KWR | December 2025

KWR Proficiency Testing Services Program for 2026

KWR

Bridging Science to Practice

KWR Proficiency Testing Services Program for 2026

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Client(s)
Participating laboratories

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Content

1 Introduction

1.1 General

KWR Water Research Institute, hereinafter abbreviated as KWR, supports water companies and other clients with research in the field of (drinking) water, water quality and water management. KWR covers the entire process of extraction, treatment, distribution and quality assessment of (drinking) water and the related nature development and environmental aspects.

Furthermore, KWR organizes proficiency tests for the matrix water. These proficiency tests are an important instrument in the harmonization of (environmental) analyses within The Netherlands as well as within Europe. The importance of proficiency testing for individual laboratories lies in the opportunity to compare own results with those from other (peer) laboratories. In practice, different analytical methods are being used and suitable reference materials are not always available. Therefore, it is sometimes impossible for laboratories to determine if (systematic) errors are present in their analytical procedures. Proficiency testing results can be helpful in visualizing these types of errors. Good results of a laboratory in a proficiency test can give additional value and trust towards customers and can play an important role in the assessment of the laboratory by accreditation bodies. Therefore, proficiency testing is more and more considered as a standard and integral part of the quality control system of a laboratory, by laboratories as well as accreditation bodies. For participants it is of utmost importance that the quality of the offered proficiency testing service is outstanding. Accrediting the organization of proficiency testing schemes is a tool to guarantee high quality schemes.

Depending on the objective, different types of proficiency tests can be organized. They can be divided into three types:

- method-evaluating test comparisons in which the performance of a (newly) developed method is tested;
- material-certifying test comparisons that primarily involve the production of a certified reference material for quality control purposes;
- laboratory-evaluating test comparisons (also called proficiency tests) that give participating laboratories the opportunity to evaluate their analytical methods and to compare their results with those from other (peer) laboratories.

1.2 KWR proficiency testing

Especially for the laboratory-evaluating comparisons KWR has set up a yearly program, which enables laboratories to test and evaluate their laboratory procedures on a regular basis. The primary objective of a proficiency test is to create an opportunity for laboratories to test their own performances under analytical conditions which are as normal as possible. To enable laboratories to get insight into their own performance in daily practice, they will receive samples which are made of practice water matrices. The samples are therefore prepared from actual drinking, surface, groundwater, waste and/or bathing water. For certain proficiency tests, standards in ultrapure water are also offered, and for organic proficiency tests, a standard is sent with the substances of the respective proficiency test in a solvent. The analytical method to be applied by the laboratory is up to the laboratory, no mandatory methods are demanded by KWR.
KWR is accredited by the Dutch Accreditation Council in accordance with ISO/IEC 17043 under number R005 for the organisation of proficiency tests.

KWR proficiency tests:

- consist yearly of approximately 40 laboratory test comparisons for different types of water and more than 250 parameters;
- are based on Youden statistics for chemical parameters, which makes it possible to obtain a good indication if deviating results are caused by systematic and/or by relatively large random errors;
- present the results in table format and graphically;
- give information about the analytical methods applied by the participants. In this way assessment of the participants performance is simplified;
- assess the performance for chemical parameters of a group of (peer) laboratories by presenting a report mark;
- assess the individual performance of a laboratory by presenting the z-score.

In this brochure the procedure to be followed, when participating in KWR proficiency tests, is described. In chapter 2, the practical side of participating (subscription, sample distribution and receipt, reporting, etc.) is explained. The proficiency-testing program for 2026 together with the subscription form can be found in chapters 3, 4 and 5. In chapter 6 an extended explanation of the layout and statistics of the KWR proficiency tests is given.

2 General information

2.1 Subscription

This brochure contains the program for the KWR proficiency tests for 2026. You can make your own selection from several proficiency tests offered by ticking the appropriate box(es) on the subscription form. In this way you can put together a tailor-made program.

All participants receive after registering a written confirmation of participation.

2.2 Per proficiency test

KWR offers you for every parameter an opportunity to test your own performances under analytical conditions that are as normal as possible. To enable you to get insight into your own performance in daily practice, you will receive samples which are made from real drinking water, surface water, ground water, wastewater or swimming water. Furthermore, for a number of chemical proficiency tests you will also receive standard solutions to check your instruments directly. It is, of course, important that you treat the proficiency testing samples the same as any other sample that is offered to your laboratory for analysis. In this way your results in the inter-laboratory test comparison represent daily practice and you will get the most out of your participation. For each proficiency test wherein you subscribe you will receive an e-mail with two accompanying files: a form to fill in your results and an instruction with the details.

This instruction refers to:

- the parameters to be analysed;
- the matrices offered with an indication of the concentration levels;
- the preservation of the samples;
- an advice relating to the storage life of the samples;
- the code numbers on the sample bottles;
- when to report back your results (closing date of the Proficiency Test);
- the date when you can expect to receive the final report from KWR;
- any other information that could be of importance.

Results as well as applied analytical methods will be reported under a random code number in the final report.

2.3 Sample material

The amount of sample material you will receive is based on the amount that is needed when using an accepted analytical method. If you require more sample material than provided, you may contact Mrs. M. ten Broeke. She is also the person to contact when the sample material has been damaged during transport. If possible, you will then immediately receive new sample material.

It is also possible to request additional sample material for other purposes (internal quality assurance). However, we are then forced to charge extra costs for preparation and shipping.

2.4 Distribution of the samples and returning of packaging materials

The microbiological samples and proficiency tests which contain parameters with a limited storage life, they will be delivered before 12:00 hours after receipt of the samples and you can return the packaging materials by postal mail (preferably within two weeks after receiving the samples). Samples delivered outside the Netherlands and Belgium will arrive later.

For the parameters that are only stable for 24 hours the samples are delivered within 24 hours after preparation in The Netherlands and Belgium.

2.5 Reporting your results

The files with your results and applied analytical methods have to be at KWR within four weeks for chemical proficiency tests or within three weeks for microbiological proficiency tests after receiving the samples. The exact closing date stated in the instruction of the proficiency test. For delivering the results you need to use the RingDat Online program.

2.6 Processing your results

The processing of the results of a proficiency test is carried out in the PROLab software. This system provides all the necessary functions to meet the requirements of the ISO/IEC 17043 standard. The statistical processing of the results is based on the statistical method according to the international standard ISO 5725-2, which is available as standard in this software.

2.7 Reporting by KWR

The objective is four weeks after the closing date to send to you by e-mail the final report and the summary for all proficiency tests. In the KWR proficiency tests the results and analytical methods applied of all participants will be reported under a random code number to guarantee anonymity. A list of participants is given in the final report. If you do not want your company to be named in this list, it is possible to be named under code, which you can let us know by phone or by letter. The overview of analytical methods applied, given in the final report, can be of use in assessing deviating results. The results of the whole group of participants for the chemical proficiency tests are assessed in a so-called ‘report mark’. In general one report mark is given per parameter and per matrix.

An individual assessment of the performance of each participant is given through reporting of the z-scores. Z-scores are calculated in relation to the group average and in relation to the theoretical value. In this way you can follow your own performance. The final report displays the results graphically and in table format. The report also contains a summary of your results. We refer to chapter 6 for an extended explanation of the lay-out, applied statistics and the report.

2.8 Confidentiality

KWR guarantees that no results of the participants will be disclosed to third parties. This applies both internally within the own organization and for a potential contractor, client or accrediting institution. If prior written permission is given by the participant concerned, this can be deviated from.

2.9 Subcontracting

With regard to the proficiency tests organized by KWR and included in the program here, no parts of the activities are contracted out.

2.10 Information

For further information and requests, please contact:

- Asmaïl Asgadaouan (phone: +31 (0)30 60 69 595), e-mail: Asmail.Asgadaouan@kwrwater.nl
- Marieke ten Broeke (phone: +31 (0)30 60 69 612), e-mail: Marieke.ten.Broeke@kwrwater.nl
- Send an email to: pt@kwrwater.nl

2.11 Complaints

We always hope to provide you with a good service, but if you have a complaint, you can make it known via the general e-mail address (pt@kwrwater.nl). The complaint will then be handled further in accordance with the internal complaints procedure. We will keep you informed about the handling of the complaint by e-mail.

3 Program 2026

3.1 How to make a choice

The KWR program consists of organic, inorganic and microbiological inter-laboratory test comparisons for more than 250 physical, chemical and microbiological parameters in the matrices drinking, surface, ground, waste and swimming water. By offering this program we hope that we can be of service to you in setting up your own personal proficiency testing program in 2026.

3.1.1 Inorganic parameters

For each inorganic ring test two samples are submitted. For the test VIO 26-06 'urea, cyanuric acid, free chlorine, total chlorine and $KMnO_4$ in swimming water' we offer you also standard solutions. A standard in ultrapure water is also offered for the ring test VIO 26-18 'bromide, bromate and chlorate'.

3.1.2 Organic parameters

In every organic proficiency test at least three matrices are offered and one standard solution. Per matrix two spiked samples are offered, except the proficiency test mineral oil in wastewater (VIO 26-38).

3.1.3 Microbiological parameters

For all the microbiological proficiency tests, except the parameters SSRC and *Clostridium perfringens*, four samples are offered.
For the proficiency tests *Legionella pneumophila* qPCR beside the water samples two genomic DNA standards are sent.

