

A National Approach to Human and Animal Food Laboratory Accreditation

The Importance of FDA's Cooperative
Agreement Program



SEPTEMBER 2017

Table of Contents

Background	3
Benefits of Accreditation	3
Key Drivers of Accreditation	3
Program Implementation.....	4
Association Support for Accreditation	5
Progress Towards Accreditation	8
Success of the ISO Cooperative Agreements.....	8
Utilization of Data from Accredited Laboratories.....	9
Sustaining Accreditation.....	12
Conclusion: A Vision for the Future.....	13
References	14

Background

According to the US Centers for Disease Control and Prevention (CDC), an estimated 48 million people are sickened in the United States each year due to foodborne illness, resulting in 128,000 hospitalizations and 3,000 deaths.¹ The Food Safety Modernization Act (FSMA) gives greater powers to the US Food and Drug Administration (FDA) to protect the nation's food supply, both domestic and foreign and reduce foodborne illness through an integrated national food safety system.² FSMA shifts focus from response to prevention of human and animal food contamination through enhanced partnerships and integration among federal, state, local, tribal and territorial partners.

As an effort to establish national laboratory standards and implement a fully-integrated human and animal food safety system, laboratory accreditation has been identified as a critical element for ensuring the integrity and validity of human and animal food testing to support mutual reliance, or the interdependence and trust shared between parties. Accreditation is a third-party attestation that a laboratory fulfills specified requirements and is competent to carry out specific analytical test methods. Accreditation supports the traceability and accountability of laboratory results submitted to a human and animal food regulatory agency, including FDA, for surveillance, compliance, enforcement and foodborne illness outbreak activities. Investment in laboratory accreditation helps protect the public's health by ensuring that regulatory agencies can act quickly on high quality data.

Benefits of Accreditation

A recent increase in the number of federal, state, local and private laboratories undergoing the accreditation process gives testimony to its value. Given that laboratory accreditation can be an expensive and time-consuming endeavor, accreditation must provide an advantage for the laboratory. Accreditation brings immediate and long-term benefits to a laboratory and its customers via the development and implementation of a robust quality management system resulting in:

- Trained and highly competent laboratory personnel
- Rigorous laboratory practices
- Fewer mistakes and less retesting resulting in cost savings for both the laboratory and customer
- Robust institutional memory through systematic record control
- Data reproducibility and traceability
- Actionable results

Ultimately, an increase in the number of accredited laboratories benefits human and animal food regulatory agencies, including FDA, with:

- Increased testing capacity and capabilities for regulated products leading to a safer food supply in the US
- High quality, defensible data leading to a more fully integrated food safety system

Key Drivers of Accreditation

FDA's commitment to laboratory quality falls in line with other federal agencies' move towards accreditation. Several federal programs require or strongly encourage their contracted human and animal food testing laboratories to be accredited to ISO/IEC 17025,³ an international quality management standard that addresses the general requirements for the competence of testing and calibration laboratories.

The US Department of Agriculture (USDA) Pesticide Data Residue program,⁴ which manages the collection, analysis and reporting of pesticide residues on agricultural commodities in the US food supply, requires

its laboratories to obtain and maintain accreditation to the ISO/IEC 17025 standard and the Guidelines for Laboratories Performing Microbiological and Chemical Analyses of Food, Dietary Supplements, and Pharmaceuticals-An Aid to the Interpretation of ISO/IEC 17025:2005 [Analytical Laboratory Accreditation Criteria Committee of AOAC International (ALACC Guidelines)].⁵ This cooperative agreement program provided an early push for accreditation of participating state food testing laboratories with some state laboratories achieving accreditation as early as 2004.

