

# **CHEMICAL CONTAMINANTS & RESIDUES IN FOOD COMMUNITY**

**BRINGING SCIENTISTS AND  
INDUSTRY TOGETHER TO  
DEVELOP AND VALIDATE  
BETTER METHODOLOGIES**

# MEETING AGENDA

## MONDAY SEPTEMBER 9<sup>TH</sup>

- Welcome and introductions – Vicki & Cheryl
- Updates from sub-groups  
Metals, Veterinary Drugs, Environmental & Emerging contaminants, and Pesticides
- Review of AOAC activities of interest to the community – Vicki
- Analytical Solutions Forum – Vicki
- Biotoxins – Cheryl
- Discussion – what topics are important to you? - group
- NACRW working groups  
Standards – Joe  
PERFORM – Vicki
- Upcoming meetings of interest - Vicki



- Attendance sheet for the meeting is being distributed; give an e-mail address and you will be included in all communications
- Community website hosted by NACRW  
<https://www.nacrw.org/community>
- Community e-mail address  
ContaminantsCommunity@gmail.com

# COMMUNITY MISSION

- **To establish an infrastructure to meet the needs of scientists involved with the analysis of food for chemical contaminants and/or residues**
- **To represent scientists from countries across the globe who are dedicated to the protection of the food supply from harmful chemicals whether they be from intentional, natural or accidental contamination**
- **To engage the community from international, federal, and state governments, academia, industry, business, and trade associations**
- **To establish a forum where stakeholders can introduce new needs and resolve method problems with international input**

# **COMMUNITY MISSION CONT.**

- **To guide and supervise the prioritization, development and validation of analytical methods for the detection, identification, and/or quantification of chemical contaminants in food matrices which are acceptable to governments and industry worldwide**
- **To provide confidence in analytical results as used by food regulators and food industry representatives alike for many purposes including public safety and security of the food supply, quality control and transparency of methods impacting trade**

# **COMMUNITY SUB-GROUP INTRODUCTIONS GOVERNOR'S SQUARE 11**

- **Metals**  
Kevin Kubachka – FDA      Meeting at 1:30 – 3:00 pm  
Tuesday September 10<sup>th</sup>
- **Veterinary Drugs**  
Eric Verdon – ANSES      Meeting at 6:15 – 7:45 pm  
Jian Wang – CFIA      Tuesday September 10<sup>th</sup>
- **Emerging contaminants**  
Thierry Delatour – Nestle      Meeting at 4:30 – 6:00 pm  
Tuesday September 10<sup>th</sup>
- **Pesticides**  
Ping Wan – OISC      Meeting at 11:45 – 1:15 pm  
Tuesday September 10<sup>th</sup>

## 1. Introduction

Sign-up sheet. The chairs will include everyone in the email distribution list to receive future subgroup updates.

## 2. Ongoing Collaborative Studies

- AOAC Collaborative Study: nDATA (non-Target Data Acquisition for Target Analysis) Workflow for Screening Pesticides in Fruits and Vegetables by Jon Wong, FDA and Jian Wang, CFIA.

## 3. Topics of Discussion

- **Pesticides in cannabis**  
A very active AOAC cannabis working group. Cannabis symposium on Saturday 9/7. Check AOAC website for more information regarding the workgroup progress.
- **Future collaborative study on glyphosate**
  - Many methodologies available
  - There were 10 attendees at last year's AOAC meeting expressed interest in participating in the collab. study. Need study director(s)!
- **Acid herbicides methods**
  - There are currently no AOAC official methods available. The community definitely have a strong interest in having a standardized method.
  - Dicamba agriculture crisis during the past three years: method needs to include Dicamba and its two major metabolites due to the short half-life of Dicamba. Eight labs at last year's meeting had some experience in acid herbicides analysis.
  - Method candidates/representative matrix to be studied?

