



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Sediment Exchange for Tests on Organic Contaminants

REFERENCE MATERIAL

SETOC sample 732



Certificate of Analysis SETOC 732

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 732 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
1997	3	2



Consensus Values SETOC 732

Method: Metals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
As	mg/kg	11.3	2.08	18.4	28	11.5	1.50	0.49	10.5	-	12.1
Cd	mg/kg	1.49	0.139	9.3	33	1.50	0.100	0.030	1.44	-	1.54
Cr	mg/kg	44.8	7.28	16.3	35	44.0	5.00	1.54	42.3	-	47.3
Cu	mg/kg	69.0	5.68	8.2	35	68.0	4.00	1.20	67.1	-	71.0
Hg	mg/kg	0.754	0.1317	17.5	28	0.785	0.0850	0.0311	0.703	-	0.805
Ni	mg/kg	26.1	1.33	5.1	35	26.1	0.90	0.28	25.6	-	26.5
Pb	mg/kg	283	22.6	8.0	35	283	15.0	4.8	275	-	291
Zn	mg/kg	446	41.9	9.4	35	443	29.0	8.9	432	-	460



Indicative Values SETOC 732

Method: Polychlorobiphenyls

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
PCB 101	µg/kg	3.50	1.010	28.9	17	3.66	0.720	0.306	2.98	-	4.01
PCB 118	µg/kg	2.37	1.070	45.1	12	2.51	0.795	0.386	1.70	-	3.05
PCB 138	µg/kg	5.62	1.837	32.7	21	6.04	1.340	0.501	4.78	-	6.45
PCB 153	µg/kg	6.31	2.388	37.9	24	6.60	1.645	0.609	5.30	-	7.31
PCB 180	µg/kg	5.29	2.606	49.3	19	5.00	1.800	0.747	4.04	-	6.54

Method: Organochlorine pesticides

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
o,p'-DDD	µg/kg	18.4	7.75	42.0	16	19.3	5.50	2.42	14.3	-	22.5
p,p'-DDE	µg/kg	25.8	10.15	39.3	19	25.0	7.00	2.91	20.9	-	30.7

Method: Other parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
EOX	mg/kg	1.20	0.559	46.7	25	1.36	0.390	0.140	0.966	-	1.43
Mineral oil, GC	mg/kg	904	311.3	34.4	12	944	213.0	112.3	708	-	1100
Mineral oil, IR	mg/kg	638	228.0	35.8	16	659	155.0	71.3	517	-	758



Informative Values SETOC 732



Method: Polychlorobiphenyls

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
PCB 028	µg/kg	6.00	2.430	19	10.00	14
PCB 052	µg/kg	3.70	1.230	19	10.00	14
PCB 149	µg/kg	5.38	1.380	3		

Method: Organochlorine pesticides

Element	Unit	Median	MAD	N	Results smaller than (<) Median of <	N
alpha-endosulfan	µg/kg	-	-	0	2.00	17
alpha-HCH	µg/kg	-	-	0	2.00	21
beta-endosulfan	µg/kg	-	-	0	3.00	5
beta-HCH	µg/kg	-	-	0	4.00	19
delta-HCH	µg/kg	-	-	0	2.00	10
dieldrin	µg/kg	-	-	0	2.15	18
endrin	µg/kg	-	-	0	5.00	19
gamma-HCH	µg/kg	-	-	0	3.00	19
heptachlor epoxide	µg/kg	-	-	0	2.50	16
hexachlorobenzene	µg/kg	1.26	0.100	4	5.00	15
o,p`-DDE	µg/kg	8.57	3.230	6	10.00	11
o,p`-DDT	µg/kg	1.20	0.675	4	5.00	14
p,p`-DDD	µg/kg	69.2	25.80	21		
p,p`-DDT	µg/kg	15.4	5.80	16	10.0	6
pentachlorobenzene	µg/kg	-	-	0	5.00	11
telodrin	µg/kg	-	-	0	5.00	11

Method: Other parameters

Element	Unit	Median	MAD	N
AOX	mg/kg	139	3.5	4
CN - Total	mg/kg	1.21	0.380	6
Organic carbon	g/kg	236	9.7	6
Particles < 2 µm	%	11.6	2.90	7
Particles < 63 µm	%	29.0	3.10	3