

METHOD STATEMENT

**Determinand:**

Dissolved methane

Matrix:

Landfill leachates, Surface water, Ground Water.

Principle of Method:

A known amount of water is sealed in a headspace vial. The sample is then heated and agitated. This drives the dissolved methane into the 'headspace' above the aqueous layer. A portion of the headspace can then be sampled and analysed by GC using Flame Ionisation Detection.

Sampling and Sample Preparation

This test is carried out on the water sample as received from the client. They must be taken without any significant headspace (when vial is inverted, air bubble no more than 6mm diameter).

Samples are stored prior to analysis in a fridge at 3±2°C.

Samples are stable for 14 days (US EPA Method 8260) from sampling

Interferences:

Any compound, eluting at the same retention time as methane and giving a response on the flame ionisation detector has the potential to interfere with the result.

Performance of Method:

Range of Application: 0.01 - 25 mg/l

Normal Reporting Limit: 0.1mg/l

Determinand	LOD (mg/l)	Low Standard		High Standard	
		RSD %	Bias %	RSD %	Bias %
Methane	0.00211	5.67	2.35	5.34	-1.10

Determinand	Landfill Leachate				Surface Water				Ground Water			
	Low Spike		High Spike		Low Spike		High Spike		Low Spike		High Spike	
	RSD %	Rec %	RSD %	Rec %	RSD %	Rec %	RSD %	Rec %	RSD %	Rec %	RSD %	Rec %
Methane	3.33	99.9	3.85	97.5	6.10	95.9	5.41	96.3	4.33	96.3	5.68	95.9

Uncertainty of Measurement:

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

Determinand	Uncertainty of Measurement %
Methane	14.22

References:

The determination of Methane and other Hydrocarbon Gases in Water 1988. ISBN 0117521280.

EPA Method 5021A : Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis