NACRW Reference Material Guide for Trace Level Analysis

and Multi-residue Mixes

**Guidance Document Draft Outline**

**Revised March 25, 2020**

Title: Best Practices for Use and Handling of Reference Materials

1. Introduction
   1. Scope (Jo Marie C.)
   2. Manufacturer/Producer Requirements (Markus O., Pat)
      1. ISO 17034
      2. ISO 17025
2. Glossary of Terms (Melissa P. & working group)
3. RM & CRM Handling Tips (Francesca M. & Joe K. Review)
4. Certificates of Analysis (Joe K. & Francesca M. Review)
5. Starting Material Characterization (Patti A. w/ Kathy S. & Mario S. to Review)
   1. Traceability
   2. Purity
   3. Identity
6. Stability (Kelly D., Alex K. – Alok Kumar, Mario S. to Review)
   1. Neat vs. Solution vs. Mixtures
   2. Detection – MS vs. UV
   3. Monitoring breakdown products
   4. Storage Conditions
   5. Interactions upon Mixing
   6. Degradation Products & Precursors
   7. Solvent Types & Combinations
   8. Matrix Interactions
   9. Detection System Influence
   10. Challenging Compounds – Reactive
   11. Storage Stability
7. Expiration (Kyle H.)
   1. Requalification/Recertification
   2. Responsible re-use
   3. SANTE Guidelines
   4. Disposition
8. Preparing In-House Reference Materials (Jo Marie - in draft)
9. Application & Use of RMs (Kate M.)
   1. Calibration vs. Incurred
      1. Solvent-based
      2. Incurred in Matrix
   2. Method Development & Performance
   3. Method Validation
   4. Method Expansion
   5. Qualitative vs. Quantitative Analysis
   6. QC Check or Verification
   7. Identification
   8. Method Comparability

(Kate will send her presentation on this topic)

1. Second Source Reference Materials (Jo Marie C., ready for Joe K. to review)
   1. History
   2. Definition
   3. How to Use
2. Measurement Uncertainty (Marcus O. and Katerine S.) (NIST guidance docs on measurement uncertainty posted on RMWG page)
   1. NIST Guidance Resources
   2. Reference Material Provider Resources
      1. Patti – SPEX White Paper (posted on RMWG Web Page)
      2. CoA definitions, equations
   3. Stressed vs. unstressed Uncertainty
3. Troubleshooting
4. Reference Documents (All Authors)
   1. Note references in your draft sections using first author name and date
   2. List references at the bottom of your draft document using our standard format

All authors should add whatever references they feel are appropriate for their chapters.  This is a guide and so extensive references are not expected; only those that the readers should definitely need for their work.  We want to standardize how references are formatted by Author and date first

* These will appear in alpha order in the References Section at the end of the guide.
* The citation in the text will be author and date.  ( *Phillip 2013)*
* For example: Authors (date) Title, Journal vol:pages

Phillips MM, Sharpless KE, Wise SA (2013) Standard reference materials for food analysis, Anal Bioanal Chem 405:4325–4335

APPENDIX

A1: List of Reference Material Providers

A2: Calculating Measurement Uncertainty