

**University of Stuttgart**  
Germany



# Analytische Qualitätssicherung Baden-Württemberg

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Proficiency Test 10/23  
- Sum parameters I in waste water -  
AOX, COD, TN<sub>b</sub>, TOC

Final report

provided by  
AQS Baden-Württemberg at  
Institute for Sanitary Engineering, Water Quality and Solid Waste Management,  
University of Stuttgart  
Bandtäle 2, 70569 Stuttgart-Büsnau, Germany



on behalf of the Ministry of the Environment, Climate Protection  
and the Energy Sector Baden-Württemberg

Stuttgart, in April 2024

**AQS Baden-Württemberg at  
Institute of Sanitary Engineering,  
Water Quality and Solid Waste Management  
at University of Stuttgart  
Bandtäle 2  
70569 Stuttgart-Büsnau  
Germany  
<http://www.aqsbw.de>  
Tel.: +49 (0)711 / 685-65446  
Fax: +49 (0)711 / 685-53769  
E-Mail: [info@aqsbw.de](mailto:info@aqsbw.de)**

**Responsibilities:**

<b>Scientific director:</b>	Dr.-Ing. Michael Koch	
<b>PT coordinator:</b>	Dr.-Ing. Frank Baumeister	
<b>Assistant PT coordinator</b>	Dipl.-Biol. Biljana Marić	
<b>Sample preparation</b>	Gertrud Joas Anass Bakiri	
<b>Release of the report:</b>	Dr.-Ing. Michael Koch	on 09.04.2024
<b>Version of the report</b>	1	

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## 1. General

This PT was provided by AQS Baden-Württemberg in the framework of the nation-wide conducted waste water PT scheme in Germany. This PT scheme is based on the requirements of the German Working Group on water issues of the Federal States and the Federal Government (LAWA), which fixed the way of doing PTs in the regulated environmental sector in its AQS-leaflet A-3 for the analysis of water, waste water and sludge. These PTs are conducted together with several PT providers nationwide in Germany in a harmonised way.

The PT was executed and evaluated according to the requirements of DIN 38402-A45 and ISO/TS 20612.

## 2. PT design

Each participant received the following samples:

- 3 samples for the determination of the AOX in 250 ml amber ground bottles; preservation with nitric acid (pH ca. 2,1) and by cooling.
- 3 samples for the determination of the COD in 100 ml glas bottles screw capped; preservation with sulphuric acid (pH ca. 2,1), by autoclaving and by cooling.
- 3 samples for the determination of total bound nitrogen (TN<sub>b</sub>) in 100 ml glas bottles screw capped; preservation with hydrochloric acid (pH ca. 2,1), by autoclaving and by cooling.
- 3 samples for the determination of the TOC in 100 ml glas bottles screw capped; preservation with hydrochloric acid (pH ca. 2,1), by autoclaving and by cooling.

9 different concentration levels/batches were produced. The concentration levels were randomly allocated to the participants. It was ensured that each participant received one concentration level from the concentration level 1–3.

## 3. Sample preparation

The samples for the above mentioned parameters were based on a real waste water matrix. The waste water was filtered by using 5 µm and 1 µm filter cartridges to eliminate particles. To reduce germs, the waste water was irradiated with ultraviolet light and pasteurised at 80°C in a stainless steel vessel overnight. During pasteurisation, the waste water was aerated with a mixture composed of carbon dioxide and nitrogen to prevent calcium carbonate precipitation.

The waste water was spiked, with exception of the parameters TOC and TN<sub>b</sub>, with stock solutions.

The samples for the parameters TOC and TN<sub>b</sub> were spiked with suspended solids (freeze-dried, powdered activated sludge) with known TOC and TN<sub>b</sub> amounts and additionally with stock solutions. The samples for the determination of COD, TN<sub>b</sub> and TOC were autoclaved after preparation. The concentrations covered waste water relevant ranges.

The samples were cooled directly after preparation. Freezer packs were added to the samples for the parameter AOX for shipment.

#### 4. Sample distribution

The samples were dispatched on 06 November 2023 by express service (GoExpress).

#### 5. Analytical methods

The participants were restricted to use one analytical method according to the requirements of the “Technical Module Water” from the German Working group on water issues of the Federal States and the Federal Government (LAWA). The following restrictions did not apply for laboratories outside Germany. Laboratories participating in this PT not under the rules of the 70. LÜRV were free to choose a suitable method:

Parameter	Analytical method	Issue
AOX	DIN EN ISO 9562 (H 14) Abschnitt 9.3.4 (microcolumn procedure)	2005-02
CSB	DIN 38409-H 41	1980-12
TN <sub>b</sub>	DIN EN 12260 (H 34) DIN EN ISO 11905-1 (H 36)	2003-12 1998-08
TOC	DIN EN 1484 (H 3) DIN EN 1484 (H 3)	1997-08 2019-04

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

parameter	limit of quantification
AOX	10 µg/l
CSB	15 mg/l
TN <sub>b</sub>	3 mg/l
TOC	1 mg/l

The samples had to be analysed in duplicate over the complete method (sample preparation and measurement). The participants were asked to submit the results as average values in mg/l and for AOX in µg/l with three significant digits.

#### 6. Submission of the results

The deadline for the submission of results was on 24 November 2023.

## 7. Basic principle of evaluation and assessment

The basic principle of the evaluation and assessment of the PTs from AQS Baden-Württemberg are described in the document „Evaluation of the PTs and information for the report“, which can be downloaded from [www.aqsbw.de/pdf/ausw\\_berichte\\_v1\\_en.pdf](http://www.aqsbw.de/pdf/ausw_berichte_v1_en.pdf).

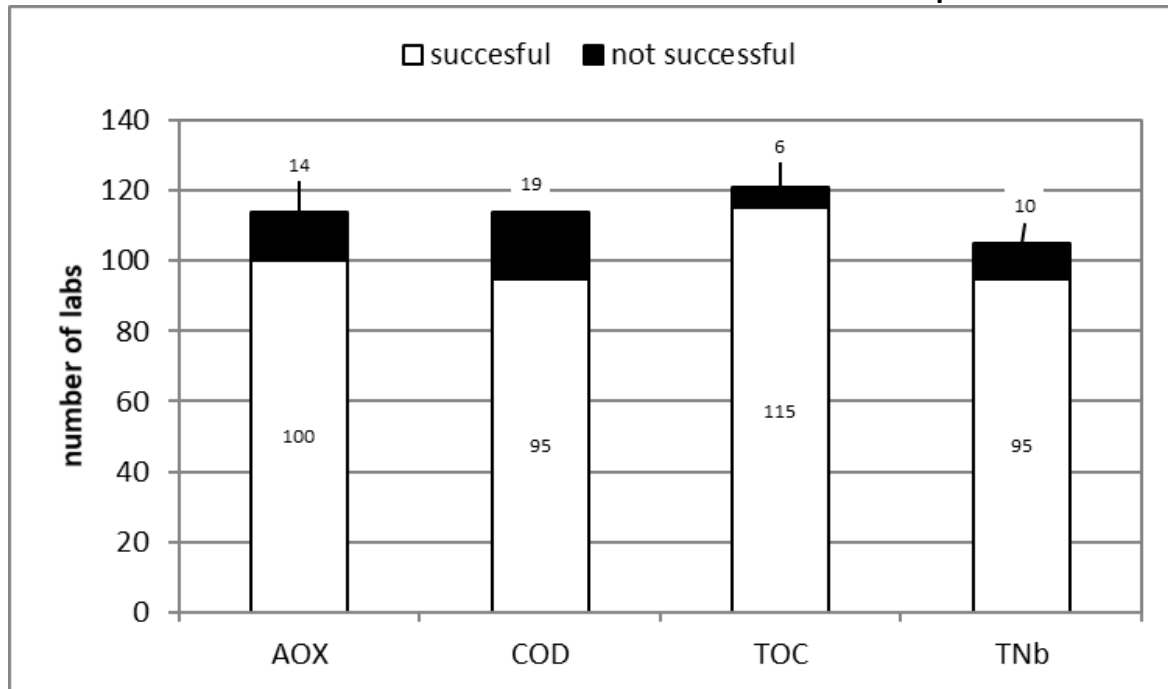
This PT was evaluated as follows:

<b>Assigned value <math>x_{pt}</math>:</b>	Consensus value (Hampel estimator)						
<b>Standard deviation for proficiency assessment <math>\sigma_{pt}</math>:</b>	Q method and variance function						
<b>Upper limit of <math>\sigma_{pt}</math>:</b>	AOX: $\leq 100 \mu\text{g/l}$ : 25 %, $> 100 \mu\text{g/l}$ : 15 % CSB: 10 % TN <sub>b</sub> : 20 % TOC: 15 %						
<b>Lower limit of <math>\sigma_{pt}</math>:</b>	AOX: $\leq 100 \mu\text{g/l}$ : 10 %, $> 100 \mu\text{g/l}$ : 5 % CSB: 4 % TN <sub>b</sub> : 10 % TOC: 7,5 %						
<b>Assessment:</b>	$z_U$ -Score						
<b>Classification of the single results:</b>	<table style="border: none;"> <tr> <td style="padding-right: 20px;"><math> z_u  \leq 2,0</math></td> <td>successful</td> </tr> <tr> <td><math>2,0 &lt;  z_u  &lt; 3,0</math></td> <td>questionable</td> </tr> <tr> <td><math> z_u  \geq 3,0</math></td> <td>unsatisfactory</td> </tr> </table>	$ z_u  \leq 2,0$	successful	$2,0 <  z_u  < 3,0$	questionable	$ z_u  \geq 3,0$	unsatisfactory
$ z_u  \leq 2,0$	successful						
$2,0 <  z_u  < 3,0$	questionable						
$ z_u  \geq 3,0$	unsatisfactory						
<b>Parameter assessment:</b>	A parameter was assessed as successful, if more than half of the values were correctly determined (2 out of 3 values are within the tolerance limits).						

## 8. Evaluation

<b>Number of participants:</b>	131
<b>Number of reported values</b>	1362
<b>Number of accepted values:</b>	1184 (86,93%)

### Illustration of the successful and not successful laboratories for each parameter



## 9. Explanation for the appendices

The explanations for the appendices can be found in the document „Evaluation of the PTs and information for the report“ which can be downloaded from [www.aqsbw.de/pdf/ausw\\_berichte\\_v1\\_en.pdf](http://www.aqsbw.de/pdf/ausw_berichte_v1_en.pdf).

## 10. Measurement uncertainty

### General:

Number of labs with valid values	130
Number of labs with valid values and reported measurement uncertainties	80 (61,5%)
Number of valid values	1299
Number of valid values with measurement uncertainties	789 (60,7%)

**Measurement uncertainties against the accreditation status**

Accreditation status of the values	Number of values	Number of values with measurement uncertainty
accredited	963	663 (68,8%)
not accredited	138	66 (47,8%)
not specified	198	60 (30,3%)

**Interpretation of the reported measurement uncertainties:**

If measurement uncertainties are underestimated values assessed as “satisfactory” in the PT ( $|z_U| \leq 2$ ), will have a large  $\zeta$ -score.  $|\zeta| > 2$  means that the “own” requirements (defined in terms of estimated uncertainty) are not fulfilled.

<b>Number of values with reported measurement uncertainty having a <math> z_U  \leq 2,0</math></b>	749
<b>Number of values with a magnitude of <math>\zeta</math>-scores <math>&gt; 2</math></b> The own requirements of the laboratory are not fulfilled and the estimation of the measurement uncertainty is too low	78 (10,4%)

**11. Traceable reference values**

The explanations about traceable reference values can be found in the document „Evaluation of the PTs and information for the report“, which can be downloaded from [www.aqsbw.de/pdf/ausw\\_berichte\\_v1\\_en.pdf](http://www.aqsbw.de/pdf/ausw_berichte_v1_en.pdf).

**12. Internet**

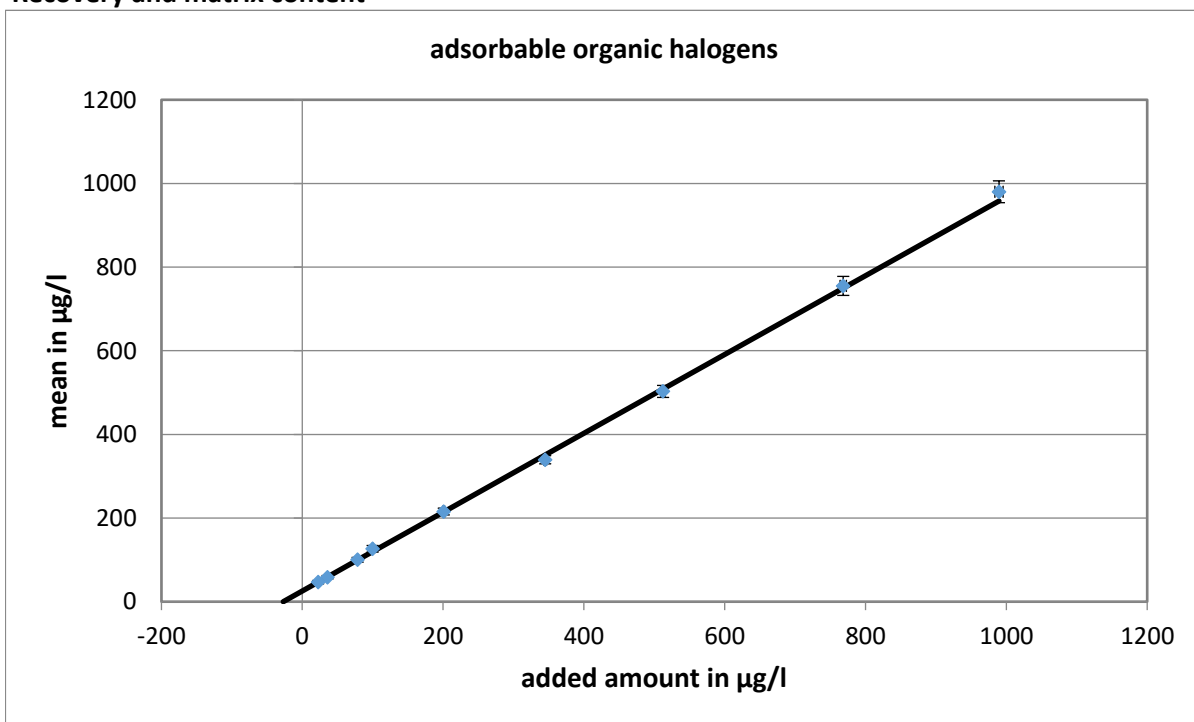
The report is available on the following webpage:  
[http://www.aqsbw/pdf/286/report\\_286.pdf](http://www.aqsbw/pdf/286/report_286.pdf)



# adsorbable organic halogens

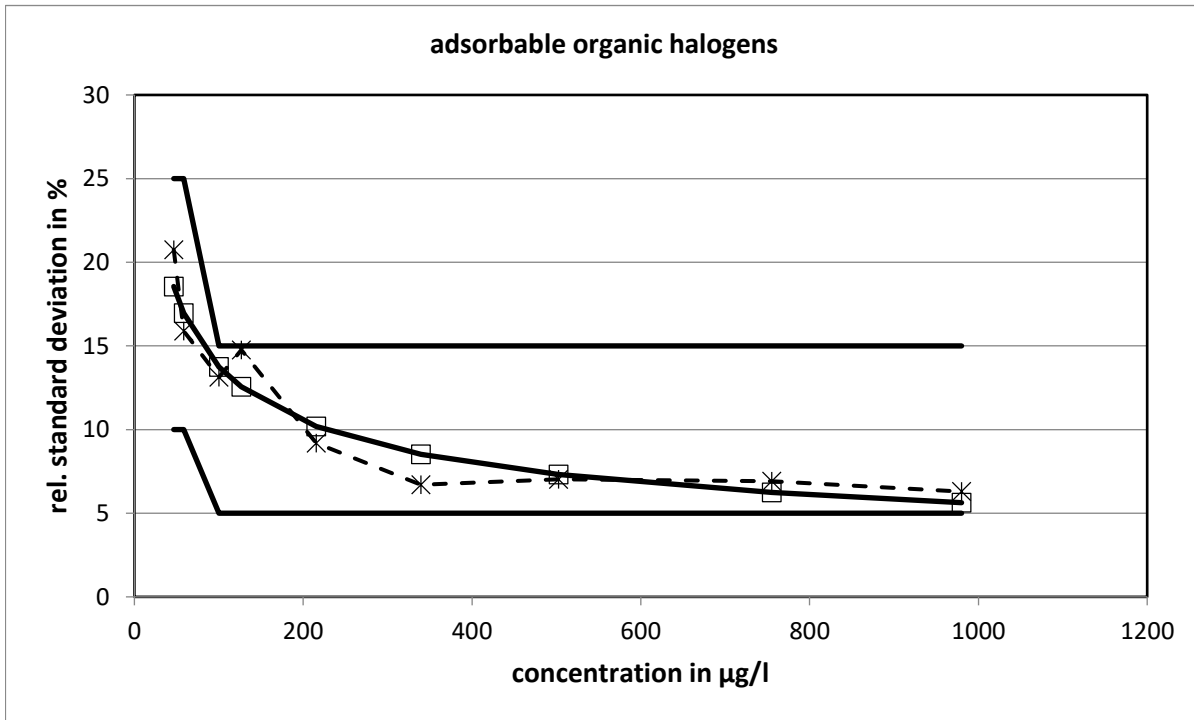
level	assigned value [µg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [µg/l]	standard deviation from variance function [µg/l]	standard deviation for proficiency assessment [µg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [µg/l]	lower tolerance limit [µg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	46,64	8,52	9,674	8,653	8,653	18,55	65,87	30,66	41,23	-34,27	37	1	7	21,1
2	58,59	6,71	9,306	9,941	9,941	16,97	80,46	40,12	37,33	-31,52	35	1	4	13,9
3	100,2	5,63	13,16	13,78	13,78	13,75	130,0	74,32	29,66	-25,86	34	1	1	5,7
4	126,6	6,15	18,69	15,88	15,88	12,55	160,6	96,55	26,88	-23,71	36	1	2	8,1
5	215,6	3,78	19,82	21,96	21,96	10,19	262,0	173,7	21,52	-19,44	37	1	0	2,7
6	339,3	2,87	22,75	28,94	28,94	8,53	399,9	283,7	17,85	-16,39	34	1	2	8,6
7	502,7	2,85	35,37	36,76	36,76	7,31	579,1	431,7	15,20	-14,13	38	3	0	7,5
8	755,0	3,01	52,22	47,07	47,07	6,23	852,3	663,6	12,88	-12,10	33	3	1	11,8
9	980,1	2,66	61,67	55,17	55,17	5,63	1094	872,7	11,59	-10,96	35	1	4	14,3
sum											319	13	21	10,7

## Recovery and matrix content

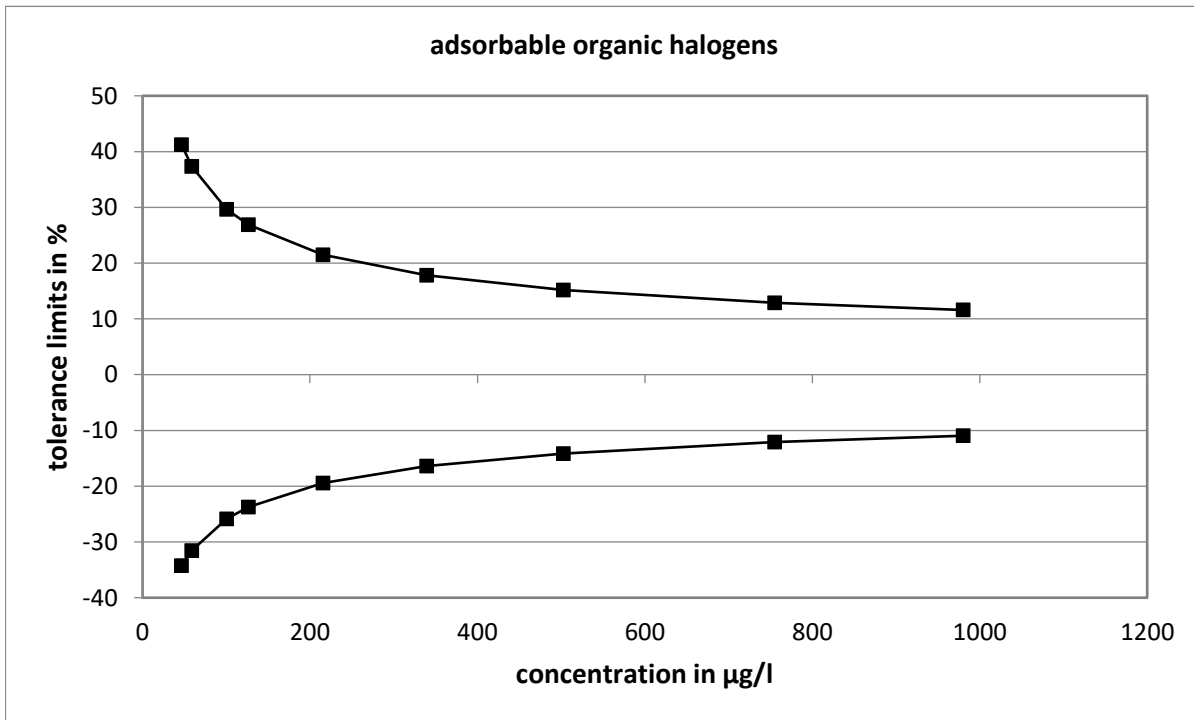


slope of the regression: 0,942; recovery rate: 94,2 %  
 neg. x-axis intercept = matrix content: 26,99 µg/l  
 expanded uncertainty of the matrix content: 3,06 µg/l = 13,2 %

Relative standard deviation and tolerance limits



The standard deviations calculated with the variance function did not reach the limits.



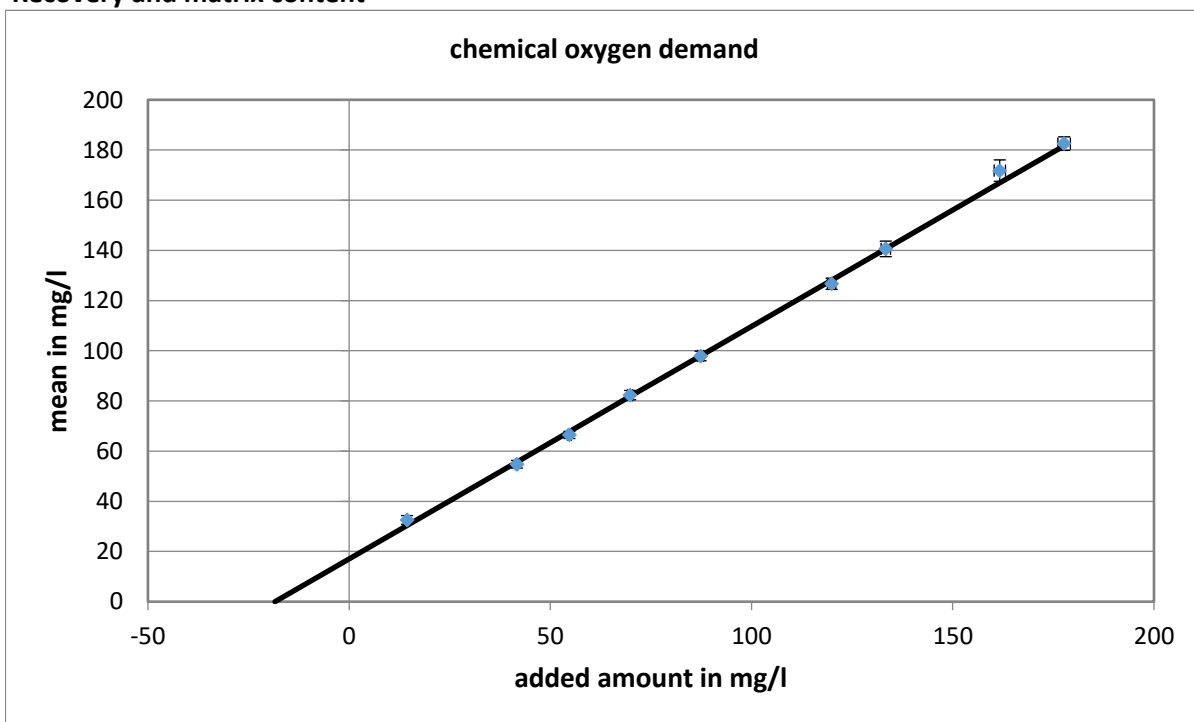
**Method specific evaluation**

There is no method specific evaluation, because only the application of the microcolumn procedure was allowed.

# chemical oxygen demand

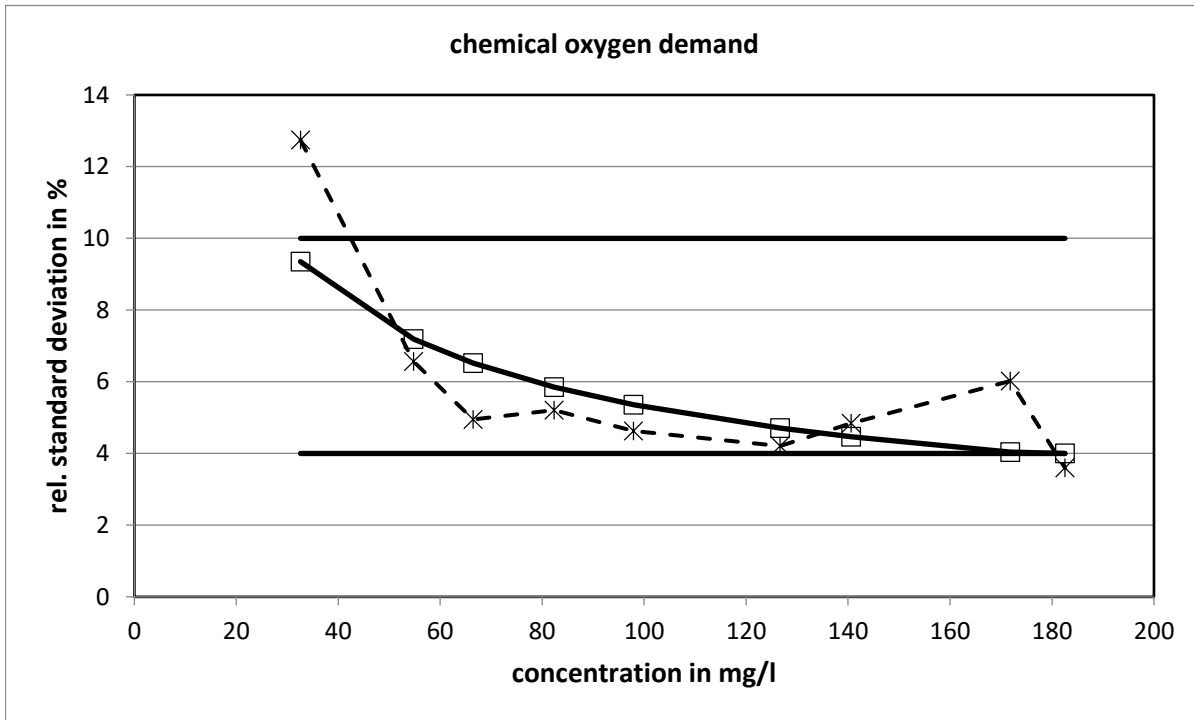
level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [mg/l]	standard deviation from variance function [mg/l]	standard deviation for proficiency assessment [mg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [mg/l]	lower tolerance limit [mg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	32,59	5,31	4,153	3,047	3,047	9,35	38,99	26,75	19,66	-17,91	36	1	4	13,9
2	54,78	2,78	3,599	3,940	3,940	7,19	62,96	47,16	14,94	-13,90	35	0	2	5,7
3	66,46	2,15	3,290	4,335	4,335	6,52	75,43	58,05	13,50	-12,65	33	2	1	9,1
4	82,32	2,27	4,291	4,819	4,819	5,85	92,25	72,94	12,07	-11,39	33	0	2	6,1
5	97,92	1,95	4,530	5,251	5,251	5,36	108,7	87,68	11,03	-10,45	35	2	1	8,6
6	126,7	1,75	5,330	5,964	5,964	4,71	138,9	115,0	9,65	-9,20	36	4	2	16,7
7	140,6	2,21	6,806	6,280	6,280	4,47	153,4	128,3	9,14	-8,74	30	4	1	16,7
8	171,8	2,48	10,35	6,934	6,934	4,04	186,0	158,2	8,24	-7,92	37	3	4	18,9
9	182,5	1,48	6,572	7,145	7,302	4,00	197,4	168,2	8,17	-7,85	37	3	2	13,5
sum											312	19	19	12,2

## Recovery and matrix content

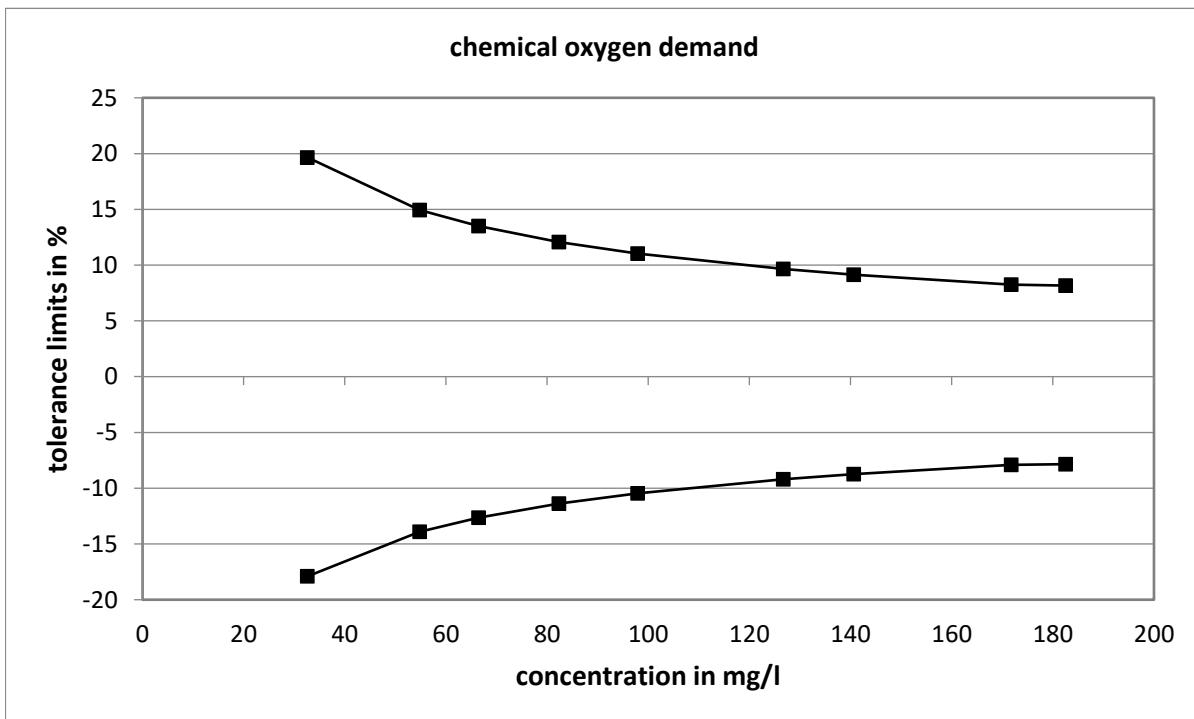


slope of the regression: 0,926; recovery rate: 92,6 %  
 neg. x-axis intercept = matrix content: 18,42 mg/l  
 expanded uncertainty of the matrix content: 1,67 mg/l = 7,4 %

Relative standard deviation and tolerance limits



The standard deviations calculated with the variance function reached the lower limit with one concentration level.



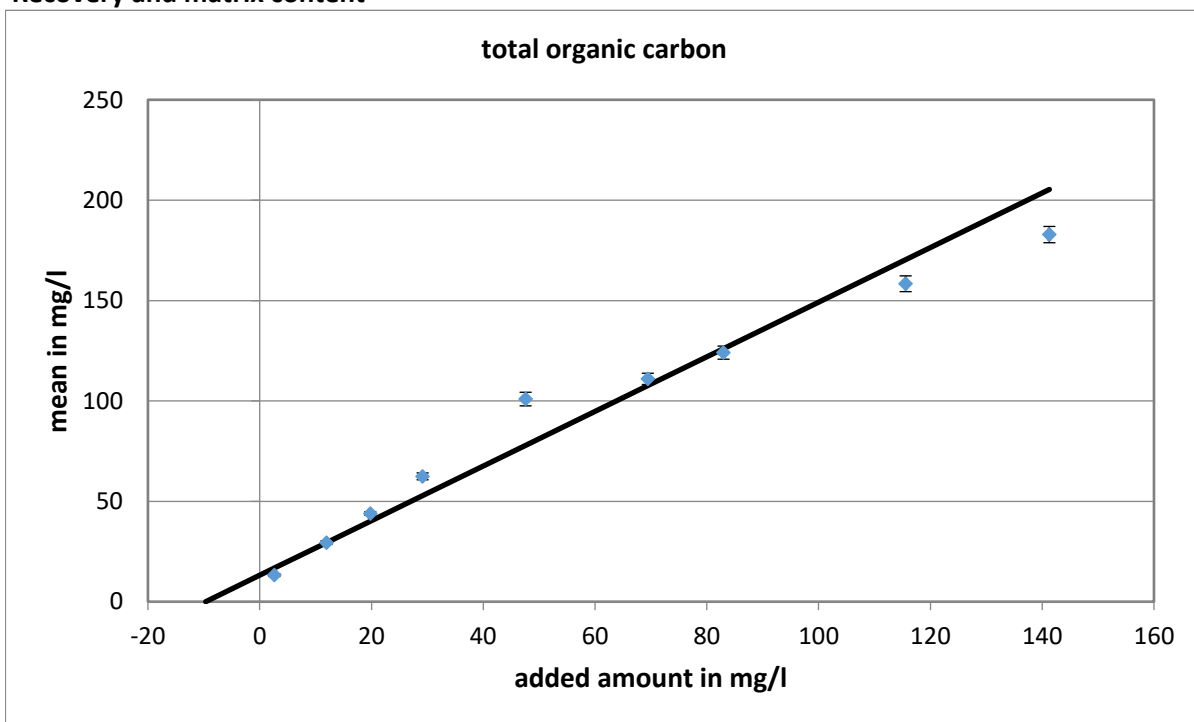
**Method specific evaluation**

There is no method specific evaluation, because only the application of the dichromate method was allowed.

# total organic carbon

level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [mg/l]	standard deviation from variance function [mg/l]	standard deviation for proficiency assessment [mg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [mg/l]	lower tolerance limit [mg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	13,21	4,90	1,636	1,311	1,311	9,92	15,97	10,70	20,93	-18,96	40	2	4	15,0
2	29,44	3,07	2,345	2,485	2,485	8,44	34,64	24,66	17,66	-16,23	42	1	2	7,1
3	43,95	2,01	2,206	3,422	3,422	7,79	51,08	37,35	16,23	-15,01	39	2	1	7,7
4	62,42	2,74	4,435	4,528	4,681	7,50	72,16	53,38	15,60	-14,48	42	1	1	4,8
5	100,9	3,36	8,478	6,647	7,570	7,50	116,7	86,32	15,60	-14,48	39	3	1	10,3
6	111,0	2,52	7,075	7,171	8,325	7,50	128,3	94,93	15,60	-14,48	40	1	1	5,0
7	124,1	2,63	8,245	7,837	9,305	7,50	143,4	106,1	15,60	-14,48	40	0	1	2,5
8	158,4	2,48	10,05	9,523	11,88	7,50	183,1	135,4	15,60	-14,48	41	1	1	4,9
9	182,9	2,22	10,26	10,68	13,71	7,50	211,4	156,4	15,60	-14,48	40	2	0	5,0
sum											363	13	12	6,9

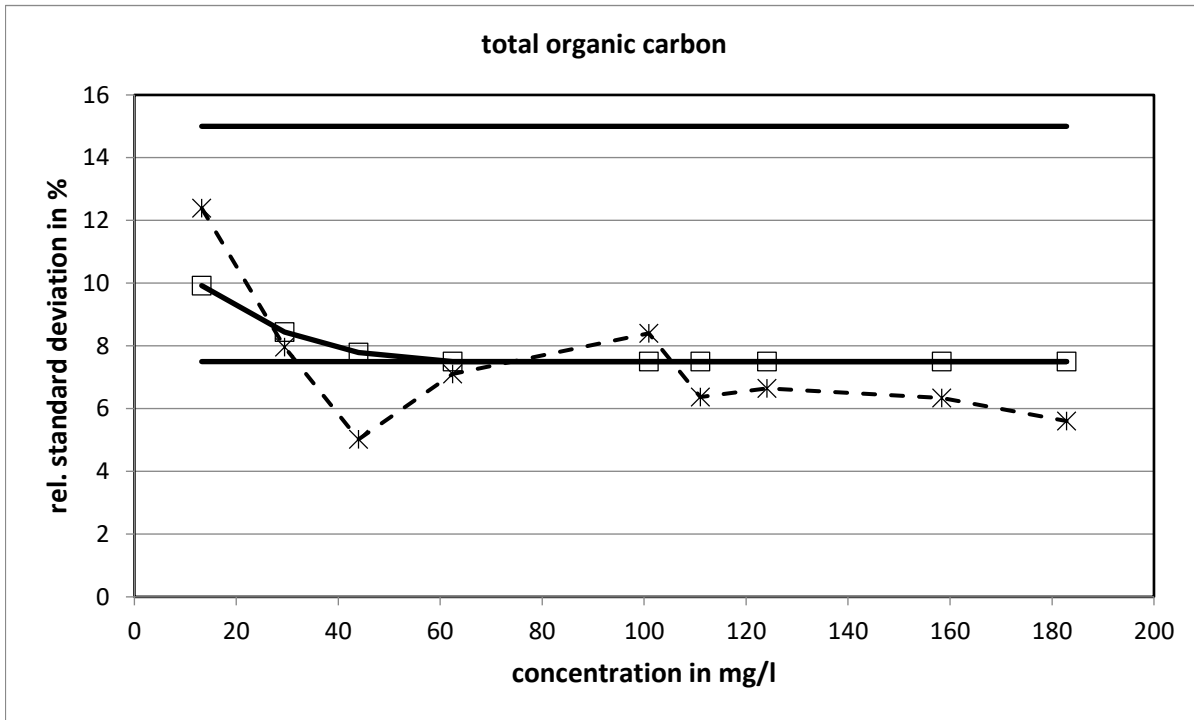
## Recovery and matrix content



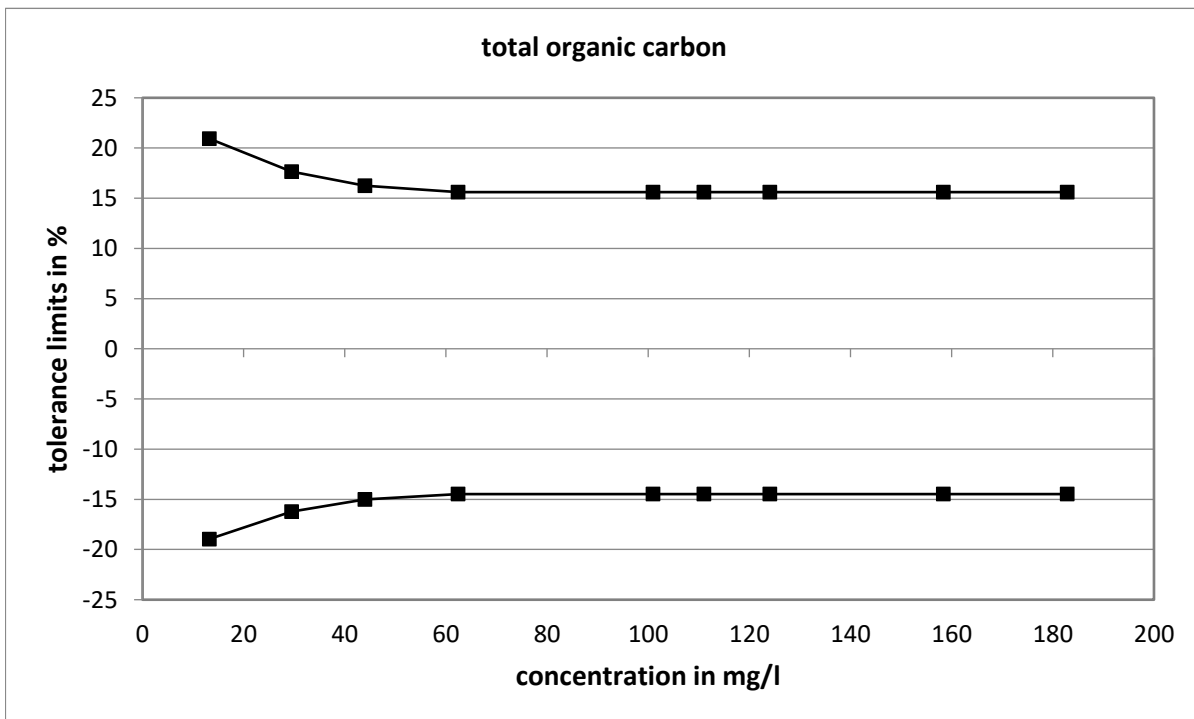
slope of the regression: 1,36; recovery rate: 136 %

There is no calculation of the matrix content due to spiking of the samples with different amounts of suspended solids.

