

Horizon Scanning Workshop (June) 2023

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Introduction

The ACMSF Committee held a horizon scanning workshop in London on the 22nd of June 2023. The focus of the workshop was to determine how climate change is likely to affect the microbiological safety of food in the UK. Members were asked to identify emerging issues around a series of specific questions relating to climate change. The workshop followed a similar format to previous years with a mixture of breakout groups and plenary sessions and included guest speakers Pete Falloon and Matt Gilmore from the Met Office and The Quadram Institute respectively.

Key issues were identified by members during discussion in breakout groups and the plenary session was used for the Committee to agree a prioritized list of

recommendations based on their potential for understanding and reducing foodborne illness. This paper summarizes the main outputs and discussions from the workshop including challenges and corresponding actions highlighted by the Committee.

Members were asked the following question:

How in your opinion is climate change likely to affect the microbiological safety of food in the UK via the following areas?

Please consider:

- Both trends (higher average temperatures) and increasing frequency of extreme weather events (flooding, drought, forest fires)
- Timescales (0-10 years, 10-20 years, 20+ years)
- Indicators: how will we know if the effect is happening?
- Likelihood and magnitude of effect
- New as well as existing hazards
- Key evidence gaps
- How CC might affect, and be affected by/mitigated by, other drivers
- Any recommended actions for the ACMSF, the FSA, other government departments and agencies, and external stakeholders.

Annex 1 includes the comments members provided before the workshop. The secretariat sent the questions to the Committee members before the workshop which members provided responses to. This document guided the discussions at the workshop.

Priority actions identified by Members.

General Actions

Specific actions to climate change associated challenges, highlighted by the Committee, are listed in the tables below. However, there are several actions which have widespread implications across multiple sectors, in tackling microbiology safety concerns in food as a result of climate change. These broadly fall into three categories: information gathering to predict and plan for specific risks, education of consumers and collaboration, particularly with other government departments.

For example, in order to prepare for the impacts on food safety the Committee highlighted the need to work with the Met Office to receive the greatest possible warning of extreme weather events and plan preparations ahead of time to develop a rapid response capability. Furthermore, a need to identify and collate information on imported foods and develop scope to source similar foods from other countries, or move to UK production, if supply issues arise, was emphasized. Any indicators of concern to be monitored need to be agreed between government departments; and discussions must be held on how to handle these collaboratively. Surveillance to identify emerging pathogens needs to be carried out and insight must be gained from other country's experience and approach to climate change mitigations with particular reference to food safety.

A range of risk factors identified by this information gathering process can be mitigated by proper education to consumers and manufactures. These might include consumer awareness of safe food practices in a warmer climate or rising cold chain management awareness to industry.

Many of the actions discussed in this report, would benefit from cross government collaboration. This is particularly relevant where there could be agreement on key factors to monitor as surveillance priorities for specific aspects of climate change impact, and the data to capture for them, so that research and other work can then be easily collated or combined to increase the power of detection.

Priority emerging issues identified by Members and associated actions.

The emerging challenges highlighted by the Committee are summarised in the tables below and are focused around the five key areas put to the Committee:

- Challenges associated with disruption to food supply chains
- Changes in methods of food production and new food technologies
- Changes in consumer behaviour and preferences

- Challenges associated with changes in the sizes of vulnerable groups
- Anything else

The points raised have been split into *direct* challenges, which are a result of climate change, and *indirect*, which may be compounded by, but are not a direct result of, climate change.

Challenges associated with disruption to food supply chains.

Direct Challenges from climate change:

Challenge

Possible actions

Drought

1. During periods of drought the impact of water scarcity and microbiological quality of both irrigation and drinking water may drive consumers to less robust/secure sources. Water scarcity could also lead to loss of food production (e.g., almond production in California could be wiped out due to water shortage) or increase food contamination risk (e.g., STEC in leafy greens spread by desiccated sheep faeces from neighbouring fields).

1.1 The FSA should establish and strengthen links (either directly or via e.g., Defra) with experts who have worked, or currently work, in countries already experiencing regular droughts, to share lessons learned. For example, what risks do they find are increased by drought and how, and what mitigations are most effective (or ineffective) at mitigating them?

1.2 The FSA should commission a review of microbiological risks most likely to increase as a result of climate change risks in countries from which we import food.

1.3 FSA to provide an update to the committee on sources of imported foods and identify alternative sources of key products from countries affected by climate change.

1.4 FSA Incidents and Policy teams should review preparedness measures e.g., rapid response capability in the context of climate risks, for example considering the potential for multiple incidents to occur simultaneously as a result of single extreme weather events.