The samples must be processed according to the supplied instructions on the date stated between 12:00 and 16:00 hours. Results of the samples that are used and reported outside this period are not included in the statistical evaluations.

3.2 Changes in the program 2026

The program KWR proficiency tests for 2026 relative to previous years, no changes have been made.

3.3 Order confirmation and invoice

Based on your subscription form we will calculate the costs and send you an overview of your participation. The total costs will be invoiced twice a year in two equal amounts, unless other agreements are made with you. If changes in your order occur during the year, an adapted cost accounting will be handled in the second period.

3.4 Discounts

At participating in several proficiency tests the following discounts are given:

Participation in 5-9 proficiency tests:	5% discount
Participation in 10-19 proficiency tests:	10% discount
Participation in more than 20 proficiency tests:	15% discount

The prices in the program are excluding carriage costs. Transport costs, based on actual transportation costs by post-calculation, will be charged.

The General Terms and Conditions for the Supply of Goods and Provision of Services and Purchase placed with KWR Water Research Institute are applied on this tender. You can find this on KWR website www.kwrwater.nl/voorwaarden/.

3.5 Cancelling an order

If you wish to cancel a collaborative study, you need at least four weeks before the date of receipt of the collaborative study notifies us in writing. After this period the cost of the ring test will be charged.

3.6 KWR PT program 2026 and subscription form

On pages 14 to 34 you will find our detailed program and on pages 35 and 36 the subscription form for participation in PTs 2026.

You can subscribe for the KWR proficiency tests by using the subscription form. Please do this at least four weeks before the starting date of the proficiency tests.

The subscription form can be sent to:
KWR Water Research Institute
Attn.: Marieke ten Broeke
P.O. Box 1072
3430 BB NIEUWEGEIN
The Netherlands
E-mail: Marieke.ten.Broeke@kwrwater.nl or pt@kwrwater.nl

When less than eight participants subscribe, KWR reserves the right to cancel the proficiency test.

4 Overview KWR Proficiency Tests 2026

Date	PT code	Matrix*	Description
4 February	VIO 26-21	sw+ww	extractable organic halogens (EOX)
4 February	VIO 26-25	dw+sw+gw+ww	polycyclic aromatic hydrocarbons (PAH)
11 February	VIO 26-01	dw	(heavy) metals, as dissolved
11 February	VIO 26-02	dw	◊ general- and macro parameters
18 February	VIO 26-30	dw+sw+gw	herbicides
25 February	VIO 26-18	dw+sw	bromide, bromate and chlorate
10 March	VIO 26-41	dw	◊ microbiological parameters
11 March	VIO 26-31	dw+sw+gw	chlorophenoxycarbonic acids (CPCA)/bentazone
18 March	VIO 26-06	zw	◊ urea, cyanuric acid, free chlorine, total chlorine, $KMnO_4$
15 April	VIO 26-28	dw+sw+gw	pharmaceuticals
15 April	VIO 26-34	dw+sw+gw	glyphosate and AMPA
15 April	VIO 26-45	dw	◊ *Legionella*
15 April	VIO 26-55	kw	◊ *Legionella* (only according to NEN-EN-ISO 11731)
15 April	VIO 26-59	dw	◊ *Legionella pneumophila* qPCR
15 April	VIO 26-61	kw	◊ *Legionella pneumophila* qPCR
22 April	VIO 26-07	sw	◊ nutrients
22 April	VIO 26-09	sw	(heavy) metals, as total
20 May	VIO 26-17	zw	sampling swimming water on location in The Netherlands
20 May	VIO 26-23	dw+sw+gw+ww	pesticides (OCP)
20 May	VIO 26-24	dw+sw+gw	pesticides (PCB)
20 May	VIO 26-46#	dw	◊ *Legionella*
2 June	VIO 26-42#	dw	◊ microbiological parameters
10 June	VIO 26-26	dw+sw+gw+ww	volatile halogenated hydrocarbons (VHH)
24 June	VIO 26-40	influent+effluent	Guide substances
26 August	VIO 26-47	dw	◊ *Legionella*
26 August	VIO 26-56#	kw	◊ *Legionella* (only according to NEN-EN-ISO 11731)
9 September	VIO 26-33	dw+sw+gw+ww	per- and polyfluoroalkyl substances (PFASs)
16 September	VIO 26-53	sw	◊ microbiological parameters
23 September	VIO 26-15	ww	◊ general- and macro parameters
23 September	VIO 26-16	ww	(heavy) metals, as total
30 September	VIO 26-27	dw+sw+gw+ww	volatile aromatic hydrocarbons (VAH)

Date	PT code	Matrix*	Description
6 October	VIO 26-20	sw	sampling surface water on location in The Netherlands
6 October	VIO 26-43	dw	◊ microbiological parameters
13 October	VIO 26-64	dw	RT-PCR *E. coli* en enterococci
14 October	VIO 26-39	dw+sw	non-target screening, semi-quantitative using a LC-MS
21 October	VIO 26-12	gw	(heavy) metals, as dissolved
21 October	VIO 26-13	gw	◊ general- and macro parameters
28 October	VIO 26-32	dw+sw+gw	phenylureaherbicides (PUH)
28 October	VIO 26-38	ww	mineral oil
4 November	VIO 26-48	vsw+dw	◊ ATP (Adenosine Tri Phosphate)
4 November	VIO 26-62	dw	◊ F-specific RNA-phages and Somatic coli-phages
4 November	VIO 26-63	dw	◊ total bacterial cell counting (incl. fraction dead and alive) using a flowcytometer

This proficiency test is optional. Only if there are enough participants this test will go on. If the number of participants is too small, you will automatically be placed in one of the other similar proficiency tests.

* Abbreviations used for the various matrices:
ww = wastewater, dw = drinking water, gw = groundwater, kw = cooling water, sw = surface water, dsw = diluted surface water and zw = pool water

Remark:
The tables with parameter specifications under Chapter 5 indicate for each proficiency test/parameter whether or not the proficiency test/parameter is accredited (R005).

5 Parameter specifications per proficiency test

5.1 General- and inorganic parameters and (heavy) metals

Proficiency test	(Heavy) metals in drinking water, as dissolved[#]		
PT code	VIO 26-01		
Date	11 February 2026		
Closing date	12 March 2026		
Expected number of participants	8		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
(Heavy) metals, as dissolved:			
Hg	Drinking water **Non-refrigerated transport**	0,1 - 1	µg/l
Ag*, Be*, Cd, Co*, Sn*, Te*, Ti*, Tl*, U*, V*, W*, Zr*		0,1 - 10	µg/l
Al, As, Cr, Pb, Sb, Se, Sr*		1 - 70	µg/l
Cu, Ni, Zn		1 - 200	µg/l
B, Ba, Fe, Mn, Mo*		1 - 350	µg/l
K, Mg		0,5 - 50	mg/l
Ca, Na		1 - 200	mg/l
total hardness		0,5 - 6	mmol/l
* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).			
# Proficiency test VIO 26-01 concerns (heavy) metals in de matrix drinking water that must be analyzed as 'dissolved'.			

Proficiency test	General- and macro parameters in drinking water		
PT code	VIO 26-02		
Date	11 February 2026		
Closing date	12 March 2026		
Expected number of participants	10		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
NO_2	Drinking water **Cooled transport**	0,02 - 0,2	mg/l N
F		0,05 - 2	mg/l
NH_4		0,05 - 2	mg/l N
turbidity		0,1 - 2,5	FNE
DOC		0,1 - 15	mg/l C
NO_3		0,5 - 50	mg/l N
SO_4		1 - 200	mg/l
Cl		10 - 200	mg/l
ortho-phosphate, total-phosphate		0,05 - 2	mg/l P
pH,		4 - 11	pH
SiO_2		0,1 - 15	mg/l Si
colour		2 - 20	mg/l Pt
CO_3		0,5 - 50	mg/l
EGV (T_{ref} = 25°C)		10 - 150	mS/m
HCO_3		1 - 300	mg/l
total cyanide		2,5 - 350	µg/l

Proficiency test	Urea, cyanuric acid, free chlorine, total chlorine and $KMnO_4$
PT code	VIO 26-06
Date	18 March 2026
Closing date	16 April 2026
Expected number of participants	10

Parameter	Matrix/Transport	Concentration range	Unit
urea	Pool water	0,5 - 5	mg/l
cyanuric acid		5 - 15	mg/l
free chlorine, total chlorine	Cooled transport	0,1 - 20	mg/l
$KMnO_4$*		0,1 - 20	mg/l

* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Nutrients
PT code	VIO 26-07
Date	22 April 2026
Closing date	21 May 2026
Expected number of participants	10

Parameter	Matrix/Transport	Concentration range	Unit
NH_4, NO_2, NO_3	Surface water Cooled transport	0,02 - 2	mg/l N
ortho-phosphate		0,05 - 3	mg/l P
F		0,02 - 2,5	mg/l
Kjeldahl-N		0,05 - 3	mg/l N
total-phosphate		0,02 - 2	mg/l P
COD (CZV)		1 - 15	mg/l O_2
SiO2		1 - 15	mg/l Si
UV-absorption		0,1 - 20	E/m
colour		2 - 20	mg/l
SO_4, Cl		1 - 200	mg/l
suspended solids		Actual level	mg/l
oxygen (dissolved)		1 - 15	mg/l O_2
EGV (T_{ref} = 25°C)*		Actual level	mS/m
pH*		4 - 11	pH

* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	(Heavy) metals in surface water, as total[#]		
PT code	VIO 26-09		
Date	22 April 2026		
Closing date	21 May 2026		
Expected number of participants	10		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
(Heavy)metals, as total:			
Ag*, Be, Cd, Hg, Sb*	Surface water **Non-refrigerated transport**	0,1 - 10	µg/l
Al, As, Bi*, Ce*, Co, Cr, Li*, Pb, Se, Sn*, Sr*, Te*, Th*,		1 - 70	µg/l
Ti*, Tl*, U*, V, W*, Zr*		1 - 70	µg/l
B*, Ba, Cu, Mo*, Ni, Zn		1 - 500	µg/l
Fe, Mn		0,01 - 1	mg/l
K, S*		1 - 15	mg/l
Ca, Mg, Na		1 - 200	mg/l
* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).			
# Proficiency test VIO 26-09 concerns (heavy) metals in the matrix surface water that must be analyzed as 'total'.			