Relative standard deviation and tolerance limits

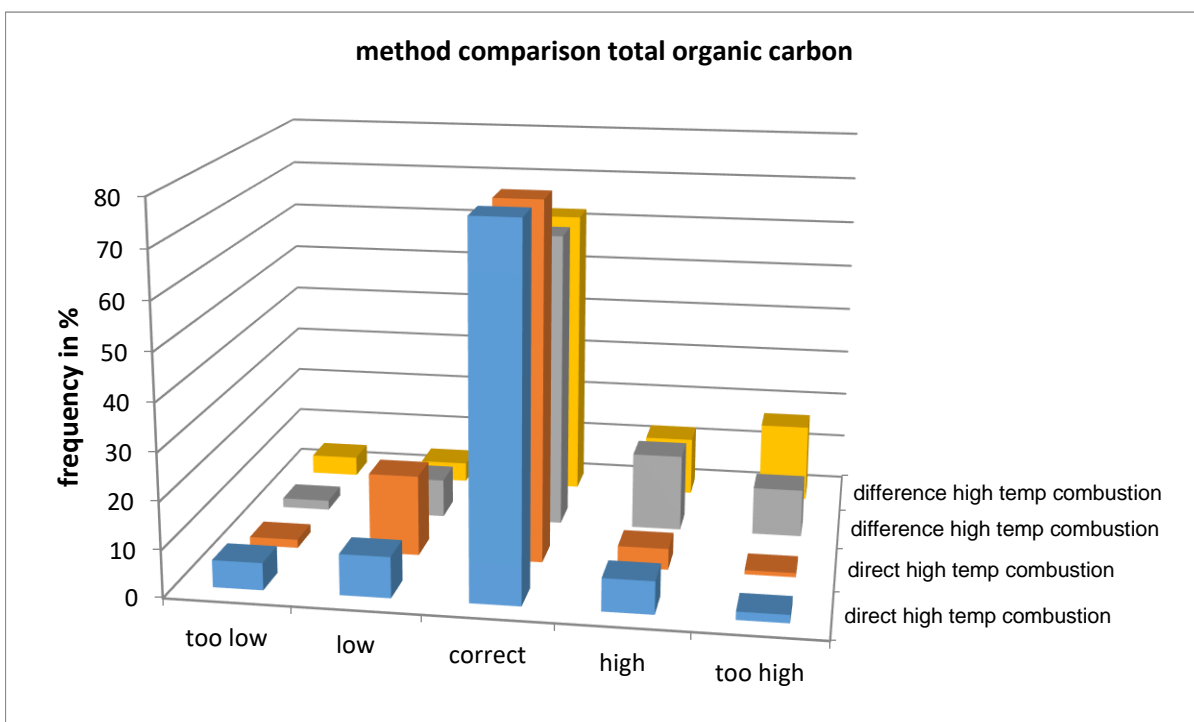
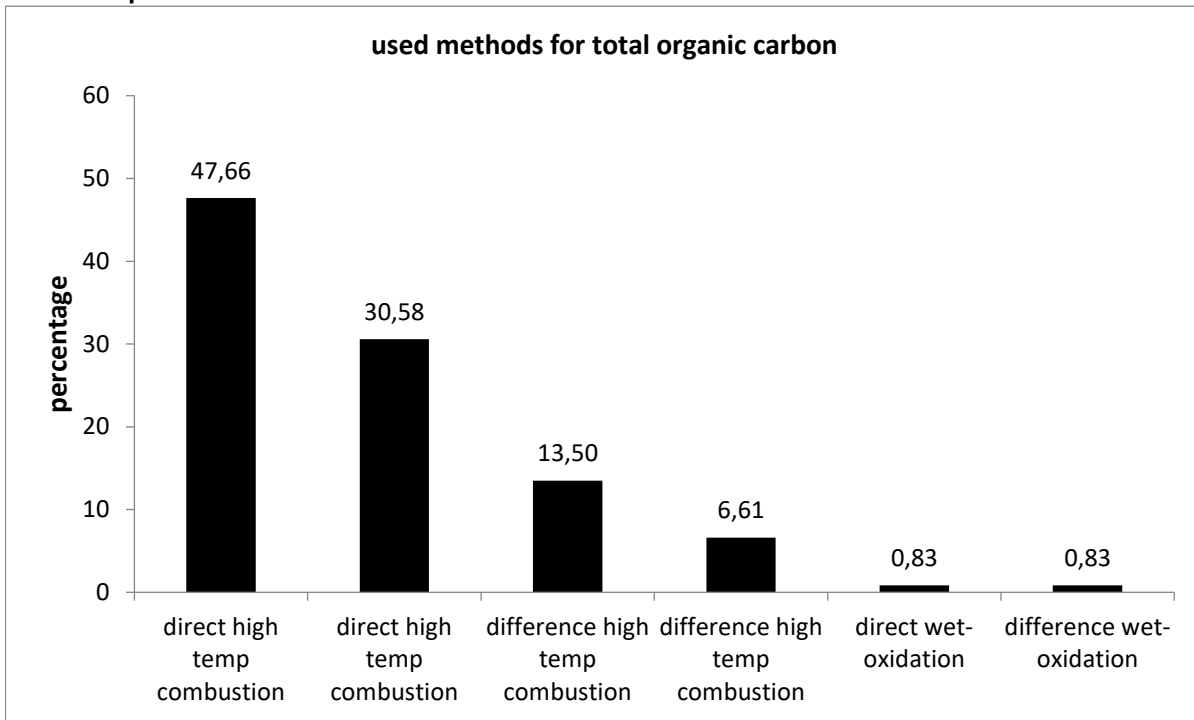


The standard deviations calculated with the variance function reached the lower limit with six concentration levels.





Method specific evaluation

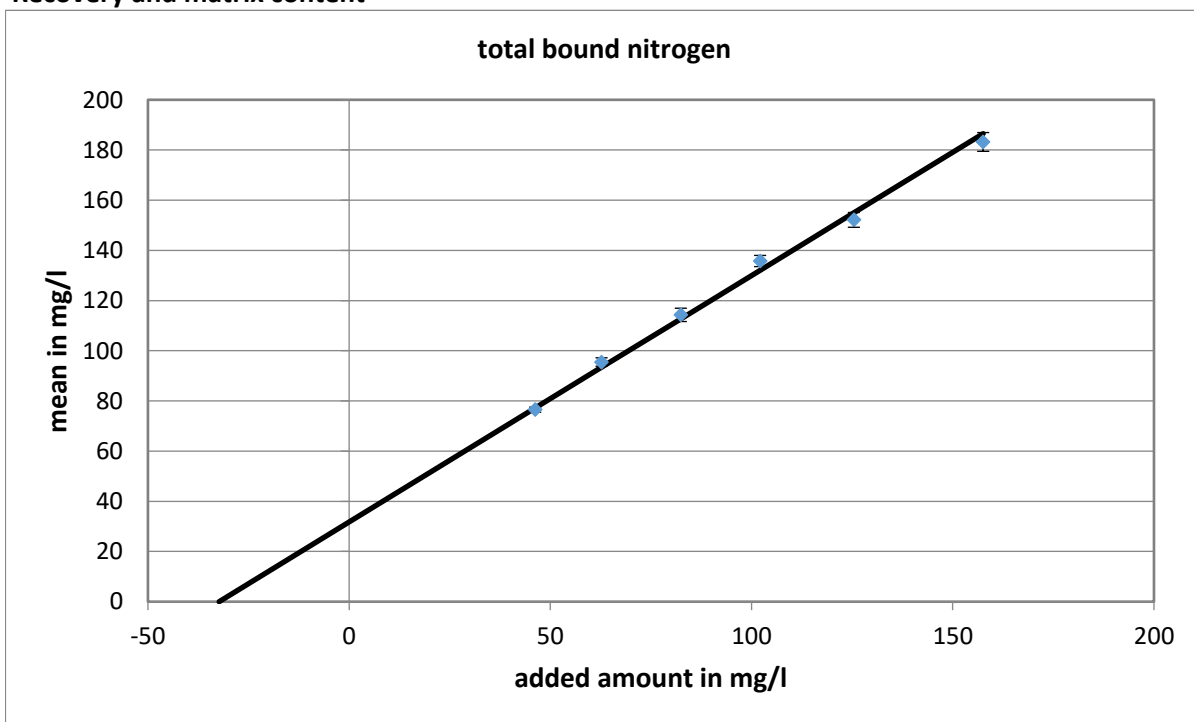


The values determined with the direct high temp combustion method showed the closest statistical distribution.

# total bound nitrogen

level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [mg/l]	standard deviation from variance function [mg/l]	standard deviation for proficiency assessment [mg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [mg/l]	lower tolerance limit [mg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	22,54	4,42	2,360	2,250	2,254	10,00	27,29	18,23	21,10	-19,10	35	1	4	14,3
2	44,93	3,72	3,841	3,968	4,493	10,00	54,41	36,35	21,10	-19,10	33	0	2	6,1
3	62,82	4,24	5,927	5,227	6,282	10,00	76,07	50,82	21,10	-19,10	31	1	2	9,7
4	76,54	2,91	5,041	6,150	7,654	10,00	92,69	61,92	21,10	-19,10	32	1	2	9,4
5	95,51	3,09	6,667	7,378	9,551	10,00	115,7	77,27	21,10	-19,10	32	0	0	0,0
6	114,3	3,28	8,860	8,553	11,43	10,00	138,4	92,47	21,10	-19,10	35	0	2	5,7
7	135,8	3,67	11,44	9,853	13,58	10,00	164,4	109,8	21,10	-19,10	33	0	0	0,0
8	152,2	2,79	9,913	10,82	15,22	10,00	184,3	123,1	21,10	-19,10	34	2	1	8,8
9	183,2	3,23	13,40	12,61	18,32	10,00	221,9	148,2	21,10	-19,10	32	0	0	0,0
sum											297	5	13	6,1

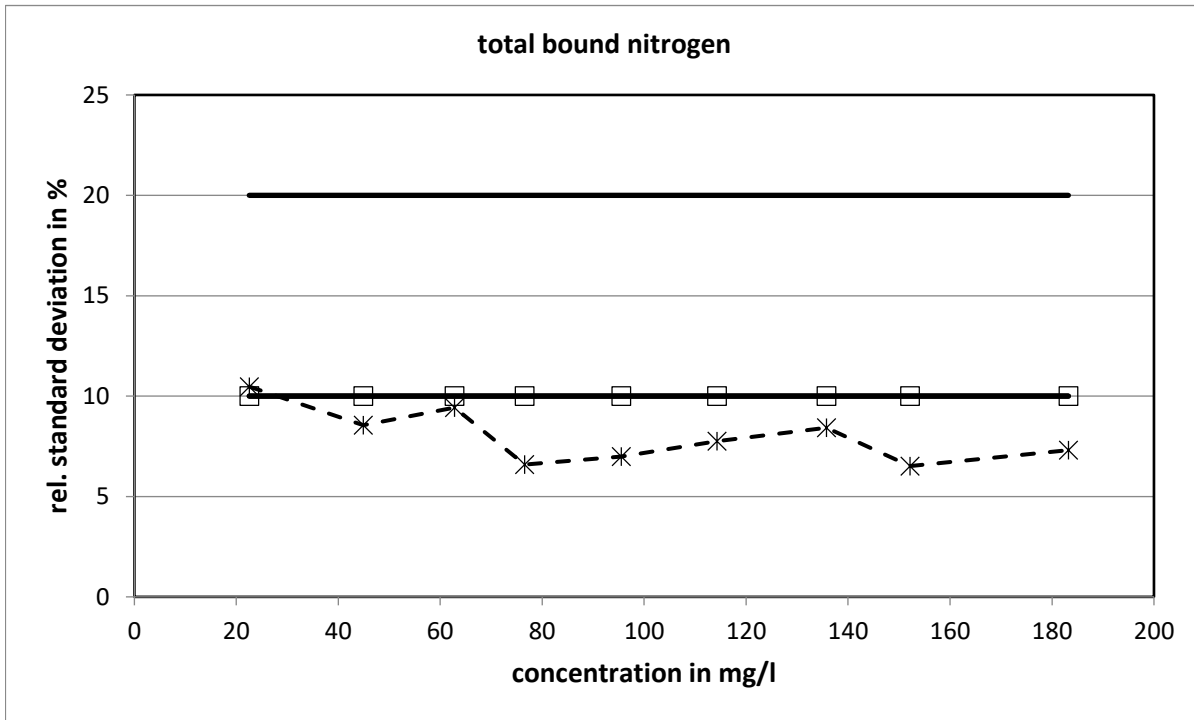
## Recovery and matrix content



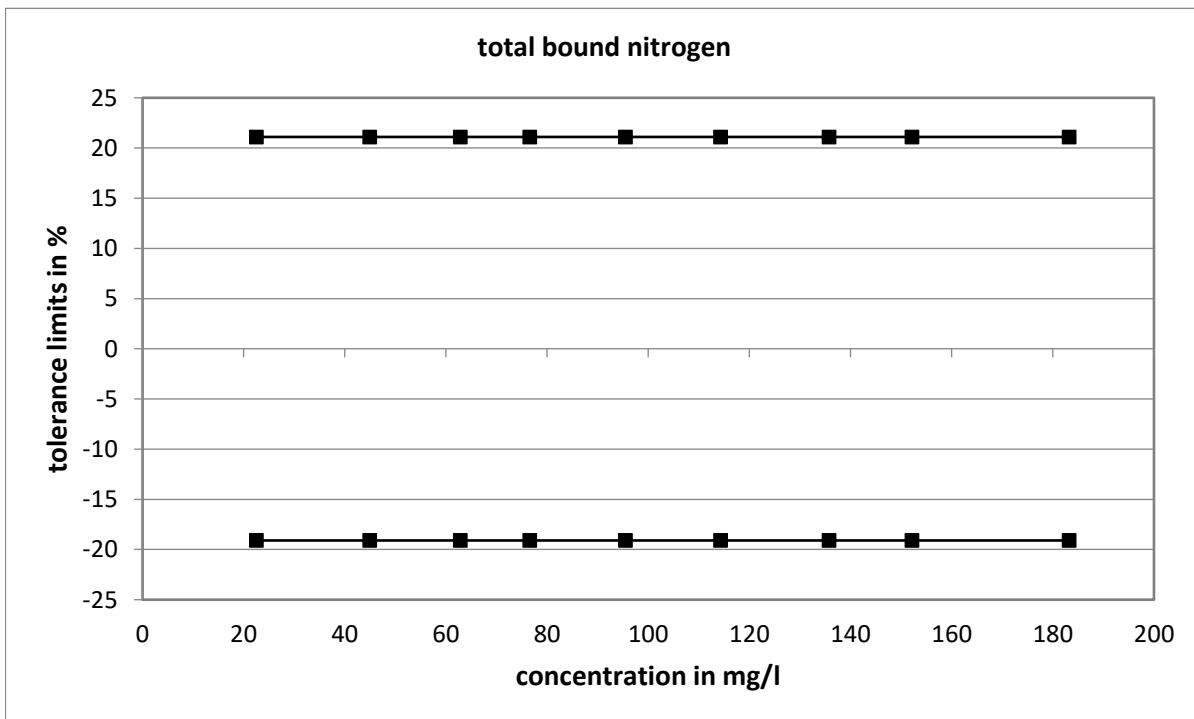
slope of the regression: 0,982; recovery rate: 98,2 %

There is no calculation of the matrix content due to spiking of the samples with different amounts of suspended solids.

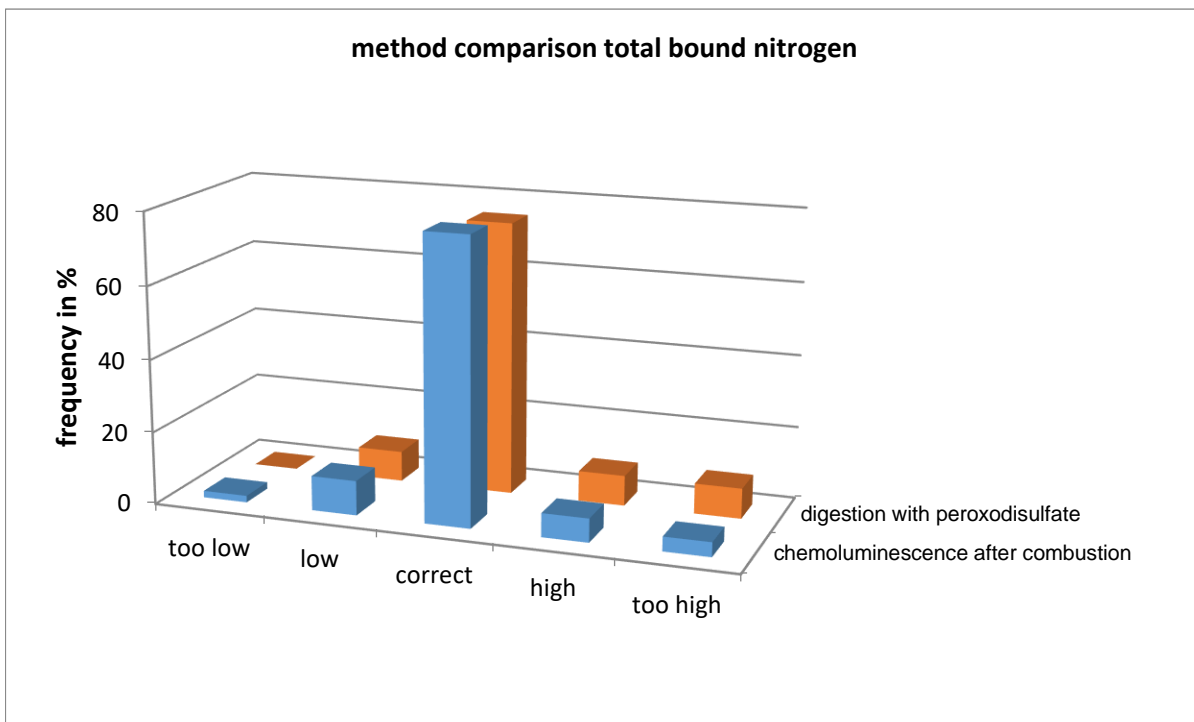
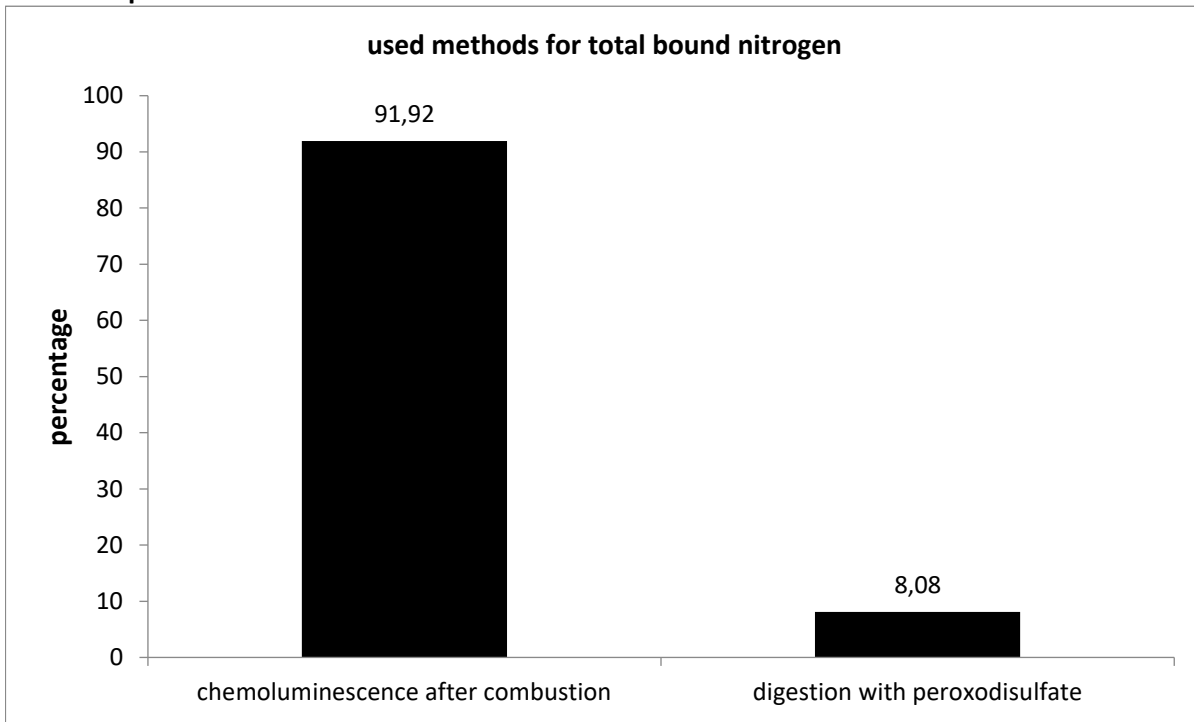
Relative standard deviation and tolerance limits



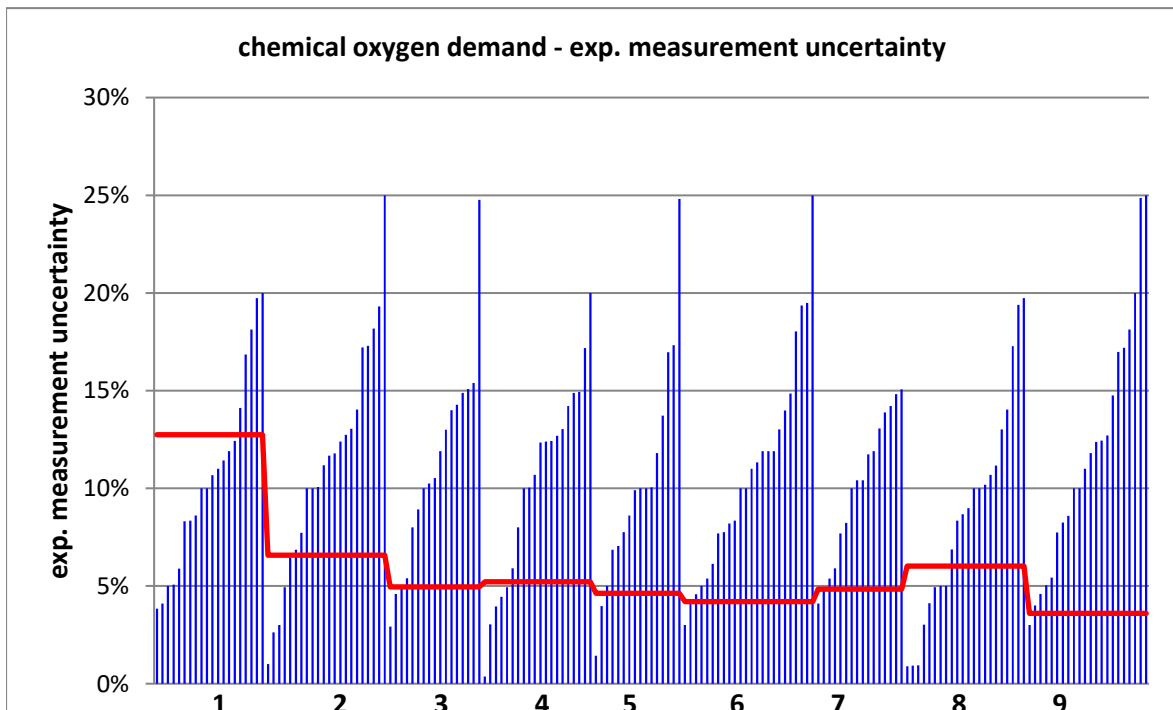
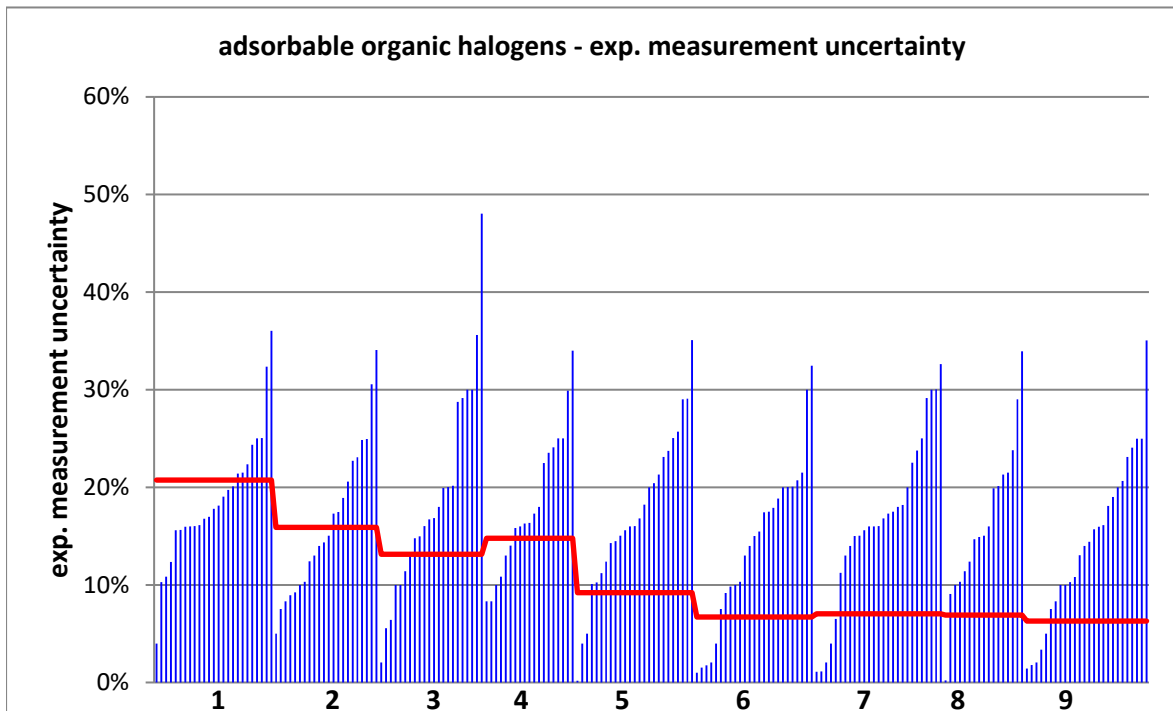
The standard deviations calculated with the variance function reached the lower limit with all concentration levels.

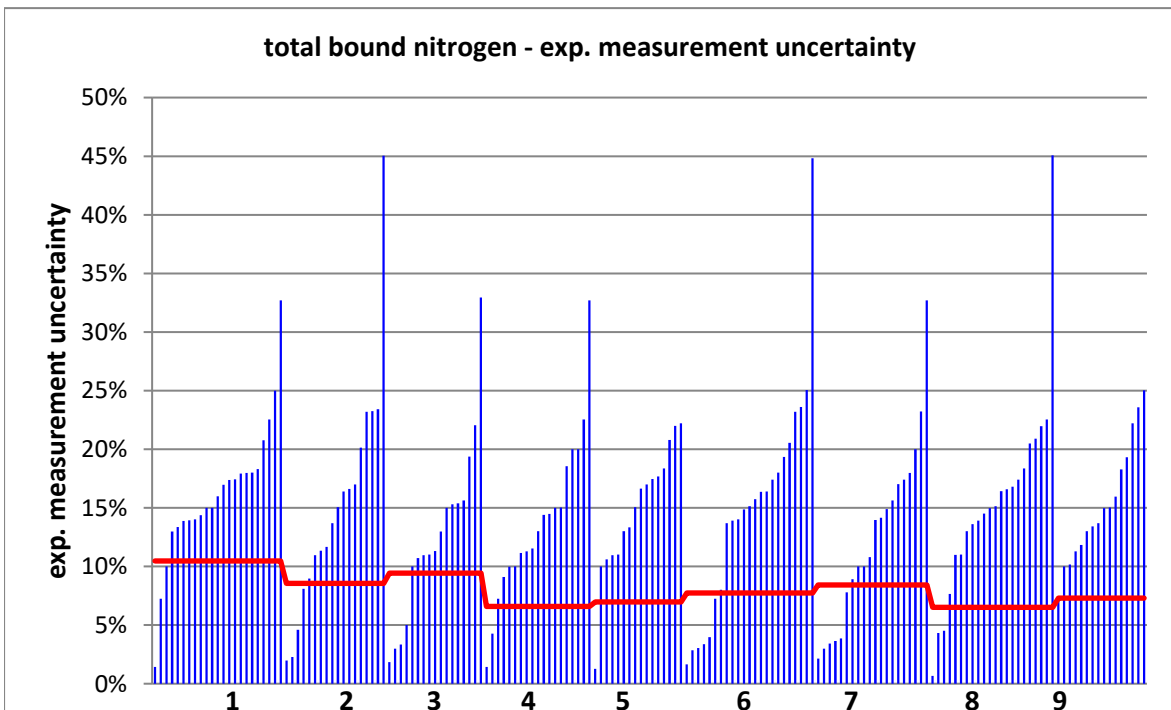
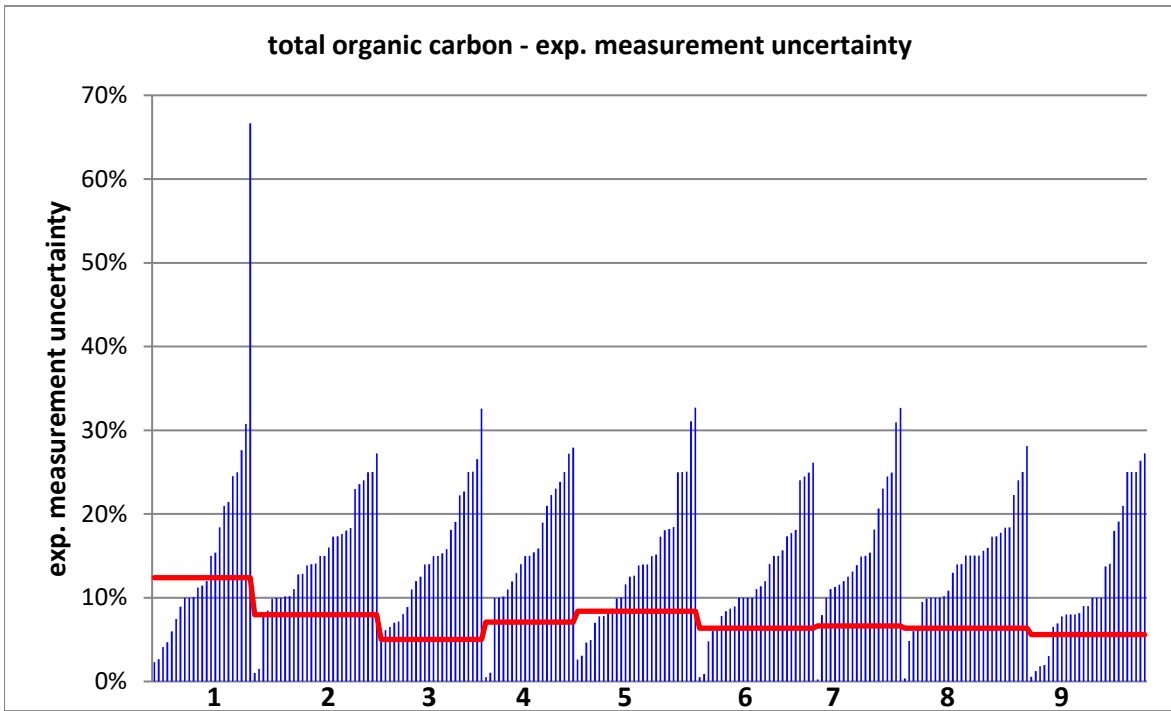


Method specific evaluation



The differences between the methods were not significant.

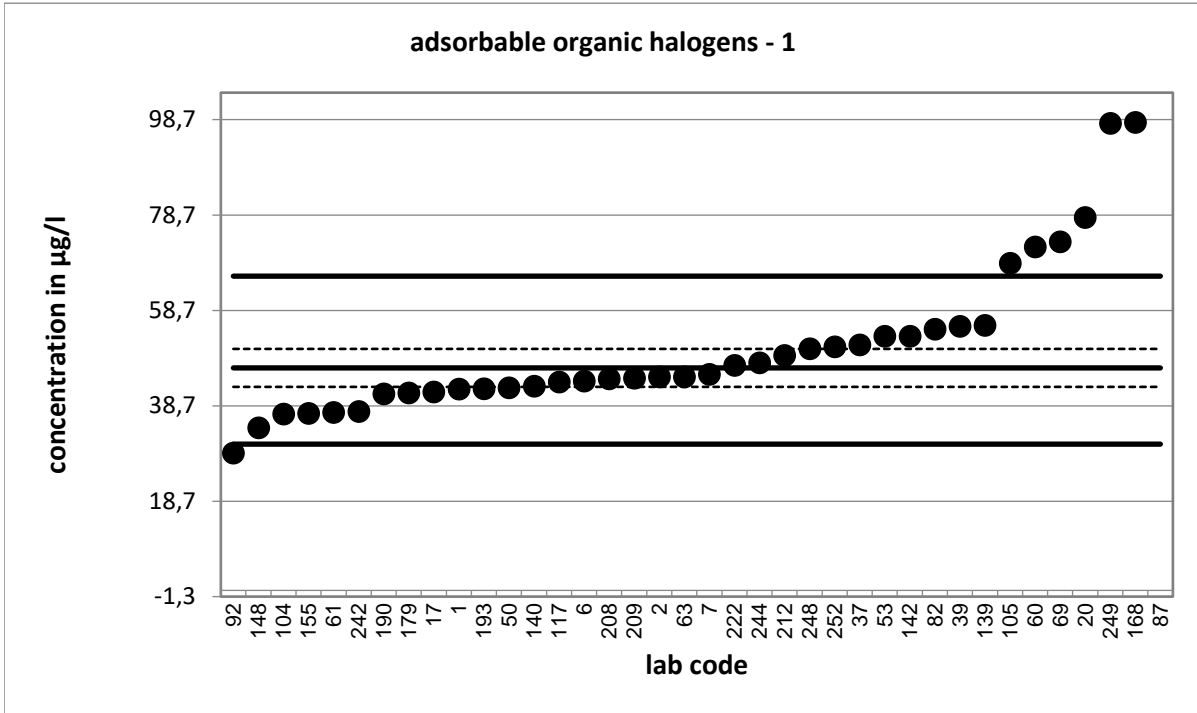




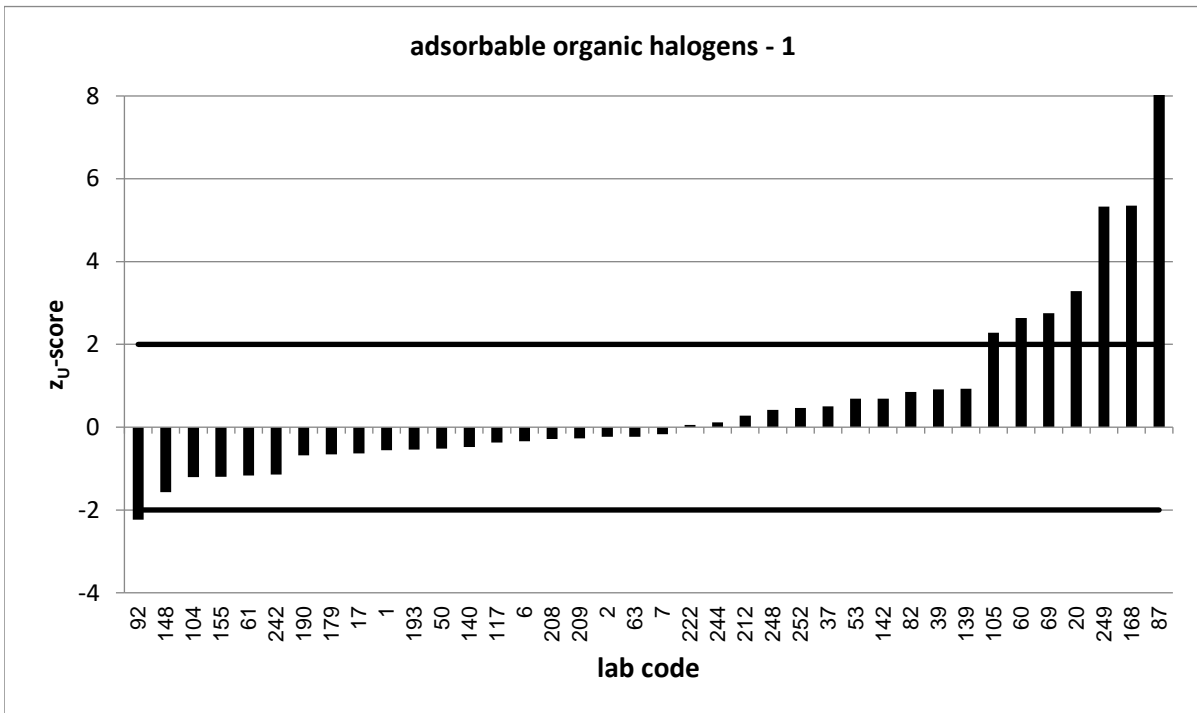
PT 10/23		adsorbable organic halogens - 1			
assigned value [ $\mu\text{g/l}$ ]*		46,64 $\pm$ 3,98			
upper tolerance limit [ $\mu\text{g/l}$ ]		65,87			
lower tolerance limit [ $\mu\text{g/l}$ ]		30,66			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
1	42,2	6,8	-1,1	-0,6	s
2	44,8			-0,2	s
6	43,9			-0,3	s
7	45,3	5,6	-0,4	-0,2	s
17	41,6	8,95	-1,0	-0,6	s
20	78,21			3,3	u
37	51,5	9,8	0,9	0,5	s
39	55,4	13,5	1,2	0,9	s
50	42,5	4,37	-1,4	-0,5	s
53	53,3			0,7	s
60	72	11,5	4,2	2,6	q
61	37,3			-1,2	s
63	44,8	9	-0,4	-0,2	s
69	73,1	13	3,9	2,8	q
82	54,8	9,3	1,6	0,8	s
87	534			50,7	u
92	28,8	4,5	-5,9	-2,2	q
104	37	6,7	-2,5	-1,2	s
105	68,6	10,7	3,8	2,3	q
117	43,7	4,74	-1,0	-0,4	s
139	55,6			0,9	s
140	42,8			-0,5	s
142	53,3	11,4	1,1	0,7	s
148	34,1			-1,6	s
155	37,1	12	-1,5	-1,2	s
168	98,1			5,4	u
179	41,4			-0,7	s
190	41,2	6,6	-1,4	-0,7	s
193	42,3	10,6	-0,8	-0,5	s
208	44,39	11,1	-0,4	-0,3	s
209	44,5	1,78	-1,0	-0,3	s
212	49,3			0,3	s
222	47,2	17	0,1	0,1	s
242	37,5	6	-2,5	-1,1	s
244	47,75			0,1	s
248	50,7	10	0,8	0,4	s
249	97,9	21,9	4,6	5,3	u
252	51,1	8,58	0,9	0,5	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

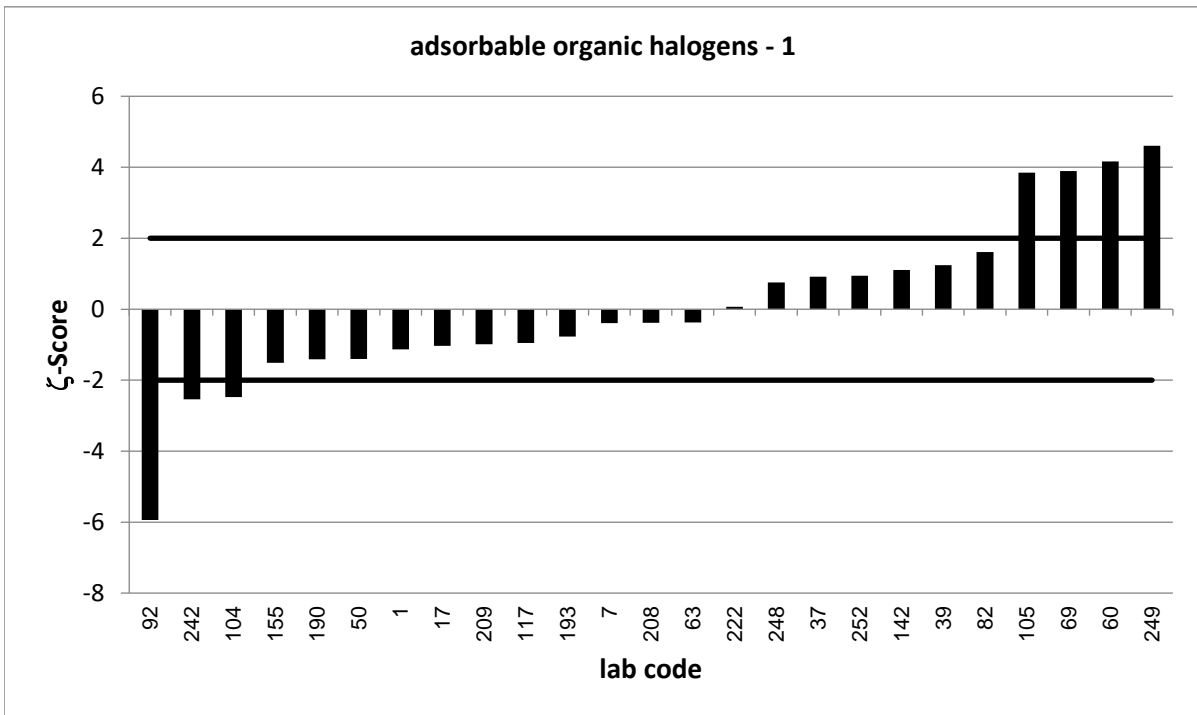
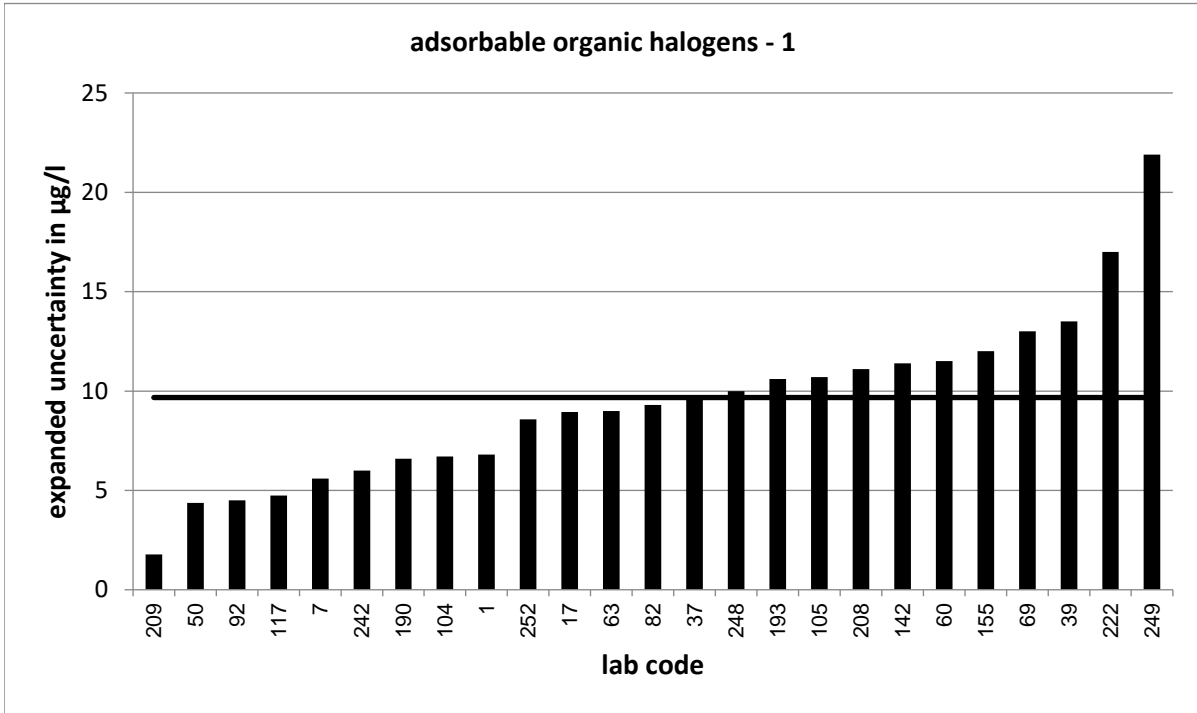


Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.

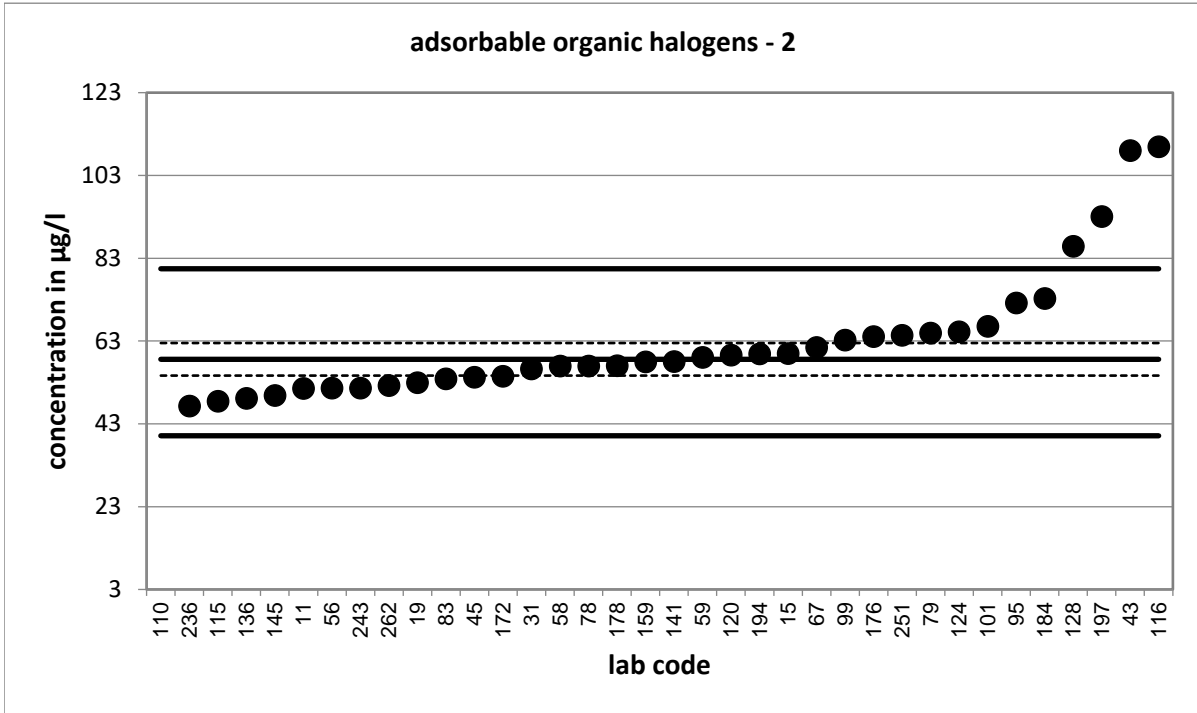




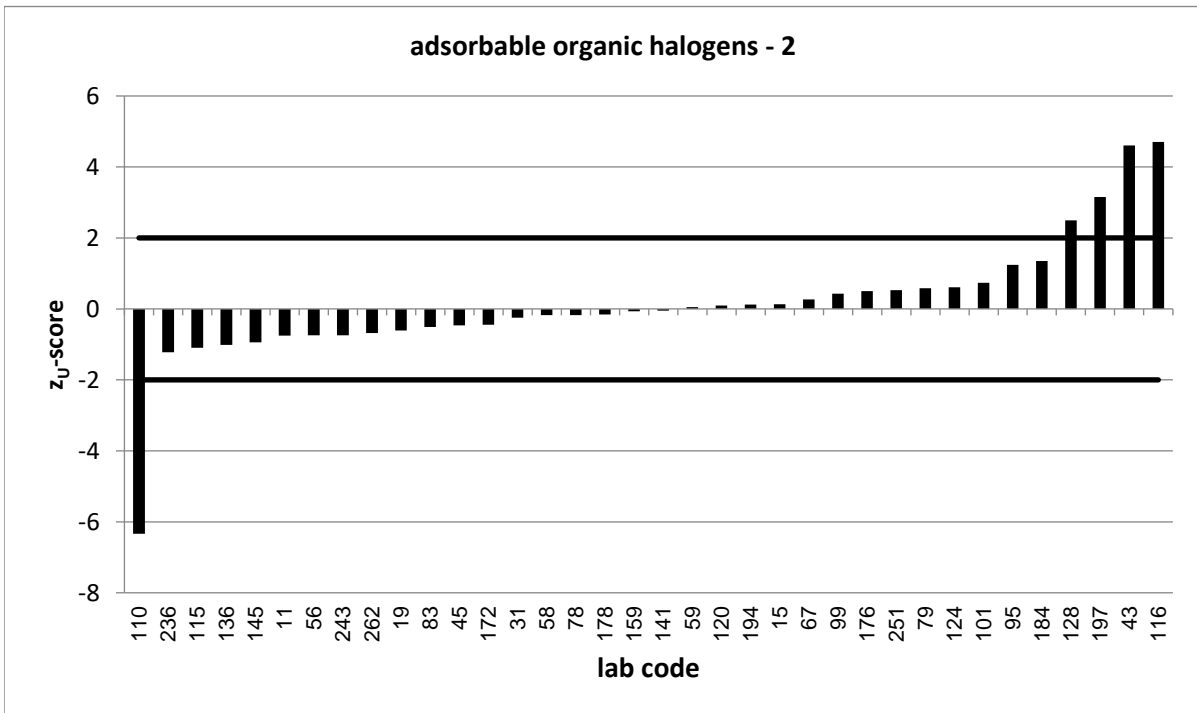
PT 10/23		adsorbable organic halogens - 2			
assigned value [ $\mu\text{g/l}$ ]*		58,59 $\pm$ 3,93			
upper tolerance limit [ $\mu\text{g/l}$ ]		80,46			
lower tolerance limit [ $\mu\text{g/l}$ ]		40,12			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
11	51,6	9,75	-1,3	-0,8	s
15	60			0,1	s
19	53	5,3	-1,7	-0,6	s
31	56,3			-0,2	s
43	109			4,6	u
45	54,3	13,5	-0,6	-0,5	s
56	51,7	15,8	-0,8	-0,7	s
58	57			-0,2	s
59	59,1	4,92	0,2	0,0	s
67	61,5	5,5	0,9	0,3	s
78	57			-0,2	s
79	65	6	1,8	0,6	s
83	53,9	11,1	-0,8	-0,5	s
95	72,2			1,2	s
99	63,3			0,4	s
101	66,6			0,7	s
110	0,0515			-6,3	u
115	48,5	5	-3,2	-1,1	s
116	110	25	4,1	4,7	u
120	59,6	7,4	0,2	0,1	s
124	65,3	11,4	1,1	0,6	s
128	85,9	12,03	4,3	2,5	q
136	49,2			-1,0	s
141	58,1	19,8	0,0	-0,1	s
145	49,9	7,5	-2,1	-0,9	s
159	58			-0,1	s
172	54,5			-0,4	s
176	64,1	9,2	1,1	0,5	s
178	57,1			-0,2	s
184	73,3			1,3	s
194	59,9	3	0,5	0,1	s
197	93,1	16,1	4,2	3,2	u
236	47,3	3,56	-4,3	-1,2	s
243	51,7	12,9	-1,0	-0,7	s
251	64,4	14,87	0,8	0,5	s
262	52,3	6,8	-1,6	-0,7	s

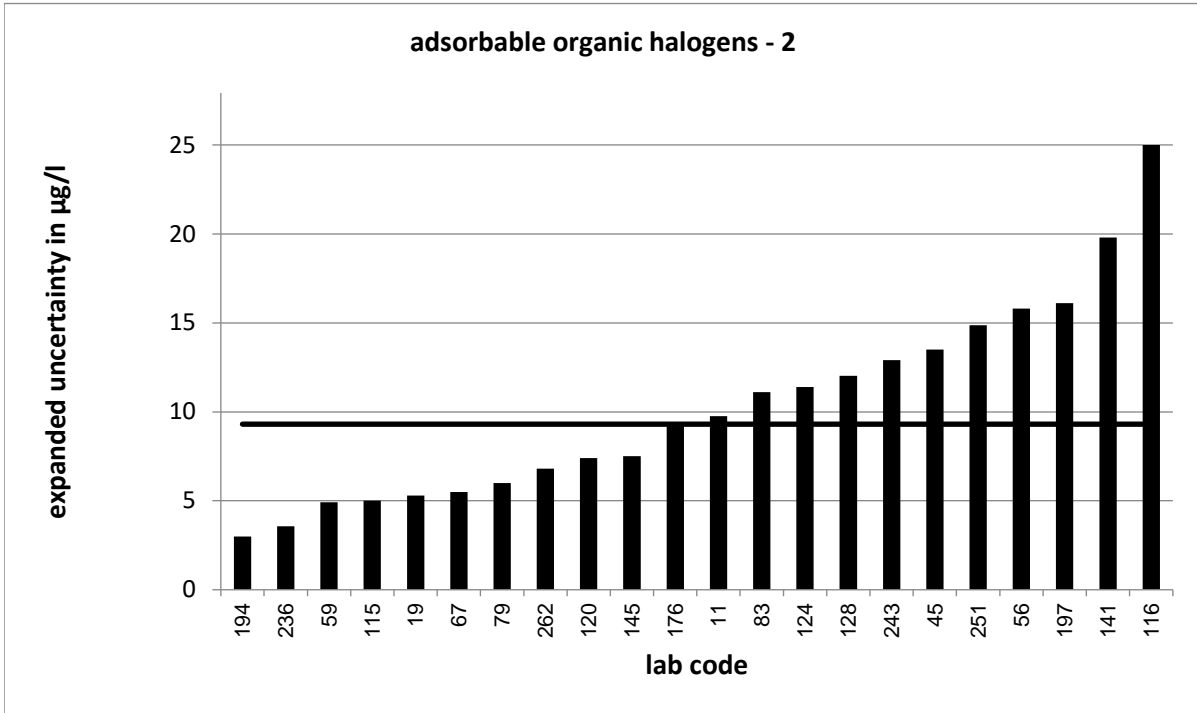
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

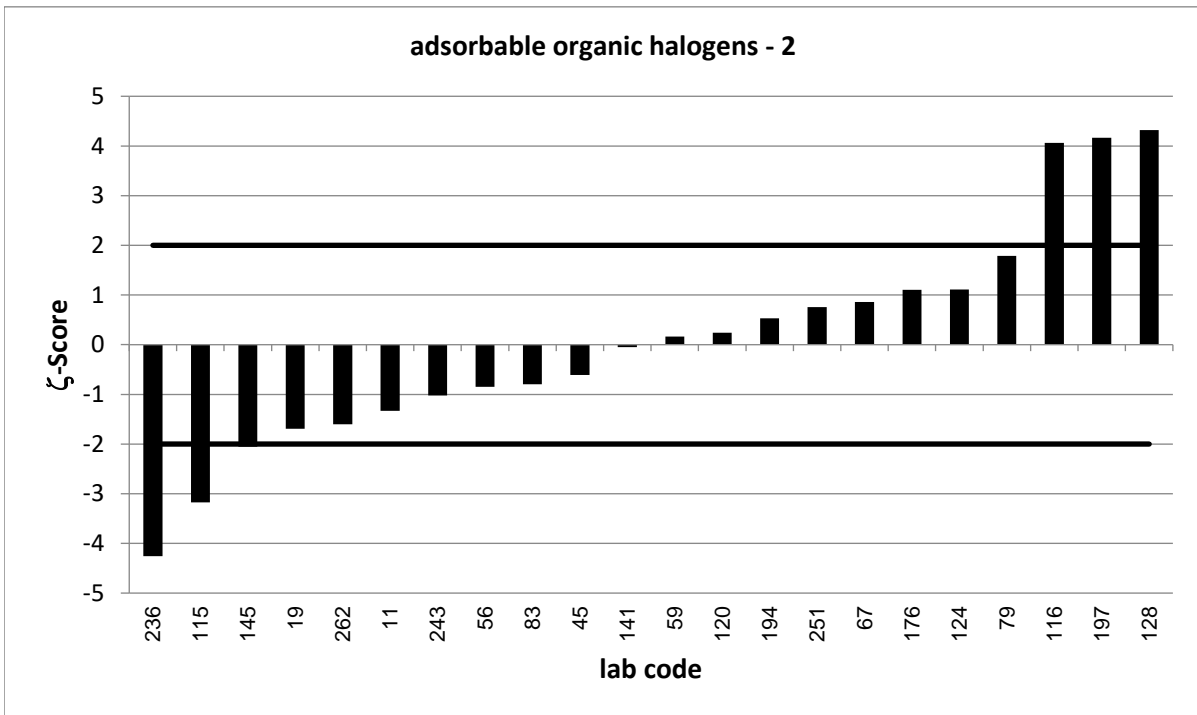


Strongly deviating values are not shown in the diagram.





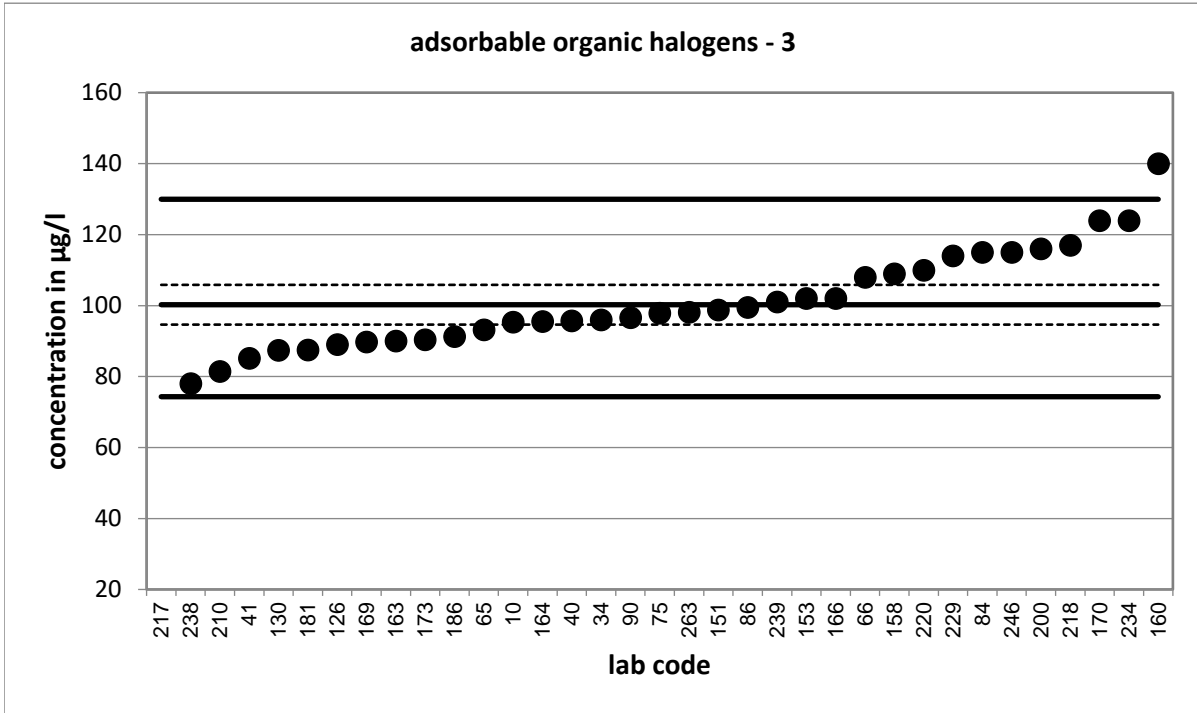
Strongly deviating values are not correctly shown in the diagram.



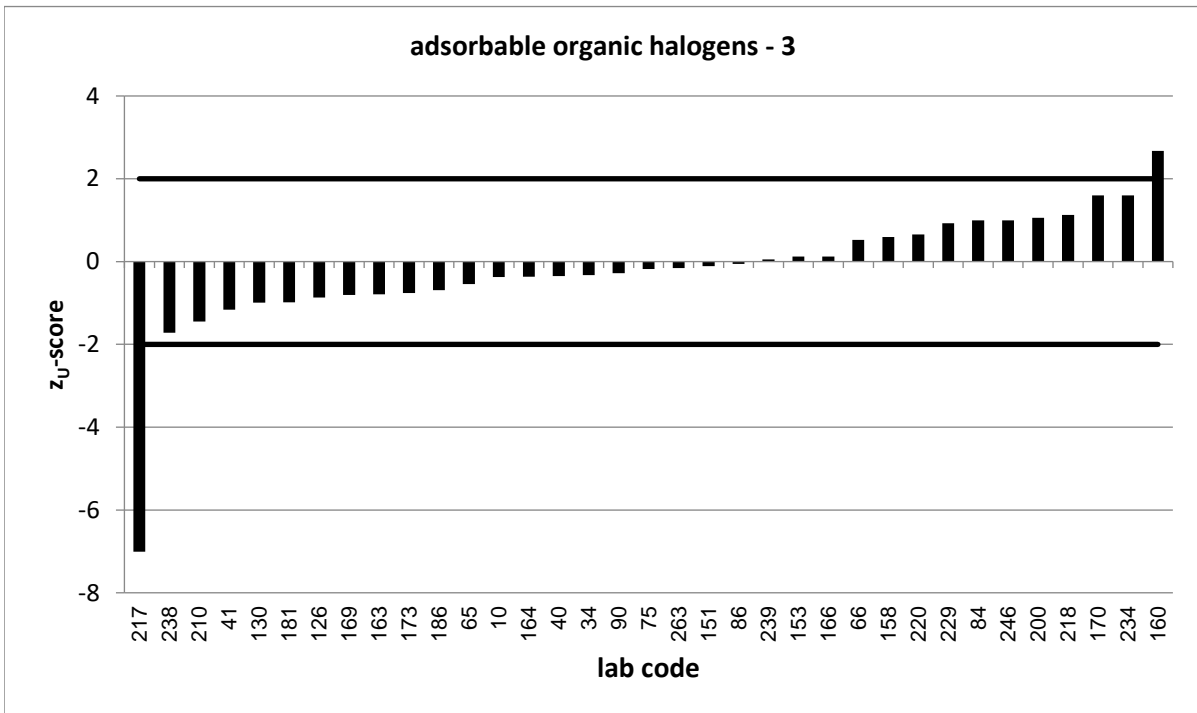
PT 10/23		adsorbable organic halogens - 3			
assigned value [ $\mu\text{g/l}$ ]*		100,2 $\pm$ 5,6			
upper tolerance limit [ $\mu\text{g/l}$ ]		130			
lower tolerance limit [ $\mu\text{g/l}$ ]		74,32			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
10	95,4	19,1	-0,5	-0,4	s
34	96			-0,3	s
40	95,7	27,9	-0,3	-0,4	s
41	85,2			-1,2	s
65	93,2			-0,5	s
66	108	6	1,9	0,5	s
75	97,9			-0,2	s
84	115	17	1,6	1,0	s
86	99,5	29,85	0,0	-0,1	s
90	96,6	12,5	-0,5	-0,3	s
126	89	15	-1,4	-0,9	s
130	87,4	14	-1,7	-1,0	s
151	98,8	19,9	-0,1	-0,1	s
153	102	10,2	0,3	0,1	s
158	109			0,6	s
160	140			2,7	q
163	90	16,2	-1,2	-0,8	s
164	95,5	34	-0,3	-0,4	s
166	102	49	0,1	0,1	s
169	89,8	15	-1,3	-0,8	s
170	124	12,4	3,5	1,6	s
173	90,4	26	-0,7	-0,8	s
181	87,5	13,1	-1,8	-1,0	s
186	91,3	18,2	-0,9	-0,7	s
200	116			1,1	s
210	81,5			-1,4	s
217	9,4			-7,0	u
218	117			1,1	s
220	110			0,7	s
229	114	13	1,9	0,9	s
234	124			1,6	s
238	78	5	-5,9	-1,7	s
239	101			0,1	s
246	115	34,5	0,8	1,0	s
263	98,2	2,01	-0,7	-0,2	s

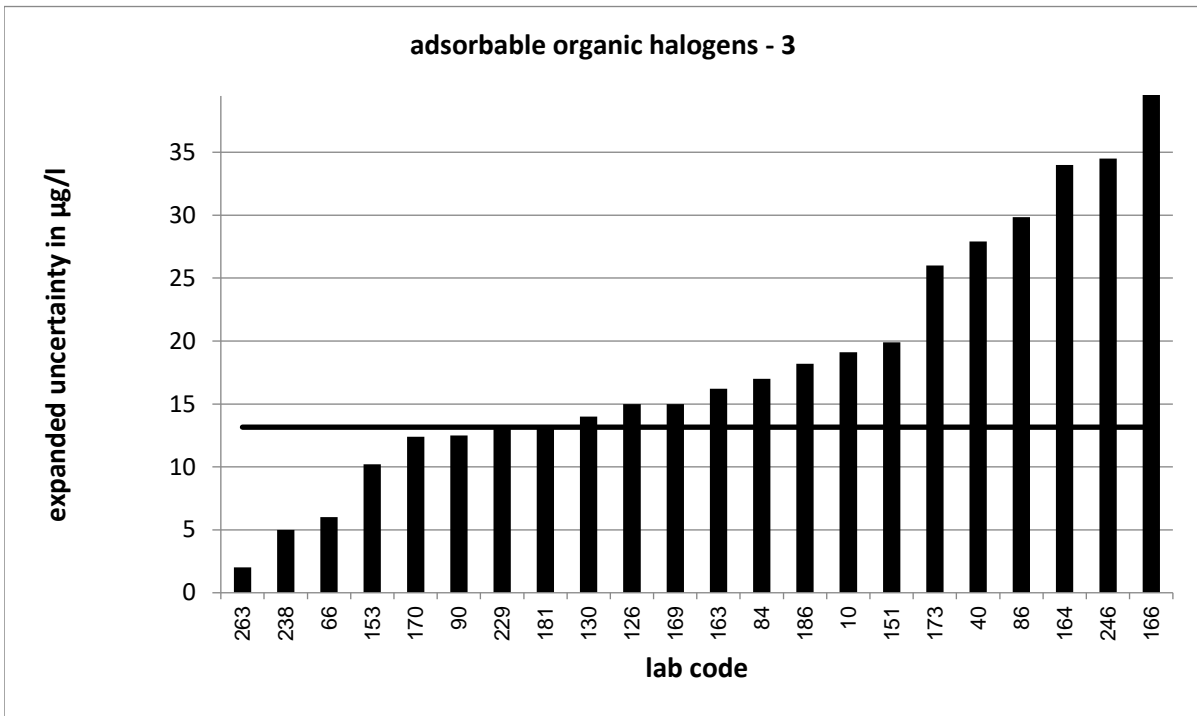
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

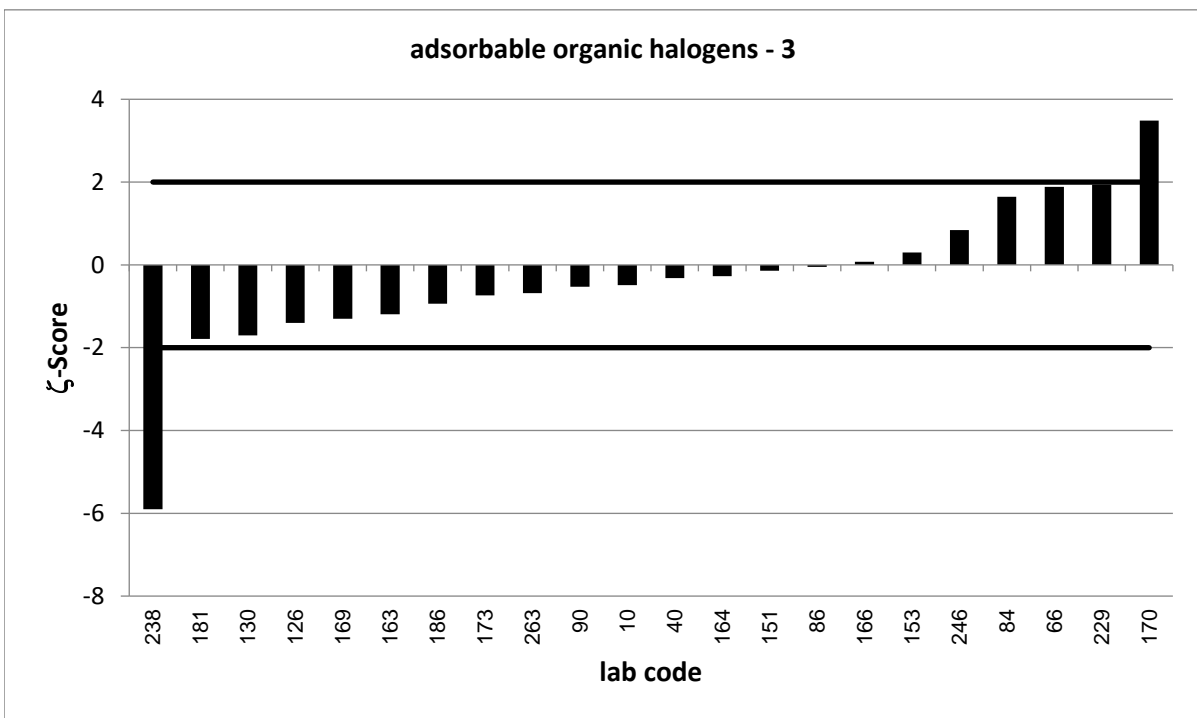


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

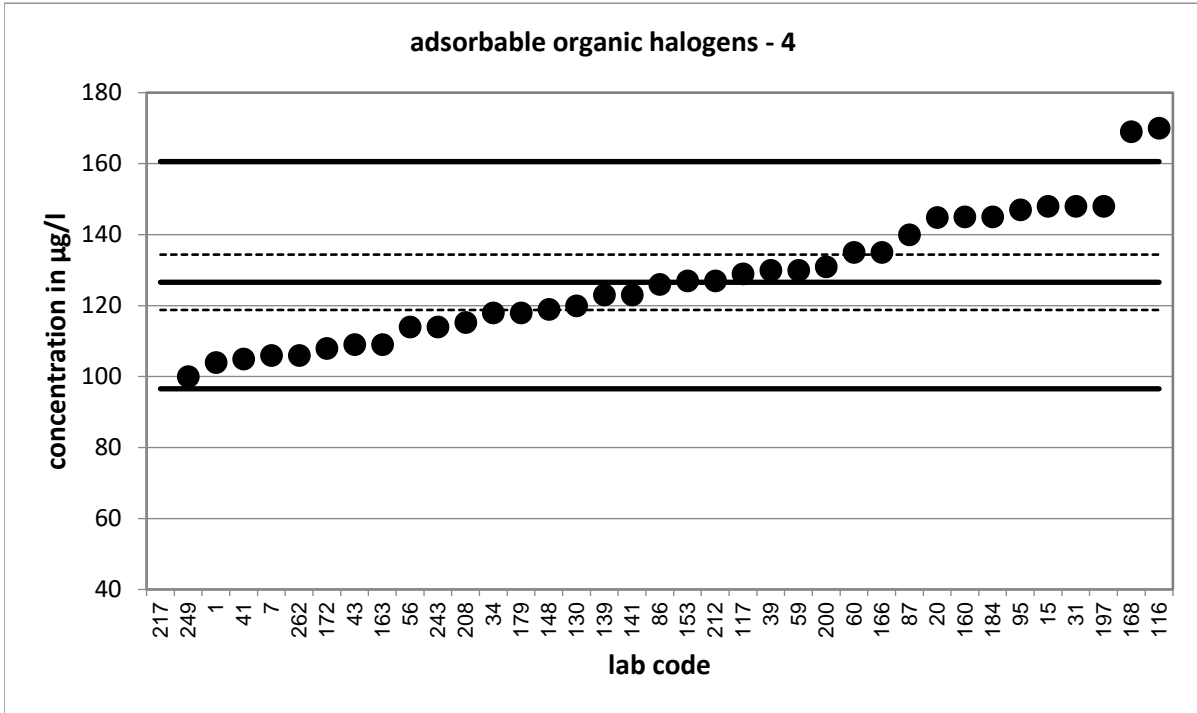


PT 10/23		adsorbable organic halogens - 4			
assigned value [ $\mu\text{g/l}$ ]*		126,6 $\pm$ 7,8			
upper tolerance limit [ $\mu\text{g/l}$ ]		160,6			
lower tolerance limit [ $\mu\text{g/l}$ ]		96,55			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
1	104	17	-2,4	-1,5	s
7	106	8,8	-3,5	-1,4	s
15	148			1,3	s
20	144,89			1,1	s
31	148			1,3	s
34	118			-0,6	s
39	130	31,3	0,2	0,2	s
41	105			-1,4	s
43	109			-1,2	s
56	114	16	-1,4	-0,8	s
59	130	10,8	0,5	0,2	s
60	135	21,6	0,7	0,5	s
86	126	37,69	0,0	0,0	s
87	140			0,8	s
95	147			1,2	s
116	170	40	2,1	2,6	q
117	129	14	0,3	0,1	s
130	120	19	-0,6	-0,4	s
139	123			-0,2	s
141	123	41,8	-0,2	-0,2	s
148	119			-0,5	s
153	127	12,7	0,1	0,0	s
160	145			1,1	s
163	109	19,6	-1,7	-1,2	s
166	135	22	0,7	0,5	s
168	169			2,5	q
172	108			-1,2	s
179	118			-0,6	s
184	145			1,1	s
197	148	25,6	1,6	1,3	s
200	131			0,3	s
208	115,23	28,81	-0,8	-0,8	s
212	127			0,0	s
217	10,9			-7,7	u
243	114	28,5	-0,9	-0,8	s
249	100	22,5	-2,2	-1,8	s
262	106	13,8	-2,6	-1,4	s

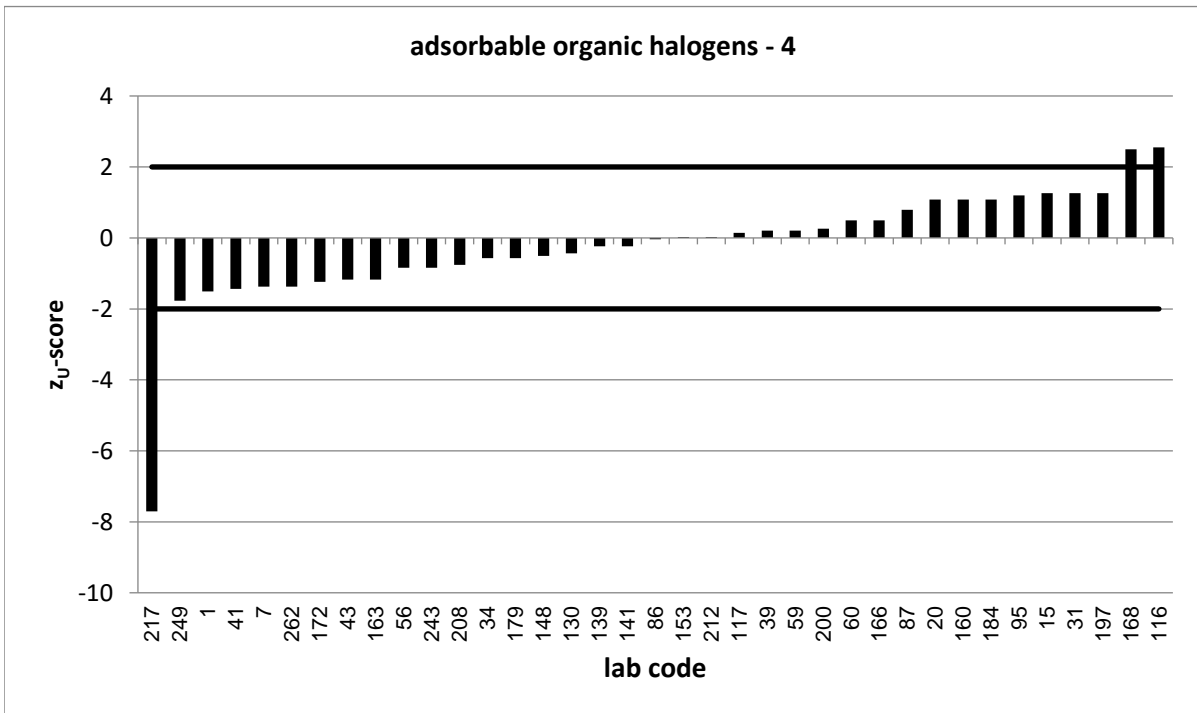
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

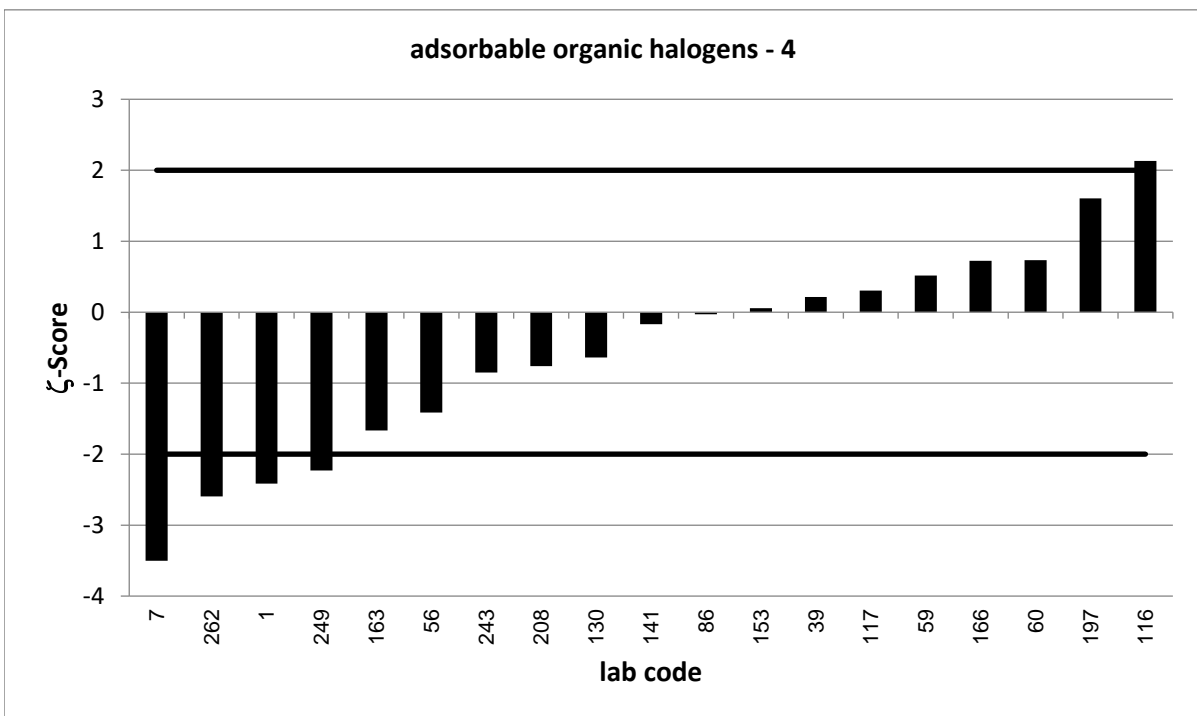
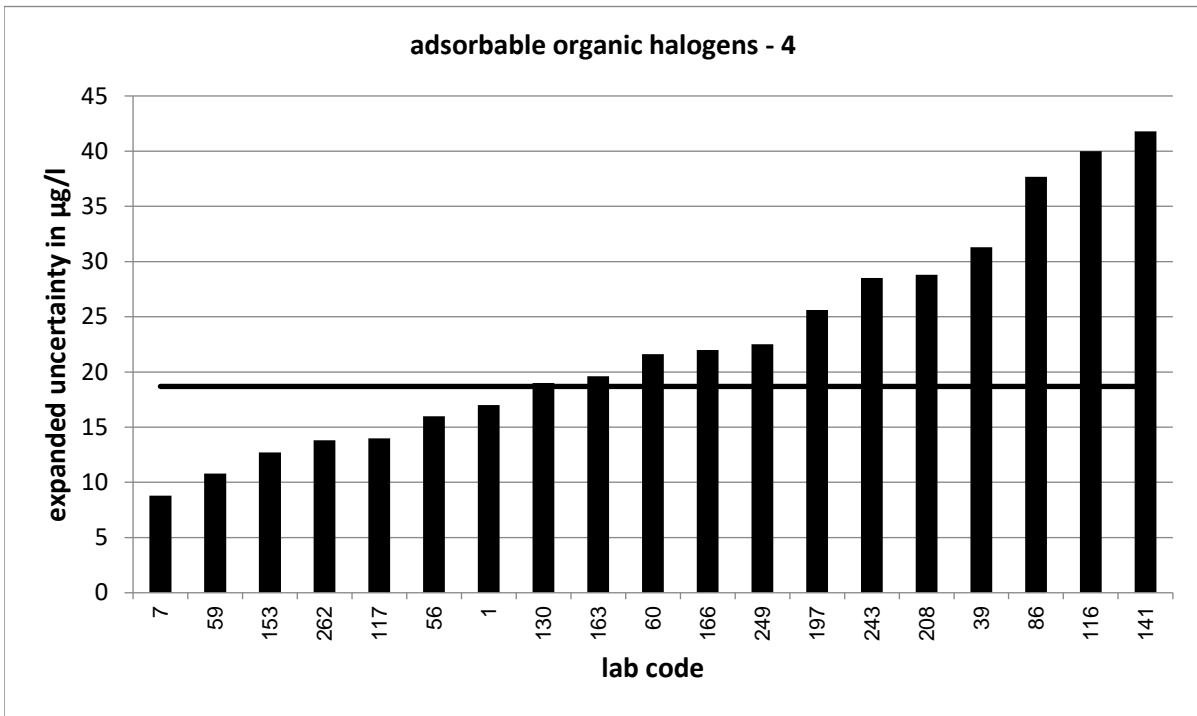
\*\* s = satisfactory, q = questionable, u = unsatisfactory





Strongly deviating values are not shown in the diagram.

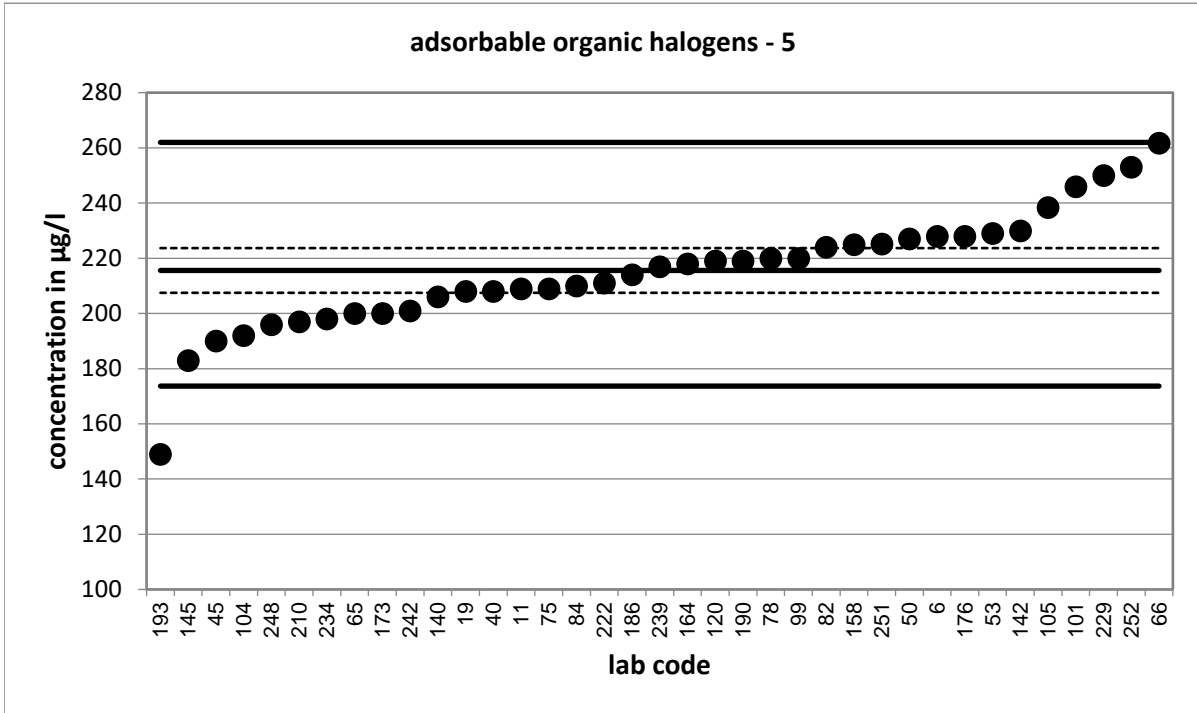




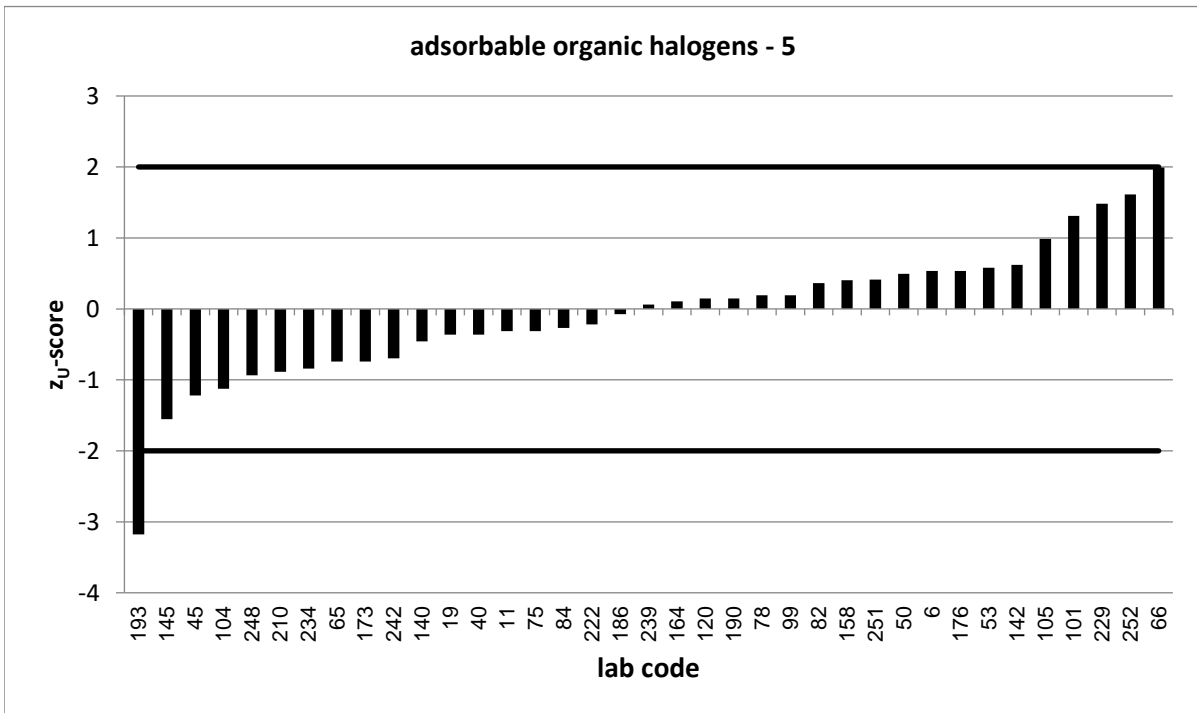
PT 10/23		adsorbable organic halogens - 5			
assigned value [ $\mu\text{g/l}$ ]*		215,6 $\pm$ 8,1			
upper tolerance limit [ $\mu\text{g/l}$ ]		262			
lower tolerance limit [ $\mu\text{g/l}$ ]		173,7			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
6	228			0,5	s
11	209	0,395	-1,6	-0,3	s
19	208	21	-0,7	-0,4	s
40	208	60,5	-0,2	-0,4	s
45	190	45,1	-1,1	-1,2	s
50	227	23,3	0,9	0,5	s
53	229			0,6	s
65	200			-0,7	s
66	261,75	13,1	6,0	2,0	s
75	209			-0,3	s
78	220			0,2	s
82	224	8,9	1,4	0,4	s
84	210	30	-0,4	-0,3	s
99	220			0,2	s
101	246			1,3	s
104	192	35	-1,3	-1,1	s
105	238,4	37,2	1,2	1,0	s
120	219	27,1	0,2	0,1	s
140	206			-0,5	s
142	230	49	0,6	0,6	s
145	183	27,5	-2,3	-1,6	s
158	225			0,4	s
164	218	56	0,1	0,1	s
173	200	58	-0,5	-0,7	s
176	228	33	0,7	0,5	s
186	214	42,8	-0,1	-0,1	s
190	219	35	0,2	0,1	s
193	149	37,3	-3,5	-3,2	u
210	197			-0,9	s
222	211	74	-0,1	-0,2	s
229	250	28	2,4	1,5	s
234	198			-0,8	s
239	217			0,1	s
242	201	32,2	-0,9	-0,7	s
248	196	40	-1,0	-0,9	s
251	225,2	52,02	0,4	0,4	s
252	253	42,5	1,7	1,6	s

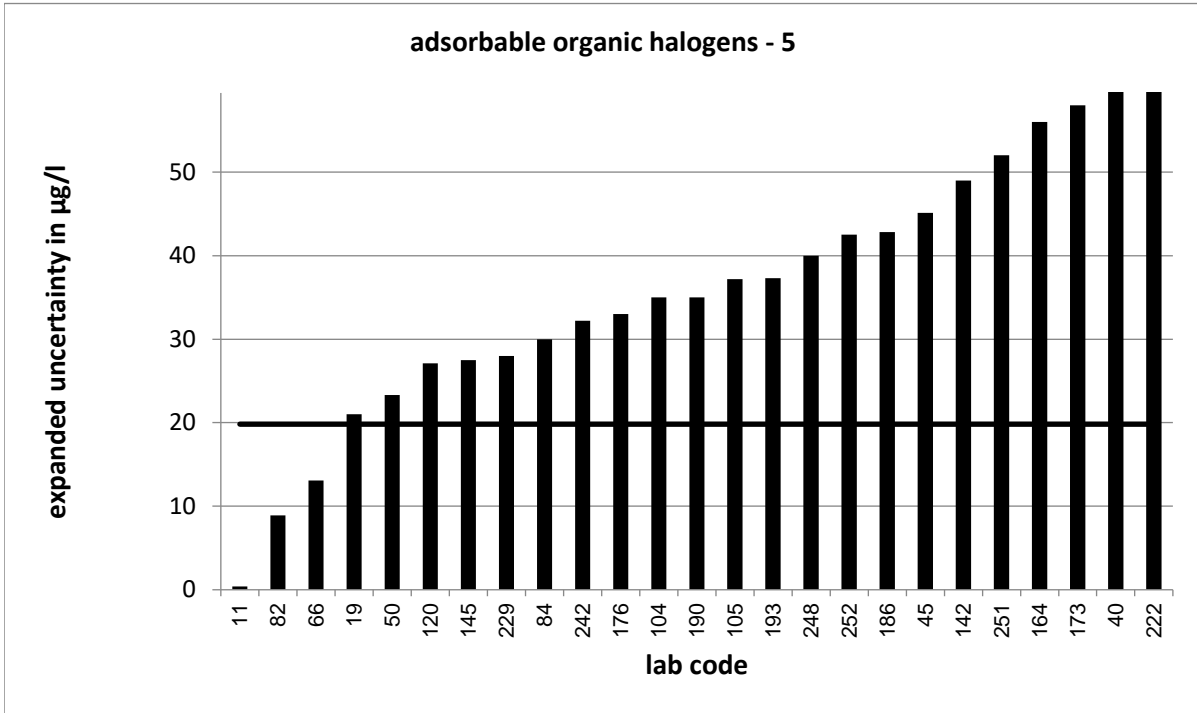
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

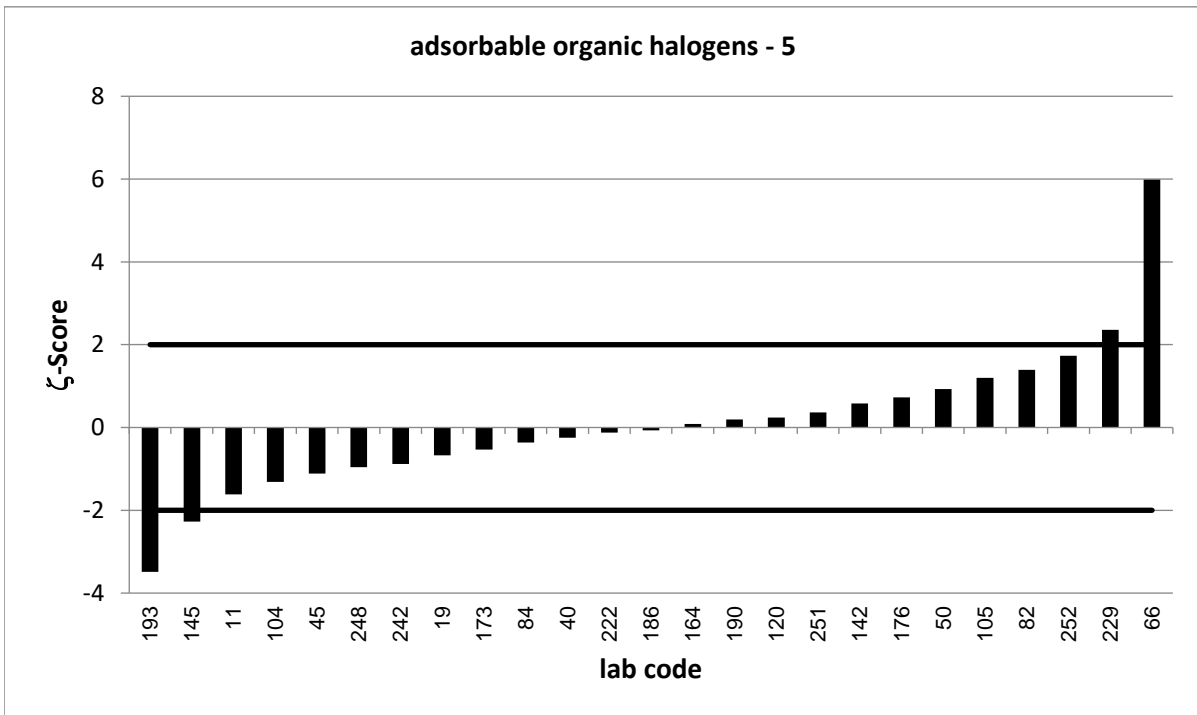


Strongly deviating values are not shown in the diagram.