Flash Flooding

2. More thundery downpour in summer could lead to animal/human waste runoff in rivers affecting water safety for consumption. Increased incidents of flooding require a better understanding of pathogens that are associated with sewage and flooding. The risks of increased flooding are compounded by lack a of resources in government agencies and lack of enforcement e.g., raw sewage.

2.1 The FSA should establish closer working relationships with water authorities & water research as well as other organisations able to provide insight into e.g., flooding risks in arable areas.

Consumer education/advice

2.2 The FSA should consider preparing consumer messaging about the food safety risks from products that may be affected by flooding/sewage.

2.3 The FSA should consider commissioning research on the effectiveness of consumer washing of vegetables to increase confidence in current consumer advice (or update it, as appropriate).

3.1 Similarly, to the action under “drought”, the FSA should consider establishing and strengthening links (either directly or via OGDs) with experts who have worked, or currently work, in countries already experiencing warmer climates, to share lessons learned. For example, what risks do they find are increased by increasing temperatures and how, and what mitigations are most effective (or ineffective) at mitigating them? For example, any effects on microbiological safety of efforts to reformulate certain foods for higher temperatures (e.g., chocolate)

Risk assessment

3.2 When performing risk assessments, the FSA should where appropriate consider how the assessed risk might be affected by higher ambient temperature in processing facilities.

Disease/AMR surveillance

3.3 The FSA should consider establishing sentinel sites to monitor emerging pathogens in different parts of the supply chain, as well as strengthening cross-government links to share surveillance data, and the use and interpretation of WGS, to determine the impact of climate change on foodborne disease and antimicrobial resistance (AMR).

3.4 The FSA and other relevant departments and agencies (APHA/Defra, UKHSA/DHSC) should continue collaborations and activities initiated

Increasing Temperatures

3. Increasing temperatures require better temperature control in the cold chain (domestic and industrial) to avoid impacting microbiological safety and quality of food. Small Medium Enterprises (SME) are likely to struggle the most with the challenges of maintaining the cold chain. Extreme climate events will also stress bacteria, leading to viable but non-culturable cells (VBNC) or adaptations that may affect virulence. Challenges in sharing whole genome sequencing (WGS) data, cross government communication and standardization of methods needs to be addressed.

Rising Sea Temperatures

4. Increasing sea temperatures may have an impact on the microbiological safety of fish and/or shellfish or increase microalgae (phytoplankton blooms).

Fraud / Compliance

5. Increasing food fraud risks, for example, wilful disregard of the increasing need for hygiene and temperature controls impacting microbiological safety. Failure to meet with compliance standards may become more frequent due to disjointed actions taken by different agencies to deal with common problems affecting different parts of supply chains. Supply of peppers & tomatoes (crop shortages) affected UK availability of product earlier this year. This may lead to acceptance of riskier products to the market.

4.1 The FSA should consider supporting sampling projects and/or industry activities to monitor for changes in emerging microbiological risks associated with fish and shellfish.

4.2 The FSA should work with UKHSA to identify opportunities to monitor levels of domestically acquired *Vibrio* infections in humans.

4.3 The FSA should consider commissioning research into the effects of sea temperature on the exposure of UK consumers to waterborne viruses (e.g., norovirus)

5.1 The Micro Risk Assessment team should consider reviewing the work the National Food Crime Unit (NFCU) does to ensure these controls are accurately represented in RAs. For example:

- Review of food 'fraud' risks and controls
- Review current and future focus and/or controls on monitoring the chill chain.
- Review regulatory and enforcement controls for new market entrants.

Food Import Disruption

6. Countries outside UK will likely be similarly impacted by climate change so may not be able to supply the UK with same food types or quantities typically seen.

6.1 Identify possible food import disruption in advance and look at mitigating measures. For example, look for other sources for similar food types or look at moving to UK production.

Indirect challenges from climate change:

Challenge

Sustainability

1. The tension between microbial food safety and food waste/sustainability issues have been increased by climate change and the cost-of-living crisis. This includes the balance between microbiological food safety and shelf-life and energy considerations during all stages of food chain and other steps towards sustainability such as reducing food packaging.

Possible actions

1.1 The FSA should continue consumer education about how home storage behaviours change the risk from food hazards.

1.2 The FSA should strengthen the links between the ACMSF and the ACNFP to ensure that new and changing risks relating to new foods and processes are fully understood.

1.3 The FSA should use its influence to ensure that food safety, particularly microbiological safety, is factored into decisions about legislation changes for packaging and shelf life.

Challenge

Labour Availability

2. The Impact on labour availability, in UK from Brexit and possible labour shortages from exporting countries may also disrupt supply chains and lead to shortages of certain food types.

Possible actions

2.1 The FSA should consider collaboration with industry to identify challenges relating to labour shortages.