

EMERGING RISK IDENTIFICATION SYSTEM (ERIS)

Annual Report

Year Three (March 2023–February 2024)

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Abbreviations

EFSA	European Food Safety Authority
ERIS	Emerging Risk Identification System
ESR	Institute of Environmental Science and Research
FSANZ	Food Standards Australia New Zealand
MPI	Ministry for Primary Industries
NZFS	New Zealand Food Safety (MPI)
NZFSSRC	New Zealand Food Safety Science & Research Centre
VIBE	Vigilance and Intelligence Before food issues Emerge (FSANZ)

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1. INTRODUCTION

New Zealand's food industry is not just focussed on research that improves food safety now, but also on research that will improve their ability to reduce or avoid future food safety risks. Horizon scanning is needed to identify these emerging food safety risks. While many individual food companies carry out some form of horizon scanning, only a few have systematic processes that link their scanning efforts to research planning. A review undertaken during 2017/18 identified the need for a systematic horizon scanning system that could identify emerging food safety risks, and then support the food industry to take action.¹

A system for identifying emerging food safety risks was launched through the New Zealand Food Safety Science & Research Centre (NZFSSRC) with funding from a core group of food industry organisations and in-kind support from New Zealand Food Safety (NZFS). The Emerging Risk Identification System (ERIS) started in April 2021 and is funded until June 2024. ERIS focusses on identifying food safety risks that may impact New Zealand in coming years.

The core purpose of ERIS is to support the food industry to prioritise their current and future food safety research.

The structure of ERIS has two pillars:

1. Gathering intelligence on emerging food safety issues and risks.
2. Supporting decision-making on future research.

This ensures that intelligence is turned into action.

The 2017/18 review included an investigation into existing food safety horizon scanning systems in other countries and identified people as being the best source of intelligence on emerging food safety risks. ERIS has been designed as an expert centred system, with intelligence from people complemented by information gathered from other sources. Human networks are at its core.

Networks deliberately established during the ERIS project include the Emerging Risk Identification Panel and connections with other teams who identify and act on emerging food safety issues (Figure 1). The Emerging Risk Action Forum is the decision-making group, both for ERIS operational aspects and for determining what actions should be taken on emerging risks. Three Coordinators, including one from NZFS, deliver ERIS and work with the Action Forum to establish processes and improve the system. The Coordinators collate information from a variety of sources to identify emerging risks and, when needed, gather additional information to support decision-making.

¹ King N, Martin-Neuninger R, Ho H and Brightwell G (2018) Dynamic scanning for emerging food safety risks and opportunities for the food industry: Learning from established horizon scanning systems and proposing a way forward for New Zealand. New Zealand Food Safety Science & Research Centre. https://www.nzfssrc.org.nz/assets/Project-Reports/Dynamic-scanning-for-emerging-food-safety-risks-and-opportunities-for-the-food-industry_final-report.pdf