Since 2012, the USDA Food Safety and Inspection Service (FSIS) has required laboratories under the Cooperative Interstate Meat and Poultry Shipment Program to have an “at least equal to” state meat or poultry inspection program.^{6,7} For the laboratory, this means:

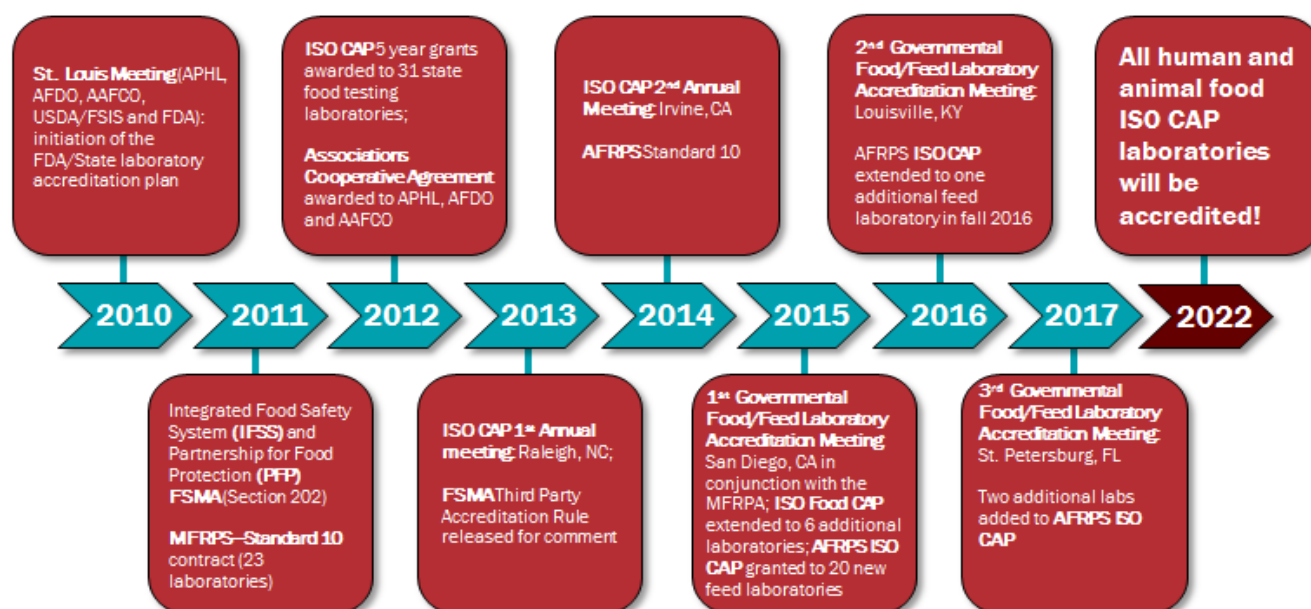
- accreditation to the ISO/IEC 17025 standard and meeting standards outlined in the ALACC Guidelines
- the laboratory is actively seeking, and has provided a timeline for obtaining ISO/IEC 17025 accreditation within two years
- the laboratory has demonstrated that it can meet the criteria in the FSIS laboratory quality assurance checklist⁸ while it seeks to obtain ISO/IEC 17025 accreditation

Under a 2015 FDA Request for Assistance,⁹ Food Emergency Response Network (FERN) laboratories that do not have other FDA cooperative agreement funds to support laboratory accreditation may use up to 20% of their annual award to develop and/or enhance their quality system. These laboratories are encouraged to obtain ISO/IEC 17025 accreditation or adopt a quality system comparable to the international standard. FSIS later included a similar option for laboratories funded for FERN activities through USDA.¹⁰

Program Implementation

Before FDA implemented the ISO cooperative agreement program, there were less than 25 accredited governmental food testing laboratories, including state, local and federal laboratories. In 2012, FDA provided five-year cooperative agreements to 31 state laboratories that perform testing for the Manufactured Food Regulatory Program Standards (MFRPS)¹¹ to achieve (23 laboratories) or enhance (eight laboratories) ISO/IEC 17025 laboratory accreditation.¹² In 2015, an additional six food testing and 20 animal food testing laboratories were awarded five-year cooperative agreements to advance their efforts towards accreditation through conformance to MFRPS and the Animal Food Regulatory Program Standards (AFRPS);^{13,14} in 2016, one more animal food laboratory was funded.¹⁵ Figure 1 shows the anticipated timeline for accreditation in each of the aforementioned laboratories.

