



19NRM03 SI-Hg

Metrology for traceable protocols for elemental and oxidised mercury concentrations

WP3 Performance evaluation

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SI-Hg WP3 Objective and Deliverables



Objective

To organise a **performance evaluation** to gather data on the characteristics of at least three **elemental** (Hg⁰) and three **oxidised** (Hg^{II}) **gas generators on the market**

Deliverables

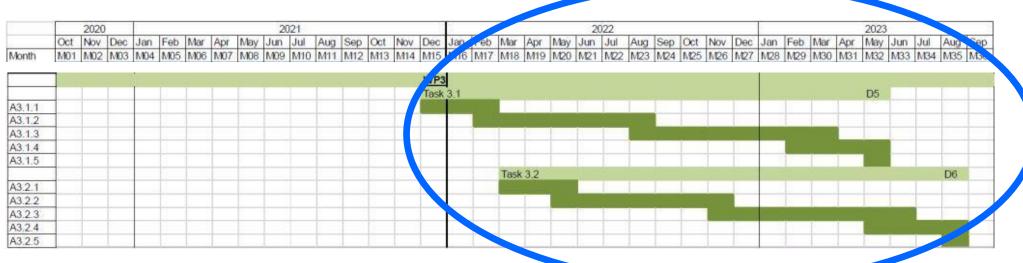
Reports on the performance evaluation of at least three elemental (Project Deliverable 5) and oxidized (Project Deliverable 6) mercury gas generators on the market



SI-Hg WP3 Content and Schedule



- Protocols for the evaluations and discussions with instrument providers
 Ongoing
- 2. Evaluation measurements Autumn 2022 – Spring 2023
- Reporting of the results → project Deliverables 5 and 6
 Summer 2023





SI-Hg WP3 Generators performance characteristics to be studied

- Repeatability
- Reproducibility
- Accuracy
- Linearity
- Short term drift
- Bias
- Effect of: flow rate, pressure, line voltage, switching on and off

Measurement range: μg/m³ (emissions) ... ng/m³ or less (ambient)



SI-Hg WP3 Traceable measurement methods

Elemental Hg (Hg⁰)

- Elemental mercury analyser
- Calibration: VSL primary elemental mercury gas standard

Oxidised Hg (Hg^{II})

- Dual mercury analyser system
 - Converter efficiency is established in SI-Hg WP2
- Calibration: secondary elemental mercury gas standard
 - Calibrated at VSL with primary elemental mercury gas standard
 - Transportable



SI-Hg WP3 Potential generator working principles and vendors identified so far

Elemental Hg (Hg⁰)

- Bell-jar
- Saturation
- Permeation
- High pressure cylinder
- Reduction Hg^{II} → Hg⁰
- ...

Vendors

- IAS (HovaCAL)
- Mercury Instruments
- PSA
- Tekran
- ...

Oxidised Hg (Hg^{II})

- Evaporation
- Permeation
- Dry salt bed (saturation)
- Oxidation Hg⁰ → Hg^{II}
- Plasma based
- ...

Vendors

- IAS (HovaCAL)
- PSA
- Tekran
- Thermo
- Optoseven
- JSI
- ...

If you are interested to participate, please let us know!

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