



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Sediment Exchange for Tests on Organic Contaminants

REFERENCE MATERIAL

SETOC sample 757



Certificate of Analysis SETOC 757

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 mean and standard deviation are calculated using all reported data when at least 8 results are left after removal of reported 'lower than' (<) and 0 (= zero) values. No outliers are removed.

This report is divided into three sections: Consensus Values, Indicative Values and Values for Information. The division is made on the reliability of the data. Consensus Values are based on at least 16 results while the coefficient of variation is smaller than 25 %. Indicative Values are based on at least 8 and less than 16 results or a coefficient of variation between 25 % and 50 %. Other values, based on more than 2 and less than 8 results or a coefficient of variation higher than 50 %, are given for information only.

In the sections with Consensus Values and Indicative Values the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median and MAD (Median of Absolute Deviation) and the uncertainty in the consensus values. The confidence limits (at 95 % probability) are calculated for these determinands.

In the section with Information Values the following parameters are given: median, MAD and number of results. For determinands which have at least 5 results reported as smaller than (<) the median of these 'smaller than results' is calculated. In some cases this median of '<' values is much smaller than median and mean of the indicative values. This may be caused by a too optimistic (too low) value for the detection limit reported by a (small) majority of participating laboratories who report '<' -values.

All values, expressed on a weight basis (kg or %), are reported in oven dry (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 757 of Sediment from Netherlands is prepared for the WEPAL proficiency programs. The sample is 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
2002	1	1



Consensus Values SETOC 757

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
p,p'-DDE	µg/kg	1.94	0.378	19.5	16	2.00	0.265	0.118	1.74	-	2.14

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
As	mg/kg	13.9	1.92	13.8	26	14.0	1.24	0.47	13.1	-	14.7
Cr	mg/kg	29.6	6.02	20.3	29	29.1	4.10	1.40	27.3	-	31.9
Cu	mg/kg	52.6	5.70	10.8	30	53.0	4.00	1.30	50.5	-	54.8
Hg	mg/kg	0.970	0.1634	16.8	29	0.980	0.1200	0.0379	0.908	-	1.03
Ni	mg/kg	25.5	3.11	12.2	30	25.2	2.20	0.71	24.4	-	26.7
Pb	mg/kg	146	10.7	7.3	29	146	7.0	2.5	141.8	-	149.9
Zn	mg/kg	196	17.1	8.7	30	195	12.0	3.9	190	-	202



Indicative Values SETOC 757

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
acenaphthene	µg/kg	31.5	15.31	48.5	36	32.0	10.84	3.19	26.4	-	36.7
anthracene	µg/kg	52.8	23.42	44.3	54	55.6	16.25	3.98	46.5	-	59.2
benz(a)anthracene	µg/kg	309	97.5	31.6	57	314	69.4	16.1	283	-	334
benzo(a)pyrene	µg/kg	300	98.4	32.8	57	300	70.0	16.3	274	-	326
benzo(b)fluoranthene	µg/kg	474	135.0	28.5	50	465	91.5	23.9	436	-	512
benzo(ghi)perylene	µg/kg	247	97.5	39.5	56	247	67.5	16.3	221	-	273
benzo(k)fluoranthene	µg/kg	220	77.9	35.5	53	220	54.2	13.4	198	-	241
chrysene	µg/kg	419	147.1	35.1	57	430	102.0	24.3	380	-	458
fluoranthene	µg/kg	765	225.0	29.4	57	761	161.0	37.2	706	-	825
indeno(1,2,3-cd)pyrene	µg/kg	284	97.5	34.4	57	292	68.0	16.1	258	-	309
phenanthrene	µg/kg	234	66.6	28.5	57	243	47.0	11.0	216	-	252
pyrene	µg/kg	612	167.9	27.4	54	600	118.0	28.6	566	-	658

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
PCB 118	µg/kg	0.980	0.3503	35.8	18	1.000	0.2500	0.1032	0.806	-	1.15
PCB 138	µg/kg	3.78	1.421	37.6	32	4.00	1.000	0.314	3.26	-	4.29
PCB 153	µg/kg	3.41	0.902	26.5	31	3.49	0.620	0.203	3.08	-	3.74
PCB 180	µg/kg	2.34	0.946	40.4	30	2.55	0.670	0.216	1.99	-	2.69

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
p,p'-DDD	µg/kg	5.31	2.640	49.7	17	5.55	1.780	0.800	3.96	-	6.67

Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Organic carbon	g/kg	317	46.0	14.5	10	313	32.5	18.2	284	-	349
Mineral oil, IR	mg/kg	131	51.6	39.4	19	145	35.0	14.8	106	-	156

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Cd	mg/kg	0.825	0.2506	30.4	27	0.800	0.1700	0.0603	0.726	-	0.924



Informative Values SETOC 757

Method: Polycyclic aromatic hydrocarbons

Element	Unit	Median	MAD	N	Results smaller than (<)	
					Median of <	N
acenaphthylene	µg/kg	28.0	15.00	25	50.0	20
dibenz(ah)anthracene	µg/kg	56.0	21.10	48	50.0	5
fluorene	µg/kg	65.4	22.40	46	40.0	7
naphthalene	µg/kg	90.0	35.85	46	50.0	9

Method: Polychlorobiphenyls

Element	Unit	Median	MAD	N	Results smaller than (<)	
					Median of <	N
PCB 028	µg/kg	1.000	0.5000	19	2.000	16
PCB 052	µg/kg	1.000	0.3800	20	2.000	15
PCB 101	µg/kg	1.96	0.715	26	5.00	11
PCB 105	µg/kg	1.04	0.285	4	6.00	6
PCB 128	µg/kg	0.825	0.3400	4	10.000	5
PCB 149	µg/kg	3.16	0.835	4		
PCB 156	µg/kg	0.250	0.0200	3	2.000	5

Method: Organochlorine pesticides

Element	Unit	Median	MAD	N	Results smaller than (<)	
					Median of <	N
aldrin	µg/kg	-	-	0	1.00	13
alpha-endosulfan	µg/kg	-	-	0	1.00	12
alpha-HCH	µg/kg	-	-	0	1.00	17
beta-endosulfan	µg/kg	-	-	0	1.00	5
endosulfan sulfate	µg/kg	-	-	0	3.50	6
endrin	µg/kg	-	-	0	1.00	13
gamma-HCH	µg/kg	0.340	0.1150	4	2.000	15
heptachlor	µg/kg	-	-	0	1.00	14
hexachlorobenzene	µg/kg	0.460	0.2700	3	1.000	15
o,p`-DDD	µg/kg	3.00	0.770	7	4.50	6
o,p`-DDE	µg/kg	1.000	0.3900	3	1.000	10
o,p`-DDT	µg/kg	1.57	0.430	3	1.00	11
p,p`-DDT	µg/kg	2.00	1.210	7	1.00	11
pentachlorobenzene	µg/kg	-	-	0	5.00	10

Method: Other parameters

Element	Unit	Median	MAD	N
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Informative Values SETOC 757

AOX	mg/kg	143	10.0	3
CN - Total	mg/kg	1.06	0.415	8
EOX	mg/kg	0.630	0.3200	19

Method: Other parameters

Element	Unit	Median	MAD	N
Mineral oil, GC	mg/kg	178	66.1	31
Particles < 2 µm	%	16.4	0.40	7
Particles < 63 µm	%	45.6	10.20	3



(cont.)