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Texas Public Health Laboratory

COVER STORY:

DSHS Laboratory keeps Texas' food safe

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Top Story : DSHS Laboratory keeps Texas' food safe

The Texas Department of State Health Services (DSHS) Laboratory Services Section works tirelessly to monitor the safety of our food and to maintain the capabilities to respond to unexpected foodborne illnesses. These activities are funded in part by the Food Emergency Response Network (FERN) cooperative agreement with the U.S. Food & Drug Administration (FDA).

FERN integrates the nation's food-testing laboratories at the federal, state, local, tribal, and territorial levels into a network that can respond to emergencies involving biological, chemical, or radiological contamination of food. The goal of the cooperative agreements is to provide labs with the capabilities to test increased number of samples in the event of food outbreaks or other large-scale food emergency events that require surge capacity testing of implicated food samples and food products.

DSHS has received funding from FERN since 2009. Laboratory members who have been a part of the grant activities since the beginning say the improvements made during the past 10 years have been tremendous. Our partnership with FDA through FERN also expanded to other cooperative agreements such as the Genome Trakr Network, and with their support, the DSHS Laboratory was able to implement a brand-new technology, Next Generation Sequencing (NGS), which revolutionized foodborne outbreak investigations. Other technological advances have been introduced, such as real-time polymerase chain reaction (PCR). The laboratory's Quality Management System (QMS) has significantly improved over time as well with the ISO 17025



accreditation that the food testing labs are accredited under.

Chris Malota, the team lead of the Consumer Microbiology Team points to the laboratory's participation in the FDA "Microbiological Surveillance Sampling: FY14-16 Whole Fresh Avocados" as one of its greatest achievements. From May 2014 to August 2015, the DSHS Laboratory was a part of a FERN/FDA Project testing avocados for the presence of Salmonella species and Listeria monocytogenes. The DSHS was 1 of 16 FERN Labs that participated in this project, which showed the capacity of the FERN Labs to respond to a large-scale event in the case of a nationwide outbreak investigation. During this timeframe the DSHS Laboratory tested approximately 50 samples (which represented ~1000 individual avocados). They also sequenced 26 positive Listeria monocytogenes and 11 positive Salmonella isolates. The DSHS Laboratory contributed to several nationwide recalls. In November 2015, the DSHS Laboratory was tasked with the routine

"Microbiological Surveillance Sampling: FY14-16 Whole Fresh Avocados as one of our Greatest Achievements"
Chris Malota said.

surveillance of ice cream samples that were being produced at the Blue Bell Creameries plant in Brenham, TX after product recalls earlier that year. With FERN grant funding, from 2015 to 2017, the DSHS Laboratory tested approximately 170 ice cream samples and 150 environmental samples for the presence of Listeria monocytogenes to ensure that ice cream products were safe for consumers. During this time, the DSHS Laboratory performed Pulse Field Gel Electrophoresis (PFGE) and

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NGS on 11 positive *Listeria monocytogenes* isolates from an outbreak. Chun Wang, manager of the DSHS Laboratory's Advanced Molecular Microbiology Group, cites the DSHS Laboratory's involvement in the ice cream investigation as one of their greatest achievements.

The DSHS Laboratory's Radiochemistry Group performs radiological analyses for special projects and for routine surveillance from areas surrounding nuclear power plants and other places of interest. With the FERN grant, the group has been able to participate in emergency response exercises and trainings. Sarah Martinez, the Group Manager of the Radiochemistry Group, says the Menu 2010 exercise was memorable because it was a collaboration of the FERN Cooperative Agreement Program Radiochemical labs to create an interlaboratory comparison study of food testing capabilities. For this project, they tested specific food products such as powdered milk, canned tuna, and apples for radiochemical contamination using gamma spectroscopy, alpha spectroscopy, and gross alpha/beta analysis. With the funding, they have also been able to purchase additional equipment that allowed them to increase their testing capacity and shorten their testing turnaround time.

The DSHS Laboratory analyzes approximately 2,500 human food samples per year on a routine basis using primarily FDA standard methods. With the FERN grant, in coordination with the DSHS Consumer Protection Group, in the past 5 years, the DSHS Laboratory has been able to test an additional 900 samples of food items such as deli ham, cucumbers, black pepper, leafy greens, ice cream and dry milk products for *Salmonella* species or *Listeria monocytogenes*. In addition, they perform whole genome sequencing of isolates to identify foodborne bacterial pathogens and perform surveillance at the molecular level. The laboratory continues to increase its sequencing capabilities for foodborne illness outbreak investigations and identification of genomic diversity of pathogenic microorganisms in our food supply.

The DSHS Laboratory is diligent in its efforts to increase the laboratory's capacity and capability by increasing the number of tests performed and the number of organisms identified every year. Work will continue with the FDA and local partners to assure the safety of food in the State of Texas.



¹ Microbiological Surveillance Sampling: FY14-16 Whole Fresh Avocados - https://www.fda.gov/food/sampling-protect-food-supply/microbiological-surveillance-sampling-fy14-16-whole-fresh-avocados?utm_campaign=National%20Broadcast%20Message%20-%20FDA%20Releases%20Reports%20on%20Avocado%20and%20Hot%20Pepper%20Sampling&utm_medium=email&utm_source=Eloqua

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