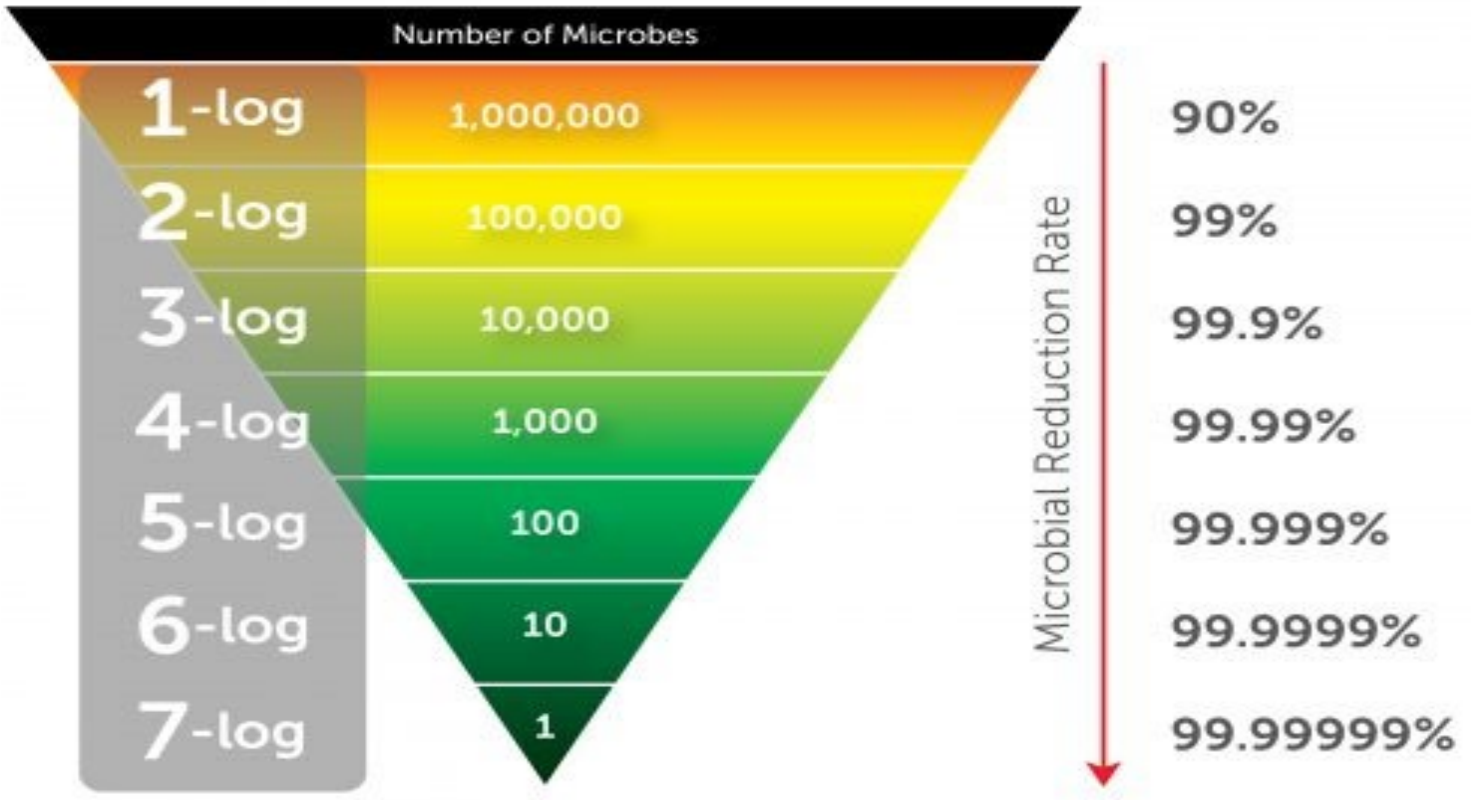
The limits of purification (depuration)



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The limits of purification (depuration)

Shellfish depuration has a finite and limited capacity to purify bacterial loading of shellfish

Therefore, depuration depends on classification of shellfish waters to ensure there are not more bacteria than the validated capability of depuration.

Validated to 4 Log cycles, if there were 10,000,000 contaminating E.coli, then after depuration 1,000 would remain

Most thermal processes are validated to 6 Log cycles or more.

On this basis, starting with 4,600 cfu/100g a standard purification cycle would usually result in less than 1 cfu/100g.

Food law and shellfish – the legal background

- Retained regulation (EU) 2017/625 - overarching principles for Official Controls - sufficient competent staff, training, methods & techniques, equipment.
- Retained Regulation (EU) No 2019/627 - laying down uniform practical arrangements for the performance of official controls on products of animal origin intended for human consumption. This legislation requires production and relay areas to be routinely monitored and classified.
- Retained Regulation (EC) 178/2004 Article 19 requires FBOs to collaborate with the Competent Authorities.
- These Regulations apply to FSA/FSS, Local Authorities and similar Agencies.

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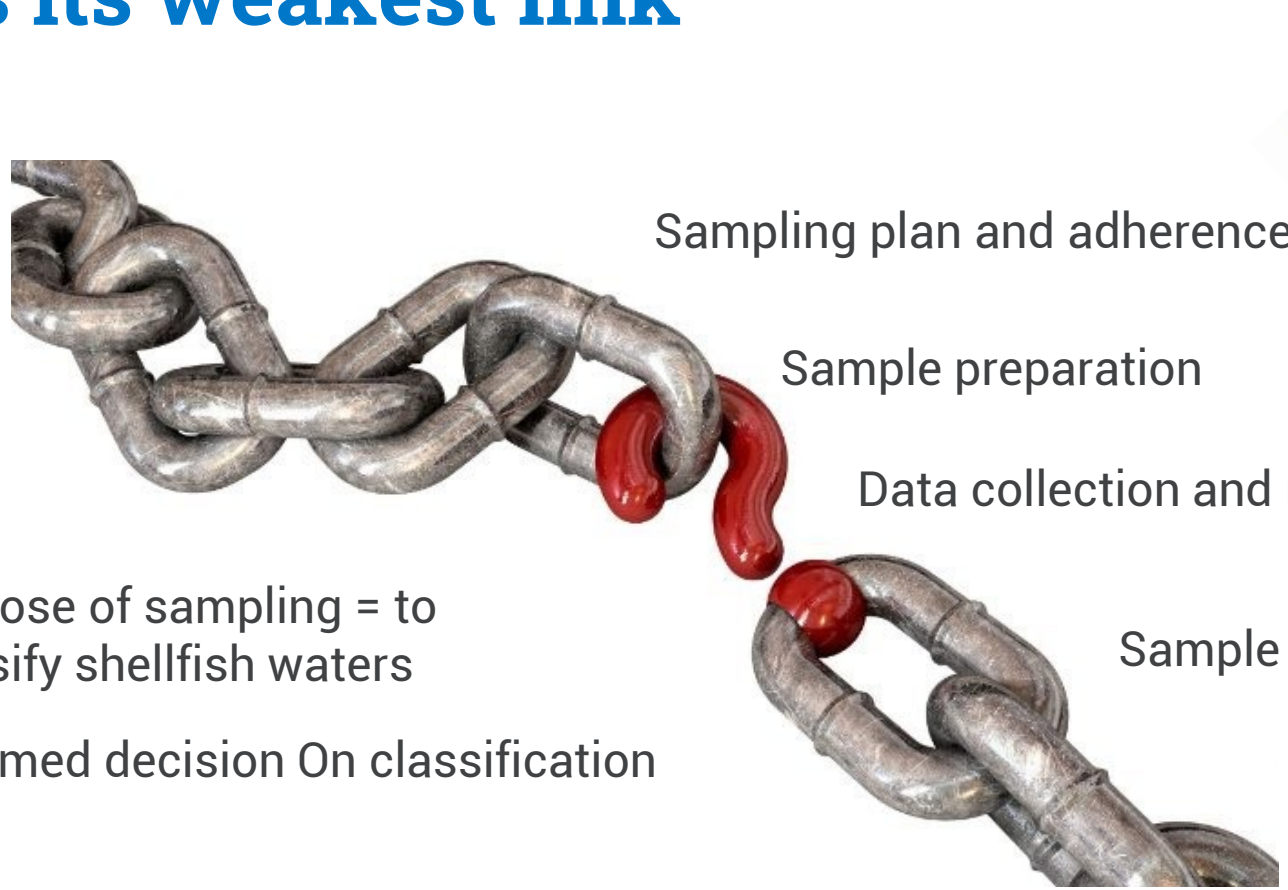
Classification and sampling process is only as strong as its weakest link



