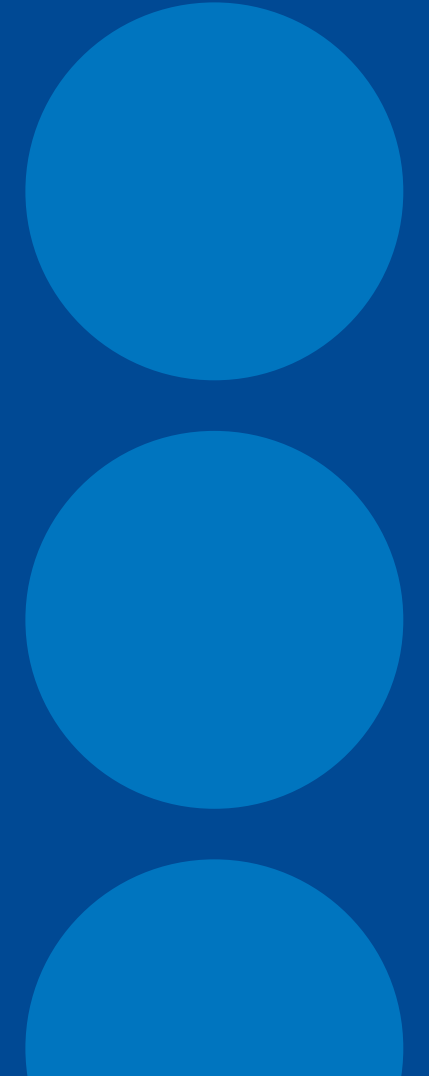


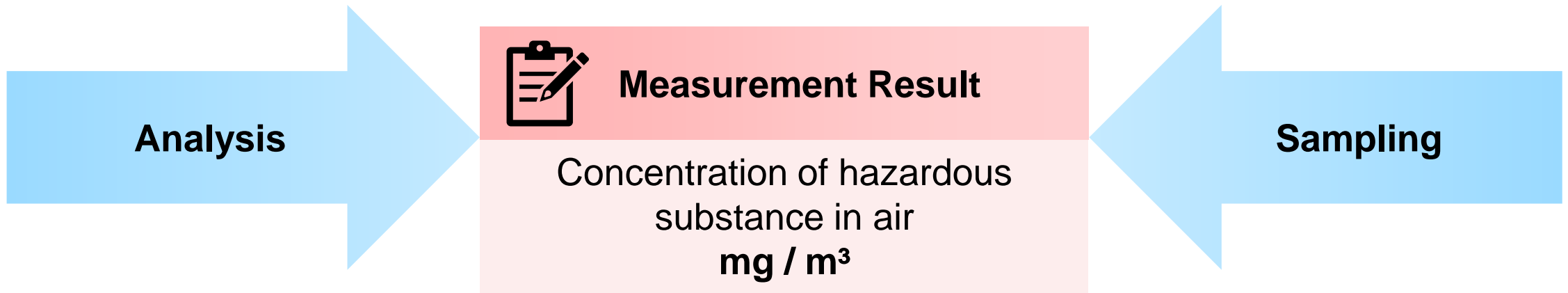
# Validation of Measurement Methods and their Uncertainty: Gases and Vapours

