QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 362

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 362

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, the 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 8 results and a maximum relative uncertainty of 6.25%. Indicative Values are based on a maximum relative uncertainty of 35% and a minimum of 4 and maximum of 7 results, or a relative uncertainty greater than 6.25% when there are at least 8 results.

For each determinand the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median, MAD (Median of Absolute Deviation), the uncertainty of the mean (consensus or indicative) value and the relative uncertainty.

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 362 of Mussel spiked with organics from Limfjord, Denmark 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
2020.2	BT10	QPF021BT
2024.1	BT2	QOR158BT
2020.1	BT2	QOR143BT
2020.2	BT4	QPH100BT
2020.2	BT8	QSP076BT
2024.1	BT9	QBC079BT
2020.2	BT9	QBC066BT

Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pp'-DDE	µg/kg	1.28	0.210	16.4	27	1.25	0.123	0.051	3.95
pp'-DDD	µg/kg	2.08	0.502	24.1	24	2.16	0.260	0.128	6.15
PCB28	µg/kg	0.977	0.214	21.9	31	0.984	0.122	0.048	4.92
PCB52	µg/kg	0.910	0.168	18.4	30	0.913	0.091	0.038	4.21
PCB101	µg/kg	0.949	0.134	14.1	29	0.950	0.060	0.031	3.27
PCB118	µg/kg	3.66	0.576	15.8	31	3.64	0.306	0.129	3.54
PCB153	µg/kg	5.85	0.620	10.6	32	5.90	0.358	0.137	2.34
PCB180	µg/kg	0.766	0.119	15.5	29	0.776	0.076	0.028	3.59
PCB138	µg/kg	1.08	0.185	17.2	26	1.09	0.103	0.045	4.21

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	2.80	0.198	7.1	15	2.80	0.110	0.064	2.28

Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
a-HCH	µg/kg	0.046	0.025	55.2	11	0.058	0.021	0.010	20.8
Transnonachlor	µg/kg	0.039	0.026	66.3	6	0.043	0.011	0.013	33.8
Dieldrin	µg/kg	0.688	0.154	22.4	11	0.676	0.070	0.058	8.45
HCB	µg/kg	0.428	0.109	25.5	22	0.434	0.076	0.029	6.79
b-HCH	µg/kg	0.196	0.063	32.2	13	0.205	0.030	0.022	11.2
HCBD	µg/kg	1.29	0.851	65.9	6	1.74	0.341	0.434	33.6
PCB105	µg/kg	0.063	0.044	68.8	12	0.076	0.031	0.016	24.8
PCB138+PCB163	µg/kg	1.11	0.121	10.9	6	1.12	0.080	0.062	5.55
PCB156	µg/kg	0.030	0.028	93.0	8	0.033	0.014	0.012	41.1
PCB31	µg/kg	0.598	0.218	36.5	15	0.606	0.158	0.070	11.8
Heptachlor-epoxide (sum)	(µg/kg)	0.023	0.009	40.6	4	0.026	0.005	0.006	25.4

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Extractable-Lipid	%	3.07	0.743	24.2	7	3.02	0.490	0.351	11.4

Consensus Values BT4

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	2.92	0.260	8.9	8	2.92	0.115	0.115	3.93