Figure 1: Timeline of Laboratory Accreditation



In addition to cooperative agreement funding, FDA also provides technical assistance to the awarded laboratories, including:

- one-on-one assistance
- on-site assessments
- evaluation of gap analysis of laboratory quality systems
- a mentor-mentee program
- educational webinars
- collaboration with associations (the Association of Public Health Laboratories (APHL), the Association of Food and Drug Officials (AFDO), and the Association of American Feed Control Officials (AAFCO)) to provide face-to-face meetings for the awardees for sharing best practices and training.

Under the FDA cooperative agreement, accredited laboratories are expected to mentor their peers who are seeking accreditation. This mentoring program allows for the sharing of best practices, experiences and practical knowledge. It also enhances laboratory relationships among states. In addition, laboratories are required to develop sampling agreements with their regulatory program to help ensure integration within the states. These agreements foster proactive communication and planning between the regulatory program and the laboratory. The goal of these sampling agreements is to target high-risk manufactured food items to prevent possible foodborne outbreaks.

Association Support for Accreditation

APHL, AFDO, and AAFCO were awarded funding by FDA beginning in 2012 to facilitate long-term improvements to the national human and animal food safety system by strengthening multi-disciplinary laboratory collaboration.¹⁶ This five-year agreement helps to prepare human and animal food testing laboratories seeking to achieve and enhance ISO/IEC 17025 accreditation by providing publicly available training, tools and

resources, as well as direct assistance to laboratories working towards accreditation without the benefit of FDA funding (unfunded laboratories).

In 2017, ten unfunded laboratories are receiving some level of assistance through an APHL consultant. These laboratories include state public health, agricultural and animal disease research and diagnostic laboratories testing human and/or animal food. These unfunded laboratories are at various stages of their accreditation. They can access the information provided by the associations including the resource sites, discussion board and training. Through travel assistance provided by AFDO, these laboratories participated in the 2015, 2016, and 2017 Governmental Food and Feed Laboratories Accreditation meetings.

Since 2012, 14 association-led member work groups comprised of over 100 individuals have been working on eight specific aims of the cooperative agreement. Through this work, the associations share a common goal of contributing to an integrated human and animal food laboratory system in the US through several key activities including:

- Hosting and continuously expanding a website of accreditation resources, which includes over 250 documents on accreditation provided by laboratory staff in governmental human and animal food laboratories across the country.¹⁷
- Hosting a Discussion Board, on-line forum for state and local laboratory professionals to exchange information related to accreditation to ISO/IEC 17025.¹⁸
- Providing direct technical assistance to unfunded laboratories identified by FDA as having a proven commitment to seeking accreditation.
- Publishing of a white paper that outlines best practices for laboratories to encourage data acceptance by end users.¹⁹
- Developing and training on improved sampling methods, including the creation and publication of Guidance on Obtaining Defensible Samples (GOODSamples)²⁰ and the publication of open source articles on sampling in the Journal of AOAC International.²¹
- Working to accredit the AAFCO Animal Feed Proficiency Testing Program to ISO 17043 and extension of the scope with additions/supplementation to the program.²²
- Developing and providing trainings in-person and by recorded webinars. The APHL training webpage provides a list of free training webinars and organizations providing training to aid in accreditation.²³
- Revising and releasing the AAFCO Quality Assurance/Quality Control Guidelines for State Feed Laboratories and enhancing the AAFCO proficiency testing program.^{22,24}

Laboratories Benefiting from Direct Assistance from APHL:

- New Hampshire Division of Public Health Services Laboratory
- New Mexico State University, College of Agricultural, Consumer and Environmental Sciences, Animal Health, Food Safety and Biosecurity Laboratory
- South Dakota State University, Animal Disease Research and Diagnostic Laboratory
- Pennsylvania Department of Health, Bureau of Laboratories
- Oklahoma Department of Agriculture, Food & Forestry Laboratory
- Michigan Department of Health and Human Services Laboratory
- Tennessee Department of Health, Division of Laboratory Services
- Hawaii Department of Health, State Laboratories Division
- Washington State Public Health Laboratories
- New Mexico Department of Health, Scientific Laboratory Division

