WAGENINGEN EVALUATING PROGRAMS

FOR ANALYTICAL LABORATORIES

Certificate of Analysis

International Sediment Exchange for Tests on Organic Contaminants

REFERENCE MATERIAL

SETOC sample 707

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis SETOC 707

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.

All values, expressed on a weight basis (kg or %), are reported as oven-dried (105°C) material. Moisture is reported in the material as received.

Sample information

WEPAL reference materials are from natural sources only. There is no spiking, mixing or other alterations of the samples. For sample preparation, the SETOC samples are dried at 40°C and milled to pass a 0.5 mm sieve.

This SETOC sample 707 of Marine Sediment, from Netherlands, is prepared for the WEPAL proficiency programs. The sample has been used in 1 period (or round). The results on which the values in this report are based were taken from the period given in the following table:

Year	Round	Number
1993	1	3

Consensus Values SETOC 707

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
fluoranthene	µg/kg	303	69.5	22.9	28	314	38.5	16.4	5.41

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cr	mg/kg	62.6	8.71	13.9	17	63.0	5.30	2.64	4.22
Cu	mg/kg	26.4	2.43	9.2	17	26.5	1.40	0.735	2.78
Ni	mg/kg	21.0	3.47	16.5	16	21.8	1.96	1.08	5.15
Zn	mg/kg	177	16.9	9.5	18	176	10.5	4.97	2.81

Indicative Values SETOC 707

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
naphthalene	µg/kg	77.6	66.1	85.1	16	100	48.5	20.6	26.6
acenaphthylene	µg/kg	23.1	24.3	105.1	9	31.0	17.1	10.1	43.8
acenaphthene	µg/kg	18.8	20.8	110.5	13	25.0	13.0	7.20	38.3
fluorene	µg/kg	31.8	17.6	55.2	16	39.8	11.0	5.49	17.3
phenanthrene	µg/kg	149	56.0	37.5	28	150	39.5	13.2	8.87
anthracene	µg/kg	44.8	22.8	50.9	23	48.0	16.5	5.94	13.3
pyrene	µg/kg	231	91.5	39.6	25	240	61.0	22.9	9.90
chrysene	µg/kg	164	63.6	38.8	28	162	38.5	15.0	9.16
benz(a)anthracene	µg/kg	147	56.3	38.2	28	150	42.5	13.3	9.03
benzo(b)fluoranthene	µg/kg	289	140	48.5	28	310	101	33.0	11.4
benzo(k)fluoranthene	µg/kg	120	36.5	30.3	28	126	20.0	8.62	7.16
benzo(a)pyrene	µg/kg	193	59.9	31.0	29	200	50.0	13.9	7.20
dibenz(ah)anthracene	µg/kg	48.0	51.0	106.2	17	60.0	40.0	15.5	32.2
indeno(1,2,3-cd)pyrene	µg/kg	191	96.7	50.7	29	200	55.0	22.4	11.8
benzo(ghi)perylene	µg/kg	141	74.2	52.7	28	150	41.5	17.5	12.4

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PCB 052	µg/kg	2.47	2.31	93.4	9	3.28	1.35	0.961	38.9
PCB 101	µg/kg	4.38	3.08	70.3	7	5.75	1.91	1.46	33.2
PCB 138	µg/kg	7.59	4.48	59.0	11	9.00	2.70	1.69	22.3
PCB 153	µg/kg	7.93	4.10	51.7	12	8.95	2.30	1.48	18.7
PCB 180	µg/kg	4.80	3.71	77.4	10	6.60	2.29	1.47	30.6

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
hexachlorobenzene	µg/kg	0.961	0.532	55.3	6	1.31	0.285	0.271	28.2

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	17.9	4.90	27.3	15	18.3	2.70	1.58	8.82
Cd	mg/kg	1.35	0.330	24.5	16	1.40	0.230	0.103	7.65
Hg	mg/kg	0.416	0.107	25.7	11	0.440	0.090	0.040	9.70
Pb	mg/kg	52.0	10.8	20.8	17	52.1	8.07	3.28	6.30