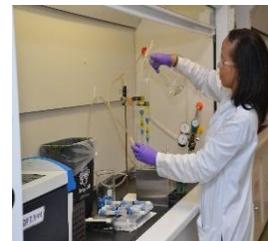
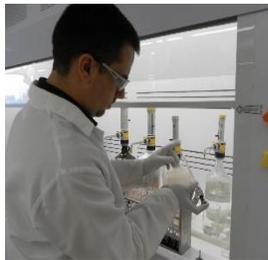




Division of Food Laboratory 2016 Annual Report

ANDREW M. CUOMO
Governor

RICHARD A. BALL
Commissioner



METRIC SUMMARY

Over the years, the Food Laboratory received and tested food, beverage, feed, and fertilizers collected by state inspectors as part of state and federal programs. The table below shows the overall number of samples received and analyzed by the laboratory, percentage of violation found over time, and the number of recalls triggered by laboratory results. The Laboratory outcomes also complement evidences collected by the Department's inspectors in order to remove violative products from shelves and public reach. Figure 1 shows the number of samples tested in the Food Laboratory.

	Year		
	2014	2015	2016
Number of Samples Received	22,015	19,963	23,377
<ul style="list-style-type: none"> • From Food, Safety & Insp • From Milk Control • From Plant Industry • From Pesticide Data Prog • From State Liquor Authority • Other (PTs and other NYS agencies) 	<ul style="list-style-type: none"> 3,805 15,853 115 1,998 105 139 	<ul style="list-style-type: none"> 2,443 15,426 129 1,667 46 252 	<ul style="list-style-type: none"> 3,363 17,745 184 1,800 37 248
Number of tests performed	55,784	61,187	67,256
Percentage of violative samples found	6.5%	7.3%	7.5%
Total number of recalls triggered by laboratory results	239	345	303

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PURPOSE

The Division of Food Laboratory is the only food testing regulatory laboratory in New York State. Under the Department of the Agriculture and Markets (the Department), the Food Laboratory provides support through food testing to the divisions of Food Safety and Inspection, Milk Control and Dairy Services, and Plant Industry. Under the Article 17 of the Department Division of Food Safety and Inspection, it is required laboratory testing in order to enforce regulatory action. Among other items, Article 17 also defines misbranding and adulteration of food products. In addition, the FDA Interstate Milk Shippers program (FDA-IMS) requires that the state Food Laboratory provide testing of dairy products by FDA certified analysts to allow NY State dairy producers to ship their products out of state. State level involvement in the FDA-IMS program is regulated by the Division of Milk Control and Dairy Services.

MISSION

The mission of the Division of Food Laboratory is to provide expert state of the art analytical testing in support of food safety programs in New York State. The laboratory supports the regulatory programs of the Divisions of Food Safety and Inspection (FSI), Milk Control and Dairy Services (MCDS), and Plant Industry (PI). Providing analytical testing of samples, which are primarily collected as part of scheduled surveillance programs, is our main goal. Food Laboratory also responds to disease outbreak investigations, consumer complaints, and special projects involving public health issues. The laboratory also provides specialized analytical services to various state and federal agencies.

BUILDING FACILITIES

The Food Laboratory relocated to a newly constructed three-story building in 2013 as a result of a multi-year project funded by New York State. The 67,000 square foot facility is home to 43 microbiologists, chemists, managers and support staff. The second floor is dedicated to chemical food testing including pesticide residues and dairy analysis. Microbiological testing is performed on the third floor where ready-to-eat foods, milk and dairy products are tested for foodborne pathogens and insanitary conditions indicators.

The Food Laboratory also serves as training facility and hosts training in collaboration with the Department, local colleges, and federal partners.

The Food Laboratory has a broad range of equipment and instruments. Examples of scientific instruments currently active include but not limited to: real-time PCR for rapid screening for foodborne pathogens, automated biochemical testing for identification of microbial pathogen, high performance liquid chromatography (HPLC), gas chromatography/ mass spectrometry (GC/MS), and inductively coupled plasma optical emission spectrometry (ICP/OES). These latest examples are used for detection of harmful chemicals in food products such as heavy metals, pesticides residues, and sulfites.

