



**University of Stuttgart**  
Germany

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AQS Baden-Württemberg

To the participants of AQS Baden-Württemberg

**Institute for Sanitary Engineering,  
Water Quality and Solid Waste  
Management**

**AQS Baden-Württemberg**

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**Proficiency test 5/20**  
**TW S4 – PFC in drinking water**

2020-07-01

Dear Madam or Sir,

in September 2020 the execution of the above mentioned proficiency test (PT) round „PFC in drinking water” is planned.

The PT is carried out under the umbrella of the NORMAN Network of Reference Laboratories for Monitoring of Emerging Environmental Pollutants (<http://www.norman-network.net>) in cooperation with IWW Water Centre.

Details about the PT round are enclosed. Please read them with care. If you are interested in participation, please register online via our website [http://www.iswa.uni-stuttgart.de/ch/aqs/rv/anm\\_rv.en.php?id=229](http://www.iswa.uni-stuttgart.de/ch/aqs/rv/anm_rv.en.php?id=229).

You will receive a confirmation of receipt by e-mail. With a second e-mail we will bindingly confirm your application to the PT. You are not registered if you do not receive any e-mail.

**Application deadline: 24 July 2020**

Please consider our general terms and conditions of business for the execution of the PT, which can be downloaded from [http://www.aqsbw.de/pdf/agb\\_en.pdf](http://www.aqsbw.de/pdf/agb_en.pdf).

If we receive your application after the deadline we cannot guarantee that participation will be possible.

The production of PT samples in this dimension is accompanied with high effort. Early registration is highly appreciated.

**Bank**  
Baden-Württembergische  
Bank Stuttgart - BW-Bank

**IBAN**  
DE51 6005 0101 7871 5216 87

**SWIFT/BIC**  
SOLADEST600

**VAT-No.**  
DE147794196

If you have any questions, please do not hesitate to contact us:

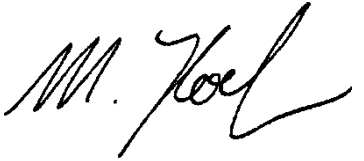
In cooperation with



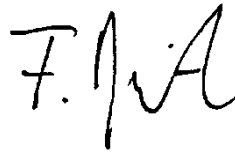
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AQS Baden-Württemberg

Best regards



Dr.-Ing. Michael Koch  
Scientific director AQS



Dr.-Ing. Frank Baumeister  
PT coordinator

Annex:  
Details of the proficiency test exercise



**Details of the proficiency test round 5/20**  
**TW S4 - PFC in drinking water - September 2020**

**Parameters**

parameter	CAS-number of the parameter
Perfluorobutanoic acid (PFBA)	375-22-4
Perfluoropentanoic acid (PFPeA)	2706-90-3
Perfluorohexanoic acid (PFHxA)	307-24-4
Perfluoroheptanoic acid (PFHpA)	375-85-9
Perfluorooctanoic acid (PFOA)	335-67-1
Perfluorononanoic acid (PFNA)	375-95-1
Perfluorodecanoic acid (PFDA)	335-76-2
1-Perfluorobutanesulfonic acid (PFBS)	375-73-5
Perfluorohexane-1-sulphonic acid (PFHxS)	355-46-4
Perfluorooctane sulfonic acid (PFOS)	1763-23-1

**Matrix**

Drinking water

**Dates and deadlines**

**Registration deadline: 24 July 2020**

**Please register for this PT only via our website [www.aqsbw.de](http://www.aqsbw.de).**

You will receive a confirmation of receipt by e-mail. With a second e-mail we will bindingly confirm your application to the PT. You are not registered if you do not receive any e-mail.

**Dispatch of the samples: 29 September 2020**

**Deadline for submission of results: 23 October 2020; 24:00h online via internet.**  
**Results submitted after the deadline will not be accepted.**

**Sample dispatch**

Samples will be sent by courier service.

**Sample details**

- 3 samples for the determination of the PFC in 1000-ml-ground bottles with ground-in stopper. Stabilisation with sodium azide.

**Permitted analytical methods**

Participants are free to choose a suitable method.

## Limit of quantification

AQS Baden-Württemberg

The analytical methods must be able to achieve the following limits of quantification:

parameter	limit of quantification [ $\mu\text{g/l}$ ]
Perfluorobutanoic acid (PFBA)	0,01
Perfluoropentanoic acid (PFPeA)	0,01
Perfluorohexanoic acid (PFHxA)	0,01
Perfluoroheptanoic acid (PFHpA)	0,01
Perfluorooctanoic acid (PFOA)	0,01
Perfluorononanoic acid (PFNA)	0,01
Perfluorodecanoic acid (PFDA)	0,01
1-Perfluorobutanesulfonic acid (PFBS)	0,01
Perfluorohexane-1-sulphonic acid (PFHxS)	0,01
Perfluorooctane sulfonic acid (PFOS)	0,01

## Execution of the analysis

The samples must be analysed in the own laboratory with own personnel and own equipment. Subcontracting of the analysis is not allowed.

## Evaluation and assessment of the single values

The statistical evaluation will be executed according to DIN 38402 - A45 or ISO/TS 20612 "Interlaboratory comparison for proficiency testing of analytical chemistry laboratories" with the combined estimator Hampel/Q-method, a method of robust statistics. The assigned value  $x_{pt}$ , derived from the weighings of the spiked samples and the matrix content<sup>1,2</sup> will be preferably used for the assessment of the single values. Only if this is not possible, the Hampel estimator as robust mean value of the participants' data will be used.

If possible, the standard deviation for proficiency assessment  $\sigma_{pt}$  will be taken from the variance function for the calculation of the  $z_u$ -scores according to DIN 38402 - A45 (chapter 10.4) or ISO/TS 20612 respectively.  $\sigma_{pt}$  will be limited for both parameters as follows:

- lower limit: 5 %
- upper limit: 25 %

A z-score is calculated for each measurement result derived from the assigned value  $x_a$  and the standard deviation for proficiency assessment:

$$z = \frac{x - x_{pt}}{\sigma_{pt}}$$

The z-score will be modified to a  $z_u$ -score with a correction factor for proficiency assessment (as described in the above mentioned standards).

The tolerance limits are defined as  $|z_u|=2$ .

The single results will be assessed as follows:

$ z_u  \leq 2.0$	satisfactory
$2.0 <  z_u  < 3.0$	questionable
$ z_u  \geq 3.0$	unsatisfactory

## Overall assessment

<sup>1</sup> Rienitz, O., Schiel, D., Güttler, B., Koch, M., Borchers, U.: A convenient and economic approach to achieve SI-traceable reference values to be used in drinking-water interlaboratory comparisons. *Accred Qual Assur* (2007) 12: 615-622.

<sup>2</sup> Koch, M., Baumeister, F.: Traceable reference values for routine drinking water proficiency testing: first experiences. *Accred Qual Assur* (2008) 13: 77-82.

There is no overall assessment of the proficiency test round, but the single AQS Baden-Württemberg parameters are assessed. A parameter is assessed as successful, if more than half of the values are assessed as “satisfactory”.

In addition those values are assessed as “unsatisfactory”:

- 1) that are not determined (if the other samples of this parameters are analysed),
- 2) that are indicated with “lower than limit of quantification”,
- 3) that have been subcontracted,
- 4) that have been submitted after the deadline of submission of results.

**Participation fee**

The participation fee will be 500 € plus transport costs.