



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Sediment Exchange for Tests on Organic Contaminants

REFERENCE MATERIAL

SETOC sample 749



Certificate of Analysis SETOC 749

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 749 of 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
1999	3	3



Consensus Values SETOC 749



Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
fluorene	µg/kg	669	180	26.9	51	674	119	31.4	4.70
phenanthrene	µg/kg	4512	1027	22.8	57	4514	580	170	3.77
anthracene	µg/kg	1721	414	24.1	56	1763	267	69.2	4.02
fluoranthene	µg/kg	6773	1194	17.6	58	6650	655	196	2.89
pyrene	µg/kg	5131	1033	20.1	54	5019	663	176	3.42
chrysene	µg/kg	3883	967	24.9	57	3840	551	160	4.12
benz(a)anthracene	µg/kg	3889	658	16.9	57	3917	347	109	2.80
benzo(b)fluoranthene	µg/kg	3552	907	25.5	50	3476	519	160	4.52
benzo(k)fluoranthene	µg/kg	1784	414	23.2	52	1795	228	71.8	4.03
benzo(a)pyrene	µg/kg	3515	765	21.8	58	3500	435	126	3.57
indeno(1,2,3-cd)pyrene	µg/kg	2531	673	26.6	57	2500	400	111	4.40
benzo(ghi)perylene	µg/kg	2250	762	33.9	57	2200	450	126	5.61

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PCB 052	µg/kg	7.75	1.94	25.1	36	7.89	1.12	0.405	5.22
PCB 101	µg/kg	34.7	9.65	27.8	40	35.0	6.00	1.91	5.50
PCB 118	µg/kg	12.7	2.87	22.7	33	13.0	1.70	0.624	4.93
PCB 138	µg/kg	68.9	20.9	30.2	41	66.5	10.5	4.07	5.90
PCB 153	µg/kg	70.0	21.1	30.1	41	70.1	12.4	4.12	5.88
PCB 180	µg/kg	44.2	12.9	29.2	41	45.0	8.00	2.52	5.71

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
p,p'-DDT	µg/kg	42.1	7.50	17.8	17	42.0	2.30	2.27	5.41

Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Particles < 2 µm	%	22.8	1.77	7.8	10	22.6	0.900	0.698	3.07

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	40.1	3.42	8.5	31	40.0	2.60	0.767	1.91
Cd	mg/kg	2.86	0.281	9.8	33	2.84	0.160	0.061	2.14
Cr	mg/kg	66.0	9.61	14.6	34	66.1	5.05	2.06	3.12
Cu	mg/kg	359	25.3	7.1	34	363	16.5	5.43	1.51
Hg	mg/kg	0.661	0.131	19.9	31	0.680	0.090	0.030	4.46



Consensus Values SETOC 749



Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ni	mg/kg	42.1	5.83	13.9	34	42.4	3.55	1.25	2.97
Pb	mg/kg	668	56.6	8.5	34	663	33.0	12.1	1.82
Zn	mg/kg	3901	411	10.5	34	3884	267	88.2	2.26

(cont.)



Indicative Values SETOC 749

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
naphthalene	µg/kg	326	149	45.8	47	327	87.0	27.2	8.36
acenaphthylene	µg/kg	285	175	61.6	36	297	119	36.6	12.8
acenaphthene	µg/kg	170	72.4	42.5	46	173	44.0	13.3	7.83
dibenz(ah)anthracene	µg/kg	637	314	49.2	54	634	203	53.4	8.37

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PCB 028	µg/kg	3.01	1.46	48.6	28	3.10	1.09	0.345	11.5
PCB 128	µg/kg	7.78	1.87	24.0	6	8.12	1.24	0.954	12.3
PCB 149	µg/kg	56.3	5.96	10.6	7	56.7	3.30	2.82	5.00
PCB 156	µg/kg	6.87	4.17	60.7	6	6.52	2.15	2.13	31.0

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
hexachlorobenzene	µg/kg	2.44	0.386	15.8	7	2.60	0.160	0.182	7.46
o,p'-DDT	µg/kg	6.59	4.03	61.2	11	8.00	2.13	1.52	23.1
p,p'-DDE	µg/kg	31.4	10.1	32.4	19	34.4	7.50	2.91	9.28
p,p'-DDD	µg/kg	57.2	23.3	40.8	19	54.3	15.5	6.69	11.7
o,p'-DDD	µg/kg	14.8	5.87	39.8	15	16.0	4.00	1.89	12.8

Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mineral oil, IR	mg/kg	797	307	38.5	21	815	162	83.6	10.5
Mineral oil, GC	mg/kg	624	240	38.5	23	627	127	62.5	10.0
AOX	mg/kg	107	28.4	26.6	4	106	16.0	17.8	16.6
EOX	mg/kg	2.51	1.33	52.9	19	2.55	0.670	0.381	15.2
Organic carbon	g/kg	61.9	10.6	17.1	6	61.4	5.85	5.42	8.75
CN - Total	mg/kg	0.931	0.665	71.4	8	1.20	0.490	0.294	31.6