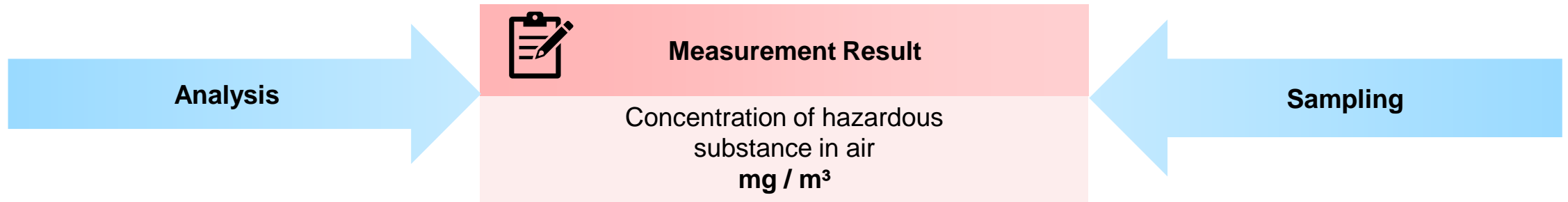
PEROSH

Presenting Author: **Kristina Witzler**

Authors: K. Witzler, J. Dospil, C. Wippich, P. Heckmann







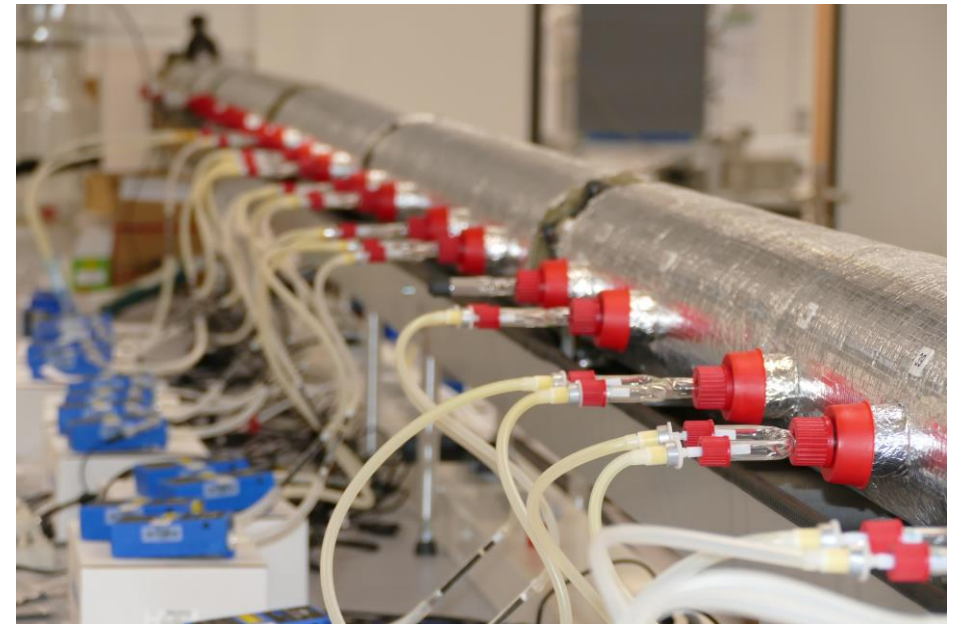
### Validation experiments ISO 22065 (gases and vapours)

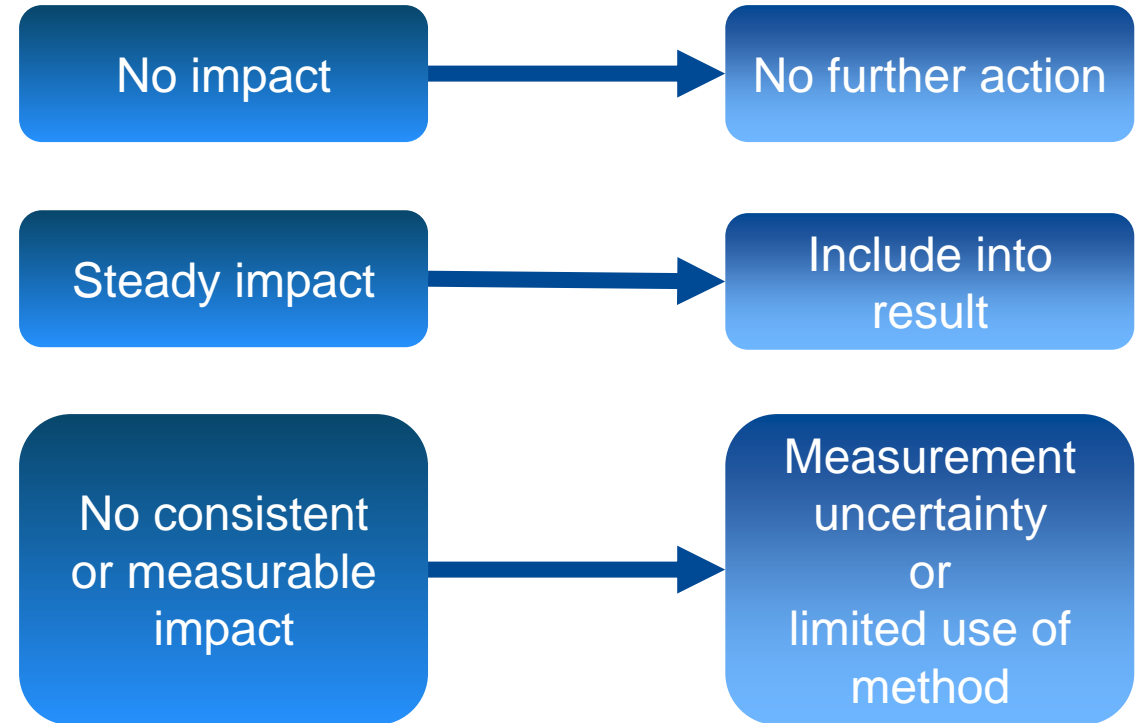
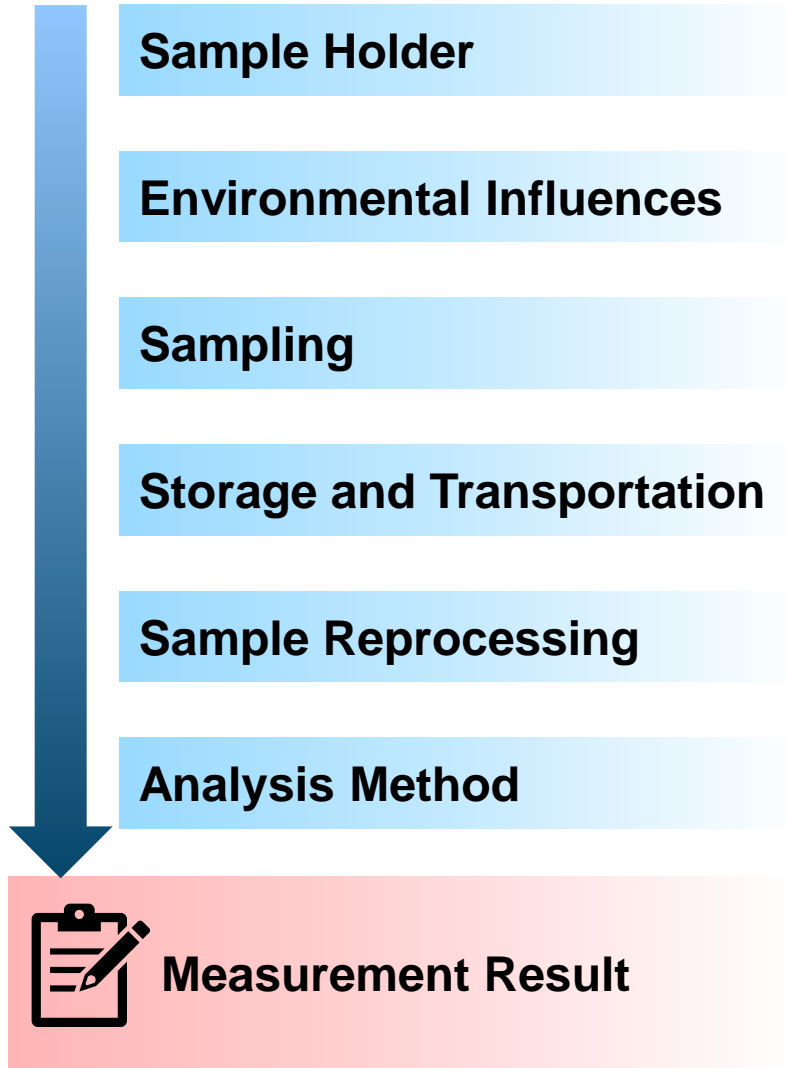
Minimum measurement range:

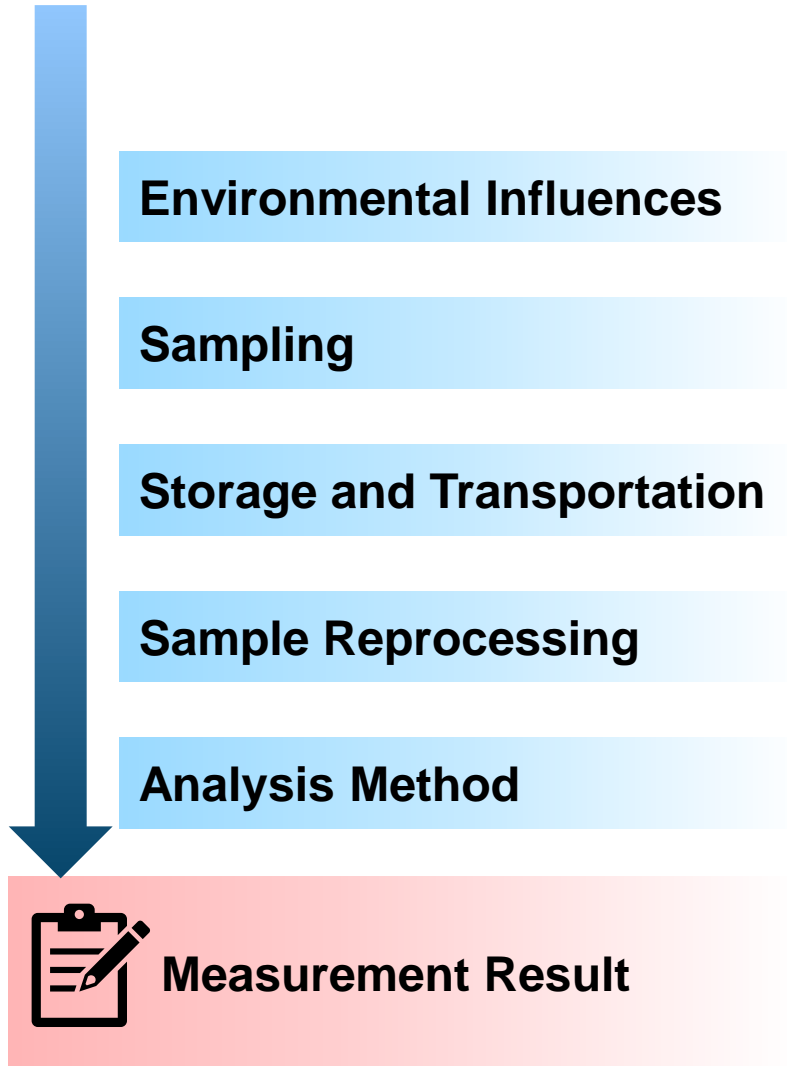
- OELV: 0.1 LV → 2 LV
- STEL: 0.5 → 2 LV

Prerequisite:

LOQ < lower limit of concentration range





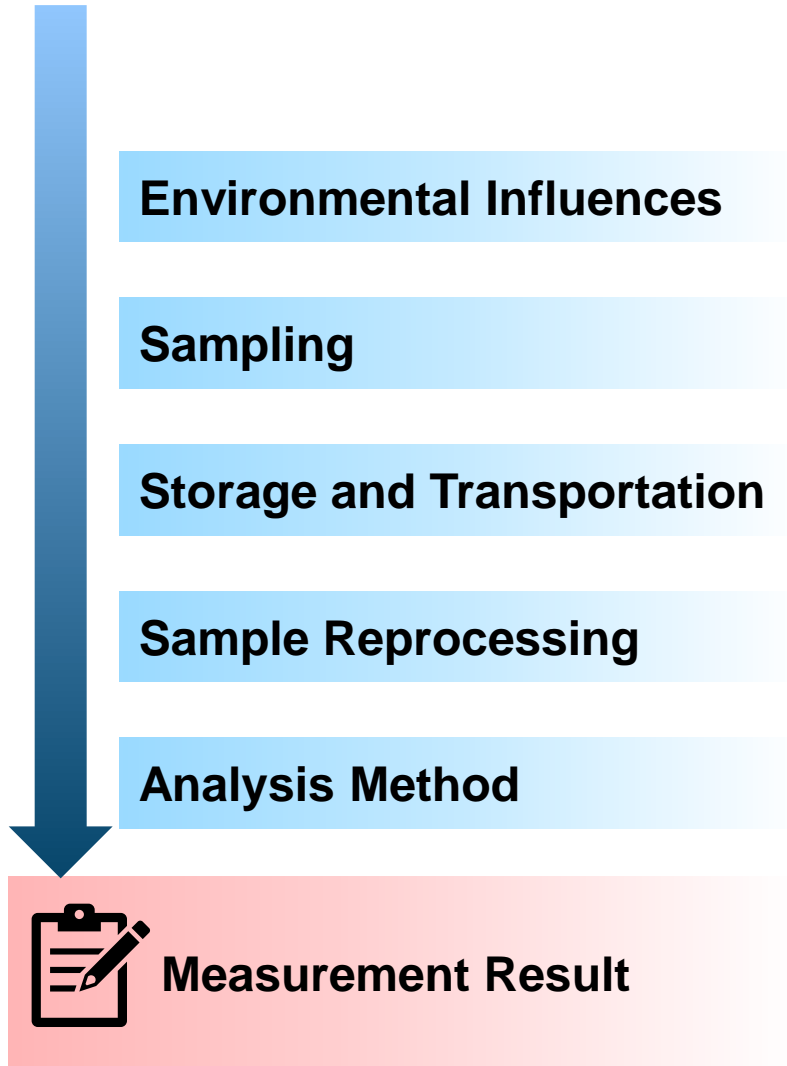


## Sample Holder

- Sampler type
  - Blank values
  - Wall deposits
- Sampler capacity
- Sampling efficacy



