



Method Summary

Determination of SVOCs in Aqueous Matrices by GC-MS

Scope and Range

This method describes a procedure for the extraction, detection, identification and quantification of 55 semi-volatile organic compounds, and the semi quantification of other unknown tentatively identified compounds (TIC's). This method holds UKAS accreditation ISO17025 for all compounds except for Phenol, 4-chloroaniline, hexachlorocyclopentadiene, pentachlorophenol, 4-nitrophenol and 3-nitroaniline for surface and ground water matrices.

The calibration range for this method is LOD to 125µg/l. For limits of detection, see Table 1.

References

EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
EPA 3510C Separatory Funnel Liquid-Liquid Extraction
Fast USEPA 8270 Semivolatiles Analysis Using the 6890/5975 inert GC/MSD. Agilent Technologies
Application note 5989-2981EN

Principle

A known volume of sample is placed into a separating funnel along with a surrogate solution. The sample is adjusted to pH 7 if required, DCM is added and the sample is shaken with the solvent then removed to a 60ml vial. The sample is then acidified, more DCM added and shaken again. This solvent is then added to the same 60ml vial. The extract is then filtered and concentrated, internal standard added and presented for analysis by GC-MS.

Analysis is undertaken by GC-MS using Selective Ion Monitoring (SIM) and Scan spectra.

Interferences

Any compound with similar volatility may co-elute with target analytes and hinder their identification



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Table 1 - Components with Limits of Detection.

COMPOUND	Limit of Detection	COMPOUND	Limit of Detection
Phenol	1µg/l	Acenaphthene	1µg/l
Bis(2-chloroethyl)ether	1µg/l	Dibenzofuran	1µg/l
2-Chlorophenol	1µg/l	4-Nitrophenol	1µg/l
1,3-Dichlorobenzene	1µg/l	2,4-Dinitrotoluene	1µg/l
1,4-Dichlorobenzene	1µg/l	Fluorene	1µg/l
1,2-Dichlorobenzene	1µg/l	Diethyl phthalate	1µg/l
2-Methylphenol	1µg/l	4-Chlorophenylphenylether	1µg/l
N-nitrosodi-n-propylamine	1µg/l	4-Nitroaniline	1µg/l
Hexachloroethane	1µg/l	Azobenzene	1µg/l
4-Methylphenol	1µg/l	4-Bromophenylphenylether	1µg/l
Nitrobenzene	1µg/l	Hexachlorobenzene	1µg/l
Isophorone	1µg/l	Pentachlorophenol	1µg/l
2-Nitrophenol	1µg/l	Phenanthrene	1µg/l
2,4-Dimethylphenol	1µg/l	Anthracene	1µg/l
Bis(2-chloroethoxy)methane	1µg/l	Carbazole	1µg/l
2,4-Dichlorophenol	1µg/l	Di-n-butylphthalate	1µg/l
1,2,4-Trichlorobenzene	1µg/l	Fluoranthene	1µg/l
Naphthalene	1µg/l	Pyrene	1µg/l
4-Chloroaniline	1µg/l	Butylbenzylphthalate	1µg/l
Hexachlorobutadiene	1µg/l	Benz(a)anthracene	1µg/l
4-Chloro-3-methylphenol	1µg/l	Chrysene	1µg/l
2-Methylnaphthalene	1µg/l	Bis(2-ethylhexyl)phthalate	2µg/l
Hexachlorocyclopentadiene	1µg/l	Di-n-octylphthalate	5µg/l
2,4,6-Trichlorophenol	1µg/l	Benzo(b)fluoranthene	1µg/l
2,4,5-Trichlorophenol	1µg/l	Benzo(k)fluoranthene	1µg/l
2-Chloronaphthalene	1µg/l	Benzo(a)pyrene	1µg/l
2-Nitroaniline	1µg/l	Indeno(1,2,3-cd)pyrene	1µg/l
Dimethyl phthalate	1µg/l	Dibenzo(a, h)anthracene	1µg/l
Acenaphthylene	1µg/l	Benzo(ghi)perylene	1µg/l
2,6-Dinitrotoluene	1µg/l		