FINAL: September 30, 2019

Laboratory Methods and Services Committee Report/Minutes

AAFCO Annual Meeting
August 6, 2019 9:30 – 5:30 PM, Louisville, KY
FINAL

Committee Recommendations
Committee recommendation summary or list.
(1) None

Board Recommendations
Board recommendation summary or list.
(1) None.

Association Actions
Association action summary or list.
(1) None.

Committee Participants
Members Present:

Josh Arbaugh	West Virginia Dept. of Agriculture
Ametra Berry	Georgia Dept. of Agriculture
Deepika Curole	Louisiana Dept. of Agriculture
Manisha Das	FDA/CVM/Division of Animal Feeds
Sally Flowers	Nebraska Dept. of Agriculture
Teresa Grant	North Carolina Dept. of Agriculture
Tai Ha	Nebraska Dept. of Agriculture
H. Dorota Inerowicz	Office of the Indiana State Chemist
Robin Johnson	Montana Dept. of Agriculture
Mary Koestner	Missouri Dept. of Agriculture
Dominika Kondratko	Colorado Dept. of Agriculture
Mark LeBlanc	Louisiana Dept. of Agriculture
Patty Lucas	Florida Dept. of Ag and Consumer Services
Kristi McCallum	Colorado Dept. of Agriculture
Rebecca Moseley	Alabama Dept. of Agriculture
Brenda Snodgrass	Oklahoma Dept. of Agriculture
Michele Swarbrick	Minnesota Dept. of Agriculture
Lei Tang	FDA/CVM/OF/CVM/OSC/DAF MPN4
Nancy Thiex	Life Member
Sharon Webb	University of Kentucky Regulatory Services

Advisors Present:

BJ Bench	Tyson Foods
Jeff Horst	Agri-King
Alexis Huyghues-despointes	JM Smucker
Paul Mostyn	Westway Feed
Lars Reimann	Eurofins
Ken Riter	Nestle-Purina Analytical Labs/PFI
Leo Schilling	Eurofins
Liberty Sibanda	Randox Food Diagnostics

Committee Report

Committee Activities

ACTION: None

Sub-Committee Activities

ACTION: Update the 2014 AAFCO Quality Assurance/Quality Control Guidelines for Feed Laboratories to comply with ISO17025:2017

Committee Minutes

1.) Call to Order by Kristi McCallum at 9:30 AM EST.

The agenda was approved.

Introductions – A meeting sign-in sheet circulated to attendees.

2.) Committee roster was reviewed and updated. Kristi McCallum removed members and advisors who retired or no longer wished to serve on the committee.

3.) Advances in Veterinary Drug Multi-residue Methods using High Resolution Mass Spectrometry – Sherry Turnipseed, FDA

a. Sherry Turnipseed from FDA-Animal Drugs Research Center gave a presentation on the advances in veterinary drug multi-residue methods using high resolution mass spectrometry/orbitrap with heated electrospray (HRMS). By 2030, over 50% of all fish sold will be farmed (aquaculture) and much will be imported in from other countries. Veterinary drugs, approved in EU and Japan, can be of concern in residue levels in imported foods such as farmed fish. Residue levels of drugs and antibiotics can have acute and chronic effects in humans. Most current LC/MS/MS methods are target specific; however, high resolution mass spectrometry allows the analyst to look for an unlimited number of compounds in various matrices. FDA validated a screening method for 70-100 of the most likely used drugs, and semi-targeted ~450 additional drug compounds. After analyzing the test samples, they applied the method to “violative” regulatory samples and incurred fish from CVM. These samples compared well with the “original” results. Next they validated for other chemical contaminants such as disinfectants, pests, human pharmaceuticals, etc. This method could potentially be used by state laboratories for animal feeds.

4.) Update on Mycotoxin Multi-laboratory Collaboration using Randox Multiplex Biosensor – Liberty Sibanda, Randox

a. Liberty Sibanda presented data on the collaborative study done following the AAFCO Mid-year meeting involving 14 state agriculture laboratories using the Randox multiplex biosensor biochip array technology.

b. Nine state agriculture laboratories participated in the collaborative study. Randox provided the instrumentation, training and test kits to each participating laboratory. The samples used in the study were previously analyzed AAFCO Proficiency Test mycotoxin samples provided by the Missouri Department of Agriculture.

c. In this collaborative study the Evidence Investigator Biochip Myco 7 Array was assessed for performance according to the Association of American Feed Control Officials' (AAFCO) set Method Performance Criteria. There were 17 samples analysed in total. One method was used with the main goal of assessing the reproducibility of the method. Reproducibility was assessed by means of Z-Scores since the collaborative study was structured in a PT format, as well as HorRat Values. For the purposes of this study a Z-Score interval of **-2 | Z | +2** and a HorRat Value range of **< 0.3 HorRat ≤ 2** were used.