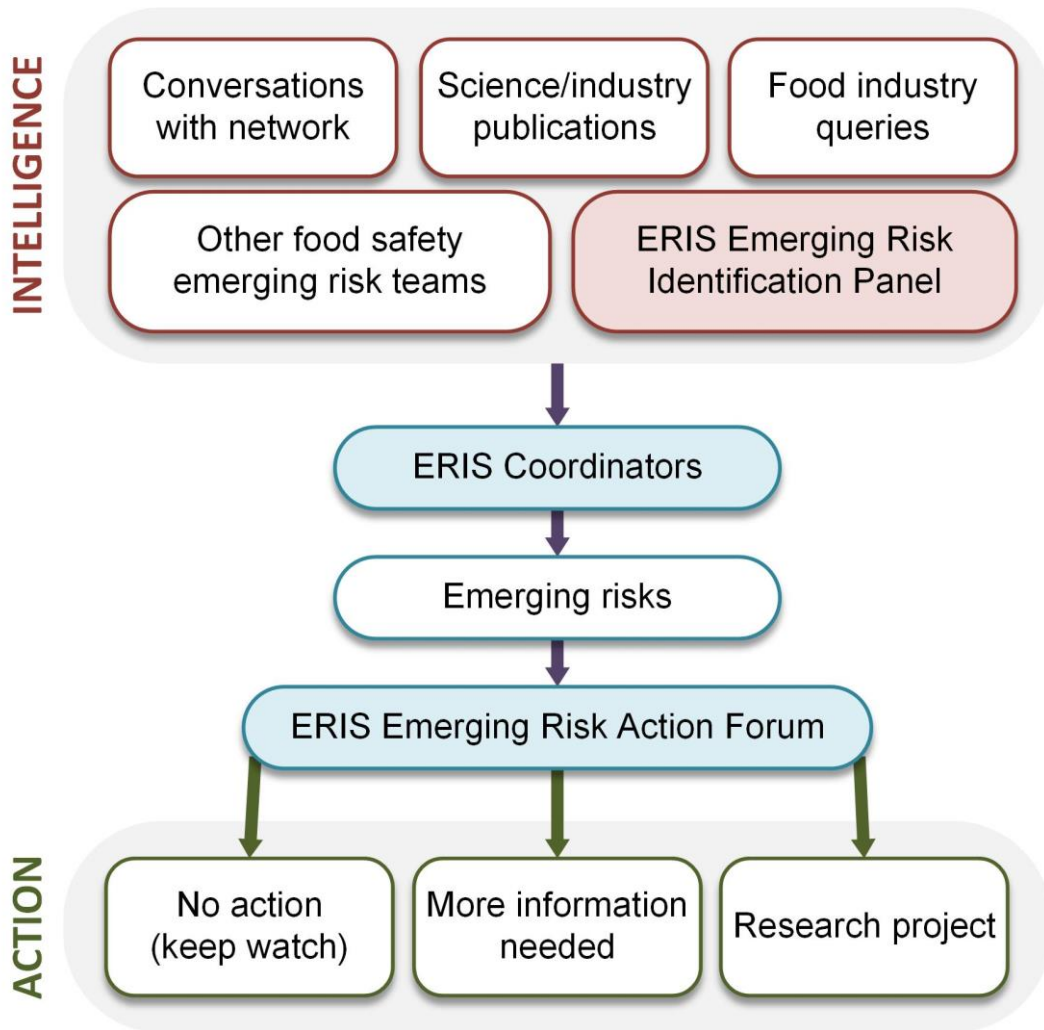


Figure 1. The structure of ERIS

Information from people and other sources is gathered and evaluated by the ERIS Coordinators. Identified emerging risks are assessed by the Emerging Risk Action Forum, which is formed from the ERIS funders and is the primary decision-making group. Information on emerging risks is also made available to other NZFSSRC members as needed, and those in the Emerging Risk Identification Panel.

2. OPERATIONAL ACTIVITIES

Year One (2021/22) activities focussed on establishing systems and processes and transitioning to an operational phase. ERIS was fully operational during Year Two (2022/23) and Year Three (2023/24) with no substantial change in structure and function, other than one industry organisation opting out of funding ERIS for 2023/24 and two new organisations opting in. The nine industry organisations currently funding ERIS are from the main primary food sectors (dairy, horticulture, seafood, poultry and meat) plus food assurance.

Meetings

The Emerging Risk Action Forum met three times during Year Three. While also considering operational matters, participants at these meetings discussed identified emerging issues, deciding if further action was needed and what this action should be. The Action Forum used these meetings to consider 43 emerging issues identified during Year Three.

The Emerging Risk Identification Panel are experts from a broad range of disciplines (e.g. food production, epidemiology and health, risk assessment, foodborne hazards, regulation). Panel members draw from their own networks and observations to bring information into ERIS. Meetings of the Emerging Risk Identification Panel were not continued during 2023/24. Instead, Panel members were invited to participate in 'Panel Perspectives', where members were presented with information on a signal or issue and asked questions to explore their views or observations.

Panel members were asked for:

- Their knowledge of research that supports cyclone recovery and resilience and that is relevant to food safety.
- Their views on microbial growth in plant-based meat analogues as an emerging risk.
- Any information showing what NZ consumers think 'plant-based' and 'vegan' means, when these words are used on food labels, and any knowledge of surveys of NZ food in which plant-based or vegan foods have been tested for animal-based ingredients.
- Their views on whether drought pressure on olive oil supplies, and the subsequent increase in the risk of food adulteration, is an emerging risk for New Zealand.
- Their views on the size of the problem presented by the sale of online foods, where products have not necessarily undergone regulatory safety checks, and any data related to this.
- Their observations of newer technologies or ways of working that are being introduced into food production without consideration of how this affects the safety of the food.

