ADVANCING STEC DIAGNOSTICS

SHIGA TOXIN-PRODUCING *E. COLI*

WORKSHOP REPORT

12TH NOVEMBER 2024
FRIENDS HOUSE, LONDON

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12TH NOVEMBER 2024
FRIENDS HOUSE
(EUSTON ROAD, LONDON, NW1 2BJ)
+ VIRTUAL PARTICIPATION

A workshop to define testing regimes that would support management of public health and food safety risks from Shiga toxin-producing *Escherichia coli*

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UKRI Biotechnology and Biological Sciences Research Council

EXECUTIVE SUMMARY

Shiga toxin-producing *Escherichia coli* (STEC) is a long-standing and evolving microbial threat affecting food systems, animal health, and human health. Significant foodborne outbreaks continue globally, and food safety and public health actions are impaired because the pathogen is technically challenging to detect and confirm when present in foods, environments, animals, and when infecting humans. STEC diagnostics involve microbiology and molecular testing (commonly for the *stx* toxin genes) and the STEC diagnostic challenge is not resolved by microbiology testing for indicator bacteria (such as non-toxigenic *E. coli*) that are used in proxy to suggest contamination has occurred.

The workshop brought together three stakeholder groups - food businesses and their trade associations, government authorities, and testing providers - each committed to addressing an urgent need in the industry sector to conduct accurate, timely and economical testing for STEC in a manner that provides actionable results to impact public health and food safety. To support the workshop and follow-on activities, cross-disciplinary academics working in food safety also actively participated.

Over 80 individuals contributed to the workshop held 12th November 2024, with 40+ participants assembled together in London and ~40 participants connecting virtually for all sessions. Representatives from each stakeholder group provided plenary materials to describe their current usage and needs assessment of STEC testing, while also providing perspectives on future opportunities to improve the detection and confirmation of STEC in the food chain. These materials were iteratively discussed in breakout group discussions and facilitated with guiding questions pertaining to each stakeholder group. Virtual participants could view the plenary presentations, ask questions via chat, and then respond to the same guiding breakout questions as provided to the in-room participants.

Workshop participants agreed in these discussions that **food safety risks are best controlled by good agricultural and good manufacturing practices** and testing should be used as a means of validating that food safety management systems are operating as intended. As such, there was agreement that a cross-stakeholder, multidisciplinary approach is needed to develop **a shared and consistent understanding of how to assess and manage STEC risks** and an **achievable toolkit** for:

1. **Sampling for STEC** in environments, farms, crops, and food ingredients, where food businesses are empowered to **strategically take appropriate samples at the right time to show due diligence and contribute to food system risk assessment activities**. Sampling plans need to be informed by defined schemas (e.g. routine testing of water and crops) and also pre-defined triggers (e.g. climatic events that may result in STEC introduction into primary production settings).

2. **Diagnostic testing of STEC**, by sharing current and new testing protocols, guidance and best practices; by uplifting UK food safety testing capacity in the short-term with methods that are affordable, accessible and widely accepted, while not being based on indicator organisms; by continuing to identify innovations and the enabling technologies that further improve test performance and reduce costs to detect and confirm the presence of STEC. A **key short-term outcome** will be a consensus definition of idealised testing strategies and requirements (with shared recognition of the caveats and limitations of current approaches) that informs the **longer-term definition** of a target testing profile to guide method innovation and development of optimised testing strategies and a new gold standard.

3. **Standardisation in test result reporting and mechanisms for data sharing to better understand STEC risk**, such as use of a consistent and defined lexicon of test result fields and technical terms that support timely and accurate transmittal of information between labs and food business operators and/ or regulators, while being able to account for and communicate interim results (e.g. unifying the use of terms such as 'presumptive'), results that cannot be confirmed, and 'atypical' results (e.g. genotypes that do not match case definitions, when in reality there is successive emergence of new genotypes through the natural evolution of STEC).

4. **Development of frameworks for test result interpretation and action**, which define when escalation and further actions are needed for confirmed and unconfirmed results, while building an overall base of knowledge on the incidence, niches and product categories susceptible to STEC risk that incorporates historical datasets and can be used to refine future testing and risk management approaches and to better understand STEC risks.

There is a **shared role between industry and government** to develop standardised methodologies and guidance for STEC sampling, testing, result interpretation, risk assessment, and next actions. We propose each of these four elements forms an individual workstream that will be defined and completed. Interconnectedness between the workstreams is anticipated, and a steering committee should be first established to ensure workstreams are supported with clear objectives, membership and resources.

To support the definition of these four workstreams, this report contains the programming from the November 2024 workshop (including plenary presentations provided in each of the three stakeholder sessions) and the summaries and key comments from the resulting breakout discussions. It is anticipated that a **multi-stakeholder STEC Steering Committee (STEC-SC) will form** and complete initial scoping work (with governance and additional timeframes) **in February 2025**, with the subsequent **formation of cross-sector teams for each workstream by end of March 2025**. Workstream teams will include participants from the November 2024 workshop and other individuals or organisations identified by the STEC-SC. Resourcing for these formation activities will be provided by the Food Safety Research Network, with subsequent resourcing to be identified by the STEC-SC. Participants will also engage their UK and international networks to add perspective and support learning and knowledge exchange between related initiatives where STEC risks are being studied and addressed. These collaborative activities are envisioned to rapidly advance the shared understanding and capacity for the UK to identify and mitigate STEC food safety issues, providing benefits to consumers, industry, researchers and government.

BACKGROUND

Shiga toxin-producing *Escherichia coli* (STEC) are a risk for food and waterborne infections, with guidance available to food businesses to help protect consumers (FSA and FSS). At the time of the workshop in November 2024 the overall reported cases in the UK had remained relatively stable across the four nations. However, over the last decade, a change has occurred in the serogroups being detected, such that serogroup O157 is no longer dominant in England and has been overtaken by other, non-O157 serogroups (King *et al.* 2025). Notably, recently released findings on culture-confirmed cases of STEC reported a 26.1% increase in England in 2024 from 2023 (with 564 serogroup O157 cases and 1,980 non-O157 cases confirmed; UKHSA, 2025). A similar situation is occurring in the other devolved nations, albeit at different rates. Although the majority of (confirmed) reported cases of non-O157 STEC arise from a handful of serogroups (i.e. O26, O145, O91, O128ab, O146, O103), the non-O157 subgroup comprises a wide diversity, with > 100 serogroups described (139 listed in Enterobase; June 2024). Although health and food safety officials have an increasing understanding of the risks of STEC, with guidance, the breadth and genetic evolution of STEC poses serious challenges for detection and control.

Based on epidemiologic evidence, the spring 2024 STEC O145 outbreak in the UK with 288 linked cases was associated with sandwiches containing lettuce (Yanshi *et al.* 2024). Leafy salad crops are susceptible to contamination with STEC in the field if neighbouring water sources such as precipitation runoff or irrigation waters are first contaminated with animal feces (Dogan *et al.* 2023). There have been issues for the industry sector because the criteria used for detection and confirmation of STEC in clinical scenarios is not feasible for produce that has a short-shelf-life (as little as 2 days for a sandwich, or a week for lettuce) and the organism may only be present in very

small concentrations. Field testing for pathogens may not be practical when the incidence will be very low, and the physiological status of the pathogen not conducive for detection.

Currently food businesses are using multiple tests (e.g. hygiene indicators, *E. coli* O157 testing, tests based on *stx* presence) that may not meet their needs to screen and confirm the presence of STEC within timelines and costs that support their food safety objectives. A particular challenge is the ability to distinguish and then confirm/ isolate STEC from the multitude of non-pathogenic E. coli that are expected to exist in natural environments and are not directly associated with animals (Ishii *et al.* 2006; Holden *et al.* 2014). These testing and sampling factors can confound food safety and public health activities as, globally, no STEC strain was isolated from food or environmental samples in over half of outbreak investigations (Anthony *et al.* 2024).

Further complicating STEC testing and risk assessments is the strong biological evidence for the genetic evolution of STEC but a paucity of contemporary microbial ecological evidence to fully establish the scope and features of the niches where STEC may reside, persist and transmit in the wider environment. Further, STEC detection and confirmation is challenged by the coexistence with other strains of *E. coli* that are not food safety threats. The high genetic diversity of STEC also requires methods which are capable of detecting a number of testing targets.

Thus, there is a need to define the most appropriate tests and their usage in practice during (i) an outbreak scenario and (ii) for routine surveillance, while also factoring that testing alone is not a control and primary effort must be placed on Good Agricultural Practice, Good Hygienic Practice, Good Manufacturing Practice and other best practices to minimise risks. Further, there is a need to agree actions on unconfirmed results, such as testing initiated but not fully completed under the ISO 13136 protocol.

References:

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COMMENTS FROM THE WORKSHOP

Paraphrasing common sentiments from the notes captured in the room and online

- Everyone at the workshop wants the same outcome: to protect the consumer and reduce illness. This aim requires the breadth of roles and expertise in the room to continue to come together for cross-party working. Consensus won't be easy, but we're all here to do the same thing.
- STEC is an invisible risk that can be present at very low levels in the environment (so we are looking for a needle in a haystack), so we can't see what's going on all of the time and we need to act and consider all steps of the impacted food chains.
- STEC is shed into the environment from animal reservoirs such as ruminants and birds, and many food types are subject to possible contamination at varying levels of risk during primary production, so we need to consider multiple points in the agrifood chain and test upstream at cattle, sheep, soils, waters, raw materials, and have the ability to screen at the crop level in traditional and vertical environments. As water presents one of the most likely vehicles for the spread of STEC from the environment to crops, then sampling and testing irrigation water or pooled water in flooded fields may be the best value for money testing.
- The future of STEC risk management involves a multidisciplinary approach (e.g. broad environmental, climate, and microbiology expertise) to identify when STEC have entered the agrifood chain and to enable actions to remove it or manage risks.
- There are a multitude of ways a crop can become contaminated with STEC - and if entering plant tissue cannot be washed off - so we have to try everything, from policy to practical solutions.
- If we solve STEC from getting from the animals to the produce, we may solve the STEC problem.
- Nirvana would be guidance on 'how and when' to conduct your microbiology sweep (pertaining to environmental monitoring and finished product testing).
- Testing can be a very grey area for some growers, packers and wholesalers. These sectors are looking for testing standardisation, validation, clarity, guidance and training.
- Building knowledge capacity for growers is essential. Growers are not always provided with training that specifically addresses microbiological hazards or contamination routes. They are required by certification schemes and/or customers to have food safety training, but this is rarely designed 'by growers for growers'.

- In some cases, there is a limited knowledge for prevention, monitoring and corrective action (HACCP principles). By bolstering grower/ industry knowledge, there is a greater likelihood of keeping the crops clear of animal faecal matter.
- Retailers in the UK have a significant role and opportunity in food safety quality assurance and quality control, with some major retailers outside of the UK struggling to enforce food safety requirements amongst their suppliers.
- Testing is a verification of other controls and practices, and should not be considered in isolation
- Identifying and addressing STEC contamination in primary production is key. End product testing is too late for proactive benefits, and can't be used for positive release in short-shelf life products. That is, although the initial *stx* gene presence test may be quick and some test results can be available next-day, in practice it can sometimes take at least a week and in some circumstances up to one month for a final confirmed result, yet a product may just have shelf life between 2-7 days.
- Contamination of fresh produce can be related to rare "perfect storm" events, and as the product has a short shelf life, it has often moved through the food chain before epidemiological investigation has identified a contaminated product.
- Culture-based confirmed STEC testing, following ISO methods, is laborious and time-consuming because it involves screening through a minimum of 50 colonies before a confirmed result may be reported and requires biosafety containment laboratories that many don't have ready access to.
- Infectious dose of STEC (and abundance of contaminants) may be below the detection limits of the test, and contamination with non-STEC environmental and foodborne bacteria further confounds detection and culture.
- There continues to be debate around the effectiveness of generic *E. coli* as a monitoring tool. One of the aims should be to reach a consensus around what the testing strategies should look like for routine monitoring purposes (where indicators may be used to verify that there has been no change in the risk of contamination via environmental contamination), and for verifying that STEC risk is under control.
- Cost and time are barriers to industry, and better indicators are needed. If we can't get a gold standard (with a low cost, and a confirmed result), can we at least have a silver standard – which needs consistency and agreement amongst stakeholders?

SEEKING PERSPECTIVES

Pre-Work leading into the Workshop

Pre-workshop material was developed to help guide the definition of the workshop objectives and to help frame the presentations delivered by stakeholder representatives.

Industry perspectives:

What detection tools does the industry currently employ routinely or in additional circumstances:

1. What is being tested and at what point in the production chain (food categories, environment)?
2. What is considered a positive STEC result (what STEC features; presence of *eae*, *stx* and O group identified?). How do you know this has come from the STEC and not any other bacteria?
3. What are the timeframes, availability, and costs to receive test results?
4. What do the test results inform?
5. What are the issues surrounding presumptive or unconfirmed results? How many presumptive STEC confirm as positive? What's the % and does it differ across different product categories?
6. Is there a correlation between the presence of STEC and the abundance/ counts of generic *E. coli*?