- Updating and dispersing a list of relevant proficiency testing providers for human and animal food testing laboratories.²⁵
- Developing effective and efficient strategies for implementing the suggestions and recommendations of the discovery report and the National Users Group on data exchange and eLEXNET activities.²⁶
- Conducting on-site trainings to laboratories to demonstrate eLEXNET's capabilities and promote the system as a powerful, historical data.
- Conducting outreach activities to promote awareness and adoption of eLEXNET with several workgroups and at various conferences.
- Working with the International Food Protection Training Institute (IFPTI) to develop a national curriculum framework for governmental regulatory laboratories.^{27, 28}
- Hosting the annual Governmental Food/Feed Laboratory Accreditation Meetings, which allow laboratories and regulatory programs to discuss and develop mutually beneficial strategies to address challenges. The associations provide travel support to unfunded laboratories working towards accreditation to attend.

Additional cooperative agreement aims that will help achieve an integrated food safety system include:

1. Working with the Partnership for Food Protection (PFP) to update the Laboratories Best Practices Manual (Draft)²⁹ and facilitating its utilization to increase standardization of laboratory practice.
2. Updating Standard 10 of the MFRPS, released in October 2016, which references regulatory laboratory services and support needed to accomplish program goals.¹¹
3. Maintaining a Subject Matter Expert (SME) Registry³⁰ initially developed by the Manufactured Food Regulatory Program Alliance (MFRPA). The SME database supports the MFRPA's mission of community-building, information exchange, and a national food safety system.
4. Maintaining a Directory of State and Local Officials (DSLO), including laboratory directors, to provide communication links. The DSLO contains regularly updated contact information for state and local regulatory officials involved with food, animal feed, animal health and food defense.³¹
5. Maintaining and updating a Topical Index of Laws and Guidance. This website provides links to resources and documents for the use by regulatory staff, including links to laboratory resources such as standard methods, and sampling guidance.³²
6. Updating AAFCO Guidelines for Preparing Laboratory Samples for the preparation of human and animal food samples for testing, based on GOODSamples.³³

Additional Program Benefits

Fostering strong collaboration among associations, laboratories and FDA is an important building block of an integrated food safety system and an immediate added benefit of the ISO cooperative agreements. Through this work, the associations have committed to leveraging resources to meet the needs of the laboratory community. Quality managers and technical staff working across the country are helping one another resolve daily challenges. Personnel from both ISO/IEC 17025 accredited and non-accredited laboratories are learning from common challenges and sharing best practices. FDA laboratory personnel are working more closely with state laboratory staff, and regulatory food program staff are operating in an atmosphere of collegiality with their laboratory counterparts regarding sampling plans, operating procedures and other common issues. These added benefits are intentional and are leading to immediate outcomes.

All laboratories are making progress towards their accreditation goal, and all but one of the original cohort of 30 laboratories achieved or expanded the scope of their accreditation by August 2017; three laboratories funded in subsequent cooperative agreement programs have already achieved accreditation. Figure 2 shows all of the state agricultural, environmental, state chemist and public health laboratories under the cooperative agreement as of August 2017, as well as those who are working towards accreditation without dedicated federal funding.

Legend:

- States in both ISO and AFRPS CAP
- AFRPS ISO CAP State
- ISO CAP State
- Neither ISO nor AFRPS CAP
- Accredited without dedicated funding
- Labs receiving help from APHL Accreditation Consultants

Success of the ISO Cooperative Agreements

APHL A National Approach to Food Laboratory Accreditation | 8

impact of the associations' resources on their accreditation efforts.

Over three-quarters (77.7%) of respondents agreed that the FDA ISO cooperative agreements improved cooperation between the laboratory and regulatory program staff. One respondent reported that the cooperative agreements have led to "increased partnerships and understanding regarding issues such as chain of custody, standardization, sampling and sample receipt...increased visibility with senior regulatory leadership regarding the importance of quality assurance, [and] the need of costs of standardization and ISO accreditation."