Information sources

In January 2023, the Coordinators undertook a full review of their information sources to ensure they were providing useful intelligence. Efforts to expand the sources, and to remove sources that had not been useful, continued through the first half of 2023. All information sources are open access, although in some cases full access requires a subscription.

Communications

During 2023, the monthly brief was replaced with a quarterly newsletter *Signals*. Three editions were published during July, October and January.²

The Action Forum continued to receive a monthly email alerting them to newly identified emerging issues, updates to previously identified emerging issues, and other signals/issues that did not meet the requirements of being an emerging risk associated with food. This email also served to communicate any other information of importance to this group. The Identification Panel also received a monthly email listing emerging issues raised during the previous month.

As part of the ERIS service, briefing notes summarising each emerging risk are made available to NZFSSRC members upon request. Throughout 2023/24, relevant briefing notes were also routinely provided to sector subgroups (taskforces) within the NZFSSRC (dairy, horticulture, seafood, poultry). Briefing notes were also shared with specific groups outside the NZFSSRC as part of establishing external connections.

In addition to the scheduled communications described above, the ERIS team have become a point-of-contact for NZFSSRC members and research organisations, and NZFS, for emerging risk information. In total, the project team has delivered nineteen presentations at meetings and conferences (five during 2023/24), describing ERIS and identified emerging risks. The team have additionally supported others preparing their own talks, meeting agendas or publications when the content considers emerging food safety risks. This includes contributions for two articles published in *Food New Zealand*.³

Connections with other emerging risk groups

The ERIS team regularly met with food safety emerging risk teams from Food Standards Australia New Zealand (FSANZ) and NZFS. The FSANZ VIBE (Vigilance and Intelligence Before food issues Emerge) team assesses the likelihood of an emerging food issue becoming a concern for FSANZ. Since 2022, NZFS have had an Emerging Risk group who identify and manage risks/issues which may fall within NZFS's remit as regulators. While the focus of the VIBE and NZFS teams differ to the ERIS work, which is focused on the needs of the food industry and identifying scientific research priorities, areas of interest overlap. Hence, the regular meetings have provided opportunities to share intelligence and updates on current activities. The forum minimises duplication of effort and maximises the benefits to stakeholders of each system.

The ERIS team also continued to be involved with the European Food Safety Authority's (EFSA's) Stakeholder Discussion Group on Emerging Risks. Through invitations to their meetings, the ERIS team has exchanged information and contributed to international discussions on emerging risks. Nicola King (ERIS Lead) is part of the editorial board for EFSA's Emerging Risk Newsletter.

During 2023/24, the ERIS team also met with the emerging risk team within Food Standards Scotland, to understand how intelligence might be shared for mutual benefit.

² Available from <https://www.nzfssrc.org.nz/resources/eris>

³ Nanoparticles (<https://www.nzfssrc.org.nz/news/in-the-latest-issue-of-foodnz-does-size-matter-when-it-comes-to-food-safety/#/>) and food allergens (*in press*). The articles are written by the NZFSSRC. *Food New Zealand* is published by the New Zealand Institute of Food Science & Technology (<https://nzifst.org.nz/Food-New-Zealand>).

Technical Response fund

As part of the overall ERIS project, a Technical Response Fund was established to enable the NZFSSRC to rapidly commission, undertake and provide the NZFSSRC industry members with technical advice on high priority food safety issues of concern. Criteria for the use of this fund and a process to access the fund has been established. To date, the fund has not been used.

3. ACTIONS ON EMERGING ISSUES

There were 70 emerging issues considered by the Action Forum during Year One (scanning period July 2021-February 2022) and 56 emerging issues considered during Year Two (March 2022-February 2023). Of the 45 emerging issues identified during Year Three, the Action Forum considered 40 at their meetings. Some older emerging issues were re-considered during Year Three.

Across all 166 emerging issues considered by the Action Forum, the following decisions and actions were taken (Appendix):

- No action at this time (53 emerging risks).
- No action other than sharing the briefing note with a specific group (79 emerging risks).
- Additional information gathering or other action required (33 emerging risks, of which briefing notes from 22 were also shared with specific groups).
- Additional information gathering followed by support to refine research concepts (1 emerging risk).

At the end of February 2024 there were five emerging issues awaiting discussion and final decision-making.

