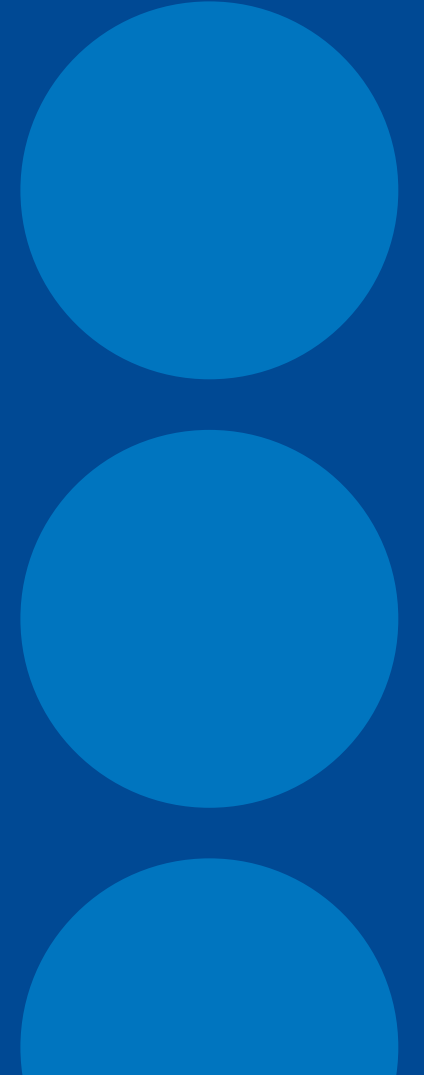


A reference material for non-volatile PAHs: development, production and analysis

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Topics

- Project introduction
- Workflow for a new reference material
- Results from external testing
- Results from internal testing
- Outlook

Project introduction

- **Polycyclic aromatic hydrocarbons:** ubiquitous CMR compounds present in everyday life and at workplaces
- **Problem:** commonly analyzed PAHs do not fully represent the carcinogenic potential
- **Solution:** establish high-molecular weight PAHs in routine analysis
 - Requires a reference material (RM) for these analytes



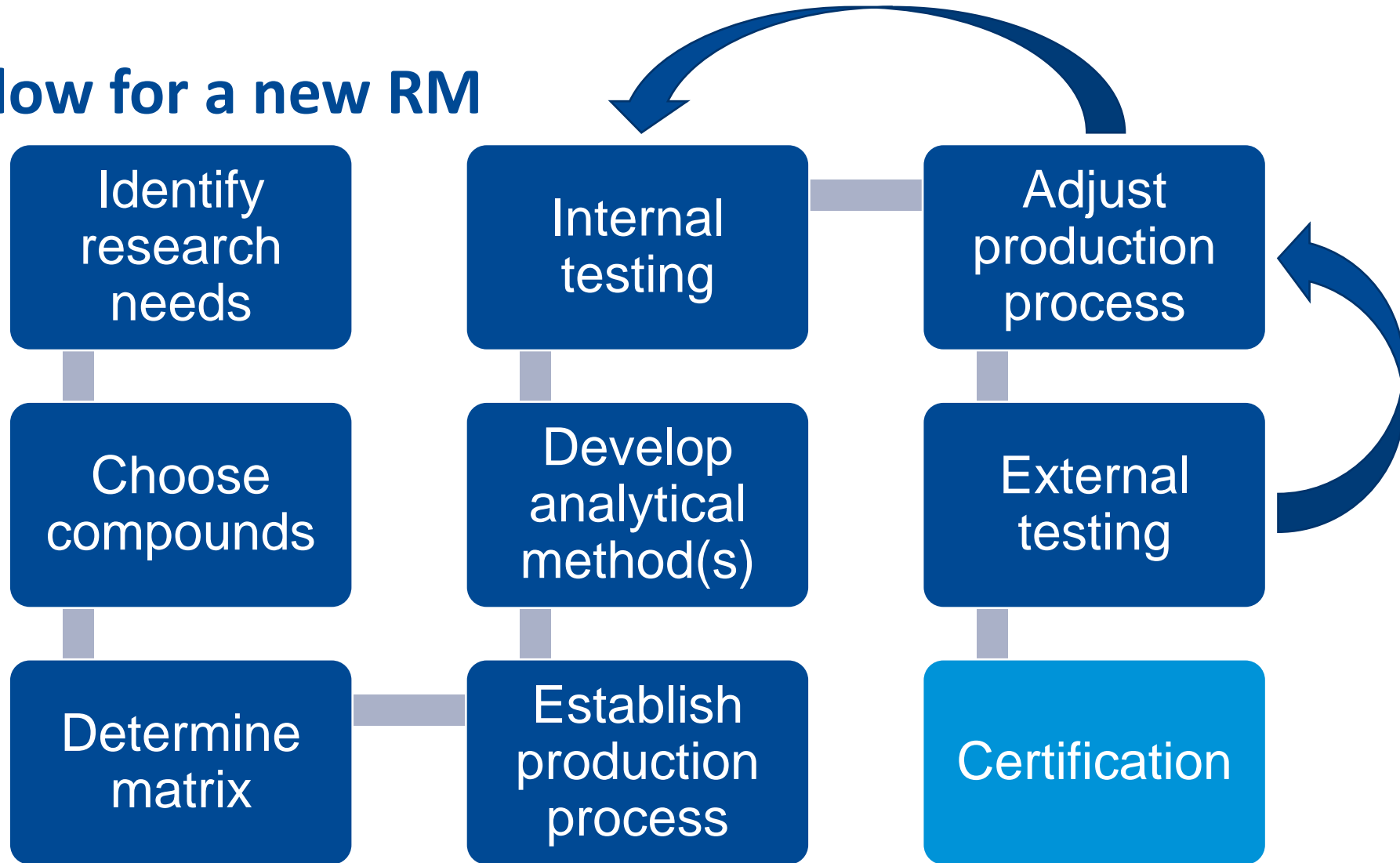
No RM for PAHs in workplace air samples available!

