



Cigarette Variability Task Force: CVAR

Coordinator: Jason Flora

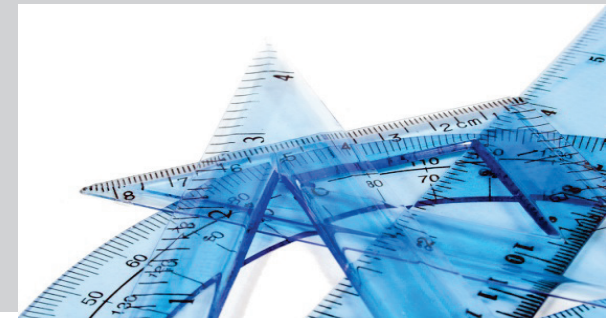
Secretary: Rana Tayyarah



Background

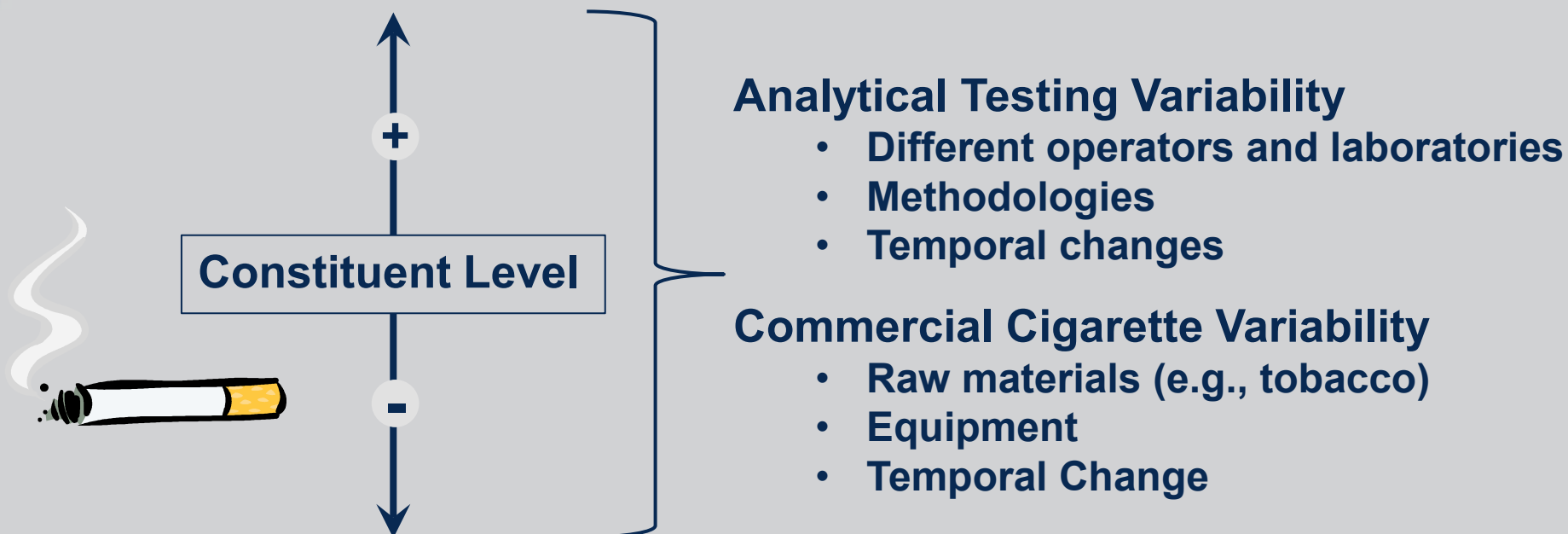
- ❖ **Scientists measure tobacco and smoke constituents for a variety of reasons**
- ❖ **There is variability associated with measuring these constituents***
- ❖ **In order for the scientific community to make science-based decisions regarding tobacco and smoke constituents, they need to fully understand this variability**

***ISO 8243**



Sources of Measurement Variability

❖ Tobacco and smoke analyte variability results from multiple sources:





Analytical Testing

- ❖ **Generally, analytes present in a higher concentration have lower variability than lower concentration analytes**
- ❖ **Generally, standardized methods show lower variability (e.g., tar, nicotine, CO, and TSNAs)**





Analytical Testing

- ❖ **CORESTA has focused on developing consensus standardized methods**
 - **Proficiency studies have elucidated repeatability and reproducibility of CORESTA recommended methods (CRMs)**
 - **More than 70 CRMs have been created for which ~40 ISO standards have been based**
 - **Analytical testing has used single batch commercial and/or reference products**
- ❖ **Prior to CVAR TF, CORESTA had not systematically addressed commercial cigarette variability**