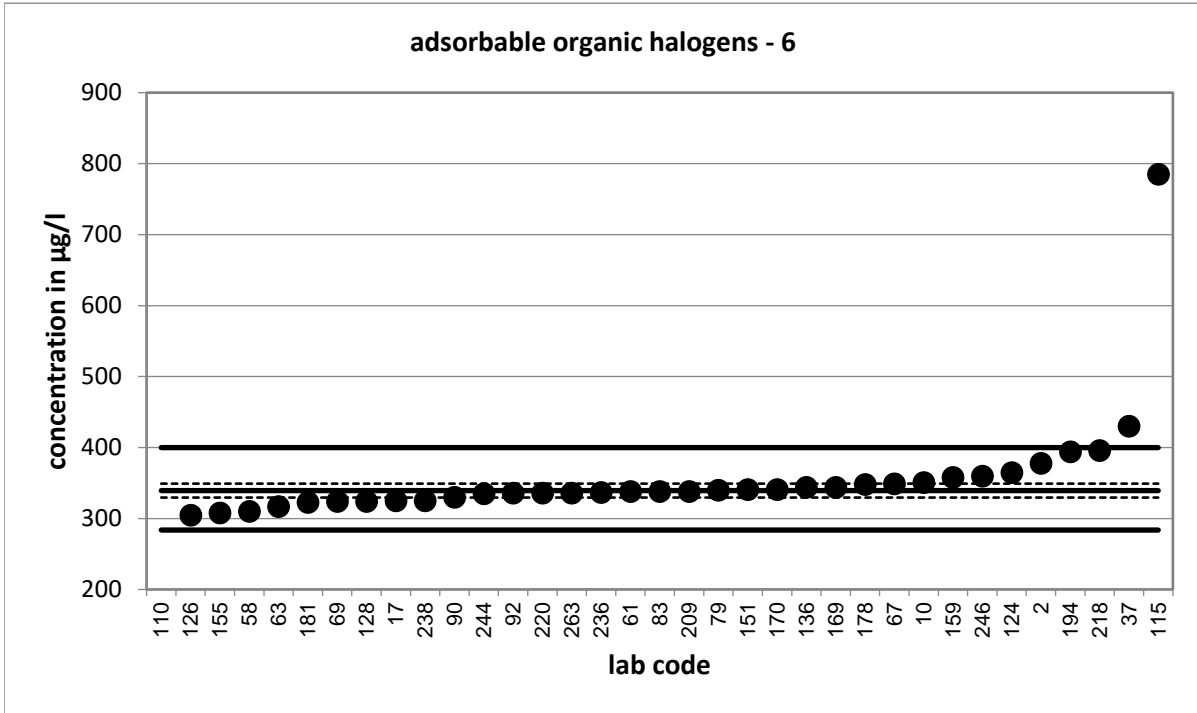
Strongly deviating values are not correctly shown in the diagram.



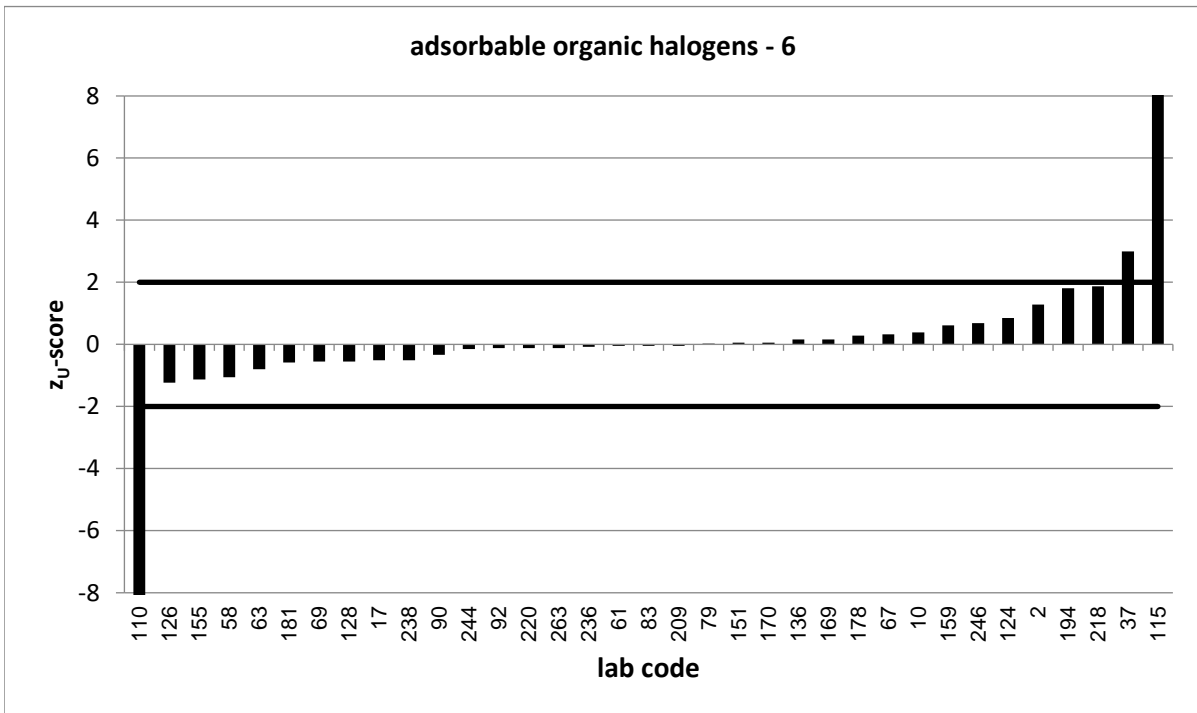
PT 10/23		adsorbable organic halogens - 6			
assigned value [ $\mu\text{g/l}$ ]*		339,3 $\pm$ 9,8			
upper tolerance limit [ $\mu\text{g/l}$ ]		399,9			
lower tolerance limit [ $\mu\text{g/l}$ ]		283,7			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
2	378			1,3	s
10	351	70,2	0,3	0,4	s
17	325	69,9	-0,4	-0,5	s
37	430	81	2,2	3,0	u
58	310			-1,1	s
61	338			0,0	s
63	317	63,5	-0,7	-0,8	s
67	349	32	0,6	0,3	s
69	324	58	-0,5	-0,6	s
79	340	6	0,1	0,0	s
83	338	70	0,0	0,0	s
90	330	42,9	-0,4	-0,3	s
92	336	52	-0,1	-0,1	s
110	0,346			-12,2	u
115	785	80,9	10,9	14,7	u
124	365	63,9	0,8	0,8	s
126	305	30	-2,2	-1,2	s
128	324	45,36	-0,7	-0,6	s
136	344			0,2	s
151	341	68,4	0,0	0,1	s
155	308	100	-0,6	-1,1	s
159	358			0,6	s
169	344	60	0,2	0,2	s
170	341	34,1	0,1	0,1	s
178	348			0,3	s
181	323	48,5	-0,7	-0,6	s
194	394	4	10,4	1,8	s
209	338	13,5	-0,2	0,0	s
218	396			1,9	s
220	336			-0,1	s
236	337	25,4	-0,2	-0,1	s
238	325	5	-2,6	-0,5	s
244	335			-0,2	s
246	360	108	0,4	0,7	s
263	336	6,88	-0,6	-0,1	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

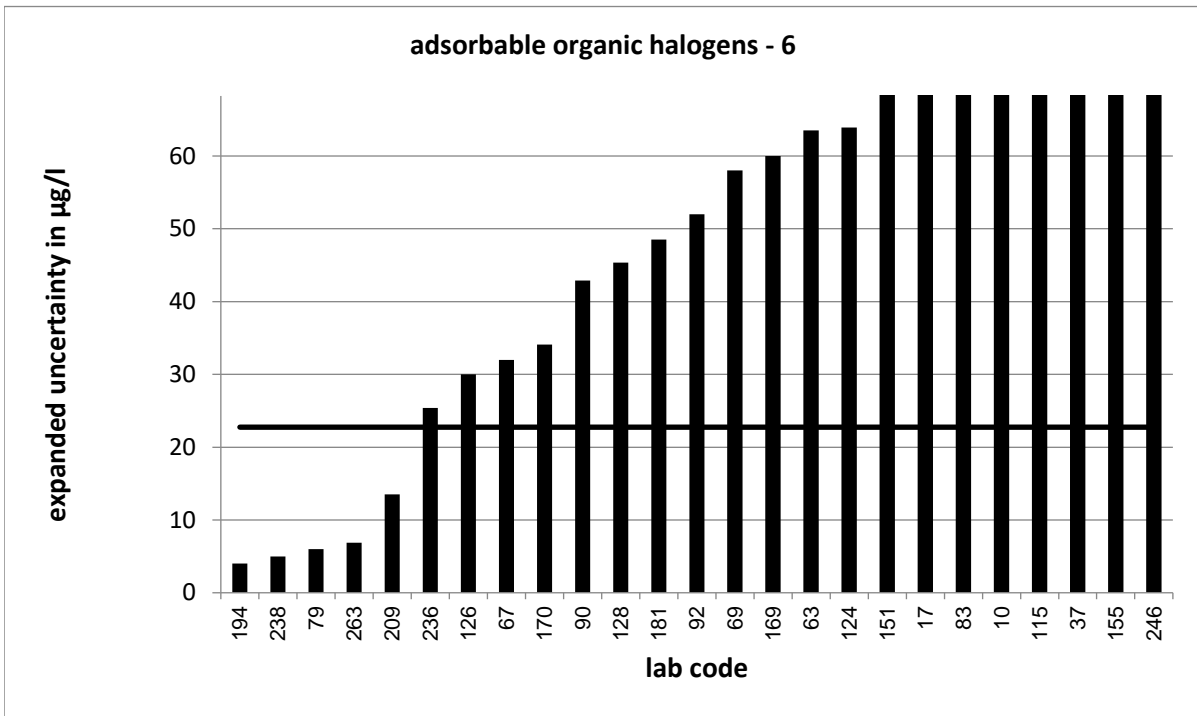
\*\* s = satisfactory, q = questionable, u = unsatisfactory



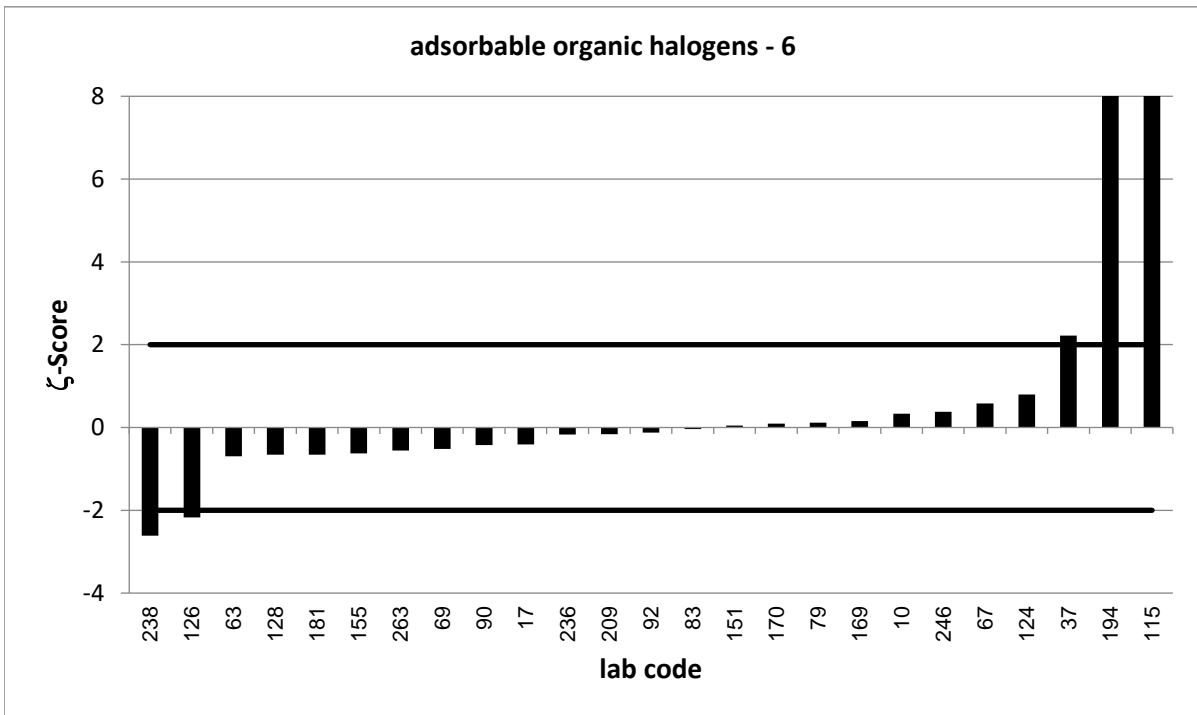
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



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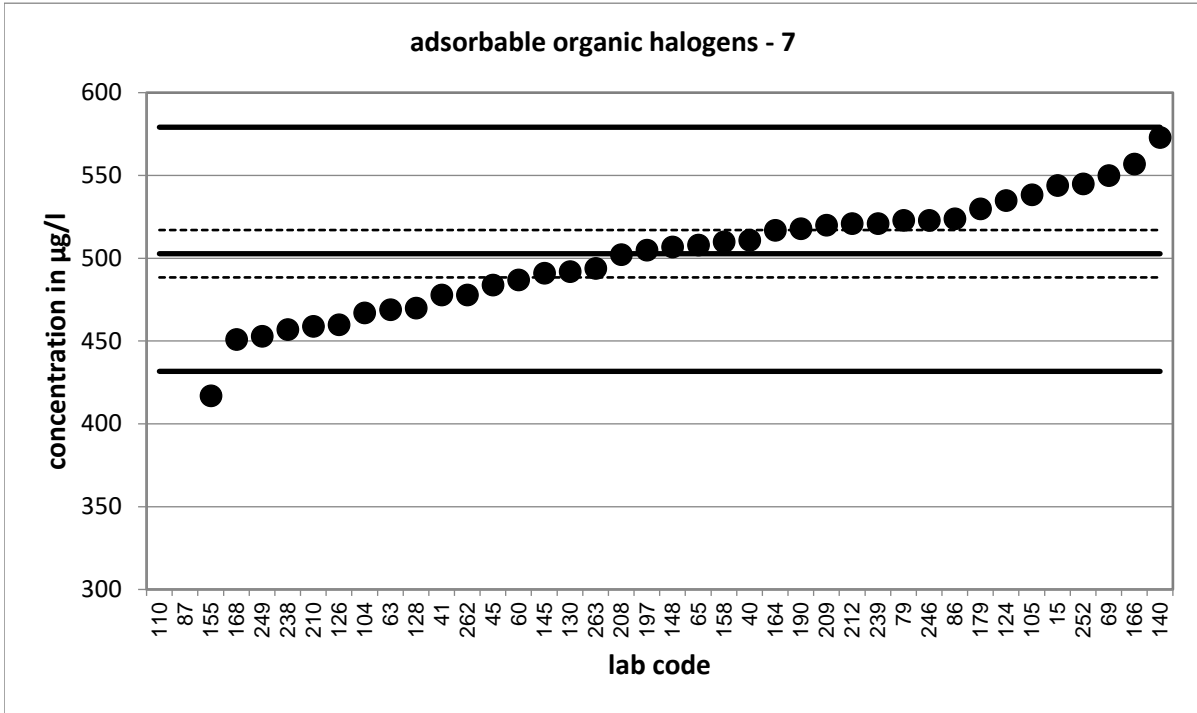
Strongly deviating values are not correctly shown in the diagram.



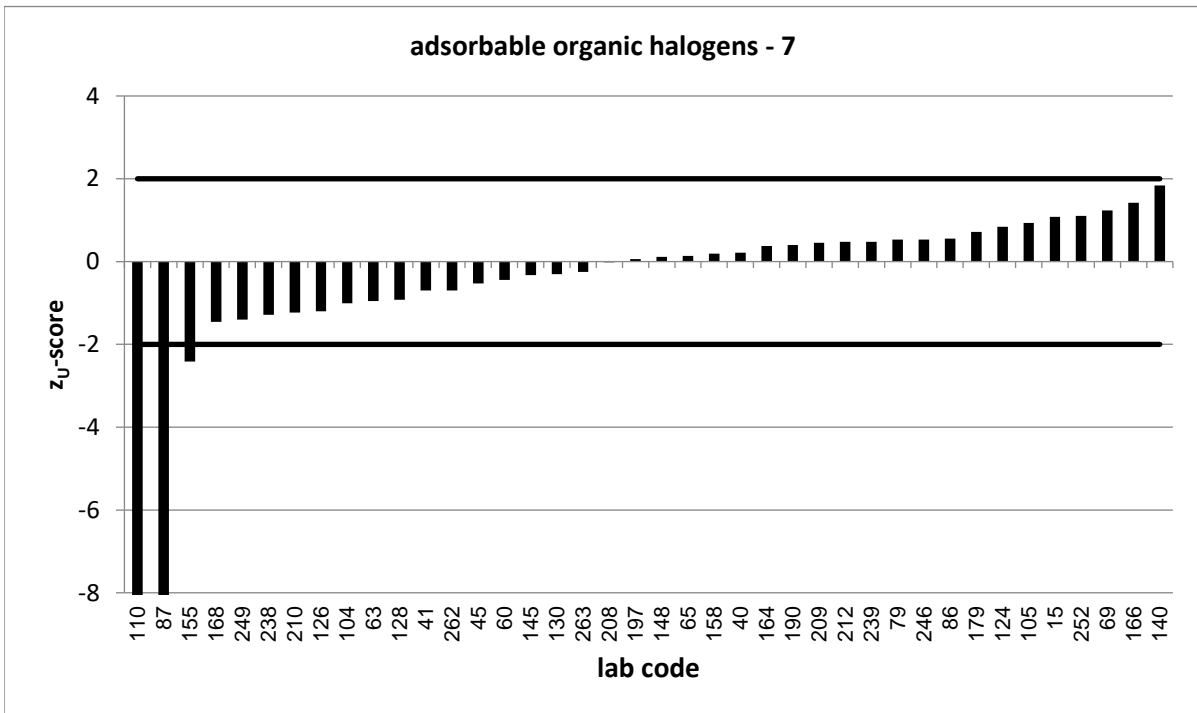
PT 10/23		adsorbable organic halogens - 7			
assigned value [ $\mu\text{g/l}$ ]*		502,7 $\pm$ 14,3			
upper tolerance limit [ $\mu\text{g/l}$ ]		579,1			
lower tolerance limit [ $\mu\text{g/l}$ ]		431,7			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
15	544			1,1	s
40	511	149	0,1	0,2	s
41	478			-0,7	s
45	484	115	-0,3	-0,5	s
60	487	77,9	-0,4	-0,4	s
63	469	93,8	-0,7	-1,0	s
65	508			0,1	s
69	550	99	0,9	1,2	s
79	523	6	2,6	0,5	s
86	524	157,3	0,3	0,6	s
87	50,1			-12,7	u
104	467	85	-0,8	-1,0	s
105	538,5	84	0,8	0,9	s
110	0,453			-14,1	u
124	535	93,6	0,7	0,8	s
126	460	30	-2,6	-1,2	s
128	470	65,8	-1,0	-0,9	s
130	492	74	-0,3	-0,3	s
140	573			1,8	s
145	491	73,7	-0,3	-0,3	s
148	507			0,1	s
155	417	136	-1,3	-2,4	q
158	510			0,2	s
164	517	58	0,5	0,4	s
166	557	89	1,2	1,4	s
168	451			-1,5	s
179	530			0,7	s
190	518	83	0,4	0,4	s
197	505	87,4	0,1	0,1	s
208	502,2	125,6	0,0	0,0	s
209	520	20,8	1,4	0,5	s
210	459			-1,2	s
212	521			0,5	s
238	457	5	-6,0	-1,3	s
239	521			0,5	s
246	523	157	0,3	0,5	s
249	453	102	-1,0	-1,4	s
252	545	91,6	0,9	1,1	s
262	478	62,1	-0,8	-0,7	s
263	494	10,1	-1,0	-0,2	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

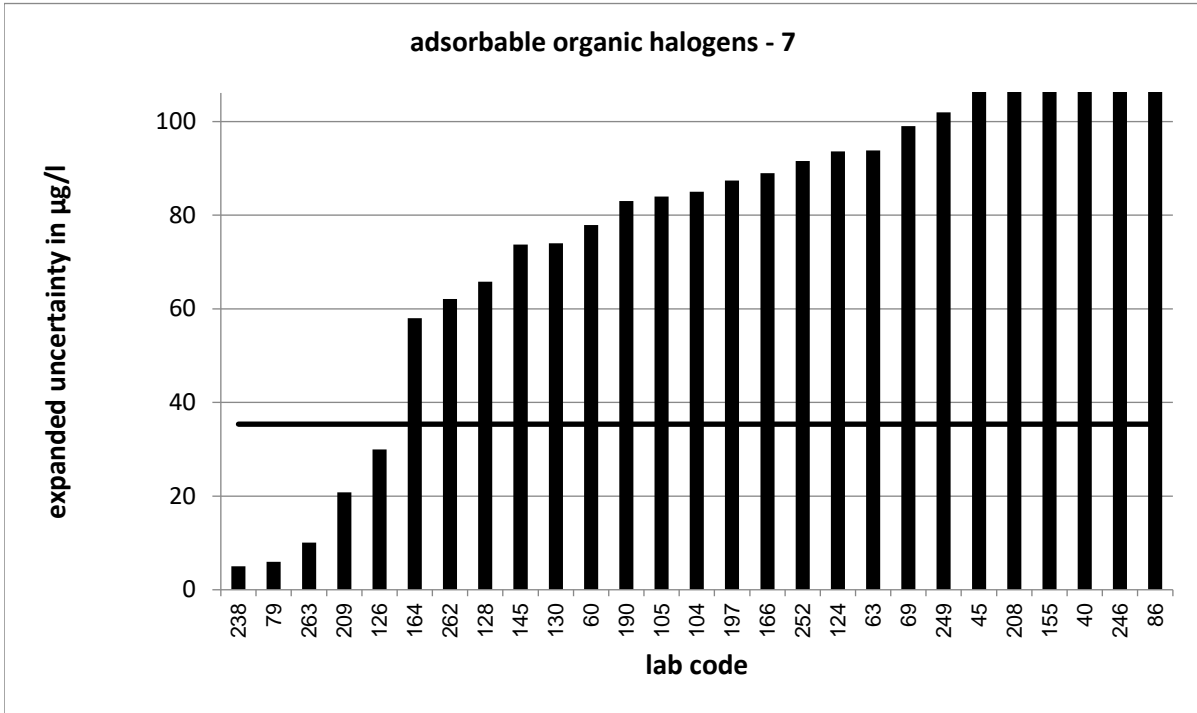
\*\* s = satisfactory, q = questionable, u = unsatisfactory



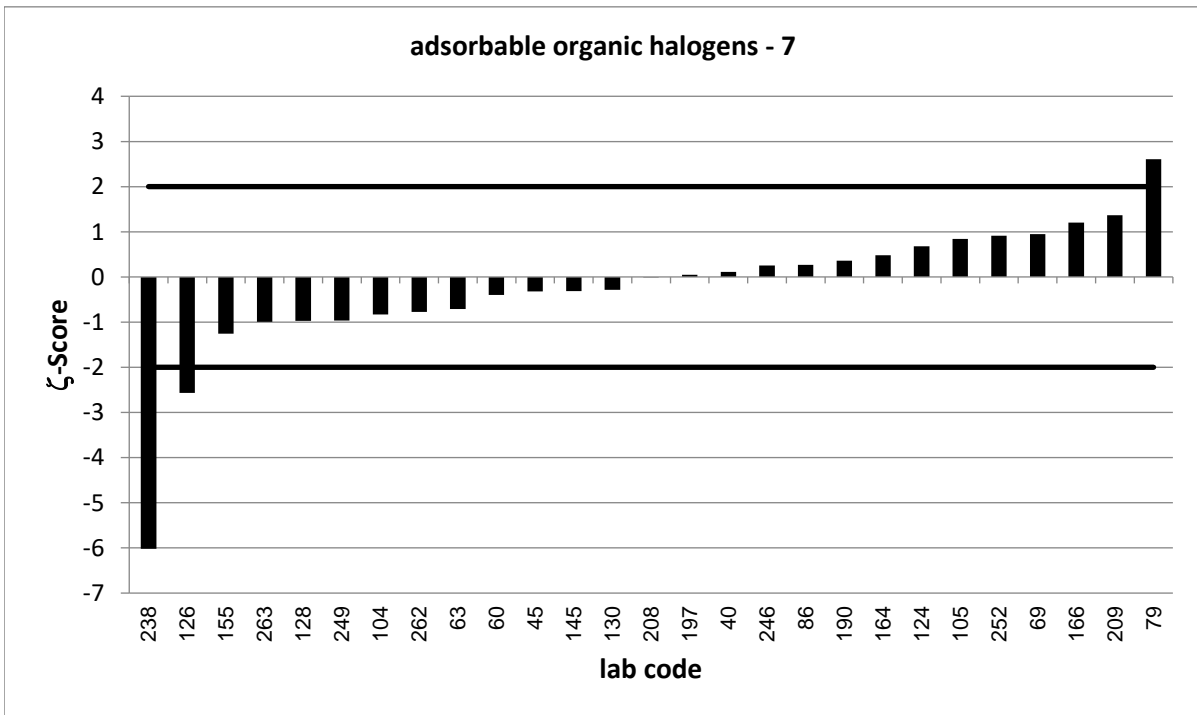
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



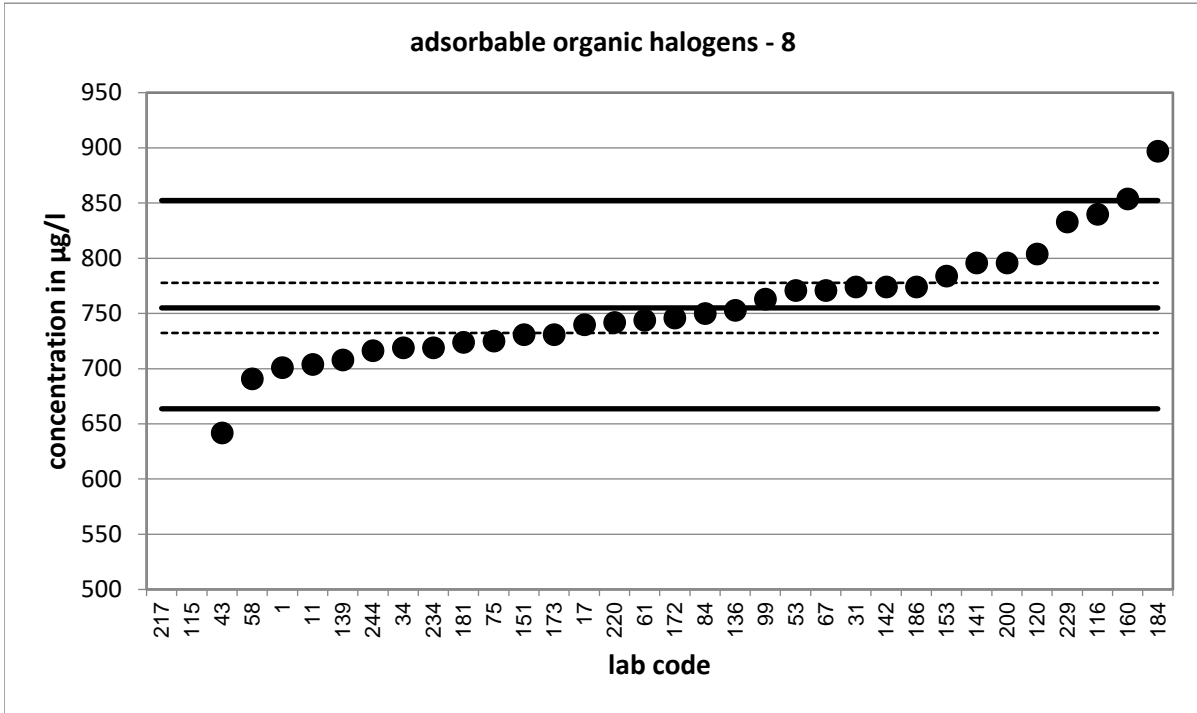
Strongly deviating values are not correctly shown in the diagram.



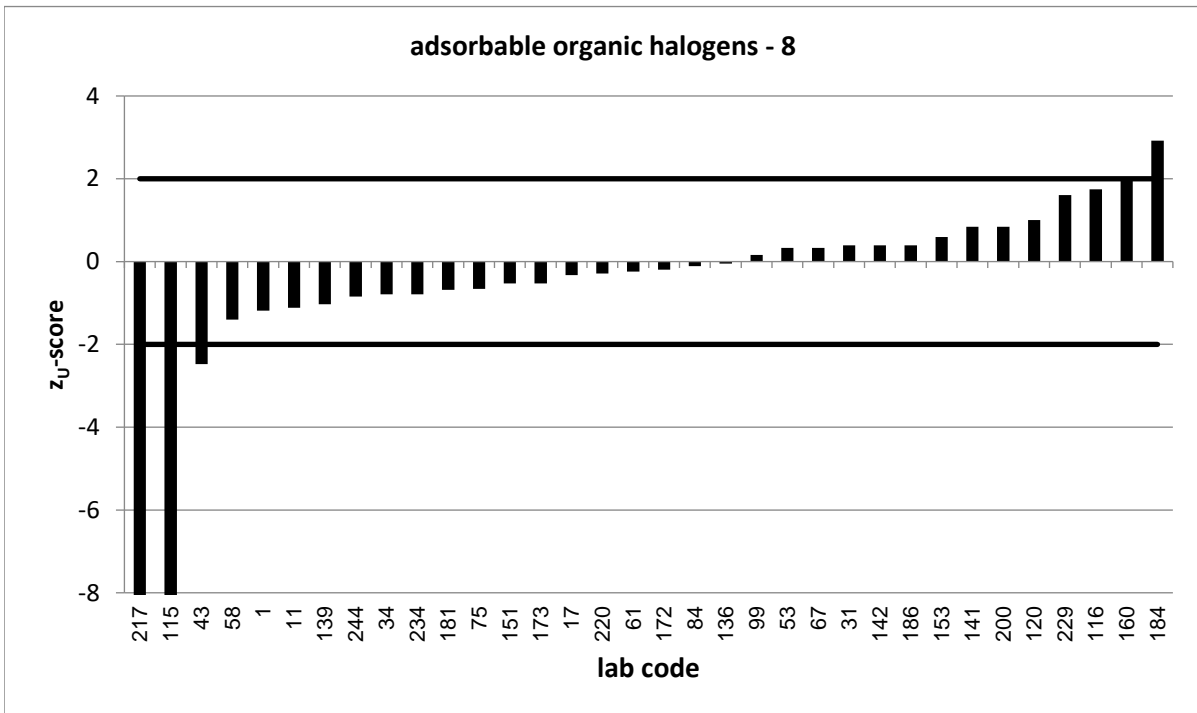
PT 10/23		adsorbable organic halogens - 8			
assigned value [ $\mu\text{g/l}$ ]*		755 $\pm$ 22,7			
upper tolerance limit [ $\mu\text{g/l}$ ]		852,3			
lower tolerance limit [ $\mu\text{g/l}$ ]		663,6			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
1	701	112	-0,9	-1,2	s
11	704	1,4	-4,5	-1,1	s
17	740	159	-0,2	-0,3	s
31	774			0,4	s
34	719			-0,8	s
43	642			-2,5	q
53	771			0,3	s
58	691			-1,4	s
61	744			-0,2	s
67	771	70	0,4	0,3	s
75	725			-0,7	s
84	750	110	-0,1	-0,1	s
99	763			0,2	s
115	386	39,8	-16,1	-8,1	u
116	840	200	0,8	1,7	s
120	804	99,5	1,0	1,0	s
136	753			0,0	s
139	708			-1,0	s
141	796	270	0,3	0,8	s
142	774	165	0,2	0,4	s
151	731	147	-0,3	-0,5	s
153	784	78,4	0,7	0,6	s
160	854			2,0	s
172	746			-0,2	s
173	731	212	-0,2	-0,5	s
181	724	109	-0,6	-0,7	s
184	897			2,9	q
186	774	154	0,2	0,4	s
200	796			0,8	s
217	84,5	12,6	-51,6	-14,7	u
220	742			-0,3	s
229	833	95	1,6	1,6	s
234	719			-0,8	s
244	716,3			-0,8	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

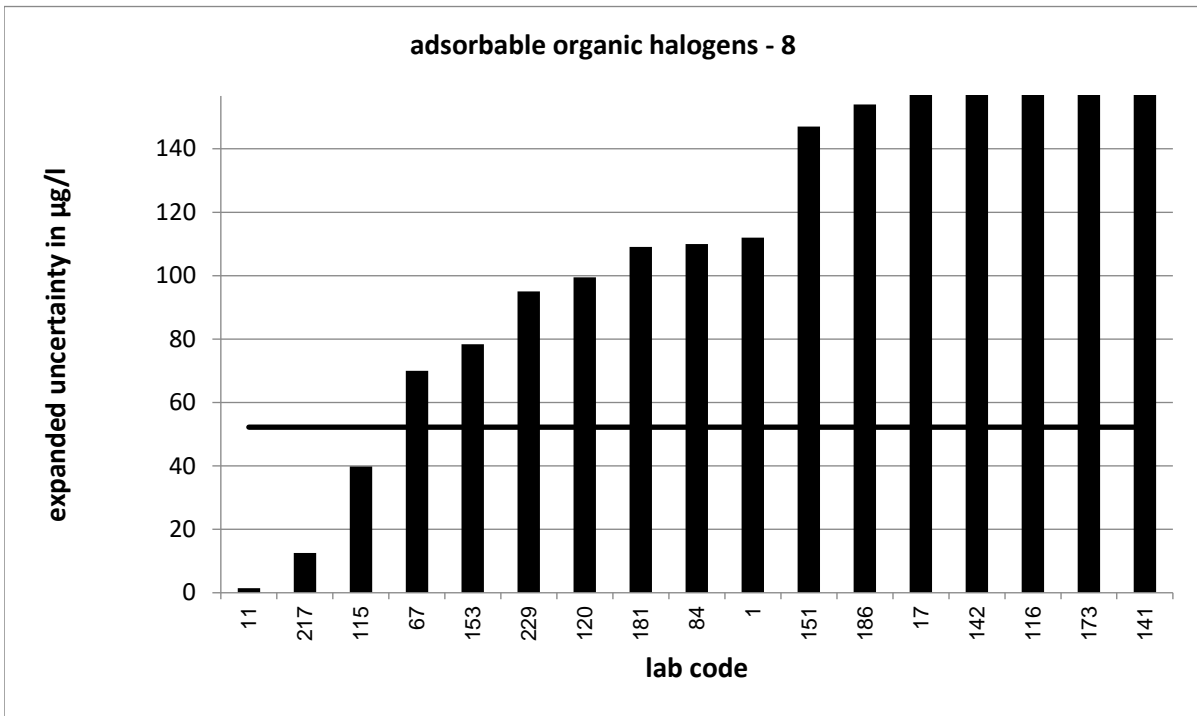
\*\* s = satisfactory, q = questionable, u = unsatisfactory



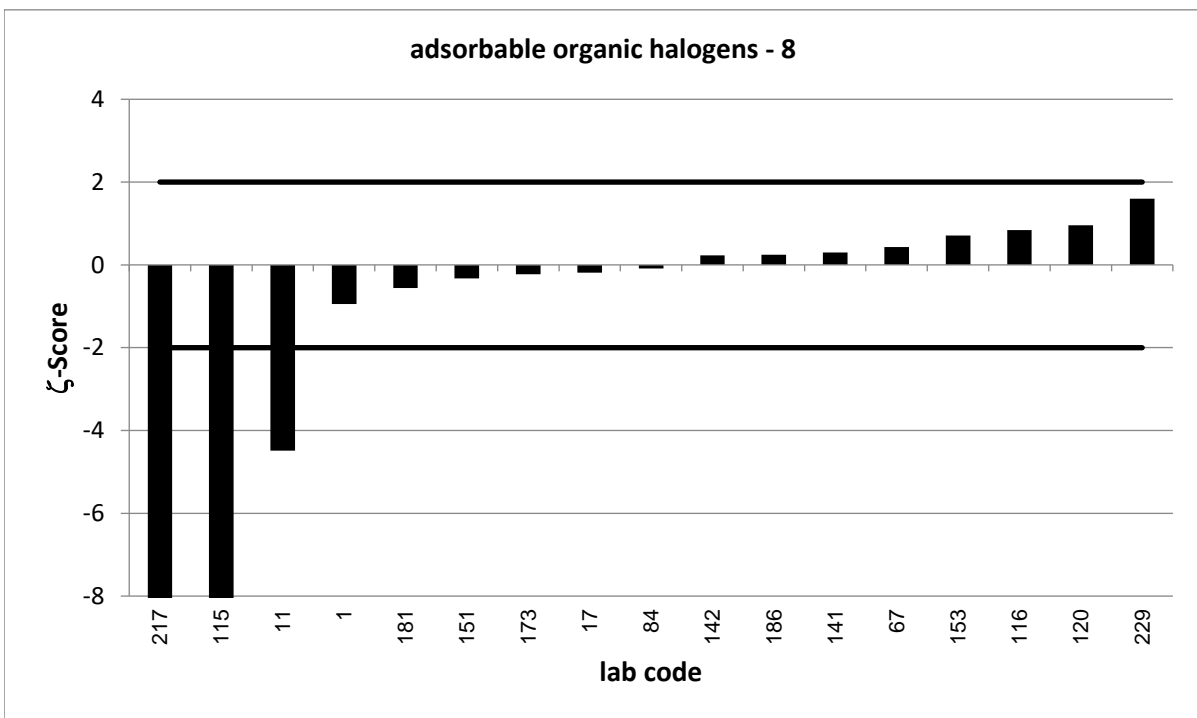
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.

