QUASIMEME

Quality assurance of information for marine environmental monitoring

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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
2023.2	BT10	QPF033BT
2022.2	BT4	QPH107BT
2022.2	BT8	QSP083BT
2020.1	BT10	QPF019BT
2020.1	BT4	QPH098BT
2020.1	BT8	QSP074BT
2020.1	BT9	QBC064BT

Consensus Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
PFHxA	µg/kg	0.438	0.0654	14.9	12	0.438	0.0350	0.0236	0.397 - 0.479
PFNA	µg/kg	0.739	0.1474	20.0	16	0.737	0.0730	0.0461	0.661 - 0.817
PFDA	µg/kg	1.16	0.193	16.6	17	1.20	0.110	0.058	1.06 - 1.26
PFTrDA	µg/kg	0.770	0.1214	15.8	13	0.755	0.0830	0.0421	0.697 - 0.843

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	1.20	0.348	28.9	17	1.28	0.207	0.106	1.03 - 1.38
PFOSA	µg/kg	0.550	0.1683	30.6	12	0.540	0.1135	0.0607	0.444 - 0.655
PFBA	µg/kg	0.735	0.1360	18.5	6	0.753	0.0690	0.0694	0.600 - 0.871
PFPeA	µg/kg	0.161	0.0703	43.7	6	0.167	0.0410	0.0359	0.0908 - 0.231
PFHpA	µg/kg	0.280	0.0549	19.6	11	0.287	0.0280	0.0207	0.244 - 0.317
PFOA	µg/kg	0.550	0.1322	24.0	16	0.557	0.0705	0.0413	0.480 - 0.621
PFUnDA	µg/kg	1.08	0.228	21.1	17	1.10	0.128	0.069	0.961 - 1.19
PFDoA	µg/kg	0.485	0.1613	33.3	15	0.488	0.0920	0.0520	0.396 - 0.573
PFTeDA	µg/kg	0.970	0.2335	24.1	13	0.989	0.1110	0.0809	0.830 - 1.11
n-PFBS	µg/kg	0.350	0.0702	20.0	11	0.357	0.0380	0.0264	0.304 - 0.397
n-PFHxS	µg/kg	0.709	0.1727	24.4	14	0.682	0.1160	0.0577	0.610 - 0.808
total-PFOS	µg/kg	1.67	0.426	25.6	17	1.79	0.307	0.129	1.45 - 1.88
total-PFBS	µg/kg	-	-	-	4	0.339	0.1	-	- - -
total-PFHxS	µg/kg	-	-	-	5	0.666	0.1	-	- - -

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Fluoranthene	µg/kg	4.41	0.970	22.0	38	4.49	0.564	0.197	4.09 - 4.72

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Chrysene + Triphenylene	µg/kg	-	-	-	5	0.180	0.1	-	-	-	-
Indeno[1,2,3-cd]pyrene	µg/kg	1.37	0.579	42.4	31	1.43	0.360	0.130	1.15	-	1.58
Phenanthrene	µg/kg	5.38	1.820	33.8	30	5.53	0.980	0.415	4.70	-	6.06
Pyrene	µg/kg	0.573	0.3792	66.2	27	0.608	0.2520	0.0912	0.423	-	0.722
Benzo[g,h,i]perylene	µg/kg	0.225	0.0717	31.8	22	0.242	0.0455	0.0191	0.194	-	0.257
Benzo[a]anthracene	µg/kg	0.0598	0.0509	85.1	16	0.0835	0.0400	0.0159	0.0329	-	0.0868
Benzo[b]fluoranthene	µg/kg	0.324	0.1656	51.2	22	0.344	0.0935	0.0441	0.250	-	0.397
Benzo[a]pyrene	µg/kg	0.480	0.1684	35.1	28	0.507	0.1115	0.0398	0.415	-	0.545
Naphthalene	µg/kg	2.95	1.836	62.2	18	3.27	1.244	0.541	2.04	-	3.86
Benzo[k]fluoranthene	µg/kg	0.176	0.0587	33.4	19	0.186	0.0370	0.0168	0.148	-	0.204
Anthracene	µg/kg	1.53	0.512	33.5	33	1.56	0.340	0.111	1.35	-	1.71
Fluorene	µg/kg	0.474	0.4197	88.5	20	0.515	0.2813	0.1173	0.278	-	0.670
Acenaphthylene	µg/kg	2.44	1.481	60.7	19	2.81	0.990	0.425	1.73	-	3.15
Dibenzothiophene	µg/kg	0.192	0.0663	34.5	7	0.190	0.0328	0.0313	0.133	-	0.252
2-methylphenanthrene	µg/kg	-	-	-	5	0.244	0.1	-	-	-	-
Perylene	µg/kg	-	-	-	4	0.100	0.0	-	-	-	-
Chrysene	µg/kg	0.0884	0.0531	60.1	17	0.0950	0.0295	0.0161	0.0612	-	0.116
Acenaphthene	µg/kg	3.37	1.835	54.5	25	3.60	1.080	0.459	2.61	-	4.12
C1-phenanthren.+ anthracen.	µg/kg	-	-	-	5	2.50	1.5	-	-	-	-
C2-phenanthren.+ anthracen.	µg/kg	-	-	-	4	2.90	1.9	-	-	-	-
1-methylphenanthrene	µg/kg	-	-	-	4	0.163	0.0	-	-	-	-

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	0.540	0.1265	23.4	11	0.570	0.0600	0.0477	0.456	-	0.624

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Tributyltin (TBT)	µg Sn/kg	6.15	2.938	47.7	15	7.04	1.648	0.948	4.54	-	7.77
Dibutyltin (DBT)	µg Sn/kg	1.74	1.016	58.6	11	2.03	0.694	0.383	1.06	-	2.41
Monobutyltin (MBT)	µg Sn/kg	3.45	1.865	54.1	15	3.28	1.115	0.602	2.42	-	4.48
Triphenyltin (TPhT)	µg Sn/kg	0.646	0.3775	58.4	8	0.718	0.2545	0.1668	0.338	-	0.954
Diphenyltin (DPhT)	µg Sn/kg	-	-	-	4	0.368	0.3	-	-	-	-

Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE28	µg/kg	0.248	0.1230	49.7	14	0.242	0.0670	0.0411	0.177 - 0.318
BDE47	µg/kg	2.08	0.955	45.9	14	2.20	0.645	0.319	1.53 - 2.63
BDE99	µg/kg	0.919	0.4645	50.5	14	0.995	0.3375	0.1552	0.653 - 1.19
BDE100	µg/kg	0.192	0.1120	58.5	14	0.214	0.0900	0.0374	0.127 - 0.256
BDE153	µg/kg	0.196	0.1087	55.6	14	0.197	0.0835	0.0363	0.133 - 0.258
BDE154	µg/kg	0.202	0.1072	53.0	14	0.234	0.0635	0.0358	0.141 - 0.264
BDE183	µg/kg	0.148	0.0953	64.5	12	0.132	0.0730	0.0344	0.0878 - 0.208
BDE66	µg/kg	0.0771	0.0531	68.8	7	0.0720	0.0320	0.0251	0.0297 - 0.125
BDE85	µg/kg	0.107	0.0274	25.5	7	0.111	0.0130	0.0129	0.0828 - 0.132