



**WAGENINGEN EVALUATING PROGRAMS  
FOR ANALYTICAL LABORATORIES**

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**Certificate of Analysis**



**International Sediment Exchange for Tests on Organic Contaminants**

**REFERENCE MATERIAL**

**SETOC sample 752**



## Certificate of Analysis SETOC 752

### 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 752 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
2001	1	1



## Consensus Values SETOC 752

### Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
anthracene	µg/kg	44.7	10.34	23.1	53	44.9	7.10	1.78	41.9	-	47.5
benz(a)anthracene	µg/kg	129	27.3	21.2	60	130	19.0	4.4	122	-	136
benzo(b)fluoranthene	µg/kg	207	36.5	17.6	51	214	25.0	6.4	197	-	218
benzo(k)fluoranthene	µg/kg	95.7	18.28	19.1	55	97.8	12.77	3.08	90.7	-	101
fluoranthene	µg/kg	315	53.2	16.9	60	319	36.5	8.6	301	-	329
fluorene	µg/kg	26.0	6.36	24.5	43	26.5	4.20	1.21	24.0	-	27.9
phenanthrene	µg/kg	144	27.3	19.0	60	142	18.0	4.4	137	-	151
pyrene	µg/kg	241	34.8	14.5	56	242	23.5	5.8	232	-	250

### Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
PCB 118	µg/kg	2.75	0.587	21.3	29	3.00	0.400	0.136	2.53	-	2.97
PCB 153	µg/kg	5.41	1.291	23.9	36	5.45	0.850	0.269	4.97	-	5.84
PCB 180	µg/kg	3.08	0.581	18.9	32	3.00	0.390	0.128	2.87	-	3.29

### Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
As	mg/kg	15.8	1.52	9.7	29	16.0	1.00	0.35	15.2	-	16.3
Cd	mg/kg	1.85	0.111	6.0	30	1.84	0.075	0.025	1.81	-	1.89
Cr	mg/kg	50.0	3.76	7.5	31	50.0	2.60	0.84	48.6	-	51.4
Cu	mg/kg	20.4	1.53	7.5	31	20.6	1.00	0.34	19.8	-	20.9
Hg	mg/kg	0.473	0.0602	12.7	29	0.480	0.0400	0.0140	0.450	-	0.496
Ni	mg/kg	13.0	1.39	10.7	30	13.0	1.00	0.32	12.5	-	13.5
Pb	mg/kg	37.2	3.05	8.2	31	37.0	2.00	0.68	36.1	-	38.3
Zn	mg/kg	140	9.9	7.0	31	140	7.0	2.2	136.4	-	143.7



## Indicative Values SETOC 752

### Method: Polycyclic aromatic hydrocarbons

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
acenaphthene	µg/kg	21.7	7.08	32.6	31	20.1	4.91	1.59	19.1	-	24.3
benzo(a)pyrene	µg/kg	124	32.1	25.9	58	125	22.5	5.3	115	-	132
benzo(ghi)perylene	µg/kg	113	31.8	28.1	57	120	22.0	5.3	105	-	122
chrysene	µg/kg	142	40.9	28.8	60	145	27.5	6.6	131	-	153
dibenz(ah)anthracene	µg/kg	28.7	10.39	36.2	46	29.8	7.20	1.91	25.6	-	31.8
indeno(1,2,3-cd)pyrene	µg/kg	133	41.7	31.4	56	130	29.0	7.0	122	-	144
naphthalene	µg/kg	69.7	28.52	40.9	46	68.6	19.00	5.26	61.2	-	78.2

### Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
PCB 028	µg/kg	2.13	0.744	34.9	24	2.00	0.530	0.190	1.82	-	2.45
PCB 052	µg/kg	2.47	0.954	38.7	30	2.52	0.665	0.218	2.11	-	2.82
PCB 101	µg/kg	3.96	1.199	30.2	32	4.00	0.850	0.265	3.53	-	4.39
PCB 138	µg/kg	4.94	1.492	30.2	35	5.00	1.000	0.315	4.43	-	5.45

### Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
p,p'-DDD	µg/kg	1.83	0.296	16.2	12	1.86	0.205	0.107	1.64	-	2.02
p,p'-DDE	µg/kg	1.06	0.133	12.6	11	1.10	0.100	0.050	0.970	-	1.15

### Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
EOX	mg/kg	0.419	0.1587	37.8	19	0.400	0.1100	0.0455	0.343	-	0.496
Organic carbon	g/kg	15.8	3.71	23.5	10	14.7	2.65	1.47	13.2	-	18.4
Mineral oil, GC	mg/kg	129	43.9	34.0	25	130	30.0	11.0	111	-	147
Mineral oil, IR	mg/kg	77.5	27.64	35.6	16	80.5	19.75	8.64	62.9	-	92.2
Particles < 2 µm	%	9.76	1.215	12.5	11	9.86	0.830	0.458	8.95	-	10.6



## Informative Values SETOC 752

### Method: Polycyclic aromatic hydrocarbons

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
acenaphthylene	µg/kg	19.5	10.50	26	50.0	21

### Method: Polychlorobiphenyls

Element	Unit	Median	MAD	N
PCB 105	µg/kg	1.05	0.080	6
PCB 128	µg/kg	1.000	0.2550	4
PCB 149	µg/kg	4.53	0.045	4
PCB 156	µg/kg	0.470	0.0700	3

### Method: Organochlorine pesticides

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
cis-chlordane	µg/kg	-	-	0	3.00	8
gamma-HCH	µg/kg	-	-	0	1.00	20
hexachlorobenzene	µg/kg	1.000	0.1000	6	2.000	17
o,p`-DDD	µg/kg	0.900	0.1000	3	1.000	15
o,p`-DDE	µg/kg	-	-	0	1.00	17
p,p`-DDT	µg/kg	-	-	0	1.00	20
trans-chlordane	µg/kg	-	-	0	1.00	9

### Method: Other parameters

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
AOX	mg/kg	37.0	1.90	3		
CN - Total	mg/kg	0.330	0.0750	4	1.000	7
Inorganic carbon	g/kg	13.6	2.60	5		
Particles < 63 µm	%	25.0	2.00	3		