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Chrysene + Triphenylene	µg/kg	6.14	1.55	25.3	5	5.90	0.970	0.867	14.1
Benzo[e]pyrene	µg/kg	4.82	0.269	5.6	7	4.90	0.126	0.127	2.64
Indeno[1,2,3-cd]pyrene	µg/kg	1.99	0.793	39.9	16	2.16	0.563	0.248	12.5
Phenanthrene	µg/kg	16.9	4.11	24.4	19	16.6	2.61	1.18	6.99
Pyrene	µg/kg	13.5	4.99	37.0	18	13.7	2.62	1.47	10.9
Benzo[g,h,i]perylene	µg/kg	3.43	1.53	44.5	15	3.30	0.831	0.493	14.4
Fluoranthene	µg/kg	22.5	5.42	24.1	22	22.6	3.74	1.45	6.41
Benzo[a]anthracene	µg/kg	3.27	1.31	40.0	18	3.30	0.724	0.385	11.8
Benzo[b]fluoranthene	µg/kg	4.20	1.40	33.4	16	4.32	0.820	0.439	10.4
Benzo[a]pyrene	µg/kg	2.37	0.829	34.9	21	2.30	0.473	0.226	9.53
Naphthalene	µg/kg	6.30	3.83	60.8	15	7.04	1.72	1.24	19.6
Dibenz[ah]anthracene	µg/kg	1.70	0.699	41.1	15	1.90	0.445	0.226	13.3
Benzo[k]fluoranthene	µg/kg	2.28	0.998	43.7	15	2.37	0.720	0.322	14.1
Anthracene	µg/kg	1.63	0.565	34.6	19	1.72	0.307	0.162	9.93
Fluorene	µg/kg	2.37	0.876	37.0	17	2.55	0.594	0.266	11.2
Acenaphthylene	µg/kg	1.22	0.754	61.8	12	1.24	0.377	0.272	22.3
Dibenzothiophene	µg/kg	2.64	0.971	36.8	7	2.84	0.528	0.459	17.4
2-methylphenanthrene	µg/kg	2.06	0.541	26.3	4	2.06	0.375	0.338	16.4
Perylene	µg/kg	1.16	0.448	38.8	6	1.09	0.285	0.229	19.8
Chrysene	µg/kg	4.26	0.952	22.4	16	4.25	0.510	0.298	6.99
Acenaphthene	µg/kg	0.966	0.474	49.1	14	1.07	0.289	0.158	16.4
1-methylnaphtalene	µg/kg	0.754	0.412	54.6	6	0.816	0.343	0.210	27.9
C1-phenanthren.+ anthracen.	µg/kg	7.31	0.449	6.1	4	7.18	0.238	0.281	3.84

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Tributyltin (TBT)	µg Sn/kg	17.6	2.97	16.8	8	17.8	1.58	1.31	7.44
Dibutyltin (DBT)	µg Sn/kg	6.58	1.52	23.0	7	6.90	0.830	0.717	10.9
Monobutyltin (MBT)	µg Sn/kg	9.20	3.59	39.0	7	10.3	3.08	1.70	18.4

Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE47	µg/kg	4.09	0.485	11.9	24	4.10	0.279	0.124	3.02
BDE99	µg/kg	0.590	0.072	12.3	24	0.594	0.054	0.018	3.13
BDE100	µg/kg	0.157	0.025	15.6	24	0.161	0.015	0.006	3.98
BDE153	µg/kg	0.149	0.029	19.2	23	0.150	0.021	0.007	5.02
BDE154	µg/kg	0.152	0.028	18.4	24	0.152	0.017	0.007	4.70
Total lipid	(%)	2.90	0.360	12.4	12	2.89	0.192	0.130	4.48

Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE28	µg/kg	0.208	0.051	24.3	22	0.208	0.033	0.013	6.48
BDE183	µg/kg	0.139	0.044	32.1	15	0.134	0.021	0.014	10.3
BDE209	µg/kg	0.725	0.311	43.0	6	0.794	0.157	0.159	21.9
BDE66	µg/kg	0.057	0.017	29.9	13	0.056	0.012	0.006	10.4
BDE85	µg/kg	0.057	0.017	29.6	13	0.061	0.013	0.006	10.3

Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
n-PFOS	µg/kg	0.545	0.324	59.4	6	0.615	0.176	0.165	30.3
PFOSA	µg/kg	0.866	0.283	32.7	5	0.870	0.161	0.158	18.3
PFDA	µg/kg	0.482	0.185	38.4	5	0.580	0.090	0.103	21.4
n-PFHxS	µg/kg	0.290	0.146	50.4	4	0.284	0.067	0.091	31.5
total-PFOS	µg/kg	0.778	0.207	26.6	5	0.830	0.123	0.116	14.9