Cigarette Variability (CVAR) Task Force

- ❖ **The CORESTA Scientific Commission approved the creation of the CVAR Task Force in June 2014**
 - **Task Force Coordinator: Jason Flora**
 - Altria Client Services, Richmond VA

 - **Secretary and Study Coordinator: Rana Tayyarah**
 - ITG Brands, LLC, Greensboro NC



CVAR Revised Objectives

(approved by the Scientific Commission*)

- 1. To develop an appropriate experimental plan to explore commercial cigarette variability**
- 2. To conduct a collaborative study to enhance the understanding of overall tobacco and smoke analyte variability relevant to commercial cigarette design features**
- 3. To create a CORESTA technical report**

***At Jan 20-21, 2015 SC meeting; Presented by SC Liaison R. Stevens**



CVAR Task Force Timeline

- ❖ **April 2014 – *Ad hoc* meeting in Nuremberg, Germany, to discuss proposal for the Task Force – Led by Steve Purkis**
- ❖ **June 2014 – Scientific Commission approved CVAR TF**
- ❖ **November 20, 2014 - First TF meeting was held in Paris, France (Hosted by Altria Client Services)**
- ❖ **April 17, 2015 - Second TF meeting was in Charlotte, NC (Hosted by RAI Services Co.)**
- ❖ **October 3, 2015 - Third TF meeting was in Jeju, South Korea**



CVAR Study Plan Summary

❖ The objective is to conduct a study to understand commercial cigarette variability as determined by the measurement of select tobacco and mainstream smoke analytes

- Physicals and TNCO
- WHO priority list
- Abbreviated USFDA harmful and potentially harmful constituents (HPHC) list
- Hydrogen cyanide (HCN)

Measurement Type	Analyte Class	Measure/Analyte
Physicals		Pack moisture (as packed)
		Cigarette weight (as packed)
		Cigarette weight (post conditioning)
		Filler/tobacco Weight (post conditioning)
		Filter Tip Ventilation
		Circumference
		Length
		Resistance to Draw (Open/Closed)
	Paper porosity	
Filler ¹⁰	Alkaloids	Nicotine
	TSNAs	NNN
		NNK
	Ammonia	Ammonia (Reported as NH ₃)
	Metals	Arsenic
		Cadmium
Smoke	TNCO	TPM
		Nicotine
		Water
		Carbon Monoxide
		NFDPM ("tar")
	Carbonyls	Acetaldehyde
		Acrolein
		Crotonaldehyde
		Formaldehyde
	Volatiles	Acrylonitrile
		Benzene
		1,3-Butadiene
		Isoprene
		Toluene
	Ammonia	Ammonia
	PAA	4-Aminobiphenyl
		1-Aminonaphthalene
		2-Aminonaphthalene
	PAH	Benzo[a]pyrene
	TSNA	NNN
	NNK	
HCN	HCN	



CVAR Study Plan Summary

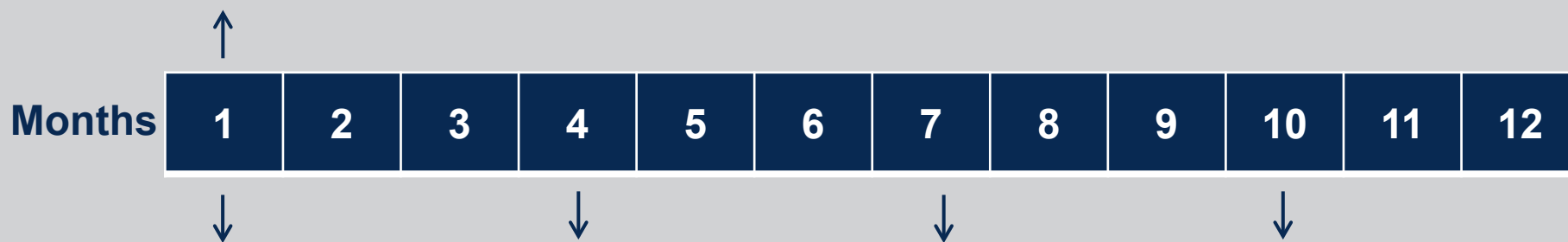
- ❖ Analytical testing variability will be minimized by:
 - Tested at one time (ISO and HC)
 - Single laboratory per constituent
 - Randomized run order
 - Reference products (3R4F or 1R6F)
- ❖ Samples will be stored at -20°C to -24°C until time of testing to minimize product changes over time
- ❖ The study is designed to allow the estimation of short-term variability and medium-term variability for a range of cigarette types available across the world-wide market



