



THE FOOD CHAIN

THE **safefood** KNOWLEDGE NETWORKS NEWSLETTER

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FOOD FORTRESS: DE-RISKING THE FIRST LINK IN THE FOOD CHAIN



IN 2008, THE meat sector on the island of Ireland was rocked by a dioxin contamination scandal. In its wake, however, a strong platform for animal feed assurance has grown. The Northern Ireland Grain Trade Association (NIGTA) believes this could pave the way for an enhanced programme of assurance right along the food chain.

“While the dioxin contamination did not arise from a feed business, it did highlight the need for effective assurance for all feed inputs. It raised a lot of questions about how risks in the food chain were being managed,” says Robin Irvine, Chief Executive of NIGTA.

“The industry looked to the feed sector as the first link in the food

chain. This is where some of these serious contaminations will come in, so it was important to have an effective programme to de-risk the materials supplied to livestock farms.”

CO-ORDINATED TESTING

NIGTA turned to Professor Chris Elliott, Director of the Institute for Global Food Security at Queen’s University Belfast, for help. His team found that animal feeds were being tested for contaminants, but not in a concerted way across the sector.

“We realised that if we could develop a strategic approach, that would be a massive win for the industry. This would involve co-ordinating testing to ensure we get coverage every month of the different feed materials, contaminants and geographic spread, then pool the information and make it available to everybody,” says Robin.

Out of this grew [Food Fortress](#), a feed assurance project. Member companies submit feed samples that are combined and tested for contaminating levels of mycotoxins, aflatoxins, dioxins, heavy metals and pesticide residues. “In 99 cases out of 100, that screen gives you the reassurance that everything is safe,” says Robin. “Every so often a signal will come up and we identify the sample with a potential issue.”

BUY-IN FROM BUSINESS

This composite-sample approach brings down the cost of testing

and also generates a bigger picture for the industry, he explains. Businesses have signed up in large numbers – the pilot scheme of 18 in 2014 has grown to 69 on the island of Ireland and in Britain, and now covers 100% of the compound feed consumed in Northern Ireland.

“It gives me confidence that we have a grasp on the whole industry, that there is not something nasty lurking out there,” he says. “Every month, we have another tranche of results coming through, giving us a regular update on the background challenges.”

MODEL FOR THE FOOD CHAIN

Robin believes this model can be applied across other sections of the food chain. “The best development would be for businesses all along the line to adopt and adapt this, to apply the basic principles to their processes to manage the risks,” he says.

Meanwhile, the Food Fortress project is also strengthening the relationship between the feed sector and the agencies that oversee food safety, notes Robin.

“That is what really pleases us – we are working with the regulators, sharing information and dealing effectively with the issues that arise,” he says. “The feeling now is that we all have the same end goal in mind. We need to protect our businesses, we need to protect the food chain and we are all looking and travelling in the same direction.”

**DISCOVER WHAT’S COMING
IN 2016 FOR THE SAFEFood
KNOWLEDGE NETWORKS: PAGE 8**

CONSUMERS NEED BALANCED INFORMATION ABOUT FOOD CHOICES



DR MOIRA DEAN

CONSUMERS NEED CLEAR information about food to avoid confusion when new food safety and nutrition research comes out. That's according to [Dr Moira Dean](#), a senior lecturer in Psychology at Queen's University Belfast (QUB), whose research looks at food choice and consumer behaviour.

"When consumers see conflicting information – perhaps a piece of research one day saying 'eat this food', then a week later, research saying 'do not eat the same food' – they have difficulty making sense of that apparent conflict," says Moira.

"This is sometimes down to how research is portrayed in the media, rather than being a true reflection of how research works, in stops and starts, with the interpretations depending on the assumptions you make and the data you have."

She cites examples, such as the push to encourage people to eat whole grain rice, yet the burden of arsenic in the plant resides in the outer husk. Consumers are also advised to eat plenty of fruit and vegetables, but those foods can sometimes be contaminated with pesticides and heavy metals.

"If consumers get the full information from the start about benefits and risks, and also how to reduce risks – maybe by cooking rice a certain way and washing fruit

and veg – then they get a more balanced picture," says Moira.

"When the media reports new research, consumers can then put the risks into context. Treat the public as people who can understand issues and make informed decisions, rather than taking the paternalistic attitude of only telling them the benefits from a public health perspective. The underlying message is the same: eat a variety of food in small quantities, to get the nutritional benefits of different foods and to spread your risk."

COMPLEX FOOD CHOICES

Food experts also need to take the big and complex picture of our food choices into account, adds Moira, who originally studied physics and worked as a teacher before studying psychology and researching consumer choices around organic food, whole grains and older-age eating habits.

Her more recent **safefood**-supported research at QUB has identified cultural and practical influences that affect our portion sizes and shopping habits. "On the island of Ireland, food is seen as social. If you invite people to your house, it is friendly to give biscuits as well as tea, but that can lead to eating too many of them," she says. "Likewise, a lot of food shopping is done through habit and as quickly as possible. That can lead to bad habits, so perhaps consumers should spend a little more time every so often looking at alternatives, new products and new options."

ESSENTIAL ADVICE

A central tenet of Moira's research is that we should eat 'essential' foods when we are hungry. "We should distinguish between what is an essential, basic food that satisfies hunger, and treats. When you want a treat, then have an indulgent food, rather than eating chocolate or crisps when we are hungry. This is one small change we can all make for our health."

HOW EFFECTIVE ARE HAND SANITISERS?

CONSUMERS SEE INSTANT hand sanitisers as a quick, easy alternative to conventional hand washing, but prefer to use water and soap if possible, as they see this method as more effective.

This is according to a survey conducted for a new **safefood** report, prepared by Dr Moira Dean, Dr Antonio Foddai and Dr Irene Grant at the Institute for Global Food Security, Queen's University, Belfast.

The study aimed to examine the efficacy of sanitisers in the removal of foodborne pathogens, including norovirus, compared to hand washing with soap and water, by conducting a thorough literature review.

It also sought to understand how often consumers use hand sanitisers and how efficient they perceive it as being in preventing foodborne illness.

Hand sanitisers are usually seen as effective in hospital and health-care settings, but their inability to remove food debris means they

have not historically been used in food establishments.

WATER AND SOAP MORE EFFECTIVE

According to the report, the scientific evidence seems to support this scepticism in food settings, despite some conflicting results. Water and soap appear to remove more debris and bacterial load from hands than water-less products, and to be more effective in removing bacteria and viruses from fingernails.

"The 'double-whammy' of thorough handwashing and sanitiser use can get rid of more contamination from the hands," says Moira. "But in the domestic setting, a thorough handwash for 20 seconds with scrubbing is effective."

Furthermore, while the topic is controversial, it seems antibacterial soaps do not perform better than non antibacterial soaps. Alcohol-based products achieve rapid and effective inactivation of bacteria, but their efficacy is limited against viruses and does not exceed 2-3 log₁₀ bacterial inactivation on soiled hands.





CAFRE IS an integral part of the Department of Agriculture and Rural Development (DARD) in Northern Ireland. It consists of three campuses: Loughry which specialises in food education and food industry support; Greenmount which specialises in agriculture and horticulture; and Enniskillen Campus which specialises in equine.

The Food Technology Development Branch is located on the Loughry campus. "We're trying to create a pathway that goes from the ideas right through to commercialisation," explains Joy.



**JOY
ALEXANDER**

PROCESS TO MANUFACTURING

Once food businesses are ready to scale up their idea, Joy explains the next step in the innovation pathway is process development. This is done using the extensive pilot processing equipment contained within the Food Technology Centre.

Once the business knows how the product is to be manufactured, the next question is where to manufacture it. Joy says CAFRE has a Food Business Incubation Centre for that purpose.

The aim of the Food Business Incubation Centre is to encourage businesses to take that first step and also to prepare them for the future commercial realities of food production outside the centre. This model allows them to assess their business viability. There are eight units in the Centre.

"These units are available for new-start businesses and also increasingly we've seen a lot of larger businesses that want to assess the market before making a substantial investment on their own site," says Joy. "We work with on average 250-300 businesses every year and our support is tailored to their needs." Joy adds that CAFRE has a great combination of commercially-oriented food technologists and fantastic facilities. "We are here to help meet the needs of individual food businesses and the sector."

INNOVATING FROM INITIAL IDEA TO THE SHOP SHELF

A NEW INNOVATION PATHWAY DEVELOPED AT THE COLLEGE OF AGRICULTURE, FOOD AND RURAL ENTERPRISE (CAFRE) WILL HELP FOOD BUSINESSES MAKE THEIR IDEAS A REALITY. THIS IS ACCORDING TO FOOD TECHNOLOGIST **JOY ALEXANDER**, HEAD OF THE FOOD TECHNOLOGY DEVELOPMENT BRANCH OF CAFRE.

EDUCATION OPTIONS

CAFRE also provides further and higher education programmes as well as an extensive range of short courses. Joy explains: "people working in industry can complete the education programmes on a part-time basis or do one- or two-day courses".

Areas of training include food safety, HACCP, allergens, and many more, and CAFRE can also design specific training

programmes to meet the needs of individual businesses.

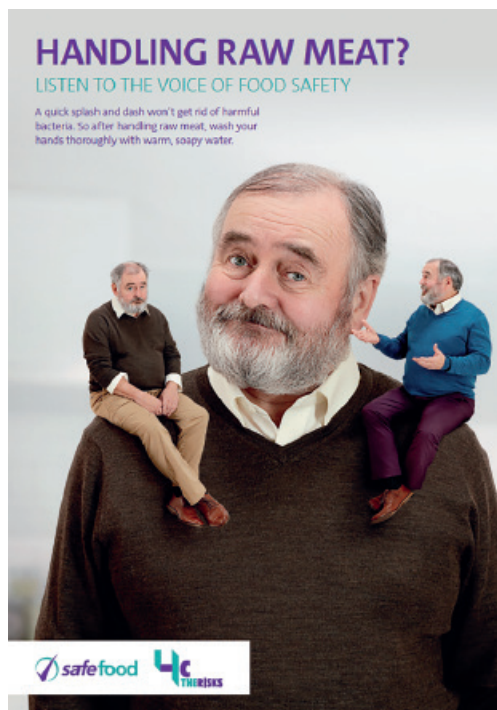
Joy says CAFRE is very keen to collaborate with others. Although it currently works extensively with companies on both sides of the border, one area it hopes to develop more in future is international collaboration.

For more details, please contact Joy at joy.alexander@dardni.gov.uk or (+44) 028 867 68132, or see cafre.ac.uk.

DEDICATED INNOVATION CENTRE

The first part of that process is the recently opened Food Innovation Centre, which was opened in May 2015. It aims to "stimulate, encourage and support the process of food innovation and to showcase innovation in sustainable building design", according to Joy. It includes an ideas hub to encourage creativity by food businesses and enable access to market intelligence reports. Initial ideas are converted into product concepts in development kitchens and the enhanced individual and group sensory facility allows businesses to conduct accurate consumer feedback. The final stage involves the production of a packaging prototype that allows potential customers to assess what the product may look like on the shelf.

FORESEEING THE RISKS WITH SAFEFOOD



CONSUMERS PERCEIVE THE home to be the least likely source of food poisoning and their behaviour does not always correlate with their food safety knowledge, according to **safefood** research. Furthermore, people over-estimate how often they take an action to prevent food poisoning, such as handwashing.

safefood's new food safety awareness campaign is aimed at over 65s on the island of Ireland, although its messages apply to everyone. It reminds consumers to foresee the risks, listen to the voice of food safety and remember [the 4 Cs – Chill, Cook, Clean and avoid Cross-Contamination](#).

The over 65s are diverse in terms of physiological functions, health and lifestyle. As people age, changes to their immune systems and other health conditions can make them more susceptible to foodborne illness or food poisoning. If older adults contract such an illness, they are more likely to be sick for longer, be hospitalised or have severe complications.

According to Dr Linda Gordon, Chief Specialist in Food Science

for **safefood**, "The 'Foresee the Risks' campaign communicates often well-known advice in a way that will overcome the audience's apathy or complacency. Much of the audience are aware they're often taking chances with food safety at home, but they don't mind as it hasn't affected them yet and their inner voice tells them things will be fine."

In this campaign, **safefood** brings that inner voice to life. As the characters prepare food, their inner voices are characterised as two miniature versions of themselves in the kitchen - a 'good' food safety side and a 'risky' food safety side. **safefood** is the voice that explains the risks of poor food safety at home. While their inner voices offer contrasting advice, they listen to and follow the voice of food safety.

The campaign combines the words 'Foresee the Risks' with the foundations of food safety – the four Cs – to create an umbrella brand that re-emphasises the core messages of food safety in an engaging and memorable way.

For more information, visit safefood.eu.

FRIDGE TEMPERATURES CAUSE CONCERN

TWO-FIFTHS OF consumers have their fridge set at the wrong temperature, according to a new study that highlights key areas of concern around consumer knowledge and behaviour in fridge and food safety.

"What stood out was that only a few people had thermometers in their fridges and that would be a fairly easy step for people to take," says Dr Tassos Koidis, Lecturer in Food Science at the School of Biological Sciences in Queen's University Belfast. He is lead author of [A study of domestic fridges on the island of Ireland: Temperature control, design and consumer practices](#).



DR TASSOS KOIDIS

Republic of Ireland," says Tassos. "We went through a questionnaire with them and then evaluated their fridges."

Tassos found that consumers remain confused about the meaning of "use by" (which is principally about safety) and "best before" (which is principally about quality). This has implications for food safety as well as unnecessary generation of food waste.

Three-quarters of consumers knew to store raw meat and poultry on the bottom shelves of the fridge, but were less clear on the importance of organising fridge contents to prevent cross contamination between raw and ready-to-eat foods.