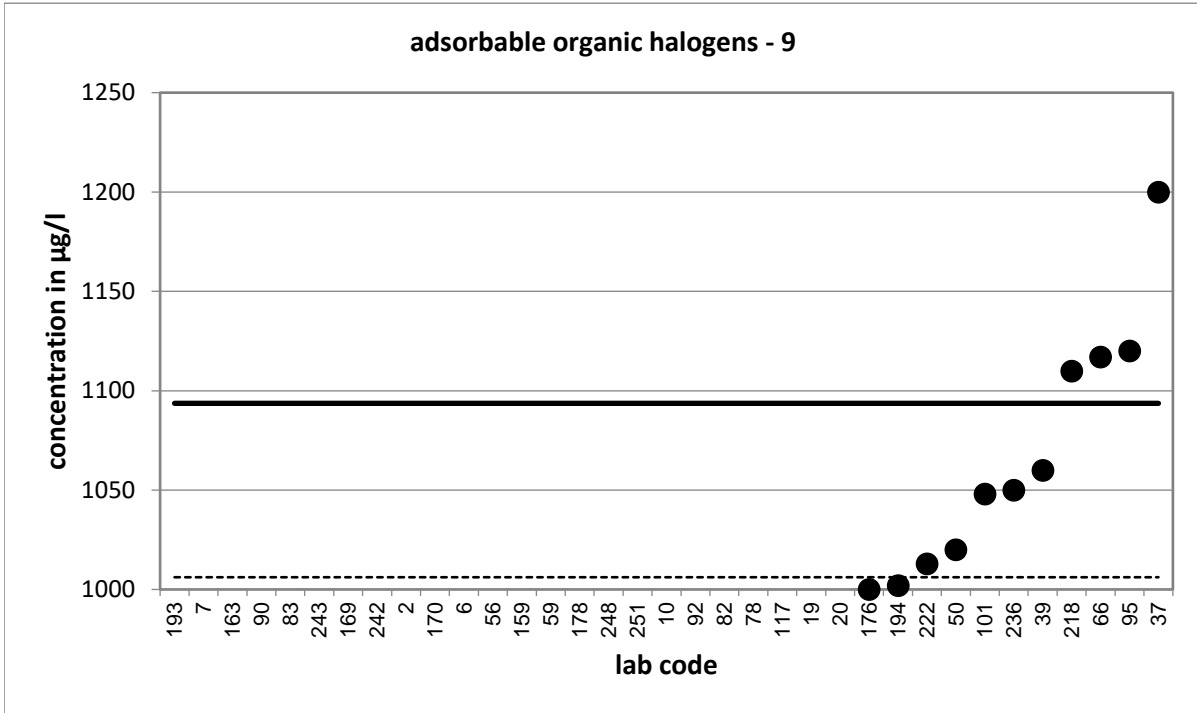


Strongly deviating values are not correctly shown in the diagram.

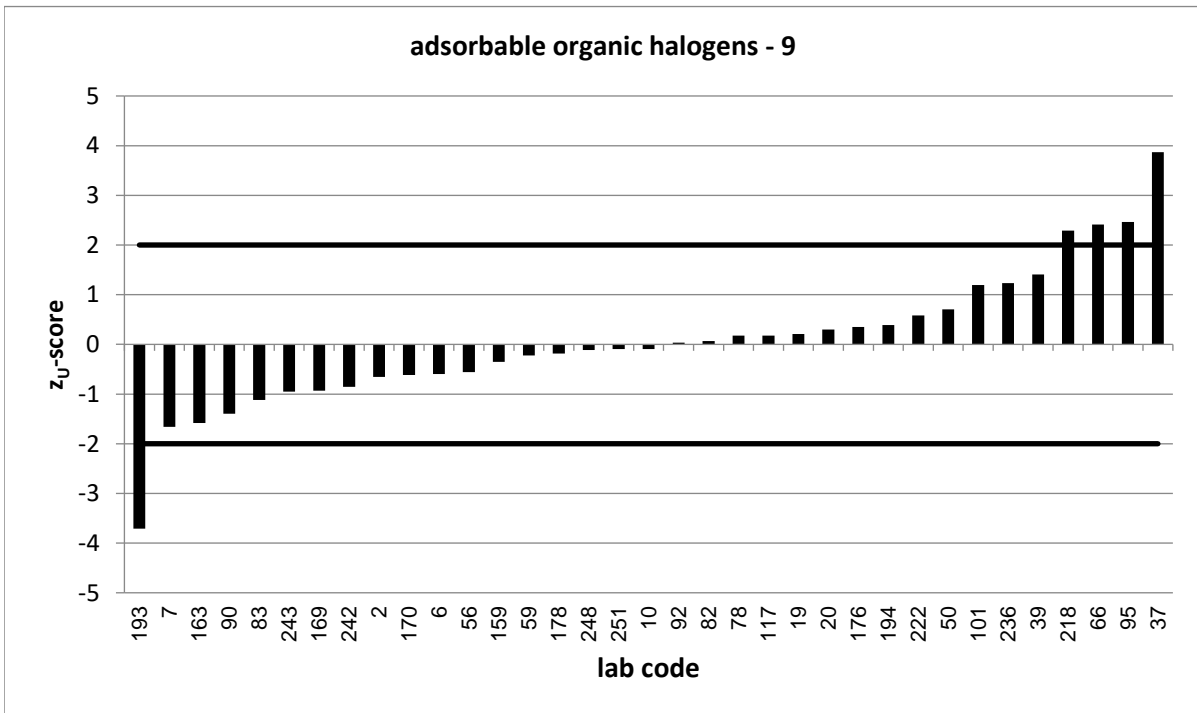
PT 10/23		adsorbable organic halogens - 9			
assigned value [ $\mu\text{g/l}$ ]*		980,1 $\pm$ 26,1			
upper tolerance limit [ $\mu\text{g/l}$ ]		1094			
lower tolerance limit [ $\mu\text{g/l}$ ]		872,7			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	z-score	z <sub>U</sub> -score	assessm.**
2	945			-0,7	s
6	948			-0,6	s
7	891	12,6	-6,2	-1,7	s
10	975	195	-0,1	-0,1	s
19	992	99	0,2	0,2	s
20	997,21			0,3	s
37	1200	228	1,9	3,9	u
39	1060	255	0,6	1,4	s
50	1020	105	0,7	0,7	s
56	950	133	-0,4	-0,6	s
59	968	80,5	-0,3	-0,2	s
66	1117	56	4,4	2,4	q
78	990			0,2	s
82	984	33,2	0,2	0,1	s
83	920	190	-0,6	-1,1	s
90	905	118	-1,2	-1,4	s
92	982	154	0,0	0,0	s
95	1120			2,5	q
101	1048			1,2	s
117	990	107	0,2	0,2	s
159	961			-0,4	s
163	895	162	-1,0	-1,6	s
169	930	150	-0,7	-0,9	s
170	947	94,7	-0,7	-0,6	s
176	1000	144	0,3	0,4	s
178	970			-0,2	s
193	781	195	-2,0	-3,7	u
194	1002	18	1,4	0,4	s
218	1110			2,3	q
222	1013	355	0,2	0,6	s
236	1050	79	1,7	1,2	s
242	934	149	-0,6	-0,9	s
243	929	232	-0,4	-1,0	s
248	974	20	-0,4	-0,1	s
251	974,9	225,2	0,0	-0,1	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

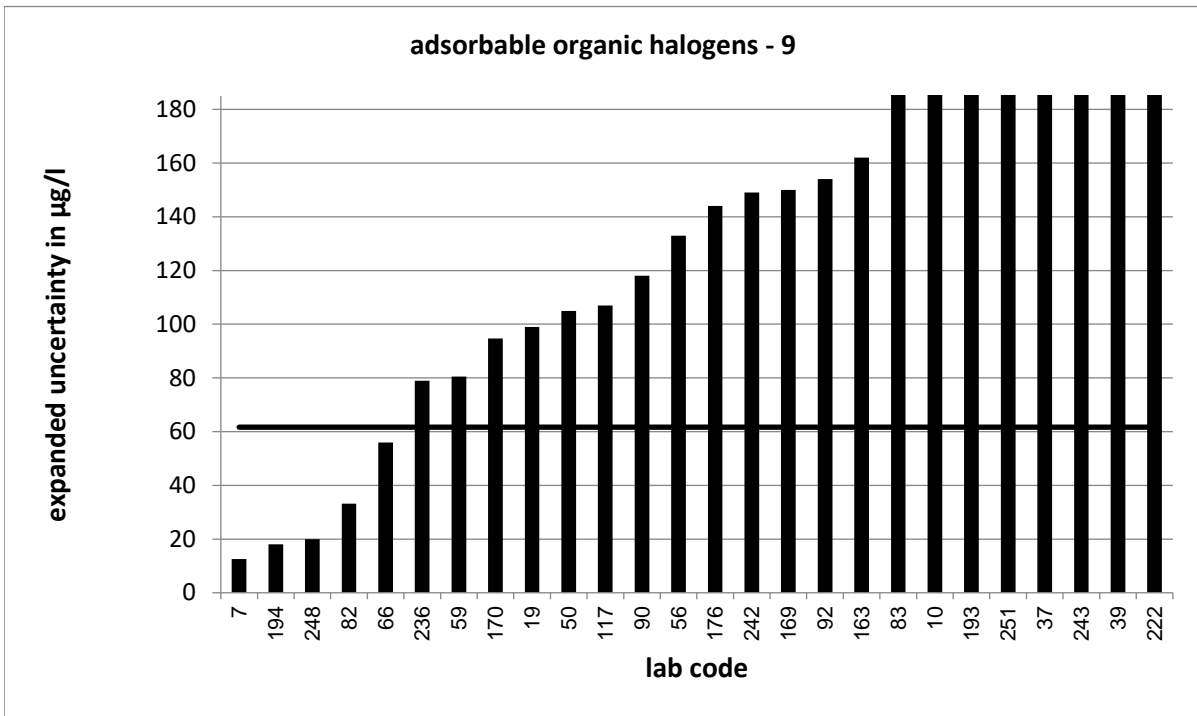
\*\* s = satisfactory, q = questionable, u = unsatisfactory



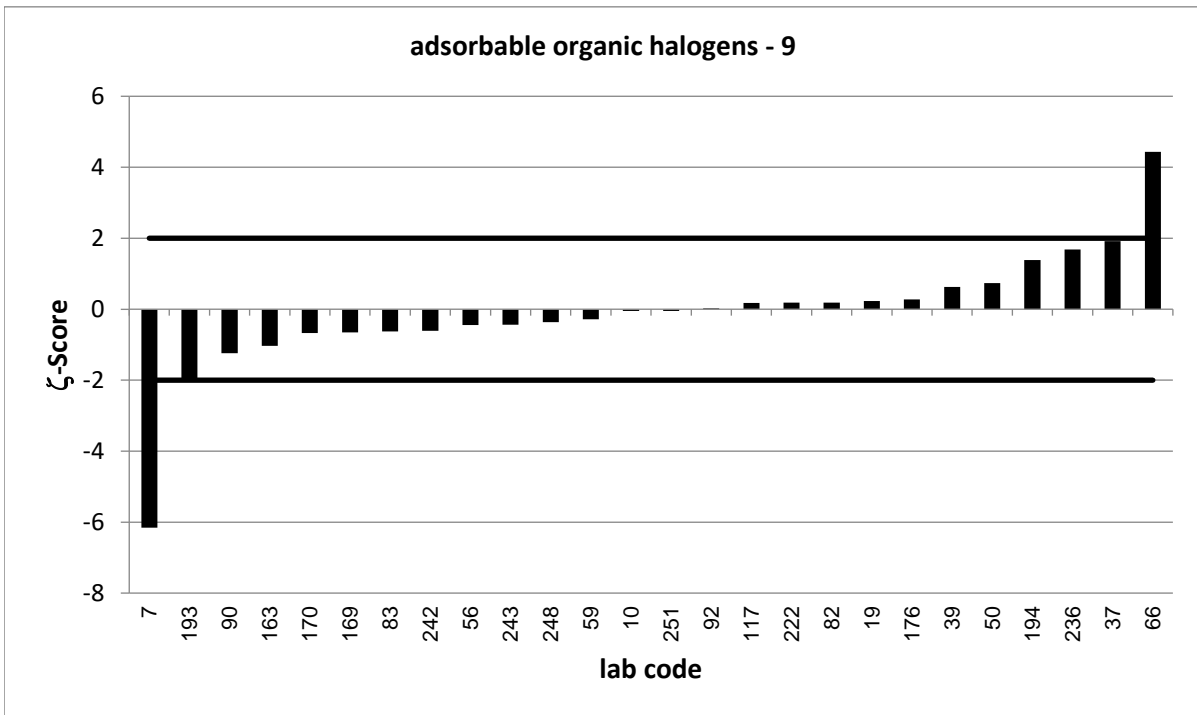
Strongly deviating values are not shown in the diagram.







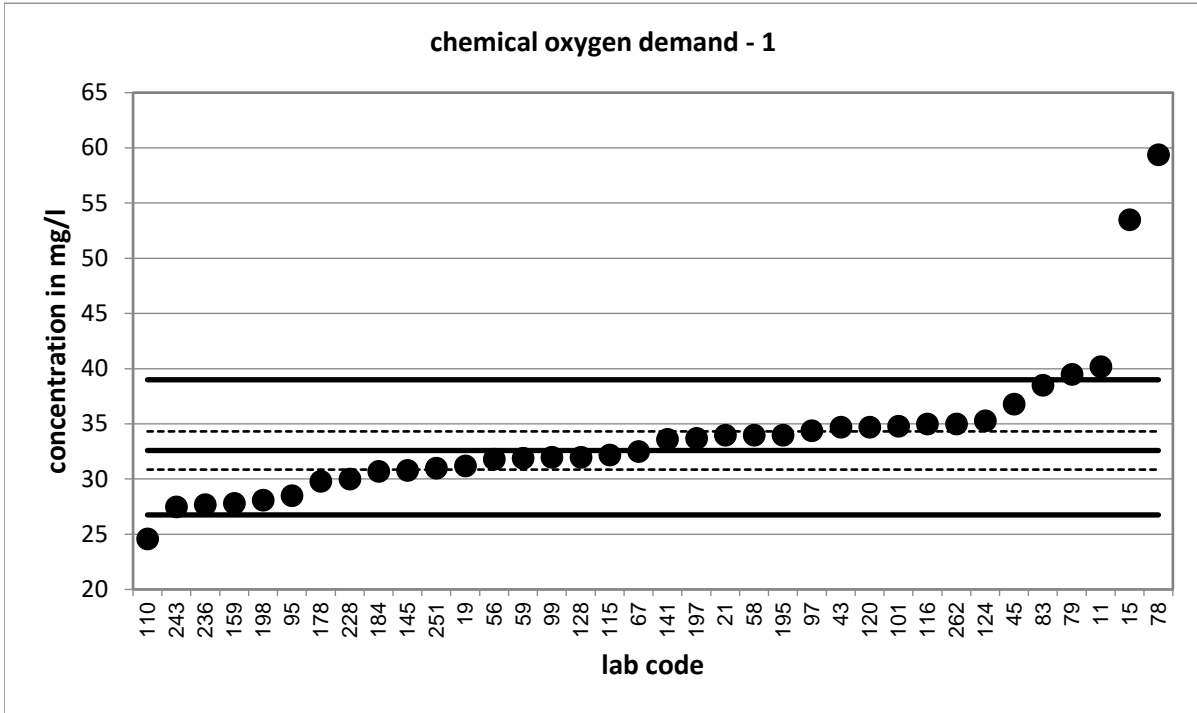
Strongly deviating values are not correctly shown in the diagram.



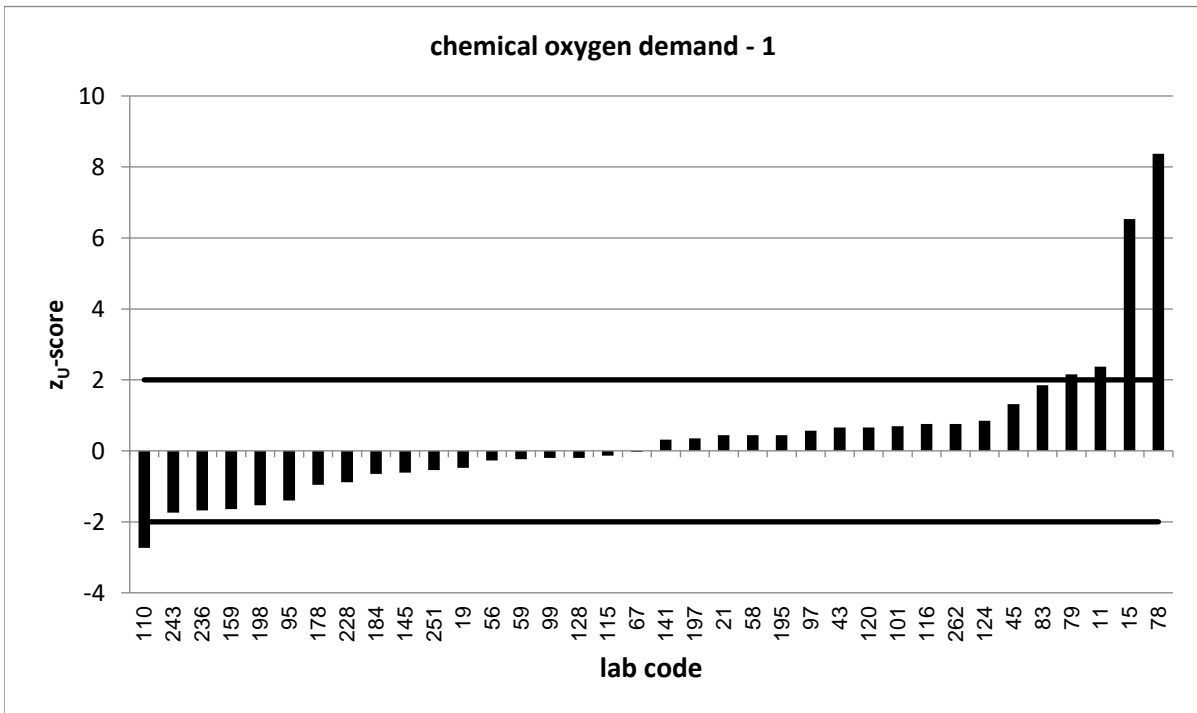
PT 10/23		chemical oxygen demand - 1			
assigned value [mg/l]*		32,59 ± 1,73			
upper tolerance limit [mg/l]		38,99			
lower tolerance limit [mg/l]		26,75			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
11	40,2	2,37	5,2	2,4	q
15	53,5			6,5	u
19	31,2	1,2	-1,3	-0,5	s
21	34			0,4	s
43	34,7			0,7	s
45	36,8	4,57	1,7	1,3	s
56	31,8	1,59	-0,7	-0,3	s
58	34			0,4	s
59	31,9	3,19	-0,4	-0,2	s
67	32,5	2,7	-0,1	0,0	s
78	59,4			8,4	u
79	39,5	2	5,2	2,2	q
83	38,5	7,6	1,5	1,8	s
95	28,5			-1,4	s
97	34,4			0,6	s
99	32			-0,2	s
101	34,8			0,7	s
110	24,6			-2,7	q
115	32,2	1,32	-0,4	-0,1	s
116	35	4	1,1	0,8	s
120	34,7	4,9	0,8	0,7	s
124	35,3	6,4	0,8	0,8	s
128	32	3,52	-0,3	-0,2	s
141	33,6	4	0,5	0,3	s
145	30,8	3,08	-1,0	-0,6	s
159	27,8			-1,6	s
178	29,8			-1,0	s
184	30,7			-0,6	s
195	34	6,8	0,4	0,4	s
197	33,7	2,9	0,7	0,3	s
198	28,1			-1,5	s
228	30			-0,9	s
236	27,7	2,31	-3,4	-1,7	s
243	27,5			-1,7	s
251	31	3,31	-0,9	-0,5	s
262	35	5,9	0,8	0,8	s

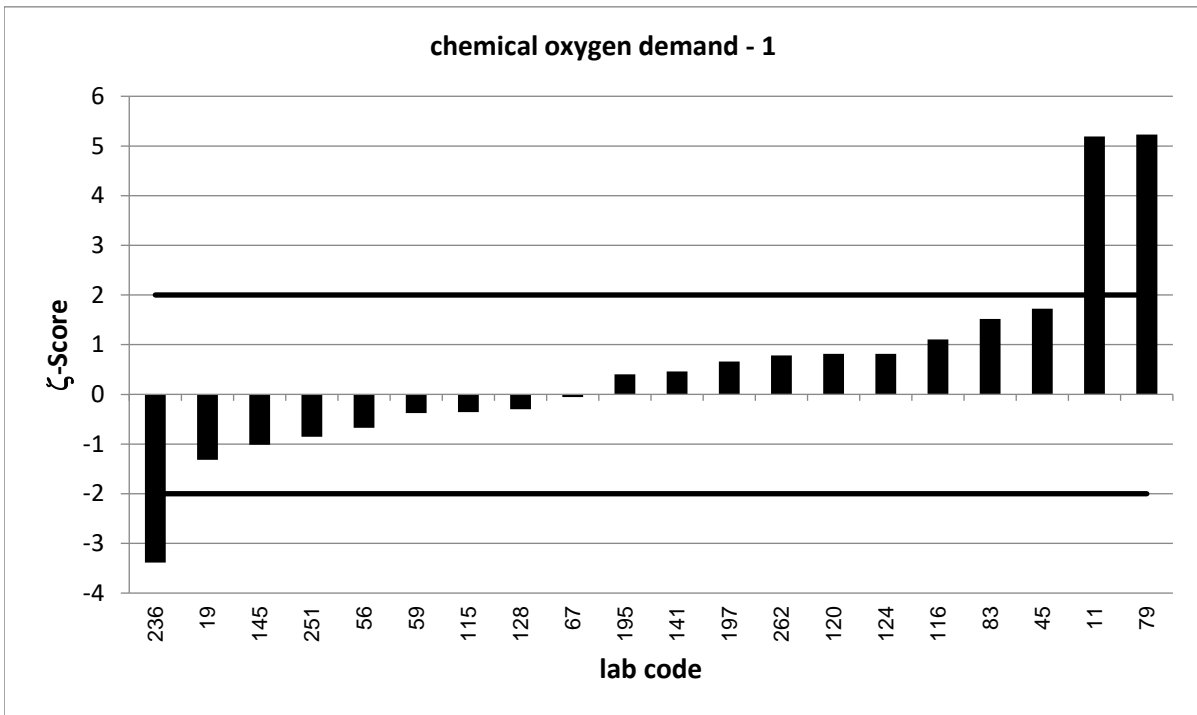
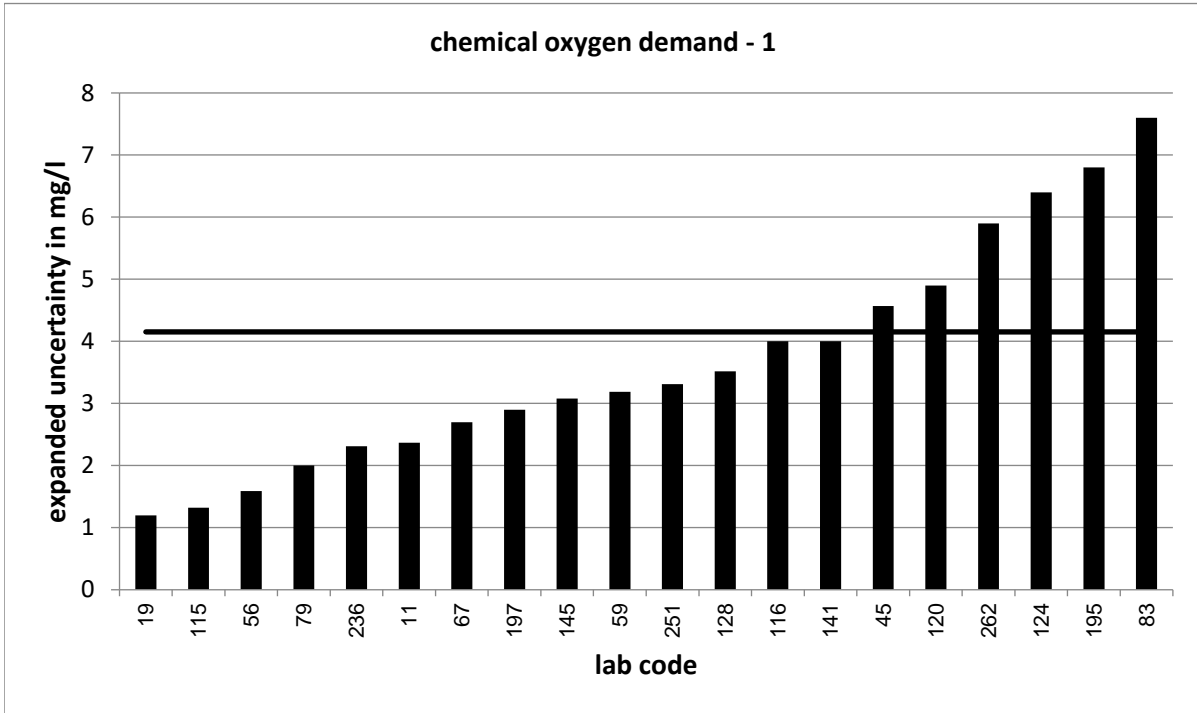
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory



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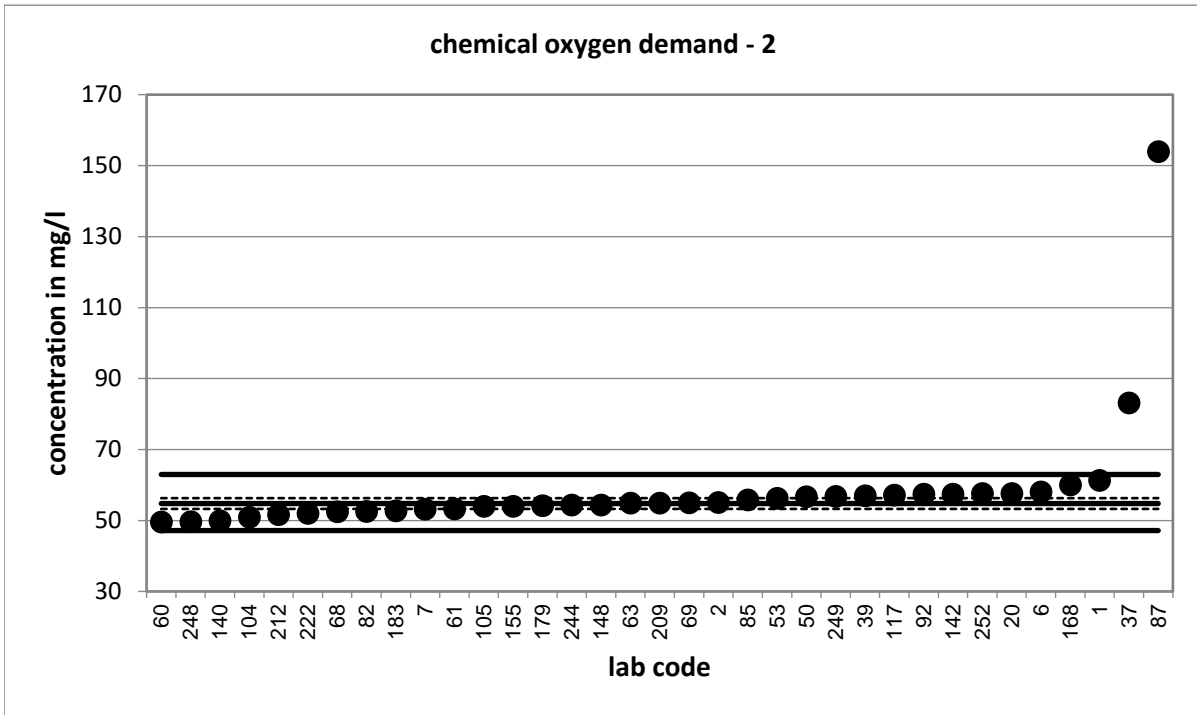




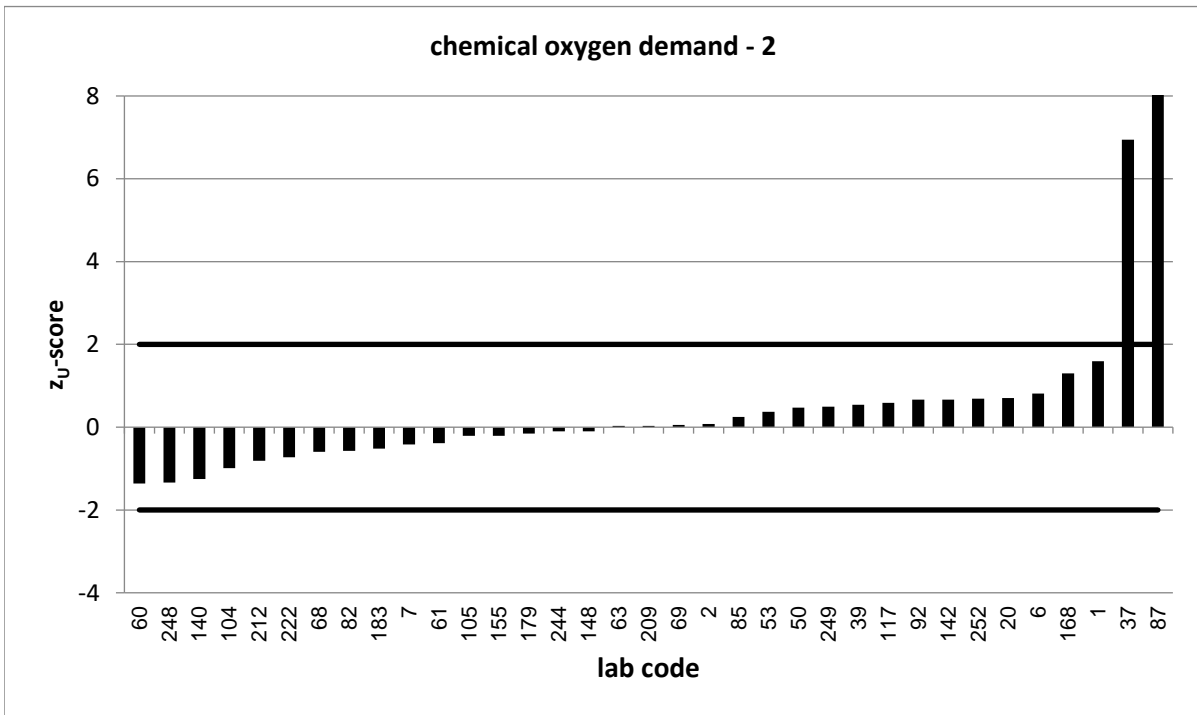
PT 10/23		chemical oxygen demand - 2			
assigned value [mg/l]*		54,78 ± 1,52			
upper tolerance limit [mg/l]		62,96			
lower tolerance limit [mg/l]		47,16			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	61,3	8,6	1,5	1,6	s
2	55,1			0,1	s
6	58,1			0,8	s
7	53,2	1,4	-1,5	-0,4	s
20	57,67			0,7	s
37	83,2	9,3	6,0	6,9	u
39	57	9,86	0,4	0,5	s
50	56,7	2,8	1,2	0,5	s
53	56,3			0,4	s
60	49,6			-1,4	s
61	53,3			-0,4	s
63	54,9	5,49	0,0	0,0	s
68	52,5	6,19	-0,7	-0,6	s
69	55	10	0,0	0,1	s
82	52,6	3,4	-1,2	-0,6	s
85	55,8	0,558	1,3	0,2	s
87	154			24,2	u
92	57,5	11,1	0,5	0,7	s
104	51	6,5	-1,1	-1,0	s
105	54	9,29	-0,2	-0,2	s
117	57,2	3,92	1,2	0,6	s
140	50			-1,3	s
142	57,5	7,5	0,7	0,7	s
148	54,4			-0,1	s
155	54	6,3	-0,2	-0,2	s
168	60,1			1,3	s
179	54,2			-0,2	s
183	52,8	13,2	-0,3	-0,5	s
209	54,9	1,65	0,1	0,0	s
212	51,7			-0,8	s
222	52	5,2	-1,0	-0,7	s
244	54,39			-0,1	s
248	49,7	5	-1,9	-1,3	s
249	56,8	4,39	0,9	0,5	s
252	57,6	7,14	0,8	0,7	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

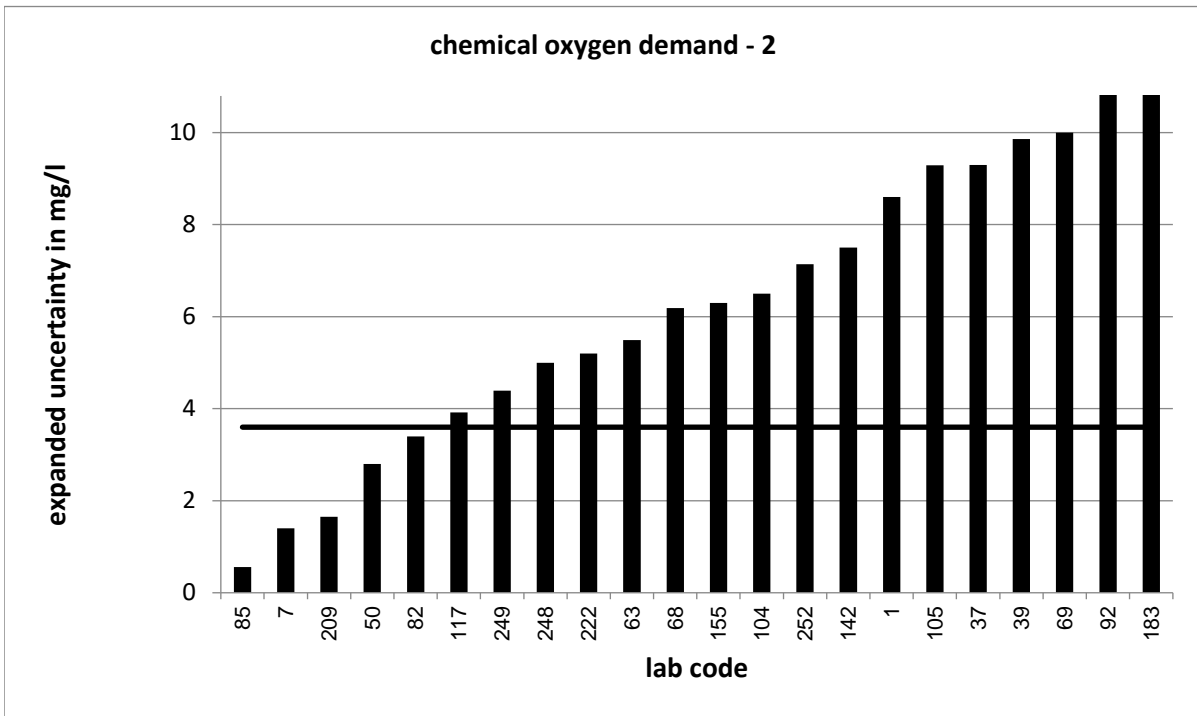
\*\* s = satisfactory, q = questionable, u = unsatisfactory



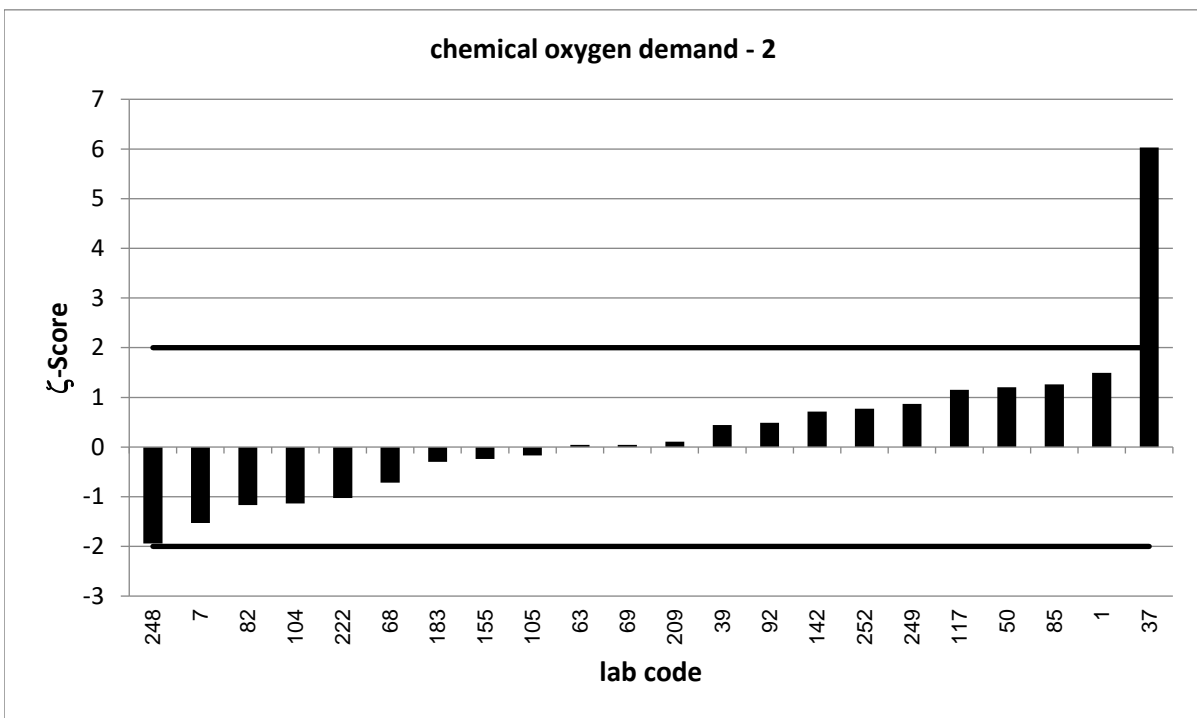
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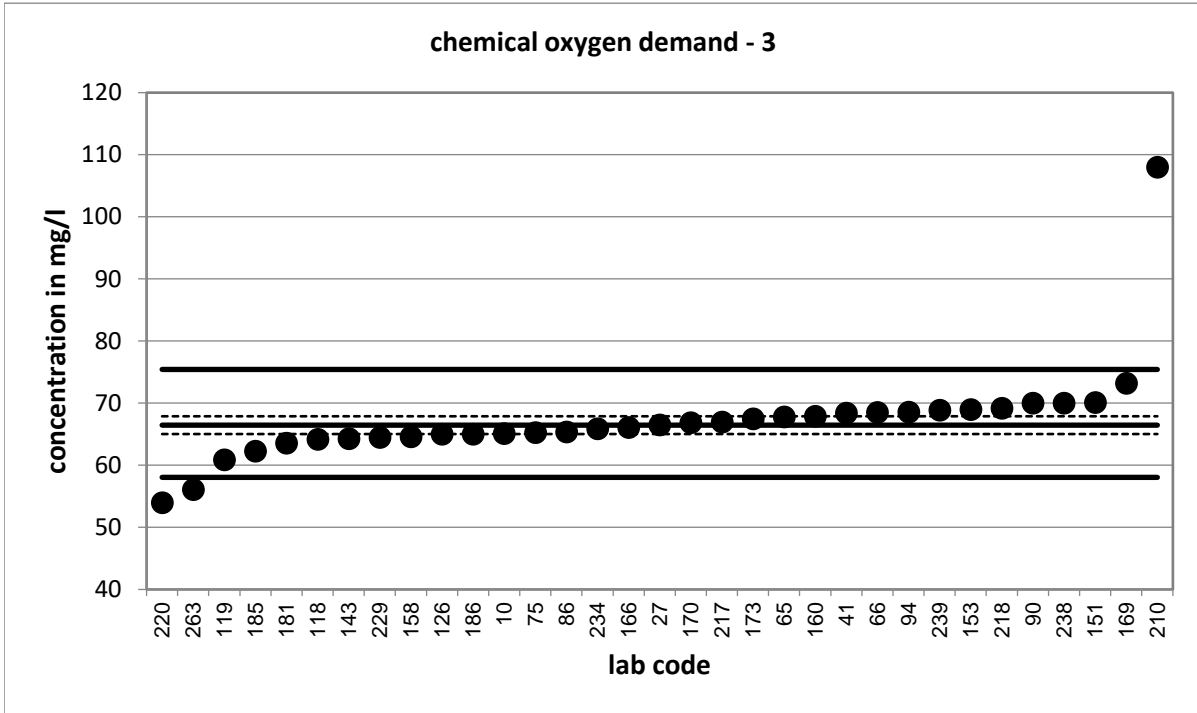


PT 10/23		chemical oxygen demand - 3			
assigned value [mg/l]*		66,46 ± 1,43			
upper tolerance limit [mg/l]		75,43			
lower tolerance limit [mg/l]		58,05			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
10	65,1	9,11	-0,3	-0,3	s
27	66,5			0,0	s
41	68,4			0,4	s
65	67,8			0,3	s
66	68,5	2	1,7	0,5	s
75	65,3			-0,3	s
86	65,4	16,2	-0,1	-0,3	s
90	70	9,1	0,8	0,8	s
94	68,6			0,5	s
118	64,2			-0,5	s
119	60,9			-1,3	s
126	65	10	-0,3	-0,3	s
143	64,3			-0,5	s
151	70,1	8,34	0,9	0,8	s
153	69	6,9	0,7	0,6	s
158	64,6			-0,4	s
160	67,9			0,3	s
166	66,1	5,9	-0,1	-0,1	s
169	73,2	7,5	1,8	1,5	s
170	66,9	3,35	0,2	0,1	s
173	67,5	5,4	0,4	0,2	s
181	63,6	3,43	-1,5	-0,7	s
185	62,3			-1,0	s
186	65	9,8	-0,3	-0,3	s
210	108			9,3	u
217	67	7,05	0,2	0,1	s
218	69,2			0,6	s
220	54			-3,0	u
229	64,5	9,6	-0,4	-0,5	s
234	65,9			-0,1	s
238	70	10	0,7	0,8	s
239	68,9			0,5	s
263	56,1	2,58	-7,0	-2,5	q

