



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Sediment Exchange for Tests on Organic Contaminants

REFERENCE MATERIAL

SETOC sample 799



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 799 of Marine Sediment, from The Netherlands, is prepared for the WEPAL proficiency programs. The sample has been used in 3 periods (or rounds). The results on which the values in this report are based were taken from the periods given in the following table:

Year	Round	Number
2024	2	1
2023	2	3
2020	3	2

Consensus Values SETOC 799

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
naphthalene	µg/kg	105	41.9	39.8	70	106	26.6	6.27	5.94
acenaphthene	µg/kg	24.5	5.36	21.9	50	24.5	3.11	0.948	3.86
fluorene	µg/kg	41.8	13.3	31.8	54	42.8	8.61	2.26	5.41
phenanthrene	µg/kg	278	52.5	18.9	74	277	32.7	7.63	2.75
anthracene	µg/kg	105	22.3	21.3	73	106	12.4	3.27	3.11
fluoranthene	µg/kg	504	97.0	19.2	74	496	63.1	14.1	2.79
pyrene	µg/kg	407	68.8	16.9	60	411	41.1	11.1	2.73
chrysene	µg/kg	285	63.8	22.4	74	284	46.6	9.28	3.25
benz(a)anthracene	µg/kg	236	49.9	21.2	75	240	30.1	7.21	3.06
benzo(b)fluoranthene	µg/kg	380	107	28.2	55	387	68.0	18.0	4.75
benzo(k)fluoranthene	µg/kg	174	38.0	21.9	73	174	24.5	5.55	3.20
benzo(a)pyrene	µg/kg	192	35.6	18.5	73	190	22.6	5.21	2.71
dibenz(ah)anthracene	µg/kg	59.1	12.9	21.8	57	61.0	9.00	2.14	3.62
indeno(1,2,3-cd)pyrene	µg/kg	226	43.0	19.0	72	229	26.0	6.33	2.80
benzo(ghi)perylene	µg/kg	218	37.6	17.3	73	217	23.0	5.50	2.53
EPA ΣPAH(16)	µg/kg	3321	500	15.1	42	3399	336	96.5	2.91

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PCB 028	µg/kg	28.4	10.4	36.7	65	29.8	7.00	1.61	5.69
PCB 052	µg/kg	133	31.9	24.0	67	132	19.8	4.87	3.67
PCB 101	µg/kg	102	22.2	21.7	68	100	13.2	3.36	3.30
PCB 118	µg/kg	40.4	8.70	21.5	66	39.3	5.61	1.34	3.31
PCB 138	µg/kg	28.6	6.52	22.8	67	28.4	4.40	0.995	3.48
PCB 153	µg/kg	33.2	8.08	24.3	68	32.8	4.80	1.22	3.69
PCB 180	µg/kg	8.85	1.91	21.6	65	8.90	1.10	0.296	3.34
ΣPCB(7)	µg/kg	390	48.9	12.5	32	390	26.7	10.8	2.77

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
hexachlorobenzene	µg/kg	1.91	0.248	13.0	14	1.94	0.114	0.083	4.34

Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mineral oil, GC	mg/kg	464	76.8	16.5	57	460	49.7	12.7	2.74
Organic carbon	g/kg	32.3	4.27	13.2	39	32.5	2.10	0.855	2.65



Consensus Values SETOC 799

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	16.8	1.81	10.7	31	16.9	1.26	0.406	2.41
Cd	mg/kg	2.26	0.343	15.2	33	2.31	0.205	0.075	3.30
Cr	mg/kg	69.9	7.83	11.2	33	70.7	5.16	1.70	2.44
Cu	mg/kg	64.9	9.45	14.6	33	63.0	5.74	2.06	3.17
Hg	mg/kg	0.805	0.077	9.5	35	0.809	0.049	0.016	2.01
Ni	mg/kg	33.0	3.53	10.7	33	33.0	2.71	0.768	2.32
Pb	mg/kg	79.7	8.60	10.8	33	81.0	6.10	1.87	2.35
Zn	mg/kg	376	35.1	9.3	33	379	25.7	7.64	2.03
Ba	mg/kg	178	26.3	14.8	20	177	13.5	7.36	4.15
Co	mg/kg	11.5	1.15	10.0	24	11.8	0.550	0.293	2.55
Mo	mg/kg	1.01	0.169	16.8	19	1.00	0.100	0.049	4.83



Indicative Values SETOC 799

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
acenaphthylene	µg/kg	38.1	14.1	36.9	53	41.0	8.80	2.41	6.34

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PCB 031	µg/kg	20.2	4.83	23.9	5	19.2	2.70	2.70	13.3
PCB 105	µg/kg	10.7	3.28	30.5	11	9.70	2.36	1.24	11.5
PCB 128	µg/kg	4.05	1.94	47.9	9	4.70	1.00	0.807	19.9
PCB 149	µg/kg	32.3	5.52	17.1	7	30.0	3.00	2.61	8.06
PCB 156	µg/kg	1.84	0.651	35.4	9	1.98	0.480	0.271	14.7
PCB 167	µg/kg	0.694	0.319	45.9	4	1.05	0.080	0.199	28.7

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
hexachlorobutadiene	µg/kg	0.720	0.262	36.4	9	0.704	0.189	0.109	15.2
pentachlorobenzene	µg/kg	1.31	0.258	19.7	13	1.30	0.136	0.089	6.83
1,2,3 trichlorobenzene	µg/kg	0.820	0.211	25.7	8	0.831	0.159	0.093	11.4
1,2,3,4 tetrachlorobenzene	µg/kg	0.908	0.171	18.9	9	0.936	0.112	0.071	7.87
1,2,4 trichlorobenzene	µg/kg	12.8	4.12	32.2	12	13.4	2.18	1.49	11.6
1,3,5 trichlorobenzene	µg/kg	9.23	2.17	23.5	11	9.53	1.46	0.816	8.84
p,p'-DDE	µg/kg	2.06	0.389	18.9	14	2.02	0.251	0.130	6.32
p,p'-DDD	µg/kg	1.11	0.219	19.8	13	1.24	0.244	0.076	6.86
o,p'-DDD	µg/kg	0.656	0.186	28.4	6	0.688	0.072	0.095	14.5

Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
EOX	mg/kg	2.39	0.524	22.0	7	2.30	0.434	0.248	10.4
Inorganic carbon	g/kg	18.8	5.60	29.8	5	18.1	3.40	3.13	16.6
Particles < 63 µm	%	71.6	19.7	27.5	8	73.1	12.7	8.69	12.1
CN - Total	mg/kg	1.15	0.377	32.9	16	1.28	0.309	0.118	10.3

Method: Experimental

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Tributyl Tin (TBT)	µg/kg	30.7	22.5	73.3	8	31.4	12.1	9.94	32.4