Government perspectives:

What do the authorities expect/ need from the industry:

1. During an outbreak, compared to
2. Routine surveillance
3. Interpretation of results in light of guidance and legislation
4. What are the testing approaches used at UKHSA for primary STEC isolation, confirmation and genomics?

Testing Provider perspectives:

With the goal to generate awareness on best practices related to current tests on offer, and a chance to understand innovations and where they may be taking their testing services going forward, please consider these questions for your presentation during the workshop:

1. Please briefly summarise your current STEC test methods available to customers, including what they are detecting, e.g. presence of *eae* and/ or *stx* and/ or O group, including if accredited and the test method title
2. Does result reporting provide confirmed or unconfirmed STEC results? What are the timescales to provide results for both unconfirmed and confirmed results?
3. What should future methods look like? E.g. in an ideal situation, what would a fit-for-purpose method be in terms of sensitivity, accuracy, clarity of results and interpretation, speed, availability, cost?

Future Perspective:

What should future detection methods look like for the industry:

1. In an ideal situation, what would be fit for purpose?
2. Is testing the right approach for all product categories and points during production?
3. Are there indicator organisms that can be considered and be shown scientifically to be valid?
4. Are there new testing technologies that look to have promise?
5. But what are the constraints to consider (e.g. biological, technical, feasibility, practicability).
6. Are there potential solutions or approaches that do not rely on testing?

PROPOSED NEXT STEPS

At the close of the workshop, four workstreams were proposed to structure and advance the findings from the day. Each workstream is underpinned by elements of standardisation and guidance, with the goals of answering the big questions of:

What should the testing strategies look like? When should STEC testing be deployed?

1. **Sampling for STEC** in environments, farms, crops, and food ingredients, where food businesses are empowered to **strategically take a good sample at the right time to show due diligence and contribute to food system risk assessment activities**. Sample plans need to be informed by defined schemes (e.g. routine testing of water and crops) and also evidence-based triggers (e.g. weather events that may result in STEC introduction into farming settings) that can be aligned between stakeholders.

Short term needs:

- Register of STEC stakeholders and experts
- Guidance and alignment on routine testing sampling approach (e.g. 1 crop/ grower/ season + seasonal water sampling; pre-harvest? pre-planting?) that enable growers to produce safe product
- Guidance on how to take representative samples from food and water.

Longer term needs:

- A multidisciplinary approach to STEC risk assessment (e.g. involvement with UKRI 'AI in Agriculture' Centres for Doctoral Training).
- Common sense, evidence-based approach for triggering STEC testing (e.g. modelling and predictive scenarios relating to changing environmental and geopolitical conditions that identify parameters for additional sampling and testing in different settings and animal reservoirs, such as after adverse weather events).
- Further, enable field risk assessments, looking at topology, watersheds, proximity of animals, outcomes of extreme weather events/ water diversion.

2. **Diagnostic testing of STEC**, by sharing current and new testing protocols, guidance and best practices; by uplifting UK food safety testing capacity in the short-term with methods that are affordable, accessible and widely accepted, while not being based on indicator organisms; by continuing to identify innovations and the enabling technologies that further improve test performance and reduce costs to detect and confirm the presence of STEC. A key outcome will be the definition of a statement of testing requirement that can be implemented by SME and large food businesses, together with expected actions to be taken, as relevant to the business.

Short term needs:

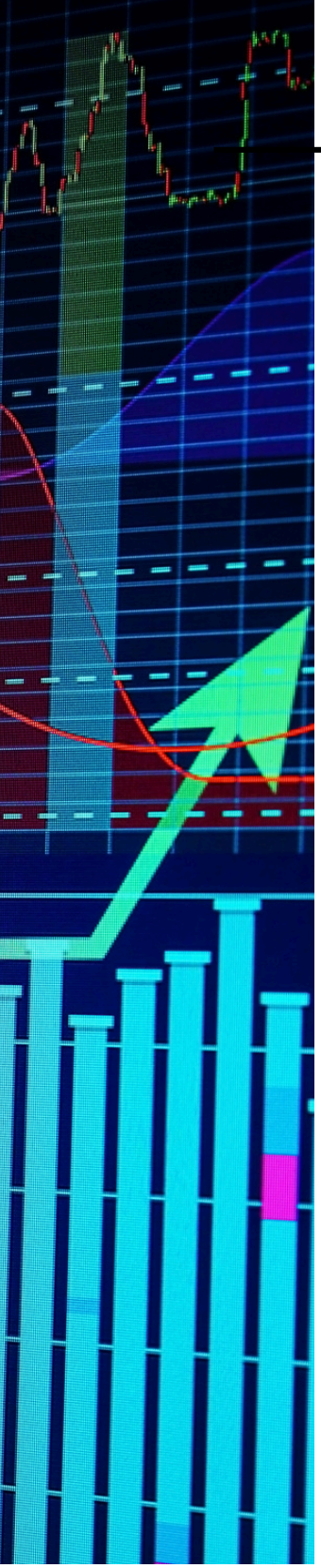
- Firstly, identify the **level of evidence needed from testing to inform STEC risk management practices and to demonstrate 'due diligence'** (in regard to good practice, not in a legal sense)
- While not waiting for a 'perfect test', compile a more immediately **achievable toolkit** of methods that are affordable, accessible, widely accepted, and promote strategic sampling
- Then, generate a consensus definition of idealised testing strategies and requirements (with shared recognition of the caveats and limitations of current approaches) that informs the **longer-term definition** of a target profile to guide method innovation and development of optimised testing strategies. *Short-list* of requirements for consideration:* reliable, specific, sensitive, rapid, and affordable method(s) that can be used to sweep for STEC in primary production
- Create a learning hub that includes a catalogue or database of testing methodologies, standards, and verification procedures. (Recent examples from the USDA Microbiology Laboratory Guidebook: Detection, Isolation and Identification of Top Seven Shiga Toxin-Producing *Escherichia coli* (STEC) from Meat Products, Carcass, and Environmental Sponges)
- Update stakeholders with new commercial selective/ differential media capable of differentiating most STEC (beyond just serogroup O157)
- Provide clarity around the services required from testing laboratories as this is variable both in terms of methods and technical advice on the interpretation of results
- Review current surveillance datasets to identity priority UK serogroups that should be included in testing regimes

- Provide clarity on legal requirements with respect to use of indicator organisms, and interpretation and enforcement of supplemental non-legislative guidance, particularly where guidance is not always congruent with legislation, e.g. UKHSA Guidelines for assessing the microbiological safety of ready-to-eat foods placed on the market.

* *Tentative long-list of requirements for consideration in the workstream:* test(s) that can be implemented by SME and large food businesses, with an accredited, rapid (4-48 hr from receipt), reliable, specific, sensitive, affordable (molecular?) method that is not subject to cross-reactivity, giving clear results on genes agreed to contribute to STEC pathogenicity (with serogroup markers) and can be shown to be present in a single viable *E. coli* cell, and which can feasibly be used in screening at primary production and which is fit for the future (i.e. allows for STEC genetic variation).

Longer term needs:

- Establish a '**target product profile**' that define specific aims that can be shared with researchers and innovators (e.g. to meet specific metrics on costs, throughput, biomarker targets, laboratory infrastructure, analytical performance/ error rate, complexity/ operability of testing platform, field deployability, availability of reagents and equipment)
- Support research projects that identify STEC biomarkers (genetic, cellular) supporting rapid testing
- Support research on additional biological indicators than generic *E. coli*, as there is little correlation to the presence of STEC (i.e. not a reliable STEC indicator, but may have a role as a hygiene monitor). The *stx* gene might be the 'ultimate indicator', and used in a manner similar to how high coliform counts can warn that further investigation is required, but not a reason for recall
- Laboratory capacity that enables culture-based confirmation, or adjustments in HSE contaminant categorisation of STEC (potentially enabling work at enhanced Cat 2 facilities). To be considered: Schedule 5, in terms of laboratory limits and capability of handling and storing STEC.



3. **Standardisation in test result reporting and mechanisms for data sharing to better understand STEC risk**, such as use of a consistent and defined lexicon of test result fields and technical terms that support timely and accurate transmittal of information between labs and food business operators and/ or regulators, while being able to account for and communicate interim results (e.g. unifying the use of terms such as 'presumptive'), results that cannot be confirmed, and 'atypical' results (e.g. genotypes that do not match case definitions, when in reality there is successive emergence of new genotypes through the natural evolution of STEC).