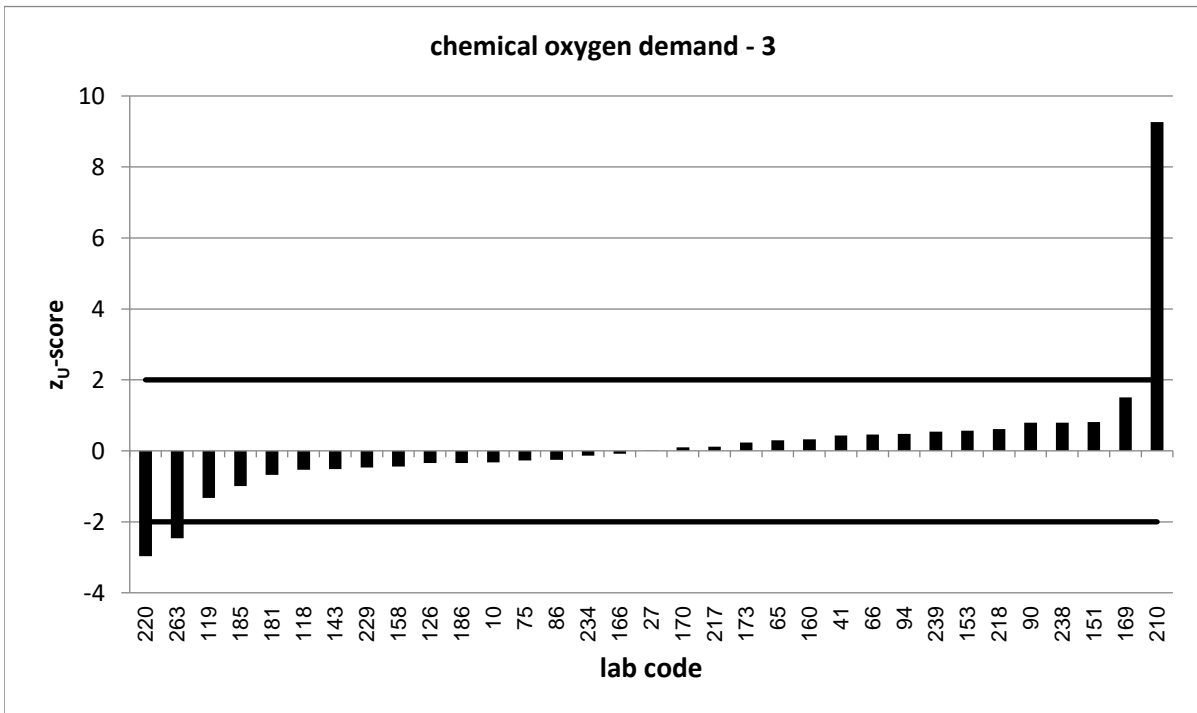
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

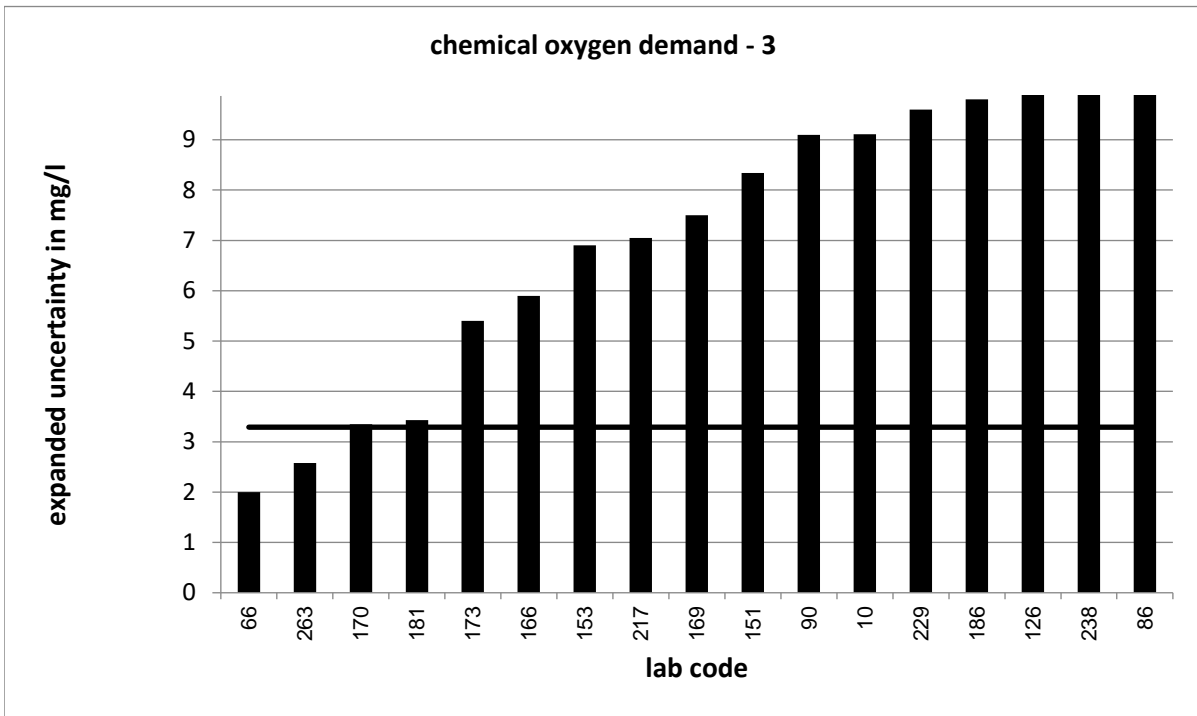
\*\* s = satisfactory, q = questionable, u = unsatisfactory



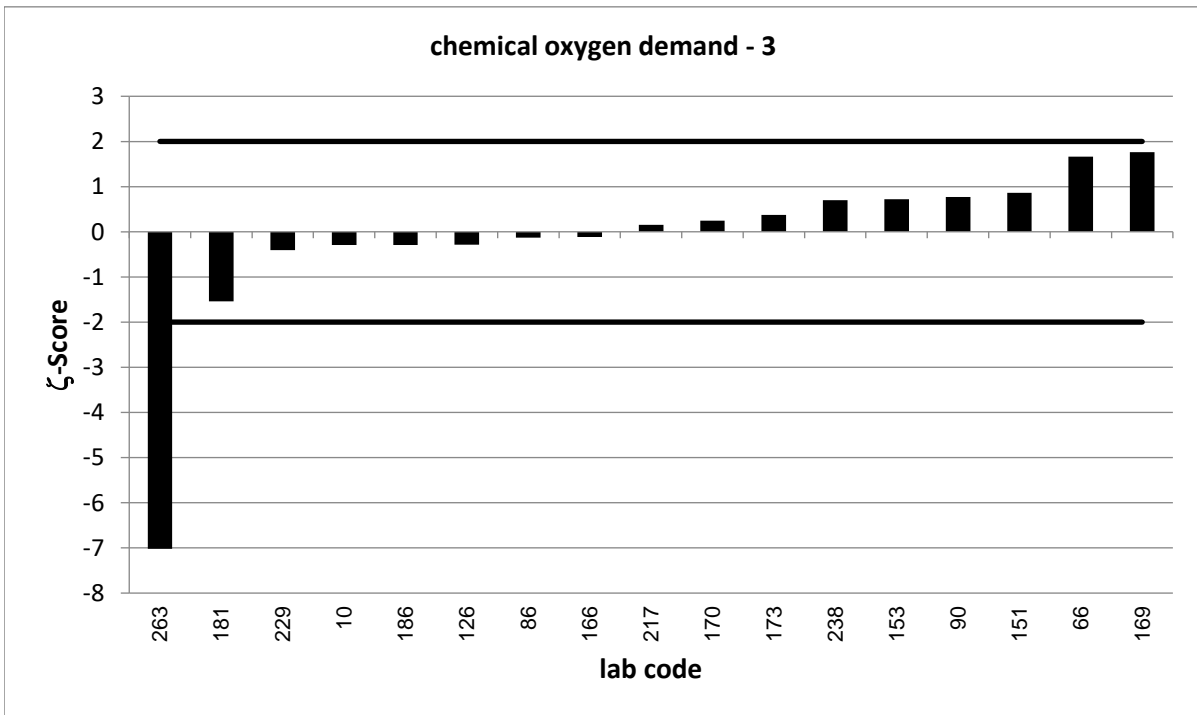


Strongly deviating values are not shown in the diagram.





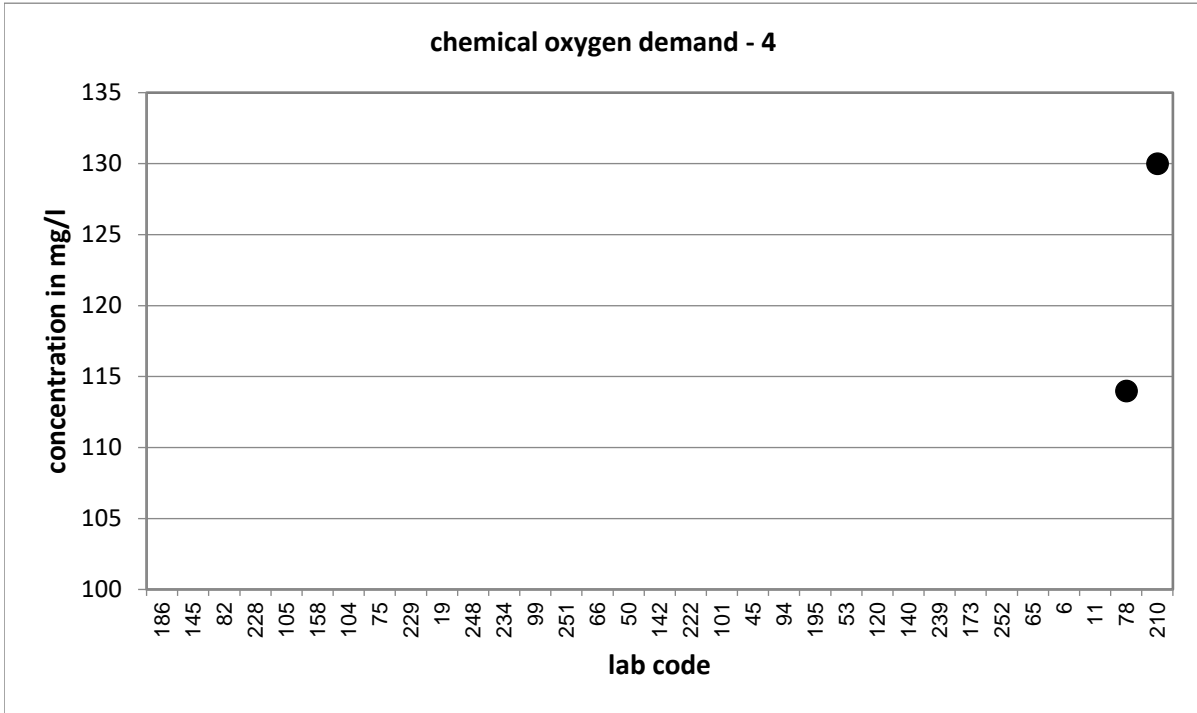
Strongly deviating values are not correctly shown in the diagram.



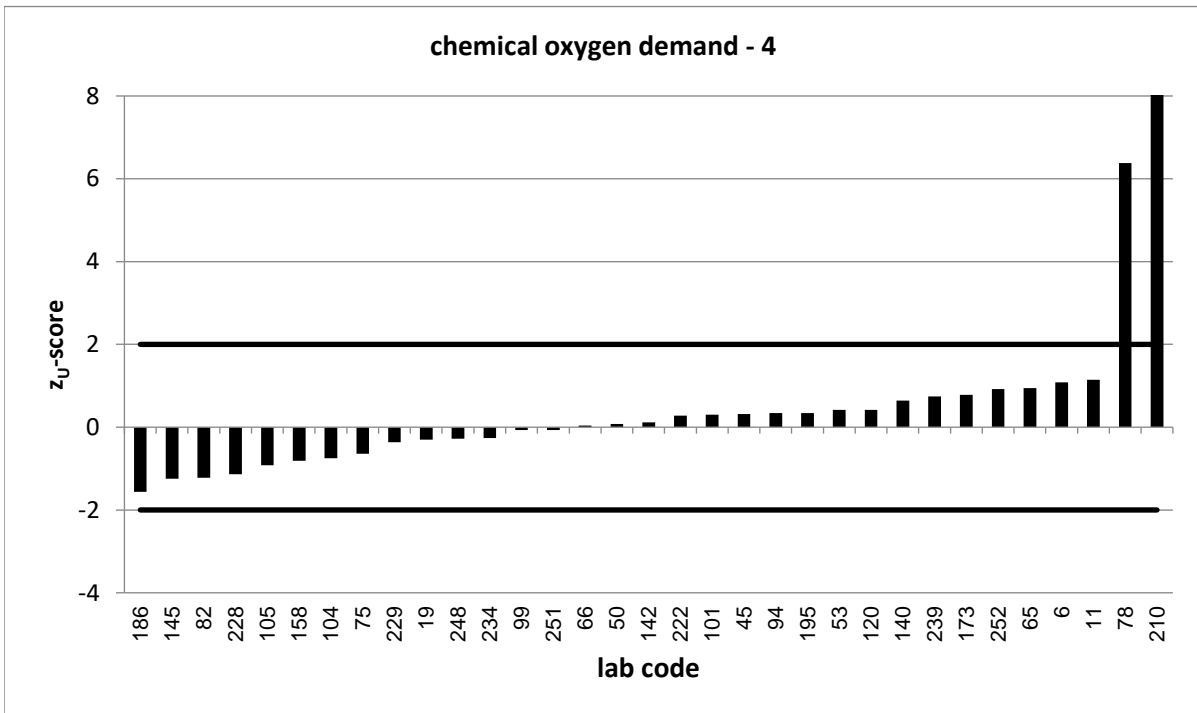
PT 10/23		chemical oxygen demand - 4			
assigned value [mg/l]*		82,32 ± 1,87			
upper tolerance limit [mg/l]		92,25			
lower tolerance limit [mg/l]		72,94			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
6	87,7			1,1	s
11	88	5,19	2,1	1,1	s
19	80,9	3,2	-0,8	-0,3	s
45	83,9	10,4	0,3	0,3	s
50	82,7	4,09	0,2	0,1	s
53	84,4			0,4	s
65	87			0,9	s
66	82,5	2,5	0,1	0,0	s
75	79,3			-0,6	s
78	114			6,4	u
82	76,6	3,4	-2,9	-1,2	s
94	84	0,31	1,8	0,3	s
99	82			-0,1	s
101	83,8			0,3	s
104	78,8	10	-0,7	-0,8	s
105	78	13,4	-0,6	-0,9	s
120	84,4	12	0,3	0,4	s
140	85,5			0,6	s
142	82,9	10,8	0,1	0,1	s
145	76,5	7,65	-1,5	-1,2	s
158	78,5			-0,8	s
173	86,2	6,9	1,1	0,8	s
186	75	11,2	-1,3	-1,6	s
195	84	16,8	0,2	0,3	s
210	130			9,6	u
222	83,7	8,4	0,3	0,3	s
228	77			-1,1	s
229	80,6	12	-0,3	-0,4	s
234	81,1			-0,3	s
239	86			0,7	s
248	81	10	-0,3	-0,3	s
251	82	8,77	-0,1	-0,1	s
252	86,9	10,8	0,8	0,9	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

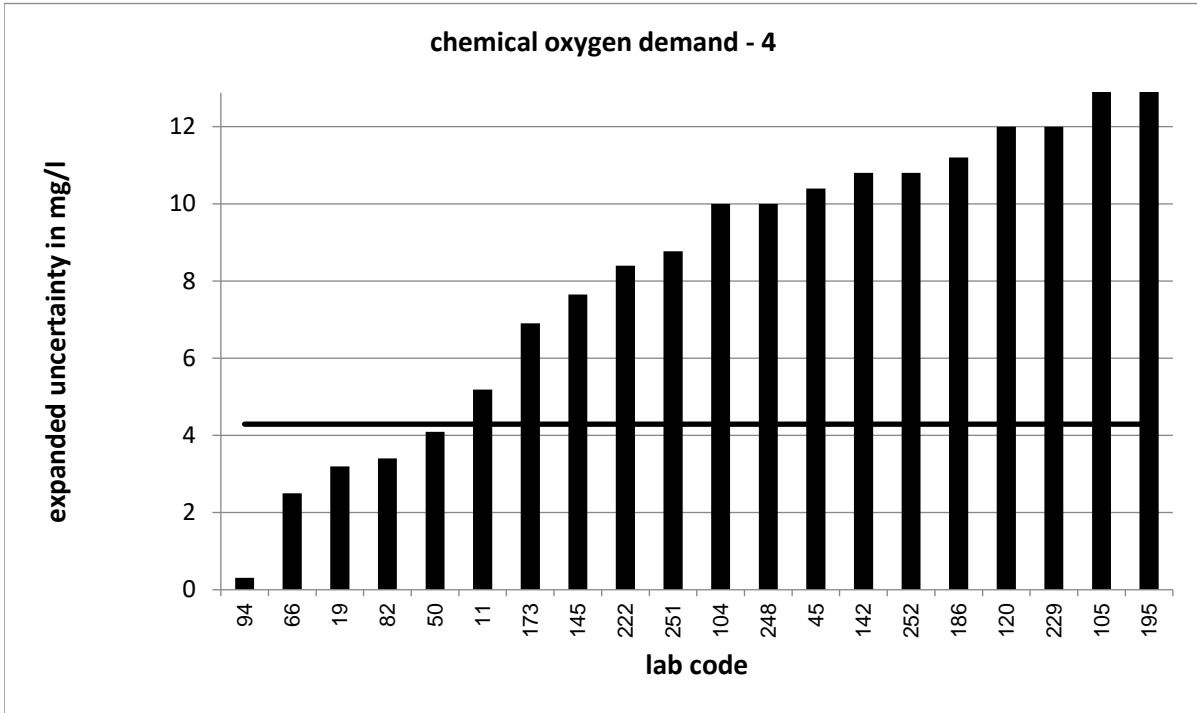
\*\* s = satisfactory, q = questionable, u = unsatisfactory



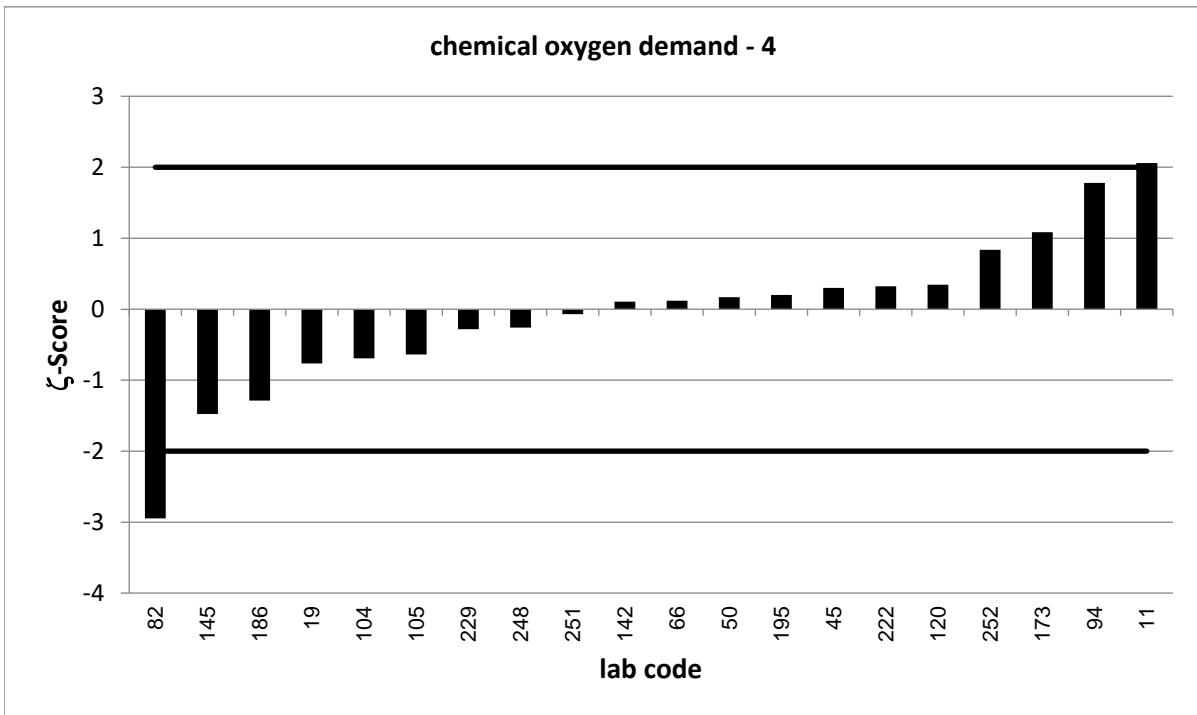
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



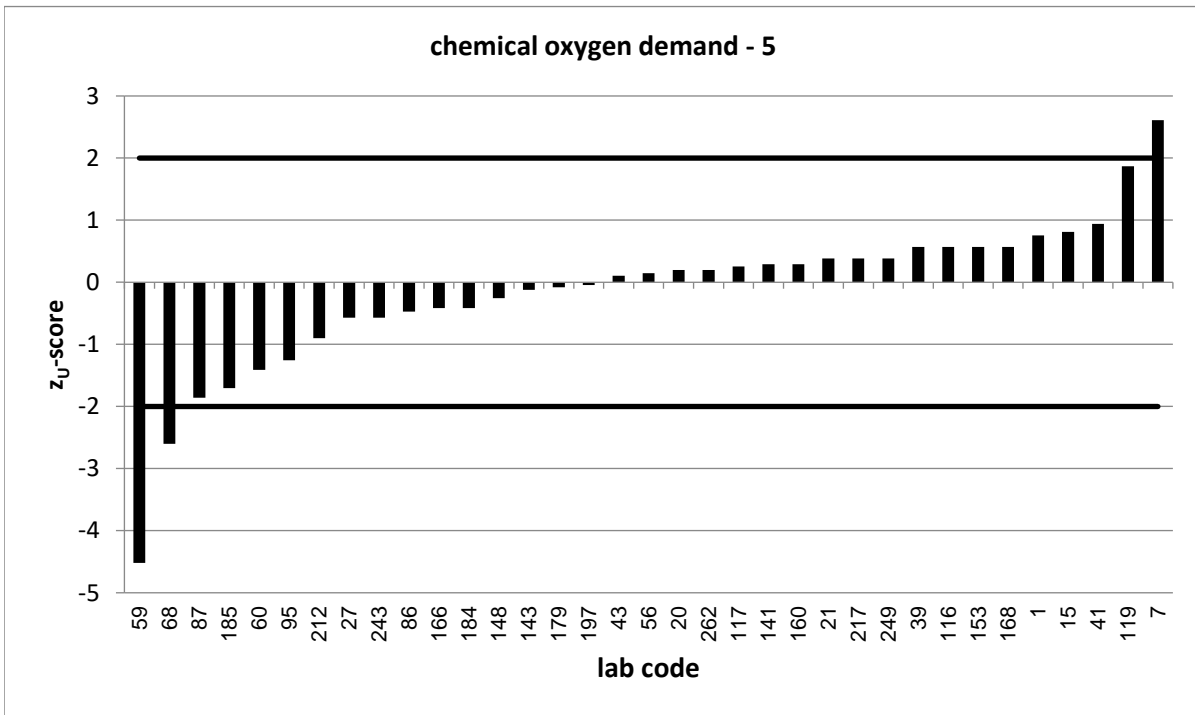
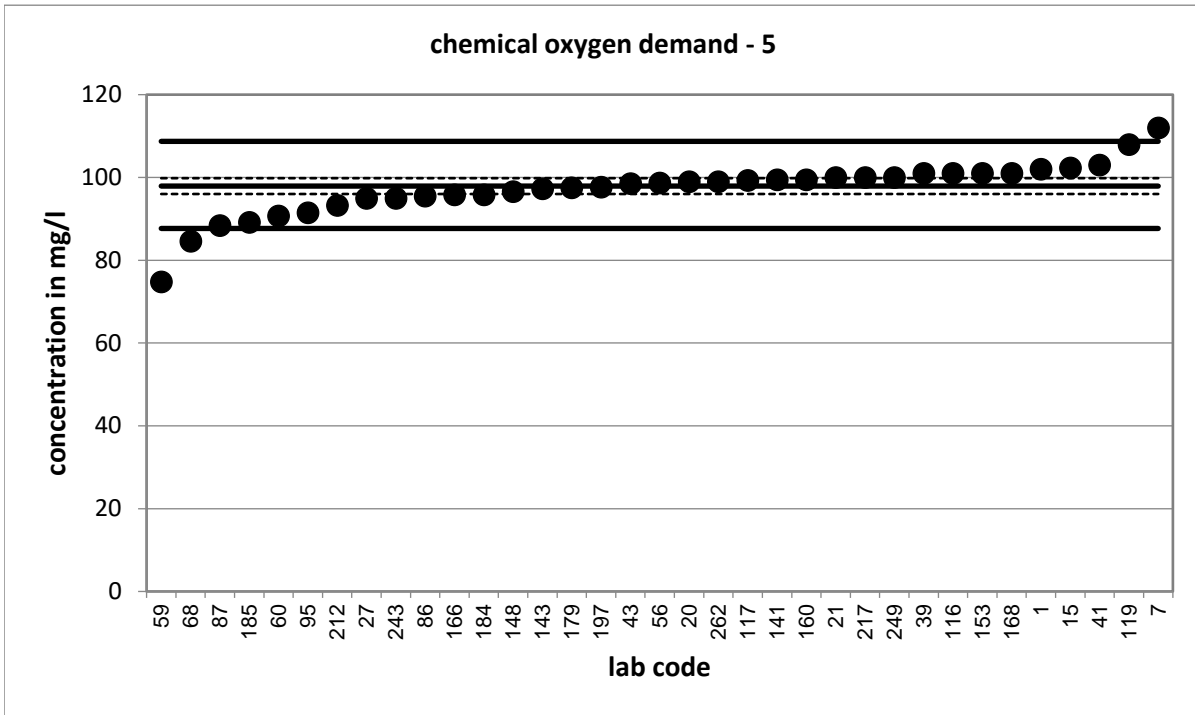
Strongly deviating values are not correctly shown in the diagram.

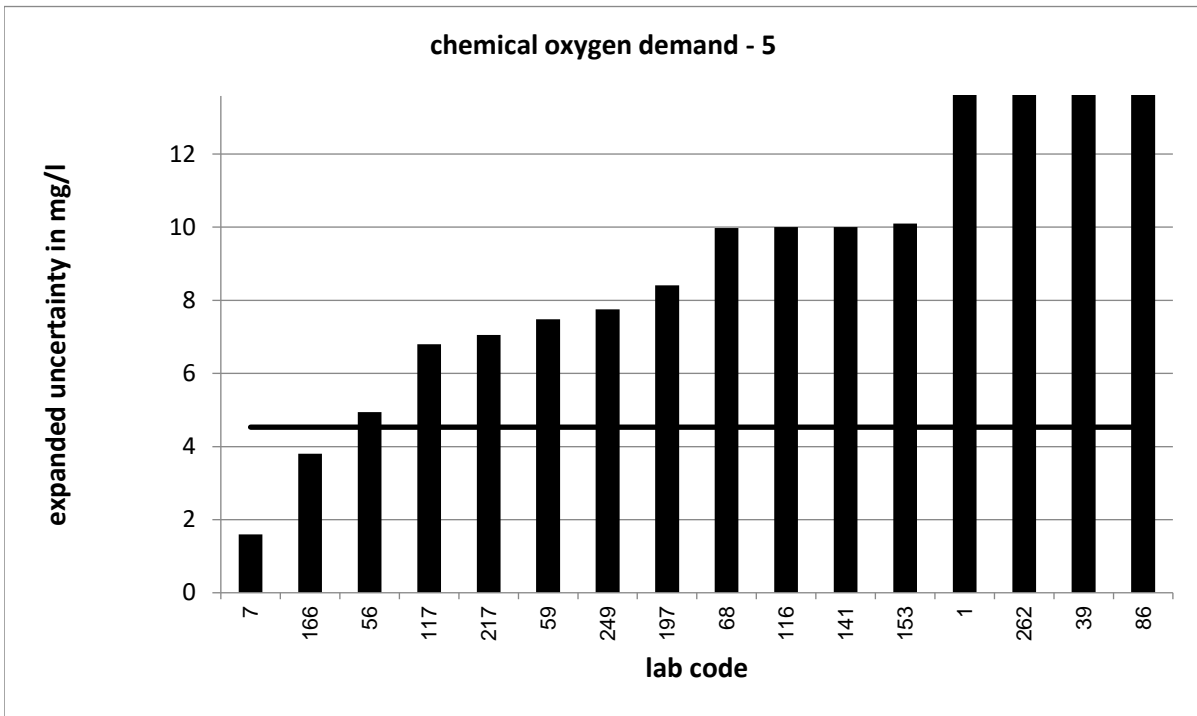


PT 10/23		chemical oxygen demand - 5			
assigned value [mg/l]*		97,92 ± 1,91			
upper tolerance limit [mg/l]		108,7			
lower tolerance limit [mg/l]		87,68			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	102	14	0,6	0,8	s
7	112	1,6	11,3	2,6	q
15	102,3			0,8	s
20	99			0,2	s
21	100			0,4	s
27	95			-0,6	s
39	101	17,5	0,4	0,6	s
41	103			0,9	s
43	98,5			0,1	s
56	98,7	4,94	0,3	0,1	s
59	74,8	7,48	-6,0	-4,5	u
60	90,7			-1,4	s
68	84,6	9,98	-2,6	-2,6	q
86	95,5	23,7	-0,2	-0,5	s
87	88,4			-1,9	s
95	91,5			-1,3	s
116	101	10	0,6	0,6	s
117	99,3	6,8	0,4	0,3	s
119	108			1,9	s
141	99,5	10	0,3	0,3	s
143	97,3			-0,1	s
148	96,6			-0,3	s
153	101	10,1	0,6	0,6	s
160	99,5			0,3	s
166	95,8	3,8	-1,0	-0,4	s
168	101			0,6	s
179	97,5			-0,1	s
184	95,8			-0,4	s
185	89,2			-1,7	s
197	97,7	8,41	-0,1	0,0	s
212	93,3			-0,9	s
217	100	7,05	0,6	0,4	s
243	95			-0,6	s
249	100	7,75	0,5	0,4	s
262	99	16,8	0,1	0,2	s

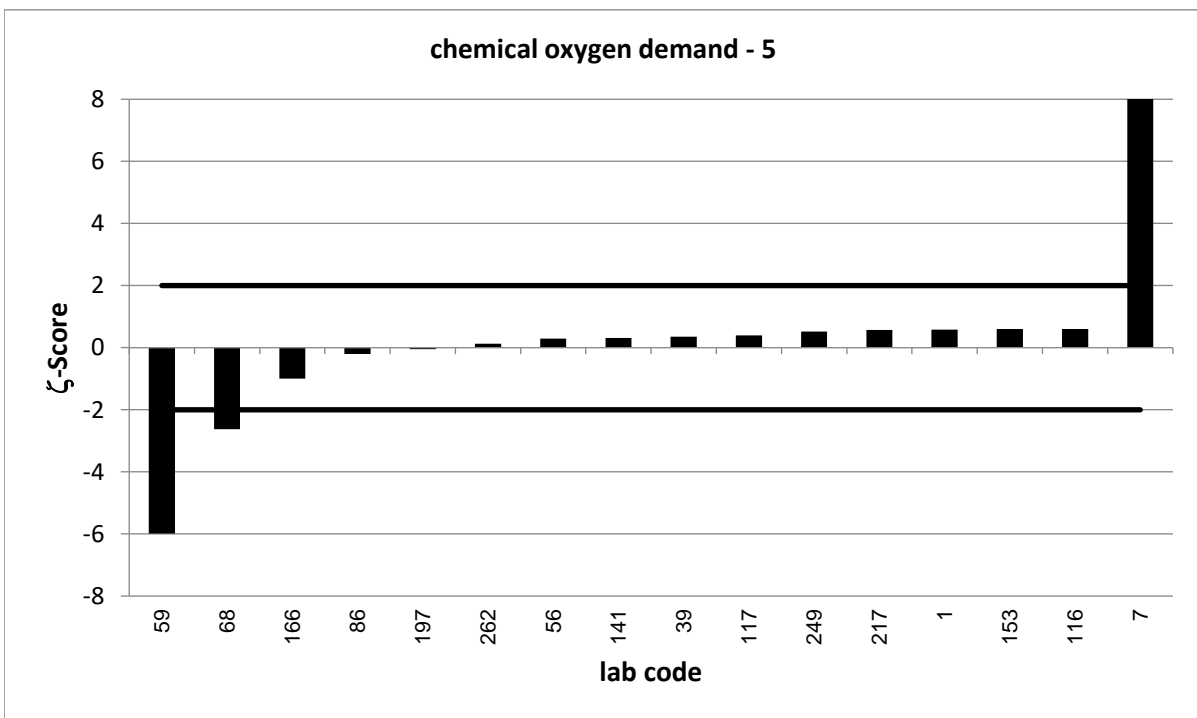
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory





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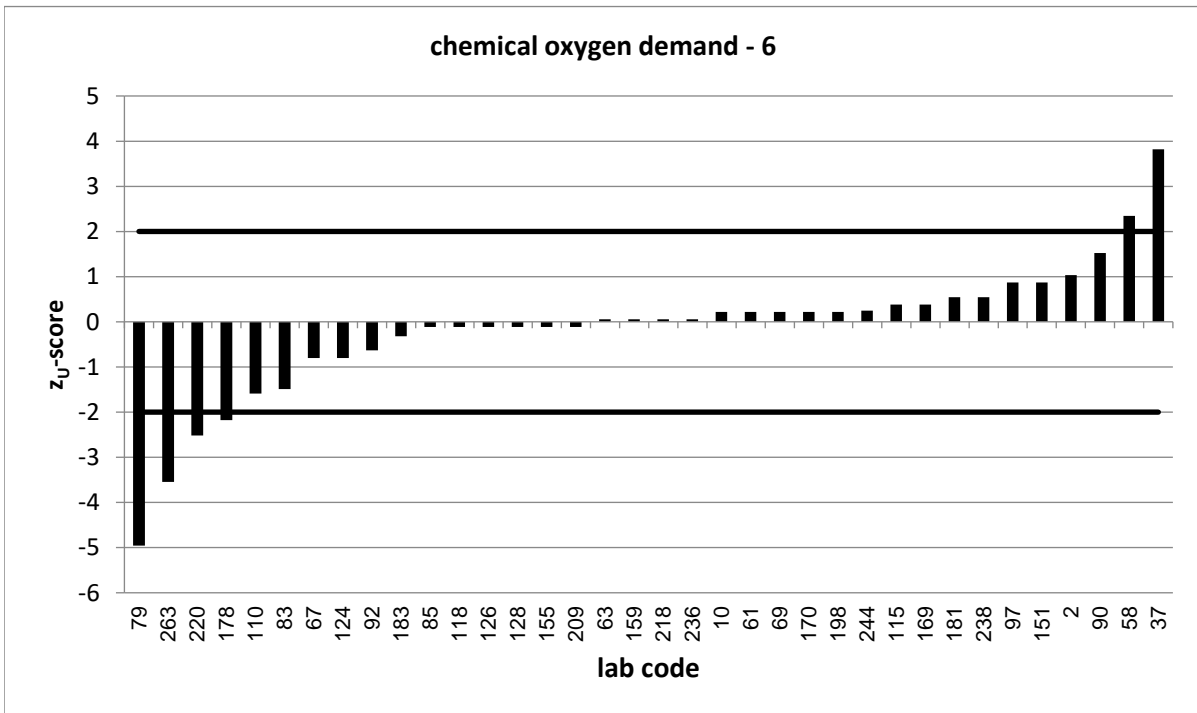
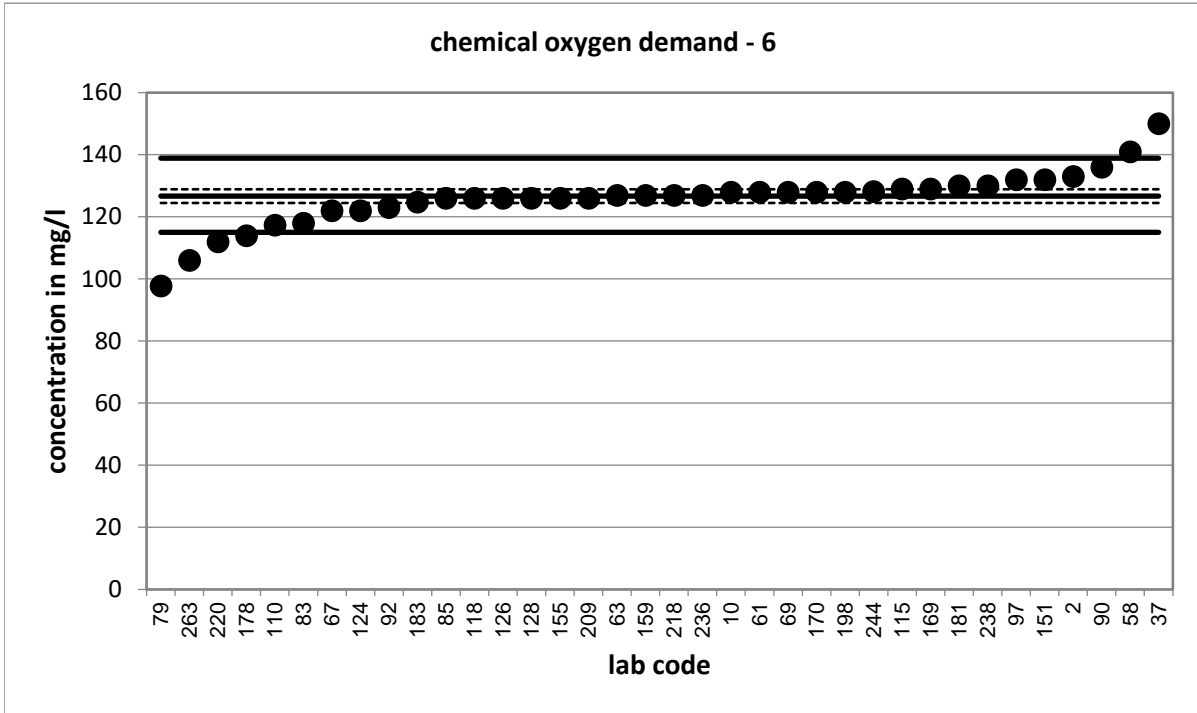
Strongly deviating values are not correctly shown in the diagram.