Consumers were also uncertain about how long high-risk foods can safely be kept at room temperature before becoming unsafe to eat.

Fridge thermometers should be promoted to consumers as best practice for assessing fridge temperature, perhaps given out with each new fridge sold, and manufacturers should be encouraged to include LED thermometer displays, according to the report.

One-third of consumers surveyed did not know how to adjust their fridge settings to achieve the recommended safe range of 0 to 5°C. More than half reported never checking the fridge temperature.

The study found 40 per cent of fridges had an operating temperature above the range recommended to prevent food poisoning and only 6 per cent of fridges had a fridge thermometer.

"We surveyed 100 households across Northern Ireland and the



MY RESEARCH

DR HECTOR ÀRGUELLO RODRIGUEZ

HECTOR IS A RESEARCH OFFICER IN THE FOOD SAFETY DEPARTMENT OF THE TEAGASC FOOD RESEARCH CENTRE IN ASHTOWN, DUBLIN 15. HE HAS A DOCTORATE IN VETERINARY MEDICINE AND A PHD IN GASTROINTESTINAL DISEASES IN PIGS FROM THE UNIVERSITY OF LEÓN IN SPAIN.

"WE WANT TO REPEAT THE SUCCESS SEEN IN POULTRY WITH PORK, WHILE KEEPING DOWN THE COST TO FARMERS."



THE TEAGASC PROJECT on which I work involves a range of on-farm and post-farm tasks, aimed at reducing the risk of pork being contaminated by *Salmonella*. The main aim of the project is to help producers and the pork industry to deal with the challenge of controlling *Salmonella* in swine.

The project is entitled [Low-cost solutions to control Salmonella in pigs](#), and we disseminated our findings to farmers through newsletters, conferences, publications as well as group meetings in Cork, Kilkenny, Tipperary and Offaly, and at the Pig Farmers' Conference in Cavan in October.

My research looks at factors related to the presence or absence of *Salmonella* on pig farms. I am carrying out a survey to see which farm practices decrease or increase the risk of *Salmonella* getting into a herd.

IDENTIFYING IMPORTANT FACTORS

One factor usually related to *Salmonella*, for example, is the feed used. Meal feed seems to be better than pellet feed. The digestion of meal feed is less efficient and more nutrients go to the hindgut and help support a healthy population of *Lactobacillus*. This reduces gut pH and doesn't let *Salmonella* attach to the gut wall so easily.

Part of my survey focuses on herd characteristics. In some countries, it has been found that the bigger the herd size, the greater chance of *Salmonella*. Larger farms have more replacement of animals from outside, but that might not be the case in the Republic of Ireland because animals tend to be replaced on farm. This is why it's important to run these surveys in every country – what's done in the UK, Germany, Spain or the Netherlands might not be done in the Republic of Ireland.

In the European Union, laying hens and chickens are the two main sources of *Salmonella* in people; pigs usually come third. But, with levels of *Salmonella* in poultry decreasing, the relative importance of pork in human disease is increasing. It now causes an estimated 10 to 20 percent of cases.

EDUCATING FARMERS

We want to repeat the success in poultry with pork, while keeping down the cost to farmers. *Salmonella* is usually a subclinical disease in pigs, meaning animals don't usually get sick. It can be a challenge to convince a farmer of the importance of this disease because it's not causing illness on his farm, although I've visited farms with pigs sick from the disease.

While *Salmonella* is important to control so that it does not cause public health issues, it's also an economic issue. The Republic of Ireland exports pork to other European countries, some of which have limitations around *Salmonella*-infected meat.

The main source of *Salmonella* is believed to be wild animals. Teagasc research has shown 1 to 2 percent of pig feed can be contaminated with *Salmonella*, but wild animals such as rodents are likely to be more important sources. A clear step farmers can take is to ensure better control of rodents on their farms.

We are also looking at other measures, such as switching from dry to wet feed, adjusting the protein content of feed, and cleaning and disinfecting facilities once an infected animal is found.

Probiotics might be useful too. I'm running trials on Irish pigs to see whether adding certain organic acids to their diet can reduce *Salmonella* prevalence, by creating a gut environment that harms the bacteria.

Away from work, I enjoy running in the Phoenix Park and I love the live music scene in Dublin.

UPSKILLING ACROSS THE FOOD CHAIN



IN TODAY'S WORLD, you can't let your skills stand still. And for more than 20 years, the [Food Industry Training Unit \(FITU\)](#) at University College Cork has been helping people in the food sector hone their skills all along the food chain, from farm to fork.

With the expertise of food research and teaching at UCC, and the support of external agencies such as Teagasc, Enterprise Ireland, Skillsnet, the Irish Co-operative Organisation Society and the Department of Agriculture, Food & the Marine, the unit's continuing professional

development (CPD) courses can respond to industry needs, according to FITU Training Manager Mary McCarthy-Buckley.

UPSKILLING FOR INDUSTRY

Participants from industry can avail of research and teaching expertise at UCC through part-time FITU courses held in Cork and at locations around the Republic of Ireland.

These include Diplomas in Food Science and Technology, Corporate Direction (Food Business) and Manufacturing Management. "Ultimately we are educating

people in practices that ensure foods are safe and traceable," explains Mary. "And people can also build up their soft skills as well as technical skills, so they can learn about communication, finance and strategy development and marketing."

FITU also offers a Diploma in Specialty Food Production, which is important to support the developing artisan food sector, Mary notes.

"This diploma is a mix of science and technology and business and management," she says. "This is ideal for food entrepreneurs and farmers. Some of them come in with an idea or concept for a specialty food, while others are already up and running, but they want to get more skills in science. They want the theory as well as the practice."

SHORT AND BESPOKE COURSES

Not everyone needs to commit to a diploma though. FITU also offers short courses and workshops on a variety of themes such as molecular gastronomy, thermal processing, and the science and technology of ice-cream and cheese.

And with the milk quotas lifting, the demand for bespoke dairy-related training is surging.

"We are seeing a large increase in demand, particularly among the major dairy processors for the courses in dairy science and technology," says Mary. "It is definitely a reflection of the boom in the dairy industry."

Across the board, taking part in a course and learning from trainers and peers brings with it the potential for long-term benefits, she adds.

"We find people feel empowered with education. Their confidence and motivation increases and their ability to deal with troubleshooting and problem-solving improves. We have people feeding back to us that they have been promoted in their roles, and they see the courses as playing an important part in that."

It does take time and commitment though, and Mary likes to think of participants as embarking on a journey with FITU.

"We are working together and when they are adult learners, they can sacrifice a lot to attend courses," she says. "There is such a great passion for food at UCC and it is such an exciting journey to make with people as they develop the skills they can bring back into industry."

'ULTIMATELY WE ARE EDUCATING PEOPLE IN PRACTICES THAT ENSURE FOODS ARE SAFE AND TRACEABLE.'



LONG AND WINDING FOOD CHAIN

"As an export nation, we are now reaching corners of the world we would not have dreamed about 10 years ago, and that brings new challenges," says Dolores, who is Principal Investigator in two Enterprise Ireland-supported academic-industry consortia, the Dairy Processing Technology Centre and Food for Health Ireland.

"The food chain has become very long and quite complicated, with the need to transport products across an array of climates and regulatory landscapes. On top of that, consumers are driving the demand for 'clean labels' on products and the industry needs to respond."

Almost all food science undergraduates will ultimately move into the food industry. They need to be well-versed in all aspects of food safety, including microbial and chemical contamination, and also the nutritional perspective, according to Dolores.

One of the key elements in student training is getting them out on placement in industry, and ensuring they see the issues first-hand and apply what they learn.

"Students need to develop a really good understanding of risk right along the food chain," she says.

The food industry plays a critical role in ensuring the health of the population by producing safe and healthy foods.

"A company's reputation hinges on the security it can give in guaranteeing its customers that its product is of the highest quality and complies with legislation and regulations."

MILKING SUCCESS

On the island of Ireland, a significant recent change has been the expansion of the dairy industry, which has opened up new opportunities for highly skilled researchers and graduates, explains Dolores.

She works on many different projects in these academic-industry consortia. She is particularly interested in combining ingredients so that a food can have a desired nutritional profile or added functional ingredient and still taste good to the consumer.

"Often we want to add a bioactive ingredient to a food to improve

health – perhaps manage blood sugar better or increase a feeling of satiety or build muscle in the elderly – but the added ingredient might have a bitter or unpalatable taste," she explains.

"So we use our knowledge of food chemistry and encapsulation and the biology of how we sense flavour and how we digest food, and we apply that to formulate the food ingredients in a way that the food can deliver the health benefit and the consumer wants to eat it."

At UCD, Dolores has also developed a microwaveable cheese-based product for the snack market that is high in protein and fibre, but low in fat and salt.

ACADEMIC-INDUSTRY BENEFITS

Dolores and her colleagues at the Food and Health Institute work closely with industry in many aspects of their work. These relationships help everyone to understand the challenges others face and the technical skills that can make a difference.

"We get input into what core skills industry really wants from graduates, and the relationship improves student and researcher placements and exchanges," she says. "We can also see where industry might benefit in terms of up-skilling their staff. We have just established a continuous professional development unit to give industry staff the opportunity to keep themselves at the forefront of the technologies that are out there."

CONFIDENT COMMUNICATION

Another key skill that the new generation of food scientists needs to develop is communication, Dolores stresses. "You see a lot of unscientific information, particularly in the media, about topics like gluten and sugar, often put out there by people who have great communication skills," she says.

"We need to improve the communication ability of our graduates because it is incumbent on the new generation of scientists to go out there and be confident about presenting their case on food and health from a scientific perspective.

"If a scientist is competing against actors and models and celebrity chefs, they often wouldn't feel comfortable in that role. It is up to us to instil that confidence in the young graduates to make sure the public is fully informed of the facts."

THE FOOD INDUSTRY NEEDS NEW GENERATION OF CONFIDENT GRADS

A LENGTHENING GLOBAL FOOD CHAIN MEANS GRADUATES IN THE INDUSTRY TODAY NEED A ROUNDED SET OF SKILLS AS WELL AS CONFIDENT VOICES TO TACKLE FOOD SAFETY AND HEALTH CHALLENGES. THAT'S ACCORDING TO **PROFESSOR DOLORES O'RIORDAN**, DIRECTOR OF THE [FOOD AND HEALTH INSTITUTE](#) AT UNIVERSITY COLLEGE DUBLIN (UCD).

SAFEFOOD KNOWLEDGE NETWORKS 2011-2015:

A LOOKBACK

OVER THE PAST FIVE YEARS, THE **SAFEFOOD** KNOWLEDGE NETWORKS HAVE BUILT BRIDGES BETWEEN ACADEMICS AND PROFESSIONALS ACROSS THE FOOD CHAIN

IN 2011, **safefood** established the Knowledge Networks to create and build links between food safety professionals across the whole food chain on the island of Ireland. We have been delighted so many of you have played an active role in developing the Knowledge Networks, whether through attending events or reaching out to other members working across the various sectors.

Eight Knowledge Networks were set up: five covering microbiological parameters – Verocytotoxigenic *Escherichia coli* (VTEC), *Salmonella*, *Campylobacter*, *Listeria* and *Cryptosporidium*; two dealing with chemical safety – chemical residues and biotoxins; and one focused on food allergy and food intolerance.

Your fellow Network members include food safety professionals from across the agri-food sector (the island of Ireland's largest industry) including health, the food industry, academia, government and agriculture.

Our members work as health professionals – vets, environmental health officers, lab personnel; in national food regulatory agencies and public health and agriculture agencies; as food safety researchers and with professional representative bodies; and as key personnel in the food supply chain across primary production, processing, distribution, retail and catering.

MEETINGS AND CONFERENCES

Every year, each Network held an annual meeting open to all interested food safety practitioners. As you know, they included presentations by Network members and guest speakers on their latest prevention and control practices, legislative updates, technological advances, industry perspectives, clinical issues, communication challenges, related research or any other items of interest to the membership.

DEDICATED WEBSITES

The Knowledge Networks websites (safefood.ning.com and safefoodallergy.ning.com) have acted as your central hub, where you could always find news updates, analysis and expert insights, event calendars, conference presentations and other resources.

You may also have seen some of the many videos **safefood** produced for the sites, including training videos, interviews with conference speakers, interviews with participants in the Training & Mobility Programme (see next section) and more general information on food safety topics.

TRAINING & MOBILITY PROGRAMME

This programme has enabled Network members to visit and spend time at a conference or in another organisation to develop their knowledge and expertise in an area related to the scope of the Knowledge Networks.

To date, 52 of our members have taken part and, between them, they have visited 19 countries.

KNOWLEDGE NETWORKS ACHIEVEMENTS

The **safefood** Knowledge Networks have helped to facilitate greater and faster knowledge sharing by those involved in all parts of the food chain to support and enhance food safety.

By providing early access to ongoing and completed research, the Networks have acted as a catalyst for industry-focused research and innovation. Above all, the Networks have helped professionals to meet new and emerging challenges with the overall aim of ensuring consumers can continue to have confidence in the food they eat. **safefood** is particularly pleased to have facilitated such a high degree of professional networking and sharing of knowledge ideas and solutions. To

build on this, in September 2015, we carried out a comprehensive survey of Knowledge Network members to gather more feedback.

From 2016 onwards, **safefood** intends to build on the strengths and successes of the 2011-2015 Knowledge Networks programme. Consequently, we will further develop the Knowledge Network concept during 2016-18 by establishing a food sector-based framework for a single overarching Knowledge Network, instead of the present model of several individual networks devoted to specific pathogens and chemicals. The framework will be broadly based on the following food sectors:

- 1) DAIRY
- 2) POULTRY & WHITE MEAT
- 3) ANIMAL FEED
- 4) RED MEAT
- 5) FRESH PRODUCE
- 6) FISH & SHELLFISH

It is intended that the new 2016-2018 Knowledge Network configuration will have the necessary flexibility to address a wide variety of food safety concerns which shall be prioritised on the basis of their impacts on public health and the wider food chain.

