



WEPAL-QUASIMEME

Certificate of Analysis



Sediment

REFERENCE MATERIAL

Sediment sample 83

2026-Aug-11



Certificate of Analysis Sediment 83

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 measurand, 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.

Please note: Most WEPAL-QUASIMEME reference materials are found to be stable over the long term (>10 years) for most measurand/matrix combinations. There are a few exceptions known to us as being less stable over the long term. These are organotins in sediment (MS6), ASP in shellfish (BT7), some PAHs and PCBs in sediment (SETOC) and N-NH₄ (as N) & N-NO₃ (as N) in clay soils (ISE).

The results of each measurand is expressed on dried sediment.

Sample information

QUASIMEME reference materials cover a range of natural Marine sediment species from contaminated waters from the North Sea and/or Mediterranean. There is no spiking, mixing or other alterations of the samples. For sample preparation the sediment samples are dried at 40 °C and milled to pass a 0.5 mm sieve.

This Sediment sample 83 of Irish Sea from Irish Sea is prepared for the QUASIMEME proficiency programs. The results on which the values in this report are based were taken from the rounds given in the following table.

Year.Round	Program	Sample Round Id
2026.1	MS2	QOR167MS
2026.1	MS3	QPH130MS
2026.1	MS6	QSP098MS



Consensus Values MS2

Method: Chlorinated organics - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PCB52	µg/kg	0.465	0.082	17.7	14	0.449	0.051	0.028	5.92
PCB153	µg/kg	1.41	0.235	16.7	16	1.44	0.110	0.073	5.22
PCB180	µg/kg	0.985	0.137	13.9	15	1.01	0.075	0.044	4.48
PCB170	µg/kg	0.446	0.058	13.0	9	0.451	0.029	0.024	5.42

Method: Carbon - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
TOC	%	1.60	0.101	6.3	11	1.60	0.074	0.038	2.37



Indicative Values MS2

Method: Chlorinated organics - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pp'-DDE	µg/kg	0.707	0.198	28.0	10	0.689	0.085	0.078	11.1
pp'-DDT	µg/kg	0.313	0.130	41.5	8	0.324	0.083	0.057	18.3
pp'-DDD	µg/kg	1.65	0.569	34.6	10	1.56	0.376	0.225	13.7
HCB	µg/kg	0.080	0.047	59.0	7	0.079	0.025	0.022	27.9
b-HCH	µg/kg	0.031	0.011	34.5	4	0.032	0.006	0.007	21.5
PCB28	µg/kg	0.495	0.105	21.2	14	0.505	0.043	0.035	7.08
PCB31	µg/kg	0.303	0.071	23.3	10	0.303	0.033	0.028	9.22
PCB101	µg/kg	0.813	0.232	28.5	16	0.782	0.150	0.072	8.91
PCB105	µg/kg	0.322	0.055	17.0	10	0.323	0.037	0.022	6.71
PCB118	µg/kg	0.767	0.168	21.9	15	0.769	0.099	0.054	7.06
PCB138+PCB163	µg/kg	1.74	0.189	10.8	4	1.73	0.087	0.118	6.77
PCB156	µg/kg	0.121	0.026	21.6	9	0.120	0.017	0.011	8.99
PCB138	µg/kg	1.22	0.354	29.0	15	1.22	0.237	0.114	9.35
PCB44	µg/kg	0.321	0.063	19.5	5	0.323	0.007	0.035	10.9
PCB47	µg/kg	0.173	0.018	10.6	4	0.175	0.009	0.011	6.63
PCB49	µg/kg	0.294	0.030	10.1	7	0.292	0.022	0.014	4.76
PCB66	µg/kg	0.638	0.049	7.7	4	0.637	0.023	0.031	4.83
PCB110	µg/kg	0.660	0.055	8.3	5	0.650	0.030	0.031	4.65
PCB128	µg/kg	0.201	0.014	7.1	7	0.200	0.004	0.007	3.37
PCB149	µg/kg	0.975	0.160	16.4	8	0.943	0.094	0.071	7.23
PCB183	µg/kg	0.195	0.015	7.9	6	0.198	0.009	0.008	4.06
PCB187	µg/kg	0.636	0.094	14.7	7	0.620	0.073	0.044	6.96
PCB158	µg/kg	0.111	0.032	29.2	4	0.109	0.016	0.020	18.2
PCB141	µg/kg	0.248	0.026	10.3	4	0.249	0.012	0.016	6.43
PCB151	µg/kg	0.278	0.066	23.6	6	0.286	0.049	0.033	12.0
PCB194	µg/kg	0.254	0.056	22.1	7	0.267	0.034	0.027	10.4

Method: Nitrogen - MS2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PN	%	0.116	0.008	6.9	4	0.116	0.005	0.005	4.34