Proficiency test	(Heavy) metals in groundwater, as dissolved[#]		
PT code	VIO 26-12		
Date	21 October 2026		
Closing date	19 November 2026		
Expected number of participants	13		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
(Heavy)metals, as dissolved:			
Ag*, Be*, Cd, Hg, Sb*	Groundwater **Non-refrigerated transport**	0,1 - 10	µg/l
As, Co, Cr, Pb, Se*, Sn*, Sr*, Te*, Ti*, Tl*, U*, V*		1 - 70	µg/l
W*, Zr*		1 - 70	µg/l
Al, B*, Cu, Mo, Ni, Zn		1 - 300	µg/l
Ba, Fe, K*, Mn		0,1 - 20	mg/l
Ca*, Mg*, Na*		1 - 200	mg/l
* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).			
# Proficiency test VIO 26-12 concerns (heavy) metals in the matrix groundwater that must be analyzed as 'dissolved'.			

Proficiency test	General- and macro parameters in groundwater
PT code	VIO 26-13
Date	21 October 2026
Closing date	19 November 2026
Expected number of participants	9

Parameter	Matrix/Transport	Concentration range	Unit
NH_4	Groundwater Cooled transport	0,05 - 2	mg/l N
ortho-phosphate		0,05 - 2	mg/l P
pH		4 - 11	pH
Mg, K		0,5 - 50	mg/l
NO_3		0,5 - 50	mg/l N
Na, Ca, SO_4, Cl*		1 - 200	mg/l
HCO_3		1 - 300	mg/l
EGV (T_{ref} = 25°C)*		Actual level	mS/m

* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	General- and macro parameters in wastewater
PT code	VIO 26-15
Date	23 September 2026
Closing date	22 October 2026
Expected number of participants	17

Parameter	Matrix/Transport	Concentration range	Unit
total-phosphate, ortho-phosphate	Wastewater Cooled transport	0,1 - 5	mg/l P
F, Br*		1 - 15	mg/l
DOC, TOC*		1 - 15	mg/l C
SiO_2		1 - 15	mg/l Si
NO_2		0,2 - 20	mg/l N
NH_4, NO_3		1 - 50	mg/l N
Kjeldahl-N		0,5 - 60	mg/l N
Cl, SO4, suspended solids		5 - 200	mg/l
COD (CZV)		7 - 300	mg/l O_2
total cyanide, free cyanide		10 – 350	µg/l
EGV (T_{ref} = 25°C)*		Actual level	mS/m
pH*		Actual level	pH

Proficiency test	(Heavy) metals in wastewater, as total[#]		
PT code	VIO 26-16		
Date	23 September 2026		
Closing date	22 October 2026		
Expected number of participants	12		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
(Heavy)metals, as total: Ag*, Be*, Bi*, Co*, Hg, Li*, Sb*, Th* Al, As, B*, Ba*, Cd, Cr, Cu, Fe, Mn, Mo*, Ni Pb, Se, Sn*, Sr*, Te*, Ti*, Tl*, U*, V*, W*, Zn, Zr* K*, S* Ca*, Mg*, Na*	Wastewater **Non-refrigerated transport**	0,5 - 50 0,03 - 5 0,03 - 5 1 - 15 1 - 200	µg/l mg/l mg/l mg/l mg/l
* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).			
# Proficiency test VIO 26-16 concerns (heavy) metals in the matrix wastewater that must be analyzed as 'total'.			

Proficiency test	Sampling swimming water on location		
PT code	VIO 26-17**		
Date	20 May 2026		
Closing date	18 June 2026		
Expected number of participants	6		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Sampling on location Sampling of a swimming pool in The Netherlands. In addition to field parameters free chlorine, total chlorine, pH and temperature, samples are also taken for urea, $KMnO_4$ and pH. These three parameters must be analyzed by the own laboratory.	Pool water **Samples are transported to the laboratory by own sampling.**	Actual level	
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	Bromide, bromate and chlorate		
PT code	VIO 26-18**		
Date	25 February 2026		
Closing date	26 March 2026		
Expected number of participants	6		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
bromide bromate chlorate	Drinking- and surface water **Cooled transport**	0,05 - 1 1 - 10 50 - 500	mg/l µg/l µg/l
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	Sampling surface water on location		
PT code	VIO 26-20**		
Date	6 October 2026		
Closing date	5 November 2026		
Expected number of participants	12		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Sampling on location In addition to the field parameters oxygen, pH, conductivity, transparency and temperature, samples are also taken for nutrients and some heavy metals.	Surface water **Samples are collected by KWR**	Actual level	
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

5.2 Organic parameters

Proficiency test	Extractable organic halogens (EOX)			
PT code	VIO 26-21			
Date	4 February 2026			
Closing date	5 March 2026			
Expected number of participants	5			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
Extractable organic halogens (EOX)		Surface water and Wastewater*** Cooled transport	0,02 - 5 10 - 80	µg/l µg/l
*** The matrix wastewater is not accredited by the Dutch Accreditation Council RvA (R005).				

Proficiency test	Organic chlorinated pesticides (OCP)			
PT code	VIO 26-23			
Date	20 May 2026			
Closing date	18 June 2026			
Expected number of participants	13			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
aldrin	309-00-2	Drinking water, Ground water, Surface water and Wastewater*** Cooled transport	0,002 - 1 0,002 - 1 0,1 - 10	µg/l µg/l µg/l
alpha-endosulfan	115-29-7			
alpha-HCH	319-84-6			
beta-HCH*	319-85-7			
delta-HCH	319-86-8			
dieldrin	60-57-1			
endrin	72-20-8			
gamma-HCH (lindane)	58-89-9			
heptachlor	76-44-8			
heptachlor endo epoxide isomer A	28044-83-9			
heptachlor exo epoxide isomer B*	1024-57-3			
hexachlorobenzene	118-74-1			
isodrin*	465-73-6			
o,p'-DDD	53-19-0			
o,p'-DDE	3424-82-6			
o,p'-DDT*	789-02-6			
p,p'-DDD	72-54-8			
p,p'-DDE	72-55-9			
p,p'-DDT	50-29-3			
pentachlorobenzene*	608-93-5			
telodrin*	297-78-9			
trans-chlordane*	5103-74-2			
* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).				
*** The matrix wastewater is not accredited by the Dutch Accreditation Council RvA (R005).				

Proficiency test	Polychlorinated biphenyls (PCB)			
PT code	VIO 26-24			
Date	20 May 2026			
Closing date	18 June 2026			
Expected number of participants	11			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
PCB 28	7012-37-5	Drinking water, Ground water and Surface water **Cooled transport**	0,002 - 1	µg/l
PCB 52	35693-99-3		0,002 - 1	µg/l
PCB 101	37680-73-2			
PCB 118	31508-00-6			
PCB 138	35065-28-2			
PCB 153	35065-27-1			
PCB 180	35065-29-3			

Proficiency test	Polycyclic aromatic hydrocarbons (PAH)			
PT code	VIO 26-25			
Date	4 February 2026			
Closing date	5 March 2026			
Expected number of participants	14			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
acenaphtene	83-32-9	Drinking water, Ground water, Surface water and Wastewater **Cooled transport**	0,02 - 1	µg/l
acenaphtylene	208-96-8		0,02 - 1	µg/l
anthracene	120-12-7		0,1 - 20	µg/l
benzo(a)anthracene	56-55-3			
benzo(a)pyrene	50-32-8			
benzo(b)fluoranthene	205-99-2			
benzo(ghi)perylene	191-24-2			
benzo(k)fluoranthene	207-08-9			
chrysene	218-01-9			
dibenzo(a,h)anthracene	53-70-3			
fluoranthene	206-44-0			
fluorene	86-73-7			
indeno(123-cd)pyrene	193-39-5			
naphthalene	91-20-3			
phenanthrene	85-01-8			
pyrene	129-00-0			

Proficiency test	Volatile halogenated hydrocarbons (VHH)
PT code	VIO 26-26
Date	10 June 2026
Closing date	9 July 2026
Expected number of participants	17

