QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 338

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 338

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 338 of Mussels from IJmuiden harbor, the Netherlands 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
2016.2	BT8	QSP058BT
2016.1	BT4	QPH081BT
2014.2	BT2	QOR121BT
2014.2	BT4	QPH076BT
2014.2	BT8	QSO051BT
2014.1	BT4	QPH074BT

Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
PCB31	µg/kg	0.414	0.0505	12.2	11	0.413	0.0330	0.0190	0.381 - 0.448
PCB52	µg/kg	1.09	0.260	23.8	25	1.09	0.180	0.065	0.984 - 1.20
PCB101	µg/kg	1.46	0.311	21.3	25	1.49	0.220	0.078	1.33 - 1.59
PCB105	µg/kg	0.174	0.0278	15.9	17	0.180	0.0200	0.0084	0.160 - 0.189
PCB118	µg/kg	0.867	0.1305	15.1	24	0.871	0.0825	0.0333	0.812 - 0.922
PCB153	µg/kg	2.47	0.280	11.3	25	2.49	0.190	0.070	2.36 - 2.59
PCB180	µg/kg	0.229	0.0481	21.0	22	0.225	0.0310	0.0128	0.208 - 0.251
pp'-DDE	µg/kg	0.621	0.1081	17.4	22	0.640	0.0795	0.0288	0.574 - 0.669

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.61	0.198	7.6	15	2.60	0.130	0.064	2.50 - 2.72

Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
PCB28	µg/kg	0.596	0.1487	24.9	23	0.592	0.1020	0.0388	0.532 - 0.660
PCB138+PCB163	µg/kg	1.61	0.153	9.5	8	1.61	0.112	0.068	1.48 - 1.73
PCB138	µg/kg	1.36	0.350	25.7	17	1.29	0.227	0.106	1.18 - 1.54
PCB156	µg/kg	0.0834	0.0255	30.6	13	0.0810	0.0160	0.0089	0.0681 - 0.0987
b-HCH	µg/kg	0.0590	0.0278	47.2	11	0.0600	0.0200	0.0105	0.0405 - 0.0774
g-HCH	µg/kg	0.0537	0.0276	51.3	8	0.0615	0.0165	0.0122	0.0313 - 0.0762
HCB	µg/kg	0.0561	0.0205	36.5	16	0.0580	0.0140	0.0064	0.0452 - 0.0670
Dieldrin	µg/kg	0.231	0.0672	29.1	5	0.262	0.0420	0.0376	0.154 - 0.309
pp'-DDD	µg/kg	0.619	0.1843	29.8	20	0.623	0.1180	0.0515	0.533 - 0.705
Transnonachlor	µg/kg	0.0221	0.0118	53.3	7	0.0217	0.0083	0.0056	0.0116 - 0.0327

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Extractable-Lipid	%	2.29	0.152	6.6	9	2.30	0.100	0.063	2.18 - 2.41

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Anthracene	µg/kg	1.93	0.563	29.2	53	1.99	0.400	0.097	1.77 - 2.08
Benzo[a]anthracene	µg/kg	14.0	2.75	19.6	63	13.9	1.82	0.43	13.3 - 14.7
Benzo[a]pyrene	µg/kg	3.15	0.434	13.8	62	3.12	0.305	0.069	3.04 - 3.26
Benzo[b]fluoranthene	µg/kg	7.24	1.628	22.5	59	7.33	1.075	0.265	6.82 - 7.66
Benzo[e]pyrene	µg/kg	9.63	1.849	19.2	38	9.83	1.301	0.375	9.02 - 10.2
Benzo[g,h,i]perylene	µg/kg	2.14	0.327	15.3	56	2.21	0.223	0.055	2.05 - 2.23
Benzo[k]fluoranthene	µg/kg	3.07	0.709	23.1	55	3.08	0.475	0.120	2.87 - 3.26
Chrysene	µg/kg	12.1	2.91	24.0	55	12.2	1.90	0.49	11.3 - 12.9
Chrysene + Triphenylene	µg/kg	18.6	3.75	20.2	21	18.7	2.63	1.02	16.9 - 20.3
Fluoranthene	µg/kg	32.5	6.97	21.4	62	32.3	4.81	1.11	30.7 - 34.3
Indeno[1,2,3-cd]pyrene	µg/kg	1.40	0.283	20.3	56	1.41	0.195	0.047	1.32 - 1.47
Perylene	µg/kg	1.68	0.272	16.1	18	1.64	0.194	0.080	1.55 - 1.82
Phenanthrene	µg/kg	11.1	1.46	13.2	57	11.2	1.01	0.24	10.67 - 11.45
Pyrene	µg/kg	35.7	5.70	15.9	61	34.9	3.93	0.91	34.3 - 37.2
Triphenylene	µg/kg	8.60	0.889	10.3	11	8.69	0.590	0.335	8.01 - 9.19
2-methylphenanthrene	µg/kg	11.6	1.36	11.7	17	11.4	0.91	0.41	10.9 - 12.3
3-6-dimethylphenanthrene	µg/kg	8.16	0.776	9.5	11	8.17	0.501	0.292	7.64 - 8.67

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.57	0.277	10.8	21	2.56	0.185	0.076	2.44 - 2.69

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Acenaphthene	µg/kg	0.760	0.2885	38.0	39	0.830	0.2000	0.0577	0.666 - 0.853
Acenaphthylene	µg/kg	0.462	0.2443	52.9	29	0.534	0.1660	0.0567	0.369 - 0.554
Benzo[a]fluorene	µg/kg	6.16	1.547	25.1	4	6.19	1.019	0.967	4.02 - 8.31
Dibenz[ah]anthracene	µg/kg	0.419	0.1367	32.7	37	0.420	0.0900	0.0281	0.373 - 0.464
Dibenzothiophene	µg/kg	1.08	0.435	40.2	23	1.14	0.295	0.113	0.896 - 1.27
Fluorene	µg/kg	1.43	0.480	33.5	44	1.50	0.334	0.090	1.29 - 1.58
Naphthalene	µg/kg	1.47	0.880	59.7	38	1.69	0.634	0.178	1.19 - 1.76
1-methylnaphtalene	µg/kg	1.26	0.481	38.3	6	1.29	0.315	0.246	0.775 - 1.74
2-methylnaphtalene	µg/kg	1.34	0.262	19.6	4	1.31	0.165	0.163	0.974 - 1.70
1-methylpyrene	µg/kg	7.90	1.614	20.4	4	7.80	1.040	1.009	5.66 - 10.1
C1-phenanthrenes/anthracenes	µg/kg	41.9	6.99	16.7	5	43.6	5.25	3.91	33.8 - 49.9
C2-phenanthrenes/anthracenes	µg/kg	98.3	25.65	26.1	5	95.7	16.90	14.34	68.8 - 128

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Extractable-Lipid	%	2.46	0.685	27.8	8	2.63	0.476	0.303	1.90 - 3.02

Consensus Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Tributyltin (TBT)	µg Sn/kg	5.75	1.131	19.7	21	5.77	0.790	0.308	5.24 - 6.27

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Dibutyltin (DBT)	µg Sn/kg	3.18	0.778	24.5	19	3.20	0.510	0.223	2.81 - 3.55
Monobutyltin (MBT)	µg Sn/kg	1.20	0.590	49.2	19	1.30	0.400	0.169	0.915 - 1.48