



19NRM03 SI-Hg

Metrology for traceable protocols for elemental and oxidised mercury concentrations

WP3 Performance evaluation

Webinar
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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** (Hg^0) 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

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

Month	2020			2021												2022												2023								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
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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: $\mu\text{g}/\text{m}^3$ (emissions) ... ng/m^3 or less (ambient)

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Traceable measurement methods

Elemental Hg (Hg^0)

- 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 (Hg^0)

- Bell-jar
- Saturation
- Permeation
- High pressure cylinder
- Reduction $\text{Hg}^{\text{II}} \rightarrow \text{Hg}^0$
- ...

Vendors

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

Oxidised Hg (Hg^{II})

- Evaporation
- Permeation
- Dry salt bed (saturation)
- Oxidation $\text{Hg}^0 \rightarrow \text{Hg}^{\text{II}}$
- Plasma based
- ...

Vendors

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

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