Parameter	CAS no.	Matrix/Transport	Concentration range	Unit
1,1,1,2-tetrachloro-ethane*	630-20-6	Drinking- and Ground water,	0,1 - 2	µg/l
1,1,1-trichloro-ethane	71-55-6	Surface water and	0,5 - 2	µg/l
1,1,2,2-tetrachloro-ethane	79-34-5	Wastewater	2 - 200	µg/l
1,1,2-trichloro-ethane	79-00-5			
1,1-dichloro-ethane	75-34-3	Cooled transport		
1,1-dichloro-ethene*	75-35-4			
1,1-dichloropropane*	78-99-9			
1,1-dichloropropene*	563-58-6			
1,2,3-trichloropropane	96-18-4			
1,2-dibromo-3-chloropropane*	96-12-8			
1,2-dibromo-ethane*	106-93-4			
1,2-dichloro-ethane	107-06-2			
1,2-dichloropropane	78-87-5			
1,3-dichloropropane*	142-28-9			
2,2-dichloropropane*	594-20-7			
bromochloromethane	74-97-5			
bromodichloromethane	75-27-4			
chloroform (trichloromethane)	67-66-3			
cis-1,2-dichloro-ethene*	156-59-2			
cis-1,3-dichloropropene	10061-01-5			
dibromochloromethane	124-48-1			
dibromomethane*	74-95-3			
dichloromethane*	75-09-2			
hexachloro-1,3-butadiene*	87-68-3			
hexachloro-ethane*	67-72-1			
tetrachloro-ethene	127-18-4			
tetrachloromethane	56-23-5			
trans-1,2-dichloro-ethene*	156-60-5			
trans-1,3-dichloropropene	10061-02-6			
tribromomethane	75-25-2			
trichloro-ethene	79-01-6			
trichlorofluoromethane*	75-69-4			

* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Volatile aromatic hydrocarbons (VAH)
PT code	VIO 26-27
Date	30 September 2026
Closing date	29 October 2026
Expected number of participants	18

Parameter	CAS no.	Matrix/Transport	Concentration range	Unit
1,2,3-trichlorobenzene*	87-61-6	Drinking- and Ground water,	0,1 - 2	µg/l
1,2,3-trimethylbenzene	526-73-8	Surface water and	0,5 - 2	µg/l
1,2,4-trichlorobenzene*	120-82-1	Wastewater	2 - 200	µg/l
1,2,4-trimethylbenzene	95-63-6			
1,2-dichlorobenzene*	95-50-1	Cooled transport		
1,3,5-trichlorobenzene*	108-70-3			
1,3,5-trimethylbenzene*	108-67-8			
1,3-dichlorobenzene*	541-73-1			
1,4-dichlorobenzene*	106-46-7			
2-chloromethylbenzene*	95-49-8			
benzene	71-43-2			
bromobenzene*	108-86-1			
chlorobenzene	108-90-7			
cyclohexane	110-82-7			
dimethylbenzene, meta+para				
dimethylbenzene, ortho	95-47-6			
ethylbenzene	100-41-4			
ethyl-tertiair-butylether (ETBE) *	637-92-3			
iso-propylbenzene*	98-82-8			
methylbenzene (toluene)	108-88-3			
methyl-tertiair-butylether (MTBE)*	1634-04-4			
naphthalene	91-20-3			
n-butylbenzene*	104-51-8			
n-propylbenzene	103-65-1			
p-isopropyltoluene*	99-87-6			
secundair-butylbenzene*	135-98-8			
styrene (ethenylbenzene) *	100-42-5			
tertiair-butylbenzene*	98-06-6			

* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Pharmaceuticals			
PT code	VIO 26-28**			
Date	15 April 2026			
Closing date	13 May 2026			
Expected number of participants	14			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
diatrizoic acid	117-96-4	Drinking water, Ground water and Surface water **Cooled transport**	0,2 - 2	µg/l
bezafibrate	41859-67-0		0,2 - 2	µg/l
caffeine	58-08-2			
carbamazepine	298-46-4			
diclofenac	15307-86-5			
phenazone	60-80-0			
ibuprofen	15687-27-1			
ketoprofen	22071-15-4			
lincomycin	154-21-2			
metoprolol	51384-51-1			
propranolol	525-66-6			
sotalol	3930-20-9			
sulfamethoxazole	723-46-6			
trimethoprim	738-70-5			

** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	N/P- pesticides, chloroacetamides and bromacil			
PT code	VIO 26-30			
Date	18 February 2026			
Closing date	19 March 2026			
Expected number of participants	11			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
N/P-pesticides		Drinking water, Ground	0,05 - 1	µg/l
atrazine	1912-24-9	water and Surface water	0,05 - 1	µg/l
azinfos-methyl*	86-50-0			
BAM*		**Cooled transport**		
chlorofenvinfos (cis + trans)				
cyanazine	21725-46-2			
DEET*	134-62-3			
desethylatrazine	6190-65-4			
desisopropylatrazine	1007-28-9			
desmetryn	1014-69-3			
diazinon*	333-41-5			
dichlorvos	62-73-7			
dimethoate	60-51-5			
ethoprophos	13194-48-4			
malathion*	121-75-5			
metribuzin	21087-64-9			
parathion-ethyl	56-38-2			
parathion-methyl*	298-00-0			
pirimicarb	23103-98-2			
prometryne	7287-19-6			
propazine	139-40-2			
pyrazofos*	13457-18-6			
simazine	122-34-9			
sulfotep*	3689-24-5			
terbutryn	886-50-0			
terbutylazine	5915-41-3			
tetrachlorovinphos*	961-11-5			
tolclofos-methyl*	57018-04-9			
Chloroacetamides		Drinking water, Ground	0,05 - 1	µg/l
alachlor	15972-60-8	water and Surface water	0,05 - 1	µg/l
metazachlor	67129-08-2			
metolachlor	51218-45-2	**Cooled transport**		
propachlor*	1918-16-7			
Bromacil	314-40-9	Drinking water, Ground	0,02 - 1	µg/l
		water and Surface water	0,02 - 1	µg/l
		Cooled transport		

* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Chlorophenoxycarbonic acids (CPCA) and bentazone			
PT code	VIO 26-31			
Date	11 March 2026			
Closing date	9 April 2026			
Expected number of participants	10			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
Chlorophenoxycarbonic acids (CPCZ)		Drinking water, Ground water and Surface water **Cooled transport**	0,05 - 1 0,05 - 1	µg/l µg/l
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)*	93-76-5			
2,4,5-trichlorophenoxypropionic acid (2,4,5-TP)*	93-72-1			
2,4-dichlorophenoxyacetic acid (2,4-D)	94-75-7			
2,4-dichlorophenoxybutanoic acid (2,4-DB)	94-82-6			
4-chlorophenoxyacetic acid (4-CPA)*	122-88-3			
3,6-dichloro-2-methoxybenzoic acid (dicamba)	1918-00-9			
2-(2,4-dichlorophenoxy)-propanoic acid (dichlorprop)	120-36-5			
(4-chloro-2-methylphenoxy)acetic acid (MCPA)	94-74-6			
4-(4-chloro-2-methylphenoxy)butanoic acid (MCPB)	94-81-5			
2-(2-methyl-4-chlorophenoxy)propionic acid (MCPP)	93-65-2			
Bentazone	25057-89-0	Drinking water, Ground water and Surface water **Cooled transport**	0,02 - 1 0,02 - 1	µg/l µg/l
* This parameter is not accredited by the Dutch Accreditation Council RvA (R005).				

Proficiency test	Phenylureaherbicides (PUH)			
PT code	VIO 26-32			
Date	28 October 2026			
Closing date	26 November 2026			
Expected number of participants	9			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
chlorbromuron	13360-45-7	Drinking water, Ground water and Surface water **Cooled transport**	0,02 - 1 0,02 - 1	µg/l µg/l
chlortoluron	15545-48-9			
diuron	330-54-1			
isoproturon	34123-59-6			
linuron	330-55-2			
methabenzthiazuron	18691-97-9			
metobromuron	3060-89-7			
metoxuron	19937-59-8			
monolinuron	1746-81-2			
monuron	150-68-5			

Proficiency test	Per- and polyfluoralkyl substances (PFAS)
PT code	VIO 26-33**
Date	9 September 2026
Closing date	8 October 2026
Expected number of participants	15

Parameter		CAS no.	Matrix/Transport	Concentration range	Unit
perfluorobutanoic acid	(PFBA)	375-22-4	Drinking water, Ground water, Surface water and Wastewater Cooled transport	10 - 200	ng/l
perfluorobutanesulfonic acid	(PFBS)	375-73-5		10 - 200	ng/l
perfluorodecanesulfonic acid	(PFDS)	335-77-3		20 - 1000	ng/l
perfluorodecanoic acid	(PFDA)	335-76-2			
perfluorododecanoic acid	(PFDoDA)	307-55-1			
perfluoroheptanesulfonic acid	(PFHpS)	375-92-8			
perfluoroheptanoic acid	(PFHpA)	375-85-9			
perfluorohexanesulfonic acid	(PFHxS)	355-46-4			
perfluorohexanoic acid	(PFHxA)	307-24-4			
perfluorononanesulfonic acid	(PFNS)	68259-12-1			
perfluorononanoic acid	(PFNA)	375-95-1			
perfluorooctanesulfonamide	(FOSA)	754-91-6			
perfluorooctanesulfonic acid	(PFOS)	1763-23-1			
perfluorooctanoic acid	(PFOA)	335-67-1			
perfluoropentanesulfonic acid	(PFPS/PFPeS)	2706-91-4			
perfluoropentanoic acid	(PFPeA)	2706-90-3			
perfluoroundecanoic acid	(PFUnDA)	2058-94-8			
HFPO-DA	(GenX)	13252-13-6			
4:2 fluorotelomer sulfonic acid	(4:2 FTS)	757124-72-4			
6:2 fluorotelomer sulfonic acid	(6:2 FTS)	27619-97-2			
8:2 fluorotelomer sulfonic acid	(8:2 FTS)	39108-34-4			
10:2 fluorotelomer sulfonic acid	(10:2 FTS)	120226-60-0			
N-ethylperfluorooctanesulfonamidoacetic acid	(N-EtFOSAA)	2991-50-6			
N-methylperfluorooctanesulfonamidoacetic acid	(N-MeFOSAA)	2355-31-9			

** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Glyphosate and AMPA
PT code	VIO 26-34**
Date	15 April 2026
Closing date	13 May 2026
Expected number of participants	5

Parameter	CAS no.	Matrix/Transport	Concentration range	Unit
glyphosate	1071-83-6	Drinking water, Ground water and Surface water Cooled transport	0,05 - 0,5	µg/l
AMPA	1066-51-9		0,05 - 0,5	µg/l

** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Mineral oil, with the GC method			
PT code	VIO 26-38			
Date	28 October 2026			
Closing date	26 November 2026			
Expected number of participants	8			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
Mineral oil, with the GC method		Wastewater Cooled transport	0,05 - 200	mg/l

Proficiency test	Non-target screening, semi-quantitative with LC-MS			
PT code	VIO 26-39**			
Date	14 October 2026			
Closing date	12 November 2026			
Expected number of participants	7			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
Various organic compounds to be (semi)-quantified with LC-MS		Drinking water and Surface water Cooled transport	0,1 - 1 0,1 - 2	µg/l µg/l

** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).

Proficiency test	Guide substances (medicine residues)			
PT code	VIO 26-40**			
Date	24 June 2026			
Closing date	23 July 2026			
Expected number of participants	8			
Parameter	**CAS no.**	**Matrix/Transport**	**Concentration range**	**Unit**
sum of 4-,5-methylbenzotriazole		Influent and Effluent	0,1 - 2	µg/l
amisulpride	71675-85-9			
azithromycin	83905-01-5	**Cooled transport**		
benzotriazole	95-14-7			
candesartan	139481-59-7			
carbamazepine	298-46-4			
citalopram	59729-33-8			
clarithromycin	81103-11-9			
diclofenac	15307-86-5			
furosemide	54-31-9			
gabapentin	60142-96-3			
hydrochlorothiazide	58-93-5			
irbesartan	138402-11-6			
metoprolol	51384-51-1			
propranolol	525-66-6			
sotalol	3930-20-9			
sulfamethoxazole	723-46-6			
trimethoprim	738-70-5			
venlafaxine	93413-69-5			

** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).

5.3 Microbiological parameters[1]

Proficiency test	Microbiological parameters		
PT code	VIO 26-41		
Date	10 March 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	2 April 2026		
Expected number of participants	13		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
bacteria of the coli group	Drinking water	0 - 300	cfu/100 ml
E. coli		0 - 300	cfu/100 ml
enterococci	Cooled transport	0 - 300	cfu/100 ml
sulphite reducing clostridia (SRCs)		0 - 300	cfu/100 ml
Clostridium perfringens		0 - 300	cfu/100 ml
plate count 22°C		0 - 3.000	cfu/ml
plate count 36°C		0 - 3.000	cfu/ml

Proficiency test	Microbiological parameters		
PT code	VIO 26-42[#]		
Date	2 June 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	25 June 2026		
Expected number of participants	9		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
bacteria of the coli group	Drinking water	0 - 300	cfu/100 ml
E. coli		0 - 300	cfu/100 ml
enterococci	Cooled transport	0 - 300	cfu/100 ml
Aeromonas 30°C		0 - 300	cfu/100 ml
Aeromonas 37°C		0 - 300	cfu/100 ml
sulphite reducing clostridia (SRCs)		0 - 300	cfu/100 ml
Clostridium perfringens		0 - 300	cfu/100 ml
[#] This ring test is optional and will only continue if there are enough participants.			

Proficiency test	Microbiological parameters		
PT code	VIO 26-43		
Date	6 October 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	29 October 2026		
Expected number of participants	12		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
bacteria of the coli group	Drinking water	0 - 300	cfu/100 ml
E. coli		0 - 300	cfu/100 ml
Aeromonas 30°C	Cooled transport	0 - 300	cfu/100 ml
Aeromonas 37°C		0 - 300	cfu/100 ml
plate count 22°C		0 - 3.000	cfu/ml
plate count 36°C		0 - 3.000	cfu/ml

[1] For all microbiological proficiency tests, the samples must be processed in accordance with the supplied instructions on the stated date between **12:00 and 16:00**. Results of the samples that are used and reported outside this period are not included in the statistical evaluations.

Proficiency test	*Legionella*		
PT code	VIO 26-45		
Date	15 April 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	7 May 2026		
Expected number of participants	15		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella	Drinking water Cooled transport	0 - 30.000	cfu/l

Proficiency test	*Legionella*		
PT code	VIO 26-46[#]		
Date	20 May 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	11 June 2026		
Expected number of participants	5		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella	Drinking water Cooled transport	0 - 30.000	cfu/l
[#] This ring test is optional and will only continue if there are enough participants.			

Proficiency test	*Legionella*		
PT code	VIO 26-47		
Date	26 August 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	17 September 2026		
Expected number of participants	13		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella	Drinking water Cooled transport	0 - 30.000	cfu/l

Proficiency test	ATP (Adenosine triphosphate)		
PT code	VIO 26-48		
Date	4 November 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	26 November 2026		
Expected number of participants	6		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
ATP (Adenosine triphosphate)	Diluted Surface water and Drinking water[*] Cooled transport	0 - 100	ng/l
[#] In this PT, ATP is also offered in drinking water and this matrix is not accredited by Dutch Accreditation Council (R005).			

Proficiency test	Microbiological parameters		
PT code	VIO 26-53[**]		
Date	16 September 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	8 October 2026		
Expected number of participants	17		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
bacteria of the coli group	Surface water	0 - 8.000	cfu/100 ml
thermotolerant bacteria of the coli group		0 - 8.000	cfu/100 ml
E. coli	Cooled transport	0 - 8.000	cfu/100 ml
Faecal streptococci		0 - 8.000	cfu/100 ml
(intestinal) enterococci		0 - 8.000	cfu/100 ml
[**] This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	*Legionella*		
PT code	VIO 26-55[**]		
Date	15 April 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	7 May 2026		
Expected number of participants	18		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella	Cooling water Cooled transport	0 - 50.000	cfu/l
[**] This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	*Legionella*		
PT code	VIO 26-56***		
Date	26 August 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	17 September 2026		
Expected number of participants	10		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella	Cooling water **Cooled transport**	0 - 50.000	cfu/l
*** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005). In addition, this ring test is optional and will only continue if there are enough participants			

Proficiency test	*Legionella pneumophila* qPCR		
PT code	VIO 26-59**		
Date	15 April 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	7 May 2026		
Expected number of participants	6		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella pneumophila qPCR	Drinking water **Cooled transport**	0 - $1 \cdot 10^6$	DNA-copies/l
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	*Legionella pneumophila* qPCR		
PT code	VIO 26-61**		
Date	15 April 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	7 May 2026		
Expected number of participants	5		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Legionella pneumophila qPCR	Cooling water **Cooled transport**	0 - $1 \cdot 10^6$	DNA-copies/l
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	F-specific RNA-phages and somatic coli-phages		
PT code	VIO 26-62**		
Date	4 November 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	26 November 2026		
Expected number of participants	6		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
F-specific RNA-phages and somatic coli-phages	Drinking water Cooled transport	0 - 150	pve/ml
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	Total bacterial cell counting (incl. fraction dead and alive), flowcytometric		
PT code	VIO 26-63**		
Date	4 November 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	26 November 2026		
Expected number of participants	6		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
Total bacterial cell counting (incl. fraction dead and alive), flowcytometric	Drinking water Cooled transport	$1x10^3$ - $1x10^6$	cells/ml
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Proficiency test	RT-PCR *E. coli* and enterococci		
PT code	VIO 26-64**		
Date	13 October 2026 (Analyzing samples: between 12:00 and 16:00 hours)		
Closing date	5 November 2026		
Expected number of participants	7		
Parameter	**Matrix/Transport**	**Concentration range**	**Unit**
E. coli and enterococci, RT-PCR	Drinking water Cooled transport	To be determined	Qualitative (Present or absent)
** This proficiency test is not accredited by the Dutch Accreditation Council RvA (R005).			

Subscription form KWR Proficiency Tests 2026

You can indicate which proficiency tests you want subscription. You will receive a confirmation of participation.