Short term needs:

- Agree on consistent vocabulary and definitions for terms like 'presumptive', *stx* DNA detected, 'unconfirmed' and 'confirmed' STEC with alignment to next actions (e.g. what can be decided from PCR results alone; what needs to happen with unconfirmed results). Starting points for internationally consistent vocabulary and definitions can include draft FSA/ FSS guidance, relevant ISOs, EU 2073/2005, and WHO and FAO reports
- Explore the parallel with clinical diagnostics where a 'molecular positive result with a negative culture result' can be used to inform actions based on standardised criteria for interpretation
- Use PCR-based detection of additional risk targets e.g. *eae* and O-group detections in combination with *stx* to inform on risk
- Training and education to help understand what test results mean and their comparability between businesses and laboratory
- Identify a system to harmonise and anonymise results in data sharing initiatives, with trade associations potentially having a role to collect and pool data from their members for due diligence/ further sharing.

Longer term needs:

- Using historical and contemporary surveillance data, establish incidence and baseline of the non-O157 serogroup STEC and the variability and evolution of genotypes, to enable attribution to global versus local sources
- Annual update on STEC incidence from government and from industry, shared with all stakeholders. Industry testing should focus on identifying and addressing STEC contamination at primary production
- Annual STEC horizon-scanning activity, with participation from researchers, to incorporate the above surveillance information identifying major and emerging trends, new and perceived risks relevant to industry, and how these risks relate to existing guidance (i.e. what does the industry need to be aware of, what info is now out-of-date, and needs to be revised).

4. **Development of frameworks for test result interpretation and actions**, which define when escalation and further actions are needed for confirmed and unconfirmed results, while building an overall base of knowledge on the incidence, niches and product categories susceptible to STEC risk that incorporates historical datasets and can be used to refine future testing and risk management approaches and to better understand STEC risks.

Short term needs:

- Agreed clear science-based results interpretation framework, with alignment to risk assessment activities to ensure that tests provide meaningful information and context to guide any actions
- Reinforce alignment with GAP/ Global GAP, HACCP, FSS Fresh Produce Tool, BRCGS.
- Review new EU regulation (2025/179) on collecting whole genome sequence information during a foodborne outbreak
- Reinforce guidance on land selection; water source and distribution methods; selective use of validated, appropriately treated organic waste; and animal access control. Training in practical risk assessment is critical
- Distribute risk and hygiene communication materials about suspected STEC risks to field-based managers and workers, in relation to potential known-risks e.g. flooded fields in the watershed of where crops are grown
- Training or communication with Environmental Health Officers and other Government officials to align interpretation of generic *E. coli* counts with UKHSA guidance and ensure cognisance of the interpretation of Process Hygiene Criteria set out in assimilated regulation 2073/2005 together with legislated expected actions by FBOs dependent on results, i.e. indicative contamination values not applicable to products on the market or to result in withdrawals or recalls, above which investigations by the FBO are required to maintain the hygiene of the process.

Longer term needs:

- Training and educational resources on sampling, testing, result interpretation, and preventative action (in relation to GAP, HACCP, BRCGS). Training should be aligned for growers, retailers, processors, regulators, and other key stakeholders to ensure that all parties are following the same evidence-based guidance
- Research on barriers or interventions to prevent zoonotic contamination of crops
- Support research to learn how to support food industry employees (field and factory managers/ workers; microbiology teams etc) prepare for and live through a food safety emergency. How can they be better supported to cope with the responsibility that is shared through the supply chain? How are anxieties about what is out of their control/ invisible become managed to ensure there is a robust, and capable and resilient decision-making process in place?

PROJECT INITIATION

It is proposed that a multi-stakeholder STEC Steering Committee (STEC-SC) and Terms of Reference will be established to ensure workstreams are supported with clear objectives, membership and resources. Further definition and completion of the workstreams will be through integrated planning and working between stakeholders. Interconnectedness between the workstreams is anticipated, with participants leveraging their UK and international networks to add perspective and support learning and knowledge exchange with related initiatives where STEC risks are being studied and addressed.

It is anticipated that the STEC-SC will form and complete initial scoping work (with governance) by end of February 2025, with the subsequent formation of cross-sector teams for each workstream by end of March 2025. Workstream teams will include participants from the November workshop and other individuals or organisations identified by the STEC-SC. Resourcing for these formation activities will be provided in part by the Food Safety Research Network, with subsequent resourcing to be identified by the STEC-SC. These collaborative activities are envisioned to rapidly advance the shared understanding and capacity for the UK to identify and mitigate STEC food safety issues, providing benefits to consumers, industry, researchers and government.

