QUASIMEME

Quality assurance of information for marine environmental monitoring

---

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 367

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 367

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 367 of Shrimp (black tiger) from Commercial market 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
2020.1	BT4	QPH098BT
2020.1	BT8	QSP074BT
2020.1	BT9	QBC064BT
2020.1	BT10	QPF019BT

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Anthracene	µg/kg	1.76	0.275	15.7	14	1.80	0.200	0.092	1.60 - 1.91
Benzo[a]pyrene	µg/kg	0.512	0.0880	17.2	13	0.510	0.0600	0.0305	0.459 - 0.564
Fluoranthene	µg/kg	4.62	0.670	14.5	15	4.53	0.473	0.216	4.25 - 4.99
Phenanthrene	µg/kg	5.88	1.019	17.3	13	5.73	0.711	0.353	5.27 - 6.49

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Acenaphthene	µg/kg	4.98	2.527	50.7	8	5.17	1.667	1.117	2.92 - 7.04
Acenaphthylene	µg/kg	3.48	0.884	25.4	7	3.40	0.590	0.418	2.69 - 4.27
Benzo[a]anthracene	µg/kg	0.0574	0.0348	60.6	5	0.0660	0.0242	0.0194	0.0174 - 0.0974
Benzo[b]fluoranthene	µg/kg	0.371	0.0471	12.7	9	0.378	0.0320	0.0196	0.336 - 0.407
Benzo[g,h,i]perylene	µg/kg	0.232	0.0394	17.0	10	0.238	0.0280	0.0156	0.204 - 0.260
Benzo[k]fluoranthene	µg/kg	0.189	0.0370	19.6	8	0.197	0.0250	0.0163	0.159 - 0.219
Chrysene	µg/kg	0.0844	0.0133	15.8	7	0.0860	0.0090	0.0063	0.0724 - 0.0963
Fluorene	µg/kg	0.369	0.1625	44.0	6	0.487	0.0751	0.0829	0.207 - 0.531
Indeno[1,2,3-cd]pyrene	µg/kg	1.53	0.450	29.3	14	1.50	0.302	0.150	1.28 - 1.79
Naphthalene	µg/kg	4.01	1.373	34.2	6	3.91	0.962	0.701	2.64 - 5.38
Pyrene	µg/kg	0.568	0.2449	43.1	11	0.570	0.1750	0.0923	0.405 - 0.730

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	0.540	0.1212	22.4	5	0.580	0.0900	0.0677	0.401 - 0.679

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Dibutyltin (DBT)	µg Sn/kg	2.20	0.650	29.5	7	2.24	0.440	0.307	1.62 - 2.78
Monobutyltin (MBT)	µg Sn/kg	2.80	1.259	44.9	8	3.12	0.882	0.557	1.78 - 3.83
Tributyltin (TBT)	µg Sn/kg	5.99	3.621	60.5	8	6.89	2.545	1.600	3.04 - 8.94
Triphenyltin (TPhT)	µg Sn/kg	0.877	0.2374	27.0	4	0.885	0.1475	0.1484	0.548 - 1.21

Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE28	µg/kg	0.240	0.1028	42.8	14	0.242	0.0670	0.0343	0.181 - 0.299
BDE47	µg/kg	2.08	0.947	45.5	14	2.20	0.645	0.316	1.54 - 2.62
BDE66	µg/kg	0.0758	0.0453	59.8	7	0.0720	0.0320	0.0214	0.0352 - 0.116
BDE85	µg/kg	0.113	0.0194	17.2	7	0.111	0.0130	0.0092	0.0955 - 0.130
BDE99	µg/kg	0.911	0.4915	53.9	14	0.995	0.3375	0.1642	0.629 - 1.19
BDE100	µg/kg	0.193	0.1229	63.6	14	0.214	0.0900	0.0411	0.123 - 0.264
BDE153	µg/kg	0.197	0.1187	60.2	14	0.197	0.0835	0.0397	0.129 - 0.265
BDE154	µg/kg	0.205	0.1013	49.4	14	0.234	0.0635	0.0339	0.147 - 0.263
BDE183	µg/kg	0.154	0.1072	69.6	12	0.132	0.0730	0.0387	0.0866 - 0.221
BDE209	µg/kg	0.458	0.2378	51.9	6	0.548	0.1770	0.1213	0.220 - 0.695

Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
n-PFOS	µg/kg	1.27	0.103	8.2	7	1.28	0.073	0.049	1.17 - 1.36
total-PFOS	µg/kg	1.76	0.294	16.7	7	1.82	0.167	0.139	1.50 - 2.02
PFOSA	µg/kg	0.652	0.1479	22.7	5	0.640	0.1060	0.0827	0.482 - 0.822
PFHxA	µg/kg	0.447	0.0126	2.8	5	0.451	0.0090	0.0071	0.432 - 0.461
PFHpA	µg/kg	0.371	0.1036	27.9	4	0.368	0.0725	0.0648	0.228 - 0.515
PFOA	µg/kg	0.572	0.0792	13.8	5	0.579	0.0550	0.0443	0.481 - 0.663
PFNA	µg/kg	0.721	0.0282	3.9	6	0.732	0.0230	0.0144	0.693 - 0.749
PFDA	µg/kg	1.20	0.030	2.5	7	1.20	0.020	0.014	1.17 - 1.23
PFUnDA	µg/kg	1.08	0.170	15.8	7	1.11	0.118	0.080	0.927 - 1.23
PFDoA	µg/kg	0.469	0.1327	28.3	5	0.550	0.0620	0.0742	0.317 - 0.622
PFTrDA	µg/kg	0.719	0.0539	7.5	5	0.740	0.0400	0.0302	0.657 - 0.781
PFTeDA	µg/kg	1.07	0.072	6.7	5	1.05	0.050	0.040	0.990 - 1.16
L-PFBS	µg/kg	0.368	0.1273	34.6	6	0.369	0.0845	0.0650	0.241 - 0.496
L-PFHxS	µg/kg	0.678	0.0627	9.2	7	0.657	0.0490	0.0296	0.622 - 0.734