"The Knowledge Networks have provided **safefood** with a valuable way of promoting food safety across the food chain," said Dr Gary Kearney, Director of Food Science in **safefood**. "We are particularly grateful for the sterling work of our network facilitators who have worked hard to provide interesting and insightful work programmes. We look forward to the new iteration of the Knowledge Networks and their role in providing you with the most up-to-date food safety news and solutions to the issues of most concern."

KNOWLEDGE NETWORKS MEMBERSHIP AND EVENTS

2,648 MEMBERS OF THE KNOWLEDGE NETWORKS

101 VIDEOS PRODUCED

2,404 CONFERENCE DELEGATES IN TOTAL

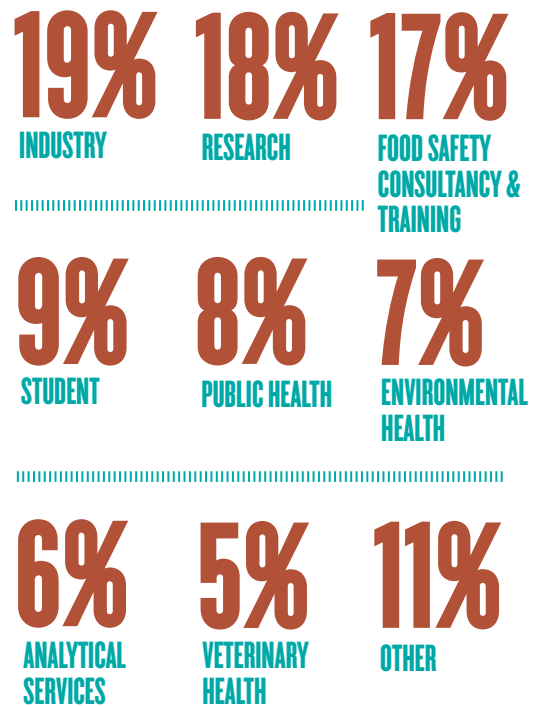
44 KNOWLEDGE NETWORK EVENTS

82 INTERNATIONAL SPEAKERS AT EVENTS

2,985 UPLOADS TO THE KNOWLEDGE NETWORK WEBSITE

327,254 PAGE VIEWS OF THE KNOWLEDGE NETWORK WEBSITE

KNOWLEDGE NETWORK MEMBERS WORK ACROSS THE FOOD CHAIN:



26% HAVE ESTABLISHED NEW SUSTAINABLE WORKING RELATIONSHIPS AS A RESULT OF BEING A MEMBER OF THE KNOWLEDGE NETWORKS

69% SAID THE KNOWLEDGE NETWORKS ENABLED THEM TO CONNECT WITH OTHER FOOD SAFETY PROFESSIONALS

94% WOULD RECOMMEND BEING A MEMBER OF THE KNOWLEDGE NETWORKS TO THEIR COLLEAGUES

COMMENTS FROM SURVEY PARTICIPANTS:

"THE KNOWLEDGE NETWORKS PROVIDE THE OPPORTUNITY TO MEET NEW PEOPLE AS WELL AS RECONNECT WITH THOSE WHO I'VE WORKED WITH OR STUDIED WITH IN THE PAST."

"IT FACILITATES DISCUSSION AMONG MEMBERS AND PROVIDES UPDATES ON RESEARCH ACTIVITIES OF MEMBERS."

"GOOD WAY TO BE CONNECTED TO WHAT IS HAPPENING IN OTHER PARTS OF FOOD INDUSTRY AND BE UPDATED WITH NEW DEVELOPMENTS."

"JOINT PUBLICATIONS HAVE RESULTED."

"EVENTS ALWAYS VERY INFORMATIVE, INTERESTING AND WELL RUN."

"SOME WORKING RELATIONSHIPS WERE CREATED VIA EMAILS AND THESE HAVE IMPROVED SINCE MEETING PEOPLE FACE-TO-FACE AT A CONFERENCE."

(SAFEFOOD KNOWLEDGE NETWORKS MEMBER SURVEY, SEP 2015)



MY WORK: DR PATRICIA GARVEY

PATRICIA IS A EUROPEAN PROGRAMME FOR INTERVENTION EPIDEMIOLOGY TRAINING (EPIET) FELLOW. SHE IS BASED IN THE REPUBLIC OF IRELAND'S [HEALTH PROTECTION SURVEILLANCE CENTRE](#) (HPSC) IN DUBLIN. PREVIOUSLY SHE WAS BASED IN THE HSPC GASTROENTERIC TEAM.

THE ROLE OF THE HPSC is to provide information on infectious diseases, primarily through surveillance, but also through expert advice and research. I've been here for 13 years as a surveillance scientist. Currently, I'm on a two-year European training programme called EPIET. This provides additional training and practical experience in field epidemiology.

The HPSC has a wide remit and is governed by Infectious Diseases Regulations 1981, most recently amended by S.I. No. 452 of 2011.

The legislation specifies the diseases that are under surveillance. My main interests are in the surveillance and epidemiology of food-related and waterborne diseases, particularly verotoxigenic *E. coli*, *Cryptosporidium* and *Salmonella*.

My role at national level is to collate and analyse the data for specific diseases. To do this, we have a computerised disease reporting system. This large database is managed by the HPSC in partnership with a number of organisations. From this, we produce weekly, quarterly and annual reports.

MONITORING TRENDS

We also look at the trends in the burden of disease or specific patterns that are occurring over time. As some of the gastroenteric diseases have outbreak potential, we also examine the data for any change in disease pattern that might indicate an outbreak is happening.

The vast majority of outbreaks are local and are investigated by the local public health department, meaning the HPSC will not have a role. The type of outbreaks in which the HPSC gets involved tend to be those affecting several areas across the country as a whole or international outbreaks.

To investigate the cause of the outbreak, we generally interview individual cases. We look for a commonality between people, be it a food or some other exposure they might have in common.

If you identify an exposure reported by many of the cases, you may consider this as a hypothesis for what caused the outbreak. You then need other evidence to support that hypothesis such as microbiological evidence or an epidemiological study. A team of people, not just the HPSC, are involved in an outbreak investigation as you need an interdisciplinary approach.

LEARNING FROM ANTHROPOLOGY

I learnt some interesting techniques at a recent workshop in London, 'Outbreak Anthropology for Epidemiologists', with thanks to a bursary from the **safe food** Training and Mobility Programme. It looked at the social determinants to disease.

While we usually use very structured interviews, the presenters were interested in semi-structured and unstructured interviews, and the idea of focus groups. Those are the kind of tools that are used by anthropologists and could be helpful for environmental exposures such as food preparation behaviour.

The HPSC is a very dynamic place to work. It's important to be able to contribute to the advice on food safety either through information we have gathered ourselves or from information we have received through other infectious disease surveillance institutes.