PT code	Description	Matrix	Price
☐ VIO 26-01	(Heavy) metals in drinking water, as dissolved	dw	€ 1.615,00
☐ VIO 26-02	General- and macro parameters in drinking water	dw	€ 2.275,00
☐ VIO 26-06	Urea, cyanuric acid, $KMnO_4$, free chlorine and total chlorine	zw	€ 1.210,00
☐ VIO 26-07	Nutrients in surface water	sw	€ 2.195,00
☐ VIO 26-09	(Heavy) metals in surface water, as total	sw	€ 1.615,00
☐ VIO 26-12	(Heavy) metals in groundwater, as dissolved	gw	€ 1.535,00
☐ VIO 26-13	General- and macro parameters in groundwater	gw	€ 1.690,00
☐ VIO 26-15	General- and macro parameters in wastewater	ww	€ 1.690,00
☐ VIO 26-16	(Heavy) metals in wastewater, as total	ww	€ 1.290,00
☐ VIO 26-17	Sampling of a swimming pool in The Netherlands	zw	€ 730,00
☐ VIO 26-18	Bromide, bromate and chlorate	dw + sw	€ 680,00
☐ VIO 26-20	Sampling of surface water in The Netherlands	sw	€ 1.485,00
	Total contribution inorganic proficiency tests		€
dw = drinking water, sw = surface water, gw = ground water, ww = wastewater and zw = pool water			

PT code	Description	Matrix	Price
☐ VIO 26-21	Extractable organic halogens (EOX)	sw + ww	€ 1.185,00
☐ VIO 26-23	Organic chlorinated pesticides (OCP)	dw + sw + gw + ww	€ 1.600,00
☐ VIO 26-24	Polychlorinated biphenyls (PCB)	dw + sw + gw	€ 1.250,00
☐ VIO 26-25	Polycyclic aromatic hydrocarbons (PAH)	dw + sw + gw + ww	€ 1.415,00
☐ VIO 26-26	Volatile halogenated hydrocarbons (VHH)	dw + sw + gw + ww	€ 1.615,00
☐ VIO 26-27	Volatile aromatic hydrocarbons (VAH)	dw + sw + gw + ww	€ 1.615,00
☐ VIO 26-28	Pharmaceuticals	dw + sw + gw	€ 1.615,00
☐ VIO 26-30	N/P-pesticides	dw + sw + gw	€ 1.600,00
☐ VIO 26-31	Chlorophenoxycarbonic acids (CPCA)/bentazone	dw + sw + gw	€ 1.615,00
☐ VIO 26-32	Phenylureaherbicides (PUH)	dw + sw + gw	€ 1.245,00
☐ VIO 26-33	Per- and polyfluoroalkyl substances (PFASs)	dw + sw + gw + ww	€ 1.670,00
☐ VIO 26-34	Glyphosate and AMPA	dw + sw + gw	€ 1.370,00
☐ VIO 26-38	Mineral oil, with GC method	ww	€ 355,00
☐ VIO 26-39	Non-target screening, semi-quantitative with LC-MS	dw + sw	€ 1.370,00
☐ VIO 26-40	Guide substances	influent + effluent	€ 1.485,00
	Total contribution organic proficiency tests		€
dw = drinking water, sw = surface water, gw = ground water and ww = wastewater			

PT code	Description	Matrix	Price
☐ VIO 26-41	Bacteriological parameters	dw	€ 1.195,00
☐ VIO 26-42#	Bacteriological parameters	dw	€ 1.195,00
☐ VIO 26-43	Bacteriological parameters	dw	€ 1.195,00
☐ VIO 26-45	*Legionella*	dw	€ 790,00
☐ VIO 26-46#	*Legionella*	dw	€ 790,00
☐ VIO 26-47	*Legionella*	dw	€ 790,00
☐ VIO 26-48	ATP	diluted sw + dw	€ 1.245,00
☐ VIO 26-53	Bacteriological parameters	sw	€ 1.195,00
☐ VIO 26-55	*Legionella*	kw	€ 790,00
☐ VIO 26-56#	*Legionella*	kw	€ 790,00
☐ VIO 26-59	*Legionella pneumophila* qPCR	dw	€ 715,00
☐ VIO 26-61	*Legionella pneumophila* qPCR	kw	€ 715,00
☐ VIO 26-62	F-specific RNA-phages and somatic coli-phages	dw	€ 890,00
☐ VIO 26-63	Total bacterial cell counting (incl. fraction dead and alive), flowcytometric	dw	€ 890,00
☐ VIO 26-64	RT-PCR *E. coli* and enterococci, qualitative	dw	€ 990,00
# This ring test is optional and will only continue if there are enough participants.		**Total contribution microbiological proficiency tests**	€
dw = drinking water, sw = surface water and kw = cooling water			

		Total contribution proficiency tests	€
Discount	**participation in 5-9 proficiency tests**	**- 5%**	- €
	participation in 10-19 proficiency tests	**- 10%**	- €
	participation in > 20 proficiency tests	**- 15%**	- €
		Total contribution in euros	€

- *When less than eight participants subscribe, KWR reserves the right to cancel the proficiency test. You will then be informed by email in time.*
- *The total costs will be invoiced in two equal amounts, unless other agreements are made with you. If changes in your order occur during the year, an adapted cost accounting will be handled in the second period.*
- *The prices in the program are excluding carriage costs. Transport costs, based on actual transportation costs by post-calculation, will be charged.*
- *If you wish to cancel a proficiency test, you need at least four weeks before the date of receipt of the proficiency test notify us in writing. After this period the costs of the test will be charged.*
- *The General Terms and Conditions for the Supply of Goods and Provision of Services and Purchase placed with KWR are applied on this tender. You can find these terms and conditions on KWR website www.kwrwater.nl/voorwaarden/.*

Your data		
Company		**Date of entry**
Correspondention attn.		
Telephone		
PO-box		**Client**
Zip code/Place/Country		
E-mail		
Samples attn.		
Telephone		**Autograph**
Address		
Zip code/Place/Country		
E-mail		

6 Lay-out of the final report

6.1 Samples and standard solutions

Samples

The chemical proficiency tests of KWR use the so-called Youden. This implies that per parameter at least two samples are distributed for analysis. These two samples are practically identical for the parameter to be analysed. There is only a slight difference in concentration between the two samples, by adding known amounts of the parameter (by 'spiking'). This lay-out enables participants to obtain a good indication if deviating results are caused by systematic errors and/or by relatively large random errors. The within laboratory reproducibility and/or repeatability of the individual participants are not tested. Because of the difference in concentration between the samples of a Youden pair is known (theoretical value), the accuracy can also be assessed. Unfortunately, for a number of parameters this is not possible since they are part of an equilibrium (e.g. carbonate and hydrogen carbonate), or because some parameters are not stable over a longer period of time (e.g. nitrite; because of bacterial activity the concentration of nitrite will decrease in time). In these situations, an indication of the theoretical value will be given if possible.
The Youden design is not used in the microbiological proficiency tests. In most cases, four samples are offered in these proficiency tests. Each sample is assessing separately and furthermore one 'combined assessment' is given for all four samples (Good, Moderate, Bad), provided that the number of lab results after removing any outliers is more than 11.

Standard solutions

In a number of chemical proficiency tests also one or two standard solutions (the parameter to be analysed is added to a solvent matrix or ultra-pure water) are offered. It is known that for many analytical methods matrix problems and/or problems with preparation and pre-concentration of the sample play a role. To examine this and to simplify the interpretation of the analytical results, one or two standard solutions are offered for analysis. The results for the standard solutions are not involved in the final assessment (report mark and Z-scores).

Homogeneity and stability

The primary purpose of the KWR laboratory-evaluating proficiency tests is to test the performance of the participating laboratories. KWR aims to provide high-level proficiency tests. This means that the samples that are offered are the best possible reflection of the samples that the participants analyze in daily practice and that they are also homogeneous and stable over the period indicated in the work instruction.
For the individual proficiency tests, the sample bottles are filled from a batch that has been checked for homogeneity in advance. The homogeneity of the batch from which the sample bottles are filled is tested on the basis of a number of guide parameters and must meet the requirements set by KWR.
The stability of the parameters in the proficiency tests has been established and in the accompanying instruction, which precedes the proficiency tests, the participating laboratories are asked to analyze the samples within the specified period.

For the microbiological proficiency tests, the stability of the parameters has been determined experimentally. No significant difference was shown between the samples stored for 24 hours or 30 hours. It is therefore important that the participants in the proficiency test adhere to the times indicated in the instruction to deploy the samples. Only then will the samples still form a homogeneous population (provided they are kept under equivalent conditions). So, the time of deployment and the storage conditions of the samples is very important for these proficiency tests.

6.1.1 Criteria minimum number of laboratory results

The minimum number of laboratory results (observations for a parameter/sample set combination) that must be present in order to perform statistical analysis on has been set at eleven results. If the number of laboratory results is less than eleven, then the usual statistical key figures (mean, standard deviation, etc.) and the alternative Z-scores were calculated. And if there are less than four laboratory results, the Youden plots (only for chemical tests) are not made.

6.1.2 Consensus value as assigned value

The arithmetic mean of the results of the participants after removal of outliers – the consensus value – is used as assigned value for the calculation of the Z-score compared to the group average, so based on this Z-score the participant can be assessed compared to the group average.

6.1.3 Difference from additions as assigned value

For some chemical proficiency testing the difference addition from Youden sample-pairs – referred to as the theoretical value – is also used as assigned value. Since its information can be obtained on the addition-recovery and a systematic error of the measurement (both important for the report mark). Furthermore, for each participant the Z-score compared to the theoretical value (Z_t) is calculated.

