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CODEX IN ACTION

How Honduras handled the unexpected

“It was a Friday. Actually, it was Friday 11 June 2021, and our decision was to take immediate action so as not to waste time. In the end, the lives of more than 300 people were involved in this event.”

María Sevilla is a technical manager of agrifood safety at the national plant and animal health service (SENASA) in Honduras. It was Sevilla who headed up the team in Honduras that tracked down the source of food contamination involving 12 countries in Europe and, later, Canada, Switzerland and the United States of America. In the end, it transpired that one bird

dropping in a melon washing tank in Choluteca, southern Honduras, had probably caused 348 people to fall ill from *Salmonella* Braenderup (sequence type 22 (ST22)) poisoning, hospitalizing 68. The path to this discovery involved multi-country and cross-sectoral collaboration across Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Ireland, the Kingdom of the Netherlands, Luxembourg, Norway, Sweden and the United Kingdom of Great Britain and Northern Ireland, the FAO/WHO International Food Safety Authorities Network (INFOSAN), scientists from the United States of America, and the then-draft Codex *Guidelines on the Management of Biological Foodborne Outbreaks* (CXG 96-2022).

Salmonella Braenderup is a serovar of *Salmonella* enterica which causes symptoms of gastrointestinal illness including abdominal cramps, diarrhoea, nausea and fever. **“We were notified of the outbreak by our colleagues in the United Kingdom Health Security Agency (UKHSA) after English and Welsh cases were identified here in the UK,”** explains Grace Letters, Senior Incidents Officer in the Incidents and Resilience Unit of the Food Standards Agency of the United Kingdom (FSAUK). **“UKHSA identified the strain through routine whole genome sequencing (WGS) processes and then set about identifying the source of the contamination by surveying infected cases who reported illness.”** Analysis of the survey results pointed to melons as a frequently consumed food. FSAUK traced the supply

chain of melons into the United Kingdom at that time, and UKHSA sampled 300 melons for *Salmonella*. While waiting on the sampling results, FSAUK applied the 'precautionary principle' outlined in retained European Union regulations 178/2002, using findings from epidemiological and food chain investigations, and advised consumers in the United Kingdom not to eat specific melons which may be contaminated with *Salmonella*. **"This was extraordinary action,"** continues Letters, **"the FSA in its function as a regulator communicating risks directly to consumers, as opposed to food businesses undertaking product withdrawals and recalls."**

"INFOSAN received a notification from the INFOSAN Emergency Contact Point (ECP) in the United Kingdom of Great Britain and Northern Ireland of an outbreak of *Salmonella* Braenderup in the country, where initial cases dated back to March 2021," says

Dr Rachelle El Khoury, Technical Officer at the World Health Organization, INFOSAN Secretariat. **"The outbreak was thought at that point to be potentially linked to fresh produce."** The FSA in the United Kingdom requested support from the INFOSAN Secretariat to seek further information from the network that could assist in identifying the source of the outbreak. *Salmonella* Braenderup cases were reported in several other countries through the European Centre for Disease Prevention and Control, with genetic sequences matching isolates from the United Kingdom.

At that point, two countries were investigating melons as the source of the outbreak. Three countries, including Honduras, were identified as the potential country of origin, based on information on



Experts took over 60 samples from water, equipment, surfaces, and soils.

import dates and first case timing (February–May 2021). INFOSAN sought information from these countries on microbiological testing of melons and any outbreaks in their countries related to the case. **"We were simply given these details,"** says Sevilla, **"so we knew that Honduras may be involved - and so at that point, we exchanged information with all melon production establishments in Honduras that were exporting to the European Union."** This is a sector in Honduras that produces 140 million kilogrammes of fruit a year, worth around USD 150 million in exports.

The INFOSAN notification was received by the ECP in Honduras at the end of May and, although there was no confirmation yet of where the source of the problem was, Sevilla set about conducting a desktop review to understand more about this strain of *Salmonella* and the risk factors associated with it. She also drew on the experience

SENASA had gathered following a previous *Salmonella* outbreak in melons in 2008. That outbreak had led to an export ban imposed by the United States of America and, subsequently, new legislation in Honduras designed to tighten up the controls along the melon production chain. That legislation drew heavily on Annex IV, the "melons annex", of Codex's *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003), and had kept the melon chain safe for a number of years. But the unexpected can happen, and on that Friday in June, SENASA received notification that galia melons from Honduras were the source of the outbreak of foodborne illness on the other side of the world. **"Microbiological testing of melons in the United Kingdom linked one melon sample from Honduras to human cases,"** explains El Khoury, **"INFOSAN then requested distribution details of the implicated batch from the Honduran ECP, that was later shared with importing countries."**

The next day, Honduran authorities had a team of 10 technical and laboratory staff, microbiologists and epidemiologists in the field collecting samples. **“What we relied on more than anything was a certain Codex document that was actually still in draft and being discussed within the Codex Committee for Food Hygiene,”** says Sevilla. That document was the draft *Guidelines on the Management of Biological Foodborne Outbreaks* (CXG 96-2022). **“We used certain parts of the document to guide us on our analysis and risk assessment. In line with the Codex document, we mapped out the areas that would most likely be involved, we visited production sites and processing plants and we took over 60 samples from water, equipment, surfaces and soils.”**

At the same time, experts at FSAUK maintained contact with SENASA. **“We worked with the Honduran authorities through INFOSAN, where we reached out to SENASA, the Honduran INFOSAN ECP,”** continues Letters. **“We built a rapport with them on the incident and had regular meetings and email communications on the issue.”**

FSA UK sent the gene sequences of the implicated bacterial strain to Honduras so they could compare *Salmonella* isolates from their samples with the outbreak strain.

The samples collected by the Honduran technical team were sent to the Honduran national laboratory to see if *Salmonella* was present in any of them. One sample came back positive. **“And that was where we met one of the first challenges within our evaluation,”** explains Sevilla. They could not use the genotype sequencing information sent in by FSAUK. **“We did not have a**

way to genotype the positive sample since we did not have the laboratory capacity in Honduras and we had not yet created an international network that could immediately support us in carrying out that type of analysis.”

They eventually found a university in the United States that was willing to sequence the positive sample from Honduras and determine whether it matched the strain causing illness in Europe. Logistical issues dogged the process as there was no formal relationship between the two parties, so there was no procedure to follow. It took 60 days to receive the positive results and for Honduras to notify INFOSAN they had found the source of the outbreak. Nonetheless, corrective actions had already taken place at the contaminated facility. At this point in the year, the melon season was over and SENASA oversaw the implementation of more than 30 different remedial measures and systematic actions to reassure trading partners across the world that Honduran melon exports would be safe the following season.

The incident has been noted in food safety circles as an exemplar of the collaboration across countries, rapid information sharing, and harmonized data collection that prevents the spread of illness and saves lives. It is noted, too, for INFOSAN's role in facilitating the exchange between countries that meant Honduras was able to take action even before they knew the outbreak had initiated in Choluteca. It is also notable for the important role of Codex standards in Honduras' legislation, which had kept contamination at bay for over 12 years, and for the role of the Codex outbreaks document, albeit

in a draft format, which guided Honduran authorities through the crisis. ■



Samples were even taken from inside a tank because water used during the season was still there – a demonstration of SENASA's commitment to finding the source of the contamination.

Lessons learned

Important lessons have been learnt. Sevilla has solid advice for food safety authorities worldwide:

- **Have your INFOSAN contact information updated.** Having updated information about the ECP and focal points is fundamental to ensuring a rapid exchange of information.
- **Act quickly and maintain open and transparent communication.** Early intervention and decision-making are key in managing food safety emergencies even when there is little data to work from. Open and transparent communication with stakeholders especially with trade partners is fundamental to maintaining trust.
- **Develop support networks at the national and international level.** Where national capacities are not available, seek out partners internationally so vital investigations can be carried out quickly and attempt to build capacities nationally. Honduras now has the capacity to carry out WGS, with equipment installed in the Ministry of Health and is establishing a national network infrastructure with a training programme developed and implemented in collaboration with the Pan-American Health Organization (PAHO), to develop WGS capacities in food pathogens under a One Health approach.
- **Carry out drill exercises.** Although an outbreak will always take us by surprise, we can prepare by building the capabilities of people in government and in the private sector. **“That is what we have done as SENASA,”** says Sevilla, **“we have generated simulation exercises that bring together both government institutions associated with food and the food industry.”**
- **Generate a national plan.** This will help with crisis management and communication in an outbreak. A plan should provide a step-by-step procedure of the actions to follow and above all how to communicate: who communicates what to whom.
- **To Codex Members: Know your Codex texts!** **“These are functional documents,”** Sevilla offers, **“they helped us a lot both in our risk-based evaluations and in managing the situation.”**

Watch the video



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The story from Honduras is an excellent example of the important role Codex standards can have in guiding national authorities' management of food safety matters,” says Sarah Cahill, Codex Secretary. **“The final Codex outbreaks document provides detailed point-by-point advice, first on how to prepare for and then on how to manage the unexpected. Maria’s advice is well worth noting!”**

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Read more

Guidelines on the management of biological foodborne outbreaks (CXG 96-2022)

Code of hygienic practice for fresh fruits and vegetables (CXC 53-2003)

Principles and guidelines for the exchange of information in food safety emergency situations (CXG 19-1995)

Working principles for risk analysis for food safety for application by governments (CXG 62-2007)

Principles and guidelines for the conduct of microbiological risk assessment (CXG 30-1999)

Principles and guidelines for the conduct of microbiological risk management (CXG 63-2007)

Principles and guidelines for national food control systems (CXG 82-2013)

Principles for traceability / product tracing as a tool within a food inspection and certification systems (CXG 60-2006)



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Codex acknowledges the kind assistance of Mirian Bueno and María Sevilla at SENASA, Dr Rachelle El Khoury at INFOSAN and Tina Potter and Grace Letters at FSA UK, who all provided essential advice and information in the compilation of this story.

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