Outside work, I like swimming and running, and I'm also a very keen gardener.

'A TEAM OF PEOPLE, NOT JUST THE HPSC, ARE INVOLVED IN AN OUTBREAK INVESTIGATION.'

ROBERT'S LIFE & LIKES:

LIVES: Cookstown, Co Tyrone

HOBBIES: A collection of shorthorn cows, various horses, a dozen sheep, two dogs and three cats

PETS: All his animals, which include a rescue dog, Lucky, the three-legged whippet with only one functioning eye

FAVOURITE BOOK: Currently enjoying *Stepping Stones: Interviews with Seamus Heaney*, by Dennis O'Driscoll.

FAVOURITE TV SHOW: NCIS.

INTERESTING FACT: Part of the UCD hockey team that beat Queens University Belfast and Trinity College Dublin to win the Inter Universities Cup in 1979. "Nobody could believe it!"



ROBERT, THE CHIEF Veterinary officer for Northern Ireland, says his passion is food hygiene. He thinks the One Health strategy is common sense. This is an international initiative that recognises that the health of humans is connected to the health of animals and the environment.

This holistic approach is critical when it comes to *Salmonella*, *E. coli*, *Listeria* and other organisms that cause food poisoning, he says. "Unless you look after the human-animal interface, you're actually wasting your time".

STRATEGIC APPROACH

He says it's his responsibility to ensure people in Northern Ireland's [Department of Agriculture and Rural Development \(DARD\)](#) "think about the problems we're trying to solve in that strategic way rather than just picking at a little part of the problem".

DARD is unique in the UK because it is the only veterinary service that also delivers meat hygiene controls in slaughter houses and cutting plants, according to Robert. "We're an integrated service: animal health, public health, and welfare. We deliver the lot!"

One aspect of food hygiene outside its remit is consumer issues. After the BSE crisis, responsibility for this was split off from the agriculture department and given to the Food

Standards Agency (FSA). This works well, says Robert, adding that during the more recent horsemeat crisis, he could speak on behalf of the farmer about traceability, food hygiene and controls within the slaughterhouse. At the same time, his counterpart in the FSA spoke on behalf of the consumer.

The chief veterinary officer reports to the DARD board for the delivery of services, governance and finance. "At one level I'm a chief executive, and at another level, I'm an adviser to the [Agriculture and Rural Development] minister on issues of animal health and welfare, and food hygiene," explains Robert, who moved into his current role two years ago.

NEW DEPARTMENT

The veterinary service is responsible for delivering a programme of work on animal health and welfare, as well as providing input into policy, but this may change in the coming months. DARD is currently combining with the Department of the Environment in Northern Ireland to form the new Department of Agriculture, Environment and Rural Affairs (DAERA). Planning for this move is a large part of Robert's job at the moment.

His strong interest in food hygiene began early in his career when he was

HEALTH OF HUMANS AND ANIMALS IS ALWAYS CONNECTED

ROBERT HUEY IS A STRONG BELIEVER THAT HUMAN HEALTH AND ANIMAL HEALTH ARE NOT TWO DIFFERENT CONCERNS. "THERE IS ONLY HEALTH, AS EVERYTHING IS SO INTEGRATED," HE SAYS.

a lecturer in the Loughry Agriculture College in Cookstown, Co Tyrone. This interest led to a Royal College Certificate in Veterinary Public Health, followed by a diploma.

After this, the University College Dublin (UCD) veterinary graduate found himself immersed in the world of meat hygiene and became involved in veterinary politics.

This ultimately led to his recent appointment as Vice-President of the Federation of Veterinarians in

Europe, the umbrella organisation for European vets.

Another committee on which Robert enjoys working is **safe food's** Scientific Advisory Committee, where he is the deputy chair. "This looks at issues and emerging issues, and sets the direction of travel as far as research is concerned," says Robert. "I have learned a lot and hopefully have given a little bit of thought to the group as well."

WHOLE GENOME SEQUENCING CRITICAL FOR VTEC



Dr Geraldine Duffy of Teagasc, who is the VTEC Knowledge Network facilitator, addressing the network's annual conference.

A HOT TOPIC at the recent VTEC Network Annual Conference was whole genome sequencing, which has huge potential for reference and research laboratories, as it gives much more information on strains than previous techniques.

Dr Claire Jenkins, from Public Health England, spoke about using whole genome sequencing in terms of public health surveillance, while Lisa Rogers of University College Dublin talked about the genomic analysis of VTEC.

Whole genome sequencing can identify more VTEC serogroups than traditional methods, according to Dr Geraldine Duffy, VTEC Network Facilitator and Head of Food Safety in the Teagasc Food Research Programme. "It's being able to show relationships with strains with different geographical origins or that have appeared in clinical infections at different times which is hugely helpful in terms of managing outbreaks."

Experts from around Europe presented new research to 90 delegates at the conference, which was held in Blanchardstown, Dublin. Speakers included Dr Claire Jenkins (Public Health England), Prof Marcello Trevisani (University of Bologna, Italy) and Dr Gro Johannessen (Norwegian Veterinary Institute).

One of the main challenges discussed was the diverse range of serogroups causing human infection. "A number of years ago, O157 would have been the most dominant cause of infection. Almost a third of cases are now being linked to diverse non-O157 serogroups outside the top five", says Geraldine.

As with last year's conference, PCR was a discussion point as problems using it as a detection tool are still ongoing. The fact that some samples are positive, but the bacteria cannot be cultured, still causes a lot of issues on a practical level, according to Geraldine.

Those attending the conference included regulatory, public health, veterinary public health and food industry representatives. One significant opportunity identified was the need for better linkages and more activities outside these meetings.

View conference presentations online at safefood.ning.com

THINK LOCAL FOR CAMPYLOBACTER CONTROL

BIOSECURITY MEASURES to control *Campylobacter* should take local factors into account. That was a key message from the *Campylobacter* Control Training Workshop held by the *Campylobacter* Knowledge Network in Monaghan in September.

More than 100 delegates attended, many of them poultry farmers keen to hear the latest developments in on-farm biosecurity.

Dr Mogens Madsen from Denmark presented the findings from the multi-partner EU project, CamCon, and demonstrated the tools developed to implement the findings. The two-year project aimed to provide European broiler producers and governments with knowledge and tools to achieve production of "low risk broilers", meaning *Campylobacter*-free broilers or broilers with a very low contamination level of *Campylobacter*.

Delegates heard how the biosecurity measures must be country-specific, because what is cost-effective in one area may not be cost-effective elsewhere.

Mogens also emphasised that poultry growers should focus on biosecurity in each individual house, rather than on the farm as a whole, and that the most significant risk factor is introduction by humans.

Delegates were given a demonstration of some of the outputs from the CamCon

project, including an e-learning programme and a best practice manual for those working on poultry farms.

At the workshop in the Four Seasons Hotel, Tara Battersby and Shaun Smith described their research on potential sources of *Campylobacter* in broiler houses in the Republic of Ireland, and how they might be addressed, including the challenges of thoroughly cleaning and disinfecting equipment such as feeders and drinkers.

