EMERGING RISK IDENTIFICATION SYSTEM
Enhancing Food Safety in New Zealand

Signals

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A quarterly brief on emerging food safety issues (Oct–Dec 2025)

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Diverse views for signal sense-making and informed decisions

When one person considers information that might signal an emerging issue, they do so from their own knowledge and experience. When more people contribute their perspectives, new information is introduced and uncertainty is reduced. A diverse group can shine light on an issue from multiple angles. While uncertainty remains, clarity is improved and we can make better informed decisions about actions, even if we can't guarantee they are the "right" decisions.

There are examples where socialising information through the ERIS network has changed our initial views on emerging issues. Discussions on cyanotoxins in crop irrigation water expanded to consider whether there may be increased risks to animals from their drinking water, and if these toxins could transfer into animal-based foods. Collating views on the apparently increasing human health risks from *Shewanella* via aquacultured foods revealed that this microbe was already being actively managed to maintain food quality. Additionally, conversations about emerging food technologies have helped to determine urgency, such as how soon mycotoxin treatments like microbial consortia, nanotechnology-based methods or electro-physical treatments may be commercial ready.

News from the network

The Food and Agricultural Organization of the United Nations (FAO) has published best practices and guiding principles for effective food safety foresight activities, which includes descriptions of emerging risk activities carried out by a range of organisations. Also published was a review of the application of artificial intelligence in food safety management, which included case studies and important considerations. AI systems are also being developed for emerging risk detection.

During October and November, the European Food Safety Authority (EFSA) held their emerging risk network meetings. Among the topics discussed were the foodborne risks posed by *Klebsiella* spp., potentially re-emerging risks from reduced food processing, environmental contamination from tyre-derived 6PPD-quinone, inorganic arsenic in rice-based drinks, and potential health risks from beneficial technologies (*Bacillus*-based agriculture biocontrols, antimicrobial resistance in probiotic products).

A central database has been established which integrates all EFSA's data from monitoring chemical residues and chemical contaminants in food and feed. This provides for advanced analysis, including trend prediction and early warning of emerging risks.

A summary from the World Health Organization's (WHO) Alliance for Food Safety annual meeting heralded the upcoming publication of the first WHO Global Report on Food Safety.

Links: FAO foresight report and AI report ; EFSA EREN and StaDG-ER meetings ; EFSA CHEFS database ; WHO food safety AGM

Summary of activities

Of interest since Issue 8 were:

- 5 emerging issues concerning food or the food industry.
- Signals prompting updates to 22 identified emerging risks.
- 30 signals that did not meet the requirement of being a foodborne emerging risk to human health.

NZFSSRC members will decide if they want to undertake actions on these signals or identified emerging issues.

Featured emerging risks and issues

Metal organic frameworks (MOFs) in food packaging. MOFs are customisable crystalline materials made from metal clusters and organic linkers. MOFs could be used in packaging as antimicrobial agents, carriers for active compounds and to improve barrier performance. However, information on the safety profile, human dietary exposure risk and long-term (chronic) toxicological effects are sparse, particularly since MOFs are highly diverse. These information voids adversely impact on the validity of risk assessments.

Exposure to parasites through raw fish consumption. *Dibothriocephalus* spp. and *Adenocephalus pacificus* are tapeworms that require copepods, fish, and fish-eating mammals or birds as hosts to complete their lifecycle. They are known hazards and human case numbers have decreased over time. While different species are associated with different global regions and habitats, there are reports of human infections caused by non-local species. Contributors include the international trade of chilled (non-frozen) fish, an increased consumption of raw fish and improved test methods.

Trifluoroacetic acid (TFAA) in foods. TFAA is an ultrashort-chain PFAS that is environmentally widespread mainly due to the break down of fluorine refrigerant gases and certain agrichemicals. Environmental concentrations are increasing. Current toxicological data indicate low acute toxicity. The concern is over lifetime exposure to steadily increasing concentrations. Food is one exposure pathway. General concerns and responses to PFAS are likely to widen to consider ultrashort-chain PFAS.

New information on selected identified issues

- **Potential foodborne transmission of extraintestinal pathogenic *Escherichia coli* (ExPEC):** Studies continue to investigate the importance of foodborne ExPEC in urinary tract infections. Aziz et al. (2025), Goh et al. (2025)
- **Allergens in alternative food packaging:** Building on findings from earlier studies, experiments with wheat-based biodegradable tableware products showed the potential for gluten migration into gluten-free foods and beverages. Sousa et al. (2025)
- **Mycotoxin and alkaloid contamination in plant-based meat alternatives:** Collated data on mycotoxins in plant-based meat and beverages show their widespread co-occurrence in these food items. Mihalache (2025)

Some other observations

Links to:

- After reviewing the emergence of hybrid Shiga toxin-producing *E. coli* (STEC) pathotypes in human disease outbreaks, the STEC/EPEC and STEC/ExPEC pathotypes were considered to present the greatest ongoing risk to public health.
  Hybrid STEC review by Jenkins et al.
- Adding to research on food safety in dark kitchens, a study showed that operators can be economically constrained and must improvise, which can result in hygiene failures.
  Brazil dark kitchen study by Cunha et al.
- Commercialisation of coconut flower nectar (coconut sap) as a functional ingredient is increasing. Proper post-harvest controls are critical for quality and safety.
  Media article on coconut sap by A. Yow
- The Governor of California (USA) has signed a Bill that defines ultraprocessed foods and will phase these out of school lunches.
  California Assembly Bill No. 1264 (8 Oct 2025)
- A review notes variable pyrrolizidine alkaloid concentrations in edible flowers and the potential for flowers with high concentrations to enter the market.
  PA review Fernández-Pintor et al.
- "Hybrid sonics" are a new treatment to reduce chemical or microbial contaminants in food. The technology combines ultrasound with other treatments such as cold plasma and pulsed electric fields. The safety of treatment byproducts must be ensured.
  Hybrid sonics review by Francis et al.
- Acrylamide in potato chips is a well-known risk subject to regulatory controls but a recent study has showed dietary exposure remains unacceptably high.
  Acrylamide survey in Spain by Mesías et al.