d. There was a 99% Z-Score for Fumonisin analysis with a corresponding HorRat Value of 2.13 (>2) for one of the 17 samples. Ochratoxin A (OTA) had a 99% Z-Score pass, and HorRat rate of 88% due to 2 of the 17 samples which recorded HorRat values <0.3. Aflatoxin G1and G2 had a 99% Z-Score pass rate, however, 2 samples of the 17 had <0.3 values. There was a 100% pass for both Z-Scores and HorRat Values for DON, while T-2/HT-2 Toxin had 3 laboratories failing Z-Scores (Laboratories 1, 3 and 4), with a 100% pass for HorRat Values. Aflatoxin $B_{1,2}$ had a 99% pass rate for Z-Scores, with only one sample recording a HorRat value <0.3. There was a 98% Z-Score pass for Zearalenone (ZEA) while only one of the 17 samples failed the HorRat with a value of <0.3. This data illustrated that the Evidence Investigator Biochip Myco 7 Array test met the performance criteria under these collaboration study conditions and is therefore *fit-for-purpose* for use.

e. Randox has written a report which will be uploaded to the AAFCO LMSC website page. This instrument also has additional platform capabilities for THCs/CBDs, vet drug residues and pesticides.

5.) Rick Hendrick from Milestone shared information about their simplified sample prep microwave digestion for ICP. They have units for digestions, extractions, synthesis, ashing and direct mercury analysis. The microwaves do not vent, so there is no loss of the more volatile analytes, such as mercury. With the direct mercury analyzer, there is no sample prep and there are three configurations based on levels of concentration.

6.) FDA Cooperative Agreement – Robin Randolph, APHL

a. APHL is working under a bridge extension agreement for ISO17025 accreditation and resources, including training for Genome Trakr and *Good Test Portions*, success stories on how accreditation has helped laboratories strengthen their defensibility and confidence in data.

b. There are two ISO17025 accreditation resource libraries available to laboratories; one for 2005 and one for 2017. There is a GAP analysis for the two standards, a PT provider list and guidance documents such as best practices for data acceptability. They are currently working on a regulatory compliance review checklist.

c. Through the cooperative agreement, they have been working with 11 laboratories to help them with the accreditation process – two laboratories have been accredited and one close to being accredited.

d. There will be a GenomeTrakr meeting 9/17-9/18 and GalaxyTrakr training 9/16-9/17.

e. APHL worked with AAFCO for three additional *Good Test Portions* trainings and have funds for four additional 2-day trainings. Contact Nancy Thiex is your agency is interested in hosting a training.

f. The IFPTI lab curriculum framework is being built-out for the entry level content. The committee is currently working on Aseptic Technique and Basic Foodborne Pathogens. The committee is in need of help with the Dairy Regulatory and Shellfish programs. If you are able to assist, please contact Robyn Randolph at APHL.

7.) Laboratory Sampling and Application of *Good Test Portions* – Nancy Thiex and NY Dept. of Agriculture
   a. Nancy Thiex discussed lab sampling activities. There will be a *Good Test Portions* training at the Denver, CO AOAC meeting on 9/7and 9/8.
   b. Patti Lucas asked what is needed to host a training. Nancy said ~20 participants, a training room with tables (2 per table), and PowerPoint presentation capability. She stated it would be good to have access to a lab, but not necessary.
   c. Nancy is developing a course flyer and pursuing success stories.
   d. There is a pilot sampling PT coming up. So far, 14 labs have indicated an interest in participating. See AAFCO PT committee minutes for more information.
   e. The New York Department of Agriculture gave a presentation of the application of *Good Test Portions*. They eliminated the use of the Jones riffler and began grinding the entire sample. They added a vacuum and container to the mill to aid in grinding the entire sample. NY reported that it takes ~ 55 minutes to grind the entire sample and clean in between samples.

8.) Quality Assurance Sub-committee Topic: Crosswalk 2005 ISO17025 and the New ISO17025:2017 Standard to Update the AAFCO QA/QC Manual.
   a. Sharon Webb and her colleagues have developed a cross-walk between the two standards.
   b. Kristi McCallum and Sharon Webb will revise the AAFCO QAQC Manual to meet the new ISO17025:2017 standard and will send it out in "Draft" form to the Quality Assurance Sub-committee for review. The revision will be done by the AAFCO 2020 Mid-year Meeting.

9.) AOAC Update – Palmer Orlandi, AOAC
   a. AOAC is changing their business model to address growing needs, new standard development and affordability. This new harmonized program has an Analytical Solutions Forum, which gives an opportunity for open discussion to stimulate participation and gain multiple perspectives. The Forum wants to look at the most pressing needs and then bring the right people (stakeholders) together to address. They want to define problems before they are a health risk, help overcome barriers, and look to share costs/resources between stakeholders with the same needs. They have developed Advisory panels (funders) to help establish priorities, but not drive the science.
   b. AOAC will give an overview of the current programs, have an emerging issues roundtable and look at issues just above the horizon to use to develop the agenda for the annual meeting.
   c. AOAC launched three new programs for the midyear meeting – Furans, Cannabis/Hemp and Food Authenticity (olive oil, honey and milk products).
   d. AOAC wants to revitalize efforts for education and training, update outdated methods and start to lay the groundwork for "AIM" – the Alternative International Methods and Standards Program. AOAC hoped that AIM will improve the way that AOAC approved for ISO methods. They need a larger body of SMEs, so let them know if you are interested.