Appendix. Actions taken on emerging risks identified during Year One (1-70), Year Two (71-126) and Year Three (127-171)

Emerging risk	Actions	Briefing note shared	
1	Shiga toxin-producing <i>Escherichia albertii</i> in food (particularly poultry)	No action	No
2	Perfluoroalkylated substances (PFAS) in foods	Information gathering (complete)	Yes
3	Invasive foodborne infections from <i>Streptococcus agalactiae</i> in fish	No action	Yes
4	<i>Datura</i> spp. in spinach	No action	Yes
5	<i>Listeria monocytogenes</i> serotype 4h	Information gathering (complete)	Yes
6	Chlorpyrifos-containing agrichemicals used for food crops	Information gathering (complete)	Yes
7	Allergenic potential of alternative proteins	No action	Yes
8	'Black food' coloured with high amounts of active carbon	No action	No
9	Adulterated beeswax	No action	No
10	Poultry as a vehicle of infection for the extraintestinal pathogenic <i>Escherichia coli</i> type ST131	No action	No
11	Microbial risks from collagen derived from marine invertebrates	No action	Yes
12	Health risks of coconut oil	Information gathering (complete)	No
13	Risk of tick-borne encephalitis from raw goat milk consumption (France)	No action	Yes
14	The Possibility for Chagas-disease due to climate change (Europe)	No action	No
15	3-monochloropropanediol and glycidyl esters from oils and fats	No action	Yes
16	Microplastics and nanoplastics in table salt	No action	No
17	Hazards in seaweed	Information gathering (complete)	Yes
18	Cannabidiol and cannabidiol products	No action	No
19	Bamboo cups leaching formaldehyde and melamine	No action	No
20	Ethylene oxide in foods	No action	No
21	Bongkrelic acid in fermented foods	No action	Yes
22	Functional nanomaterials in food packaging	Other action (complete)	No
23	Tick-borne alpha-gal induced red meat allergy	No action	Yes
24	Increasing cases of alveolar echinococcosis, caused by <i>Echinococcus multilocularis</i> , across Europe and North America	No action	No
25	Accumulation of β -methylamino-L-alanine (BMAA) in seafood and the link to neurodegenerative disease	No action	Yes
26	New limits for chlorate in milk	Information gathering (complete), research concept (complete)	Yes
27	Microplastics and nanoplastics in food	No action	No
28	Brevetoxins in shellfish (Europe)	No action	Yes
29	Increased attention on <i>Toxoplasma gondii</i> in red meat	No action	No
30	<i>Cyclospora cayetanensis</i> on fresh produce	No action	Yes
31	Foodborne transmission of <i>Salmonella</i> Bovismorbificans	No action	Yes
32	Bee products as food ingredients	No action	No
33	Chemical hazards present in <i>Salicornia</i> (sea asparagus)	No action	Yes
34	<i>Candida krusei</i> and <i>Pichia kudriavzevii</i> . Same species with pathogenic potential	No action	No
35	Sodium benzoate affects the epigenome	No action	No
36	Spore-forming bacteria in insect-based foods	No action	No

37	Bovine Milk and Meat Factors as risk factors for cancer	No action	Yes
38	Foodborne transmission of <i>Acinetobacter</i> spp.	No action	No
39	Luciferase and luciferin in food	No action	No
40	Dietary allulose as a risk factor for <i>Klebsiella</i> infection	No action	No
41	<i>Pantoea dispersa</i> in dried foods	No action	No
42	The role of milk exosomes in chronic disease	No action	Yes
43	<i>Salmonella</i> in finfish	No action	Yes
44	Risks associated with homemade plant-based milks	No action	No
45	Nanoparticle delivery of agrichemicals	Information gathering (complete), other action (complete)	Yes
46	Tortilla consumption linked to aflatoxin exposure (Guatemala)	No action	No
47	Latent bovine tuberculosis in cattle	No action	Yes
48	Microbial safety of fruit waxes	Information gathering (complete)	Yes
49	Increase in <i>Anisakis</i> spp. abundance in fish	No action	Yes
50	Edible graphene on food	No action	No
51	The effect of phytoestrogens in soy-based infant formula on infant development	No action	Yes
52	Dietary exposure to opium alkaloids in poppy seeds can exceed acute reference dose	No action	Yes
53	Coffee adulteration and deliberate mislabelling	No action	No
54	Increasing detection of hepatitis E virus in foods	No action	No
55	Hepatitis A linked to dried fruit	No action	No
56	Polyaromatic hydrocarbons in cannabidiol oils	No action	No
57	Salmonellosis linked to onions	No action	Yes
58	Fresh produce as a trigger for pollen food allergy syndrome	No action	Yes
59	Palmitic acid promotes cancer metastasis	No action	Yes
60	Lower limit for eugenol in fin fish (Japan)	No action	Yes
61	Functional nanomaterials as food ingredients	Information gathering (complete), other action (complete)	No
62	Increasing recalls from hazards in home delivery meal kits	No action	No
63	Hypoglycin A from sycamore in milk	No action	Yes
64	Titanium dioxide (E171) no longer considered safe when used as a food additive	No action	Yes
65	Plasticisers migrating from disposable gloves to food	No action	Yes
66	Foodborne infections from <i>Arcobacter</i> spp.	No action	No
67	<i>Proteus mirabilis</i> carriage by meat and poultry	No action	Yes
68	Increasing incidence of <i>Salmonella</i> Give among cattle and potential for foodborne transmission (NZ)	Information gathering (complete)	Yes
69	Pheophorbide in seaweed	No action	Yes
70	Freshwater cyanobacteria toxins in irrigation water	Information gathering (complete)	Yes
71	Foodborne spread of <i>Staphylococcus saprophyticus</i>	No action	Yes
72	<i>Alternaria</i> toxins in tomato products	No action	Yes
73	Allergens in alternative food packaging	Information gathering (complete)	Yes
74	<i>Salmonella</i> in frozen vegetables	No action	Yes
75	<i>Moringa oleifera</i> in foods	No action	Yes
76	Bisphenol S in food contact materials	Information gathering (complete)	Yes