CVAR Study Plan Summary

❖ CVAR TF has designed and initiated 3 studies

1) Phase 1 (short-term variability):
3 collections within 1 week



2) Phase 2 (medium-term variability) – product collected beginning of each quarter (*one collection from phase 1 retained for 1 year study*)

✓ 3) We will propose extending a study 3 to 5 years



Volunteers – Commercial Cigarettes

- ❖ Altria Client Services
- ❖ Beijing Cigarette Factory, CNTC
- ❖ British American Tobacco (Germany) GmbH
- ❖ China Tobacco Hunan Industrial Co., Ltd., CNTC
- ❖ Imperial Tobacco Group
- ❖ Japan Tobacco Inc.
- ❖ JT International
- ❖ Philip Morris Int.
- ❖ RAI Services Company



Volunteers – Laboratory Testing

- ❖ Altria Client Services
- ❖ British American Tobacco (Germany) GmbH
- ❖ China Tobacco Anhui Industrial Co., Ltd.
- ❖ China Tobacco Hunan Industrial Co., Ltd., CNTC
- ❖ Imperial Tobacco Group
- ❖ Japan Tobacco Inc.
- ❖ JT International
- ❖ JTI Research & Development, Okolab
- ❖ Liggett Group LLC
- ❖ ITG Brands, LLC
- ❖ RAI Services Company



CVAR Accomplishments

- 1. Experimental plan – Complete and approved by TF**
- 2. Phase 1: Short-term variability**
 - ✓ Phase 1 time points (3 collections) have been collected and shipped
 - ✓ Testing is in progress
- 3. Phase 2: Medium-term variability**
 - ✓ First quarter samples have been collected
 - ✓ Second quarter sample collection in progress



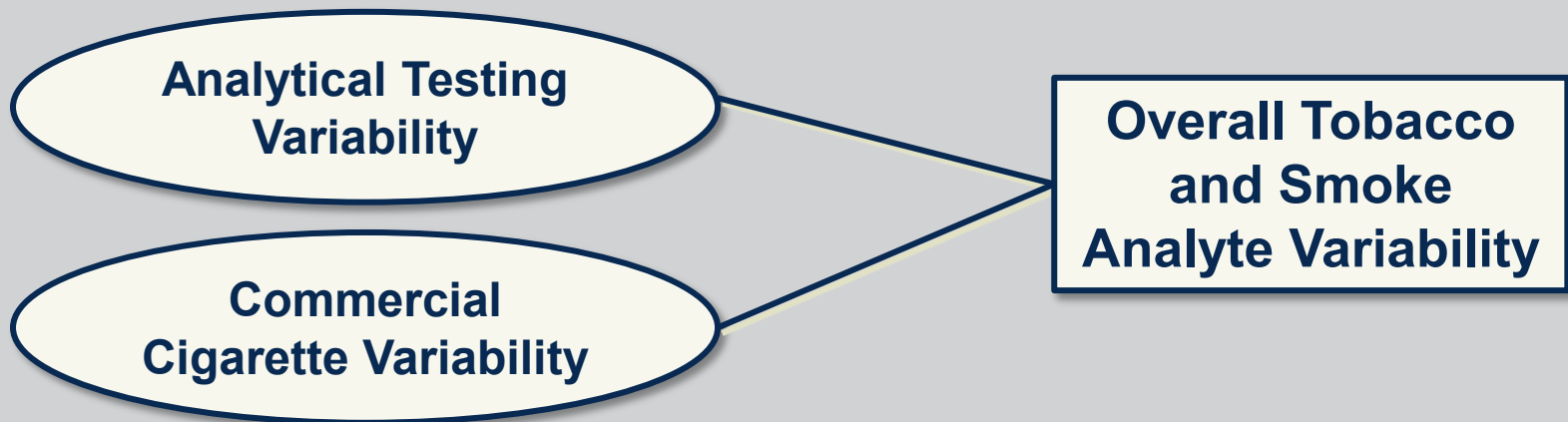
Anticipated Deliverables

- ❖ **Phase 1 technical report – 2nd Quarter 2016**
- ❖ **Phase 2 technical report – 1st Quarter 2017**



Closing Statements

- ❖ **A range of cigarettes in the worldwide marketplace are being collected at different points in time. Testing of these samples will provide a better understanding of the impact of product variability to overall tobacco and smoke analyte variability.**





Closing Statements

- ❖ **Please contact me (Jason Flora) or Rana Tayyarah to join the Task Force**
 - **Coordinator: Jason Flora**
 - Jason.W.Flora@Altria.com
 - **Secretary: Rana Tayyarah**
 - Rana.Tayyarah@itgbrands.com