10.) AOAC Updates, Completion of NASDA, PFP, Acceptance Documents – Nancy Thiex
   a. Nancy Thiex gave miscellaneous updates. The Lab Curriculum framework is a great resource for AAFCO labs; contact Robyn with APHL if you want to be a reviewer. Patty Lucas said it will be a great tool to utilize for training. Nancy said the ethics training will be coming out soon.
   b. Nancy stated the AOAC sugars method 2018.16 is with the copy editors and the Fructan Assay kit method is a first action 2018 method 2018.07 and in the JAOAC. 2 new methods are coming soon – 6 common sugars by LC/MS and Determination of sugars in animal feed, pet food and human food by IC/PAD.
   c. Nancy said there is a Preventive Control animal feed (PCAF) checklist that is very generic

but will give good information to evaluate any new lab initiative.

11.) Moisture Best Practices Workgroup - Teresa Grant, Michael Richardson, Lawrence Novotny, Bozena Draczynska-Lusiak
   a. Lawrence gave a brief presentation on the progress of the moisture best practices study. Lawrence is obtaining 6 test materials to comminute and split for shipment to participating labs. The samples will include dry dog and cat food (6-10% moisture), semi-moist dog and cat food (20-30% moisture), and wet dog and cat food (60-80% moisture). Participating labs will analyze in duplicate by Karl Fischer at each of the following times – 15 min 30 min, 1 hour, and overnight**. Lawrence needs laboratory participation with the requirements that each participating laboratory must have their own KF equipment. The objective of this study is to find optimized conditions to present as best practices. If your laboratory is interested in participating, please contact Lawrence Novotny.**

12.) Working Group updates
   a. There was a brief discussion as to what method needs should be addressed. Nancy suggested sampling; looking at what is out there and what might improve productivity without compromising accuracy. Thought it would be good to have a brainstorming group before labs invest a lot of money in equipment. She also mentioned there are better ways to store samples than bottle, such as flat pans/trays.
   b. CTC – Leo Schilling gave a CTC method update. Eurofins used the AOAC2008.09 OTC method, but modified the injection volume and % gradient. The next steps are method trials, revising method, SLV in all applicable matrices and method transfer protocol to participating labs. Nancy Thiex mentioned the possibility of adding notes or minor modifications to the methods. Nancy stated AOAC AIM should have a way to sort this out, rather than performing a full validation.
   c. Fat soluble vitamins – Dorota Inerowicz gave an update on fat soluble vitamins (A&E). Seven vitamin premix samples were sent to Microtrac Particle Analysis Lab, and they found the particle size varied greatly for most of the samples. The Good Test Portions document was used to relate the fundamental sampling error (FSE) to sample mass for a given particle size. The calculated sample mass was highly dependent on particle size. A study for Vitamin A will be performed at the MN Department of Ag using 10g and 100g test portions. The data will be presented at the midyear meeting.
   d. Multi-element metals – Michele Swarbrick updated on multi-element metals, stating they are working on Best Practice recommendations for metals.
   e. Mycotoxins – No update from working group members

13.) Method Needs Discussion – All Members and Advisors
   a. A method needs survey was sent out to the state laboratories and program officials. The results of the survey showed 36 state programs responded and 43 laboratories. The programs responded that method priorities were needed for microbiology, prohibited materials, vet drugs and mycotoxins. Common priorities between the lab and programs were microbiology, vet drugs at formulation levels, multi-analyte mycotoxin confirmation, multi-analyte pesticides, vet drugs residue levels and fat-soluble vitamins. Nancy needs helpers for further evaluation as the data collected from this survey was extensive. Email Nancy, Sharon or Kristi by the end of the month if you are interested. Kristi stated that this was a bigger issue than just our committee. We need collaboration with other AAFCO committees.
   b. B.J. Bench from Tyson Foods mentioned that we need to look at peroxide values (PV). The Pet Food Alliance is looking at PVs and would like standardization on PV assessment. AOCS is heavily engaged now. Due to oxidation of fats, they need to be extracted out to get the right PV. A question was raised to addition of peroxide values to the AAFCO PT pet food scheme and if so, how could the AAFCO PT program keep this

PT for peroxides only for US participants.

14.) Adjournment

Action Item Table

Responsible	Item #	Action	Timing / Status
K McCallum S Webb	2	Update committee roster based on recent changes and submit to AAFCO BOD	Submitted August 30, 2019
K McCallum S Webb	8	Update the 2014 AAFCO QA/QC Guidelines for Laboratories	Beginning of 2020 prior to Mid-year

Appendix

Attachments:

For a list of presentations given during this meeting, please see the AAFCO Laboratory Methods and Services committee website at the following link:

https://www.aafco.org/Regulatory/Committees/Laboratory-Methods-and-Services#minutes