QUASIMEME

Quality assurance of information for marine environmental monitoring

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Certificate of Analysis

Sediment

REFERENCE MATERIAL

Sediment sample 71

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Sediment 71

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 determinand 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.

The results of each determinand 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 oC and milled to pass a 0.5 mm sieve.

This Sediment sample 71 of Mix estuary sediment from Westerscheldt\Nieuwe Maas, 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
2024.2	MS1	QTM149MS

Consensus Values MS1

Method: Real totals - MS1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Aluminium-RT	%	2.69	0.109	4.0	11	2.66	0.060	0.041	1.53
Arsenic-RT	mg/kg	10.6	1.09	10.3	10	10.8	0.565	0.431	4.09
Cadmium-RT	µg/kg	717	106	14.8	10	685	83.5	41.8	5.84
Copper-RT	mg/kg	15.5	1.23	7.9	10	15.5	0.850	0.485	3.13
Iron-RT	%	1.67	0.035	2.1	11	1.67	0.020	0.013	0.800
Lead-RT	mg/kg	27.7	3.15	11.4	12	27.6	1.76	1.14	4.10
Manganese-RT	mg/kg	384	28.8	7.5	10	384	22.8	11.4	2.97
Nickel-RT	mg/kg	13.9	0.989	7.1	10	13.9	0.555	0.391	2.82
Zinc-RT	mg/kg	115	8.59	7.5	11	114	5.10	3.24	2.82
Vanadium-RT	mg/kg	41.8	5.35	12.8	8	42.4	3.40	2.36	5.66

Method: Acid extractable (So-called totals) - MS1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Arsenic-AE	mg/kg	9.36	0.629	6.7	19	9.20	0.505	0.180	1.93
Cadmium-AE	µg/kg	698	60.3	8.6	18	697	45.5	17.8	2.54
Chromium-AE	mg/kg	36.3	7.41	20.4	19	36.2	4.87	2.13	5.86
Copper-AE	mg/kg	14.4	1.01	7.0	21	14.5	0.780	0.275	1.92
Iron-AE	%	1.50	0.175	11.7	14	1.51	0.115	0.058	3.90
Lead-AE	mg/kg	23.2	1.74	7.5	20	23.6	1.05	0.487	2.10
Manganese-AE	mg/kg	347	41.8	12.1	15	345	30.4	13.5	3.89
Mercury-AE	µg/kg	168	13.3	7.9	19	170	8.37	3.80	2.27
Nickel-AE	mg/kg	11.8	1.16	9.8	20	12.0	0.650	0.325	2.75
Zinc-AE	mg/kg	109	8.99	8.2	21	110	5.00	2.45	2.25
Phosphorus-AE	mg/kg	596	72.8	12.2	9	590	31.0	30.4	5.10
Vanadium-AE	mg/kg	31.8	4.30	13.5	12	31.9	2.69	1.55	4.89
Cobalt-AE	mg/kg	5.19	0.559	10.8	10	5.14	0.375	0.221	4.26

Method: Carbon - MS1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
TOC	%	0.966	0.062	6.4	12	0.965	0.039	0.022	2.30

Indicative Values MS1

Method: Real totals - MS1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Chromium-RT	mg/kg	57.4	10.3	17.9	11	56.9	6.86	3.88	6.76
Lithium-RT	mg/kg	21.6	3.15	14.6	8	22.1	1.90	1.39	6.45
Mercury-RT	µg/kg	169	27.1	16.1	10	169	16.5	10.7	6.36
Magnesium-RT	mg/kg	5287	162	3.1	5	5312	98.1	90.8	1.72
Barium-RT	mg/kg	228	21.5	9.5	7	229	12.0	10.2	4.47
Calcium-RT	g/kg	50.7	2.84	5.6	4	50.4	1.34	1.78	3.51
Cobalt-RT	mg/kg	5.70	0.359	6.3	7	5.68	0.267	0.170	2.98
Strontium-RT	mg/kg	215	22.8	10.6	4	217	11.0	14.2	6.62
Uranium-RT	mg/kg	1.64	0.387	23.6	4	1.64	0.270	0.242	14.8

Method: Acid extractable (So-called totals) - MS1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Aluminium-AE	%	1.23	0.389	31.7	14	1.29	0.218	0.130	10.6
Lithium-AE	mg/kg	14.6	2.29	15.7	8	14.6	1.01	1.01	6.92
Magnesium-AE	mg/kg	4931	895	18.1	5	5000	440	500	10.1
Selenium-AE	mg/kg	0.305	0.036	11.9	6	0.309	0.024	0.018	6.06
Barium-AE	mg/kg	45.0	13.2	29.3	10	43.9	8.70	5.21	11.6
Thallium-AE	µg/kg	207	49.0	23.6	5	216	40.0	27.4	13.2
Calcium-AE	g/kg	49.4	4.61	9.3	4	49.4	3.21	2.88	5.84
Strontium-AE	mg/kg	165	5.18	3.1	5	167	3.00	2.89	1.75
Molybdenum-AE	mg/kg	0.549	0.088	16.1	7	0.549	0.049	0.042	7.59
Uranium-AE	mg/kg	0.745	0.024	3.2	5	0.739	0.016	0.013	1.80

Method: Carbon - MS1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Inorganic-Carbonate	%	1.50	0.089	5.9	5	1.51	0.039	0.050	3.30