## 4. Chinese study update: Multi-Residues Screening Method for 765 Pesticides in Fruits and Vegetables

Guo-Fang Pang

Chinese Academy Inspection and Quarantine, P.R. China

## 5. Future Meeting

- NACRW - July 26-29, 2020 Fort Lauderdale, FL
- AOAC - September 13-16, 2020, Orlando, FL

## Metals Sub-group Topics

Tuesday, September 10, 2019, 1:30-3:00 PM

Room: Governor's Square 11

Status of metals related methods for OMA consideration:

- 2015.01 – Elemental analysis in foods
- 2016.04 – Arsenic speciation in juice

Follow-up Questions for speakers from “Recent Trends in Elemental Analysis Applications” session

US FDA elemental analysis activities

Expert Review Panel related to metals analysis

Needs of the community

- Desired methods
  - Matrices of interest
  - Elements of interest
- Reference materials needed

General Discussions and future status of Metals Community Subgroup



**Chemical Contaminants & Residues in Food Community  
Subgroup – ‘Environmental & Emerging Contaminants’**

**Tuesday, September 10<sup>th</sup>, 2019**

**4:30 p.m. to 6:00 p.m.**



**133<sup>rd</sup> AOAC Annual Meeting & Exposition  
Denver, Colorado  
September 6 – 12, 2019**

# Chemical Contaminants & Residues in Food Community

## Subgroup – ‘Environmental & Emerging Contaminants’

### Agenda

- 4:30 p.m. to 4:40 p.m.  
Introduction
- 4:40 p.m. to 5:00 p.m.
  - Determination of nitrofurazone in milk
- 5:00 p.m. to 5:30 p.m.
  - Overestimation of acrylamide in food by LC-MS/MS
- 5:30 p.m. to 5:50 p.m.
  - CEN Interlaboratory trial for a LC-MS/MS multiresidue method for mycotoxins in food
- 5:50 p.m. to 6:00 p.m.  
Wrap-up and closure

# AOAC VDR Sub-Group Community Meeting

**Tuesday, September 17, 2019**

**6:15 pm – 7:45 pm**

**Room : Governor's Square 11**

**Sheraton Denver Downtown Hotel**

Co-Chairs: Eric Verdon & Jian Wang



133rd Annual Meeting & Exposition  
September 8-12, 2019  
Denver, CO USA

# Agenda

- **Introduction** Sub-Group Co-Chairs: **Eric Verdon and Jian Wang**  
[http://www.nacrw.org/Community/vet\\_drugs.html](http://www.nacrw.org/Community/vet_drugs.html)
- **Topic n°1:**  
**Latest method performance criteria updates**
  - *International*
  - *European*
- **Topic n°2:**  
  
Update on MRM method on VDR in food and AOAC process to submit a proposal
- **Topic n°3:**  
  
NACRW Working Group for Veterinary Drugs
  - TO IDENTIFY CRITERIA OF PERFORMANCE FOR MULTI-RESIDUE VET DRUGS METHODS THAT WOULD MEET THE NEEDS OF REGULATORS?
- **Adjournment** of the Contaminant Subgroups Meeting  
for Veterinary Drug Residues

# AOAC ACTIVITIES

## PRE-MEETING

- **SPIFAN Infant formula**

Stakeholder panel meeting Saturday morning 090719

- ERP Saturday afternoon 090719 (nutrients)

Updates on continuing progress to have a full suite of Official methods that also are Codex Type II methods

- Chlorate / perchlorate round robin study in infant formulas & milk / milk product matrices

Assessment of between-lab variation in test results

Volunteer to participate by e-mailing

[dustin.starkey@abbott.com](mailto:dustin.starkey@abbott.com) or Erik Konings

- Preparing to send out MLT study samples for first action methods 2018.03 1nd 2018.12 for 3-MCPD & GE

- extending set of study samples to include infant formula samples with higher GE levels (incurred, FDA)

- **Cannabis Analytical Science Program**

All day Saturday 090719

three Working groups; one on chemical contaminants

# FURANS

On September 8, the AOAC Furans Working Group opened a motion to approve the SMPR, *Standard Method Performance Requirements for Furan and Alkyl Furan in Coffee, Baby Foods, Infant Formula and Fruit Juices*. During the meeting, Dr. Katerina Mastovka made the motion to approve this SMPR and Dr. Hans Cruijisen seconded. The question remains open and we are asking for your vote on adopting this document.

The meeting book, which contains Dr. Mastoska's presentation as well as the SMPR itself, is here: <https://griegler-aoac-org.cld.bz/2019-AOAC-Furans-WG-Book1>. Please review both if you intend to vote.