Sampling plan and adherence

Sample preparation

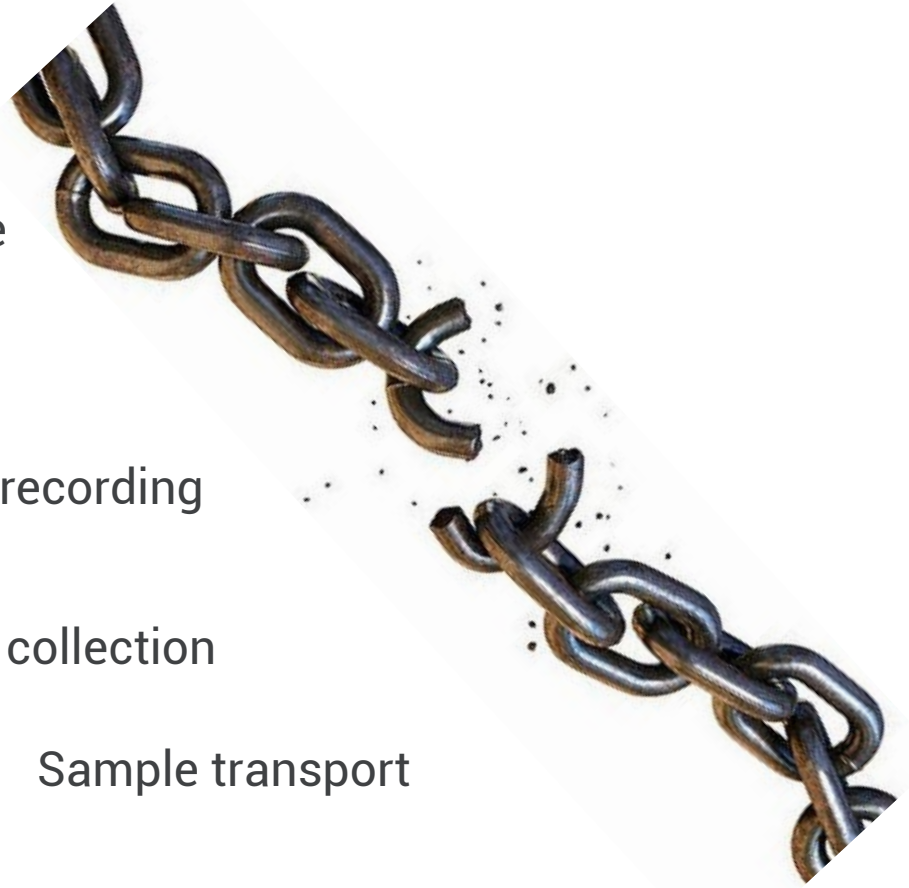
Data collection and recording

Sample collection

Sample transport

Purpose of sampling = to classify shellfish waters

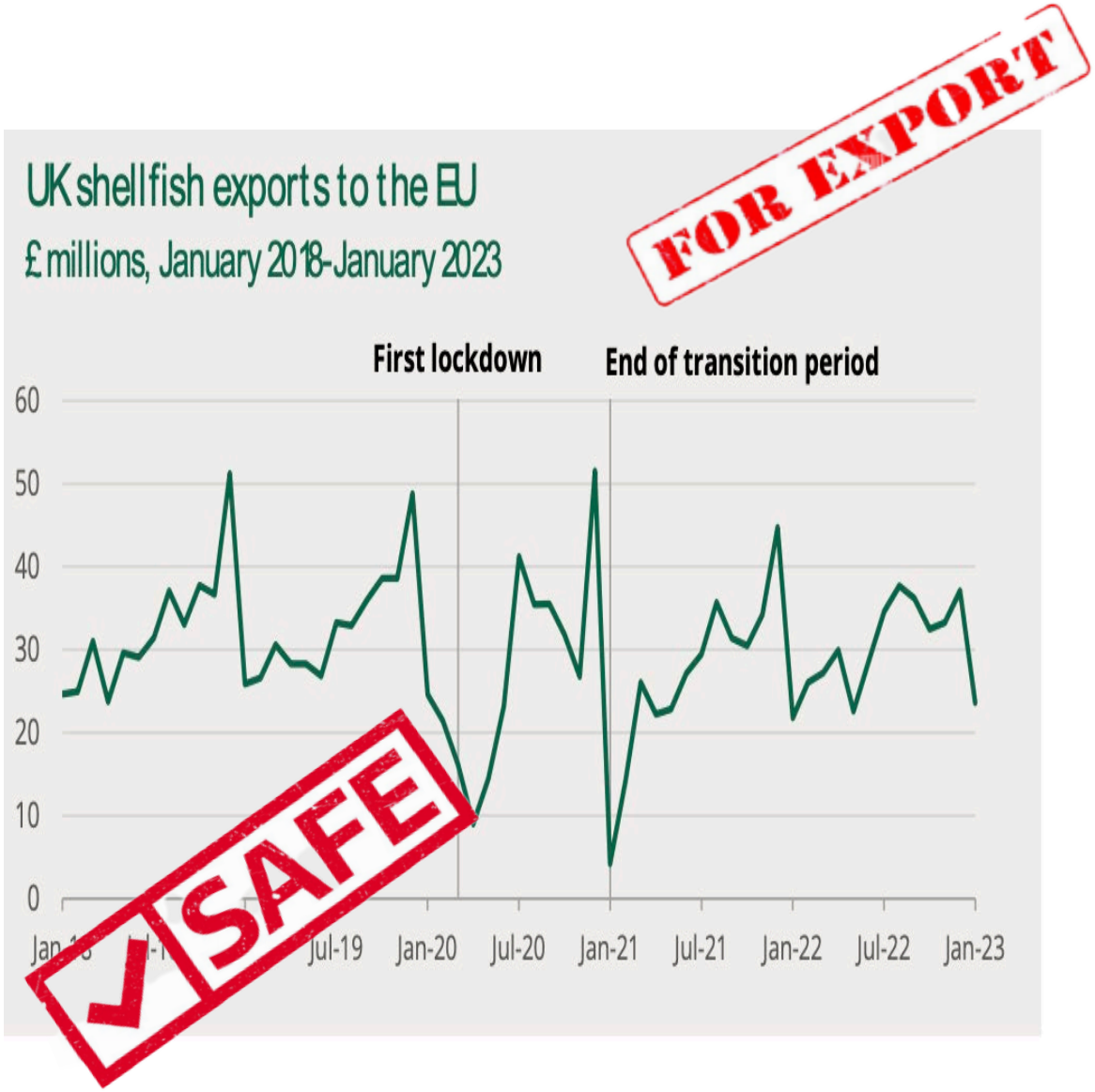
Informed decision On classification



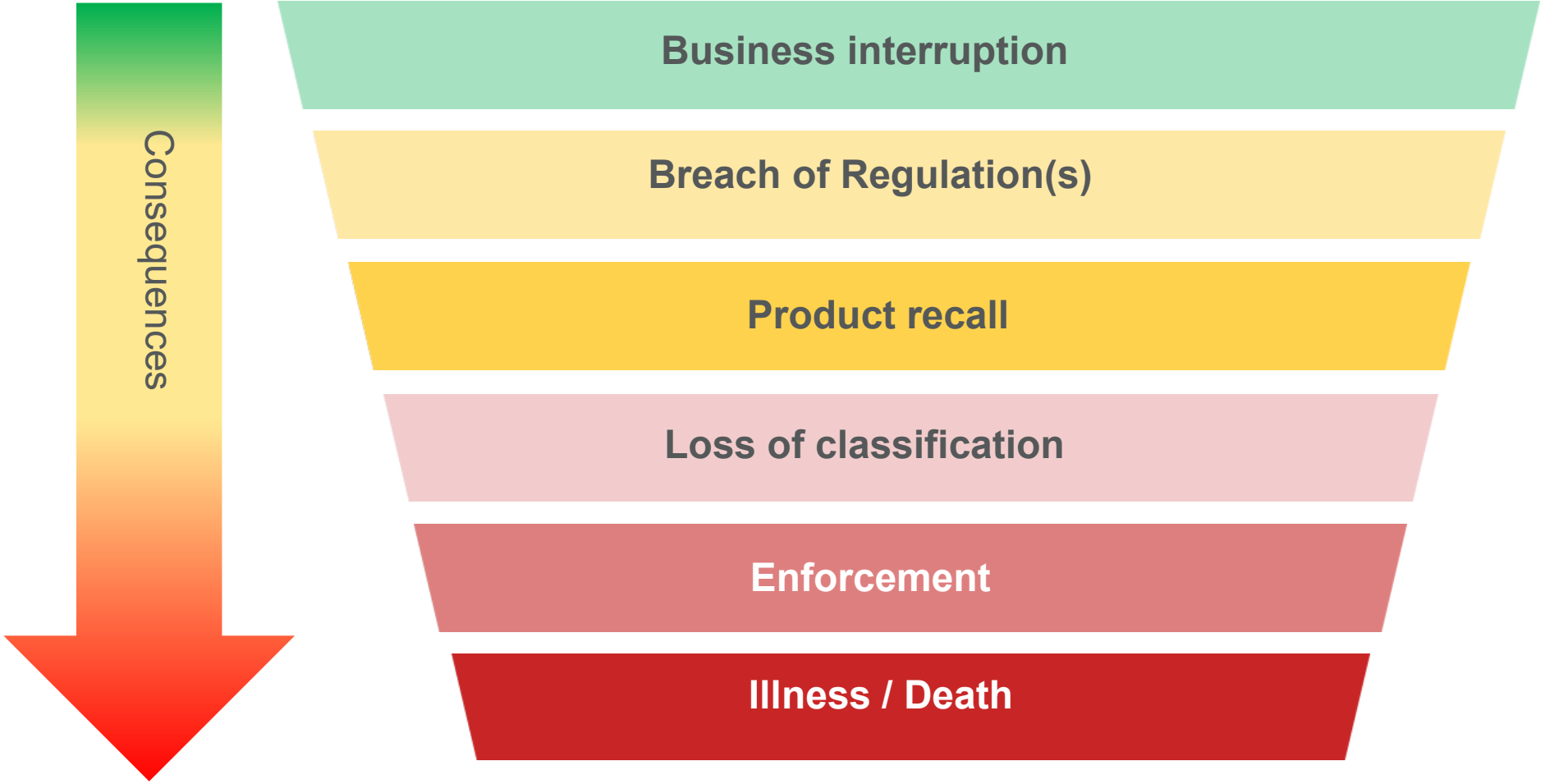
Reputation and exports

- Majority of UK LBM exports continue to be to the EU, principally France and Spain.
- 9,482 tonnes in 2021 and 9,697 tonnes in 2022*.
- The value of UK LBM exports increased by 4% in cash terms, from £64.3 million to £67 million from 2022 to 2023*.
- Industry located in remote fragile economic areas where employment prospects can be limited
- Exports critically depend on compliance with retained EU Food Law (Regulations (EU) 2017/625, (EU 2019/627 and (EC) 853/2004):
    - Audited by DG Sante F
- **Quality of UK Official Controls inc. sampling and classification & monitoring are critical to exports.**

* *Seafish Trade and Tariff Tool*



The Consequences of failure to follow the guidance



Routine activity theory

- Majority of UK Shellfish exports continue to be to the EU, principally France and Spain.

  - Routine activity theory is now a feature of food crime.

  - There have been instances of FBOs influencing the sampling and classification process.

- Incentives:
  - Gain classification
  - Improve classification

  - Sampling Officers and EH staff must act as Capable Guardians of the classification process.

Where the three factors overlap in the centre, there is a potential authenticity/integrity issue.