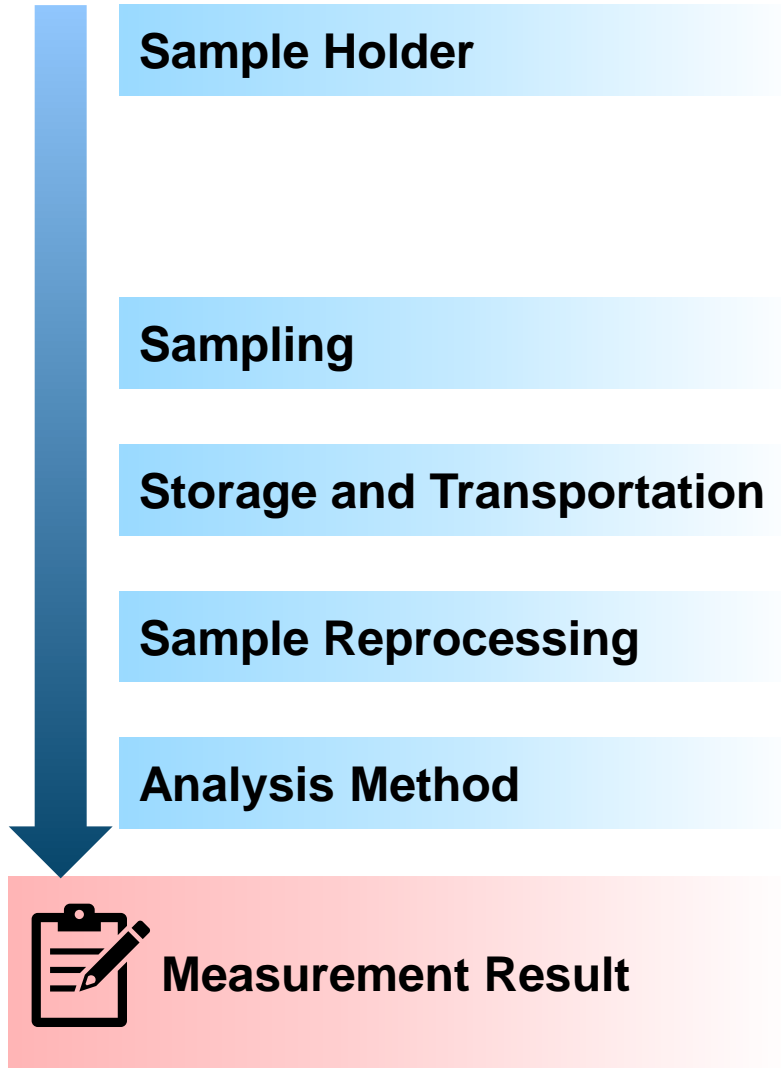
©Sandra Seifen Fotografie



## Sample Holder

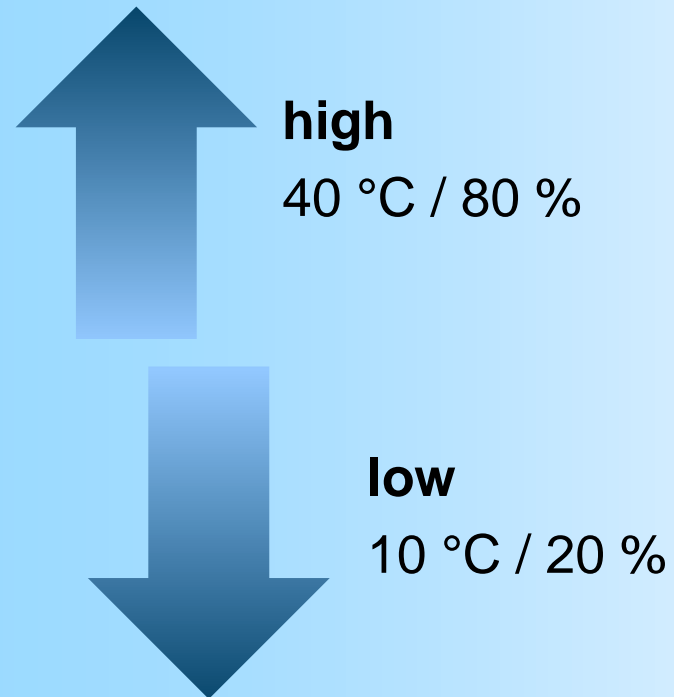
- Sampler type
  - blank values
  - wall deposits
- **Sampler capacity**
- Sampling efficacy
- **Breakthrough volume**