Similarly, laboratory participation in association committee meetings and conference calls and attendance at national meetings were found to be overwhelmingly helpful. Of those respondents who participated in subcommittee or committee work, 93% found them to be helpful for networking with other laboratories. Of those respondents who attended associations meetings or the annual Governmental Food and Feed Testing Laboratories Accreditation meeting, 100% found them to be helpful for training and networking purposes. One respondent said, "It actually gave us additional opportunities to meet face-to-face with our mentor lab, and [was] invaluable for problem solving and brainstorming ways to work around roadblocks and other problems."

The associations have also been successful at marketing their resources and publications. Ninety-four percent of respondents indicated they were aware of *GOODSamples*, and 23.5% reported they were working with a regulatory program that has adopted sampling practices based on *GOODSamples* theory. A vast majority of respondents were aware of the APHL data acceptance white paper (80.0%) and of AFDO's National Laboratory Curriculum Framework (75.0%). APHL accreditation resources were also widely used, including the accreditation discussion board (45.7%), the public accreditation resources (48.5%), the members-only document repository (68.5%) and the accreditation training resources (80.0%). When asked how the resources provided by the Associations cooperative agreement benefited the laboratory, one respondent replied, "The APHL resources are the first place I go to look for answers to a question I might have."

Utilization of Data from Accredited Laboratories

To date, there have been several examples of successful uses of data from accredited laboratories for regulatory action across agencies. Many of these successes are also described in Food Safety Magazine's "Benefits of the ISO Cooperative Agreement Program (CAP) for Food Safety" article.³⁴

FDA avocado surveillance testing reveals *Salmonella*:³⁵

From May 2014 – August 2015, 15 FDA FERN Microbiology Cooperative Agreement Program (MCAP) laboratories participated in an FDA-initiated large volume surveillance assignment analyzing imported and domestic avocados. During their participation in the assignment, FERN MCAP laboratories analyzed more than 1,100 avocado samples for *Salmonella* and *Listeria monocytogenes*. More than 22,000 avocados were tested and positive results supported FDA regulatory decisions.

This was the first time that FDA used state FERN laboratories to perform large-scale produce testing for enforcement action. This assignment ensured technical review and concurrence with analytical results, and reporting data in a timely manner to support regulatory determinations for perishable produce. The use of FERN laboratories for large-scale assignments is a model for a comprehensive national food surveillance system that leverages the resources and expertise of state, county and local food testing laboratories.

Import alerts and recalls-New York State Department of Agriculture and Markets (NYSDAM):

Imported chia powder:³⁶ On June 4, 2014, NYSDAM reported a *Salmonella*-positive imported organic

sprouted chia seed powder product to FDA New York District office. The ingestion of contaminated chia seed powder was linked to a multistate outbreak with 31 infected persons from 16 states. FDA issued an Import Alert on June 11, 2014, based on NYSDAM data nine days after the initial report of analysis, which is an unusually quick turnaround. This successful collaboration between the state and FDA resulted in prevention of future adulterated product from entering United States commerce.

Chinese chicken jerky pet treats:³⁷ Beginning in 2007, dogs who consumed chicken jerky treats imported from China were falling ill with vomiting, diarrhea and decreased appetite—some were even dying. Many of the ill dogs were diagnosed with acquired Fanconi Syndrome, which is caused by heavy metals, certain antibiotics or some antiviral drugs. NYSDAM began testing the implicated chicken jerky treats and identified six antibiotics at varying levels in the samples. The treats contained sulfaclozine, which is not FDA-approved for use in poultry, as well as other antibiotics that exceeded the FDA maximum allowable concentration in edible poultry. NYSDAM worked in collaboration with Veterinary Laboratory Investigation and Response Network (Vet-LIRN) members in the FDA Center for Veterinary Medicine and Cornell University Diagnostic Laboratory, as well as providing data packets and methods for review to FDA New York State District office. In early 2013, a recall of the imported chicken jerky treats was initiated based on the findings of NYSDAM, which resulted in a national recall of several brands. For more on the story, visit [APHL's Lab Blog](#).