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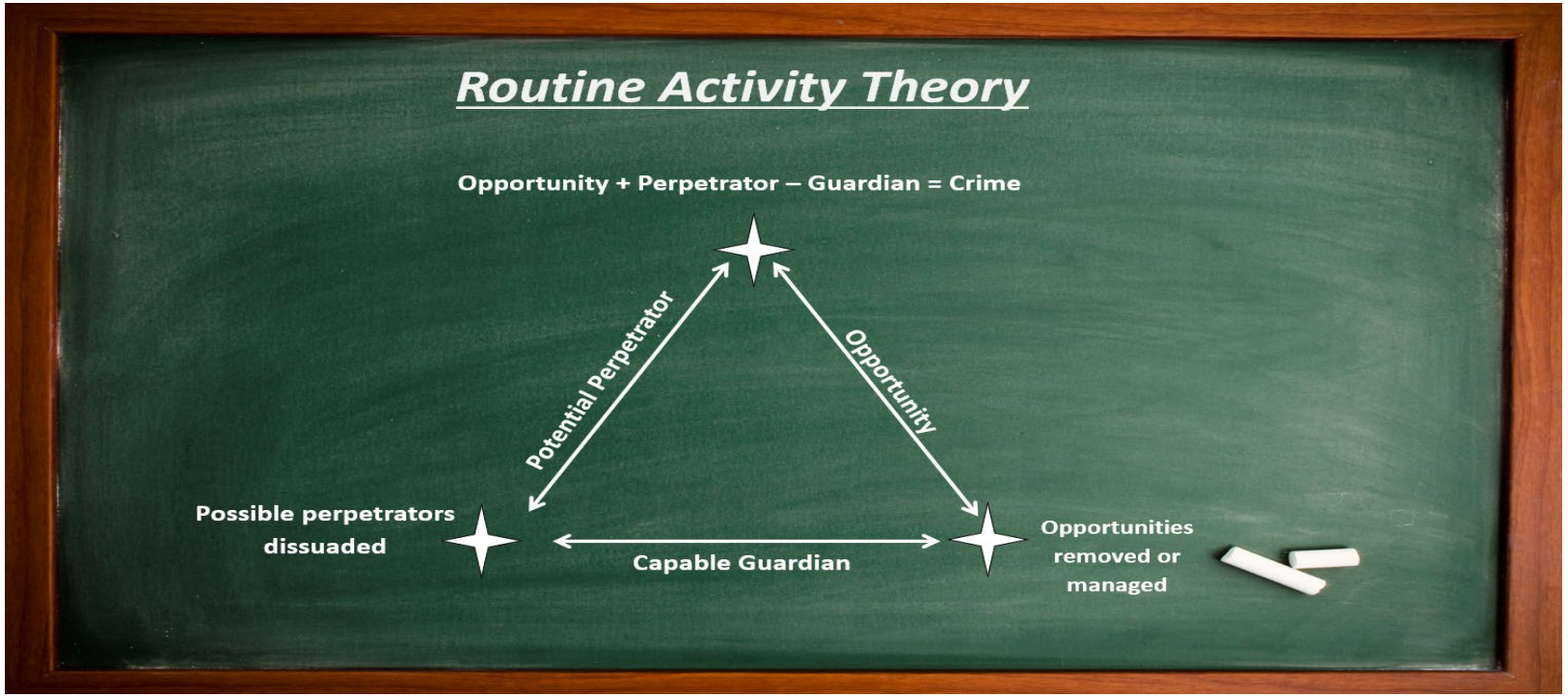
Sampling officers as capable guardians

- Capable Guardians is a concept that has come to the fore in food safety.
- Capable Guardians in this context are Sampling Officers, EH staff and FBOs.
- Their ‘Guardianship' ensures the authenticity and integrity of the sampling process.



Recap - understanding the purpose of Official Control shellfish samples

- Epidemiology of shellfish (food safety)
- Limits of depuration
- Legal context and duties
- Consequences of errors
- Routine activity theory
- Capable guardians

Understand and apply the process of Official Control samples

The practical how-to aspects

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Key learning outcome - 2

- To understand and apply to process of collection, processing and transport samples for Official Control sampling consistently and in conformity with the Official Guidance otherwise sampling may not accurately classify shellfish waters.

Overview - understand and applying the process of Official Control samples

- **Species sampled**
- **Sampling**
  - Location, frequency, transport
- **Sample size**
- **Data**
  - Collection, recording
- **Sample preparation**
- **Cool boxes**
  - Packing, validation

Sample species

- The level of contaminating bacteria is frequently species specific i.e., different species concentrate bacteria differently.

- Therefore, the sampling plan will confirm the species for sampling or another indicator species.

- In the UK species are generally (although not exclusively):
  - Mussel (e.g. *Mytilus edulis*),
  - Oyster (e.g. *Crassostrea gigas*)
  - *Cockle (e.g. Cerastoderma edule)*

Sample size

- The following sample sizes are recommended (number of commercially sized live animals by species) to ensure that the minimum testing material requirement is met for commercially sized shellfish.

Species	##	Manilla clams (Tapes philippinarum)	18-35
Oysters (*Crassostrea gigas* and *Ostrea edulis*)	12-18	Palourdes (Tapes decussatus)	18-35
Hard clams (*Mercenaria mercenaria*)	12-18	Mussels (Mytilus spp.)	15-30
Horse mussels (Modiolus modiolus)	12-18	Cockles (Cerastoderma edule)	35-55
Sand Gapers (Mya arenaria)	12-18	Thick trough shells (Spisula solida)	35-55
Razoe clams (Ensis spp.)	12-18	Abalone (Haliotis spp.)	12-18
King scallops (Pecten maximus)	12-15	Whelks (Buccinum undatum)	12-18
Queen scallops (Aequipecten opercularis)	15-30	Periwinkles (Littorina littorea)	35-55

- In any event, an absolute minimum of 10 individual shellfish arriving live at the laboratory and containing at least 50g of flesh and intravalvular fluid is required for testing if results are to be used for classification purposes (including formal investigative samples associated with Action States). **Insufficient material = rejected sample**

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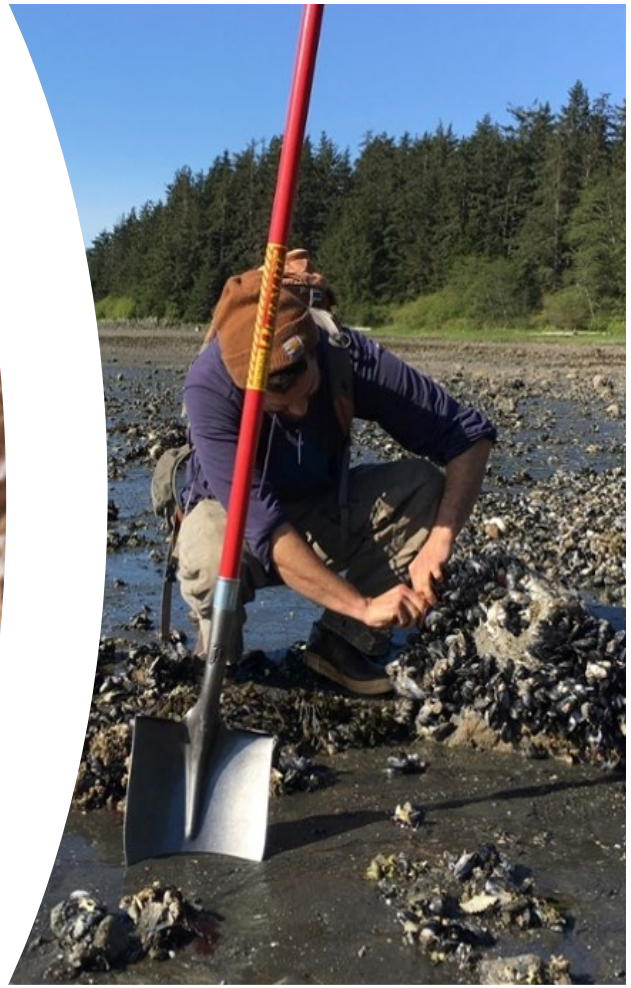
Sample location

- Samples must be taken @ the Regulatory Monitoring Point (RMP) confirmed in the relevant sampling plan.
- The RMP represents the shellfishery – its pollution sources and tidal flows.
- Positional tolerances can be stated in the sampling plan and complied with.
- Where insufficient shellfish of the correct size are available – default action is contact CEFAS.
- Classification zones stated within the sampling plan – sample within the boundaries and the actual location of sampling or the center of the dredge run recorded.