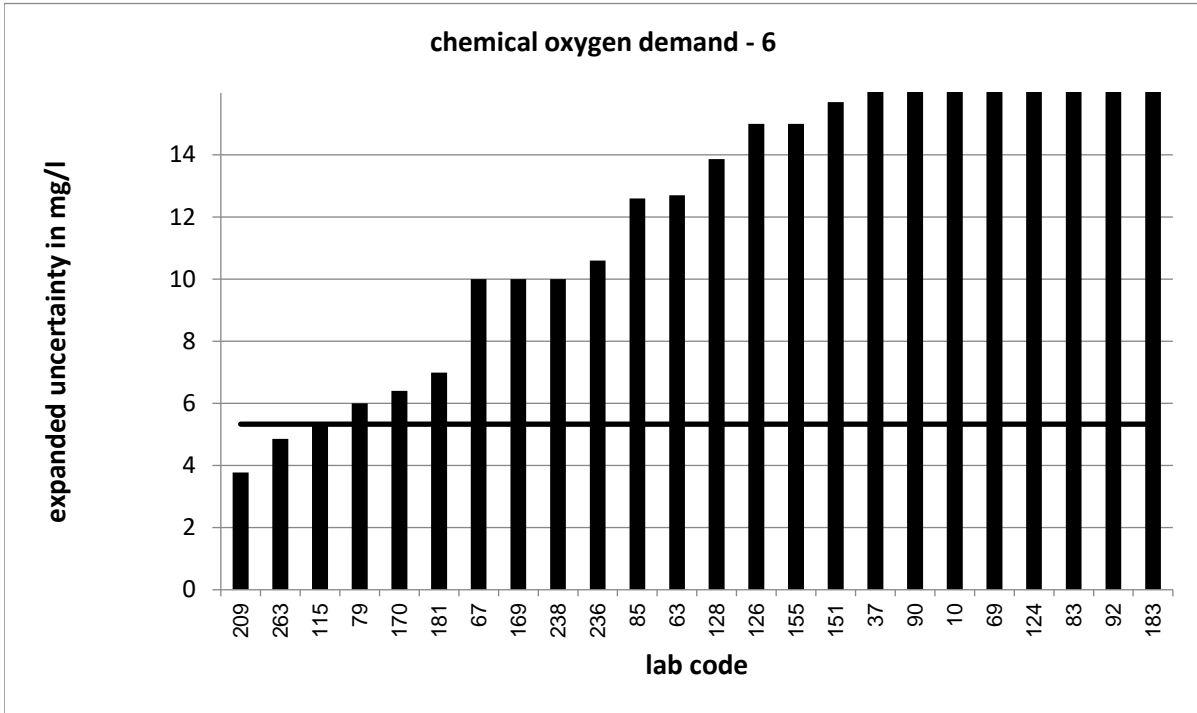


PT 10/23		chemical oxygen demand - 6			
assigned value [mg/l]*		126,7 ± 2,2			
upper tolerance limit [mg/l]		138,9			
lower tolerance limit [mg/l]		115			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
2	133			1,0	s
10	128	17,9	0,1	0,2	s
37	150	17	2,7	3,8	u
58	141			2,3	q
61	128			0,2	s
63	127	12,7	0,0	0,1	s
67	122	10	-0,9	-0,8	s
69	128	19	0,1	0,2	s
79	97,8	6	-9,0	-5,0	u
83	118	23	-0,8	-1,5	s
85	126	12,6	-0,1	-0,1	s
90	136	17,7	1,0	1,5	s
92	123	23,8	-0,3	-0,6	s
97	132			0,9	s
110	117,4			-1,6	s
115	129	5,29	0,8	0,4	s
118	126			-0,1	s
124	122	22	-0,4	-0,8	s
126	126	15	-0,1	-0,1	s
128	126	13,86	-0,1	-0,1	s
151	132	15,7	0,7	0,9	s
155	126	15	-0,1	-0,1	s
159	127			0,1	s
169	129	10	0,5	0,4	s
170	128	6,4	0,4	0,2	s
178	114			-2,2	q
181	130	6,99	0,9	0,5	s
183	124,8	31,2	-0,1	-0,3	s
198	128			0,2	s
209	126	3,78	-0,3	-0,1	s
218	127			0,1	s
220	112			-2,5	q
236	127	10,6	0,1	0,1	s
238	130	10	0,6	0,5	s
244	128,2			0,2	s
263	106	4,86	-7,7	-3,5	u

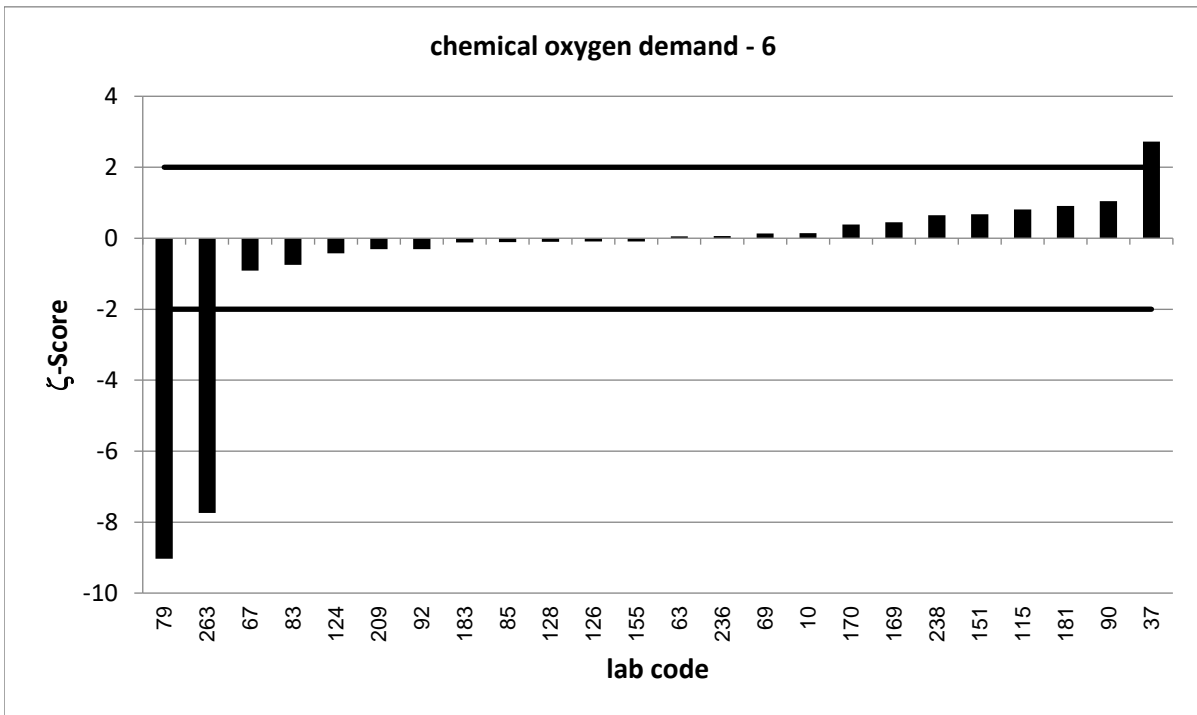
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory





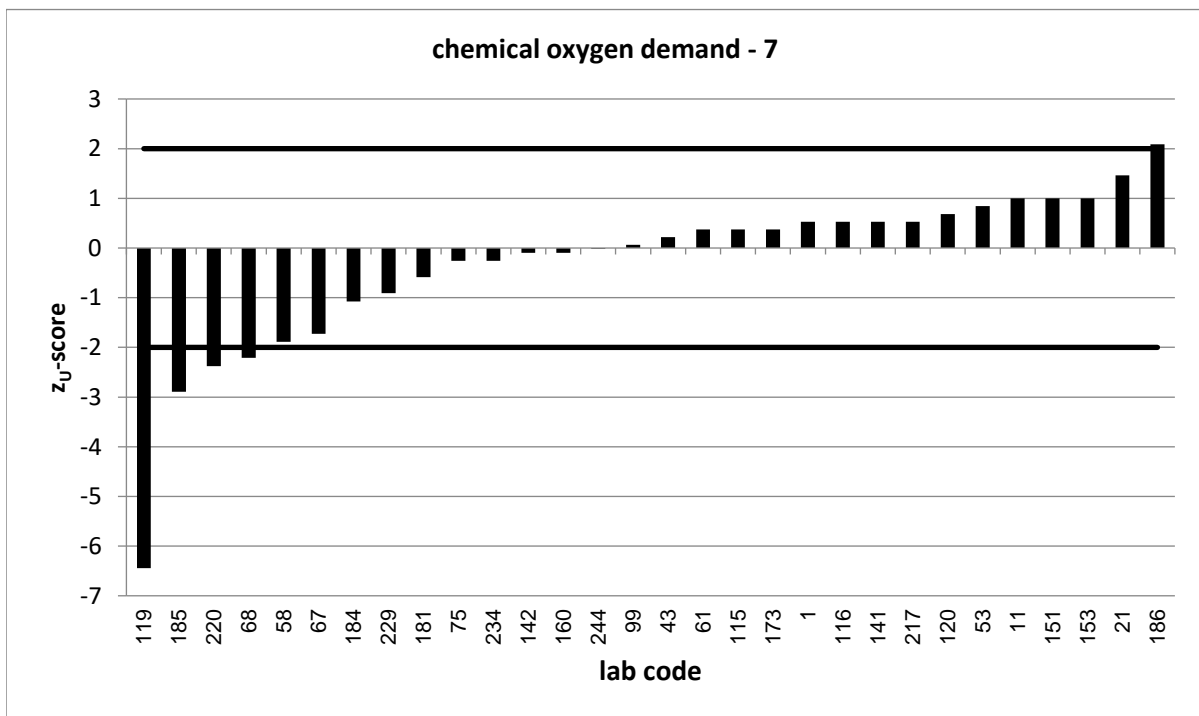
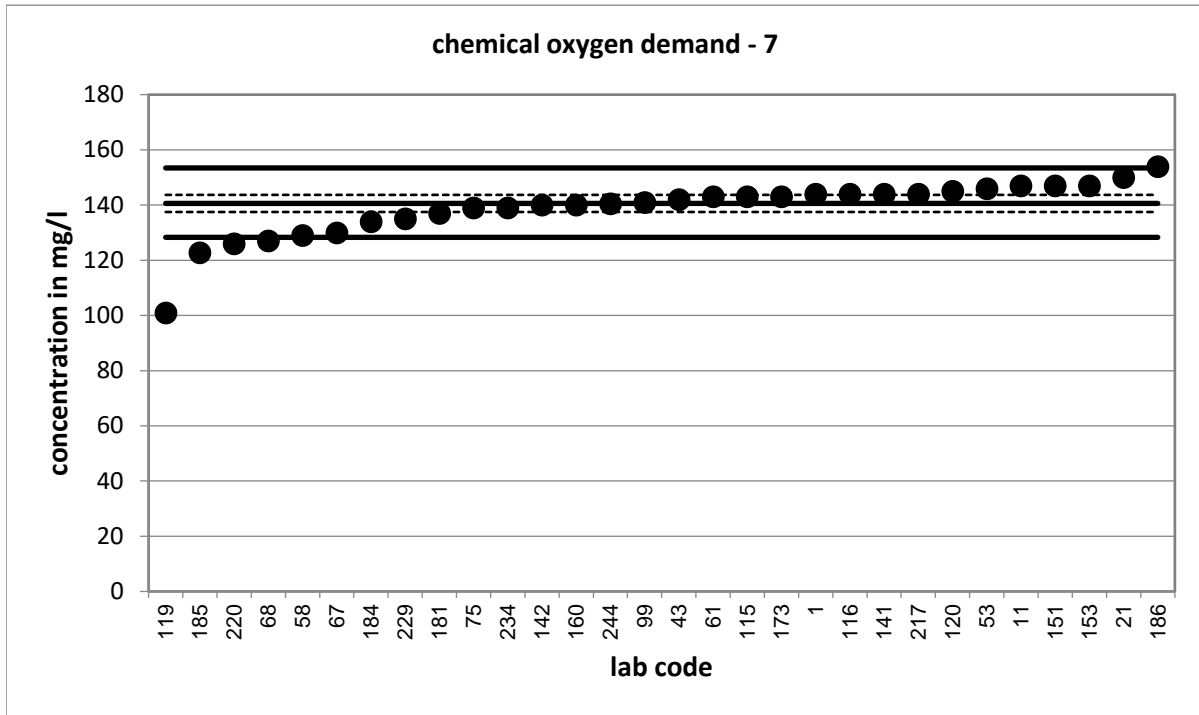
Strongly deviating values are not correctly shown in the diagram.

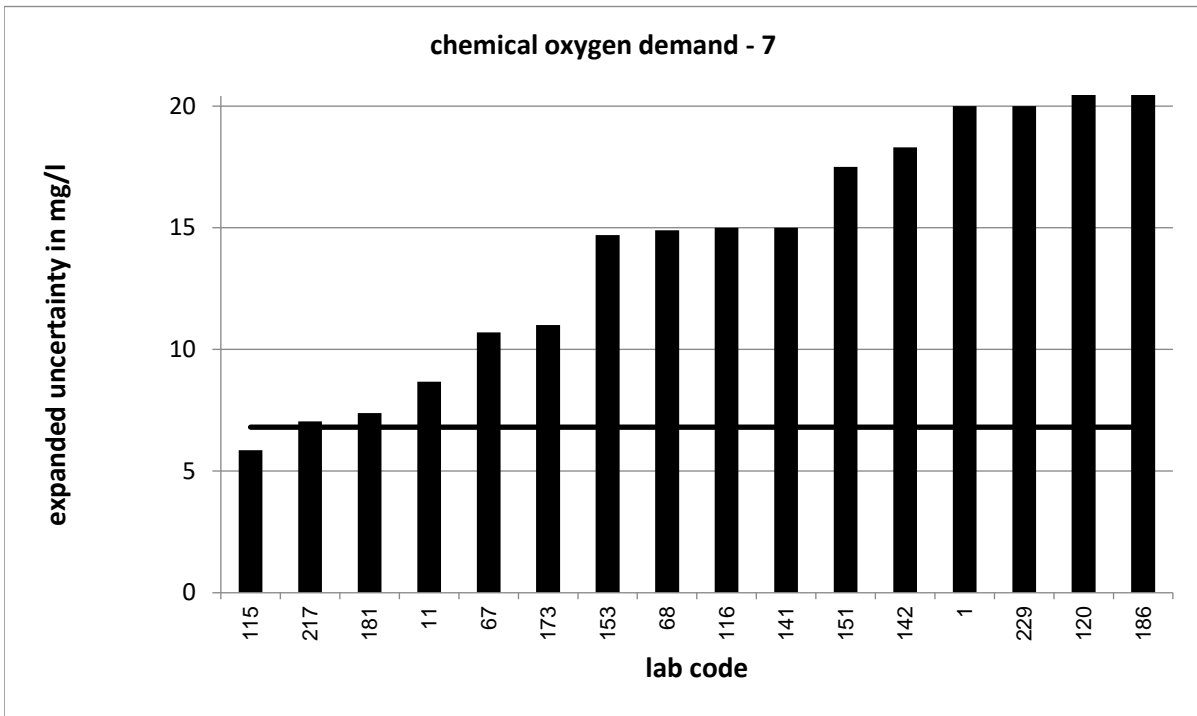


PT 10/23		chemical oxygen demand - 7			
assigned value [mg/l]*		140,6 ± 3,1			
upper tolerance limit [mg/l]		153,4			
lower tolerance limit [mg/l]		128,3			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	144	20	0,3	0,5	s
11	147	8,67	1,4	1,0	s
21	150			1,5	s
43	142			0,2	s
53	146			0,8	s
58	129			-1,9	s
61	143			0,4	s
67	130	10,7	-1,9	-1,7	s
68	127	14,9	-1,8	-2,2	q
75	139			-0,3	s
99	141			0,1	s
115	143	5,86	0,7	0,4	s
116	144	15	0,4	0,5	s
119	101			-6,4	u
120	145	20,6	0,4	0,7	s
141	144	15	0,4	0,5	s
142	140	18,3	-0,1	-0,1	s
151	147	17,5	0,7	1,0	s
153	147	14,7	0,9	1,0	s
160	140			-0,1	s
173	143	11	0,4	0,4	s
181	137	7,38	-0,9	-0,6	s
184	134			-1,1	s
185	122,8			-2,9	q
186	154	23,2	1,1	2,1	q
217	144	7,05	0,9	0,5	s
220	126			-2,4	q
229	135	20	-0,6	-0,9	s
234	139			-0,3	s
244	140,5			0,0	s

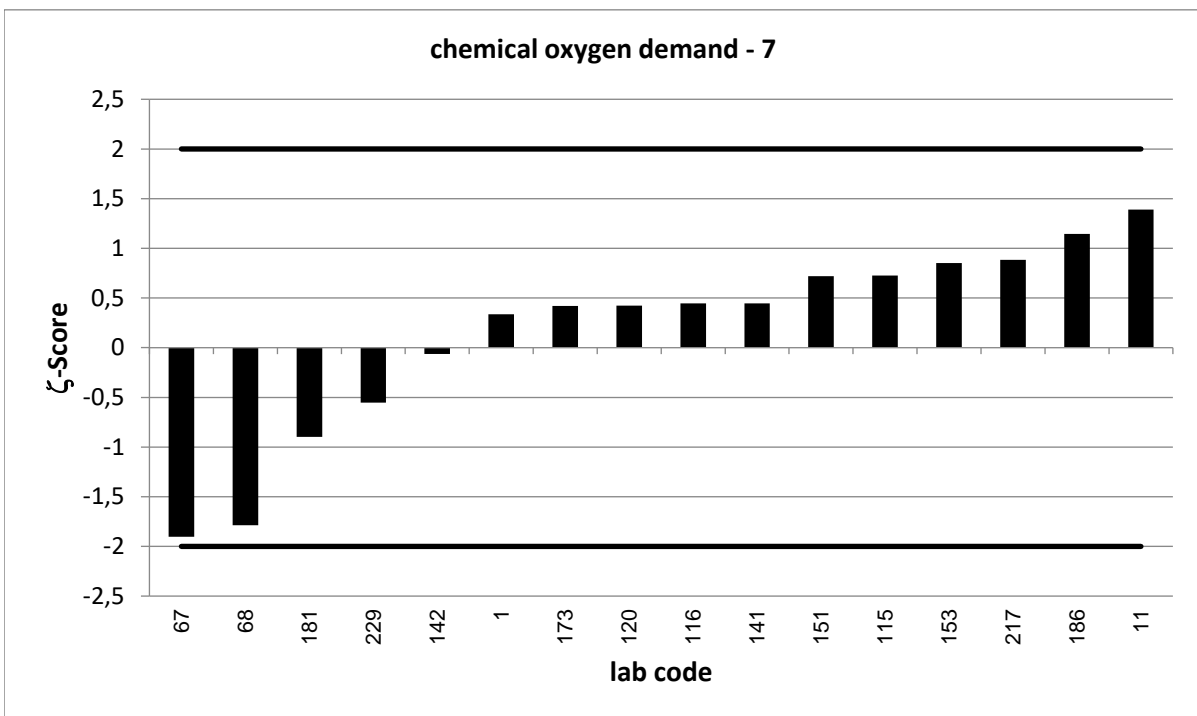
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory





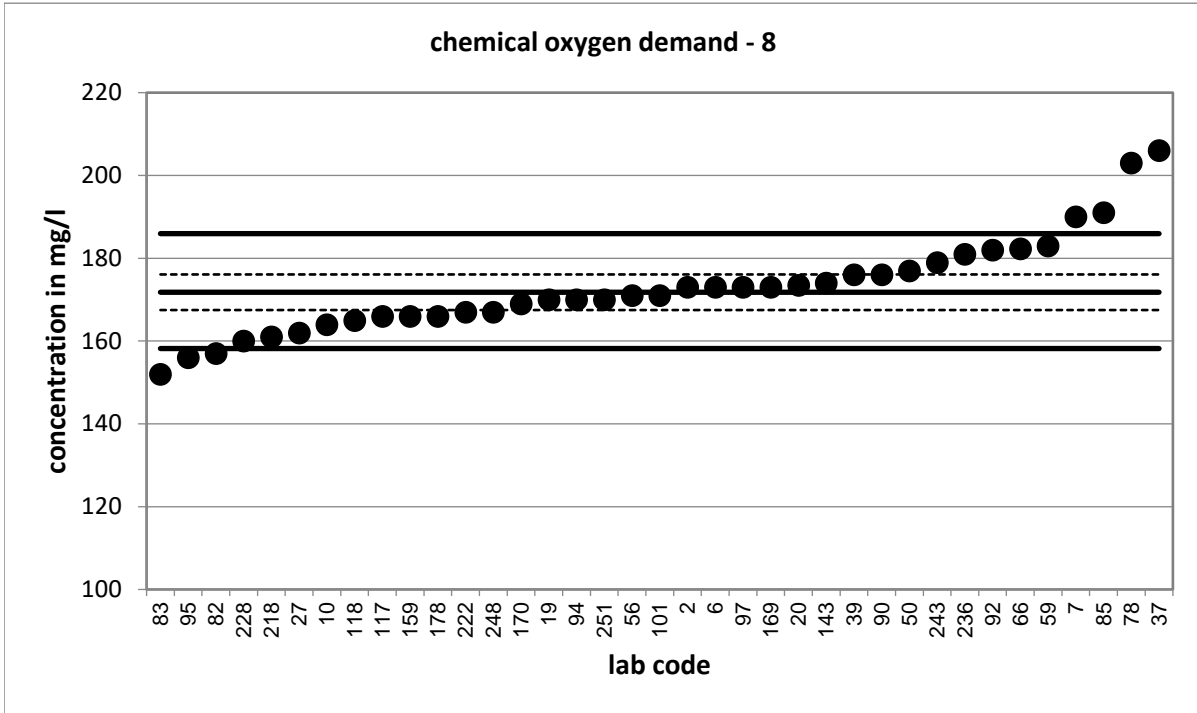
Strongly deviating values are not correctly shown in the diagram.



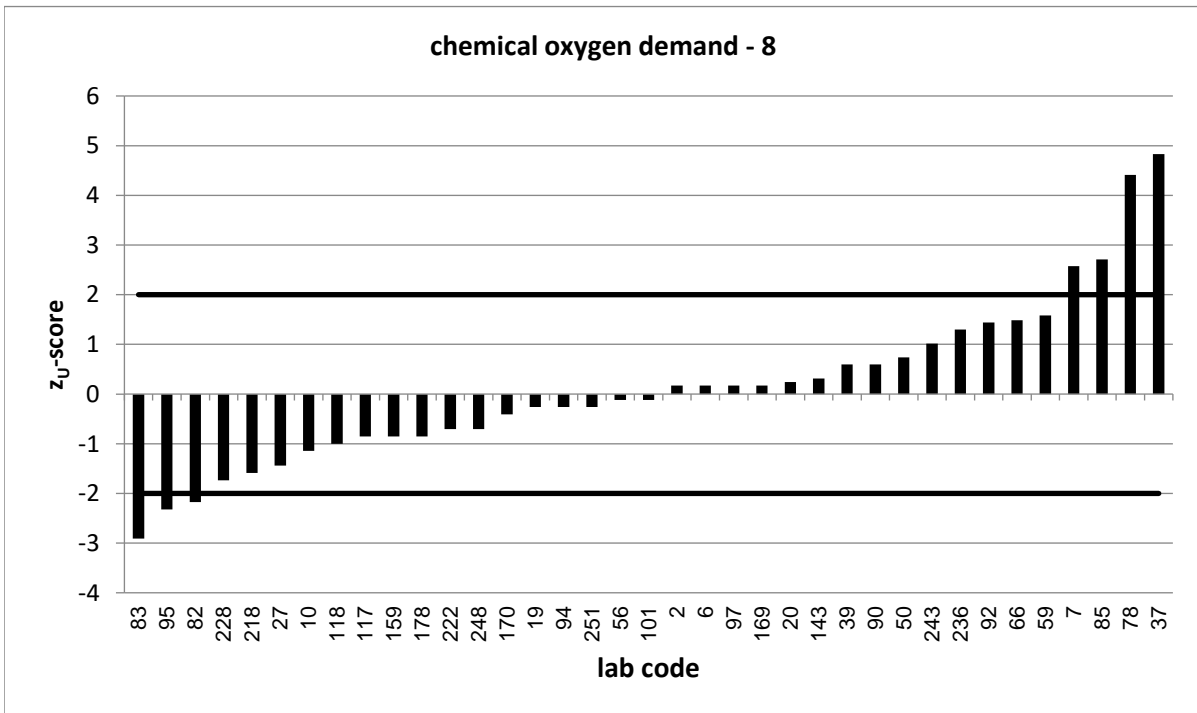
PT 10/23		chemical oxygen demand - 8			
assigned value [mg/l]*		171,8 ± 4,3			
upper tolerance limit [mg/l]		186			
lower tolerance limit [mg/l]		158,2			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
2	173			0,2	s
6	173			0,2	s
7	190	1,8	7,9	2,6	q
10	164	23	-0,7	-1,1	s
19	170	7	-0,4	-0,3	s
20	173,5			0,2	s
27	162			-1,4	s
37	206	23	2,9	4,8	u
39	176	30,4	0,3	0,6	s
50	177	8,74	1,1	0,7	s
56	171	8,55	-0,2	-0,1	s
59	183	18,3	1,2	1,6	s
66	182,3	5,5	3,0	1,5	s
78	203			4,4	u
82	157	1,4	-6,6	-2,2	q
83	152	30	-1,3	-2,9	q
85	191	19,1	2,0	2,7	q
90	176	22,9	0,4	0,6	s
92	182	35,3	0,6	1,4	s
94	170	1,57	-0,8	-0,3	s
95	156			-2,3	q
97	173			0,2	s
101	171			-0,1	s
117	166	11,4	-1,0	-0,9	s
118	165			-1,0	s
143	174			0,3	s
159	166			-0,9	s
169	173	15	0,2	0,2	s
170	169	8,45	-0,6	-0,4	s
178	166			-0,9	s
218	161			-1,6	s
222	167	17	-0,5	-0,7	s
228	160			-1,7	s
236	181	15,1	1,2	1,3	s
243	179			1,0	s
248	167	15	-0,6	-0,7	s
251	170	18,17	-0,2	-0,3	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

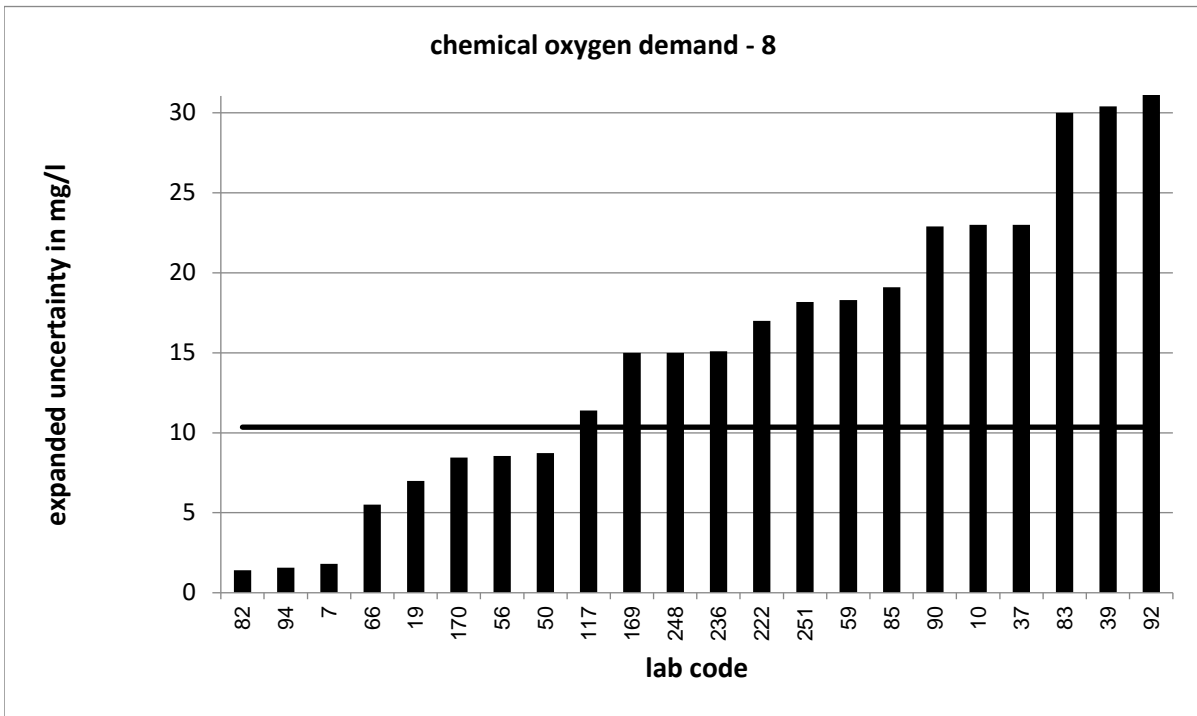
\*\* s = satisfactory, q = questionable, u = unsatisfactory



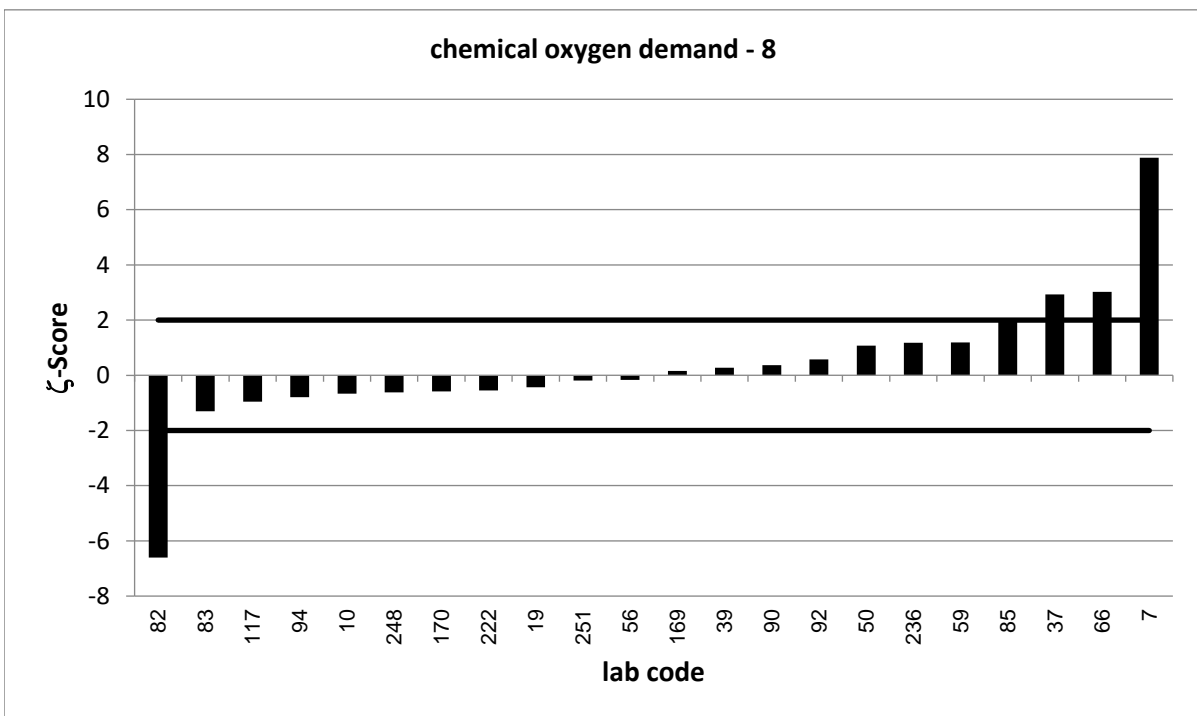
Strongly deviating values are not shown in the diagram.







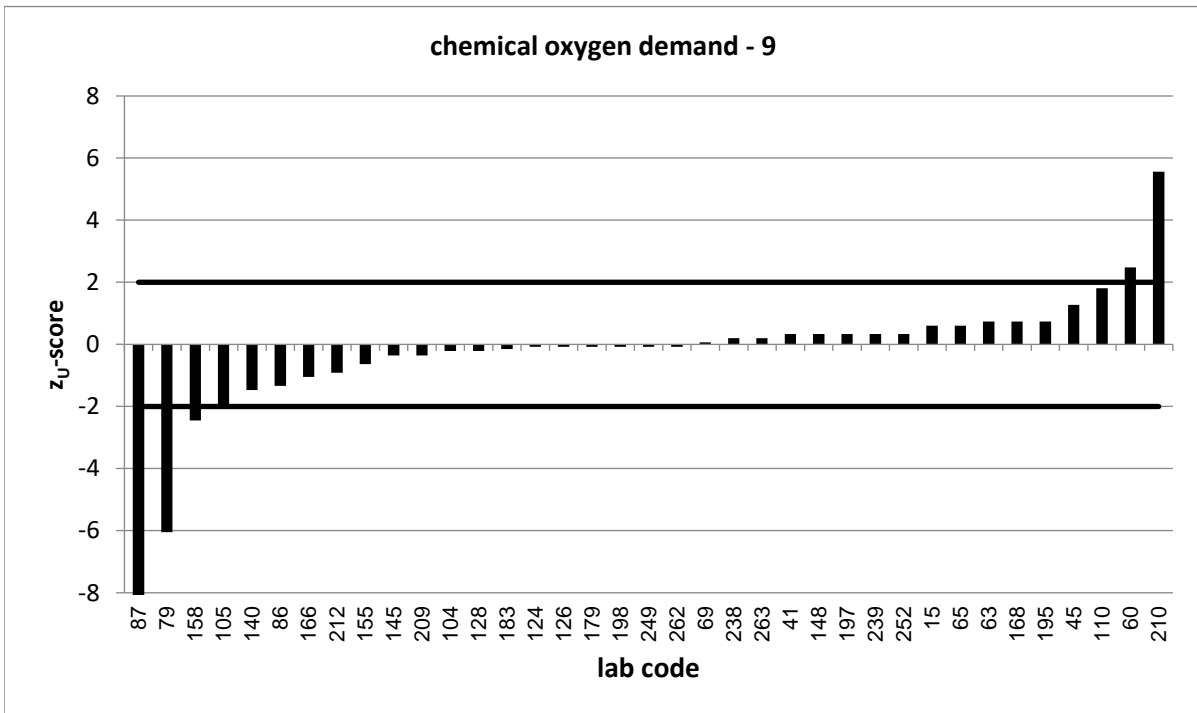
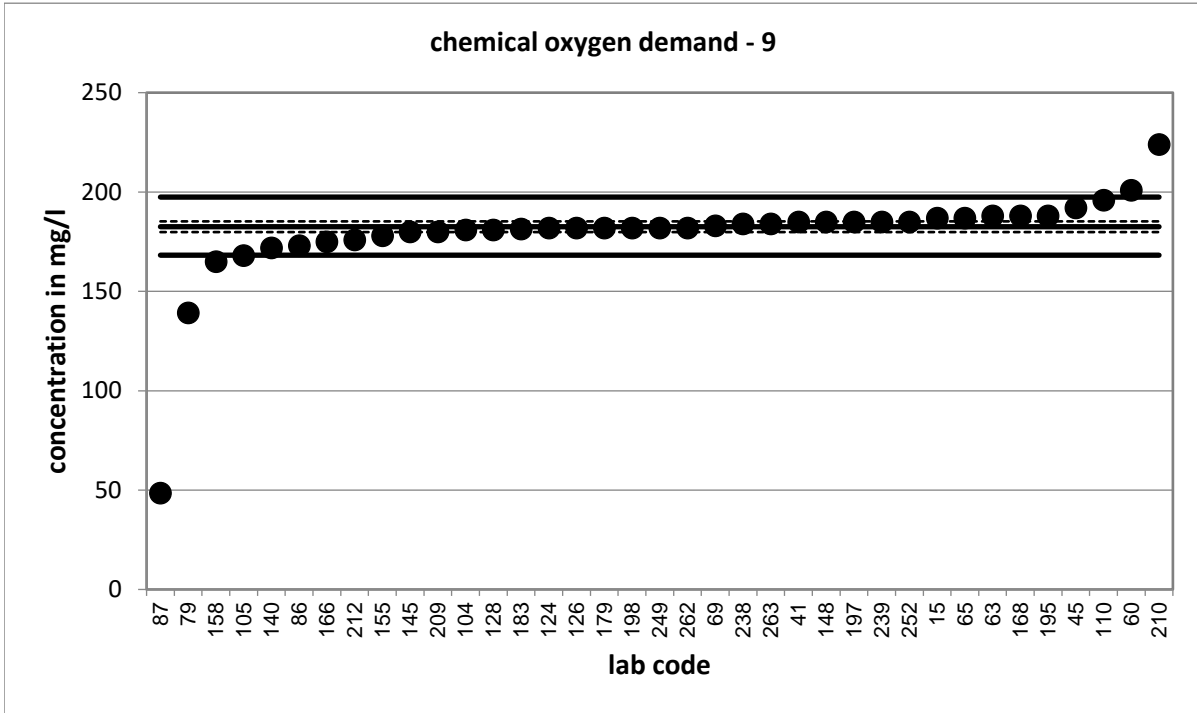
Strongly deviating values are not correctly shown in the diagram.



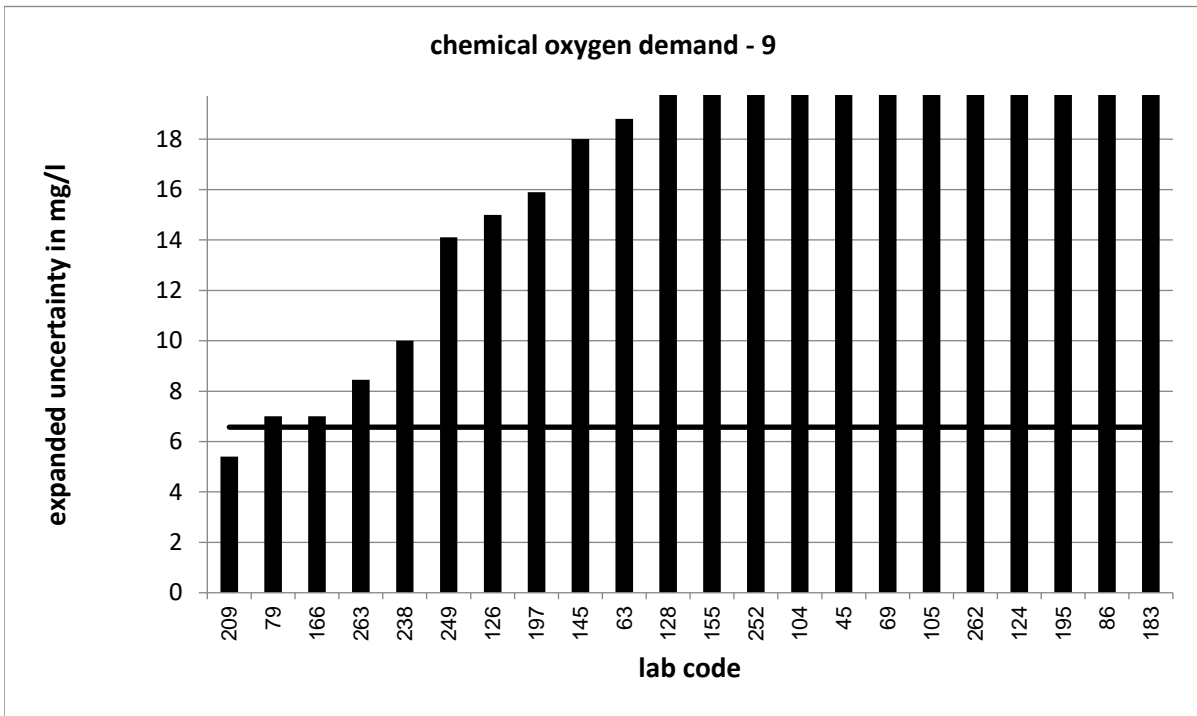
PT 10/23		chemical oxygen demand - 9			
assigned value [mg/l]*		182,5 ± 2,7			
upper tolerance limit [mg/l]		197,4			
lower tolerance limit [mg/l]		168,2			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
15	187			0,6	s
41	185			0,3	s
45	192	23,9	0,8	1,3	s
60	201			2,5	q
63	188	18,8	0,6	0,7	s
65	187			0,6	s
69	183	27	0,0	0,1	s
79	139,2	7	-11,6	-6,1	u
86	173	43	-0,4	-1,3	s
87	48,5			-18,7	u
104	181	23	-0,1	-0,2	s
105	168	28,9	-1,0	-2,0	s
110	196			1,8	s
124	182	33	0,0	-0,1	s
126	182	15	-0,1	-0,1	s
128	181	19,91	-0,2	-0,2	s
140	172			-1,5	s
145	180	18	-0,3	-0,4	s
148	185			0,3	s
155	178	21	-0,4	-0,6	s
158	165			-2,4	q
166	175	7	-2,0	-1,1	s
168	188			0,7	s
179	182			-0,1	s
183	181,45	45,36	0,0	-0,2	s
195	188	37,6	0,3	0,7	s
197	185	15,9	0,3	0,3	s
198	182			-0,1	s
209	180	5,4	-0,8	-0,4	s
210	224			5,6	u
212	176			-0,9	s
238	184	10	0,3	0,2	s
239	185			0,3	s
249	182	14,1	-0,1	-0,1	s
252	185	22,9	0,2	0,3	s
262	182	30,9	0,0	-0,1	s
263	184	8,45	0,3	0,2	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

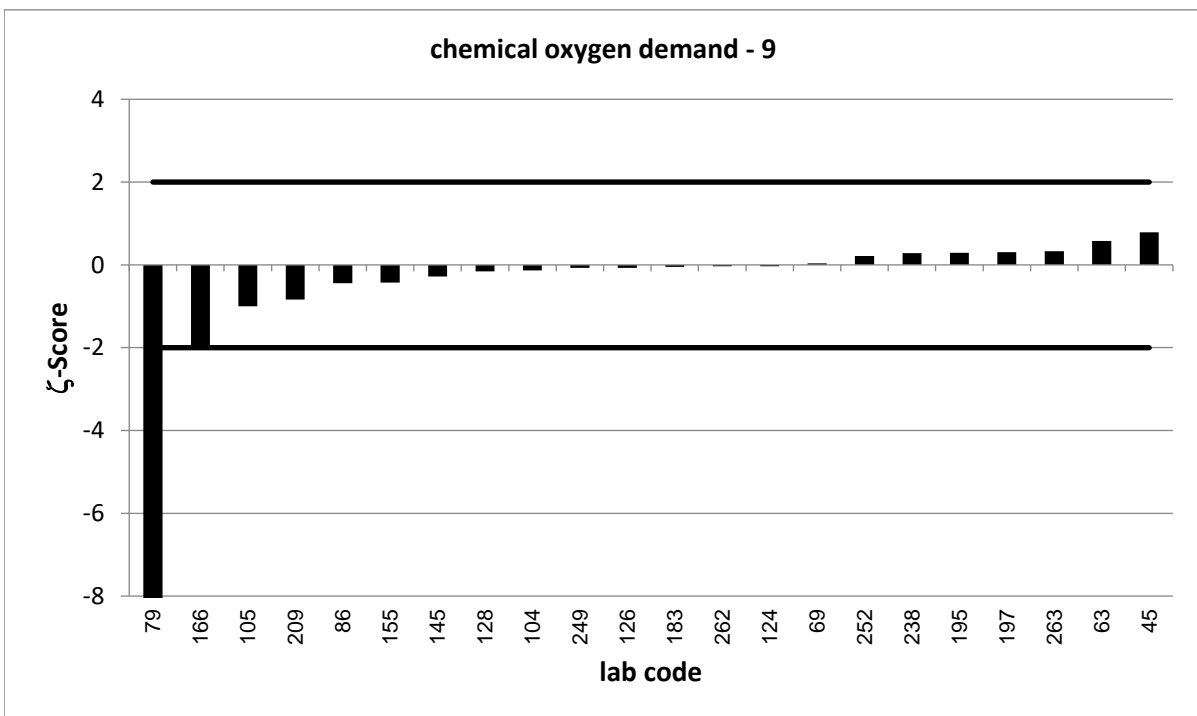
\*\* s = satisfactory, q = questionable, u = unsatisfactory



Strongly deviating values are not correctly shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.

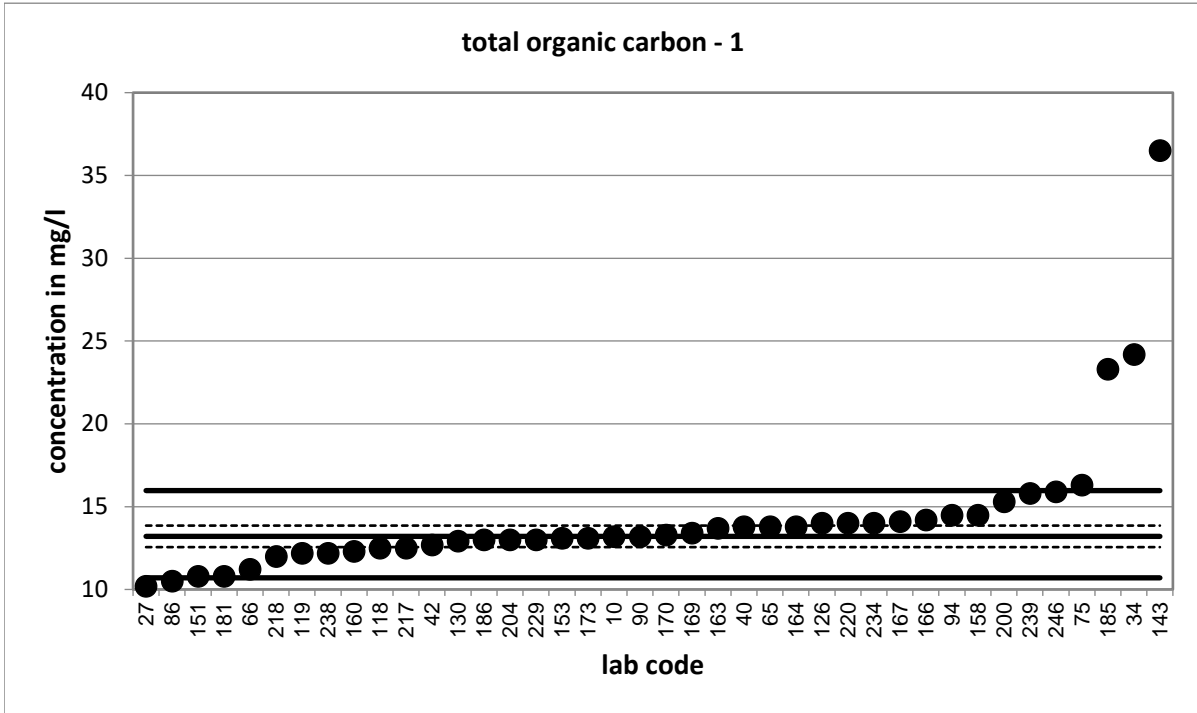


Strongly deviating values are not correctly shown in the diagram.

