

NY State Food Laboratory: Making a Name in *Listeria*, Forensic Chemistry

Director

Dan Rice, director of the Food Laboratory Division in the New York State Department of Agriculture & Markets, began his career in wildlife diseases research. After earning a graduate degree in veterinary epidemiology, however, he segued into food safety as a researcher at Washington State University College of Veterinary Medicine. “Many of the foodborne pathogens that people are interested in,” said Rice, “have a food animal reservoir.” At the time of the infamous *E. coli* O157:H7 outbreak in Jack in the Box® restaurants, Rice’s laboratory was one of the few in the nation doing O157:H7 research. “We were in a great position from then on to compete for food safety research funding, and our program grew immensely,” he said. But after 17 years working on food safety from the farm to processing, Rice was ready for a change. Hence, when the opportunity presented itself three years ago, he moved to the East Coast and began his current position, which emphasizes food safety at the consumer level covering processing to retail. Said Rice, “The opportunity to be the director of a lab like this is really a once-in-a-lifetime opportunity.”

Location

The laboratory is situated in a state office complex in Albany, next to the State University of New York campus—a location that offers two advantages. “Albany is the capital of New York, so all allied state agencies have their offices here. Our current location also puts us in close proximity to farmland, livestock produc-

tion facilities and food processing plants. New York actually has a large agricultural base; people don’t often recognize that.”

“Food presents a varied and complex matrix for testing and often necessitates creativity and ingenuity when really odd samples arrive for testing.—Dan Rice, director, Food Laboratory Division in the New York State Department of Agriculture & Markets”

Facility

The food laboratory occupies 25,000 square feet of a 43-year-old structure that was not designed to house a laboratory. The building supports food and dairy microbiology, chemistry and pesticide residue laboratories. Unfortunately, the building cannot support BSL-3 laboratory space, so staff is limited to working under BSL-2 criteria. “The building has its challenges,” said Rice, “but we still do excellent work here.” Rice has just begun the design process for a new food laboratory facility; a task he describes as “a rare opportunity and something I’m really looking forward to”

Staff

43 permanent staff, including 36 bench scientists and analysts, 4 administrative personnel and 3 quality assurance/safety staff. The laboratory also employs up to 5 hourly staff.

Revenue

The laboratory’s total budget is about \$3.9 million/year, much of it from the state to fund regulatory testing.

However, the laboratory also earns roughly \$100,000/year doing fee-for-service work for universities and state agencies and receives about \$2

million in federal contracts. Federal dollars support the federal Pesticide Data Program (a multi-state effort to evaluate pesticide residues in drinking water and produce), the Microbiological Data Program (a multi-state program to evaluate selected pathogens in produce) and the Food Emergency Response Network (FERN). Said Rice, “Our capabilities have advanced significantly in the last three years in large part due to the ability to acquire state-of-the-art instrumentation.”

Distinguishing Characteristics

- One of a few state laboratories whose analytical results are accepted by the FDA as the basis for food recalls.
- Expertise in the ecology and epidemiology of *Listeria monocytogenes* in retail foods and environments. “As an agency, we’ve been working with producers and retail stores on (Hazardous Analysis Critical Control Points) plans for *Listeria* control.”
- A close relationship with other government laboratories. “We meet

frequently with (staff from other state laboratories) and have plans for cross-training programs with our health department's biodefense laboratory. We also work closely with allied staff from Cornell University.”

- One of ten state agricultural products testing laboratories that comprise the National Food and Agricultural Laboratory Committee (NFALC). NFALC is currently developing a Web site—www.foodshield.org—with a directory of agricultural laboratory capabilities and capacity throughout the US.

- A multi-purpose laboratory: “Although we are called ‘the food lab,’ we are not all about food; we also test liquor, wine, hard cider, pet food, animal feed, fertilizer and lime.”

Highest Volume Testing

Collectively, the laboratory's three sections—food microbiology, food and dairy chemistry and pesticide residues—analyze about 22,000 samples/year (performing roughly 118,000 tests). “Food presents a varied and complex matrix for testing and often necessitates creativity and ingenuity when really odd samples arrive for testing. New York ranks third in the nation in terms of dairy production and much of our testing is dairy-related,” said Rice. Another major emphasis is on imported food products, an important focus since about a third of the nation's imported food comes through New York. “The majority of samples are regulatory in nature—labeling issues, compliance issues and adulteration. We're trying more and more to go to risk-based testing programs for specific hazards in foods to get the biggest impact we can from the work that we do.”

Notable Success Stories

- Forensic chemistry testing. “One of our big pushes right now has been implementing



The laboratory tests imported and domestic honey samples for antibiotic residues.

poison/toxin screening methods. We have had several recent events where we used these methods in forensic investigations to respond to suspected food tampering cases and even an attempted murder case involving food. These events have fostered closer working relationships with the NY state police, FBI and the FDA. Being a member of the FERN helped us get moving in this direction, but most of our progress comes from having highly competent staff and excellent instrumentation.”