MAJOR RESPONSIBILITIES

- ✓ Test all food and beverage samples collected by Department staff for specific biological or chemical health hazards or accuracy of labeling.
- ✓ Collaborate with allied governmental agencies such as the Food and Drug Administration, the United States Department of Agriculture, the New York State Department of Health to test various foods and beverages for health hazards and accurate labeling.
- ✓ Support cooperative agreements with the USDA Agricultural Marketing Service (AMS) for the pesticide program (PDP), the FDA Rapid Response Team (RRT) program and the FDA ISO/IEC 17025:2005 accreditation initiative.
- ✓ Test animal feed, pet food, fertilizer and lime samples for accuracy of labeling and selected animal and human health hazards.
- ✓ Support state and federal agencies on food safety programs.

Figure 1: Samples Tested in NYS Dept of Agr & Mkts Food Laboratory

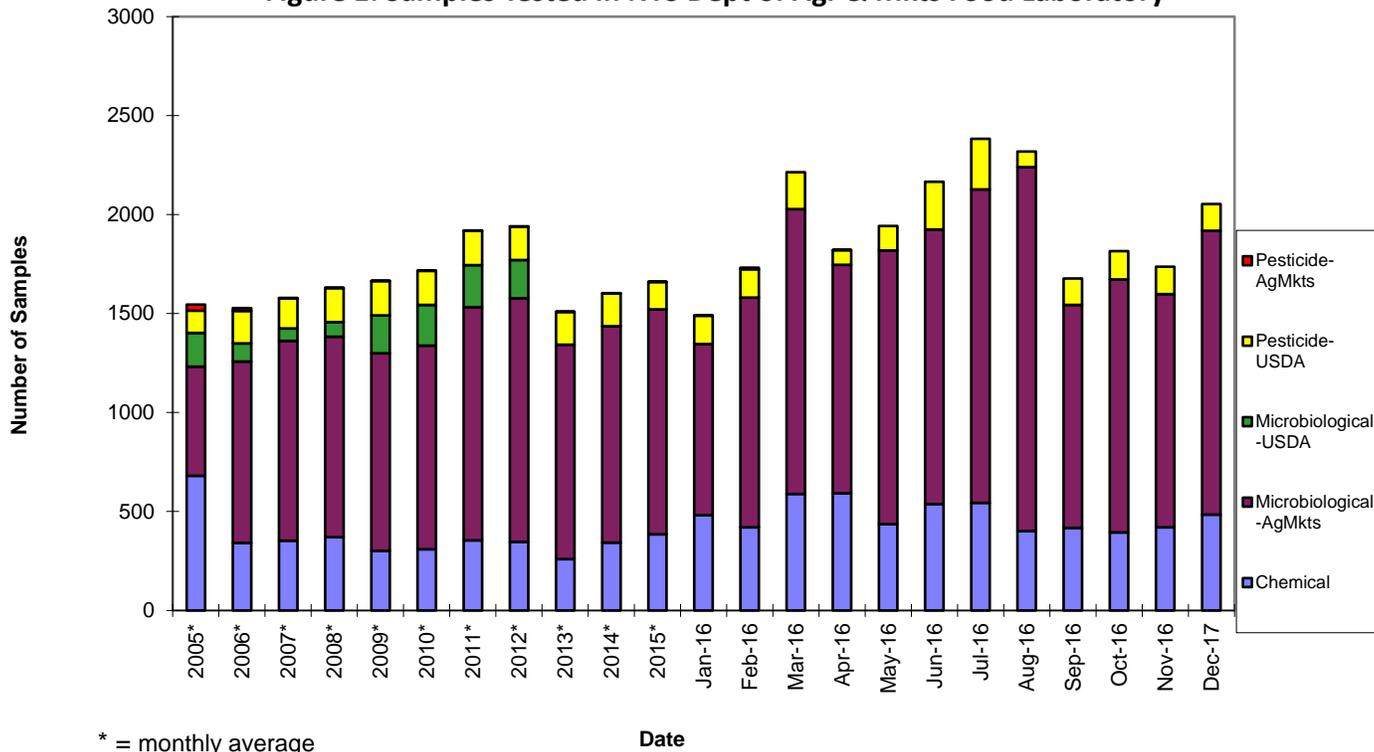
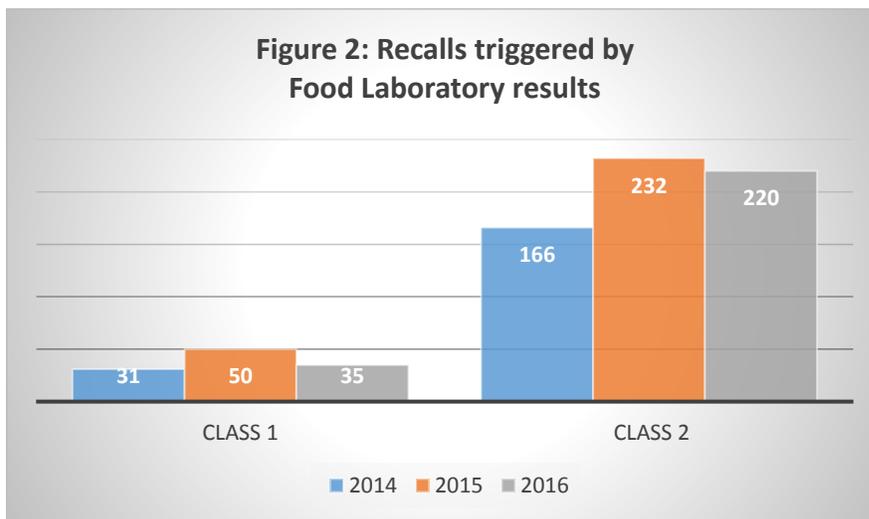