6.2 Graphical presentation of the results

In the final report a graphical presentation is given by means of a saw tooth plot and, if applicable, a Youden plot (see also figures 1 and 2). Furthermore, a graphical presentation of the Z-score is given (see figure 6).

6.2.1 Sawtooth plot

The sawtooth plot is a graphical representation of the results of all participants for a standard solution and for the samples. On the x-axis the random numbers are shown and, on the y-axis, the measured values. Using the saw tooth plot, the individual result of each of the laboratories can be compared with the results of the other participating laboratories. In the plots, the results of the participating laboratories are displayed without any outliers.

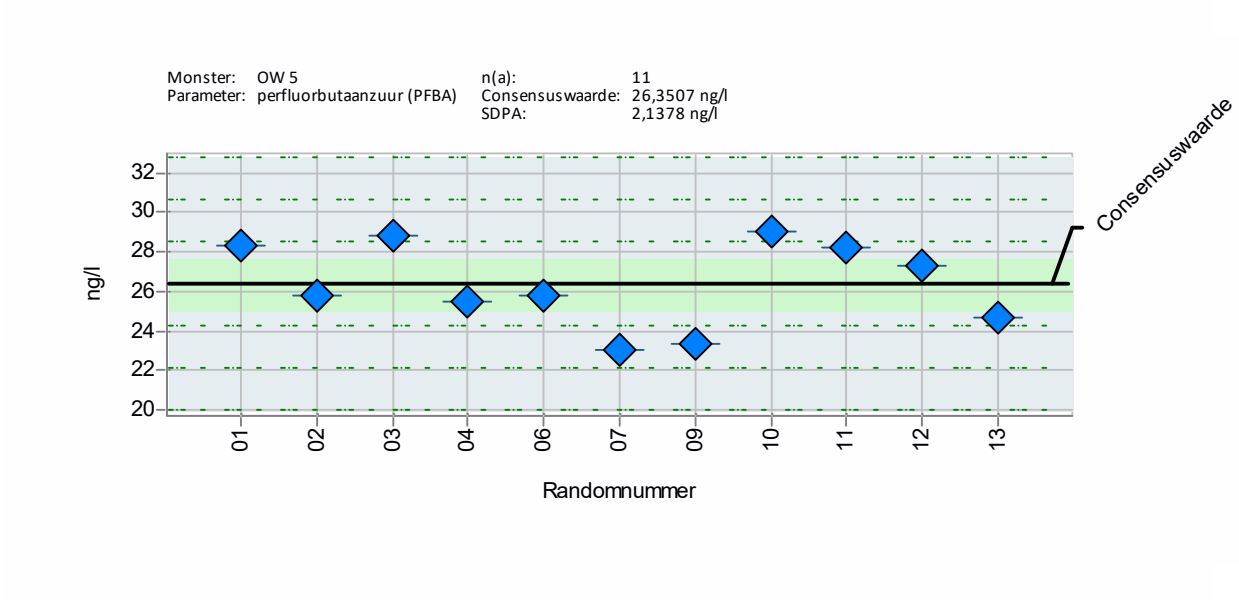

Figure 1: Sample of a sawtooth plot
The dotted lines in the graph show 1 × SDPA, 2 × SDPA and 3 × SDPA respectively. The light green marked part concerns the 95% confidence interval.

6.2.2 Youden plot

The Youden plot is a graphical representation of the results for the two samples of a Youden pair. For each laboratory, the result of the first sample (on the x-axis) is plotted against the result of the second sample (on the y-axis). The lines perpendicular to the x-axis and the y-axis are the averages of the two samples. The radius of the circles is determined by the standard deviation caused by random errors. If there are no systematic errors, with a normal distribution about 95% of the results will lie within the smallest circle and about 99% of the results will lie within the largest circle. Furthermore, the results will also be equally distributed over the four quadrants.
Also, a 45°-line through the 1st and 3rd quadrant is also displayed in the plot. From the Youden plot it can be established whether the mistake made is accidental or systematic.

To apply the special statistics, as developed by Youden, the following conditions must be met:

- the minimum number of participants is 4 (after also applying the test on outliers);
- the random error is of the same level for all laboratories;
- the systematic error for both samples is of the same order of magnitude within one laboratory;
- to enable a sound interpretation of the circles in the Youden plot, the results should come from a normal distribution.

The following interpretation can be made from the Youden plot:
The further away a laboratory is from the center of the plot along the diagonal line, the greater a systematic error of that laboratory. Laboratories that lie within the radius show neither systematic error nor poor repeatability at the indicated significance level (5%, 1% or 0.1%).

Systematic errors will cause observations to occur in the first and third quadrant of the Youden plot. When there are no random errors, all points will lie on the 45°-line that passes through the 1st and 3rd quadrant (the 1st quadrant is situated top right, the other ones run up clockwise). With random errors, inevitable in practice, in combination with detectable systematic errors the points will lie in a drawn-out ellipse round the 45°-line. The length of the perpendicular from the plotted point of the laboratory to the 45°-line will be a measure for the random error of that laboratory. The distance along the 45°-line, from the centre of the circle to the point of intersection with the perpendicular is a measure for the systematic error of the laboratory. The Youden plot concerns only one combined observation in time, therefore no more than a global indication of the type of errors (random or systematic) can be obtained. When a laboratory has participated in more inter-laboratory test comparisons with the same parameters, the results can indeed confirm a pattern in the type of errors.

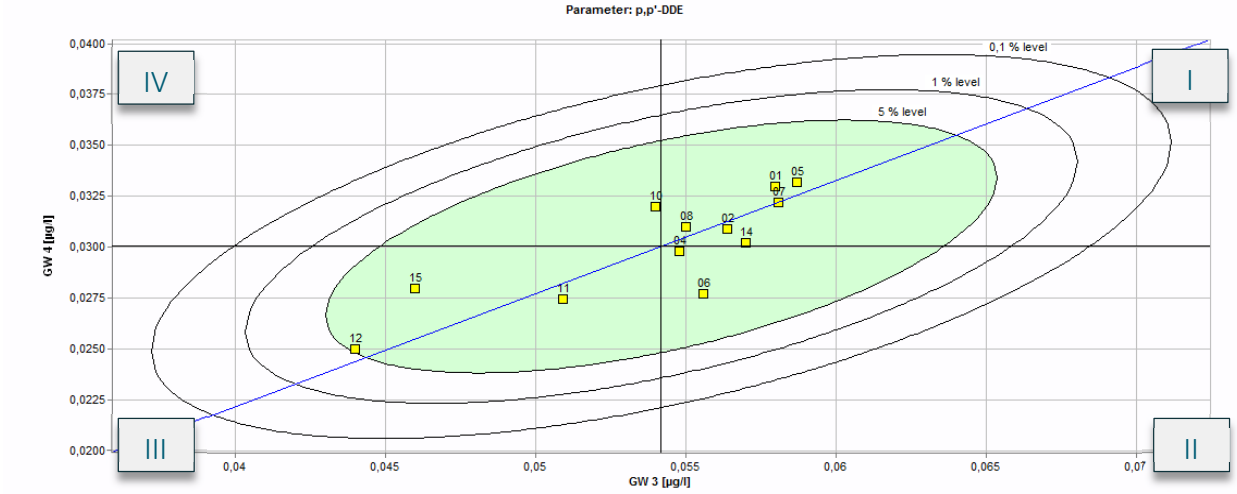

Figure 2: Sample of a Youdenplot

Some examples of how to interpret a Youden plot are given below.

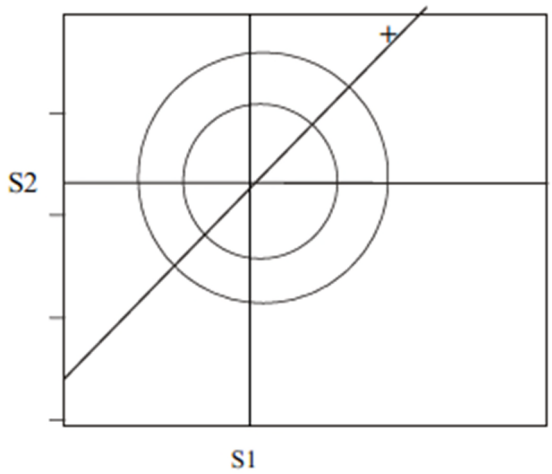

Figure 3: Example of a large systematic error, above the average of the group

In this example the results of a participant are shown with a '+'. The samples (S1 and S2) are samples from one Youden pair. There is only a slight difference in concentration between the two samples. On the x-axis the result of sample 1 is plotted and on the y-axis the result of sample 2. In this graph you can clearly see that the reported concentrations for both sample 1 and sample 2 are too high. This indicates the presence of a large systematic error. It is possible that this participant has a problem with its blank procedure.

The same as in figure 3, but now the participant is analyzing systematically too low. A low recovery could be the problem. The length of the perpendicular (dotted line) to the 45°-line is representative for the size of the random error. The distance along the 45°-line, from the centre of the circle to the point of intersection with the perpendicular represents the size of the systematic error. Most errors will be a combination of random and systematic errors.

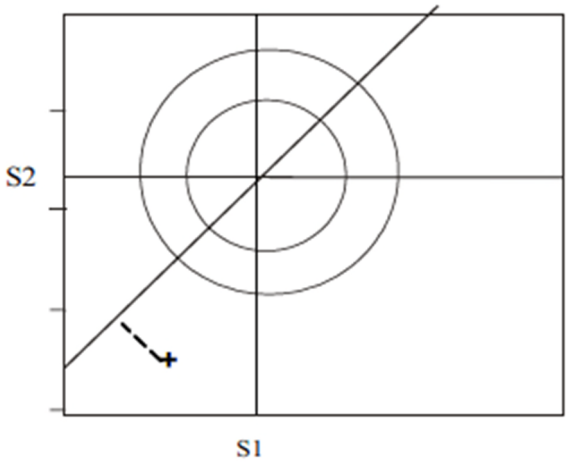

Figure 4: Example of a large systematic error, below the average of the group

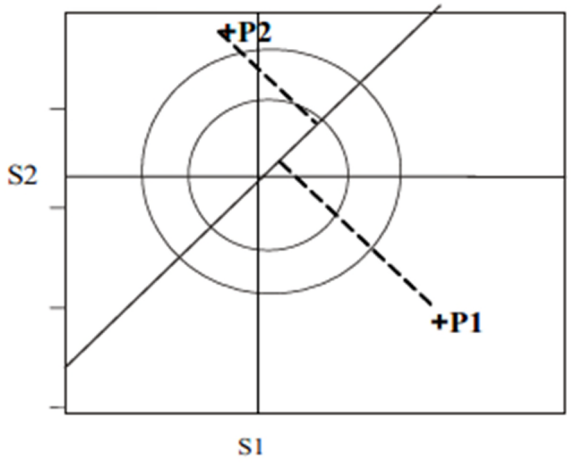

Figure 5. Example of random errors

In this plot two examples of random errors are given. Participant 1 (P1) finds for sample 1 a higher value and for sample 2 a lower value than the average value of the group. Both samples are not correctly analysed and/or reported. This may indicate a sample exchange. Participant 2 (P2) scores very close to the average group value for sample 1, but for sample 2 far above the average group value and for both samples (Youden) outside the 2s border. It is not possible to draw a conclusion on systematic basis and therefore these errors may be considered as random. You could think of a once-only error, e.g. adding no reagent samples during the analysis.

When a participant has a deviating score or is even an outlier, it is of utmost importance to find the cause(s). KWR herewith would like to point out that it is absolutely useful first to check for trivial causes, such as sample exchange, typing errors, dilution errors etc. Research performed by KWR in 1996 showed that 30% of all proficiency testing relating errors were trivial. This first check is very easy to perform with a fairly large chance of getting results. When no causes are found after this first and quick check, it is useful to check the analytical method applied.

6.3 Report mark

The report mark gives an idea of the performance of a group on a scale of 0 to 10, and is an instrument to assess group performances over a longer period of time. It can be used to identify for which parameters the analytical method has to be reconsidered or to see certain trends in results as a consequence of (inter)national harmonisation of analytical methods. The report mark is only calculated in the chemical proficiency tests.
The mark is calculated by weighing the scores for the following items:

- percentage of outliers (the outliers in the group of differences of the two results of a Youden pair);
- recovery of the spike, where applicable;
- occurrence of systematic errors (only with normal distribution of the results);
- coefficient of variation of the reproducibility.

The report marks are calculated per real sample matrix and per parameter. However, in some cases no 'theoretical value' is known. Consequently, it is not possible to calculate a recovery of the spike or a systematic error with regard to the theoretical value (known as "systematic error with marginal note"). In these cases, an alternative report mark will be calculated that does not take into account these two items. This alternative report mark is always calculated. The table with the basic statistics for the calculation of the report mark also presents a standard deviation of the repeatability (sr); this can be seen as an average for the participating group. The special Youden lay-out enables the calculation of this statistical number, even though there are no repeated measurements. An underlying assumption however, is that in each laboratory both samples were analysed in the same series of measurements.
If it is not possible to test for systematic errors and/or if the theoretical value is unknown, an alternative mark is calculated. This number is indicated by an asterisk (*).

Example of a report mark calculation of a Youden pair with known theoretical value:

VIO xx-xx, parameter y Samples S1, S2	Youden pair δ = 0,0800 mg/l	Score	
Participating laboratories	15		
Outliers	(0) 0 %	10	
Remaining laboratories	15		
Normal distribution	Yes	Yes	
Average difference	-0,0554 ug/l		
Median difference	-0,0560 ug/l		
Recovery of spike	79,1 %	6	
Syst. Error of the measurement	1%>=P	0	0
Syst. Error between laboratories	1%>=P	0	
Group average result	0,1177 ug/l		
Stand.dev. repeatability	0,0129 ug/l		
Stand.dev. reproducibility	0,0283 ug/l		
Coëff. of var. reproducibility	24,0%	6	
Report mark	**5,5**	**7,3** **alternative ***	

6.4 Z-score

To enable a participant in a proficiency test to assess his or her results in an equivocal way, Z-scores are presented. Z-scores are an internationally accepted way to assess the performance of an individual laboratory. It also enables participants to follow the own performance in time. The Z-score presents the deviation from the group average or the theoretical value and is related to the standard deviation of the group.

To assess the performance of the own laboratory, a distinction is made between:

- the assessment with regard to the group average;
- the assessment with regard to the theoretical value (the actual addition difference of the two samples) and
- the assessment of the performance of your laboratory over time (not shown in the report).

The performance of the own laboratory compared to the group average can be assessed on the basis of the Z-scores per sample. The following criteria are used:

1. the laboratory performs ***good*** if: $|Z\text{-score}| \leq 2{,}0$
2. the laboratory performs ***moderate*** if: $2{,}0 < |Z\text{-score}| \leq 3{,}0$
3. the laboratory performs ***bad*** if: $|Z\text{-score}| > 3{,}0$

The performance of the own laboratory compared to the theoretical value (the actual addition difference, only for chemical ring studies) can be assessed per component. The assessment criteria for this Z-score per component (Zt,c,i) depend on the number of participating laboratories after removing outliers, assuming that this Z-score follows a t-distribution with a two-sided probability of exceedance of 5% and 0,3% respectively:

1. the laboratory performs **good** if $|Z_{t,c,i}| \leq$ limit value (at n-1* and two-sided probability of exceedance 5%);
2. the laboratory performs **moderate** if $|Z_{t,c,i}|$ is greater than the limit value (at n-1* and two-sided probability of exceedance 5%) and less than or equal to the limit value (at n-1 and two-sided probability of exceedance 0,3%);
3. the laboratory performs **bad** if $|Z_{t,c,i}| >$ limit value (at n-1* and two-sided probability of exceedance 0,3%).

*(n-1) is the number of participating laboratories after removing outliers minus 1.

The various Z-scores are also presented graphically. An example is shown in figure 6.

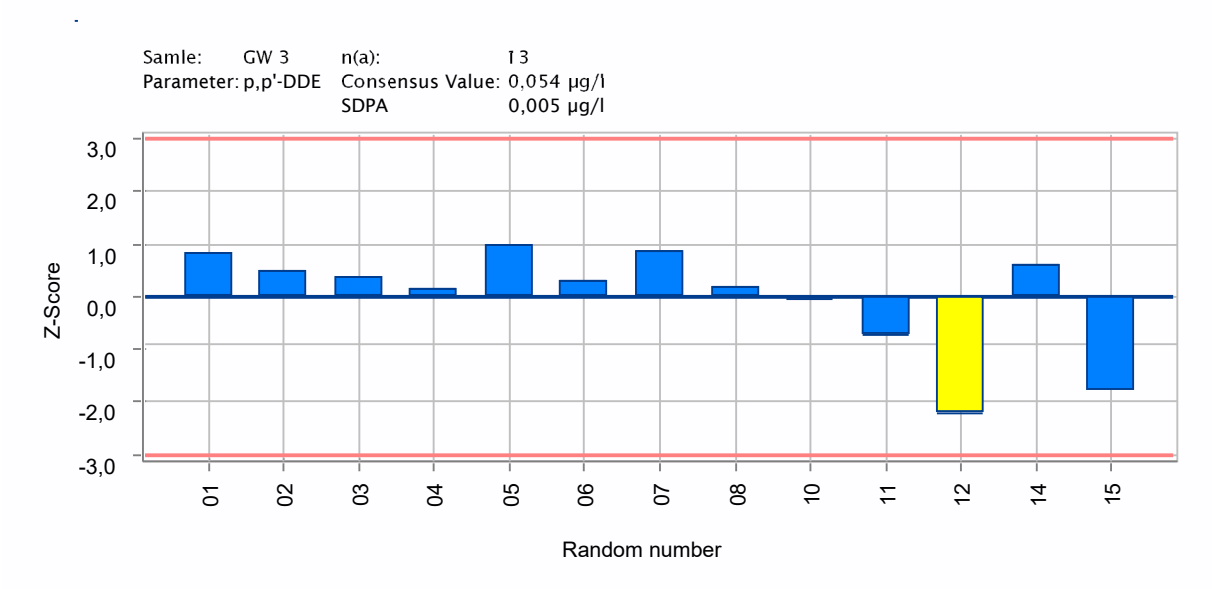

Figure 6: Example of the graphically presentation of the Z-scores