Massachusetts investigates *Campylobacter* in raw milk:

In October 2014, Massachusetts investigated an outbreak of *Campylobacter* associated with raw milk from a local farm. At that time, the Massachusetts State Public Health Laboratory (MA SPHL) did not have the capability to test for *Campylobacter* in food or milk. Through a pre-existing mentoring relationship as part of their FDA ISO Cooperative Agreement, the MA SPHL contacted NYDAM, which has an accredited method for *Campylobacter* testing in raw milk. Because the NYDAM test method is ISO/IEC 17025 accredited, Massachusetts state officials were able to accept their positive results and take action to remove implicated products from commerce, and reduce the chance of additional illness. The partnership forged between the two laboratories allowed for accurate and timely results, the removal of contaminated product from the food supply and the sharing of knowledge and experience for future needs. For more details, visit [APHL's Food Safety website](#).

Colorado Department of Agriculture Biochemistry Laboratory (CDA-BCL) discovers staphylococcal enterotoxin in breaded chicken nuggets:³⁸

CDA-BCL conducts routine surveillance of meat products purchased at retail stores as part of their USDA FSIS FERN cooperative agreement activities. In October 2014, microbiologists at the CDA-BCL detected and identified staphylococcal enterotoxin in a sample of gluten-free breaded chicken nuggets. Based on CDA-BCL's findings, which were generated under the scope of their ISO/IEC 17025 accreditation, FSIS began a trace-back of the product. On October 25, 2014, USDA announced a Class I recall, taking approximately 31,689 pounds of product off the market.

South Carolina Department of Health and Environmental Control (DHEC) finds *Listeria monocytogenes* in ice cream:³⁹

DHEC had a sampling agreement between the DHEC laboratory and the regulatory program that included testing of frozen dessert products. On February 12, 2015, the laboratory tested several Blue Bell Creameries ice cream products collected from a South Carolina distribution center for the presence of *Salmonella* and *Listeria monocytogenes*, and discovered two initial positive results for *L. monocytogenes*. Epidemiologists used the PulseNet network to identify illnesses with onset dates ranging from January 2010 through January 2015. A link was discovered between an outbreak of listeriosis in another part of the country and this adulterated ice cream. The strains of *L.*

monocytogenes from ten patients in four states had pulsed field gel electrophoresis (PFGE) patterns indistinguishable from the strains of *L. monocytogenes* found in the ice cream products. On April 20, 2015, Blue Bell Creameries voluntarily recalled all products on the market at that time. For more information, visit [APHL's Food Safety website](#).

Nebraska Department of Agriculture finds *Listeria monocytogenes* in ice cream:⁴⁰

The value and importance of ISO/IEC 17025 laboratory accreditation was abundantly clear when the Nebraska Department of Agriculture Food Laboratory (NDA) found a Jenni's Splendid Ice Cream sample positive for *L. monocytogenes* in April 2015. Likely due to the recall resulting from NDA's findings, no human cases were identified that matched the PFGE pattern of the *L. monocytogenes* type found in the ice cream. Recalling contaminated products before there are human illnesses epitomizes the goal of FSMA: to prevent foodborne illness from happening in the first place. For more information, visit [APHL's Food Safety website](#).

Virginia's Division of Consolidated Laboratory Services (DCLS) discovers *Listeria* in sprouts through targeted sampling and testing:

In March 2015, regulators in Virginia collected soy and mung bean sprouts from various manufacturers to test for *L. monocytogenes*. DCLS isolated the pathogen in a soybean sprout sample, and the manufacturer closed for remediation. The laboratory performed follow up testing to assess on-going risk; DCLS again isolated *L. monocytogenes* and the manufacturer closed for a second remediation attempt. When a third set of samples produced an *L. monocytogenes* positive sample—leading to a third and final recall—the manufacturer decided to cease production and closed permanently in November 2015. During this targeted sampling, DCLS tested more than 200 samples in an eight-month period in addition to their regular sample load. For more information, visit [APHL's Food Safety website](#).