Sampling plan?

- Sampling should be undertaken according to the official sampling plan and, where possible, on as random a basis as possible with respect to likely influencing environmental factors e.g., tidal state, rainfall, wind etc. to avoid introducing any bias to the results.

- In practical terms, planning sampling dates weeks in advance and sticking to those dates regardless of weather (where safety permits) should be adequate for 'randomising' most factors. In doing so, it should be ensured that a representative range of tidal states is covered (where possible).

Frequency of sampling

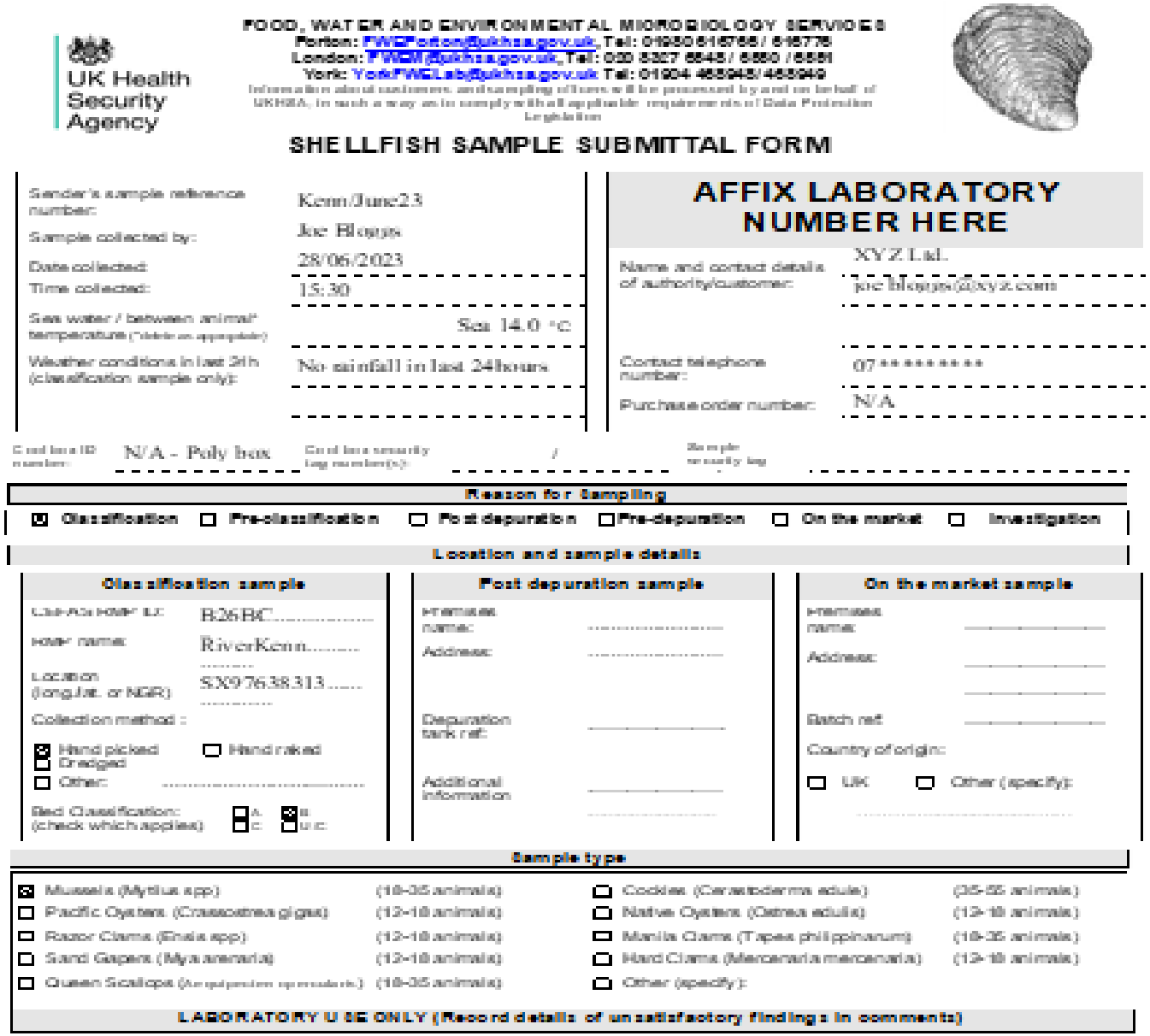
- Where sampling is limited to particular tidal states due to access or safety reasons then this should be taken into account (particularly in the sanitary survey) when the appropriate location for the RMP is established.

- To maintain full classification status, full monthly monitoring is expected i.e. 12 samples from each RMP per year unless otherwise stated in the sampling plan.

- Class B and C sites with less than 8 samples and class A sites with less than 10 samples over a year are likely to be declassified.

- LAs are asked to contact CEFAS Weymouth as soon as possible if they are encountering any difficulty in complying with their agreed sampling programme.

Data collection and recording 1



UK Health Security Agency

FOOD, WATER AND ENVIRONMENTAL MICROBIOLOGY SERVICES
Porton: FWDPorton@ukhsa.gov.uk Tel: 01980 615755 / 615776
London: FWDM@ukhsa.gov.uk Tel: 020 8327 6545 / 6550 / 6551
York: YorkFWDLab@ukhsa.gov.uk Tel: 01904 455945/ 455949
Information about customers and sampling of them will be processed by and on behalf of UKHSA, in such a way as to comply with all applicable requirements of Data Protection Legislation

SHELLFISH SAMPLE SUBMITTAL FORM

Sender's sample reference number:	KernJune23
Sample collected by:	Joe Bloggs
Date collected:	28/06/2023
Time collected:	15:30
Sea water / between animal* temperature (*delete as appropriate)	Sea 14.0 °C
Weather conditions in last 3Rh (classification sample only):	No rainfall in last 24hours

AFFIX LABORATORY NUMBER HERE

Name and contact details of authority/customer:	XYZ Ltd. joe.bloggs@xyz.com
Contact telephone number:	07*********
Purchase order number:	N/A

Cool box ID number: N/A - Poly box Cool box security tag number(s): Sample security tag

Reason for Sampling

☒ Classification ☐ Pre-classification ☐ Post depuration ☐ Pre-depuration ☐ On the market ☐ Investigation

Location and sample details

Classification sample

Class Area HOME ID: B26BC
Home name: RiverKern
Location (Long./Lat. or NGR): SX97638313
Collection method :
☒ Hand picked ☐ Hand raked ☐ Dredged
☐ Other:
Bed Classification: (check which applies) ☐ A ☒ B ☐ C ☐ U/C

Post depuration sample

Harvester name:
Address:
Depuration tank ref:
Additional information

On the market sample

Harvester name:
Address:
Batch ref:
Country of origin:
☐ UK ☐ Other (specify):

Sample type

☒ Mussels (Mytilus spp)	(18-35 animals)	☐ Cockles (Cerastoderma edule)	(35-65 animals)
☐ Pacific Oysters (Crassostrea gigas)	(12-18 animals)	☐ Native Oysters (Ostrea edulis)	(12-18 animals)
☐ Razor Clams (Ensis spp)	(12-18 animals)	☐ Manila Clams (Tapes philippinarum)	(18-35 animals)
☐ Sand Gapers (Mya arenaria)	(12-18 animals)	☐ Hard Clams (Mercenaria mercenaria)	(12-18 animals)
☐ Queen Scallops (Aequipecten opercularis)	(18-35 animals)	☐ Other (specify):	

LABORATORY USE ONLY (Record details of unsatisfactory findings in comments)

- Points to note:
  - Key data that must be recorded.
  - Incorrectly completed forms are one of the main causes of sample rejection.

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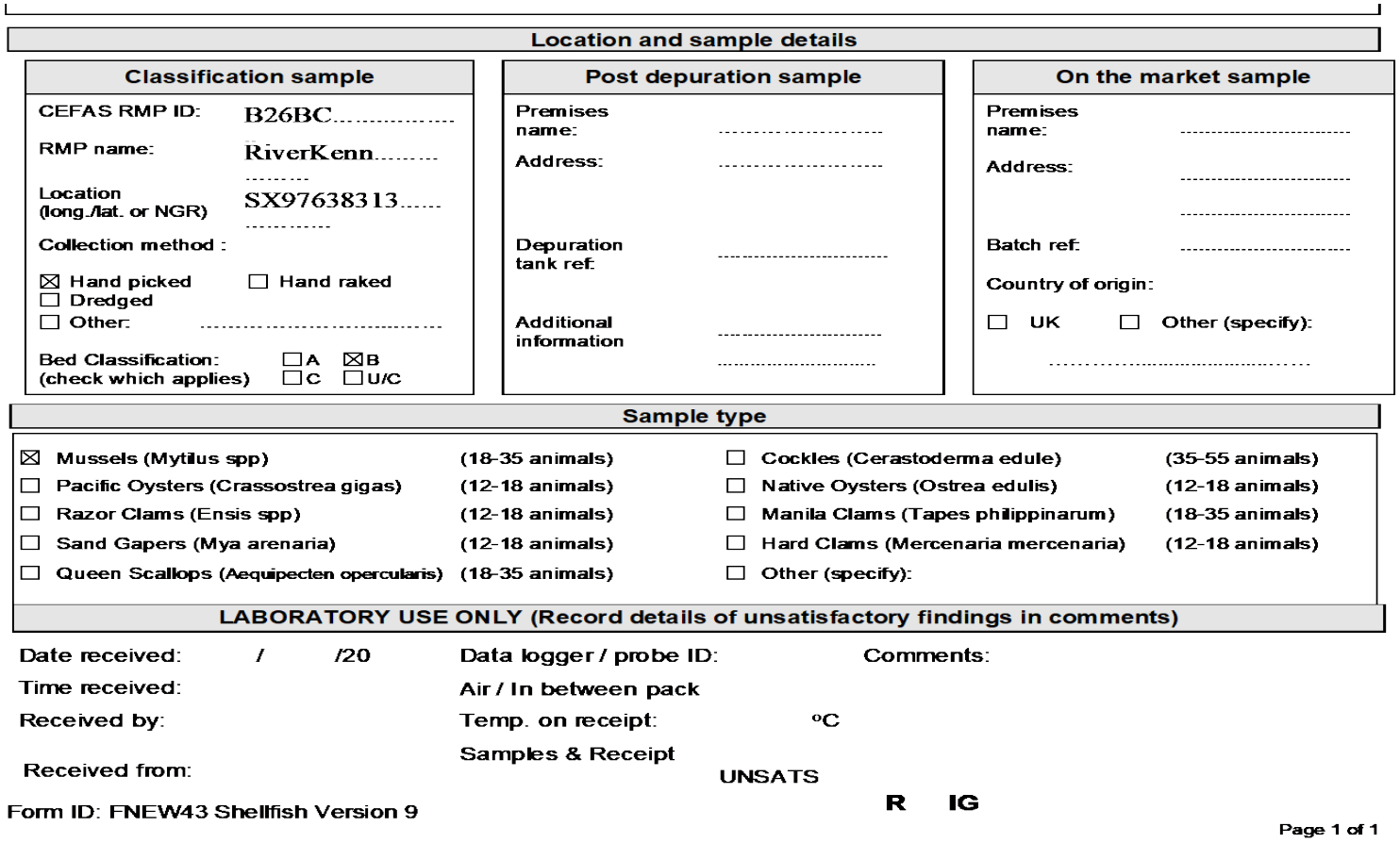
Data collection and recording 2

- Key data that must be recorded.
- RMP ID, RMP name, map co-ordinates, temperature at time of collection, time and date of collection, species sampled and method of collection (hand-picked, dredged, etc.).



Location and sample details

Classification sample	Post depuration sample	On the market sample
CEFAS RMP ID: B26BC	Premises name:	Premises name:
RMP name: RiverKenn	Address:	Address:
Location (long./lat. or NGR): SX97638313	Depuration tank ref:	Batch ref:
Collection method :	Additional information	Country of origin:
☒ Hand picked ☐ Hand raked ☐ Dredged ☐ Other:		☐ UK ☐ Other (specify):
Bed Classification: (check which applies) ☐A ☒B ☐C ☐U/C		

Sample type

☒ Mussels (Mytilus spp)	(18-35 animals)	☐ Cockles (Cerastoderma edule)	(35-55 animals)
☐ Pacific Oysters (Crassostrea gigas)	(12-18 animals)	☐ Native Oysters (Ostrea edulis)	(12-18 animals)
☐ Razor Clams (Ensis spp)	(12-18 animals)	☐ Manila Clams (Tapes philippinarum)	(18-35 animals)
☐ Sand Gapers (Mya arenaria)	(12-18 animals)	☐ Hard Clams (Mercenaria mercenaria)	(12-18 animals)
☐ Queen Scallops (Aequipecten opercularis)	(18-35 animals)	☐ Other (specify):	

LABORATORY USE ONLY (Record details of unsatisfactory findings in comments)

Date received: / /20
Time received:
Received by:
Received from:

Data logger / probe ID:
Air / In between pack
Temp. on receipt: °C
Samples & Receipt
UNSATS
R IG

Comments:

Form ID: FNEW43 Shellfish Version 9

Page 1 of 1

Data collection and recording 3

- Key data that must be recorded.
- The map co-ordinates must be recorded to at least 10m accuracy (8 figure OS reference e.g., TQ12345678) and should be those of the *actual* sampling location. A suitable GPS device or Ordnance survey 1:25,000 map should ideally be used for this purpose.

☒ Classification ☐ Pre-classification ☐ Post depuration ☐ Pre-depuration ☐ On the market ☐ Investigation

Location and sample details

Classification sample	Post depuration sample	On the market sample
CEFAS RMP ID: B26BC.....	Premises name:	Premises name: .....
RMP name: RiverKenn.....	Address:	Address: ....
Location (long./lat. or NGR) SX97638313.....		
Collection method :	Depuration tank ref:	Batch ref: .....
☒ Hand picked ☐ Hand raked ☐ Dredged		Country of origin:
☐ Other:	Additional information	☐ UK ☐ Other (specify):

Data collection and recording 4

- Key data that must be recorded.
- Offshore samples via a boat then, 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).

