



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

2022 Virtual Congress

10 - 28 October 2022



TTPA Overview

- ❖ **Coordinator and Scientific Commission Liaison**
 - Karl Wagner, Ph.D. (Altria Client Services, United States)

- ❖ **Secretary**
 - Johan Lindholm, Ph.D. (Swedish Match, Sweden)

- ❖ **Established in 2008**

- ❖ **Typically meet twice a year**
 - ~ 50 attendees
 - ~ 40 companies represented

- ❖ **Meetings since 2021 Virtual SSPT Meeting**
 - 30th meeting – New Orleans, hybrid (September 11, 2022)



TTPA Objectives

- ❖ To organise the manufacture of and maintain smokeless tobacco reference products (CRPs)
- ❖ To propose and maintain CORESTA Recommended Methods (CRMs) and related documents for the analysis of tobacco and unburned tobacco products
- ❖ To organise interlaboratory testing



CORESTA Reference Products (CRPs)

- ❖ **Produced in 2009 and 2016**
 - **Swedish style snus pouch**
 - **American-style loose moist snuff**
 - **American-style loose dry snuff powder**
 - **American-style loose-leaf chewing tobacco**



CORESTA Reference Products (CRPs)

2009 CRP 1 – CRP 4



2016 CRP 1.1 – CRP 4.1





Maintenance of CRPs

❖ Collaborative studies to assess stability:

- Nicotine,
- TSNAs,
- pH,
- Moisture (oven volatiles)

❖ CRPs have been shown to be stable for 10 years when stored at the recommended temperature of -20 °C

❖ Distributed by North Carolina State University

- <https://strp.wordpress.ncsu.edu/>

Ground Tobacco Reference Products

University of Kentucky, Center for Tobacco Reference Products



Dark Fire
Cured



Flue Cured



Dark Air
Cured



Oriental



Burley



Flavored
Cigar Filler



Unflavored
Cigar Filler



Completed and Ongoing Projects

Project No.	Type	Project name	Project Leader	Data Published
281	TR, CRM updates	2021 Nicotine Pouches Collaborative Study and update 8 CRMs	R. Avagyan	Oct 2021
283	TR	Characterization of University of Kentucky Reference Smokeless Tobacco Products - 2021 Analysis	R. Ballentine	Nov 2021
319	TR, CRM	Collaborative study for the determination of nitrate and nitrite in tobacco products	G. Prepelitskaya	Ongoing Dec 2022
246	TR, CRM	Development of CRM for nicotine degradants in nicotine pouches	F. Aldeek	Ongoing Q3 2023



Future Work Plan

- ❖ **Biennial stability study for the CRPs**
- ❖ **Development of CORESTA nicotine pouch reference products**



Constituents of Regulatory Concern

Unburned Tobacco Filler (cigarettes, cigars, RYO)

Constituent	CRM	ANVISA (Brazil)	Health Canada	China STMA	US FDA
Nitrate	36	✓	✓	✓	NA
Humectants	60, 61	✓	✓	✓	NA
Nicotine	62, 87	✓	✓	✓	✓
pH	69	✓	✓	✓	NA
TSNAs	72	✓	✓	✓	✓
Moisture	76	✓	✓	✓	NA
Ammonia	79	✓	✓	✓	✓
B[a]P	82	✓	✓	NA	NA
Metals	93	✓	✓	✓	✓

NA = not required



Constituents of Regulatory Concern

Smokeless Tobacco

Constituent	CRM	ANVISA (Brazil)	Health Canada	Swedish NFA	US FDA
Nitrate	36	✓	✓	NA	NA
Humectants	60, 61	✓	✓	✓	NA
Nicotine	62, 87	✓	✓	NA	✓
pH‡	69	✓	✓	NA	✓
TSNAs	72	✓	✓	✓	✓
Moisture	76	✓	✓	NA	NA
Ammonia	79	✓	✓	NA	✓
B[a]P	82	✓	✓	✓	✓
Carbonyls	86	NA	NA	NA	✓
Metals	93	✓	✓	✓	✓

NA = not required

The “‡” symbol indicates pH is either required or needed for the calculation of free nicotine



Accomplishments

CRM Updates to Include *Cigar Filler/Wrapper*

Constituent	CRM
Water	No. 56 - Determination of Water in Tobacco and Tobacco Products by Karl Fischer Method No. 57 - Determination of Water in Tobacco and Tobacco Products by GC Analysis
Nicotine	No. 62 - Determination of Nicotine in Tobacco and Tobacco Products by GC Analysis No. 87 - Determination of Nicotine in Tobacco Products by GC-MS
pH	No. 69 - Determination of pH in Tobacco and Tobacco Products
TSNAs	No. 72 - Determination of TSNAs in Tobacco and Tobacco Products by LC-MS/MS
Moisture (OV)	No. 76 - Determination of Moisture Content (Oven Volatiles) of Tobacco and Tobacco Products
Ammonia	No. 79 - Determination of Ammonia in Tobacco and Tobacco Products by Ion Chromatographic Analysis
B[a]P	No. 82 - Determination of B[a]P in Tobacco Products by GC-MS
Water Activity	No. 88 - Determination of Water Activity of Tobacco and Tobacco Products
Expanded PAHs	No. 91 - Determination of 15 PAHs in Tobacco and Tobacco Products by GC-MS/MS or GC-MS
Metals	No. 93 - Determination of Selected Metals in Tobacco Products by ICP-MS



Accomplishments

CRM Updates to Include *Nicotine Pouches*

Constituent	CRM
Nicotine	No. 62 - Determination of Nicotine in Tobacco and Tobacco Products by GC Analysis No. 87 - Determination of Nicotine in Tobacco Products by GC-MS
pH	No. 69 - Determination of pH in Tobacco and Tobacco Products
TSNAs	No. 72 - Determination of TSNAs in Tobacco and Tobacco Products by LC-MS/MS
Moisture (OV)	No. 76 - Determination of Moisture Content (Oven Volatiles) of Tobacco and Tobacco Products
B[a]P	No. 82 - Determination of B[a]P in Tobacco Products by GC-MS
Carbonyls	No. 86 - Determination of Select Carbonyls in Tobacco and Tobacco Products by UHPLC-MS/MS
Water Activity	No. 88 - Determination of Water Activity of Tobacco and Tobacco Products
Metals	No. 93 - Determination of Selected Metals in Tobacco Products by ICP-MS



Benefits to the Scientific Community

- ❖ **Production and maintenance of CRPs**
- ❖ **Development of robust CRMs with defined repeatability and reproducibility values**
- ❖ **Interlaboratory studies**
 - **Provides laboratory performance feedback**
 - **Supports ISO 17025 accreditation**
- ❖ **Study results and methodology are a source of engagement with stakeholders**



Acknowledgements

❖ Participating laboratories and their management's support

❖ Study Coordinators and Statistical Support

➤ Rozanna Avagyan (Swedish Match)

- 2021 Nicotine Pouches Collaborative Study and CRM updates

➤ Regina Ballentine (Altria)

- Characterization of University of Kentucky Reference Smokeless Tobacco Products - 2021 Analysis

➤ Yevgeniya (Genya) Prepelitskaya (Altria)

- Nitrate and Nitrite Collaborative Study and CRM

➤ Fadi Aldeek (Altria)

- Ongoing work to develop a CRM for nicotine degradants in nicotine pouches

➤ Michael Morton (Altria) co-author and statistical support



Thank You!