Ohio Department of Agriculture (ODA) discovers *Listeria* in products through targeted sampling:

ODA recognizes the importance of accreditation and collaboration with its public health counterparts. In January 2016, ODA tested packaged salad as part of their routine sampling plan and isolated *L. monocytogenes* from a packaged salad manufactured in Springfield, OH. ODA asked the Ohio Department of Health (DOH) to perform whole genome sequencing (WGS) on the isolates, which revealed that the *L. monocytogenes* isolated was a close genetic match to isolates collected from 19 people in nine states, including one death.

Identifying contaminated food products is not unusual for ODA laboratorians. In April 2016, laboratorians at ODA tested frozen vegetable products for microbiological contamination and isolated *L. monocytogenes* from corn and peas. ODA again asked the Ohio DOH to perform WGS, which revealed a linkage to nine human illness cases, including three deaths. The manufacturer recalled over 350 consumer products sold under 42 separate brands; other companies recalled almost 100 additional products that contained these ingredients. For more information, visit [APHL's Food Safety website](#).

Through collaboration, teamwork, optimizing laboratory services and facilitation of the exchange of information, integration is happening. Laboratory accreditation is one of the factors enabling integration based on building

trust in state-derived data. With a level of trust built nationally, these examples of integration will be the norm and not the celebrated exception.

Sustaining Accreditation

As of August 2017, all but one of the laboratories initially funded in 2012 under the ISO CAP program have achieved or enhanced their scope of accreditation. Three laboratories funded in subsequent cooperative agreement programs, as well as several unfunded laboratories, have achieved or expanded their scope of accreditation. However, many laboratories will face the major challenge of sustaining their accreditation if dedicated grant-funding ends. FDA released a funding-opportunity announcement in March 2017, and has provided funding for 29 ISO CAP laboratories from September 2017 through June 2019.⁴¹ Nonetheless, laboratories must develop a long-term, sustainable plan for maintaining accreditation with little or no federal funding. Developing this sustainability plan is required as part of the laboratories' cooperative agreements. A key component to success will be the buy-in of organizational management.

As previously mentioned, some laboratories recognize the importance of ISO accreditation and have achieved accreditation without dedicated federal funding. However, it is likely that some laboratories will require outside funding to maintain and/or expand their scope of accreditation. It is also possible that laboratories will not be able to pay for some aspects of accreditation (e.g., full-time quality manager, proficiency tests or third-party audits) even if they maintain a quality management system. In order to maintain accreditation, laboratories may have to fund accreditation by reducing services, reducing staff and cutting travel for continuing education and technical trainings—all items themselves needed to ensure quality data.

In collaboration with FDA, the associations have discussed ways forward with their members to maintain accreditation with more limited funding. In January 2017, APHL sent a letter to FDA encouraging some level of continued funding for the ISO CAP laboratories to sustain their ISO programs and maintain their accreditation.⁴² The previous year, AFDO created a resolution that affirmed that FDA should work with the states to determine an appropriate level of federal funding for laboratories participating in the cooperative agreement program, which would help in sustaining or expanding the laboratories' accreditation.⁴³ One possibility is the development of a shared cost model for funding. In July 2017, APHL launched a survey to collect data that demonstrates the level of funding needed to maintain and/or expand a laboratory's scope of accreditation. From these findings, a scalable model based on need could be developed to potentially allocate essential funding from the federal level.

Laboratories may also consider revenue-generating opportunities to support their accreditation costs. Given that state and federal funding may not be available or may be significantly diminished, laboratories may look to implement or expand fee-for-service testing. While this may not be a possibility for all states due to legislative or generated revenue restrictions, fee-for-service testing may be a solution for some human and animal food testing laboratories.