Figure 2 shows number of recalls triggered by laboratory results over the past three years. Laboratory results are responsible for recalls within state or across the country. As consequence, the Department avoided or minimized the risk for NYS consumers to health consequences after consuming violative sample.



Note: Definition of Class 1 and 2 recalls is described below:

- Class 1 recalls are triggered when there is a strong likelihood of use or exposure to a violative product that can cause serious adverse health consequences or death.
- Class 2 recalls are triggered when use or exposure to a violative product can cause temporary or reversible health consequences.

TYPES OF SAMPLES TESTED BY THE FOOD LABORATORY

Animal feed	Baked goods
Beverages (alcoholic, carbonated & noncarbonated)	Butter
Candies, gums, chocolates, etc.	Cheese
Coffee, tea, etc.	Cow milk (raw, pasteurized, skim)
Dairy products other than cheese (flavored milk, cultured, condensed, dry, sour cream, yogurt, etc.)	Dietary food
Dressings & condiments	Eggs & egg products
Environmental samples (water and swabs)	Extracts & flavors
Fertilizers (agricultural and commercial)	Fish, shellfish, crustaceans
Frozen dairy products	Frozen desserts
Fruit (fresh and dried)	Fruit juices
Grain, cereal, flour & mixes	Infant food
Jams, jellies & preserves	Lime (agricultural and commercial)
Macaroni, noodles, etc.	Meat & meat products
Nuts & nut products	Oil, cooking
Other than cow milk	Snack items
Spices & salt	Syrups (including maple), honey & sugars
Ultra-Pasteurized Dairy Products	Vegetable (fresh, juices, canned, cured, dried)

