Welcome to Issue 15. ERIS is in year two of a two-year project, finishing April 2023. We are currently securing support to continue this work through to 2024 with an intent to transition into a long-term service.

Introducing Kyla Archer
Industry Research Liaison Manager, NZFSSRC

ERIS Role: Project extension.

Kyla joined the NZFSSRC in October 2022, with a focus on continuing to build positive partnerships with the NZFSSRC's current and future members. Kyla also supports the science research teams currently delivering projects through the NZFSSRC, plus helps with the tricky process of turning research ideas into projects that meet a food safety need. Within ERIS, Kyla is supporting the Action Forum and project team to transition from the current project to the next phase.

Spotting emerging risks using AI.
In the science world, Artificial Intelligence recently hit the headlines when powerful tools were released that could write scientific papers.[1,2] The concerns are obvious: Plagiarism, accuracy, and the potential for propagating false or biased information. Human intelligence and reasoning are still needed.

According to IBM, "at its simplest form, artificial intelligence is a field, which combines computer science and robust datasets, to enable problem-solving."[3] This definition sits well with using AI, or some form of computer-based pattern recognition, to identify emerging food safety risks. Organisations around the world have taken advantage of data sets that capture food safety problems, using these to signal when a hazard might be emerging. Because these databases usually capture information on known hazards that are actively being monitored in certain foods, the capacity to detect new hazards is limited. However, long-term monitoring means that it is possible to establish a baseline, remove the noise, and detect if a known hazard is truly emerging, or re-emerging.

Other organisations have gone further, employing AI tools to scan and analyse millions of sources, detecting clusters of information to identify or predict food safety trends and risks. People are still needed to propose the questions they want answered and to make decisions on the outputs. While the part that happens in the middle is beyond human capability, humans must still build, train, test and refine these tools. There is currently no AI employed in ERIS, but we look at the available outputs, and methods, with interest.

[1] Sparkes M (2022) Meta's Galactica AI can write scientific papers, but is it any good?
[2] Else H (2023) Abstracts written by ChatGPT fool scientists [3] IBM. What is artificial intelligence (AI)?

Hypertransmissible pathogens.
Foodborne pathogens can emerge with increased virulence or transmissibility. This means they are more likely to cause illness if ingested, and the symptoms can be more severe, so their spread between hosts is noticeable. Changes in virulence and transmissibility may be due to mutations, acquired genes, or activation of dormant genes by external factors. Globally dominant *Cryptosporidium* subtypes are an example, having been described as 'highly virulent' and 'hypertransmissible'. Fresh produce has been implicated in several recent cryptosporidiosis outbreaks in Scandinavia although the subtype is not always reported. Some *Cryptosporidium* subtyping occurs in NZ and illnesses from these hypertransmissible subtypes have been reported. Subtype-level monitoring can signal whether these strains are becoming more dominant.

The NZFSSRC member organisations funding ERIS are:

AsureQuality Kaitiaki Kai

Westland Milk Products
Hokitika · New Zealand

PIANZ

Horticulture New Zealand
Ahumāra Kai Aotearoa

mia
Meat Industry Association

Oceania DAIRY

Zespri KIWIFRUIT

Fonterra
Dairy for life

United Fresh
New Zealand Incorporated

Featured emerging risks and issues

Microbial growth in plant-based meat analogues. A laboratory study has found that microorganisms present on plant-based "meat" products taken from retail outlets can quickly grow at non-refrigeration temperatures, sometimes as well as microorganisms present in raw minced beef. Consumers could be exposed to foodborne microbial hazards if they fail to store and cook the products correctly. See Liu *et al.* (2023)

Cadmium in flaxseed products. An independent US consumer product testing company reported they found high concentrations of cadmium in whole and ground flaxseed (linseed) products. In New Zealand, there is increased availability of flaxseed products at retail, but no data were located on cadmium concentrations in these foods. Linseeds are both grown in New Zealand and imported.

Summary of activities, December 2022 and January 2023.

New emerging risks and issues. Four emerging risks concerning food were identified during December 2022 and January 2023, along with two emerging issues for which the role of food was not yet clear, but the issue was considered to be important for the food industry.

Concerns food:

- Emerging risks associated with chocolate
- Histamine in non-fish foods and histamine intolerance
- Cadmium in flaxseed products
- Microbial growth in plant-based meat analogues

Might concern food:

- Foodborne transmission of *Enterobacter cloacae*
- Tyre wear particles in foods

Many of these issues are likely to be important to New Zealand and briefing notes are being prepared. The Action Forum will decide if they want to undertake actions on these identified emerging risks. Briefing notes sourced from publicly available information can be provided by the coordinators to NZFSSRC members upon request.

Other assessed emerging issues. There were 22 emerging issues assessed during December and January that did not meet the requirement of being a foodborne emerging risk to human health. A list of these emerging issues is maintained for later review.

Some other observations. For interest, not currently in the ERIS Emerging Risks Register.

- Increasing numbers of children are being reported as becoming ill from consuming edible cannabidiol products in the USA. Citing concerns over long-term use and ingestion by vulnerable people such as children, the US FDA announced that existing regulatory frameworks for foods and supplements are not appropriate for these foods, and a new approach is needed.

  Link to Tweet et al. (2023) report
  Link to USFDA announcement

- A study in Brazil has shown that protocols put in place to prevent the spread of SARS-CoV-2 (the virus that causes CoVID-19) appears to have also reduced the prevalence and concentration of *Staphylococcus aureus* on beef.

  Link to Costa et al. (2023) report

- An assessment of the risk of foodborne transmission of the Monkeypox (Mpox) virus found no relationship between food consumption and Mpox transmission, other than noting the potential for this to occur through consuming bushmeat. There are data gaps.

  Link to Chaix et al. (2022) report

- Fresh produce from horticultural areas flooded during January's high rainfall events are likely to be contaminated and growers are being advised to discard affected crops unless there is a process in place to ensure any product reaching the market is safe to consume.

  Link to United Fresh advice
  Link to Horticulture NZ advice