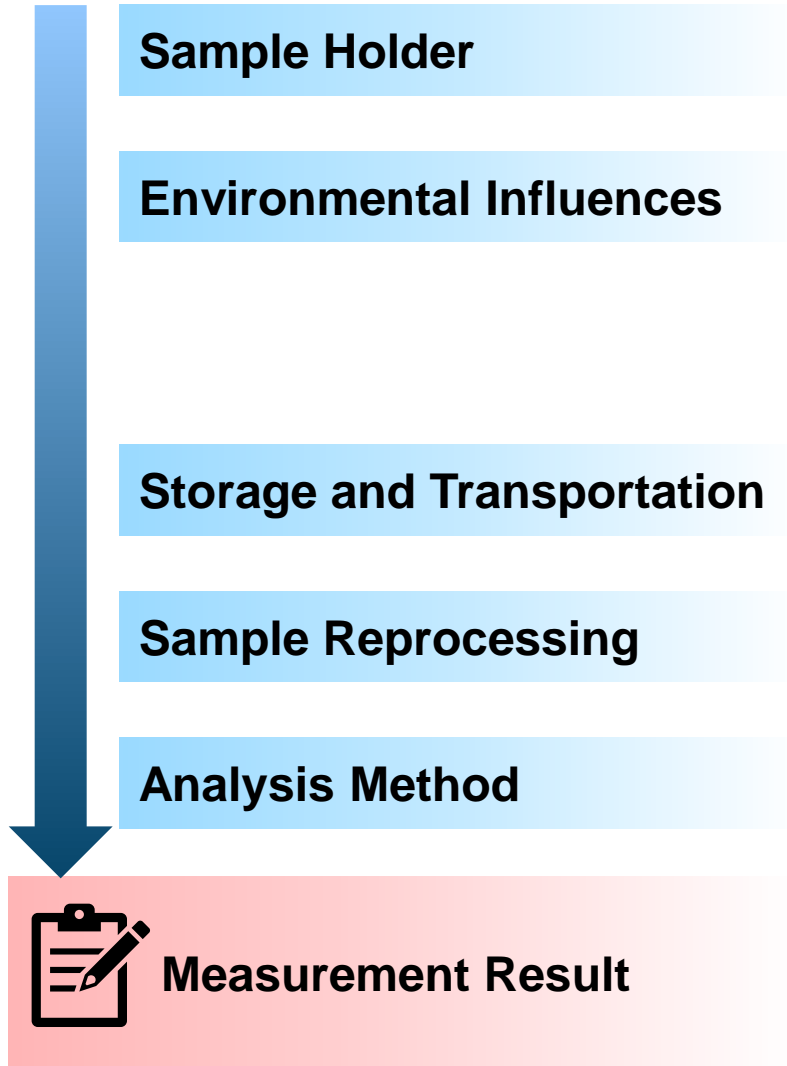




## Environmental Influences

- Temperature
- Humidity



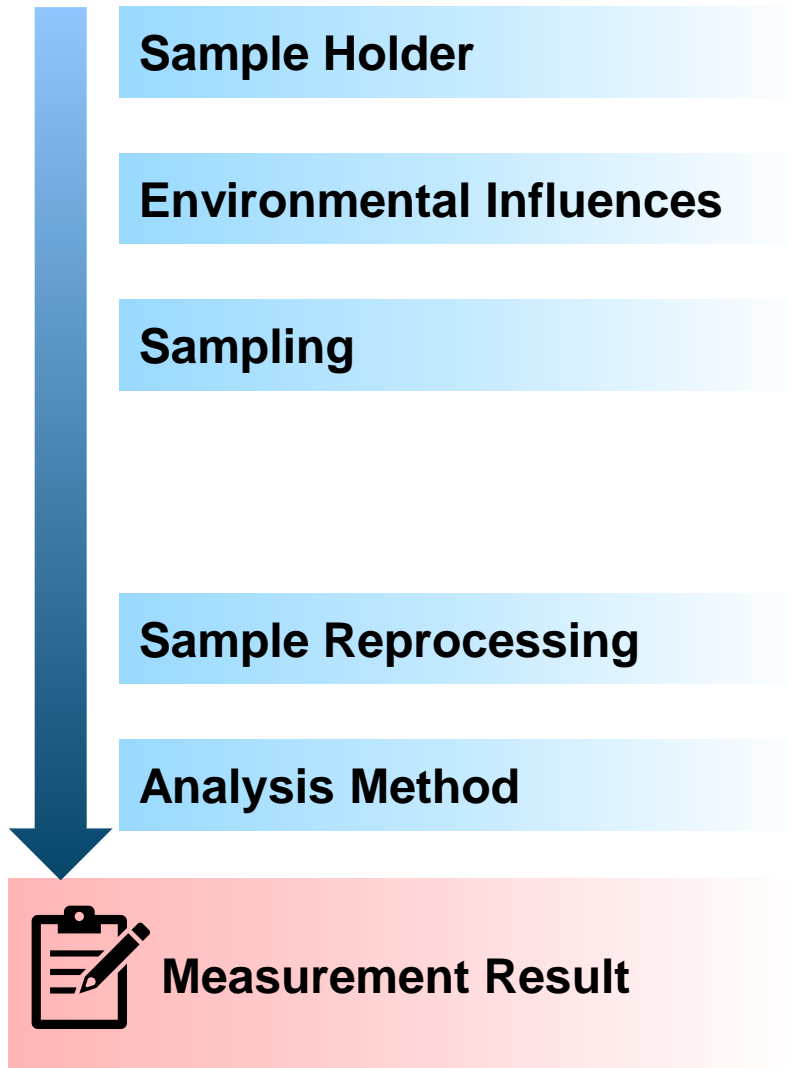


## Sampling

- Sample volume
- Flow rate
  - Stability
  - Read-off accuracy
  - Measurement
- Sampling time



