University of Stuttgart
Germany

Institute for Sanitary Engineering, Water Quality and Solid Waste Management

AQS Baden-Württemberg

University of Stuttgart • ISWA • Bandtäle 2 • 70569 Stuttgart
AQS Baden-Württemberg

Contact person
Dr. Frank Baumeister, Dr. Michael Koch, Mandy Wünsche

Contact details
Bandtäle 2
70569 Stuttgart
GERMANY
T +49 711 685-65446
F +49 711 685-63769
info@aqsbw.de
www.aqsbw.de

To the participants of AQS Baden-Württemberg

2018-06-22

Proficiency test 8/18
TW S6 – X-ray- and MRT-contrast media in drinking water

Dear Madam or Sir,

in September 2018 the execution of the above mentioned proficiency test (PT) round „X-ray- and MRT-contrast media 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=181.

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 2018

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.

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

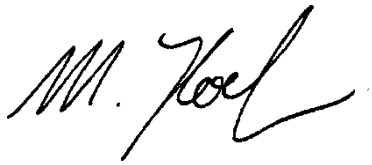
SWIFT/BIC
SOLADEST600

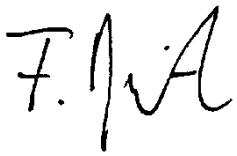
VAT-No.
DE147794196

In cooperation with

If you have any questions, please do not hesitate to contact us:
AQS Baden-Württemberg, Bandtäle 2, 70569 Stuttgart, Germany
Phone: +49 711 685 65446
Telefax: +49 711 685 53769
E-Mail: info@aqsbw.de
Contact: Mandy Wünsche, Dr. Frank Baumeister, Dr. Michael Koch

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 8/18
TW S6 – X-ray and MRT-contrast media in drinking water – September 2018

Parameters

- **amidotrizoic acid**
- **iodipamide**
- **iohexol**
- **iomeprol**
- **iopamidol**
- **iopromide**
- **iothalamic acid**
- **ioxaglic acid**
- **ioxitalamic acid**
- **gadolinium**
- **gadolinium anomaly[1] (evaluation for information only)**

Matrix
Drinking water

Dates and deadlines
Registration deadline: 24 July 2018

Please register for this PT only via our website 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: 25 September 2018

Deadline for submission of results: 15 October 2018; 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 x 1 sample for the determination of amidotrizoic acid, iodipamide, iohexol, iomeprol, iopamidol, iopromide, iothalamic acid, ioxaglic acid and ioxitalamic acid in 1000-ml-glas bottles with ground glass plugs.
- 3 x 1 sample for the determination of gadolinium and gadolinium anomaly in 50-ml-plastic tubes. Preservation with nitric acid.

Permitted analytical methods
Participants are free to choose a suitable method.

[1] For the determination of the gadolinium anomaly the quotient of the measured and „expected“ Gd is calculated. The procedure is described e.g. in the following publication:
Lewandowski J, Putschew A, Schwesig D, Neumann C, Radke M (2011): Fate of organic micropollutants in the hyporheic zone of a eutrophic lowland stream: Results of a preliminary field study. Science of the Total Environment, 409, 1824-1835.

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

parameter	limit of quantification [µg/l]	maximum expected upper limit [µg/l]
amidotrizoic acid	0,05	1 µg/l
iodipamide	0,05	1 µg/l
iohexol	0,05	1 µg/l
iomeprol	0,05	1 µg/l
iopamidol	0,05	1 µg/l
lopromide	0,05	1 µg/l
iothalamic acid	0,05	1 µg/l
ioxaglic acid	0,05	1 µg/l
ioxitalamic acid	0,05	1 µg/l
gadolinium	0,005	0,1 µg/l

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.

Report of the result

The samples must be analysed in duplicate by the complete method (sample preparation and measurement). Please submit the results as average values in µg/l with three significant digits.

The results for the gadolinium anomaly must be submitted without dimension and with three significant digits.

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[2,3] 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 σ_{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. σ_{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:

[2] 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.
[3] Koch, M., Baumeister, F.: Traceable reference values for routine drinking water proficiency testing: first experiences. Accred Qual Assur (2008) 13: 77-82.

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

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:

$\|z_U\| \leq 2.0$	satisfacory
$2.0 < \|z_U\| < 3.0$	questionable
$\|z_U\| \geq 3.0$	unsatisfactory

Overall assessment
There is no overall assessment of the proficiency test round, but the single 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.