You can vote on the SMPR here: <https://form.jotform.com/92496265483166>. The ballot will remain open until COB Wednesday, September 11. Please let us know if you have any questions or concerns, thank you!

# ASF – SUNDAY 9/8/19

## ANALYTICAL SOLUTIONS FORUM

- **Mechanism for Community input into future AOAC Programs**

New in 2019 will post presentation on community web page -  
- started at mid-year meeting

Evaluation of current programs / projects

Discussion of future interests / looks at current events

- **Topics prioritized and selected for Annual meeting**

- **Dietary supplements**

End of AOAC/NIH funding cycle; 25 years of DSHEA

- **Biostimulants**

USDA farm bill – mandate for definitions / method guidance

EU fertilizer law to address; activity in ISO/TC134

- **SMEs give presentations; breakout session for discussion**  
**Summary meeting to capture feedback; used by AOAC to**  
**prioritize & develop future programs**

# ANALYTICAL SOLUTIONS FORUM

## ASF

- **Steering committee of stakeholder members**
  - Mentor & engage communities
  - Used to feed the development of future AOAC programs
- **Propose topics during mid-year meeting**
  - work with steering committee
  - engage stakeholders and focus discussion
  - session at annual meeting
- **Challenges / opportunities identified**
  - AOAC works on projects
  - leads to trainings / ERPs / engagement outside
- **In progress & development**
  - they want to involve us
  - we need to tell them what we need





**NOAA**  
**FISHERIES**

# Marine Biotoxins Awareness

Cheryl L. Lassitter

Lead Chemist

National Seafood Inspection Laboratory  
NMFS, NOAA

# Biotoxin Contamination Examples

- Paralytic Shellfish Poisoning (PSP)
- Neurotoxic Shellfish Poisoning (NSP)
- Amnesiac Shellfish Poisoning (ASP)
- Diarrhetic Shellfish Poisoning (DSP)



# Paralytic Shellfish Poisoning (PSP)

## Genus “*Alexandrium*”

Unpredictability Factor

Affects nervous system; symptoms can occur within 30 minutes

About 20 toxins responsible; all derivatives of saxitoxin

Pacific coast, Northeast Canada to Long Island

## NOAA’s Current PSP Analytical Testing Capabilities

RBA

PCOX

Cell Based Assays

ELISAs

LC-MS/MS



**NOAA**  
**FISHERIES**

# Neurotoxic Shellfish Poisoning (NSP)

## Genus "*Karenia*"

Gastro/neurologic issues/respiratory

Symptoms can occur in a few hours

Caused by brevetoxins

Gulf of Mexico, southern Atlantic coast to Delaware

## NOAA's Current NSP Analytical Testing Capabilities:

RBA

Cell Based Assays

ELISAs

LC-MS/MS



**NOAA**  
**FISHERIES**

# Amnesiac Shellfish Poisoning (ASP)

## Genus “*Pseudo-nitzschia*”

Also known as Domoic Acid Poisoning

Neurological symptoms can occur in 24 to 48 hours

No antidote; death can occur

Northern U.S. states and Canada on both coasts

## NOAA’s Current ASP Analytical Testing Capabilities:

ELISA

RBA

LC-MS/MS



# Diarrheic Shellfish Poisoning

## Genus “*Dinophysis*”

Causes gastrointestinal disorders

Symptoms occur within 30 minutes to a few hours

Recovery normally complete; no aftereffects

Texas, Europe, Eastern Canada; U.S. Gulf of Mexico monitored

## NOAA’s Current ASP Analytical Testing Capabilities:

DSP—PP2A assay

LC-MS-MS



**NOAA**  
**FISHERIES**

# Fresh Analytical Perspectives

## Turnkey/Combination Method using Current Techniques?

- ELISA Kits
  - Receptor Binding Assays
  - Post Column HPLC
  - LC- MS/MS Methods
  - PP2A Kits
  - Other Methods?
- 
- ***Thank You!***



