



Uncertainty and food safety investigations — Part I



It's not easy being a food safety investigator in the face of deep uncertainty.

Consider two recent cases. In the U.S., the largest foodborne outbreak in the last decade involved a rare strain of *Salmonella Saintpaul* thought to originate from tomatoes. The Food and Drug Administration (FDA) acted quickly, providing a public warning to avoid eating tomatoes until its investigation was complete. After several weeks and hundreds of tests and interviews, the FDA concluded that the problem was likely not tomatoes but rather hot peppers. Politicians rushed to microphones attacking the FDA for “destroying” the tomato industry. Of course, these are the same people who would have been outraged if tomatoes had been the source of the *Salmonella* and the FDA had not acted quickly.

While the FDA probably did the right things in the face of so much uncertainty, as we shall see, they should have communicated better. Tracing the source of foodborne illnesses is very complicated, especially for produce like tomatoes where there are no bar codes, no packages, and they are quickly consumed, often with other produce.

In the EU, the largest foodborne illness outbreak in the last decade, and one of the developed world's most severe in modern times, took place this summer when a very rare strain of *E. coli* (O104:H4) got into the European food supply. The first death was reported on May 24. The next day, the Robert Koch Institute announced that the early epidemiology indicated that the likely culprit was cucumbers, tomatoes or green salads. And later that day German officials announced that the rare strain had been found in the stools of five of the sick patients. The following day a German state-level agency announced triumphantly that it had found *E. coli* on Spanish cucumbers, though it had not yet tested for the strain.

On May 31, after testing for the strain, it was announced that the cucumbers were not to blame, by which time, of course, the Spanish cucumber industry was destroyed and German vegetable growers were suffering losses of \$2.8

million per day as consumers quit eating all salads. Finally, on June 5 it was reported that “initial tests” (it was not tests, it was the result of epidemiological tracing) revealed that sprouts grown on an organic farm in Germany were “likely” the source of the problem, even though they couldn't find a smoking sprout on the farm.

Then on June 12 several victims of the O104 strain fell ill in France. They had no connection to the German organic farm. Attention turned to seeds, with the French blaming the British (I'm not making this up). Finally, on June 29 tracing determined the source of the problem as sprout seeds imported from Egypt in 2009. By this time there had been more than 50 deaths and well over 4,300 people seriously ill, including approximately 900 cases of patients with permanent kidney damage.

In both cases, with the benefit of hindsight, academics and the media roundly criticized the regulators as incompetent. In a detailed review of the EU sprouts case, Peter Sandman, an expert on risk communication, concluded that the main failure of the regulators was in not being more forceful in proclaiming in their risk messaging the level of uncertainty in the case. To me it seems there is a more basic problem, and it flows from the use of the language of risk, because “risk” disguises the deep uncertainty inherent in complex cases like these. These regulators were dealing with uncertainty, not risk — they were engaged in crisis management, not risk management.

Next month we'll explore why we may need a whole new model and language for describing food safety investigations characterized by such deep uncertainty. ■

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