TOTAL OF NUMBERS OF SAMPLES AND VIOLATIONS FOR EACH TYPE OF COMMODITY TESTED

Classification of Samples	# of Samples	# of Violations	% Violative
Animal Feed	523	56	11
Beverages, Alcoholic	5	1	20
Beverages, Carbonated & Noncarbonated	43	10	23
Baked Goods, Sweet Goods, Cookies	12	2	17
Baked Goods, Bread, Rolls, etc.	103	29	28
Butter	149	26	17
Candies, Gums Chocolates, Etc.	106	36	34
Cheese, cheddar type	1450	96	7
Cheese, grated	78	20	26
Cheese, Italian, Semi-Soft/Hard Type	739	99	13
Cheese, Soft Type	2176	78	4
Cheese, Spanish, soft/hard type	282	28	10
Coffee, Tea, etc.	11	1	9
Dressings & Condiments	61	15	25
Eggnog	95	15	16
Eggs & Egg Products	29	9	31
Extracts & Flavors	5	2	40
Frozen Desserts, Ice Cream	1053	134	13
Frozen Desserts, Ice Milk	0	0	0
Frozen Dairy Products	370	39	11
Frozen Desserts, Sherbets	456	18	4
Frozen Desserts, Yogurt	155	11	7
Fish, Shellfish, Crustaceans	233	22	9
Fertilizer, Agricultural, Commercial	162	44	27
Food, Dietary	0	0	0
Food, Infant	1	0	0
Food, Multiple	310	19	6
Food, Snack Items	32	7	22
Food, Desserts	10	4	40
Food, Miscellaneous	9	0	0
Fruit & Juices, Canned & Bottled	20	4	20
Fruit, Dried	97	40	41
Fruit & Juices, Fresh	129	1	1
Fruit & Juices, Frozen	4	1	25
Fruit, Unclassified	26	7	27
Grain, Cereal, Flour & Mixes	63	10	16
Jams, Jellies & Preserves	27	2	7
Lime, Agricultural, Commercial	22	14	64

Classification of Samples	# of Samples	# of Violations	% Violative
Macaroni, Noodles, etc.	40	8	20
Meat & Meat Products	256	34	13
Melloream	38	0	0
Milk, Cream Products	695	63	9
Milk, Flavored	424	29	7
Milk, Other Than Cow	570	61	11
Milk, Pasteurized	1651	87	5
Milk, Raw	1122	56	5
Milk, Skim	542	54	10
Ultra-Pasteurized Dairy Products	783	12	2
Milk, Cultured, Sour Cream, Yogurt	4272	162	4
NFDM, Condensed & Dry Milk Products	380	3	1
Nuts & Nut Products	99	6	6
Oil, Cooking	85	3	4
Spices & Salt	495	67	14
Syrups, Honey & Sugars	96	6	6
Syrups, Maple	6	0	0
Vegetables & Vegetable Juices, Canned	18	1	6
Vegetables, Cured	49	11	22
Vegetables, Dried	29	7	24
Vegetables & Vegetable Juices, Fresh	178	1	1
Vegetables & Vegetable Juices, Frozen	11	0	0
Water, Dairy & Cooling	382	16	4
Unclassified (i.e. Quality Assurance)	165	0	0
Unclassified (i.e. Extraneous Matter, Bacterial Surface Swabs)	98	31	32
Totals	21530	1618	7.5

MAJOR PROGRAMS

Food and Dairy Chemistry

Description:

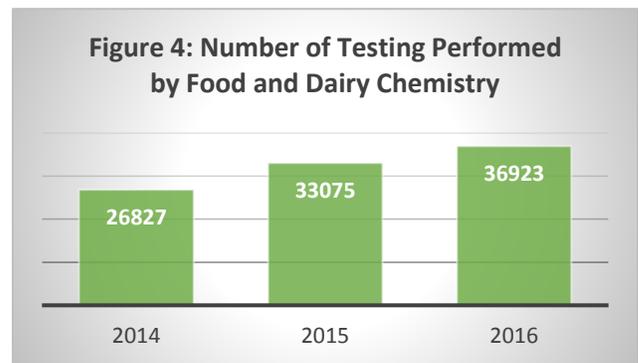
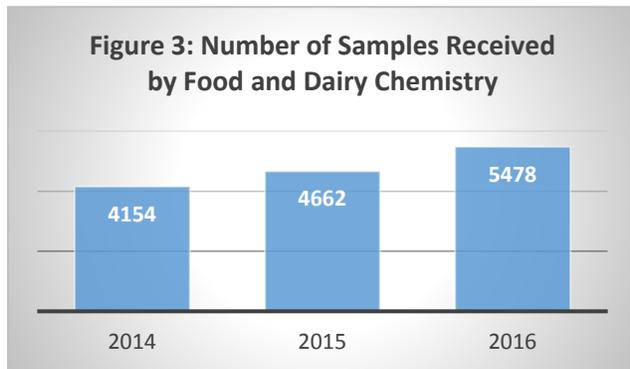
- Samples are analyzed for food and dairy chemistry standards including compliance with regulatory standards of identity and nutritional labeling, adulteration, the presence of undeclared and potentially harmful allergens, preservatives and artificial colors, specific chemical hazards such as heavy metals, aflatoxins, pesticide residues, antibiotic residues, and the identification of impurities and foreign material.
- Current emphasis exists on testing of food for allergens and antibiotic residues in support of the Department's Imported Food Initiative and expansion of poison/toxin screens in support of enhanced food safety and security programs.
- Animal feed and pet food samples are analyzed for compliance with label guarantees covering nutrients, minerals, declared and undeclared antimicrobials and several biological and chemical safety parameters.
- Fertilizer and Lime Analysis are performed for plant nutrients to confirm label claims of chemical content.

Why it is important:

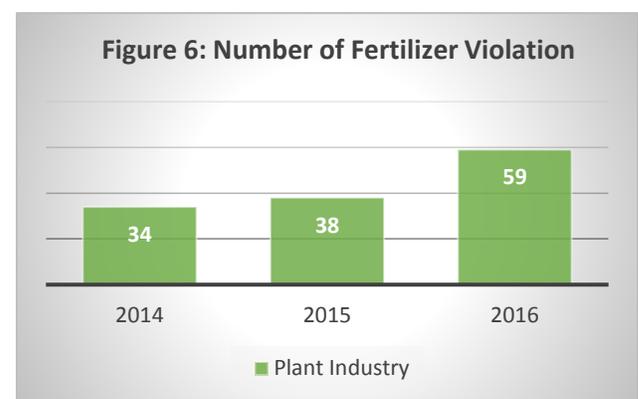
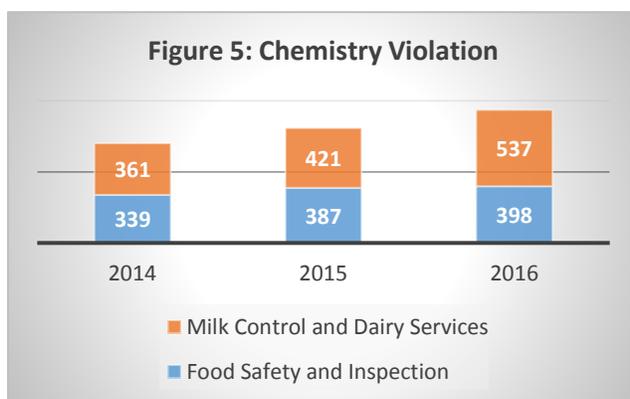
Three of NYSDAM's divisions and NYS Liquor Authority use laboratory results as evidence for their regulatory programs, which includes verifying label accuracy, presence of harmful contamination or investigation of consumer complaints.

Food and Dairy Chemistry Metrics

Figure 3 shows the number of samples received and tested by the Food and Dairy Chemistry laboratory. Samples are collected by Divisions of Food Safety and Inspection, Milk Control and Dairy Services, Plant Industry, and NYS Liquor Authority. **Figure 4** shows the number of testing performed by the Food and Dairy Chemistry over the last three years. Samples are often tested for multiple chemicals and submitted to microscopy analysis.



The following **Figures 5 and 6** show the number of violative samples detected after chemistry testing over the past three years per Department divisions.