"Several agencies have been actively tackling the *Campylobacter* problem," said Declan Bolton, the *Campylobacter* Network Facilitator. "The FSAI has brought all the stakeholders together and developed a strategy for the processors, while **safefood** has worked hard to educate consumers. Now we need to build on this.

The Food Standards Agency (FSA) also have a well developed programme called 'ACT' to reduce *Campylobacter* in poultry across the UK.

"Teagasc research, funded by DAFM, suggests we need improved biosecurity on the farm, including training for farmers, testing of all flocks and a review of thinning; new technologies such as crust freezing and cook-in-the-pack; and continued consumer education on poultry preparation by **safefood**."

View conference presentations online at safefood.ning.com



A snapshot of the audience at the VTEC Knowledge Network annual conference.

FOOD FRAUD: FIGHTING THE WEAK LINKS IN THE CHAIN

THE HORSE MEAT SCANDAL IN 2013 LED TO AN INCREASED FOCUS ON PREVENTING FOOD ADULTERATION, ACCORDING TO **DR JAMES MCINTOSH** OF SAFEFOOD. JAMES, A TOXICOLOGIST, SPOKE AT TWO SEMINARS HELD IN JUNE AND NOVEMBER THIS YEAR, ENTITLED 'FOOD AUTHENTICITY: PROTECTING YOUR BUSINESS FROM FOOD FRAUD'.

"YOU REALLY NEED to know how secure your supply chain is. It's a bit like a relay team; you are only as good as your weakest runner, so you have to ask: how secure are the links in your chain?" says James, who co-chaired the seminars hosted by **safe food** in conjunction with Teagasc and Queen's University Belfast (QUB).

More than 200 delegates attended the events held in Dublin and Belfast, where a total of 12 individual presentations on monitoring, detecting and preventing food fraud were given.

Opening each seminar, keynote speaker, Chris Elliott, Professor of Food Safety and Director of the Institute for Global Food Security at QUB, discussed the ramifications of his report, the Elliott Review into the Integrity and Assurance of Food Supply Networks for the agri-food economy and the red meat industry across the UK.

FIGHTING FOOD CRIME

Peter Whelan, Director of Audit and Compliance in the Food Safety Authority of Ireland,

stressed that food crime is about vast illicit profits and described in detail the complexity of the criminal networks involved.

Kathryn Baker of the Food Standards Agency NI, discussed their role in combatting food crime as well as the origins of the FSA Food Crime Unit, its remit and approach going forward, and how the sharing of information is key in keeping a food crime unit effective.

A food fraud expert from Europol gave attendees in Dublin an overview of Operation Opson, which works to combat the organised crime networks behind illicit trade in counterfeit and unregulated food and drink.

Such fraud can pose health risks. "Think back to the horse meat scandal. You can go into a butcher's in France and buy horsemeat, but the difference is that meat is traceable. When you don't know where something comes from, you don't know what could get in," says James.

REDUCING RISK TO BUSINESSES

Businesses are not helpless against food fraud. Lynn Patterson of the food hygiene consultancy LP Associates, showed how they can defend themselves. Senior management, for example, should have systems in place to ensure their operations are kept informed of new risks to the authenticity of their raw materials. They should also establish testing processes to reduce these risks.

Lynn set out five steps: map your supply chain; identify impacts,

risks and opportunities; assess and prioritise your findings; create a plan of action; and implement, track, review and communicate.

Paul Willgoss, Director of Food and Technology at Marks & Spencer, also spoke about how they, as retailers, have approached the subject of food fraud and how they look at risk and put risk mitigation practices in place.

CONTROLLING SUPPLY CHAINS

At the seminar in Dublin, Patrick Wall, Associate Professor of Public Health at the School of Public Health, Physiotherapy and Population Science in University College Dublin, discussed how full control of supply chains is so crucial. Dr David Hammond from Eurofins, which specialises in analytical testing, advises food producers to only use suppliers they have visited and audited or which have been approved by a reputable third party.

In Belfast, Richard Moore, Managing Director of Linden Foods, discussed the importance of adopting the advances in technology and DNA testing in order to improve traceability within the meat supply chains. Denis O'Brien, Director of Standards and Solutions at GS1 Ireland, a global standards organisation, spoke about the growing need for food business operators to manage internal traceability as well as the importance of data sharing.

Find the seminar presentations and a number of video interviews with speakers on <http://safe food.ning.com> and safe food.eu.



Speakers at the Food Fraud event held in Dublin



UPCOMING EVENTS

For full event listings, see
safefood.ning.com/events.

Seminar: Role of science in food and agriculture policy - regulation, research and novel foods
London, UK

Jan 27th, 2016

4th ISEKI_Food Conference: Responsible Research and Innovation in the Food Value Chain

Vienna, Austria

Jul 6th to 8th, 2016

Food Micro 2016 conference
University College Dublin

Jul 19th to 22nd, 2016

International Association for Food Protection (IAFP) Annual Meeting 2016

Missouri, US

Jul 31st to Aug 3rd, 2016

18th IUFoST (World Congress of Food Science and Technology)

Royal Dublin Society

Aug 21st to 25th, 2016

ANALYTICAL CHEMISTRY MEETS TOXICOLOGY AT BIOTOXINS NETWORK CONFERENCE



Dr Toby Athersuch, a Lecturer in Environmental Toxicology & Biomarkers at Imperial College London, addressing the audience at the Biotoxins Knowledge Network annual conference.

TOXINS PRODUCED BY living organisms are all around us, including in food and food packaging, but when are they likely to cause problems?

In June, the annual **safefood** Biotoxins Knowledge Network conference focused on how analytical chemistry can uncover biotoxin issues in the food environment.

More than 60 delegates from industry, regulatory bodies and research attended the one-day joint research conference, which was held in partnership with the Irish Society of Toxicology. The event took place at Malone Lodge Hotel in Belfast.

Presentations centred on the theme of Analytical Chemistry meets Toxicology and included a talk by Dr Toby Athersuch, a Lecturer in Environmental Toxicology & Biomarkers in the Department of Surgery and Cancer at Imperial College London. He discussed the concept of the “human exposome” (lifetime environmental exposures) and analytical strategies for metabolic profiling.

Dr Linda Bengtström, of the National Food Institute at the Technical University of Denmark, presented new data on the timely issue of chemical contamination of foodstuffs from food packaging,

a topic that has featured in the national press recently.

Dr Toine Bovee and Dr Arjen Gerssen, both from the RIKILT Institute of Food Safety at Wageningen UR, presented on marine biotoxin analysis. Toine spoke of his new research into the development of cell-based bioassays to detect marine toxins in seafood, with the aim of replacing current animal-testing methods.

Dr Gerssen focused on recent developments in liquid chromatography-tandem mass spectrometry (LC-MS/MS) and their contribution to the field of marine biotoxin analysis.

