# QUASIMEME

**Quality assurance of information for marine environmental monitoring**

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# Certificate of Analysis

**Sediment**

**REFERENCE MATERIAL**

**Sediment sample 60**

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WAGENINGEN
UNIVERSITY & RESEARCH

# Certificate of Analysis Sediment 60

## 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.

The results of each determinand is expressed on dried sediment.

## Sample information

QUASIMEME reference materials cover a range of natural Marine sediment species from contaminated waters from the North Sea and/or Mediterranean. There is no spiking, mixing or other alterations of the samples. For sample preparation the sediment samples are dried at 40 oC and milled to pass a 0.5 mm sieve.

This Sediment sample 60 of Estuary sediment spiked from Westerscheldt is prepared for the QUASIMEME proficiency programs. The results on which the values in this report are based were taken from the periods given in the following table.

| Year.Round | Program | Sample Round Id |
|---|---|---|
| 2024.1 | MS6 | QSP089MS |
| 2022.2 | MS6 | QSP083MS |
| 2021.2 | MS6 | QSP080MS |
| 2022.1 | MS7 | QBC072MS |
| 2021.2 | MS8 | QPF015MS |
| 2020.2 | MS8 | QPF011MS |

## Consensus Values MS6

**Method: Organometals - MS6**

| Element | Unit | Mean | Std.Dev. | CV % | N | Median | MAD | Uncertainty | Rel.Uncert. % |
|---|---|---|---|---|---|---|---|---|---|
| Tributyltin (TBT) | µg Sn/kg | 8.99 | 2.22 | 24.7 | 58 | 9.10 | 1.22 | 0.364 | 4.05 |
| Dibutyltin (DBT) | µg Sn/kg | 9.16 | 2.45 | 26.8 | 51 | 9.12 | 1.65 | 0.429 | 4.69 |

## Indicative Values MS6

**Method: Organometals - MS6**

| Element | Unit | Mean | Std.Dev. | CV % | N | Median | MAD | Uncertainty | Rel.Uncert. % |
|---|---|---|---|---|---|---|---|---|---|
| Monobutyltin (MBT) | µg Sn/kg | 36.7 | 22.2 | 60.6 | 44 | 37.6 | 14.4 | 4.19 | 11.4 |
| Triphenyltin (TPhT) | µg Sn/kg | 1.87 | 0.489 | 26.1 | 25 | 2.00 | 0.300 | 0.122 | 6.53 |
| Diphenyltin (DPhT) | µg Sn/kg | 2.27 | 0.855 | 37.7 | 11 | 2.32 | 0.569 | 0.322 | 14.2 |
| Monophenyltin (MPhT) | µg Sn/kg | 3.44 | 1.53 | 44.5 | 13 | 3.64 | 0.637 | 0.530 | 15.4 |

## Consensus Values MS7

**Method: Brominated Flame Retardants - MS7**

| Element | Unit | Mean | Std.Dev. | CV % | N | Median | MAD | Uncertainty | Rel.Uncert. % |
|---|---|---|---|---|---|---|---|---|---|
| BDE209 | µg/kg | 15.3 | 1.82 | 11.9 | 9 | 15.7 | 0.660 | 0.757 | 4.96 |

## Indicative Values MS7

**Method: Brominated Flame Retardants - MS7**

| Element | Unit | Mean | Std.Dev. | CV % | N | Median | MAD | Uncertainty | Rel.Uncert. % |
|---|---|---|---|---|---|---|---|---|---|
| BDE028 | µg/kg | 0.024 | 0.017 | 70.2 | 9 | 0.031 | 0.013 | 0.007 | 29.3 |
| BDE047 | µg/kg | 1.30 | 0.227 | 17.4 | 12 | 1.26 | 0.169 | 0.082 | 6.27 |
| BDE099 | µg/kg | 0.077 | 0.027 | 35.0 | 10 | 0.082 | 0.015 | 0.011 | 13.8 |

## Indicative Values MS8

**Method: Perfluorinated alkyl substances - MS8**

| Element | Unit | Mean | Std.Dev. | CV % | N | Median | MAD | Uncertainty | Rel.Uncert. % |
|---|---|---|---|---|---|---|---|---|---|
| PFHxA | µg/kg | 0.017 | 0.006 | 38.4 | 4 | 0.017 | 0.004 | 0.004 | 24.0 |
| PFHpA | µg/kg | 0.008 | 0.002 | 28.7 | 4 | 0.008 | 0.001 | 0.001 | 18.0 |
| PFOA | µg/kg | 0.011 | 0.005 | 43.8 | 4 | 0.012 | 0.003 | 0.003 | 27.3 |
| PFDA | µg/kg | 0.012 | 0.003 | 25.0 | 4 | 0.013 | 0.002 | 0.002 | 15.6 |
| PFUnDA | µg/kg | 0.032 | 0.013 | 40.2 | 5 | 0.039 | 0.007 | 0.007 | 22.4 |
| PFDoA | µg/kg | 0.057 | 0.012 | 22.1 | 5 | 0.061 | 0.007 | 0.007 | 12.3 |
| PFTrDA | µg/kg | 0.185 | 0.057 | 31.0 | 8 | 0.191 | 0.022 | 0.025 | 13.7 |
| PFTeDA | µg/kg | 0.133 | 0.022 | 16.8 | 8 | 0.131 | 0.008 | 0.010 | 7.42 |
| n-PFHxS | µg/kg | 0.029 | 0.007 | 22.8 | 4 | 0.030 | 0.003 | 0.004 | 14.3 |
| total-PFOS | µg/kg | 0.085 | 0.029 | 34.8 | 8 | 0.091 | 0.021 | 0.013 | 15.4 |