77	<i>Staphylococcus argenteus</i> in poultry	No action	Yes
78	Cyanogenic glycosides in elderberries	No action	Yes
79	Meat as a dietary contributor to amyloidosis	No action	No
80	Allergenicity of pectin as a food ingredient	No action	Yes
81	Increasing inclusion of probiotics, prebiotics, paraprobiotics and postbiotics in foods	No action	No
82	Mycotoxins in fish from plant-based feed	No action	Yes
83	Adaptogens in food, beverages and animal feed	No action	No
84	Precautionary labelling for allergens in food	Information gathering (complete)	Yes
85	Rat Hepatitis E Virus (HEV) causing hepatitis in people	No action	Yes
86	Tolerance of bacteria to substandard alcohol-based sanitisers	No action	Yes
87	Potential radiation contamination of cereals from Ukraine	No action	No
88	Halogenated polycyclic aromatic hydrocarbons in high salt seafood snacks	No action	Yes
89	Animal reservoirs of <i>Streptococcus gallolyticus</i> subsp. <i>gallolyticus</i>	No action	Yes
90	Engineered nanomaterials in the environment	Information gathering (complete), other action (complete)	No
91	Increase in the proportion of dried beans and rice samples with pesticide residues exceeding MRLs (EU)	No action	No
92	Fungicide residues in food and antifungal resistance among <i>Candida auris</i>	No action	Yes
93	Hazards associated with jellyfish as a food	No action	Yes
94	Mycotoxins in red wine	No action	No
95	<i>Bacillus thuringiensis</i> and foodborne disease	No action	No
96	Mineral oil hydrocarbons (MOAH) in food: Harmonised limits of quantification	Information gathering (complete)	Yes
97	Human bocavirus in shellfish	No action	Yes
98	<i>Clostridioides (Clostridium) difficile</i> on potatoes	No action	Yes
99	Foodborne transmission of <i>Klebsiella</i> species	No action	Yes
100	Foodborne transmission of <i>Streptococcus equi</i> subspecies <i>zooepidemicus</i>	No action	Yes
101	Chemical migration from substandard silicone moulds	No action	No
102	Emerging natural toxins in seafood	No action	Yes
103	Cadmium in emerging animal fodders	Other action (complete)	Yes
104	Potential for adulteration of sunflower oil	No action	No
105	Dietary exposure to organophosphate esters	Information gathering (complete)	No
106	Colourants from butterfly pea flowers	No action	No
107	Chlorinated paraffins in food	No action	No
108	Heat tolerant Enterobacteriaceae	Information gathering (complete)	Yes
109	Foodborne transmission of <i>Clostridium difficile</i>	No action	Yes
110	Mycotoxins in pseudocereals	Information gathering (complete)	Yes
111	Mycotoxin and alkaloid contamination in plant-based meat alternatives	No action	Yes
112	Allergens in powdered silk worm (<i>Bombyx mori</i>)	No action	Yes
113	Lead in freeze-dried berries	No action	Yes
114	Potential foodborne transmission of extraintestinal pathogenic <i>Escherichia coli</i> (ExPEC)	No action	Yes
115	<i>Helicobacter pylori</i> in poultry	No action	Yes