Food Safety and Dairy Microbiology

Description:

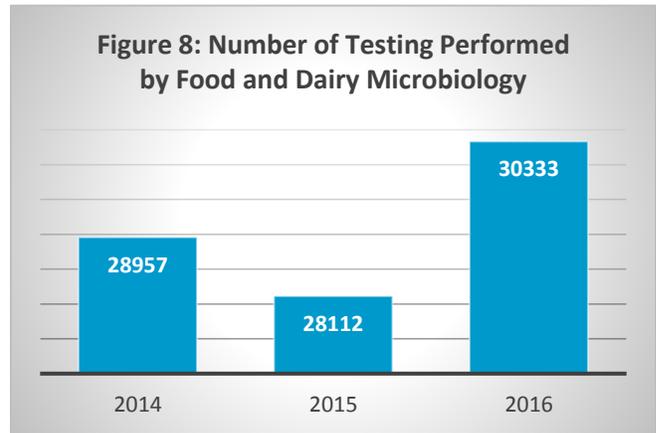
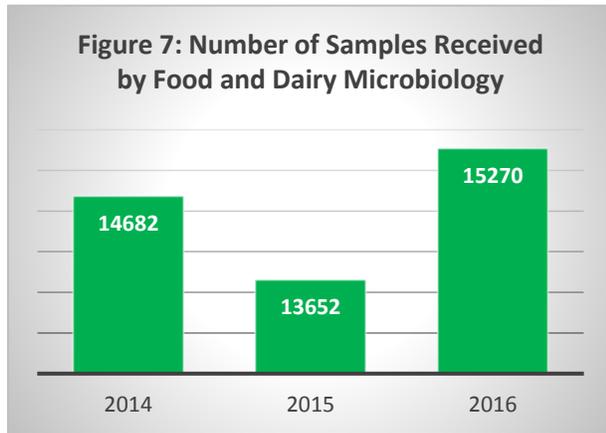
- Samples are analyzed for food and dairy microbiology targeting organisms such as total aerobic plate counts, total coliforms, *E. coli*, *E. coli* O157:H7 and other enterohemorrhagic *E. coli*, *Salmonella enterica*, *Listeria monocytogenes*, *Campylobacter coli* and *jejuni*, *Shigella* spp. *Staphylococcus aureus*, heat stable enterotoxin, yeasts and molds.
- Other analyses include antimicrobials in dairy products, verification of pasteurization efficiency, and direct microscopy examination.

Why it is important:

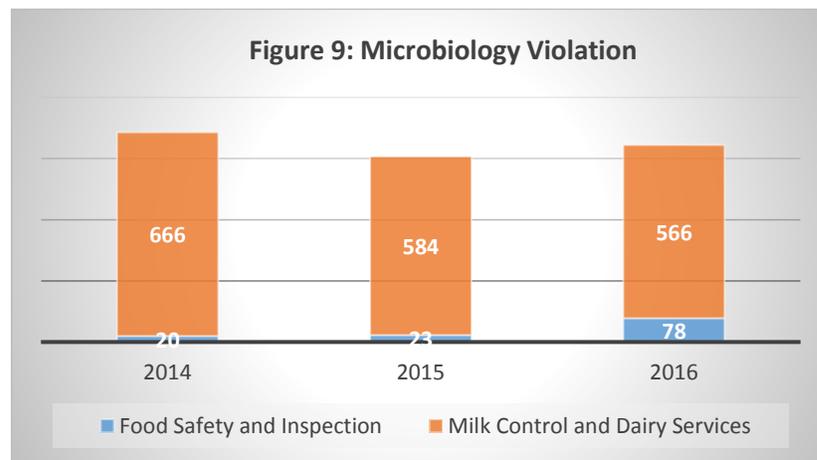
- Three of NYSDAM's divisions use laboratory results as evidence for their regulatory programs which includes verifying label accuracy, presence of foodborne pathogens, insanitary conditions, and investigation of consumer complaints.
- Laboratory played an integral role in investigating several local and multi-state outbreaks of foodborne disease including *Salmonella enterica*, *Campylobacter* spp. and *Listeria monocytogenes*.

Food and Dairy Microbiology Metrics

Figure 7 shows the number of samples received and tested by the Food and Dairy Microbiology laboratories. Samples are collected by Divisions of Food Safety and Inspection and Milk Control and Dairy Services. **Figure 8** shows the number of testing performed by the Food and Dairy Microbiology over the past three years. Samples are often tested on detecting insanitary conditions indicators, foodborne pathogens, antibiotics, etc.



