



METHOD STATEMENT

Determinand:

Extractable petroleum hydrocarbons (EPH) >C10 - C44

Matrix:

Raw waters, waste waters, effluents and leachates.

Principle of Method:

Petroleum hydrocarbons are extracted from aqueous samples using n-Hexane and the extracted hydrocarbons are then quantified by capillary gas chromatography with flame ionisation detection (GC FID).

Sampling and Sample Preparation:

250ml glass bottles should be used fitted with PTFE lined screw caps.

Samples should be stored at $3\pm 2^{\circ}\text{C}$.

Extracts must be stored below 6°C if they cannot be analysed on the day that they are vialled.

Samples must, if at all possible be extracted in the sample bottles in which they were collected.

Samples are stable for 13 days (In-House Data) from sampling.

Interferences:

Any co-extracted material which has a retention time in the C10 to C44 range and which elicits a detector response will interfere.

Performance of Method:

The range of analysis is 10 - 2,000 $\mu\text{g/l}$ without dilution

Determinand	LOD $\mu\text{g/l}$	Low Std		High Std	
		Bias	RSD	Bias	RSD
>C10 - C12	0.969	-	-	-	-
>C12 - C16	1.540	-	-	-	-
>C16 - C21	3.072	-	-	-	-
>C21 - C44	7.052	-	-	-	-
>C10 - C16	1.521	-	-	-	-
>C16 - C24	3.869	-	-	-	-
>C24 - C44	7.132	-	-	-	-
TPH (>C10 - C44)	9.038	+3.35%	7.28%	+4.76%	3.32%

Determinand	Dechlorinated Tap		Leachate		Effluent	
	Rec.	RSD	Rec.	RSD	Rec.	RSD
TPH (>C10 - C44)	102.9%	7.80%	96.7%	6.19%	103.5%	7.56%
TPH (>C10 - C44) - High Range	103.2%	6.60%	102.1%	5.93%	103.5%	5.93%

Determinand	Aliphatic LOD $\mu\text{g/l}$	Aromatic LOD $\mu\text{g/l}$
>C10 - C12	0.326	0.616
>C12 - C16	0.225	0.351
>C16 - C21	3.125	3.176
>C21 - C44	3.878	5.608
>C10 - C16	0.441	0.540
>C16 - C24	4.076	4.933
>C24 - C44	2.938	4.033
EPH (>C10 - C44)	8.377	9.705



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Compound	Silica gel fractionation - Mean Recoveries			
	Aliphatic Fraction (F1)		Aromatic Fraction (F2)	
	Recovery (%)	RSD (%)	Recovery (%)	RSD (%)
Naphthalene	<5.00	-	90.4	5.00
2-Methyl Naphthalene	<5.00	-	90.6	5.02
Acenaphthylene	<5.00	-	90.6	4.95
Acenaphthene	<5.00	-	91.0	4.93
Fluorene	<5.00	-	92.2	4.45
Phenanthrene	<5.00	-	94.8	4.09
Anthracene	<5.00	-	94.4	4.07
Fluoranthene	<5.00	-	95.0	3.45
Pyrene	<5.00	-	96.3	3.50
Benzo(a)Anthracene / Chrysene	<5.00	-	97.2	3.14
Benzo(b/k)Fluoranthene	<5.00	-	91.1	3.64
Benzo(a)Pyrene	<5.00	-	102.4	2.10
Dibenzo(ah)Anthracene / Indenopyrene	<5.00	-	97.7	3.62
Benzo(ghi)Perylene	<5.00	-	96.3	5.08
Total Aromatic	<5.00	-	94.3	4.07
Decane (C10)	89.2	2.15	<5.00	-
Dodecane (C12)	88.8	2.30	<5.00	-
Tetradecane (C14)	88.9	1.95	<5.00	-
Hexadecane (C16)	89.2	1.73	<5.00	-
Octadecane (C18)	91.6	1.70	<5.00	-
Nonadecane (C19)	92.5	1.70	<5.00	-
Eicosane (C20)	92.8	1.52	<5.00	-
Docosane (C22)	93.7	1.30	<5.00	-
Tetracosane (C24)	94.2	1.69	<5.00	-
Hexacosane (C26)	92.9	1.15	<5.00	-
Octacosane (C28)	93.0	2.85	<5.00	-
Triacontane (C30)	92.7	1.32	<5.00	-
Hexatriacontane (C36)	91.3	2.54	<5.00	-
Tetratetracontane (C44)	87.9	5.99	<5.00	-
Total Aliphatic	91.3	2.14	<5.00	-

References:

In-House method