Decreased funding may require laboratories to think outside the box to find additional resources. Laboratories often use grant funding in part to hire staff to accommodate the requirements of accreditation. One alternative to consider is utilizing paid and/or unpaid interns. While interns may not be able to test patient samples due to licensure requirements, they have proven valuable in other areas of public health laboratory testing. Interns can aid with and perform method validation studies, sample intake and auditing, and often are able to work up to 20 hours per week. Establishing a good relationship with a nearby college or university can provide a steady source of help and can introduce subsequent generations of students to the public health field. Alternatively, the laboratory can consider the use of experienced retirees.

Communicating successes linked to accreditation is essential in showing the impact that being an accredited

laboratory can have on the advancement of an integrated food safety system. Identifying the value-added features of ISO accreditation, such as increased confidence in laboratory data, decreased sample run-repetition rates, decreased laboratory turn-around time and continuous improvement, will also be key to showing the monetary benefits of implementing the ISO standard in the laboratory. Investment in governmental laboratory accreditation for the nation's regulatory human and animal food testing laboratories strengthens the mission of protecting the public's health.

From its inception, the associations' cooperative agreement was designed to create products and resources that would be sustainable beyond the five-year funding cycle. These products and resources can also be cross-utilized for laboratories other than human and animal food testing laboratories. APHL, AFDO and AAFCO will continue to offer accreditation resources through our normal member services channels. Some products, such as the National Laboratory Curriculum Framework^{17, 18} and accreditation of AAFCO's proficiency testing program¹⁴ will remain ongoing as funding permits. The associations anticipate that many of the current committees will evolve to meet the on-going needs of our member laboratories.

The associations will explore available funding opportunities to continue our work in support of human and animal food testing laboratory accreditation. Laboratories wishing to find out more about accreditation or how to access the resources available through the associations can contact APHL (foodsafety@aphl.org), AFDO (afdo@afdo.org) and AAFCO (aafco@aafco.org).

Conclusion: A Vision for the Future

Laboratory accreditation has been identified as a critical element for ensuring the integrity and accuracy of testing results. A national network of laboratories that are accredited to an agreed upon standard is foundational to an integrated food safety system working collaboratively to reduce the burden of foodborne illness and enhance the public's health. The 59 human and animal food testing laboratories funded to seek or expand their scope of accreditation, and additional laboratories devoting their own resources towards accreditation, have made great strides towards achieving the ISO/IEC 17025 standard. Through these accreditation activities, laboratory data acceptance has improved and regulatory actions that protect American consumers have been taken based on state findings. The associations' collaborative efforts with FDA have ensured that the number of accredited governmental human and animal food testing laboratories increased within the five years of the cooperative agreement and beyond, and that successful data sharing among agencies will improve.

Sustaining these achievements will require extensive collaboration and coordination among the three associations, federal partners, and a wide range of stakeholders. Collaboration is more than the presentation of information and the exchange of ideas. It is a strengthening of the laboratory community and the building of trust. The long-term goals of these cooperative agreements include implementation of the *PFP Laboratory Best Practices Manual (Draft)*²⁹ and the MFRPS¹¹ and AFRPS¹³ laboratory standards, increased laboratory

Desired Program Outcomes:

- Increased number of accredited regulatory human and animal food testing laboratories
- Increased regulatory testing capacity by accredited laboratories
- Harmonized laboratory standards throughout the country
- Increased data sharing and data acceptance for regulatory action
- Enhanced federal-state partnerships in building the nation's integrated food safety system
- Increased collaboration among the community of regulatory laboratories testing human and animal food
- Improved sampling methods implemented in the human and animal food regulatory field
- Harmonized career-spanning educational opportunities for regulatory human and animal food laboratory professionals
- Increased public health protection

participation in national surveillance programs, and greater use of state data for regulatory action. By facilitating long-term, permanent improvements, the work completed through these cooperative agreements will advance public health initiatives beyond the five-year funding cycle and improve the safety of the US food supply.

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Association of Public Health Laboratories

The Association of Public Health Laboratories (APHL) works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, terrorist agents, genetic disorders in newborns and other diverse health threats.

This project was 100% funded with federal funds from a federal program of \$1.5 million. This publication was supported by Cooperative Agreement #1U18FD004710 from the US Food and Drug Administration (FDA). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of FDA.



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