The following **Figure 9** shows the number of violative samples detected after microbiological testing over the past three years per Department divisions.



USDA Pesticide Data Program (PDP)

Description:

The PDP is funded by a cooperative agreement that was initiated in 1991 between the Department and the USDA AMS to test fruit, vegetables, dairy products and other food samples for pesticide residues.

- Similar contracts exist with nine other states – California, Colorado, Florida, Maryland, Michigan, North Carolina, Ohio, Texas, and Washington.
- Data are used by federal agencies for policymaking, regulatory and educational purposes.
- The program is dynamic and the targets for analyses frequently change as new pesticides are introduced to the market.
- The program has allowed the laboratory to become an international leader in the development and application of new technologies.
- The program has allowed the laboratory to expand its expertise in identifying and confirming low levels of pesticide residues, benefiting other programs in the Department and the laboratory through training opportunities and instrumentation.

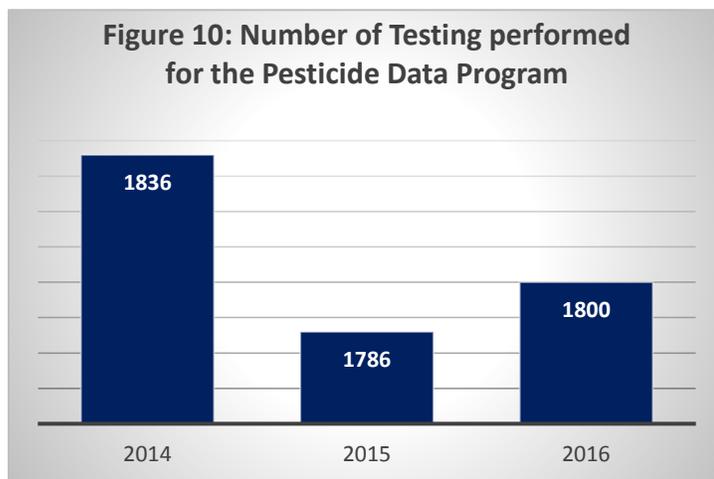
Why it is important:

- Enable the U.S. Environmental Protection Agency (EPA) to assess dietary exposure.

- Facilitate the global marketing of U.S. agricultural products.
- Provide guidance for governmental agencies to make informed decisions.

USDA Pesticide Data Program Metrics

Figure 10 shows the number of samples received and tested for the Pesticide Data Program by the PDP laboratory. Samples are collected by PDP participants and samples are sent to designated laboratory. In 2014, PDP laboratory tested green beans, celery and dairy-based products; while in 2015 and 2016 tested for potato, tomato and spinach for over 200 over pesticide residues covering a spectrum of compound classes: Halogenated, Benzimidazole, Organophosphorus, Carbamate, Organonitrogen, Imidazolinone, Imidiazoles, Pyrethroids, and Triazoles.



Program reports and other information can be found at <https://www.ams.usda.gov/datasets/pdp>.

OTHER PROGRAMS

Training

The Food Laboratory hosted food microbiology trainings in collaboration with the College of Saint Rose. Laboratory staff participated in substantial internal and external training to develop knowledge and expertise in food testing and regulatory food safety.

Research

PFOA and PFOS in food

Following the discovery of PFOA (perfluorooctanoic acid) and PFOS (perfluorooctanesulfonate) contamination in Hoosick Falls NY ground water, there was a need to measure PFOA and PFOS in food products to insure they did not contain these compounds, likely to happen through contact with contaminated water or soil. Few published methods exist for the determination of these compounds in milk and other food samples. In response the need, the Food Laboratory developed and validated a sensitive and selective method to test PFOA/PFOS for milk and maple syrup. The resulting method was a single laboratory validated and is used as requested.

Illegal Dyes in Food

In an expansion of the illegal colors program an investigation was initiated to determine if toxic industrial dyes could be detected in a variety of food products. With the use of several extraction techniques followed by analysis using UPLC-MS/MS a method was developed and validated for the detection of 30 industrial dyes in food. This method has been applied to hundreds of food samples over the last few years and has prompted

the FDA to focus on this nationwide food adulteration issue. Interest in this method and the widespread fraud it has revealed has resulted in many invitations for the principal investigators to speak on this subject at scientific conferences.

NCIMS Split Sample Program

The Nation Conference of Interstate Milk Shipments (NCIMS) requires that all laboratories testing milk that is to be shipped across state lines be analyzed in NCIMS certified laboratories. Participating in annual proficiency testing plays a critical part of this certification. The Food Laboratory has developed a method and annually prepares the proficiency samples for all of the dairy laboratories that are certified by NY for the NCIMS program. In addition, the states of CT, MA, NJ, PA, and VT contract with NY to have the proficiency samples we prepare shipped to the certified laboratories within their states.

GenomeTrakr Whole Genome Sequencing (WGS) Program

The FDA's GenomeTrakr network is the first distributed organization of laboratories to employ whole genome sequencing for microbial pathogen identification. It is comprised of public health and university laboratories, both domestically and internationally, that collect and share genomic and geographic data derived from foodborne pathogens including *E. coli*, *Listeria monocytogenes*, and *Salmonella enterica*. Whole genome sequencing is inexpensive, easy to use, has identical sample prep for all pathogens, and is the most accurate and high resolution subtyping technique currently available. The data, housed in public databases at the National Center for Biotechnology Information (NCBI), can be accessed by researchers and public health officials for real time comparison and analysis that promises to speed foodborne illness outbreak investigations. The Food Laboratory has full implementation of the program and is a contributing member of the GenomeTrakr network.

NOTABLE ACHIEVEMENTS

Collaboration Between Food Safety and Inspection and Food Laboratory

- As part of NYS Grown & Certified program, samples collected by the Department food inspectors and subsequent analysis of the product by the Food Laboratory revealed the elevated level of lead in ground turmeric. In July 2016, two lots of the product were recalled nationwide.
- In August 2016, the Food Laboratory results revealed that the finished products of curry contained lead. The responsible establishment ceased the production and distribution of the products that used contaminated curry as FDA and the company investigated what caused the problem.

Participation on FDA Mutual Reliance Pilot.

- This pilot is a collaboration between selected States and FDA to improve collaboration and integration. The NYS Mutual Reliance Pilot consist of established good practices on data acceptance between the two agencies. Currently, there are overlapping of activities and procedure inconsistencies in the process to accept laboratory information from a state in order to trigger FDA action. The success of this pilot will improve response to public health issues related to food safety. FDA is not providing any funding for this project.
- In 2016, the Food Laboratory worked with FDA district to develop a checklist to help laboratory results submission. In addition, it received positive feedback concerning methods for detection of *Salmonella* species and *Listeria monocytogenes* and results generated by these methods will be reported to FDA for possible regulatory action nationwide.

FDA ISO 17025 Cooperative Agreement

It was renewed for the 5th and final year (2016-2017). Continuation of the cooperative agreement after the 5th year has not been confirmed. This funding supports staff, travel, laboratory consumables, and services to maintain the ISO accreditation status.

Representing New York State Nationwide

- The Food Laboratory continues to represent NYS in working groups and committees for the following associations: the Association of Official Analytical Communities International (AOAC-I), the International Association of Food Protection (IAFP), Association of Public Health Laboratories (APHL), Association of Food and Drug Officials (AFDO), the American Association of Feed Control Officials (AAFCO), and the American Association of Plant Control Officials (AAPCO).
- Food Laboratory staff continue to serve as peer reviewer for food safety related scientific journals.
- Food Laboratory staff participated in national Partnership for Food Protection workgroups and are leading efforts to implement significant components of the Food Safety Modernization Act (FSMA).
- Food Laboratory continue to be a member of the Food Emergency Response Network (FERN). FERN is a network of university, state and federal laboratories with expertise in testing food for chemical, biological, and radiological hazards in respond to food emergencies.