The History and Challenges Faced by the CORESTA EVAP Sub-Group in Developing Testing Standards for e-liquids and e-aerosols.

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Introduction to CORESTA

CORESTA E-Vapour Sub-Group

Process for Development of Recommended Methods

Proficiency study for metals in e-liquids

Challenges and Opportunities
CORESTA

Centre de COopération pour les REcherches Scientifiques Relatives au TAbac

Cooperation Centre for Scientific Research Relative to Tobacco

www.coresta.org
To be recognised by our members and relevant external bodies as an authoritative source of publically available credible science and best practices related to tobacco and its derived products.
Encourage international cooperation to actively work on tobacco-related areas of research.
156 members (May 2019)

>600 participants across 27 Sub-Groups and Task Forces
Currently 35 member organisations: e-cig and e-liquid manufacturers, academia, regulators, equipment suppliers, and testing laboratories

Information documents available on CORESTA website:

- Guide No. 18: Sample Handling and Sample Collection of E-Cigarettes and E-Vapour Generating Products – November 2016

In development:

- Guide for Designing E-Vapor Product Stability Studies
- Collection Strategies and Considerations When Testing E-Vapour Product Technologies
- LOD/LOQ values for the determination of metals in aerosol
Analytical Methods and Technical Reports

- CRM 81: Routine analytical machine for e-cigarette aerosol generation and collection - definitions and standard conditions – June 2015
- CRM 84: Determination of Glycerin, propylene glycol, water, and nicotine in the aerosol of e-cigarettes by gas chromatographic analysis – March 2017
- 2017 Collaborative Study on Carbonyl Containing Compounds in Electronic Cigarette Liquids – May 2018

In progress:

- Proficiency Study: Determination of Metals in e-liquids (reporting stage)
- Collaborative Study: Determination of Carbonyls in Aerosol
- Collaborative Study: Aerosol delivery of Nicotine, PG and Glycerin from a reference e-cigarette
Approach used for the development of robust methods

- Consensus-based process

Define purpose → Paper-based assessment of available methods → Preliminary practical assessment → Method optimisation

Collaborative study: draft CRM 10-20 labs multiple products

Publish CRM → Data evaluation using ISO 5725

Discussions during process provide insight into causes/reduction of intra- and inter-laboratory variability
Analytical Methods and Technical Reports

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Analytical Methods and Technical Reports

- CRM 81: Routine analytical machine for e-cigarette aerosol generation and collection - definitions and standard conditions – June 2015
- Collaborative Study for Determination of Glycerin, Propylene Glycol, Water and Nicotine in Collected Aerosol - March 2017
- CRM 84: Determination of Glycerin, propylene glycol, water, and nicotine in the aerosol of e-cigarettes by gas chromatographic analysis – March 2017
- 2017 Collaborative Study on Carbonyl Containing Compounds in Electronic Cigarette Liquids – May 2017

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Basis for ISO 20768: “Vapour products - Routine analytical vaping machine – Definitions and standard conditions”
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Development has informed ISO 20714/FDIS: “E-liquid — Determination of nicotine, propylene glycol and glycerol in liquids used in electronic nicotine delivery devices — Gas chromatographic method”
Objective: To assess whether harmonisation necessary

- 4 blank/fortified e-liq
- 8 labs using µwave digestion, 6 using dilution only
- ICP-MS analysis
- As, Cd, Cr, Cu, Fe, Pb, Ni, Ag, Sn, Zn
Challenges

- **Range of member needs**
  - Testing requirements vary according to local regulations
  - Scope of testing and target analytes are not harmonized e.g. EU vs US

- **Range of ENDS products**
  - Rapid advances in ENDS technology
  - Members do not have experience with all types
  - Studies cannot cover all products on the worldwide market

- **Collaborative studies**
  - Device availability for collaborative studies, members cite liability and logistics
  - Shipping of study samples worldwide complicated by varied local customs requirements, e.g. nicotine content and tank capacity
Opportunities

- Global interdisciplinary expertise from different sectors – non-members can get involved
- Focus on sharing and advancing scientific knowledge
- Conduct of inter-laboratory studies during development of analytical methods
- Track record supporting development of International Standards
- Emphasis on collaboration
Thank you for your attention

Questions?

More information available at www.coresta.org