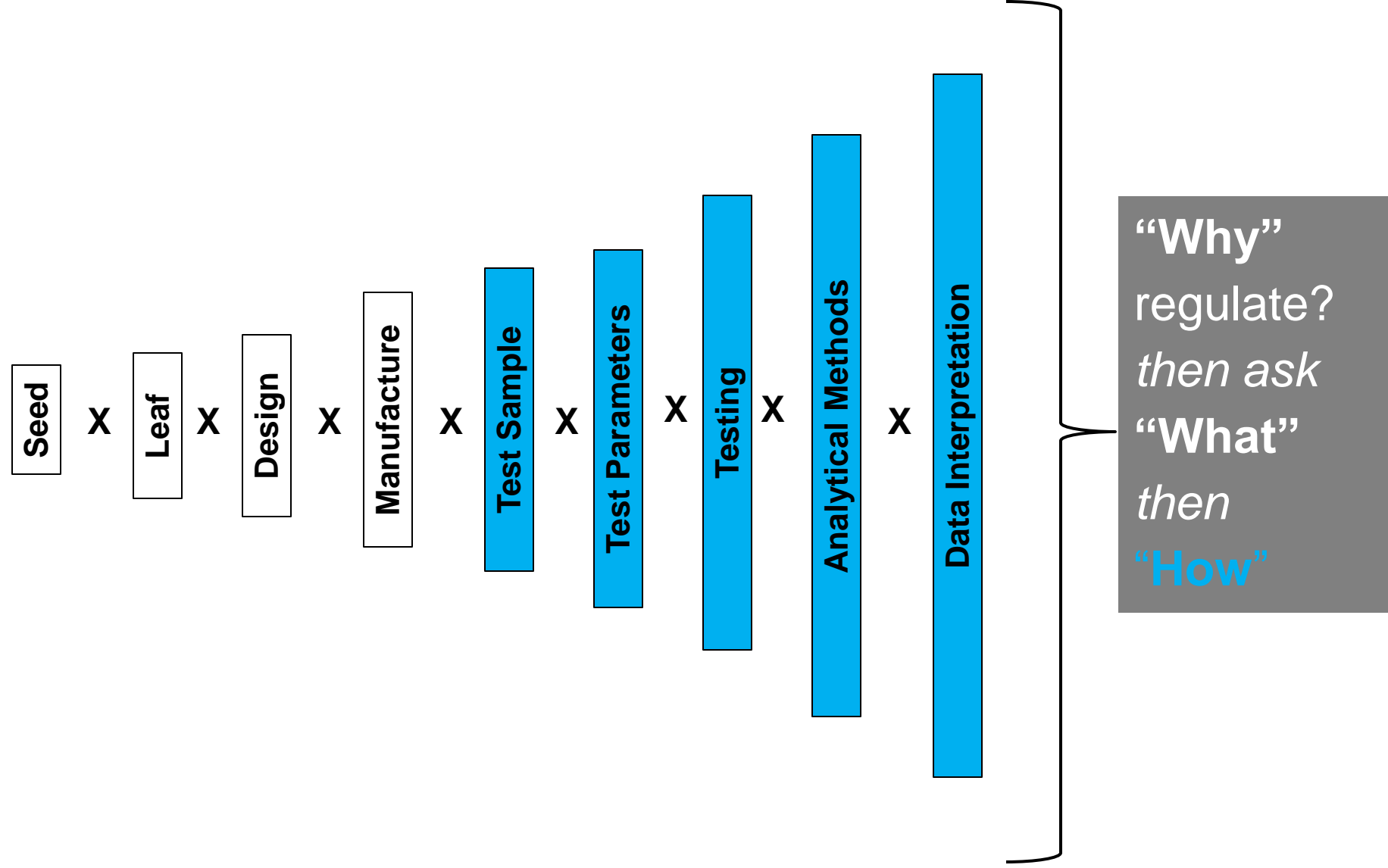


CIGARS: COMPOUNDING VARIABILITY



Challenges Associated with the Testing of Cigars

Peter Joza

CORESTA Smoke Science and Product Technology
Joint Study Groups Meeting
October 8 - 12, 2017
Kitzbühel, Austria



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Cigar Testing – Coresta Recommended Methods

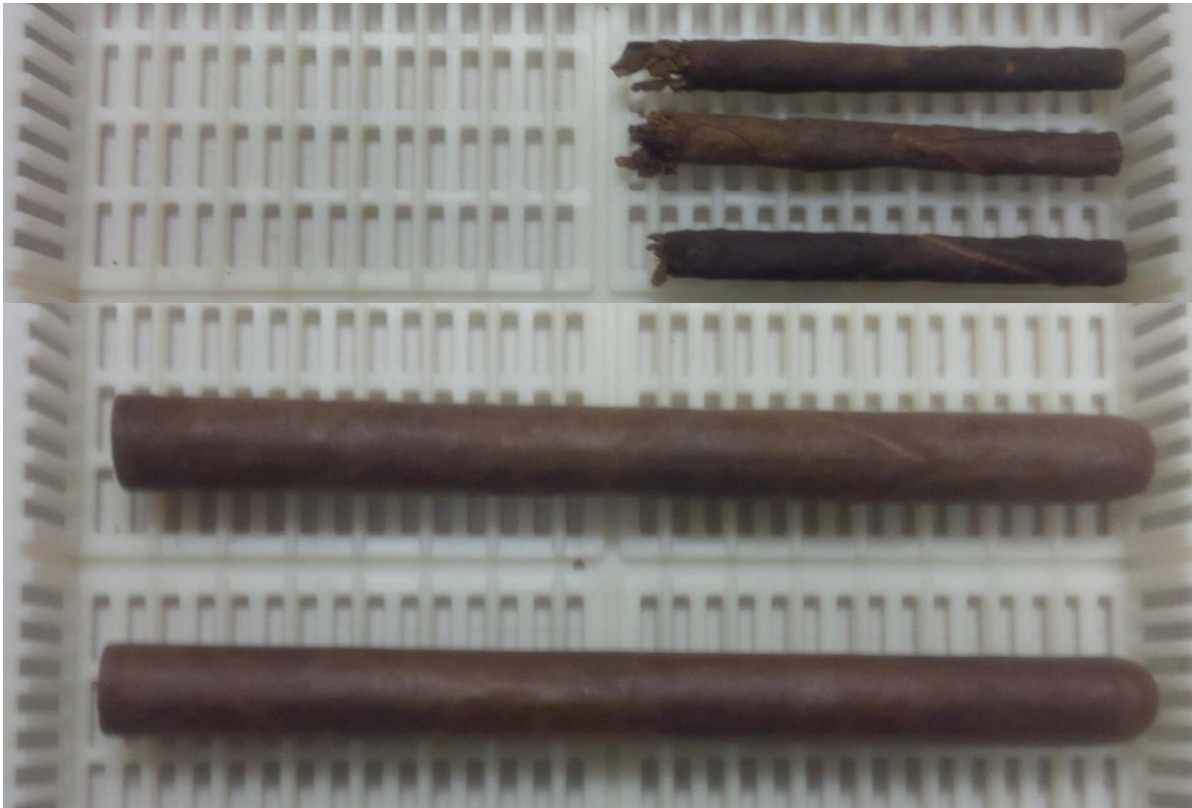
- **CORESTA RECOMMENDED METHOD N° 64 (2005)**
ROUTINE ANALYTICAL CIGAR-SMOKING MACHINE SPECIFICATIONS, DEFINITIONS AND STANDARD CONDITIONS
- **CORESTA RECOMMENDED METHOD N° 65 (2010)**
DETERMINATION OF TOTAL AND NICOTINE-FREE DRY PARTICULATE MATTER USING A ROUTINE ANALYTICAL CIGAR-SMOKING MACHINE –DETERMINATION OF TOTAL PARTICULATE MATTER AND PREPARATION FOR WATER AND NICOTINE MEASUREMENTS
- **CORESTA RECOMMENDED METHOD N° 46 (1998)**
ATMOSPHERE FOR CONDITIONING AND TESTING CIGARS OF ALL SIZES AND SHAPES

