Federal funding has been crucial for laboratories working to achieve accreditation to the ISO/IEC 17025:2005 standard. A key requirement of the ISO Cooperative Agreements between the US Food and Drug Administration (FDA) and state laboratories performing food and animal feed testing is the creation of risk-based food and animal feed sampling plans.

The sampling plans are developed through collaboration between laboratory and state regulators and outline the minimum number of samples to be tested, the methods of analysis used and the frequency of testing annually. The samples tested usually include those deemed to be at higher risk for contamination or those typically consumed by high-risk populations, including children, the elderly and those with compromised immune systems.

South Carolina’s Department of Health and Environmental Control (DHEC) includes frozen dessert products as part of their routine sampling plan, since high-risk populations often consume these products. On February 12, 2015, DHEC tested several Blue Bell Creameries’ ice cream products collected from a South Carolina distribution center for the presence of Salmonella and Listeria. Two initial positive results for Listeria monocytogenes were discovered.

Public health investigators used the PulseNet Network to identify other human illness cases in the US that could be associated with the contaminated ice cream products discovered by DHEC, with illness onset dates ranging from January 2010 through January 2015. PulseNet, the national molecular subtyping network for foodborne disease surveillance, uses pulsed-field gel electrophoresis (PFGE) and whole genome sequencing (WGS) techniques to identify possible enteric disease outbreaks. PulseNet provides a genetic “fingerprint” for a pathogen that can be compared to other human illness cases to determine commonalities and potentially identify an outbreak source.
Ten patients in four states (Arizona [1], Kansas [5], Oklahoma [1] and Texas [3]) were identified with PFGE patterns indistinguishable from the strains of L. monocytogenes found in the ice cream products. The PFGE results were later confirmed by WGS. All patients were hospitalized, and three of the ten patients died.

Further investigations by CDC and the Kansas Department of Health and Environment found that five patients were treated at the same Kansas hospital. *Listeria* isolates from four of the five patients had PFGE patterns that were also identified in Blue Bell ice cream products tested by South Carolina and Texas. Hospital records available for four patients showed they were served ice cream manufactured by Blue Bell Creameries. On April 20, 2015, Blue Bell Creameries voluntarily recalled all products that were on the market at that time.

The link between the ice cream and Listeriosis cases was made as a result of DHEC’s sampling program and routine testing of frozen dessert products. Routine sampling of high-risk food and animal feed products can provide valuable information during a foodborne outbreak investigation. It is important for regulatory programs and state laboratories conducting routine sampling to collaborate closely with foodborne illness investigators and vice versa, ultimately leading to a safer food supply in the US.

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