Additional stakeholders to consider (non-exhaustive):

- British Standards Institute/ ISO
- Public Health Scotland
- Animal & Plant Health Agency Science Services (*formerly VLA*)
- Department for Environment, Food & Rural Affairs (DEFRA)
- Environment Agency
- Health and Safety Executive (HSE)
- PATH-SAFE
- National Biosurveillance Network
- Met Office
- British Sandwich Association
- Roslin Institute, John Innes Centre and other BBSRC institutes
- Scottish Government Main Research Providers (i.e. SEFARI)
- SRUC Veterinary Services; other veterinary authorities
- Government innovation offices

ANNEX DOCUMENTATION

- Agenda / Participants
- Guiding questions used in the breakout sessions

ANNEXES

AGENDA & PARTICIPANTS

STEC Interest Group - a workshop to define testing regimes that would support management of public health and food safety risks from Shiga toxin-producing *Escherichia coli*.

Recent background: The spring 2024 STEC O145 outbreak was associated with sandwiches from epidemiological evidence. The common factor was hypothesised to be a lettuce variety that is commonly used for sandwiches. So far, the causative organism has not been detected in any foodstuffs or from any lettuce producers, presenting challenges for industry and government.

When *12th November, 2024* with optional group dinner evening of 11th November for those arriving the day prior

Where Friends House, 173-177 Euston Road, London, NW1 2BJ + virtual participation

Objective is to bring together industry and public & government authorities to discuss how to address an urgent need in the industry sector to conduct accurate, timely and economical testing for STEC that provides actionable results & impact for public health and food safety.

Anticipated outcomes include i) a statement of requirement for optimised testing (including what actions should be required from unconfirmed results) and ii) identification of opportunities for integrated planning or action between stakeholders

Participants:

The workshop was attended by 40 participants in-person, with a further 40 joining online. Participants included 13 government officials (FSA, FSS, UKHSA, MHRA) and representatives from 36 food businesses/ trade associations, 12 food testing companies and 4 academic organisations.

Workshop Agenda (*next page*)

Time (BST)	Session	Speaker / Chair
9:30 – 10:00	Arrival, tea/coffee	
10:00–10:30	Welcome, introductions, opening remarks	Matt Gilmour – Director, Food Safety Research Network; Kelly Shields – Technical Director, Fresh Produce Consortium
10:30 – 11:00	Industry perspective	Karin Goodburn – Director General, Chilled Food Association
11:00 – 11:15	Q&A	*Moderated*
11:15 – 11:50	Breakout discussion (supported by guiding questions)	*Moderated*
11:50 – 12:00	Reconvene & feedback	*Moderated*
12:00 – 12:45	Lunch	
12:45 – 13:15	Government perspective	Tina Potter – Food Standards Agency Claire Jenkins – UK Health Security Agency Frieda Jorgensen – UK Health Security Agency
13:15 – 13:30	Q&A	*Moderated*
13:30 – 14:05	Breakout discussion (supported by guiding questions)	*Moderated*
14:05 – 14:15	Reconvene & feedback	*Moderated*
14:15 – 14:30	Coffee break	
14:30 – 15:05	Testing labs perspective (5-min flash presentations on current tests and methods under development)	Susana Robles – Eurofins Gemma Stokes – Primerdesign Christophe Noel – SGS UK ltd Danny Franklin – Microsearch Labs Bethany Draper – ALS Life Sciences Europe Suzanne Jordan – Campden BRI David Tomas – bioMérieux
15:05 – 15:15	Q&A	*Moderated*
15:15 – 15:45	Breakout discussion on the future of contract testing	*Moderated*
15:45 – 16:15	Next steps: How can we move forward collaboratively	Matt Gilmour – Director, Food Safety Research Network
16:15 – 16:30	Closing remarks	

Breakout Discussion

Guiding questions for consideration at each table

Following the session on 'Industry Perspective':