Cigar Testing – Challenges with Emissions Testing

- **Product Variability versus Testing Variability**
 1. Natural product
 2. Machine made versus handmade
 3. Lack of a reference product
- **Diverse Range of Product Formats/Types/Construction.**
- **Application of CRMs – Complications During Testing**
- **Applicability of Cigarette Methods to Cigars**

Challenges – Diversity of Products

➤ Cigars Vary in Size



- Diameters within a product can vary by as much as 2.6mm (potentially more).
- The number of cigars used to determine diameter, and eventually puff volume for testing, is not clearly defined.

Challenges – Diversity of Products

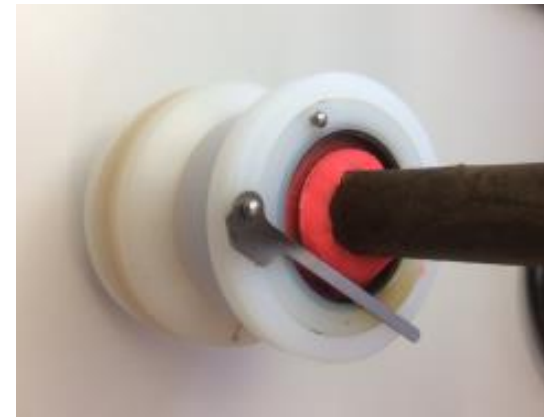
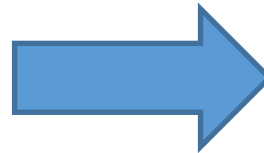
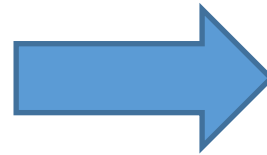
➤ Cigars Vary in Shape



- Cutting more than 5mm may be required for testing purposes.
- Determination of bobbin size may not be adequately defined at 15mm.
- The diameters of the cigars can vary significantly cigar-to-cigar. A common bobbin size amongst replicates may not be adequate.

Challenges – Diversity of Products

- Large (>22.5mm Φ) and Odd Shaped Cigars – Sealing



Challenges – Complications During Testing

- Lighting and Re-lighting
 - Lighting procedure and pre-light times tend to be product dependent.
 - Standard smoking machines lighter coils are smaller than the diameter of many premium cigars.
 - Many products require multiple lighting puffs.
 - Some cigars self-extinguish requiring re-lighting during smoking.
- Ash removal and water build up in the cigar.
- Total Particulate Matter (TPM) exceeding prescribed limits.

Challenges – Product vs. Testing Variability

- Variability is greater than that expected from conventional cigarette smoking.
 - Number of cigars used to produce one result is impractical for the testing of other compounds.
 - Lack of a reference product – Alternative strategies required
- Product Based Controls (PBC)
- Pre-Smoking / Smoking / Post-Smoking Checks
 - Assignable Cause Identification

Applicability of Cigarette Methods to Cigars

- Method performance is generally well characterized for cigarette emissions.
 - Potential matrix amount limitations
 - Potential calibration range issues
 - Potential flavor component interferences

- Trapping efficiency considerations

- Impact of collection time on stability
 - Carbonyls
 - Ammonia

Constituent Testing of Cigars and Cigar Filler

- Processed tobacco and/or finished leaf methods are directly applicable to cigar tobacco.
- Control processes used for the analysis of cigarette filler or leaf tobacco would be directly applicable.
- Challenges?
 - Sample Selection / Compositing / Replicates

Moving Forward – Cigar Smoke Methods Sub-Group

- NWIP 121 – CRM 64 / CRM 65 (Review)

- NWIP 148 – Handmade Long Filler Cigars.
 - Lighting/relighting
 - Sealing methods
 - Smoking part of the cigar
 - Cutting
 - Smoke trap capacity
 - Conditioning

Acknowledgements

*Thank you for your
attention !*

