QUASIMEME

Quality assurance of information for marine environmental monitoring

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Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 377

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 377

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 a wet weight basis.

Sample information

QUASIMEME reference materials cover a range of natural Biota species from contaminated waters from the North Sea and/or Mediterranean. The supplied wet test materials are homogenised and sterilised by autoclaving.

This Biota sample 377 of Mix Oyster and mussel from Oyster from Ems Dollard 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
2023.2	BT4	QPH112BT
2023.2	BT8	QSP088BT
2023.2	BT9	QBC078BT

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Pyrene	µg/kg	4.36	0.722	16.5	16	4.26	0.445	0.226	3.98 - 4.75
Benzo[g,h,i]perylene	µg/kg	1.76	0.264	15.0	14	1.85	0.167	0.088	1.61 - 1.91
Fluoranthene	µg/kg	6.52	1.004	15.4	18	6.64	0.520	0.296	6.02 - 7.02
Benzo[a]anthracene	µg/kg	2.15	0.221	10.3	15	2.10	0.165	0.071	2.02 - 2.27
Benzo[b]fluoranthene	µg/kg	3.34	0.586	17.5	14	3.35	0.329	0.196	3.01 - 3.68
Benzo[k]fluoranthene	µg/kg	1.52	0.259	17.1	13	1.58	0.100	0.090	1.36 - 1.67
Anthracene	µg/kg	4.91	0.790	16.1	16	4.77	0.446	0.247	4.49 - 5.33
Fluorene	µg/kg	5.40	0.830	15.4	12	5.48	0.440	0.299	4.88 - 5.93
Chrysene	µg/kg	2.38	0.441	18.6	14	2.50	0.252	0.147	2.13 - 2.63

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Benzo[e]pyrene	µg/kg	2.92	0.171	5.9	7	2.87	0.173	0.081	2.76 - 3.07
Indeno[1,2,3-cd]pyrene	µg/kg	1.54	0.365	23.7	13	1.52	0.238	0.127	1.32 - 1.76
Phenanthrene	µg/kg	11.3	2.59	22.8	16	11.5	1.50	0.81	9.96 - 12.7
Benzo[a]pyrene	µg/kg	1.45	0.453	31.3	17	1.55	0.250	0.137	1.22 - 1.68
Naphthalene	µg/kg	5.48	1.586	29.0	11	5.56	0.840	0.598	4.43 - 6.53
Dibenz[ah]anthracene	µg/kg	0.631	0.2182	34.6	12	0.664	0.1265	0.0787	0.494 - 0.768
Acenaphthylene	µg/kg	3.95	0.736	18.6	10	3.84	0.546	0.291	3.44 - 4.47
Dibenzothiophene	µg/kg	-	-	-	5	0.402	0.1	-	- - -
2-methylphenanthrene	µg/kg	-	-	-	4	0.800	0.5	-	- - -
Perylene	µg/kg	-	-	-	4	3.92	0.4	-	- - -
Acenaphthene	µg/kg	4.80	0.968	20.2	9	4.90	0.550	0.403	4.07 - 5.53
1-methylnaphtalene	µg/kg	-	-	-	5	0.591	0.1	-	- - -
2-methylnaphtalene	µg/kg	-	-	-	5	1.16	0.4	-	- - -
C2-phenanthren.+ anthracen.	µg/kg	-	-	-	4	2.09	0.1	-	- - -
1-methylphenanthrene	µg/kg	-	-	-	5	0.781	0.2	-	- - -

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.37	0.505	21.3	8	2.31	0.262	0.223	1.96 - 2.79

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Tributyltin (TBT)	µg Sn/kg	5.29	2.250	42.5	6	4.91	1.326	1.148	3.05	-	7.54
Monobutyltin (MBT)	µg Sn/kg	-	-	-	4	1.98	1.0	-	-	-	-

Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
BDE28	µg/kg	2.44	0.499	20.5	17	2.57	0.269	0.151	2.18	-	2.69
BDE47	µg/kg	5.32	0.940	17.7	18	5.42	0.486	0.277	4.86	-	5.79
BDE99	µg/kg	2.55	0.392	15.4	18	2.62	0.237	0.116	2.36	-	2.74
BDE153	µg/kg	2.22	0.447	20.1	18	2.26	0.224	0.132	2.00	-	2.44
BDE154	µg/kg	2.36	0.397	16.8	17	2.45	0.259	0.120	2.16	-	2.56
BDE66	µg/kg	2.85	0.455	16.0	11	2.97	0.250	0.172	2.54	-	3.15

Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
BDE100	µg/kg	2.41	0.561	23.3	18	2.50	0.270	0.165	2.13	-	2.68
BDE183	µg/kg	2.38	0.569	23.9	15	2.43	0.366	0.184	2.07	-	2.70
BDE85	µg/kg	2.65	0.524	19.8	8	2.67	0.304	0.232	2.22	-	3.08
Total lipid	(%)	2.43	0.252	10.4	9	2.42	0.140	0.105	2.24	-	2.62