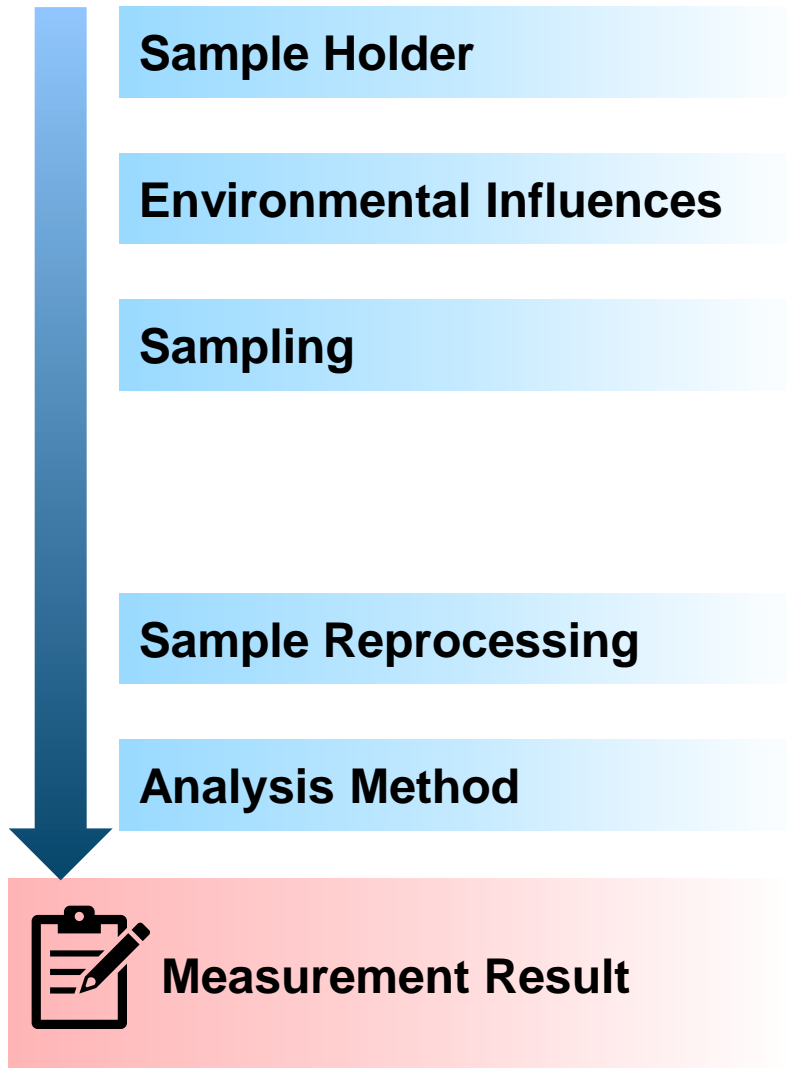




## Storage and Transportation

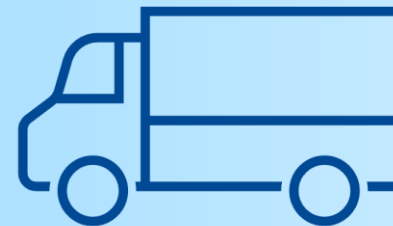
- Realistic storage conditions
  - Before sampling
  - After sampling
- Stability of analytes during transportation





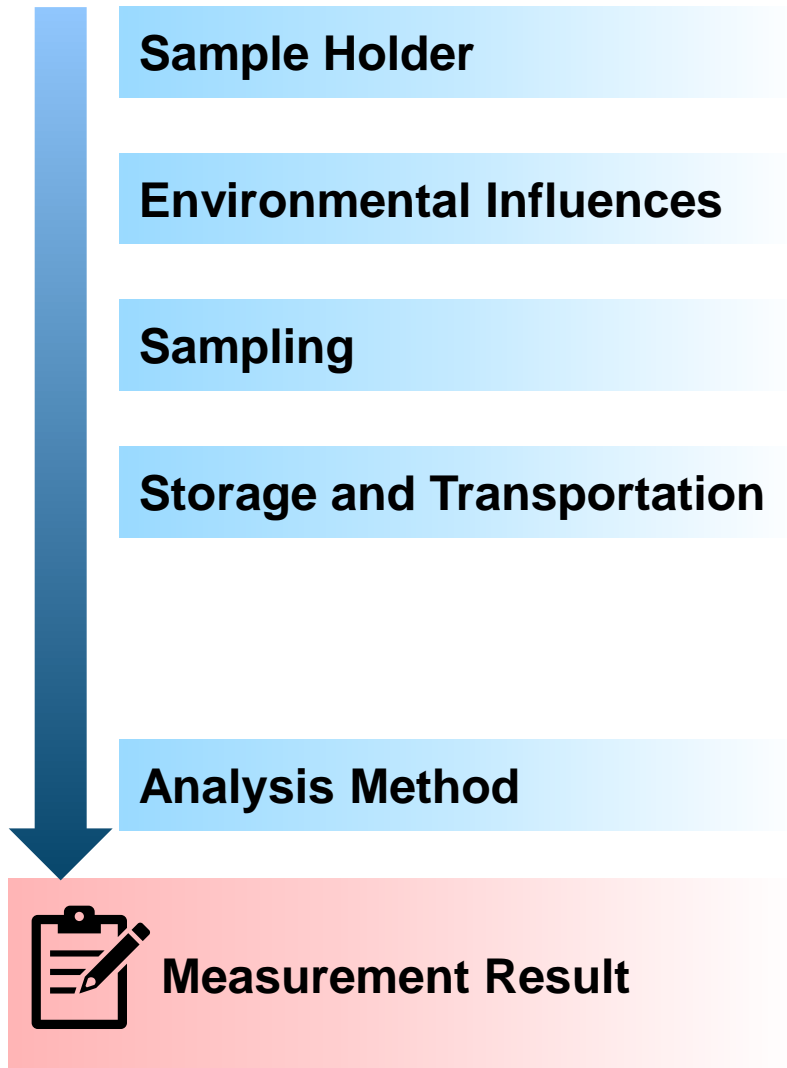
## Storage and Transportation

- Realistic storage conditions
  - Before sampling
  - **After sampling**
- Stability of analytes during transportation



### “Worst-case-scenario”

- High/low concentration
- High humidity
- Ambient temperature

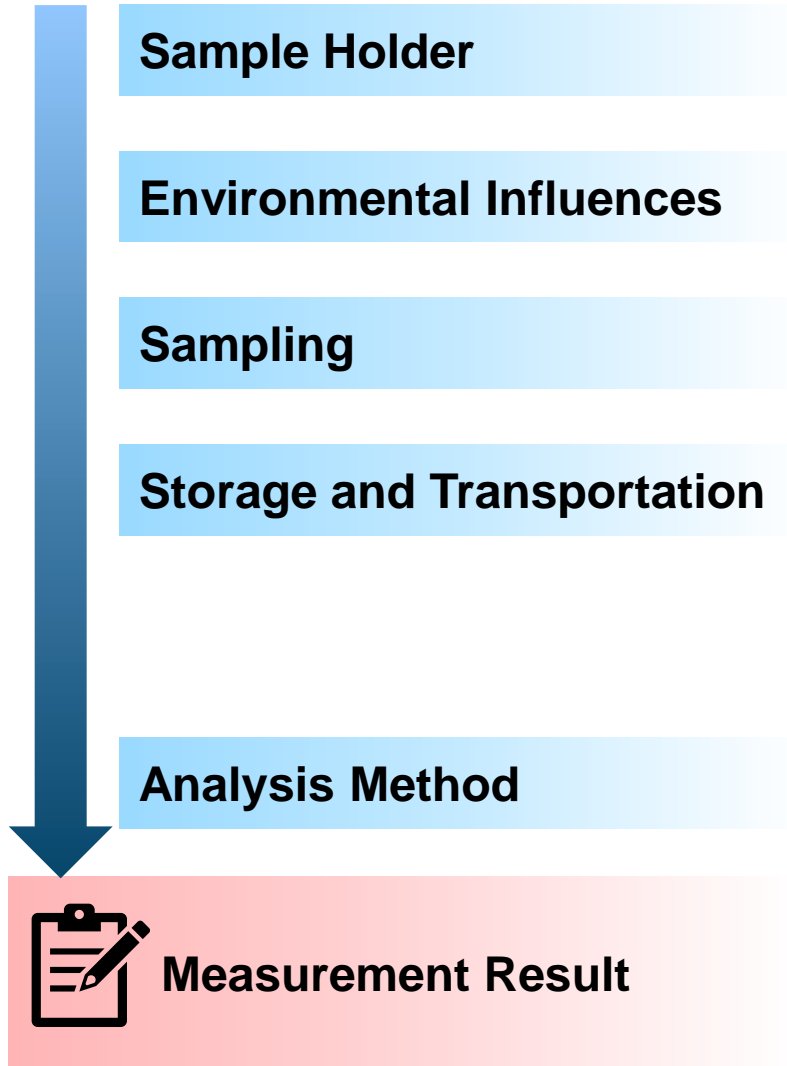


## Sample Reprocessing

- Extraction, elution, desorption
- Recovery rate
- Chemicals
- Volumetric devices
- Dilution
- Derivatisation



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## Sample Reprocessing

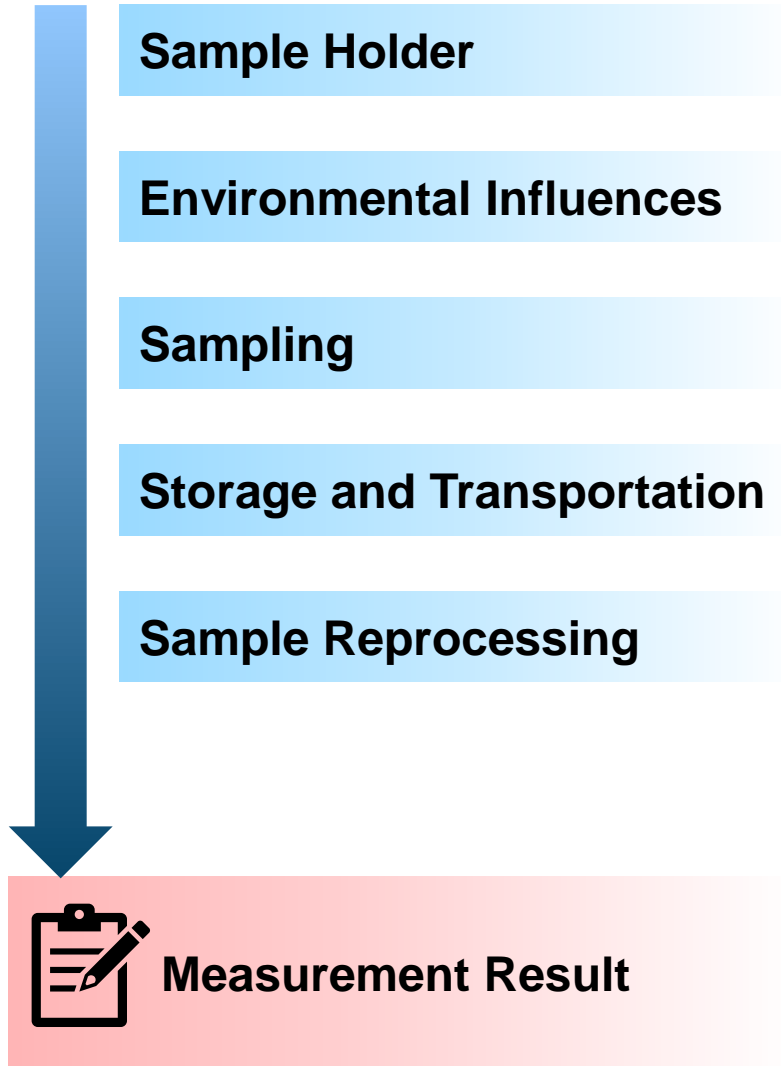
- Extraction, elution, desorption
- **Recovery rate**
- Chemicals
- Volumetric devices
- Dilution
- Derivatisation



averaged > 95 %

**Recovery Rate**

Independent of analyte concentration



## Analysis Method

- Blank values
- Interferences
- Limit of Detection LOD
- Limit of Quantification LOQ
- Calibration curve
- Coefficient of variation



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**Thanks for your attention**

