



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 and 4-nitrophenol for surface and ground water matrices.

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

Principle

Preparation and Extraction

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

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.

Table 1 - Components with Limits of Detection.

COMPOUND	LIMIT OF DETECTION
Phenol	1 µg/l
Bis(2-chloroethyl)ether	1 µg/l
2-Chlorophenol	1 µg/l
1,3-Dichlorobenzene	1 µg/l
1,4-Dichlorobenzene	1 µg/l
1,2-Dichlorobenzene	1 µg/l
2-Methylphenol	1 µg/l
N-nitrosodi-n-propylamine	1 µg/l
Hexachloroethane	1 µg/l
4-Methylphenol	1 µg/l
Nitrobenzene	1 µg/l
Isophorone	1 µg/l
2-Nitrophenol	1 µg/l
2,4-Dimethylphenol	1 µg/l
Bis(2-chloroethoxy)methane	1 µg/l
2,4-Dichlorophenol	1 µg/l
1,2,4-Trichlorobenzene	1 µg/l
Naphthalene	1 µg/l
4-Chloroaniline	1 µg/l



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COMPOUND	LIMIT OF DETECTION
Hexachlorobutadiene	1 µg/l
4-Chloro-3-methylphenol	1 µg/l
2-Methylnaphthalene	1 µg/l
Hexachlorocyclopentadiene	1 µg/l
2,4,6-Trichlorophenol	1 µg/l
2,4,5-Trichlorophenol	1 µg/l
2-Chloronaphthalene	1 µg/l
2-Nitroaniline	1 µg/l
Dimethyl phthalate	1 µg/l
Acenaphthylene	1 µg/l
2,6-Dinitrotoluene	1 µg/l
3-nitroaniline	1 µg/l
Acenaphthene	1 µg/l
Dibenzofuran	1 µg/l
4-Nitrophenol	1 µg/l
2,4-Dinitrotoluene	1 µg/l
Fluorene	1 µg/l
Diethyl phthalate	1 µg/l
4-Chlorophenylphenylether	1 µg/l
4-Nitroaniline	1 µg/l
Azobenzene	1 µg/l
4-Bromophenylphenylether	1 µg/l
Hexachlorobenzene	1 µg/l
Pentachlorophenol	1 µg/l
Phenanthrene	1 µg/l
Anthracene	1 µg/l
Carbazole	1 µg/l
Di-n-butylphthalate	1 µg/l
Fluoranthene	1 µg/l
Pyrene	1 µg/l
Butylbenzylphthalate	1 µg/l
Benz(a)anthracene	1 µg/l
Chrysene	1 µg/l
Bis(2-ethylhexyl)phthalate	2 µg/l
Di-n-octylphthalate	5 µg/l
Benzo(b)fluoranthene	1 µg/l
Benzo(k)fluoranthene	1 µg/l
Benzo(a)pyrene	1 µg/l
Indeno(1,2,3-cd)pyrene	1 µg/l
Dibenzo(a, h)anthracene	1 µg/l
Benzo(ghi)perylene	1 µg/l