

FAO Reference Centre for Bivalve Sanitation workshop on the development of bivalve production in Africa

8th – 10th July 2025, Nairobi, Kenya

Exercise: Outbreak scenario

Dr James Lowther and Dr Andy Turner



**Food and Agriculture
Organization of the
United Nations**



**Centre for Environment,
Fisheries & Aquaculture
Science**

Instructions – Outbreak Scenarios

- Working in groups with a Cefas lead you will go through two **fictional “scenarios”**, where **bivalve molluscs** may have been associated with an **outbreak of serious illness**
- Acting as the Responsible Authority for **bivalve molluscs**, we would like you to consider **your role and responses** in these **fictional events**
- **Documents with relevant information** will be given to you by your Cefas lead in stages
- Discuss in your groups **your response to the outbreaks, what information you need** and **consider actions that you should take**



Scenario 1 - Setting the scene

- Every year a large **food festival** is held in your area
- It attracts **hundreds of people** from the surrounding area and has become **world famous** for a wide variety of foods, particularly popular are the **local seafoods** including **cooked and raw bivalve molluscs**.
- Very quickly after the event many **people** report **sickness and diarrhoea**. Social media goes wide and the story becomes 'viral'.
- An investigation led by the public health authority suggests that **eating shellfish** is very closely associated with reports of illness.



PACK A – OPEN PACK A

- You have 20 mins to look through the 7 ITEMS in PACK A
- Think about the following,
 1. What could have been the cause of this illness?
 2. Why do you think this?
 3. Looking at the accreditation schedules and map, which laboratory would you choose to test the shellfish?
 4. Why would you make this choice?
 5. What would the impact of this outbreak have been on the local shellfisheries?



Ask any questions of your Cefas facilitator. AFTER 20 mins your Cefas facilitator will talk you through the information in PACK A

PACK B – OPEN PACK B

- You have 20 mins to look through the 4 ITEMS in PACK B
- Think about the following,
 1. Does the laboratory report confirm your suspicions on the cause of illness?
 2. Looking at the phytoplankton and flesh monitoring results, what could be predicted with respect to risk?
 3. What might be the significance of the weather report?
 4. How do you know that the monitoring frequency is correct?
 5. What could have helped prevent this incident?



Ask any questions of your Cefas facilitator. AFTER 20 mins your Cefas facilitator will talk you through the information in PACK B

So what happened? And what can we learn

- The illnesses were caused by DSP in the cooked mussels served at the food festival. An investigation begins gathering epidemiological information from the attendees at the festival and testing remnants of the many different foods served at the event.
- The Official Laboratory is a relatively long way from the festival site but has excellent quality assurance – it's the only laboratory in the country with accreditation for the test methods. The Responsible Authority chooses this laboratory and has confidence in the results.
- The results from the questionnaire and the testing confirm that DSP in cooked mussels was the likely cause of the outbreak.
- Examination of the phytoplankton and toxin monitoring data for the area where the mussels were harvested shows an unusual increase in levels, but these levels are below your action limits.
- Your risk assessment to determine monitoring frequency was completed 10 years ago and hasn't been reviewed. But weather patterns are changing and may mean that monitoring frequency needs to be changed and additional safety check put in place.

Scenario 2 - Setting the scene

- A few days after a spell of bad weather (heavy rains) a prestigious sailing event is held in your area - luckily the weather improves, and the event passes successfully.
- Many spectators visit the region; they enjoy watching the races, listening to live music and eating local foods including oysters
- An unusual rise in the number of hepatitis A virus cases starts before the sailing event but case numbers rise dramatically afterwards, with many spectators falling ill
- Initial investigations suggest that foodborne transmission is involved, possibly from seafood



PACK A – OPEN PACK A

- You have 20 mins to look through the 7 ITEMS in PACK A
- Think about the following,
 1. What was the original source of the HAV outbreak in region A?
 2. What is the link between the bad weather in late December and the illnesses amongst regatta spectators?
 3. The high *E. coli* result from site 1 was discounted because of an issue with the transport protocol – was this the right decision?
 4. Why are the *E. coli* results so different between site 1 and site 2?
 5. Are there any issues with the laboratory methods and accreditation for *E. coli*?



Ask any questions of your Cefas facilitator. AFTER 20 mins your Cefas facilitator will talk you through the information in PACK A

PACK B – OPEN PACK B

- You have 20 mins to look through the 6 ITEMS in PACK B
- Think about the following,
 1. What is the significance of the heavy rainfall in late February?
 2. Was it sensible to grant an export license given the ongoing investigation?
 3. How can allowing trade of contaminated product damage shellfish businesses?
 4. Is there a way to make the product safe for consumption after contamination?
 5. Could direct HAV testing of shellfish have helped the investigation? Was it available?



Ask any questions of your Cefas facilitator. AFTER 20 mins your Cefas facilitator will talk you through the information in PACK B

So what happened? And what can we learn

- A local outbreak of HAV in travellers returning from an endemic area resulted in contamination of oysters in region A after bad weather led to untreated sewage washing over the growing areas
- This led to a large increase in HAV cases when people ate the oysters including many spectators at a sailing event
- A high *E. coli* monitoring result indicating a potential faecal contamination event was discounted because of minor sample transport issues, although other evidence suggested there could be a genuine problem
- Despite evidence linking HAV cases to seafood consumption, an export license was granted for local oysters – these were harvested after more bad weather that again led to HAV contamination of the growing area
- In a short period the importing country reported finding HAV in the oysters and the routine testing reported high levels of *E. coli*; the authorities imposed a harvesting ban and the export license was cancelled
- The events caused major reputational and financial damage to the oyster producers – effective management at an earlier stage could have prevented this

Learning outcomes?

- Awareness of risks associated with bivalve consumption amongst Responsible Authorities is important
- Thorough cooking does not prevent all shellfish borne public health risks
- Good quality shellfish safety programmes are reliant upon good quality laboratories
- Data generated from monitoring programmes should be actively monitored and reviewed
- Unusual weather events, or gradual shifts in weather patterns can impact both biotoxin and microbiological risk
- Interventions such increased monitoring frequency or additional 'final product' testing can help reduce risk

Any questions?



Food and Agriculture
Organization of the
United Nations



Centre for Environment,
Fisheries & Aquaculture
Science