Participant feedback about the meeting was “extremely positive and very pleasing”, according to Biotoxins Knowledge Network Facilitator Prof Chris Elliott from Queen’s University Belfast.

“To really progress some of the complex issues around food safety, we need to get experts from different disciplines talking and working together,” he says. “The **safefood** Knowledge Network meetings give a unique opportunity for such linkages to be made and progress.”

View conference presentations online at
safefood.ning.com

LIVES: Booterstown, Co Dublin, two grown-up daughters, one who works in data analytics in Dublin and another who is a junior hospital doctor in Glasgow.

HOBBIES: Playing golf and walking the dog

PETS: A Scottish terrier called Jazz

FAVOURITE RADIO STATION: Lyric FM

ENTERTAINMENT: Cinema, National Concert Hall

INTERESTING FACT: She worked in Irish Distillers in the 1980s and was involved in the development of West Coast Cooler.



A STANDARD-BEARER FOR HAVING A SAY

THE FOOD SECTOR USES VARIOUS STANDARDS TO HELP ENSURE PRODUCT AND PROCESS SAFETY AND QUALITY. AT THE SAME TIME, DIFFERENT SECTORS WITHIN THE FOOD INDUSTRY ENGAGE WITH THE DEVELOPMENT OF INTERNATIONAL AND EUROPEAN STANDARDS THAT MAY AFFECT THEIR BUSINESSES.

ANNE MARIE CROWLEY, a Standards Officer with the [National Standards Authority of Ireland](#) (NSAI), would like to make it easier for food industry stakeholders to have their say.

NSAI is the authorised body in the Republic of Ireland for the publication of international and European standards. In Northern Ireland, the British Standards Institute (BSI) publishes standards.

Using its national mirror committees, NSAI reviews, comments and votes on international and European standards of interest, she explains. NSAI also develops national standards where necessary using national expert groups.

Anne Marie, a microbiologist, has worked with the NSAI since 1992,

and was employed in the food and drink industry before that, so she has a good knowledge of the sector and its standards in the Republic of Ireland.

ISO STANDARDS

The International Standards Organisation (ISO) standards are used in the food sector because food is traded worldwide, she explains, and standards are used to facilitate trade. However, European Committee for Standardization (CEN) standards are also used in food businesses. A recent example is a standard for pest management services (EN 16636) published in March 2015.

The most widely used national food standard is I.S. 340:2007 Hygiene in Catering. This was first published

in 1994 and revised in 2007 to comply with the EU hygiene regulation.

The equivalent standard in the food retail sector, which is also widely used, is I.S. 341:2007 Hygiene in Food Retailing and Wholesaling. A significant number of food processors use ISO 22000 "Management of Food Safety" for control of operations and this standard is currently being revised by ISO.

FORTHCOMING STANDARDS

Further back in the food chain, ISO is finalising a new technical specification for the feed sector to be used with ISO 22000, she adds. "This will address hygiene and other aspects like record-keeping and cross-contamination. This technical specification will be finished in October and available next year." ISO and CEN develop and revise methods of food analysis. Recent new additions are vitamin and allergen methods and a new working group for a standard on criteria for ingredients to be considered 'natural'.

CEN is also working on standards for traceable and sustainable cocoa. "We are not cocoa producers [on the island of Ireland] but we are cocoa users," says Anne Marie. "We want cocoa users here to know this standard

is available and, when they are sourcing their cocoa, they may decide to refer to this standard in their contracts."

Another CEN standard in development relates to halal food, which should interest producers and retailers of Halal foods on the island of Ireland.

WORKING GROUPS

To help stakeholders have their say on relevant standards, Anne Marie is organising working groups by topic within the Food Industry Standards Consultative Committee.

"We are keen to have as much participation at national level as possible, but you can only engage people if they feel it is relevant to them," she says. "For example, the infant milk formula people and the meat industry people would be interested in different areas."

Participating in such committees can enable stakeholders not only to contribute their views, it can also help them to develop contacts with others in their industry on the island of Ireland, Europe and internationally, she notes.

"We would welcome enquiries from people who wish to participate," she says, encouraging readers to visit the website at [nsai.ie](#).

WINNING WORDS ON HEPATITIS A IN BERRIES



Rebecca Jenkinson, a graduate of the Food Quality, Safety and Nutrition course at Queen's University Belfast (QUB), was the 2015 winner of the **safe food** Student Prize. The prize was awarded to the best essay on the theme of Food: Is it safe to eat? The title of Rebecca's essay was 'Protective measures to make mixed frozen berries safe for human consumption'. She is seen here with Prof Aaron Maule, Professor of Molecular Parasitology at QUB. **An excerpt from Rebecca's winning essay is available to read on safe food.ning.com.**

TRAINING AND MOBILITY PROGRAMME 2016

WHY NOT AVAIL of the **safe food** Knowledge Network Training and Mobility Programme in 2016. The Programme enables Knowledge Network members to visit and spend time in another organisation to develop their knowledge/expertise in an area related to the scope of the Knowledge Networks. This is an ideal opportunity for members to enhance their skills and broaden their expertise. The knowledge and skills gained can then be shared within their own organisation and with other members. Get your applications in early 2016! See safe food.ning.com.

CHANGE ON THE WAY FOR THE KNOWLEDGE NETWORKS

AS YOU MAY know, we are restructuring the Knowledge Networks. Exciting changes are ahead of us for 2016. We'll keep you posted! We would also like to take this opportunity to thank each of the Network Facilitators for all their hard work and support over recent years.

DR DECLAN BOLTON, Teagasc Food Research Centre (Ashtown)
Campylobacter Network Facilitator

PROF FRANCIS BUTLER, School of Agriculture, University College
Dublin
Salmonella Network Facilitator

DR GERALDINE DUFFY, Teagasc Food Research Centre (Ashtown)
VTEC Network Facilitator

PROF CHRIS ELLIOTT, Institute for Global Food Security, Queen's
University Belfast
Chemical Residues and Biotoxins Networks Facilitator

DR KIERAN JORDAN, Teagasc Food Research Centre (Moorepark)
Listeria Network Facilitator

MR MICHAEL WALKER, LGC Limited
Food Allergy and Food Intolerance Network Facilitator

In the meantime, we continue to welcome your feedback. Send your letters, article ideas, and suggestions to networks@safefood.eu.

While you're at it, subscribe! The Food Chain comes in print and email format. To subscribe, contact us on networks@safefood.eu.

safe food and the Knowledge Network team would like to wish all our members a happy Christmas and a very successful 2016.

COMPETITION

Answer our trivia questions to win a luxury hamper of gourmet food from the Arcadia Delicatessen in Belfast!

1. WHAT ARE ARANYGALUSKA, BASBOUSA AND FAWORKI?
2. WHAT ARE THE TOP THREE COCOA-PRODUCING COUNTRIES, ACCORDING TO THE UN FOOD AND AGRICULTURE ORGANIZATION?
3. WHAT ARE CHERIMOYAS, PUMMELOS AND JABUTICABAS?

Send your answers to networks@safefood.eu before January 31st, 2016. Good luck!