



Tobacco and Tobacco Products Analytes Sub-Group (TTPA) 2017 Annual Report

CORESTA SSPT – Kitzbühel, Austria

October 11, 2017



TTPA Overview

- ❖ **Coordinator and Scientific Commission Liaison:**
 - Karl Wagner (Altria Client Services LLC, Virginia, United States)
- ❖ **Secretary:**
 - Johan Lindholm (Swedish Match, Stockholm, Sweden)
- ❖ **Sub-Group was established in November 2008**
- ❖ **Typically two meetings per year:**
 - ~ 45 attendees
 - ~ 30 companies represented
- ❖ **Meetings since 2016 CORESTA Congress, Berlin**
 - 2017: Charlottesville, Virginia (May) – 20th meeting
 - 2017: Kitzbühel, Austria (October) – 21st meeting



Revised Sub-Group Name and Objectives

- ❖ Alignment of the Sub-Group's name and objectives with the work performed
- ❖ **Smokeless Tobacco and Tobacco Products Analytes Sub-Group (TTPA)**
 - Objectives:
 1. To propose and evaluate practical and robust Recommended Methods for the determination of analytes related to **smokeless tobacco and tobacco products**.
 2. To periodically organise collaborative and/or proficiency testing.
 3. To organise the manufacture and maintain smokeless tobacco reference products.

CORESTA Recommended Method Development

❖ New Work Item Proposals

- Constituents of regulatory concern
 - Participating laboratories
 - Scientific Commission

❖ Iterative, stepwise process to develop a CRM

- 1) Identify method(s) for evaluation
- 2) Initial small joint experiment
- 3) Method refinements
- 4) Large collaborative study

➤ Robust CRM with defined repeatability and reproducibility



CORESTA Reference Products

❖ Smokeless Tobacco Reference Products (CRPs)

- Coordinated production in 2009 and 2016
- Maintained and distributed by North Carolina State University
 - Swedish style snus pouch
 - American-style loose moist snuff
 - American-style loose dry snuff powder
 - American-style (chopped) loose-leaf chewing tobacco



Supply of 2009 CRPs

	Dec 2009	Dec 2010	Dec 2011	Dec 2012	Dec 2013	Dec 2014	Dec 2015	Dec 2016	Sept 2017
CRP 1	7000	6135	5443	4895	3975	3242	1992	1195	1160
CRP 2	7020	6363	6093	5082	4453	3680	1723	620	592
CRP 3	7040	6653	6207	5520	5113	4691	4191	2169	2116
CRP 4	7000	6806	6567	6374	6236	6040	5686	2309	2278



Supply of 2016 CRPs

	Apr 2016	Sept 2016	Dec 2016	Sept 2017
CRP 1.1	10008	9384	9312	8908
CRP 2.1	10000	9132	9061	8380
CRP 3.1	7000	6426	6340	6210
CRP 4.1	7200	6855	6769	6598



CORESTA Reference Products

❖ Collaborative studies:

- Assess stability of the CORESTA Reference Products (CRPs)
- Support laboratory accreditation

❖ Analytes

- Nicotine
- pH
- Tobacco-specific nitrosamines
- Moisture (oven volatiles)
- Ammonia
- Benzo[a]pyrene
- New CRMs

Even Years

Odd Years

Ground Tobacco Reference Products

❖ Ground Tobacco Reference Products

- Prepared and distributed by the University of Kentucky, Center for Tobacco Reference Products



Dark Fire Cured



Flue Cured



Dark Air Cured



Oriental



Burley



Technical Reports Completed (past 12 months)