Project introduction

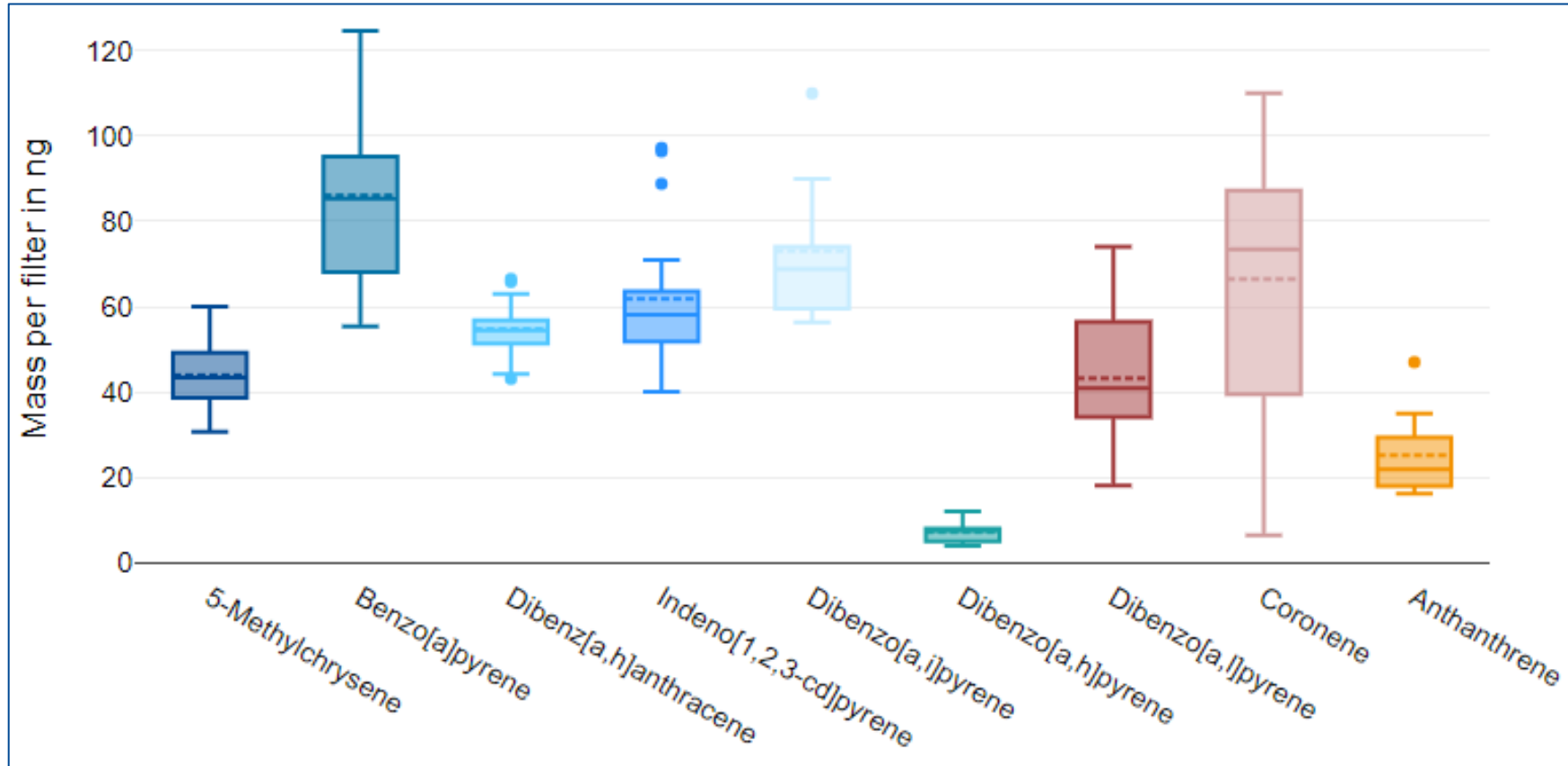
- **Aim:** developing a reference material for non-volatile PAHs
- Task group with several **national and international participants**
- Analytes chosen based on relevance, **carcinogenicity** and availability of standards
- Quartz fibre and PTFE membrane filters as medium