- A program to screen food for antibiotic residues, currently focusing on dairy products and honey, with an emphasis on imported products.

- Work identifying chili spice coated candy with high lead content, getting these products off the market and educating the public.

- Identifying substandard infant formula imported from China in the US market.

- Tracing disease outbreaks in livestock to livestock feed.

- Being the first laboratory to identify aflatoxin contamination in dog food involved in an international outbreak of dog poisonings.

Biggest Challenges

- Keeping technical staff current on the latest technology with a limited budget for training and training-related travel.
- Hiring and retaining “top-notch” staff in a bureaucracy with an outmoded civil service hiring system.
- Trying to do state-of-the-art work in a 43-year-old building.

Vacancies

2. “It seems we're always looking for a chemist or a microbiologist and we currently have one of each (position) open. Right now we're experiencing a fair number of retirements along with the usual turnover of staff, and we seem to be hiring several new staff each year.”

Goals

- We are always looking for new and improved ways of doing what we do: methods that are more safe or more sensitive or let us test for more things. One of our pushes right now is DNA-based detection methods for pathogens in food. Food and other agricultural products can be very challenging to test, and we are doing our part to facilitate the process of getting rapid methods validated.”

- Begin testing certain food origin bacterial isolates for antimicrobial resistance.

- Expand the use of pulse field gel electrophoresis (PFGE) and integrate the laboratory's work with PulseNet. "We perform PFGE, but we're not a PulseNet-approved laboratory."

- Develop the capability to perform fish speciation using PCR methodology.

- Replace the current laboratory information management system and develop an electronic submission form for samples. "We're just in the early process of evaluating some potential systems."

- Achieve A2LA accreditation to the International Organization of Standards 17025 and ALACC standards for food testing laboratories.

- Expand the use of LC-MS/MS (liquid chromatography tandem mass spectrometry) for detecting a variety of contaminants in food and beverage samples.

- Design and construct a new laboratory facility.

APHL Presence at 2006 NCSL Meeting

The 2006 National Conference of State Legislatures (NCSL) Annual Meeting and Exhibition convened in Nashville, TN, August 15-18. The NCSL annual conference is the biggest of its kind and brings together thousands of key legislators and senior legislative staff to meet with representatives from corporations, members of the association community and federal policy makers.

The meeting exhibit hall featured more than 250 diverse booths of trade associations, healthcare associations, philanthropic organizations, corporations, educational entities and federal agencies. Anna Dillingham, Karen Breckenridge and Linette Granen exhibited for APHL, with back-up from the staff of the Tennessee NLTN office, Bobbi Albert and Pam Moleta. The booth and staff provided information regarding the critical work of state

and local public health laboratories and the association's activities. During the course of the conference, staff distributed a variety of APHL publications, networked with legislators and legislative staff members from 48 different states and territories and interacted with the other associations and agencies that were present. Also available at the APHL exhibit booth were *Labs Are Vital* brochures, which promote a new collaborative effort between industry and laboratory organizations aimed at recruiting individuals into the profession and raising public awareness about the critical work performed by laboratories.

APHL also distributed recent issue briefs, *Ready Set, Respond: Chemical Terrorism Preparedness in the Nation's State and Public Health Laboratories and Bioterrorism Capacity* at the educational session, "ABCs of Emergency Preparedness: Avian Flu, Bioterrorism and Other Calamities."

News from APHL's Board of Directors

In June, the Board of Directors met in conjunction with APHL's annual meeting. They approved the annual budget and discussed member services, product development and member recruitment and retention. McKinley Marketing presented its final report on the NLTN marketing plan, and the board approved a policy program for the fellowship program. They heard reports from APHL's global health and infectious diseases programs and met with CDC Director Julie Gerberding.

The board met via conference call in July to respond to committee needs. Board members approved a motion submitted by the Environmental Health Committee to address

concerns around the National Environmental Laboratory Accreditation Conference. The board approved a pandemic influenza policy statement for interim use, and it will now be submitted to the larger membership for final vote. A motion submitted by the Newborn Screening & Genetics Committee to cosponsor a conference with the International Society of Neonatal Screening was approved. At the request of the Food Safety Committee, the board agreed to support the LabDIR Web site, accessible through FoodSHIELD (<http://www.foodshield.org/>).

The directors then reviewed the annual priorities established by each committee and provided feedback.

Board Liaisons to APHL Committees

- Emergency Preparedness—Susan Neill
- Environmental Health—Yvonne Hale
- Finance—Susan Neill
- Food Safety—Yvonne Hale
- Global Health—Francie Downes
- Infectious Diseases—Kati Kelley
- Informatics—Steve Hinrichs
- Knowledge Management—Victor Waddell
- Laboratory Systems & Standards—Scott Zimmerman
- Membership & Recognition—Scott Zimmerman
- Newborn Screening & Genetics—Bill Becker
- Public Policy—Bill Becker