Consensus Values MS3

Method: Polycyclic aromatic hydrocarbons - MS3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Chrysene + Triphenylene	µg/kg	163	14.7	9.1	10	162	8.15	5.83	3.58
Benzo[e]pyrene	µg/kg	178	25.1	14.1	15	176	20.2	8.11	4.55
Indeno[1,2,3-cd]pyrene	µg/kg	181	28.2	15.6	23	181	13.3	7.36	4.06
Phenanthrene	µg/kg	216	27.4	12.7	23	220	15.0	7.14	3.30
Pyrene	µg/kg	297	46.6	15.7	22	295	20.0	12.4	4.18
Benzo[g,h,i]perylene	µg/kg	199	30.8	15.5	22	198	16.9	8.20	4.13
Fluoranthene	µg/kg	269	28.2	10.5	22	271	16.2	7.51	2.79
Benzo[a]anthracene	µg/kg	144	24.4	16.9	23	146	14.8	6.36	4.40
Benzo[b]fluoranthene	µg/kg	180	28.3	15.7	17	186	22.7	8.59	4.76
Benzo[a]pyrene	µg/kg	198	27.1	13.7	22	197	16.0	7.23	3.65
Naphthalene	µg/kg	67.5	13.7	20.3	21	66.0	6.35	3.73	5.53
Anthracene	µg/kg	56.9	9.45	16.6	23	57.9	4.86	2.46	4.33
Fluorene	µg/kg	31.2	7.39	23.6	23	32.3	4.67	1.93	6.16
Perylene	µg/kg	60.4	8.30	13.8	13	59.9	5.36	2.88	4.77
Chrysene	µg/kg	125	25.7	20.5	18	128	15.8	7.58	6.05
C1-naphthalenes	µg/kg	137	9.90	7.2	8	140	4.60	4.37	3.19

Method: Carbon - MS3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
TOC	%	1.59	0.086	5.4	11	1.58	0.047	0.032	2.05



Indicative Values MS3

Method: Polycyclic aromatic hydrocarbons - MS3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Dibenz[a,h]anthracene	µg/kg	37.2	8.93	24.0	21	38.9	6.07	2.44	6.55
Benzo[k]fluoranthene	µg/kg	104	28.4	27.2	20	101	15.7	7.94	7.61
Acenaphthene	µg/kg	21.1	5.93	28.1	23	20.0	3.91	1.55	7.33
Acenaphthylene	µg/kg	15.6	7.16	45.8	20	14.5	4.95	2.00	12.8
Dibenzothiophene	µg/kg	12.8	3.41	26.7	12	12.4	2.79	1.23	9.62
3-6-dimethylphenanthrene	µg/kg	13.9	5.65	40.6	7	14.9	3.89	2.67	19.2
2-methylphenanthrene	µg/kg	69.6	14.0	20.1	10	70.2	10.5	5.53	7.94
1-methylpyrene	µg/kg	53.3	20.0	37.5	6	51.8	11.9	10.2	19.1
Triphenylene	µg/kg	38.7	13.0	33.7	7	40.8	7.76	6.16	15.9
Benzo[fluoranthenes (b+j)]	µg/kg	313	32.0	10.2	5	310	17.3	17.9	5.70
C1-phenanthr.+anthrac.	µg/kg	248	54.5	22.0	9	244	31.4	22.7	9.17
C2-phenanthr.+anthrac.	µg/kg	241	77.0	31.9	10	240	49.7	30.4	12.6
C3-phenanthr.+anthrac.	µg/kg	163	75.1	46.1	7	173	31.2	35.5	21.8
C1-pyrenes+fluoranthenes	µg/kg	315	80.8	25.7	7	324	27.9	38.2	12.1
C2-pyrenes+fluoranthenes	µg/kg	218	30.3	13.9	4	221	14.6	18.9	8.68
C1-chrysenes	µg/kg	194	51.8	26.7	6	188	26.8	26.4	13.6
C2-naphtalenes	µg/kg	253	114	44.9	10	248	71.9	45.0	17.8
C3-naphtalenes	µg/kg	216	149	68.9	10	229	86.0	58.9	27.2
C1-dibenzothiophenes	µg/kg	30.6	14.6	47.9	8	31.6	9.12	6.47	21.2
C2-dibenzothiophenes	µg/kg	38.9	12.3	31.5	8	39.1	7.13	5.42	13.9
C3-dibenzothiophenes	µg/kg	22.3	5.93	26.6	8	22.7	3.93	2.62	11.8
1-methylphenanthrene	µg/kg	52.2	12.3	23.6	7	53.0	10.4	5.82	11.1
2-methylantracene	µg/kg	74.6	11.3	15.1	4	72.4	5.72	7.06	9.46
1-methylnaphtalene	µg/kg	61.9	16.9	27.3	13	61.5	8.24	5.86	9.47
2-methylnaphtalene	µg/kg	88.9	26.3	29.6	11	94.8	22.6	9.91	11.1

Method: Nitrogen - MS3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PN	%	0.112	0.009	7.6	5	0.114	0.006	0.005	4.26



Indicative Values MS6

Method: Organometals - MS6

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Tributyltin (TBT)	µg Sn/kg	0.298	0.137	46.1	6	0.332	0.081	0.070	23.5
Dibutyltin (DBT)	µg Sn/kg	0.548	0.238	43.3	7	0.570	0.130	0.112	20.5
Monobutyltin (MBT)	µg Sn/kg	1.57	0.962	61.3	8	1.80	0.553	0.425	27.1