Workflow for a new RM



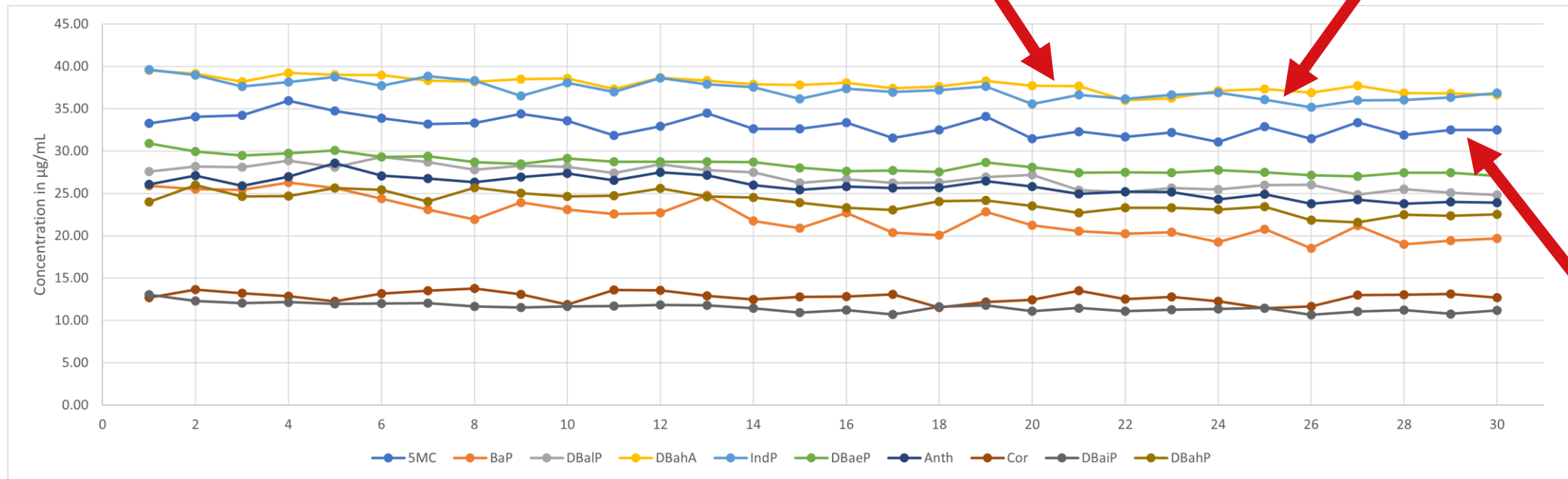
First filter series



- **Big spread of data** for most compounds
- **RSD** between 11.4 and 37.6 %

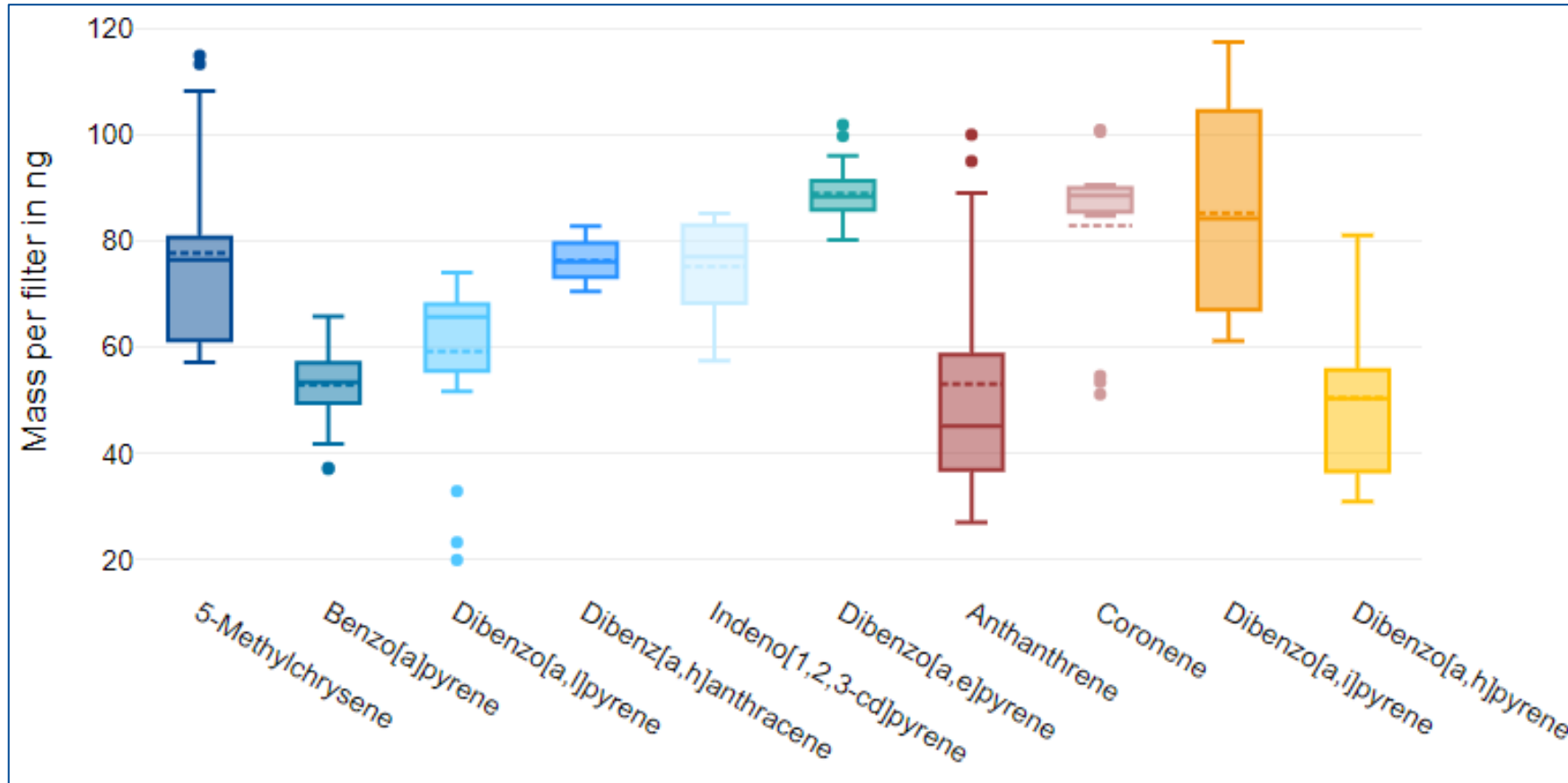
Adjustment of production process

- Internal testing showed improved results



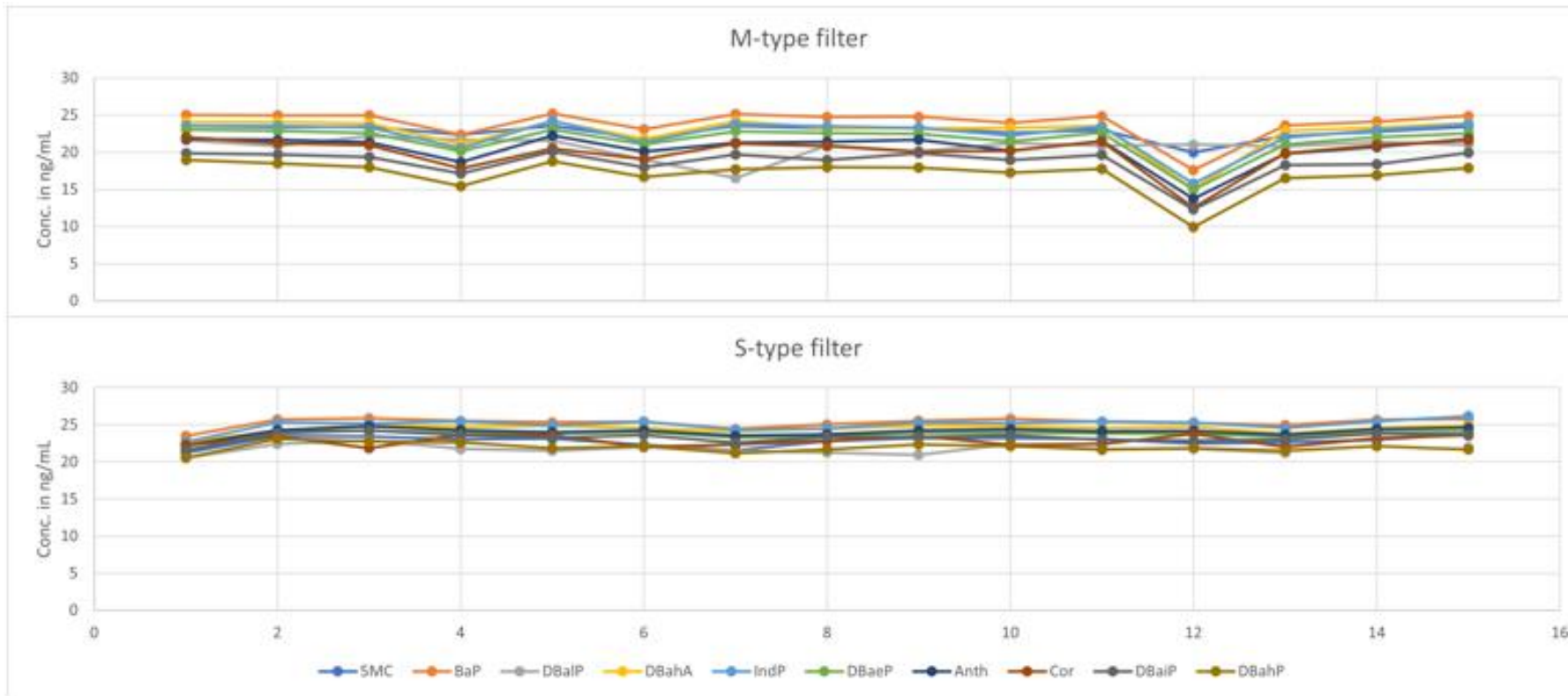
- RSD < 3 %** for **three PAHs**, **< 5 %** for 9/10 PAHs
- Stability** over four weeks was confirmed

Second filter series



- **RSD** over all participants improved (4.6 – 23.7 %)
- **Intra-laboratory deviation** improved
- Especially the **EPA PAHs** showed a very good performance

Internal testing – third series with PTFE filters



- **PTFE filters** showed better reproducibility and robustness
- **Third series** with filters from two different manufacturers
- **Reproducible dosing** of filters, but **differing recovery rates**

Next steps

- Evaluate the **third filter series**
- Plan the **first 'official' PT scheme** for Nov. 2023

- Examine **differences between filters** from various manufacturers
- Integrate the reference material into IFA's **regular PT scheme**

Thank you for your attention!

