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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

Contact person

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Proficiency test 2/25 - Elements in waste water

2024-11-24

Dear Madam or Sir,

in February 2025 the execution of the above mentioned proficiency test (PT) round „Elements in waste water“ is planned.

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.aqsbw.de/en>.

If you are interested in participation, please register online via our PT portal. You will reach this portal via our website <http://www.aqsbw.de/en>. For the first usage of the web portal, you must create a new user. If the e-mail address is not known to the system, this user must be verified. Please plan time for this registration process.

Application deadline: 13 December 2024

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

Baden-Württembergische
Bank Stuttgart – BW-Bank

IBAN

DE51 6005 0101 7871 5216 87

SWIFT/BIC

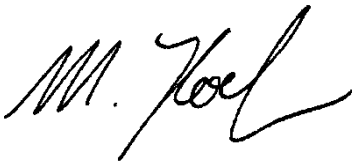
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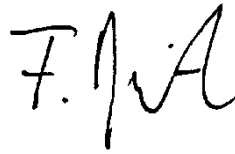
DE147794196



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 2/25 - Elements in waste water – 02/2025

Parameters

- aluminium
- arsenic
- lead
- cadmium
- chromium
- iron
- copper
- nickel
- mercury
- zinc

Matrix

waste water

Dates and deadlines

Registration deadline: 13 December 2024

Please register for this PT only via our PT portal (accessible via our website).

You will receive a confirmation of receipt by e-mail and your registration is documented in our PT portal.

Dispatch of the samples: 24 February 2025

**Deadline for submission of results: 17 March 2025; 23:59 h using our PT portal.
Results submitted after the deadline will not be accepted.**

Sample dispatch

Samples will be sent by courier service.

Sample details

- 3 samples in 500-ml-plastic bottles for the determination of aluminium, arsenic, lead, cadmium, chromium, iron, copper, nickel, zinc. Preservation with HNO₃ (pH 2,1).
- 3 samples in 250-ml-glas bottles for the determination of mercury. Preservation according to ISO 12846: 2012 only with hydrochloric acid. Further preservation steps must be done directly after receipt of the samples.

Permitted analytical methods

The following restrictions do not apply for laboratories outside Germany. Laboratories participating in this PT not under the rules of the 76. LÜRV are free to choose a suitable method:

parameter	analytical method according to module water from 18.10.2018	digestion
Al	DIN EN ISO 11885: 2009-09 (E 22) DIN EN ISO 12020: 2000-05 (E 25) DIN EN ISO 17294-2: 2017-01 (E 29)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
As	DIN EN ISO 11969: 1996-11 (D 18) DIN EN ISO 11885: 2009-09 (E 22) DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4) DIN 38405-D 35: 2004-9	Digestion according to section 8.3.1 D18 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Pb	DIN EN ISO 11885: 2009-09 (E 22) DIN 38406-E 6: 1998-07 DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Cd	DIN EN ISO 11885: 2009-09 (E 22) DIN EN ISO 5961: 1995-05 (E 19) DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Cr	DIN EN ISO 11885: 2009-09 (E 22) DIN EN 1233: 1996-08 (E 10) DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Fe	DIN EN ISO 11885: 2009-09 (E 22) DIN 38406-E 32: 2000-05 DIN EN ISO 15586: 2004-02 (E 4) DIN EN ISO 17294-2: 2017-01 (E 29)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Cu	DIN EN ISO 11885: 2009-09 (E 22) DIN 38406-E 7: 1991-09 DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Ni	DIN EN ISO 11885: 2009-09 (E 22) DIN 38406-E 11: 1991-09 DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07
Hg	DIN EN ISO 12846: 2012-08 (E 12) DIN EN ISO 17852: 2008-04 (E 35)	Digestion according to section 5 E 12 Digestion according to section 7 E 35
Zn	DIN EN ISO 11885: 2009-09 (E 22) DIN 38406-E 8: 2004-10 DIN EN ISO 17294-2: 2017-01 (E 29) DIN EN ISO 15586: 2004-02 (E 4)	DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07 DIN EN ISO 15587-2 (A32): 2002-07

Limit of quantification

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

parameter	limit of quantification in µg/l
aluminium	100
arsenic	10
lead	10
cadmium	0,5
chromium	20
iron	50
copper	20
nickel	20
mercury	0,1
zinc	20

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} is calculated by the Hampel estimator. 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:

Parameter	lower limit [%]	upper limit [%]
aluminium	5	15
arsenic	5	15
lead	5	15
cadmium	5	15
chrom	5	15
iron	5	15
copper	5	15
nickel	5	15
mercury	15 ($\leq 0,6 \mu\text{g/l}$, low level) 10 ($> 0,6 \mu\text{g/l}$, high level)	35 ($\leq 0,6 \mu\text{g/l}$, low level) 25 ($> 0,6 \mu\text{g/l}$, high level)
zinc	5	15

A z-score is calculated for each measurement result derived from the assigned value x_{PT} 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

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 447,00 € plus transport costs.