Location and sample details

Classification sample

CEFAS RMP ID: B26BC.....

RMP name: RiverKenn.....

Location (long./lat. or NGR): SX97638313.....

Collection method :

☒ Hand picked ☐ Hand raked
☐ Dredged
☐ Other: .....

Bed Classification: (check which applies) ☐ A ☒ B ☐ C ☐ U/C

Post depuration sample

Premises name: .....

Address: .....

Depuration tank ref: .....

Additional information .....

On the market sample

Premises name: .....

Address: .....

Batch ref: .....

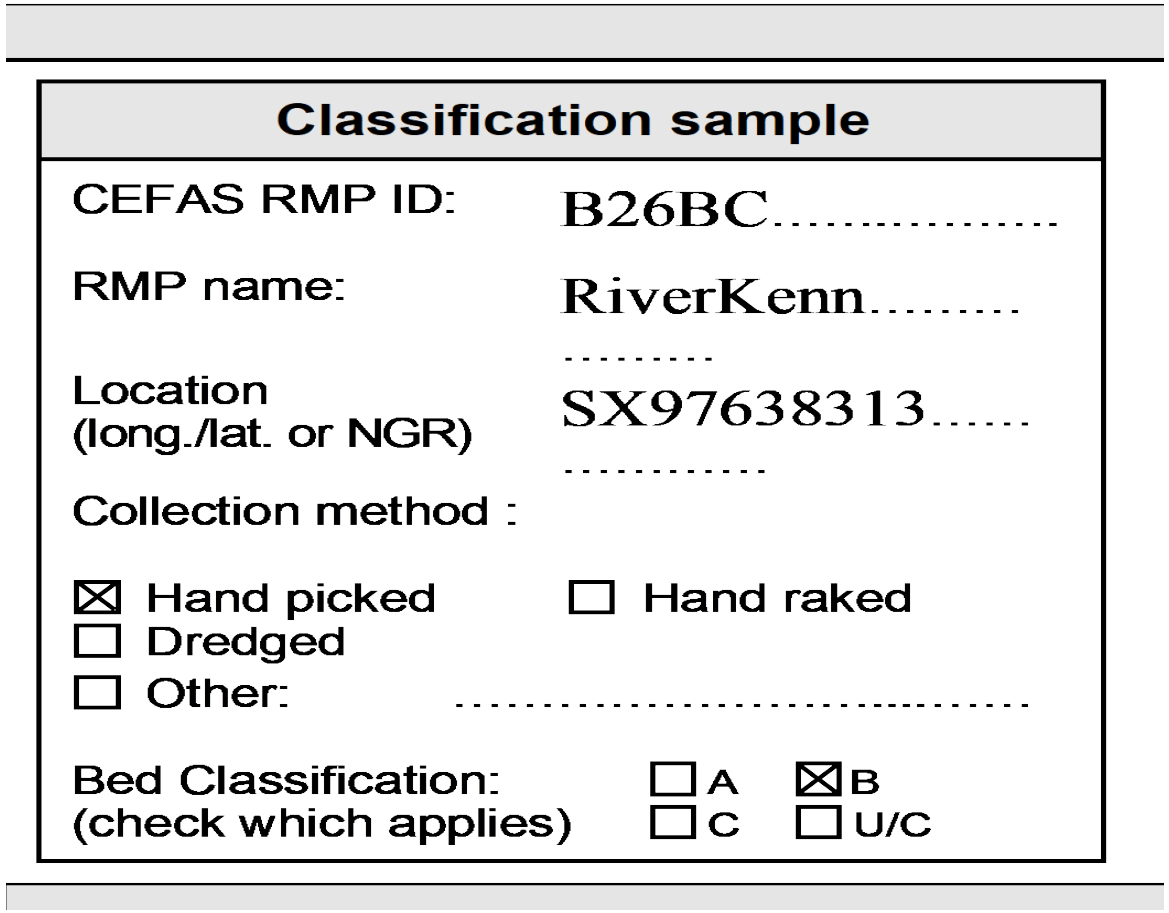
Country of origin:

☐ UK ☐ Other (specify): .....

Sample type

Data collection and recording 5

- Key data that must be recorded.
- Record locations to 3 decimal places and record which datum is used (OSGB 36 or WGS 84) as positional errors of up to 200m can occur if the incorrect datum is reported.



Classification sample

CEFAS RMP ID: B26BC.....

RMP name: RiverKenn.....

.....

Location (long./lat. or NGR) SX97638313.....

.....

Collection method :

☒ Hand picked ☐ Hand raked

☐ Dredged

☐ Other: .....

Bed Classification: (check which applies) ☐ A ☒ B ☐ C ☐ U/C

Condition/preparation of the sample

- Any adhering mud should be removed using a brush or similar.
- Shellfish should be rinsed with clean seawater or potable quality freshwater & drained.
- No re-immersion – This would allow shellfish to open & to become contaminated.
- Open, gaping or damaged shellfish must be discarded & replaced.
- Placed into sample bag labelled with species RMP ID & collection date.

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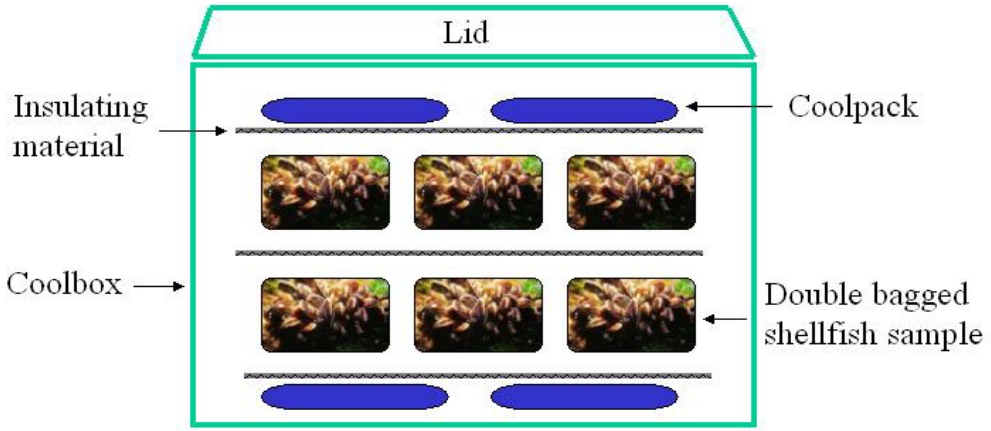
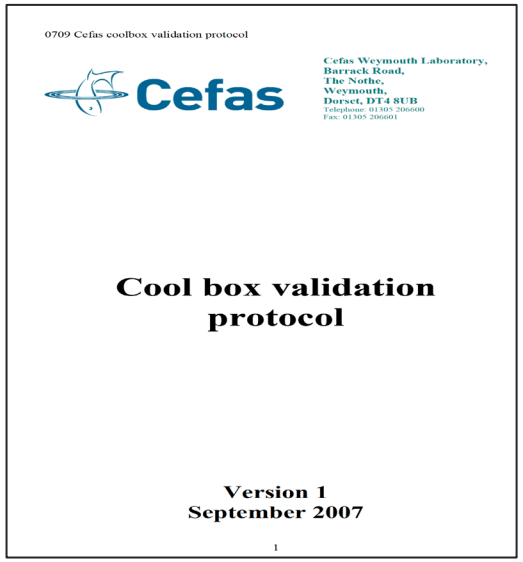
Use of the cool box