116	Food safety of tara flour	No action	Yes
117	Fluoride in soy-based beverages	No action	Yes
118	<i>Laribacter hongkongensis</i> in freshwater foods	No action	Yes
119	New zoonotic henipavirus (<i>Langya henipavirus</i>)	No action	Yes
120	Furan, methylfurans and alkylfurans in foods	No action	Yes
121	Pathogenic <i>E. coli</i> in falafel	No action	Yes
122	Fraudulent use of additives in fresh tuna	No action	Yes
123	Spore-forming bacteria in plant-based proteins	No action	Yes
124	<i>Citrobacter</i> spp. in foods	No action	Yes
125	Hypertransmissible, zoonotic <i>Cryptosporidium parvum</i>	No action	Yes
126	Potential for novel food processing to affect packaging integrity	No action	Yes
127	Emerging risks associated with chocolate	No action	Yes
128	Histamine in non-fish foods and histamine intolerance	No action	Yes
129	Cadmium in flaxseed products	No action	Yes
130	Foodborne transmission of <i>Enterobacter cloacae</i>	No action	Yes
131	Microbial growth in plant-based meat analogues	Information gathering (complete)	Yes
132	Tyre wear particles in foods	No action	Yes
133	(issue under consideration, awaiting key information)	Decision pending	No
134	(confidential issue, under consideration)	Decision pending	No
135	Food contamination from flooding and silt (Jan/Feb 2023 cyclones, NZ)	Information gathering (complete)	Yes
136	Increased attention on <i>Salmonella</i> in raw, crumbed and frozen chicken	No action	Yes
137	Allergenicity of chia seeds	No action	Yes
138	Grayananes in honey made with nectar from plants in the <i>Ericaceae</i> family	No action	Yes
139	Potential chemical and microbiological hazards associated with 3D food printing	No action	Yes
140	Non-sugar sweeteners	Information gathering (complete)	No
141	(confidential issue)	Information gathering (complete)	No
142	Brominated flame retardants in foods	No action	No
143	(issue under consideration, awaiting key information)	Decision pending	No
144	Increasing signals on pathogen contamination of flour	No action	No
145	<i>Bacillus cytotoxicus</i>	No action	Yes
146	<i>Aichivirus</i>	No action	Yes
147	Glycerol in slush ice drinks	No action	No
148	Food contact materials containing bamboo and similar plant-based materials	No action	No
149	Emergence of <i>Salmonella</i> Ball	No action	No
150	Potential microbial contamination of new disposable gloves	Other (underway)	Yes
151	Increasing backyard poultry ownership in New Zealand	No action	Yes
152	Animal products in vegan or plant-based foods	Other (complete)	No
153	Drought pressure on olive oil supplies increases risk of fraud	Other (complete)	No
154	Moves towards STEC serogroup independent detection and isolation	No action	No
155	N-nitrosamines in food	No action	No
156	Release of treated and diluted radioactive water from Japan	No action	Yes

157	Multidrug resistant salmonellae causing foodborne illness	Information gathering (complete)	Yes
158	Tropane alkaloids in flour	No action	No
159	Food and feed treatments to reduce mycotoxins	No action	Yes
160	Fermented bee products	No action	No
161	Global spread of rat lungworm (<i>Angiostrongylus cantonensis</i>)	Information gathering (complete)	Yes
162	Nanoparticles and the formation of biocoronas	Information gathering (underway)	No
163	Food dependent exercise induced anaphylaxis	No action	No
164	Food contamination from rare earth elements	Information gathering (underway)	Yes
165	Foodborne transmission of <i>Providencia</i> spp.	Information gathering (underway)	Yes
166	Alcohol replacers	No action	No
167	Increased consumption of <i>Amanita muscaria</i> (magic mushroom)	No action	No
168	Foodborne transmission of emerging parasites, <i>Enterocytozoon bieneusi</i> & <i>Cystoisospora belli</i>	No action	No
169	(confidential issue)	Information gathering (complete)	No
170	New species of <i>Listeria</i> and their relevance to food safety	Decision pending	No
171	Mercury release into the aquatic environment from the Arctic permafrost	Decision pending	No