# NEEDS OF THE COMMUNITY





# Chemical Contaminants & Residues in Food Community

## Update on NACRW Reference Materials Working Group

Joe Konschnik  
September 9, 2019

# Chemical Contaminants & Residues in Food Community

## NACRW Reference Materials Working Group

- Formed in 2018
- Focus: Equip food testing community users of chemical residues reference standards and materials with guidance on the use and handling of reference materials

# NACRW Reference Materials Working Group

## Guidance Document Outline

Title: **Best Practices for Use and Handling of Reference Materials**

1. Introduction
2. Glossary of Terms
3. Reference Documents
4. RM & CRM Handling Tips
5. Certificates of Analysis
6. Starting Material Characterization
  1. Traceability
  2. Purity
  3. Identity

# NACRW Reference Materials Working Group

## Guidance Document Outline

Title: **Best Practices for Use and Handling of Reference Materials (continued)**

7. Stability
8. Expiration
9. Interactions upon Mixing
10. Second Source Reference Materials
11. Measurement Uncertainty

# Contact With Questions

**Joe Konschnik**

Business Development Manager  
Food & Agriculture Markets



[www.restek.com](http://www.restek.com)

**Restek Corporation** 110 Benner Circle, Bellefonte, PA 16823  
Phone: 800-356-1688 ext. 2002 • Mobile/Cell: (302) 388-3131 •  
Home Office: (302) 838-5796 • Fax: 302-838-7636  
e-mail: [joe.konschnik@restek.com](mailto:joe.konschnik@restek.com)

# **NACRW WORKING GROUPS**

**PROFICIENT**

**EQUIVALENT**

**RELIABLE**

**FLEXIBLE**

**OFFICIALLY**

**RECOGNIZED**

**METHODS**

# PROJECT SCOPE - GLYPHOSATE

- **Resources and tools**
  - demonstrate acceptable performance
  - your favorite method
  - expert guidance on validation criteria
  - Official method not in use
  - Regulatory involvement (FDA, USDA, FSIS & CFIA)
  - Documentation package paired with blind reference material
- **Progress to date**
  - recruited group ~30 volunteers
  - 3 teleconferences, one in-person meeting
    - 47 people attended NACRW (13 members present)
  - pesticide manufacturer, regulatory agencies, testing labs (state & commercial), food industry, reference material providers & instrument manufacturers
- **[PerformWGNACRW@gmail.com](mailto:PerformWGNACRW@gmail.com)**

# ASSIGNMENTS – THREE AREAS

- **Acceptable performance criteria (APC)**
  - targets for scope, range, accuracy & precision
  - matrices of interest
  - regulatory limits
- **Best Practices Documentation**
  - review of guidance
  - checklist development (analyte specific)
  - template documents
- **Reference Materials**
  - development of blind study samples
  - requirements for reference material provider
  - mechanism to collect ongoing data



# CURRENT STATUS –APC

- **Scope**  
glyphosate, n-acetyl glyphosate  
AMPA, n-acetyl AMPA
- **Range**  
10ppb – 10 ppm
- **LOD** – 2 ppb
- **LOQ** – 10 ppb
- **Accuracy**  
70 – 120%  
Note that with 20% RSDr uncertainty may exceed 50% with 70% recovery (80% ok)
- **Precision**  
RSDr <20%
- **Reproducibility**  
RSDR <25%?  
- hoping to use PT data set to see real world performance

# NEXT STEPS

- **Teleconferences continue**
  - **Split larger group to work on best practices or reference materials**
- **Add verbiage to APCs**
  - **format, style for NACRW**
- **Prepare AOAC SMPRs using APCs**
  - **submit to pesticides sub-group**
- **Review guidance documents**
  - **compare experiment design required for each guidance**
- **<https://nacrw.org/More>  
Working\_Groups**

# UPCOMING MEETINGS

- **ACS**  
March 22 – 26, 2020 - Philadelphia, PA
- **Mid-year AOAC**  
March 9 – 13, 2020 – Gaithersburg, MD
- **EPRW 2020**  
May 11 – 15, 2020 – Granada, Spain  
[www.eprw2020.com](http://www.eprw2020.com)
- **NACRW**  
July 26 – 29, 2020 – Fort Lauderdale, Florida
- **NACRW**  
July 25 – 28, 2021 - Fort Lauderdale, Florida