



Overview of Measurement Technologies for Air Pollutants and Air Quality Metrics

Pollutant Type:

Gaseous Pollutant

Pollutant/Metric Name:

Mercury vapour

#	Technology	Characteristics and performance	Availability and current use of instruments	Suggested area of application
1	Direct Cold Vapour Atomic Adsorption	<ul style="list-style-type: none"> European reference method (EN 15852: 2010) Measures only gaseous elemental mercury Very high time resolution (up to 1 second) Detection limit of the order of several ng/m^3 – may limit applications in rural and remote environments Calibration more difficult than other methods 	Commercial; re-search and monitoring networks	Industrial Urban
2	Trap and Desorb Cold Vapour Atomic Absorption	<ul style="list-style-type: none"> European reference method (EN 15852: 2010) Measures total gaseous mercury Pre-concentration on gold trap prior to thermal desorption and measurement High time resolution (up to a few minutes) Detection limit $< 1 \text{ ng}/\text{m}^3$ Calibration using mercury saturated air in bell-jar May suffer from more cross interferences than CVAFS 	Commercial; re-search and monitoring networks	Industrial Urban Rural Remote
3	Trap and Desorb Cold Vapour Atomic Fluorescence	<ul style="list-style-type: none"> European reference method (EN 15852: 2010) Measures total gaseous mercury Pre-concentration on gold trap prior to thermal desorption and measurement High time resolution (up to a few minutes) Detection limit $< 0.1 \text{ ng}/\text{m}^3$ Calibration using mercury saturated air in bell-jar 	Commercial; re-search and monitoring networks	Industrial Urban Rural Remote

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References:

- [1] Brown, R. J. C., Brown, A. S. (2008) "Accurate calibration of mercury vapour measurements." Analyst, 133: 1611-1618.
- [2] Brown, R. J. C., Pirrone, N., van Hoek, C., Sprovieri, F., Fernandez, R., Toté, K. (2010) "Standardisation of a European measurement method for the determination of total gaseous mercury: results of the field trial campaign and determination of a measurement uncertainty and working range." Journal of Environmental Monitoring 12: 689-695.
- [3] Dumarey, R., Brown, R. J. C., Corns, W. T., Brown, A. S., Stockwell, P. B. (2010) "Elemental mercury vapour in air: the origins and validation of the 'Dumarey equation' describing the mass concentration at saturation." Accreditation and Quality Assurance 15: 409-414.

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