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FoodSafeR is a 4-year Horizon Europe funded research project that started in October 2022.

The project aims to design, develop, and test the building blocks of an innovative proactive and holistic food safety warning and management system, which focuses on emerging of food safety hazards and associated risks.

FoodSafeR embodies integrated approaches to hazard characterisation and risk management in a comprehensive suite of future-oriented case studies, tools, methods, strategies, models, guidance, and training materials.

These resources are being made available in the **FoodSafeR Open Digital Hub**, a one-stop-shop platform uniting a community of professionals from the European and international food safety system.



This Project has Received funding from the European Union's Horizon Europe Research and Innovation Programme Under Grant Agreement No. 101060698



International Stakeholder Assessment of Emerging Microbiological and Chemical Food Safety Hazards and Associated Risks

Introduction

The interconnectedness of food markets has increased the risk of contamination and emerging foodborne illnesses, with microbiological hazards accounting for over 95% of food safety violations in Europe, and chemical contaminants also posing significant health risks. Climate change, the rise in consumption of alternative proteins, and the move towards a circular economy are likely to make sporadic occurrences like zoonotic diseases and carcinogenic mycotoxins more frequent. The global food system's vulnerability to shocks from zoonoses, conflicts, extreme weather, and pandemics like COVID-19 underscores the need for adaptive and resilient food safety management strategies.

The FoodSafeR project, funded by the European Commission, aims to enhance EU food safety and offer insights for global application through a collaborative approach to manage emerging food safety hazards and associated risks. This involves proactive risk management strategies, lessons from other industries, and innovative technologies like big data.



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Stakeholder

To gather current stakeholder perspectives on emerging food safety hazards, a workshop was held within the Living Labs

Workshop

framework.

Members of the FoodSafeR Consortium and International Advisory Board identified new microbiological and chemical risks via a mini-survey, addressing a gap in data since the last major study over ten years ago.

The workshop aimed to inform EU and global food safety policies with updated insights.



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The Team

The FoodSafeR consortium of 19 leading academic, research and industry organisations from across Europe, is led by FFoQSI.

FFoQSI is the Austrian Competence Centre for Food and Food Quality, Safety and Innovation. It is a multidisciplinary joint research hub that encompasses scientific, national and international business partners food safety authorities and stakeholders, technology SMEs and startups from the food system.

The FoodSafeR Advisory Board of 25 leading stakeholders from the food safety field gives us a global reach.



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Insights on enhancing food safety knowledge and informing new policies within the EU and globally.

Materials & methods:

The FoodSafeR International Advisory Board, with 25 experts from 18 institutions across four continents, met for a workshop in Barcelona in April 2023. Participants, experts in food safety from various global institutions, focused on microbiological and chemical hazards and risk assessment. They completed pre-workshop surveys on food safety issues, which were analysed for discussion at the event, fostering peer-to-peer dialogue on food safety risk management.

Current and emerging microbiological hazards and risk factors

18 responses identified Salmonella and Listeria as primary microbial food safety hazards in North America and Europe, with a greater variety of pathogens recognized as high-risk in Africa and Asia due to less controlled food chains. Multi-drug resistant bacteria were also a concern across the study regions. These findings align with the World Health Organization's 2021 report on significant global foodborne pathogens¹. Specific risks included Cronobacter in North American infant formula and Salmonella in vegetables globally, while Listeria was a risk in various foods like cheese and seafood. Other concerns involved toxigenic fungi, parasites, and viruses, with norovirus contamination noted in Singapore due to climate change. The study highlighted poor regulations, limited surveillance, climate change, and rising antimicrobial resistance as universal risk factors for microbial contamination, emphasizing the need for improved monitoring and regulation to prevent foodborne illnesses.

Current and emerging chemical hazards and risk factors

18 responses identified 7 classes of chemical food safety hazards, including heavy metals, PFAS, mycotoxins, pesticides, processing contaminants, plant toxins, and phycotoxins. Specific concerns varied by region, with heavy metals and PFAS emphasized in the US, and mycotoxins and pesticides highlighted in Europe. Global concerns included food allergens, veterinary drug residues, microplastics, and volcanic ashfall. The factors affecting chemical contamination range from inadequate regulations and informal markets to environmental conditions like extreme weather.

Stakeholders agreed on the need for proactive warning systems to identify risks, especially given climate change's impact on increasing mycotoxin contamination and the northward spread of mycotoxigenic fungi.

¹ World Health Organization 2021.

<https://www.who.int/news-room/fact-sheets/detail/food-safety#:~:text=are%20listed%20below.,Bacteria,vomiting%2C%20abdominal%20pain%20and%20diarrhoea>