- 1) CORESTA Reference Products (Smokeless Tobacco) - 2016 Analysis (Jan 2017)**
- 2) 2016 Collaborative Study on Minor Alkaloids in Tobacco Products (Feb 2017)**
- 3) 2016 Collaborative Study on Nicotine in Tobacco Products (Feb 2017)**
- 4) 2017 Collaborative Study on TSNA, pH, and Moisture (OV) (July 2017)**
- 5) 2017 Collaborative Study on Benzo[a]pyrene in Tobacco Products (July 2017)**
- 6) Determination of Nitrite and Nitrate in Smokeless Tobacco Products by Ion Chromatography and Continuous Flow Analysis (July 2017)**
- 7) 2017 Metals Proficiency Study (July 2017)**



CORESTA Recommended Method Updates

- 1) **CRM N° 69: Determination of pH in Tobacco and Tobacco Products (2nd ed., 2017)**
 - Update to include ground tobacco, cigarette and cigar filler
- 2) **CRM N° 72: Determination of Tobacco Specific Nitrosamines in Tobacco and Tobacco Products by LC-MS/MS (4th ed., 2017)**
 - Update to include ground tobacco, cigarette and cigar filler
- 3) **CRM N° 76: Determination of Moisture Content (Oven Volatiles) of Tobacco and Tobacco Products (2nd ed., 2017)**
 - Update to include ground tobacco, cigarette and cigar filler
- 4) **CRM N° 82: Determination of Benzo[a]pyrene in Tobacco Products by GC-MS (2nd ed., 2017)**
 - Method update

1) Expanded PAHs

- Purpose: Create CRM for analytes of regulatory concern
- Receive data, draft technical report, and CRM

2) 2017 Ammonia, B[a]P Study

- Purpose: Expand the scope of CRMs to include cigars
- Receive remaining data sets, draft technical report and update CRMs

3) Carbonyls - Formaldehyde, acetaldehyde, crotonaldehyde

- Purpose: Create a CRM for analytes of regulatory concern
- Finalize technical report and CRM

❖ Spring 2018

- 1) Update CORESTA Guide No. 11 - *Technical Guideline for Sample Handling of Smokeless Tobacco and Smokeless Tobacco Products*
- 2) Water (GC/Karl Fischer) and moisture (OV) collaborative study
- 3) Development of CRM for select metals

❖ Fall 2018

- 1) TSNA, nicotine, pH, and moisture collaborative study
- 2) Continue development of CRM for metals

Standards Development - ISO

- ❖ **ISO/DIS 21045: "Tobacco and tobacco products - Determination of ammonia - Method using ion chromatographic analysis"**
 - **The Draft International Standard (DIS) was approved on 2017-06-22**
- ❖ **ISO/DIS 21766: "Tobacco and tobacco products - Determination of tobacco-specific nitrosamines in tobacco products - Method using LC-MS/MS"**
 - **Approved for circulation as a DIS in April 2017**
 - **DIS voting starts on 2017-10-11 and concludes 2018-01-03**
- ❖ **Submit the B[a]P and Moisture CRMs to ISO as NWIPs**



Progress Against Objectives *Smokeless Constituents of Regulatory Concern*

Constituent	Status	HPHC Abbreviated List	WHO STP Priority Toxicants	Swedish National Food Agency
Nicotine (total and free)	CRM N°62	√		
pH	CRM N°69	√		
NNK, NNN	CRM N°72	√	√	√
Benzo[a]pyrene	CRM N°82	√	√	√
Acetaldehyde, Croton., Formaldehyde	Draft CRM	√		
Arsenic, Cadmium	PT	√		
Lead	PT			√
Aflatoxin B1				√



Benefits to the Scientific Community

- ❖ **Production and maintenance of CRPs**
- ❖ **Development of robust methods with defined repeatability and reproducibility**
- ❖ **Interlaboratory studies**
 - **Provide laboratory performance feedback**
 - **Support ISO 17025 accreditation**
- ❖ **Study results and methodology are a source of engagement with authorities and regulators**

- ❖ **Participating laboratories and their management's support**
- ❖ **John Bunch**
 - **WG4 Coordinator (reference products)**
- ❖ **Michael Morton**
 - **Statistical Support**