- Critically, a correctly packed cool box should be able to achieve an internal temperature of below 10°C within 4 hours and maintain it at that temperature for at least 48 hours.
- Shellfish should be double bagged.
- The diagram and the photograph confirm how the cool box should be packed.
- The pre-printed sample information sheet (see sample protocol) should be completed and placed inside a polythene bag and secured within the box.
- The lid should be secured in place with tape and the cool box then delivered to the test laboratory to arrive in time to allow testing to commence within 48 hours of sample collection.



Validated cool boxes

- Cool boxes validated in accordance with the CEFAS Cool box *Validation Protocol* should be used.


0709 Cefas coolbox validation protocol

Cefas

Cefas Weymouth Laboratory,
Barrack Road,
The Nothe,
Weymouth,
Dorset, DT4 8UB
Telephone: 01305 206600
Fax: 01305 206601

Cool box validation protocol

Version 1
September 2007

1

- CEFAS cool box protocol document

- Are other packaging protocols available?

Coleman 28Q Model number 5278
Size: 51 x 27 x 35 cm
Material: Polypropylene
Capacity: 26.4 L

Used with 4 x 1000g ice packs. The 4 x 1000g ice packs firstly frozen to −18°C for at least 24 hr. and then placed in the appropriate positions within the box, 2 in the base of the box and 2 attached by the special clips to the cool box lid.

Also Used with 6 x Camping Gaz M10 ice packs (3 on top, 3 on bottom) with 1kg shellfish sample

Recap - understand and applying the process of Official Control samples

- **Species sampled**
- **Sampling**
  - Location, frequency, transport
- **Sample size**
- **Data**
  - Collection, recording
- **Sample preparation**
- **Cool boxes**
  - Packing, validation

Avoiding problems

Key learning outcome - 3

- To understand how to ensure conformance with the Official Controls Guidance.

Overview – avoiding problems

- Common reasons for rejection.

- How to ensure acceptance.

Avoiding sample rejection

- **Common reasons for rejection by the laboratory:**
  - Size and condition of shellfish
  - Insufficient quantity
  - Temperature (too high or low)
  - Poor packaging
  - Dead or damaged shellfish
  - Poor documentation e.g. lack of location
  - Out of time
- **How to ensure acceptance:**
  - Follow procedures at all times
  - Notify the laboratory/LA of dispatch
  - Confirm timely receipt by laboratory

Avoiding sample rejection (*continued*)

Date and Time of Sampling	:	25/04/2023 16:15
Date and Time Received	:	26/04/2023 12:30
Date and Time Examined	:	26/04/2023 13:21
Temp at Sampling (°C)	:	10.5
Temp on Receipt (°C)	:	-0.4
Condition of Coolbox on receipt	:	Satisfactory
		Samples not frozen
Condition of sample on receipt	:	Satisfactory

MICROBIOLOGICAL EXAMINATION - SHELLFISH — FINAL TEST REPORT

Test (Performed at receiving laboratory unless stated)	Method Ref.	Result	Unit	Interpretation
Escherichia coli	FNES48 (F16)	2.3 x 10^3	MPN/100g	

Opinions and Interpretation

The time of sampling is not recorded on the request form. It may not be possible to assess whether the sample has been tested within 24 hours.

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Other events

- Report unusual, noteworthy or useful observations of incidents to stakeholders:
    - What might these unusual or noteworthy incidents be?
    - Why and how to report them?
    - Who are the reports made to?
    - Who are the stakeholders ?
- Examples of real incidents:
    - Recent adverse weather
    - CSO spills
    - Other examples?

Summary of key learning outcomes

1. Understanding that there needs to be consistency and conformity of sampling with the Official Controls Guidance otherwise sampling may not accurately classify shellfish waters.

2. To understand and apply to process of collection, processing and transport samples for official control sampling consistently and in conformity with the Official Guidance otherwise sampling may not accurately classify shellfish waters.

3. To understand how to ensure conformance with the Official Controls Guidance.

Verification

- Occupational Standard
- Local Authority or FSA requirements

Occupational Standard

- Collect, process and transport samples for official control sampling

The learner will	The learner can
1. Prepare for shellfish sampling	Plan for sampling, establishing the time, location and species to be sampled. Assemble equipment and other supplies/services as required. Collect and record any required data appropriately.
2. Collect samples of shellfish	Collect shellfish samples (species, size, quantity) using the appropriate methods. Record data as required.
3. Store shellfish samples	Prepare samples for storage and transport: • Clean samples • Wrap samples Chill and store samples ready for dispatch or transport. Record data as required.

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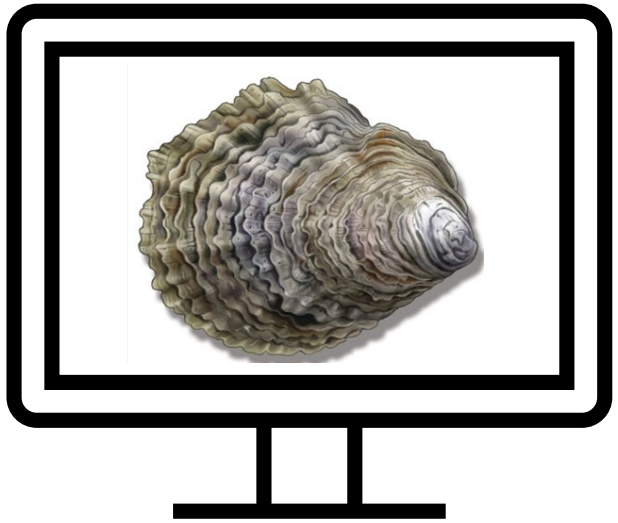
Sources of further guidance and support

- Online resources
- Official Guidance Documents:
  - Guidance for Local Authority delegation of Official Control Samples
  - Protocol for sampling and transport of shellfish for the purpose of Official Control monitoring
  - Protocol for sampling and transport of water samples for the purpose of Official Control monitoring
  - Shellfish supplementary sampling protocol – Northern Ireland
  - Shellfish supplementary sampling protocol – England and Wales
- Other forms of guidance and support?



Safe working practices on the shore or at sea?

- Working fishermen will have completed suitable safety training programmes.

- Those collecting samples intertidally can undertake **Seafish's *Basic Safety for Intertidal Workers*** training programme through a Seafish recognised approved training provider.

For more information on training for fishermen or intertidal workers please email training@seafish.co.uk

Discussions, questions and answers

Thank you

Official Control Sampling of Shellfish

A Seafish training programme

Here to give the UK seafood sector **the support it needs to thrive.**