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
2023.1	BT4	QPH109BT
2023.1	BT8	QSP085BT
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
pp'-DDE	µg/kg	0.625	0.1359	21.8	22	0.640	0.0795	0.0362	0.565 - 0.685
PCB101	µg/kg	1.46	0.319	21.8	25	1.49	0.220	0.080	1.33 - 1.59
PCB118	µg/kg	0.865	0.1686	19.5	24	0.871	0.0825	0.0430	0.794 - 0.936
PCB153	µg/kg	2.47	0.331	13.4	25	2.49	0.190	0.083	2.33 - 2.60
PCB31	µg/kg	0.414	0.0623	15.0	11	0.413	0.0330	0.0235	0.373 - 0.455

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.58	0.246	9.5	15	2.60	0.130	0.079	2.44 - 2.72

Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
a-HCH	µg/kg	0.0167	0.0132	79.1	8	0.0160	0.0110	0.0058	0.0059 - 0.0274
g-HCH	µg/kg	0.0536	0.0312	58.1	8	0.0615	0.0165	0.0138	0.0282 - 0.0790
Transnonachlor	µg/kg	0.0228	0.0154	67.7	7	0.0217	0.0083	0.0073	0.0090 - 0.0366
Dieldrin	µg/kg	-	-	-	5	0.291	0.1	-	- - -
pp'-DDD	µg/kg	0.633	0.2249	35.6	20	0.623	0.1180	0.0629	0.528 - 0.738
HCB	µg/kg	0.0561	0.0211	37.5	16	0.0580	0.0140	0.0066	0.0450 - 0.0673
b-HCH	µg/kg	0.0590	0.0283	48.0	11	0.0600	0.0200	0.0107	0.0402 - 0.0778
PCB28	µg/kg	0.595	0.1574	26.5	23	0.592	0.1020	0.0410	0.527 - 0.663
PCB52	µg/kg	1.09	0.281	25.8	25	1.09	0.180	0.070	0.976 - 1.21
PCB105	µg/kg	0.175	0.0369	21.1	17	0.180	0.0200	0.0112	0.156 - 0.194
PCB138+PCB163	µg/kg	1.61	0.143	8.9	8	1.61	0.112	0.063	1.49 - 1.72
PCB156	µg/kg	0.0836	0.0314	37.5	13	0.0810	0.0160	0.0109	0.0648 - 0.102
PCB180	µg/kg	0.229	0.0568	24.8	22	0.225	0.0310	0.0151	0.204 - 0.254
PCB138	µg/kg	1.34	0.403	30.0	17	1.29	0.227	0.122	1.14 - 1.55

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Extractable-Lipid	%	2.27	0.235	10.3	9	2.30	0.100	0.098	2.10 - 2.45

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Chrysene + Triphenylene	µg/kg	18.9	3.41	18.1	25	18.8	2.39	0.85	17.5 - 20.3
Benzo[e]pyrene	µg/kg	9.74	2.080	21.3	42	9.83	1.301	0.401	9.10 - 10.4
Indeno[1,2,3-cd]pyrene	µg/kg	1.39	0.334	23.9	69	1.40	0.198	0.050	1.31 - 1.47
Phenanthrene	µg/kg	10.9	2.05	18.7	72	11.1	1.14	0.30	10.4 - 11.4
Pyrene	µg/kg	35.1	7.30	20.8	75	34.7	4.16	1.05	33.4 - 36.7
Benzo[g,h,i]perylene	µg/kg	2.15	0.379	17.6	70	2.21	0.230	0.057	2.06 - 2.24
Fluoranthene	µg/kg	31.8	7.24	22.8	78	31.7	4.64	1.02	30.2 - 33.5
Benzo[a]anthracene	µg/kg	14.0	2.84	20.2	79	14.0	1.69	0.40	13.4 - 14.7
Benzo[b]fluoranthene	µg/kg	7.35	1.815	24.7	71	7.43	1.010	0.269	6.92 - 7.78
Benzo[a]pyrene	µg/kg	3.14	0.555	17.7	78	3.12	0.375	0.079	3.02 - 3.27
Benzo[k]fluoranthene	µg/kg	3.09	0.782	25.3	65	3.09	0.485	0.121	2.90 - 3.29
Anthracene	µg/kg	1.92	0.578	30.1	68	2.00	0.360	0.088	1.78 - 2.06
Fluorene	µg/kg	1.46	0.495	33.8	53	1.51	0.318	0.085	1.33 - 1.60
3-6-dimethylphenanthrene	µg/kg	7.99	1.263	15.8	15	7.89	0.610	0.407	7.29 - 8.68
2-methylphenanthrene	µg/kg	11.4	1.79	15.8	21	11.3	1.02	0.49	10.6 - 12.2
Perylene	µg/kg	1.67	0.302	18.1	20	1.64	0.194	0.084	1.53 - 1.81
Chrysene	µg/kg	12.0	3.71	30.9	69	12.2	1.90	0.56	11.1 - 12.9

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.48	0.415	16.7	27	2.49	0.220	0.100	2.32 - 2.65

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Naphthalene	µg/kg	1.39	0.877	63.2	46	1.54	0.548	0.162	1.13 - 1.65
Dibenz[ah]anthracene	µg/kg	0.418	0.1706	40.8	44	0.436	0.0914	0.0322	0.367 - 0.470
Acenaphthylene	µg/kg	0.465	0.2649	57.0	37	0.530	0.1630	0.0544	0.377 - 0.553
Benzo[a]fluorene	µg/kg	-	-	-	5	6.44	2.0	-	- - -
Dibenzothiophene	µg/kg	1.08	0.458	42.4	26	1.14	0.283	0.112	0.897 - 1.27
1-methylpyrene	µg/kg	6.83	2.045	29.9	6	7.02	1.460	1.044	4.79 - 8.87
Triphenylene	µg/kg	8.48	1.684	19.9	12	8.66	0.964	0.608	7.42 - 9.54
Acenaphthene	µg/kg	0.794	0.3720	46.9	48	0.840	0.2205	0.0671	0.686 - 0.902
1-methylnaphtalene	µg/kg	1.01	0.386	38.3	9	1.02	0.230	0.161	0.717 - 1.30
2-methylnaphtalene	µg/kg	1.28	0.377	29.4	7	1.34	0.167	0.178	0.947 - 1.62
C1-phenanthren.+ anthracen.	µg/kg	40.5	7.03	17.4	8	41.2	4.11	3.11	34.8 - 46.3
C2-phenanthren.+ anthracen.	µg/kg	101	28.3	28.1	9	104	14.7	11.8	79.4 - 122
C3-phenanthren.+ anthracen.	µg/kg	136	42.1	31.1	6	132	29.7	21.5	93.4 - 178
C1-pyrenes+fluoranthenes	µg/kg	-	-	-	4	51.2	7.0	-	- - -
C1-chrysenes	µg/kg	-	-	-	5	14.8	1.1	-	- - -

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Extractable-Lipid	%	2.53	0.816	32.2	8	2.63	0.476	0.361	1.87 - 3.20

Consensus Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Tributyltin (TBT)	µg Sn/kg	5.55	1.218	21.9	31	5.70	0.820	0.273	5.11 - 6.00
Dibutyltin (DBT)	µg Sn/kg	3.26	0.803	24.6	27	3.23	0.445	0.193	2.94 - 3.58

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Monobutyltin (MBT)	µg Sn/kg	1.38	0.585	42.5	26	1.44	0.319	0.143	1.14 - 1.61