QUASIMEME

Quality assurance of information for marine environmental monitoring

---

Certificate of Analysis

Sediment

REFERENCE MATERIAL

Sediment sample 18

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Sediment 18

General Information

In this report an overview is given of analytical data for this sample collected in our proficiency testing program. The consensus values are calculated using a robust statistical model. With this NDA model mean and standard deviation are calculated using all reported data when at least 4 results are left after removal of reported 'lower than' (<) and 0 (= zero) values. No outliers are removed.

This report is divided into two sections: Consensus Values and Indicative Values. The division is made on the reliability of the data. Consensus Values are based on at least 10 results while the relative uncertainty is smaller than 6.25%. Indicative Values are based on a relative uncertainty of maximum 35% with at least 4 and less than 10 results or a relative uncertainty higher than 6.25%.

For each determinand the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median, MAD (Median of Absolute Deviation) and the uncertainty in the assigned value. The confidence limits (at 95 % probabilty) are calculated for these determinands.

The results of each determinand is expressed on dried sediment.

Sample information

QUASIMEME reference materials cover a range of natural Marine sediment species from contaminated waters from the North Sea and/or Mediterranean. There is no spiking, mixing or other alterations of the samples. For sample preparation the sediment samples are dried at 40 oC and milled to pass a 0.5 mm sieve.

This Sediment sample 18 of Estuarine sediment from Off Tyne, Newcastle, United Kingdom is prepared for the QUASIMEME proficiency programs. The results on which the values in this report are based were taken from the periods given in the following table.

Year.Round	Program	Sample Round Id
2022.2	MS2	QOR152MS
2022.1	MS7	QBC070MS
2021.1	MS7	QBC067MS
2018.2	MS2	QOR136MS
2016.2	MS2	QOR128MS
2014.1	MS2	QOR119MS

Consensus Values MS2

Method: Chlorinated organics - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
PCB28	µg/kg	2.88	0.402	13.9	22	2.97	0.265	0.107	2.71 - 3.06
PCB31	µg/kg	2.85	0.615	21.6	84	2.89	0.432	0.084	2.71 - 2.98
PCB52	µg/kg	17.7	3.03	17.1	94	17.8	2.04	0.39	17.1 - 18.3
PCB101	µg/kg	19.0	2.44	12.8	95	19.2	1.64	0.31	18.5 - 19.5
PCB105	µg/kg	3.05	0.469	15.4	54	3.03	0.322	0.080	2.93 - 3.18
PCB118	µg/kg	9.46	1.223	12.9	94	9.50	0.830	0.158	9.21 - 9.71
PCB138+PCB163	µg/kg	8.63	1.532	17.8	19	8.75	1.040	0.439	7.89 - 9.37
PCB138	µg/kg	6.74	1.273	18.9	84	6.78	0.845	0.174	6.46 - 7.01
PCB153	µg/kg	7.56	1.210	16.0	95	7.55	0.826	0.155	7.31 - 7.80
PCB156	µg/kg	0.443	0.1319	29.8	48	0.453	0.0933	0.0238	0.405 - 0.482
PCB180	µg/kg	2.05	0.629	30.7	91	2.04	0.419	0.082	1.92 - 2.18
HCB	µg/kg	0.280	0.0841	30.0	61	0.289	0.0590	0.0135	0.259 - 0.302
pp'-DDD	µg/kg	0.453	0.1426	31.5	57	0.460	0.1000	0.0236	0.415 - 0.491
pp'-DDE	µg/kg	0.422	0.1189	28.2	60	0.460	0.0908	0.0192	0.392 - 0.453

Method: Carbon - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
TOC	%	1.33	0.102	7.6	47	1.31	0.071	0.019	1.30 - 1.36

Indicative Values MS2

Method: Chlorinated organics - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
PCB18	µg/kg	0.260	0.0595	22.9	5	0.266	0.0454	0.0332	0.191 - 0.328
PCB44	µg/kg	6.80	1.494	22.0	5	6.55	0.950	0.835	5.08 - 8.52
PCB47	µg/kg	2.05	0.176	8.6	6	2.11	0.138	0.090	1.87 - 2.22
PCB49	µg/kg	7.28	1.670	22.9	6	7.27	1.145	0.852	5.61 - 8.95
PCB66	µg/kg	6.96	1.525	21.9	6	6.94	1.040	0.778	5.43 - 8.48
PCB110	µg/kg	14.9	1.06	7.1	5	14.9	0.77	0.59	13.7 - 16.2
PCB128	µg/kg	1.04	0.175	16.9	7	1.06	0.129	0.083	0.881 - 1.19
PCB141	µg/kg	1.56	0.397	25.5	6	1.64	0.280	0.202	1.16 - 1.95
PCB149	µg/kg	7.78	1.200	15.4	8	7.80	0.780	0.530	6.80 - 8.76
PCB151	µg/kg	2.28	0.544	23.8	5	2.18	0.415	0.304	1.66 - 2.91
PCB158	µg/kg	0.741	0.0159	2.1	5	0.744	0.0130	0.0089	0.723 - 0.759
PCB170	µg/kg	1.31	0.485	37.0	9	1.39	0.348	0.202	0.947 - 1.68
PCB183	µg/kg	0.595	0.2257	37.9	6	0.591	0.1555	0.1152	0.369 - 0.820
PCB187	µg/kg	1.55	0.277	17.9	7	1.53	0.150	0.131	1.30 - 1.80
PCB194	µg/kg	0.300	0.1414	47.2	8	0.305	0.0975	0.0625	0.184 - 0.415
a-HCH	µg/kg	0.0290	0.0161	55.7	30	0.0380	0.0108	0.0037	0.0229 - 0.0350
g-HCH	µg/kg	0.0286	0.0148	51.6	26	0.0340	0.0100	0.0036	0.0227 - 0.0346
Dieldrin	µg/kg	0.101	0.0485	47.9	19	0.125	0.0330	0.0139	0.0779 - 0.125
pp'-DDT	µg/kg	0.0858	0.0597	69.6	43	0.1100	0.0470	0.0114	0.0674 - 0.104

Method: Nitrogen - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
PN	%	0.121	0.0133	11.0	7	0.120	0.0100	0.0063	0.109 - 0.133

Consensus Values MS7

Method: Brominated Flame Retardants - MS7

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE047	µg/kg	0.457	0.0748	16.4	23	0.451	0.0510	0.0195	0.425 - 0.489
BDE099	µg/kg	0.632	0.0646	10.2	23	0.630	0.0427	0.0168	0.604 - 0.660
BDE153	µg/kg	0.153	0.0284	18.6	23	0.154	0.0190	0.0074	0.141 - 0.166

Indicative Values MS7

Method: Brominated Flame Retardants - MS7

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE028	µg/kg	0.0361	0.0093	25.7	16	0.0375	0.0067	0.0029	0.0312 - 0.0410
BDE100	µg/kg	0.108	0.0283	26.1	22	0.114	0.0198	0.0075	0.0958 - 0.121
BDE154	µg/kg	0.148	0.0362	24.6	22	0.156	0.0240	0.0097	0.132 - 0.164
BDE183	µg/kg	0.199	0.0893	45.0	20	0.209	0.0635	0.0250	0.157 - 0.240
BDE209	µg/kg	3.97	1.015	25.5	14	4.24	0.702	0.339	3.39 - 4.56
BDE66	µg/kg	0.0562	0.0157	27.9	14	0.0576	0.0097	0.0052	0.0472 - 0.0652
BDE85	µg/kg	0.0271	0.0070	25.7	10	0.0273	0.0050	0.0027	0.0222 - 0.0320