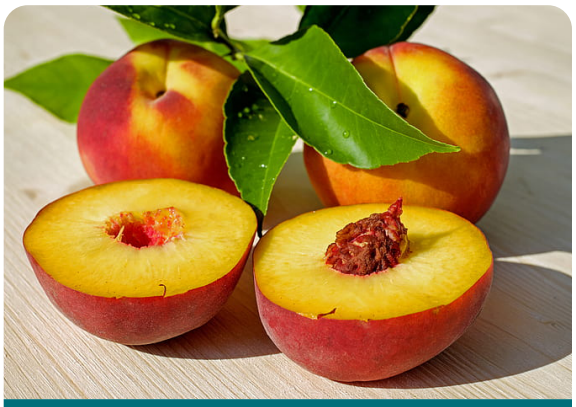
TEAMWORK PROVES FRUITFUL IN FOODBORNE OUTBREAK PREVENTION

State RRTs Identify Issues and Remove Unsafe Products from Commerce

It has long been established that teamwork and collaboration are vital components of a successful foodborne outbreak investigation. These are the building blocks behind state Rapid Response Teams (RRTs), multi-agency and multi-disciplinary teams that respond to human and animal food emergencies. RRTs' goal is to minimize the time between agency notification of a human or animal food contamination event and the implementation of effective control measures.



As of September 2023, there were 23 states with FDA-funded RRT cooperative agreements, as well as three participating in a voluntary, non-funded capacity.

The US Food and Drug Administration (FDA) is in its third year of supporting the Laboratory Flexible Funding Model (LFFM) Program, a comprehensive emergency response and surveillance cooperative agreement between the FDA and Food Emergency Response Network (FERN) partner laboratories, supporting a wide range of chemistry, microbiology and radiochemistry analytical activities. The laboratory is an integral part of an RRT and, through the Product Testing Tracks, LFFM provides resources and a framework for surveillance sampling, which can be pivoted towards response-focused sampling during an outbreak or other human and animal food contamination event. There are currently 55 state laboratories across 40 states involved in the LFFM program, including several directly involved in the food safety investigations outlined below.

Summer 2022 highlighted the strengths of RRTs during two separate investigations into contamination events of *Listeria monocytogenes* (commonly known as "L. mono") in peaches. By working with interstate partners and leveraging collective resources, these RRTs were able to conduct thorough investigations, identify a potentially contaminated product and remove it from commerce without links to any human illnesses.

Two Orchards, One Packing House

On June 6, 2022, the California Department of Public Health (CDPH) was notified by another state that, as part of their surveillance sampling under the LFFM program, it had collected a fresh peach sample from a grocery store that tested positive for L. mono. On July 12, CDPH was notified by the Pennsylvania RRT that the Pennsylvania Department of Agriculture had collected a fresh peach sample from a grocery store in the state as part of their LFFM surveillance program, which also tested positive for L. mono.

Why was CDPH notified of contaminated peaches found in two other states? The answer may surprise you: traceback investigations from these states showed both peaches were grown in California!

The California Food Emergency Response Team (CalFERT) initiated traceback for peach samples. Both samples were harvested in May 2022 from California orchards. While peaches were harvested on different days (May 9 and May 19, respectively) and from two different orchards about 50 miles apart, both peaches were sorted at the same fruit packing house. The fruit packing house indicated they collected ten environmental swabs from around the facility twice weekly and tested them internally; they had no positive *Listeria* species findings in 2022.

On August 17, CDPH conducted an environmental assessment of the fruit packing house, collecting 84 environmental swabs and observed their fruit harvesting and handling practices. The CDPH Laboratory reported that one of the 84

environmental swabs—taken from one of the firm's cull line conveyor belts for fruit not fit for fresh market—tested positive for L. mono. Whole genome sequencing of the L. mono isolated from the swab showed that it was within five SNPs of the peach samples, which indicated that this strain of L. mono had been at the facility since at least May 2022. There were no clinical cases associated with this strain of L. mono.

Given these findings, the fruit packing house implemented remediation steps to reduce the risk of L. mono in their facility. They retrained the cleaning crew, focusing on *Listeria* spp. awareness and sanitation procedures. They also hired a food safety consultant who helped them revamp their environmental monitoring program; the fruit packing house refocused their environmental swabbing locations and increased *Listeria* spp. testing from 20 swabs per week to 120 swabs per week. From September 15–26, the facility reported multiple positive results for *Listeria* spp. On November 15, CDPH returned to the fruit packing house and collected 81 additional swabs at locations that included the previous positive result; L. mono was not detected.

Connecting the Dots of Distribution

In June 2022, the Michigan Department of Agriculture and Rural Development collected a fresh peach sample as part of their LFFM surveillance sampling plan. Laboratory testing confirmed that the sample was positive for L. mono. The Michigan RRT notified the FDA as well as the South Carolina RRT (comprised of the South Carolina Department of Health and Environmental Control [SC DHEC], the South Carolina Department of Agriculture [SCDA] and the FDA), as the peaches were packed at a South Carolina facility. Michigan RRT initiated a traceback/trace forward investigation and determined that the implicated lot of peaches had been shipped to a distributor in a third RRT state.

The three RRT states collaborated and shared their findings with FDA and each other. Further trace forward investigation showed that the peaches were mainly sent to schools and adult care facilities in Michigan and other states; there was much concern about the exposure to L. mono for these potentially vulnerable populations.

A joint SC DHEC/FDA team conducted an environmental assessment at the packing facility. An environmental swab collected from a food contact surface tested positive for L. mono, and the facility recalled the implicated lot of peaches. However, the positive environmental sample did not match the initial Michigan isolate by WGS. Fortunately, there were no illnesses linked to the product.

Learning From the Past, Improving For the Future

The steps taken because of these LFFM samples included removing adulterated products from domestic commerce, preventing additional product from entering the country and investigations/corrective actions at the facilities that produced these products. These activities resulted in a safer food supply and prevented potential consumer illnesses, medical costs and even deaths.

Stone fruits have been linked to outbreak investigations in the past, including a 2014 multi-state outbreak of listeriosis (the first reported link between human listeriosis and stone fruit) and a 2020 multi-state outbreak of *Salmonella enteritidis* that caused 101 reported illnesses and 28 hospitalizations. It is essential that states identify potential new or unusual vehicles for pathogen harborage and consider adding them to surveillance sampling efforts. This proved fruitful for the Ohio Department of Agriculture, which added frozen vegetable products to its surveillance sampling plan in 2016 after multiple recalls in other states.

The investigations illustrated here are stories of prevention, where a potential future outbreak was stopped before it began. Through surveillance, testing and investigation, valuable information was gained about hazards in our food supply that can be used to inform prevention strategies and mitigate that risk moving forward.

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