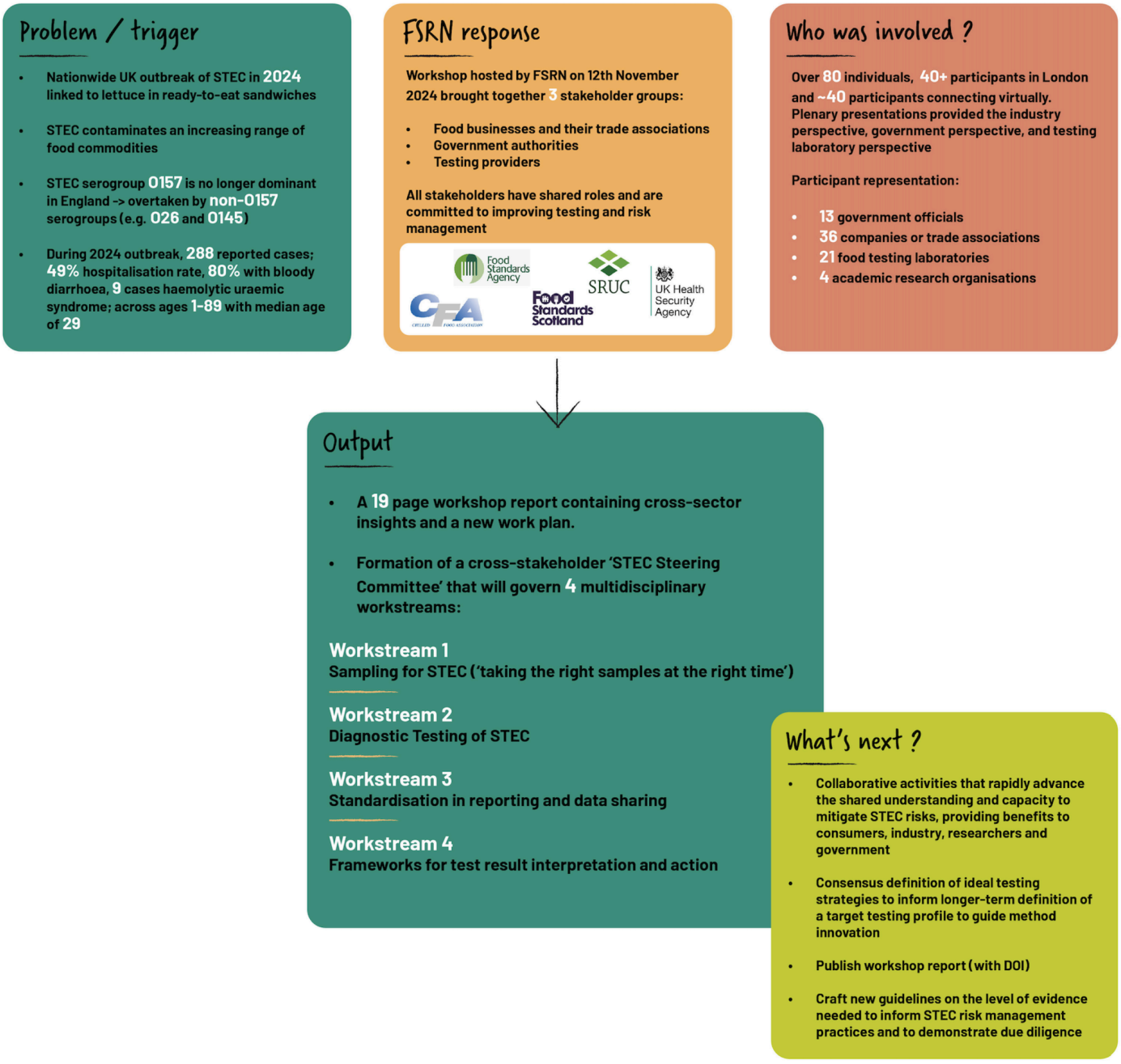
- In what products are STEC considered a hazard in your sector and how do you currently manage contamination risks?
- What testing do you carry out to verify that STEC risks are being controlled?
- How do you manage false positive testing results?
- What issues do you experience in relation to testing? (including access to laboratory services, costs, turnaround times, interpretation of results)
- What new tools do you need to help you detect and monitor STEC risks?

Following the session on 'Government Perspective':

- What are the essential STEC testing criteria that should be agreed/ shared between industry and government?
- What are some shared challenges between industry and government that are experienced in relation to STEC testing requirements for food safety management?
- What are some possible solutions to support objectives on managing STEC risk and rapid epidemiological investigations when a food safety risk has become apparent?

Following the session on 'Testing Lab Perspective':

- What are the most promising new technologies or approaches to test and confirm for STEC in foods?
- What new testing approach are you mostly likely to try to implement?
- What supports would you need to feasibly implement and interpret new tests?



Shiga toxin-producing *Escherichia coli* (STEC): Advancing STEC diagnostics in fresh produce to provide actionable results that impact public health and food safety.

FOOD SAFETY RESEARCH NETWORK

Biotechnology and Biological Sciences Research Council

Food Standards Agency

THE FOOD SAFETY RESEARCH NETWORK

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