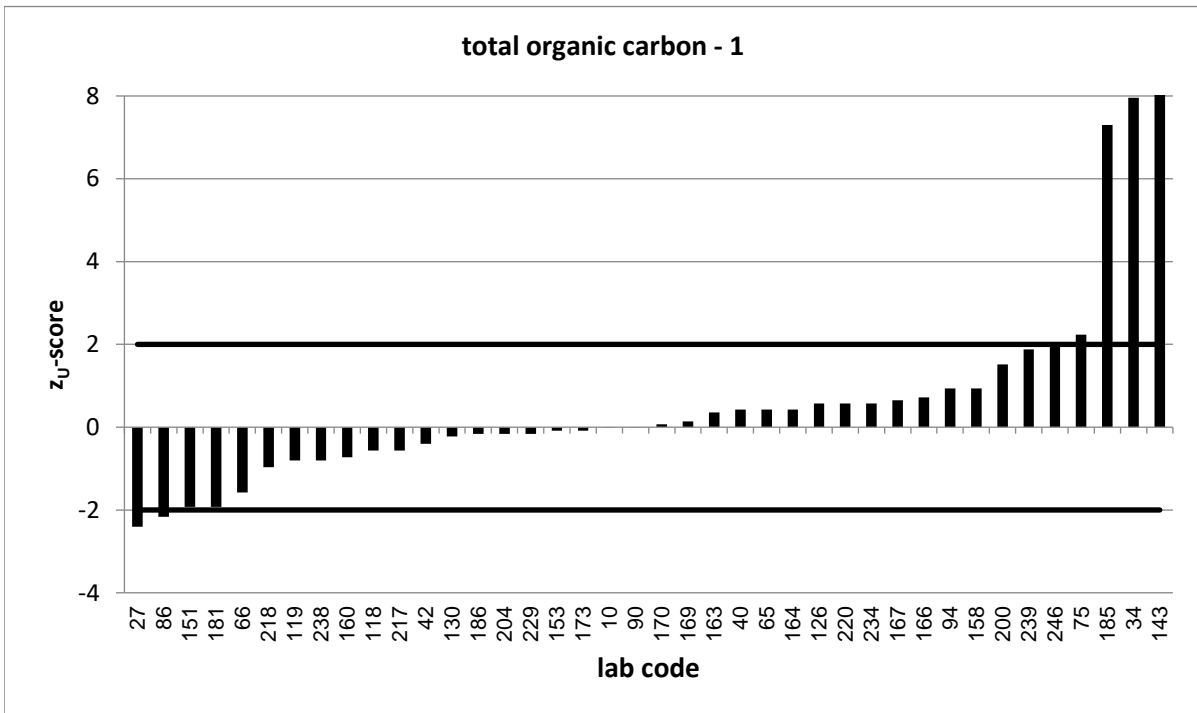
PT 10/23		total organic carbon - 1			
assigned value [mg/l]*		13,21 ± 0,65			
upper tolerance limit [mg/l]		15,97			
lower tolerance limit [mg/l]		10,7			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
10	13,2	1,32	0,0	0,0	s
27	10,2			-2,4	q
34	24,2			8,0	u
40	13,8	2,54	0,5	0,4	s
42	12,7			-0,4	s
65	13,8			0,4	s
66	11,23	0,3	-5,5	-1,6	s
75	16,3			2,2	q
86	10,5	2,9	-1,8	-2,2	q
90	13,2	1,18	0,0	0,0	s
94	14,5	0,68	2,8	0,9	s
118	12,5			-0,6	s
119	12,2			-0,8	s
126	14	3	0,5	0,6	s
130	12,93	1,3	-0,4	-0,2	s
143	36,5			16,9	u
151	10,8	2,65	-1,8	-1,9	s
153	13,1	1,31	-0,1	-0,1	s
158	14,5			0,9	s
160	12,3			-0,7	s
163	13,7	2,87	0,3	0,4	s
164	13,8	9,2	0,1	0,4	s
166	14,2	1,7	1,1	0,7	s
167	14,1	3,52	0,5	0,6	s
169	13,4	1	0,3	0,1	s
170	13,3			0,1	s
173	13,1	1,5	-0,1	-0,1	s
181	10,8	1,62	-2,8	-1,9	s
185	23,3			7,3	u
186	13	2	-0,2	-0,2	s
200	15,3			1,5	s
204	13	1,46	-0,3	-0,2	s
217	12,5	0,29	-2,0	-0,6	s
218	12			-1,0	s
220	14			0,6	s
229	13	4	-0,1	-0,2	s
234	14			0,6	s
238	12,2	0,5	-2,5	-0,8	s
239	15,8			1,9	s
246	15,9	0,95	4,7	1,9	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

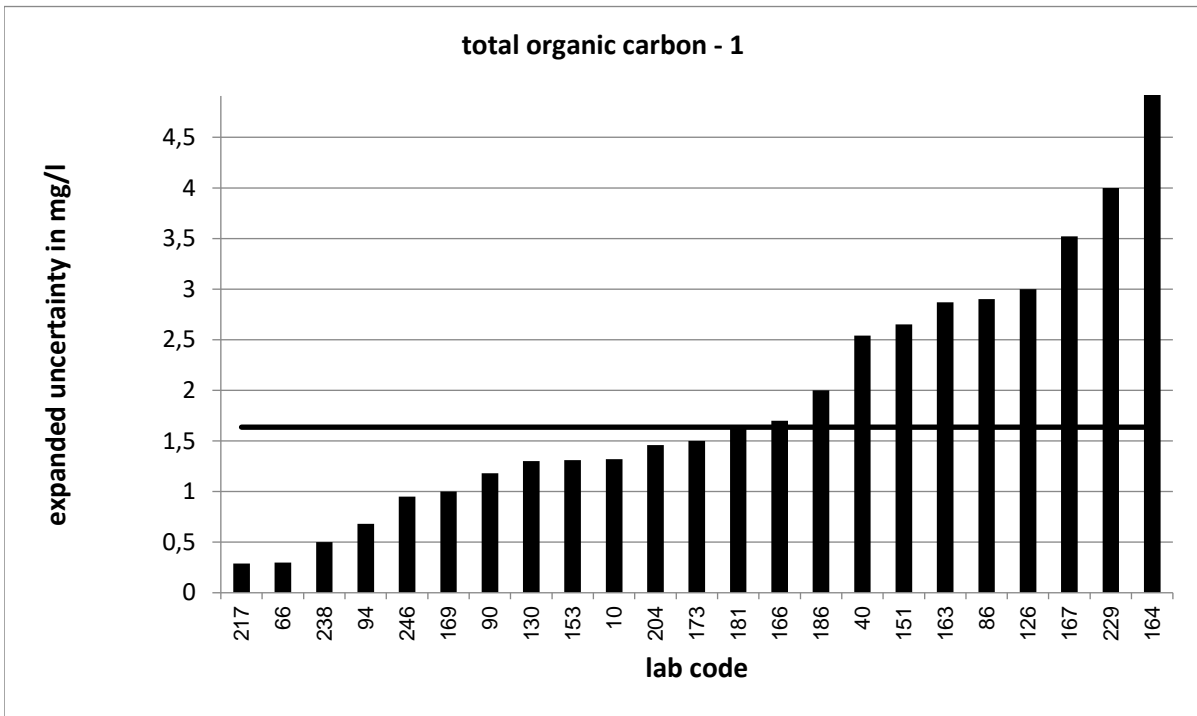
\*\* s = satisfactory, q = questionable, u = unsatisfactory



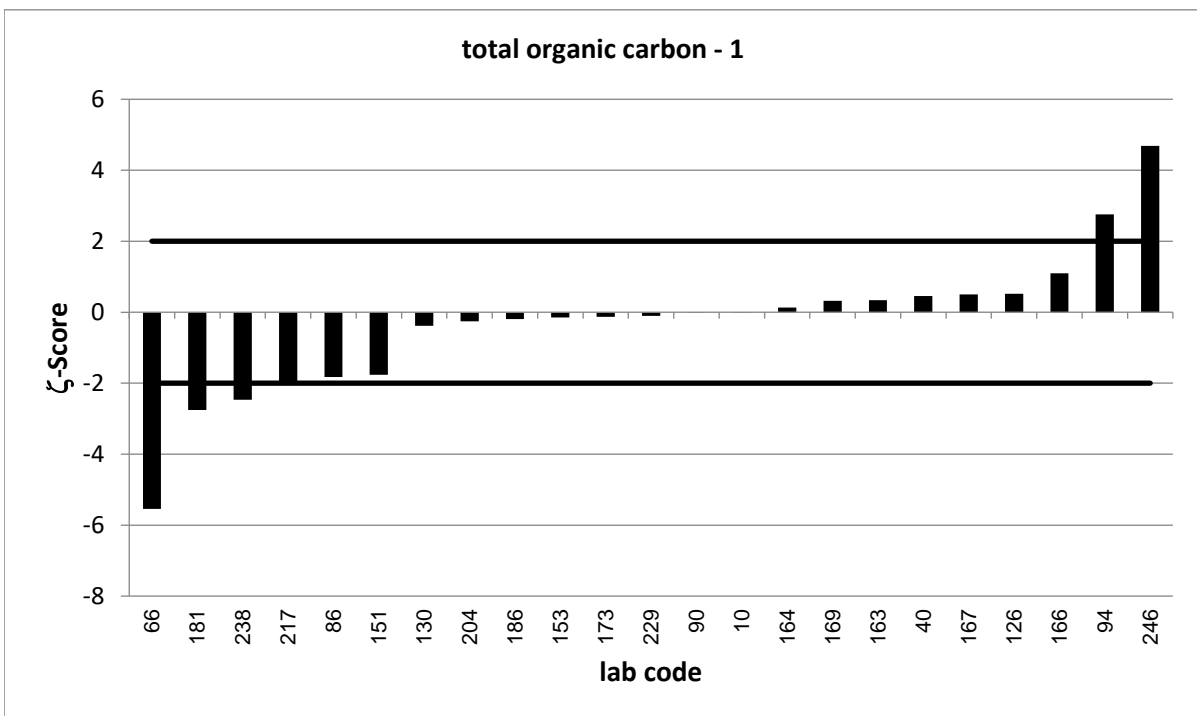
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.

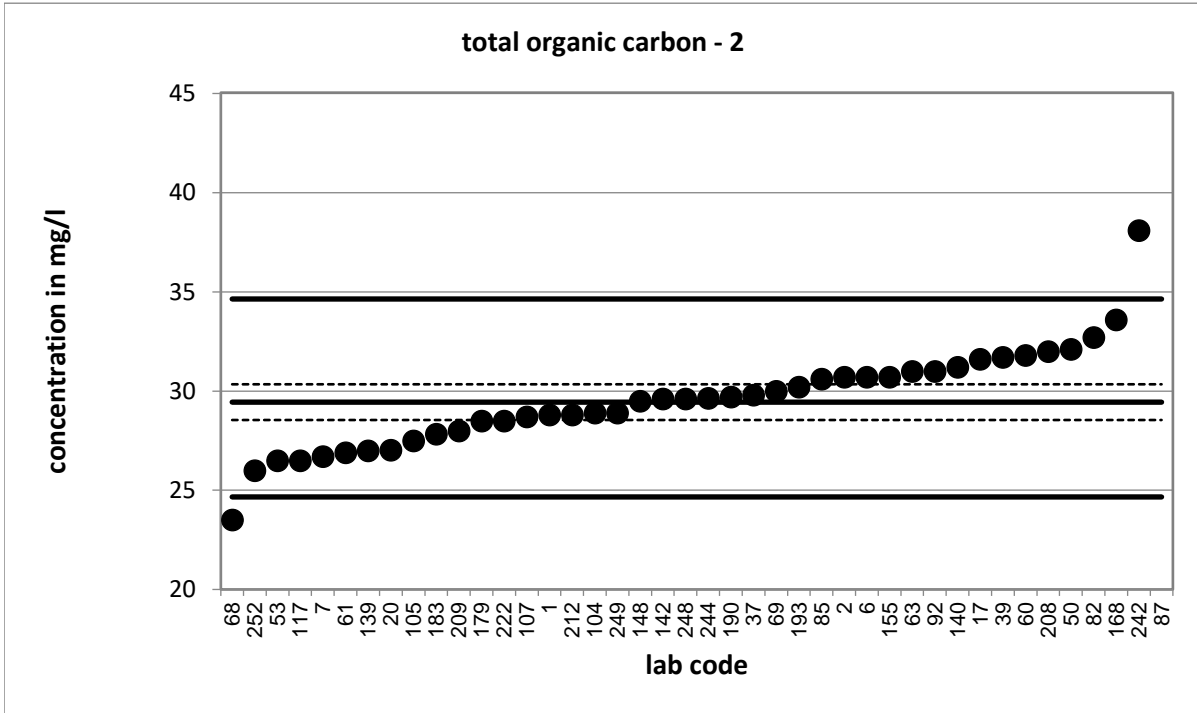


PT 10/23		total organic carbon - 2			
assigned value [mg/l]*		29,44 ± 0,9			
upper tolerance limit [mg/l]		34,64			
lower tolerance limit [mg/l]		24,66			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	28,8	3,7	-0,3	-0,3	s
2	30,7			0,5	s
6	30,7			0,5	s
7	26,7	0,4	-5,5	-1,1	s
17	31,6	3,49	1,2	0,8	s
20	27,02			-1,0	s
37	29,8	4,2	0,2	0,1	s
39	31,7	4,44	1,0	0,9	s
50	32,1	2,61	1,9	1,0	s
53	26,5			-1,2	s
60	31,8	4,77	1,0	0,9	s
61	26,9			-1,1	s
63	31	3,1	1,0	0,6	s
68	23,5	5,4	-2,2	-2,5	q
69	30	4,8	0,2	0,2	s
82	32,7	7,7	0,8	1,3	s
85	30,6	0,306	2,4	0,4	s
87	164			51,8	u
92	31	7,74	0,4	0,6	s
104	28,9	5,3	-0,2	-0,2	s
105	27,5	4,76	-0,8	-0,8	s
107	28,7	4,97	-0,3	-0,3	s
117	26,5	7,22	-0,8	-1,2	s
139	27			-1,0	s
140	31,2			0,7	s
142	29,6	4,1	0,1	0,1	s
148	29,5			0,0	s
155	30,7	5,4	0,5	0,5	s
168	33,6			1,6	s
179	28,5			-0,4	s
183	27,835	6,69	-0,5	-0,7	s
190	29,7	3,8	0,1	0,1	s
193	30,2	7,55	0,2	0,3	s
208	32	4,8	1,0	1,0	s
209	28	2,8	-1,0	-0,6	s
212	28,8			-0,3	s
222	28,5	2,9	-0,6	-0,4	s
242	38,1	6,86	2,5	3,3	u
244	29,64			0,1	s
248	29,6	2,5	0,1	0,1	s
249	28,9	2,93	-0,4	-0,2	s
252	26	2,57	-2,5	-1,4	s

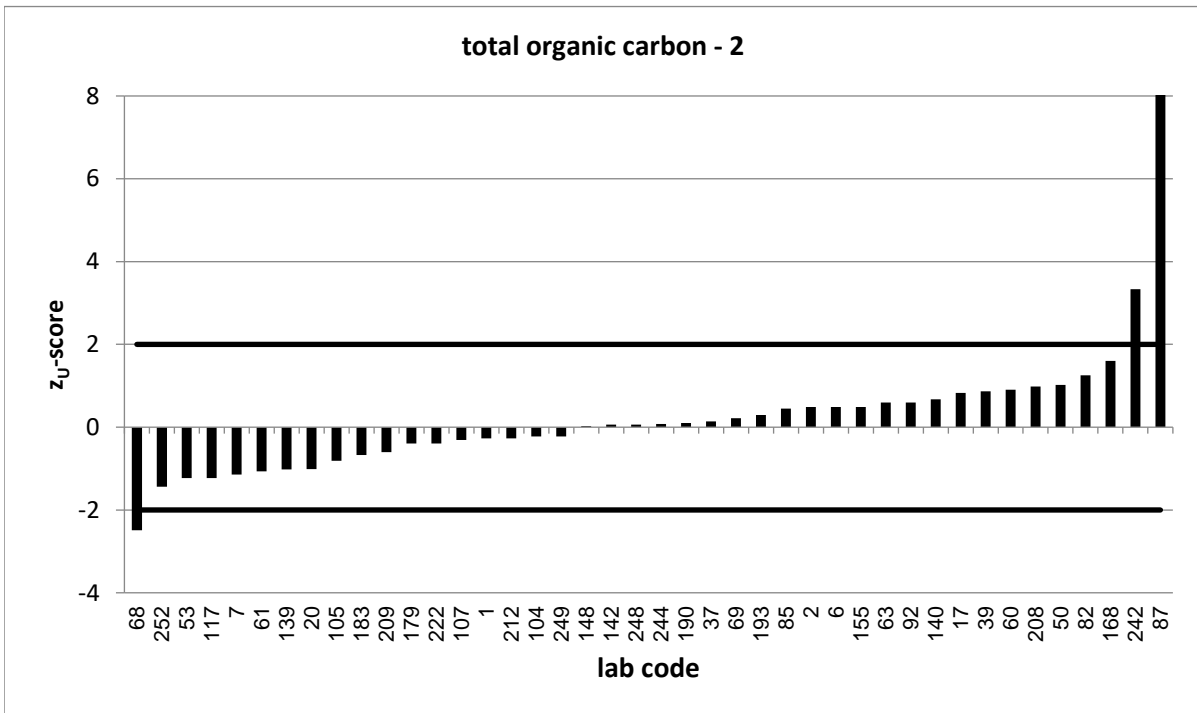
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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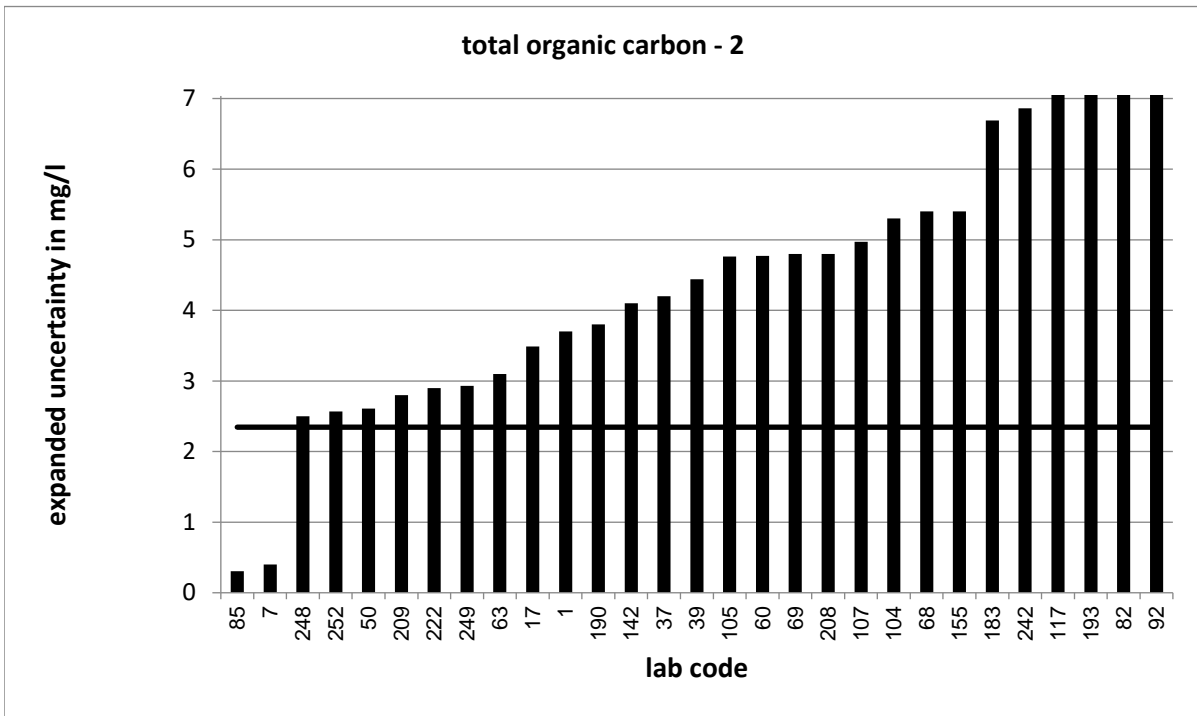




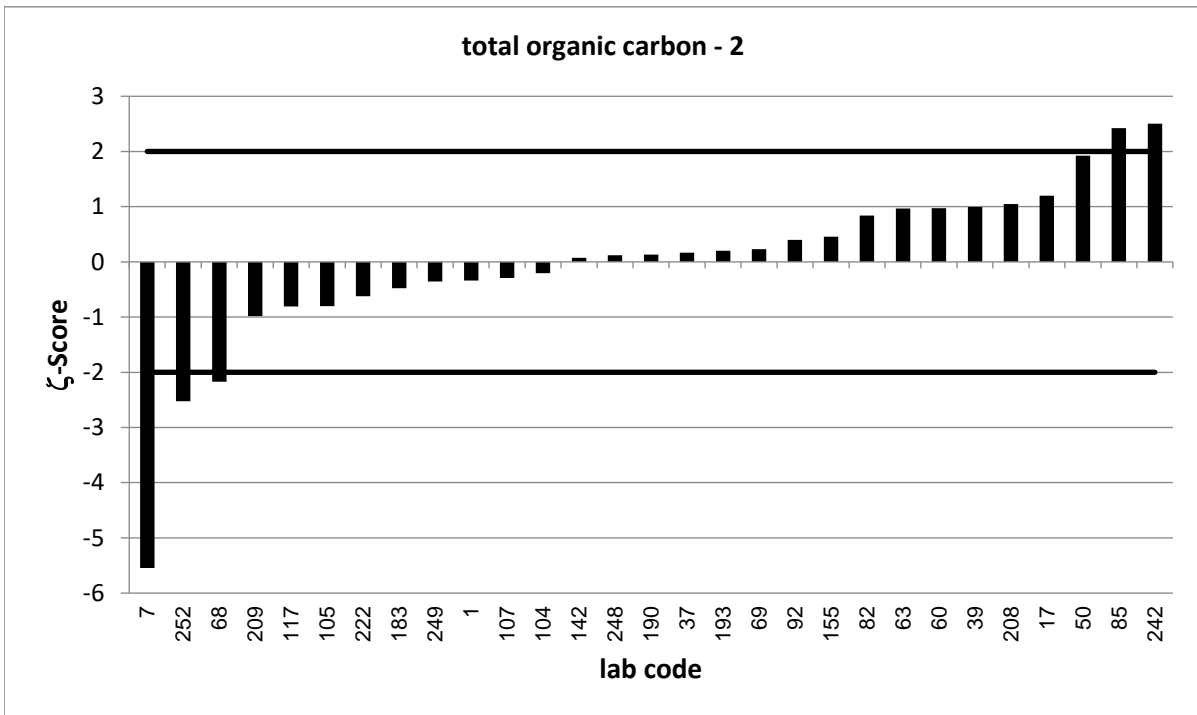
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



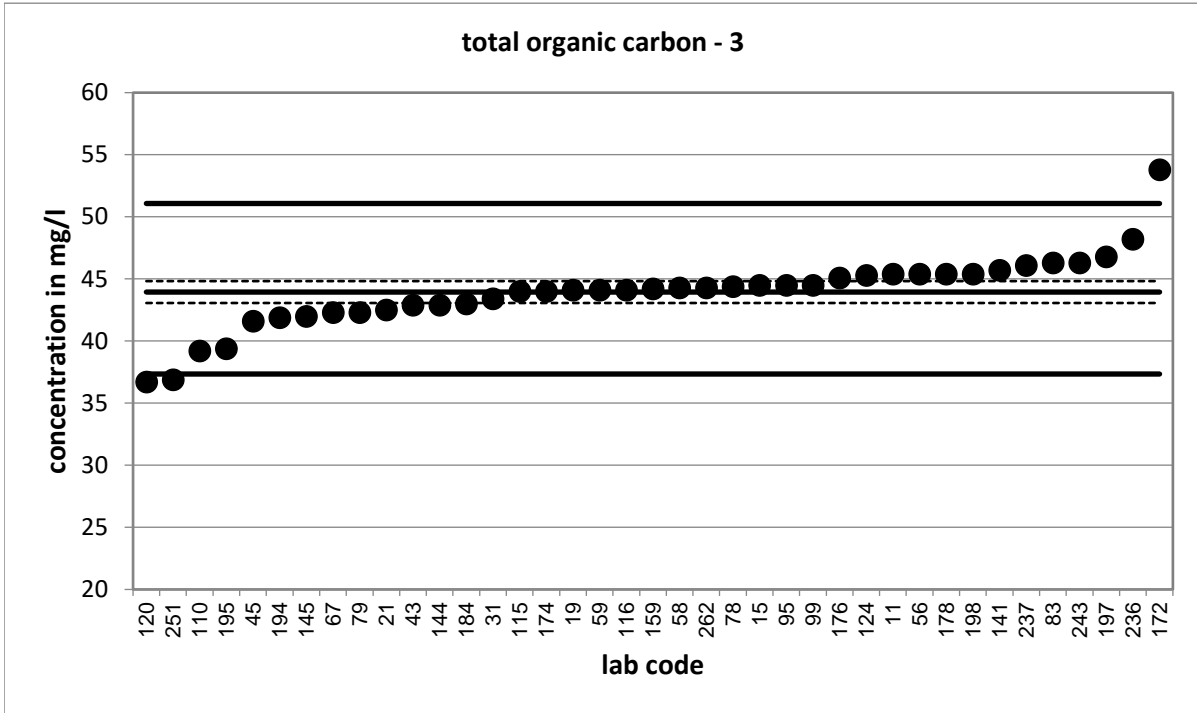
Strongly deviating values are not correctly shown in the diagram.



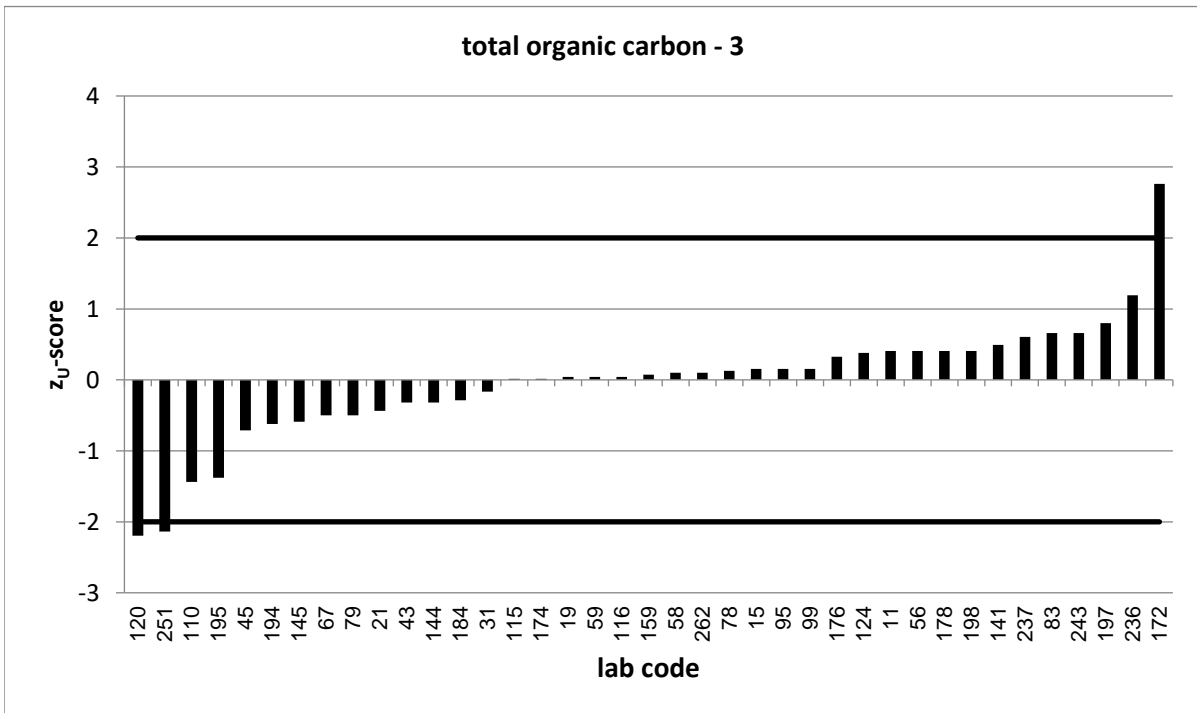
PT 10/23		total organic carbon - 3			
assigned value [mg/l]*		43,95 ± 0,88			
upper tolerance limit [mg/l]		51,08			
lower tolerance limit [mg/l]		37,35			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
11	45,4	14,8	0,2	0,4	s
15	44,5			0,2	s
19	44,1	3,1	0,1	0,0	s
21	42,5			-0,4	s
31	43,4			-0,2	s
43	42,9			-0,3	s
45	41,6	5,82	-0,8	-0,7	s
56	45,4	4,99	0,6	0,4	s
58	44,3			0,1	s
59	44,1	8,41	0,0	0,0	s
67	42,3	7,66	-0,4	-0,5	s
78	44,4			0,1	s
79	42,3	2,6	-1,2	-0,5	s
83	46,3	12,3	0,4	0,7	s
95	44,5			0,2	s
99	44,5			0,2	s
110	39,2			-1,4	s
115	44	5,28	0,0	0,0	s
116	44,1	10	0,0	0,0	s
120	36,7	4,6	-3,1	-2,2	q
124	45,3	6,79	0,4	0,4	s
141	45,7	7	0,5	0,5	s
144	42,9			-0,3	s
145	42	6,29	-0,6	-0,6	s
159	44,2			0,1	s
172	53,8			2,8	q
174	44	11	0,0	0,0	s
176	45,1	4	0,6	0,3	s
178	45,4			0,4	s
184	43			-0,3	s
194	41,9	2	-1,9	-0,6	s
195	39,4	5,5	-1,6	-1,4	s
197	46,8	10,4	0,5	0,8	s
198	45,4			0,4	s
236	48,2	3,14	2,6	1,2	s
237	46,1	3,7	1,1	0,6	s
243	46,3	11,6	0,4	0,7	s
251	36,9	2,65	-5,0	-2,1	q
262	44,3	7	0,1	0,1	s

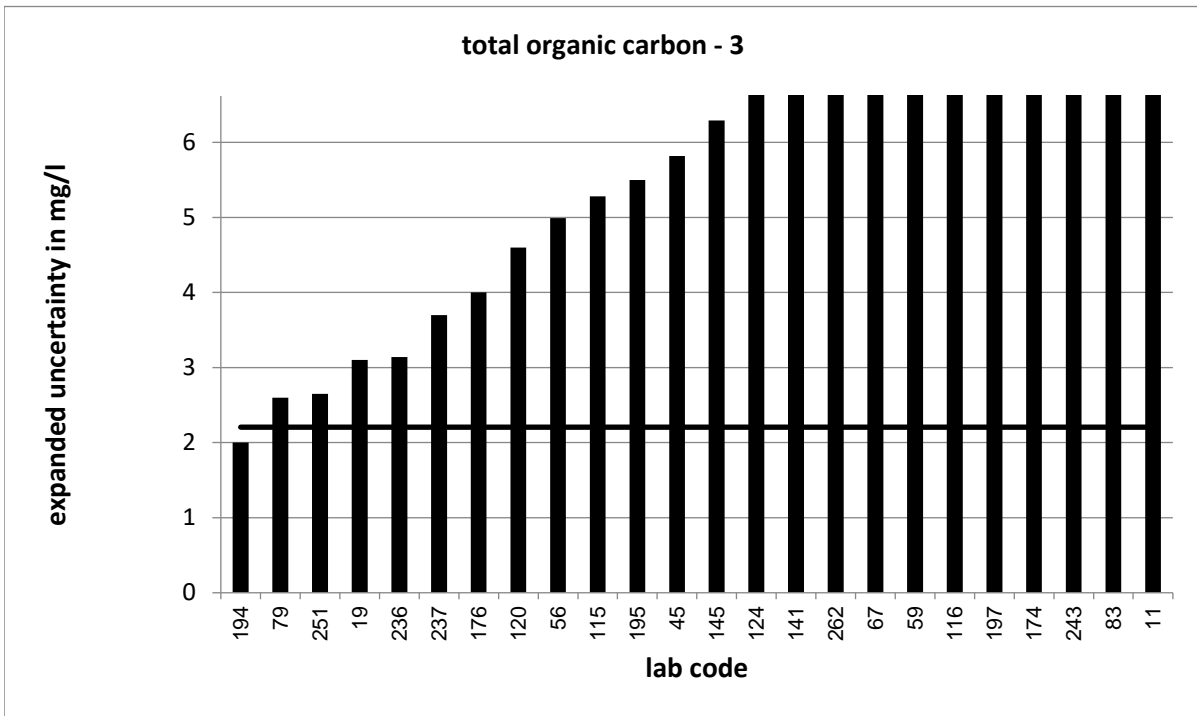
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

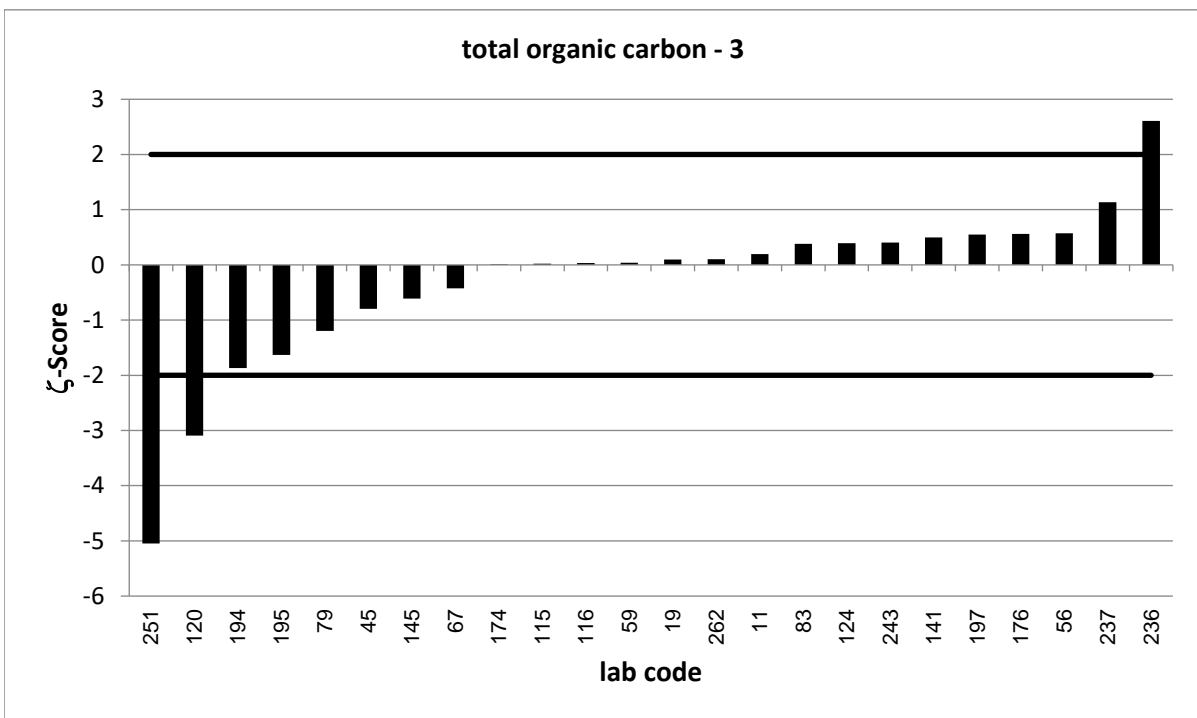


Strongly deviating values are not shown in the diagram.





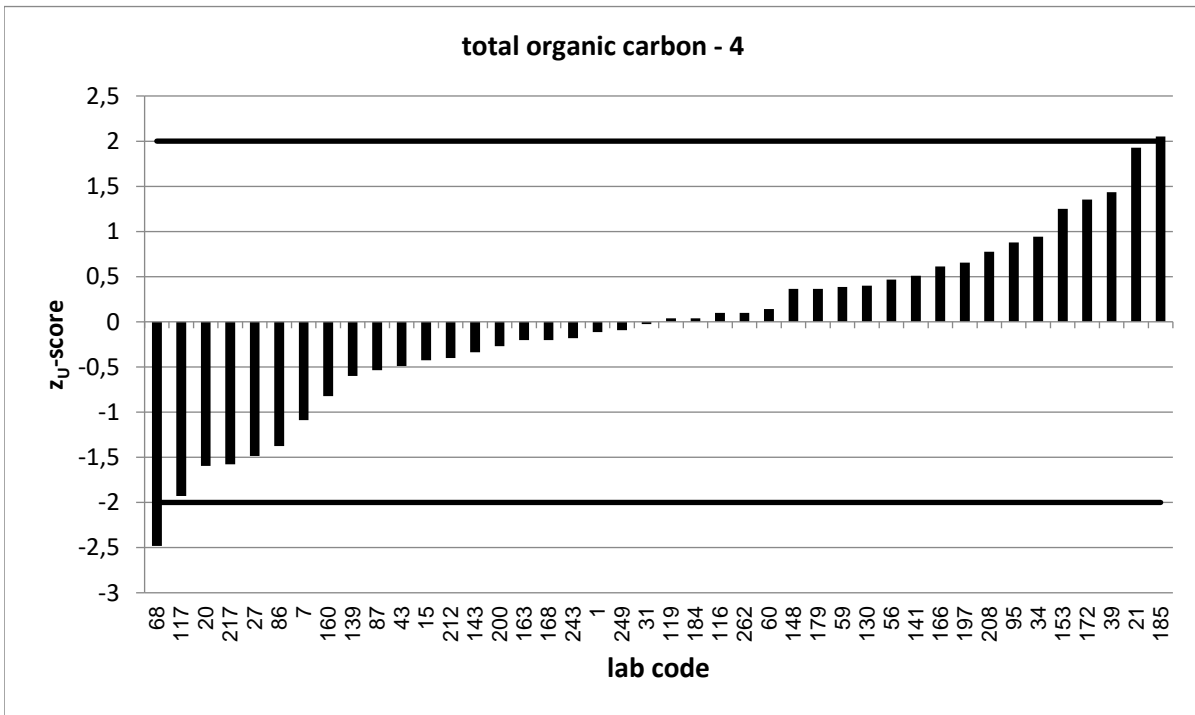
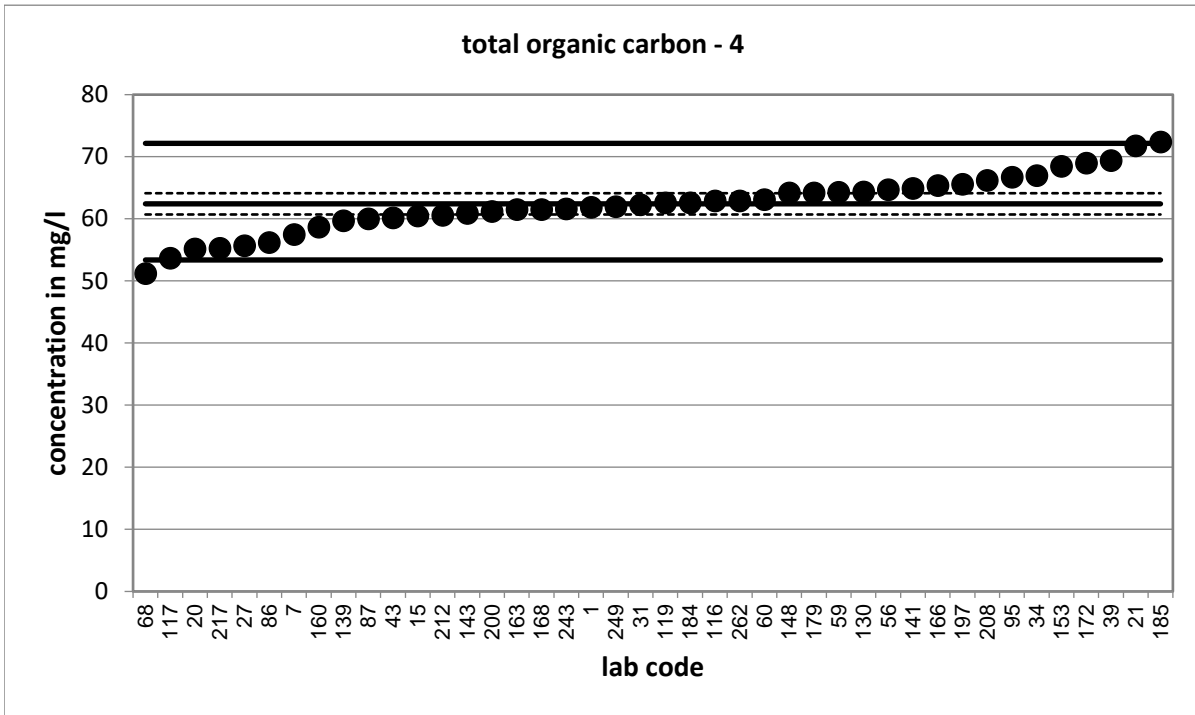
Strongly deviating values are not correctly shown in the diagram.

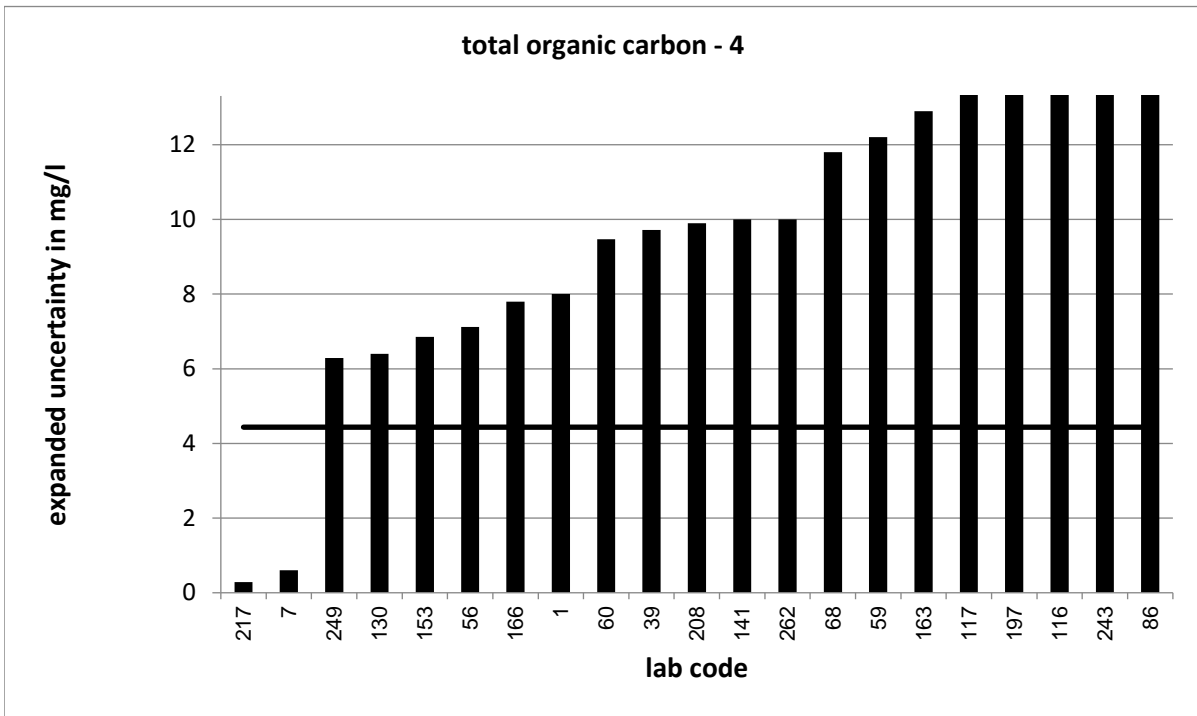


PT 10/23		total organic carbon - 4			
assigned value [mg/l]*		62,42 ± 1,71			
upper tolerance limit [mg/l]		72,16			
lower tolerance limit [mg/l]		53,38			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	61,9	8	-0,1	-0,1	s
7	57,5	0,6	-5,4	-1,1	s
15	60,5			-0,4	s
20	55,2			-1,6	s
21	71,8			1,9	s
27	55,7			-1,5	s
31	62,3			0,0	s
34	67			0,9	s
39	69,4	9,72	1,4	1,4	s
43	60,2			-0,5	s
56	64,7	7,12	0,6	0,5	s
59	64,3	12,2	0,3	0,4	s
60	63,1	9,47	0,1	0,1	s
68	51,2	11,8	-1,9	-2,5	q
86	56,2	15,7	-0,8	-1,4	s
87	60			-0,5	s
95	66,7			0,9	s
116	62,9	15	0,1	0,1	s
117	53,7	14,6	-1,2	-1,9	s
119	62,6			0,0	s
130	64,37	6,4	0,6	0,4	s
139	59,7			-0,6	s
141	64,9	10	0,5	0,5	s
143	60,9			-0,3	s
148	64,2			0,4	s
153	68,5	6,85	1,7	1,2	s
160	58,7			-0,8	s
163	61,5	12,9	-0,1	-0,2	s
166	65,4	7,8	0,7	0,6	s
168	61,5			-0,2	s
172	69			1,4	s
179	64,2			0,4	s
184	62,6			0,0	s
185	72,4			2,1	q
197	65,6	14,6	0,4	0,7	s
200	61,2			-0,3	s
208	66,2	9,9	0,8	0,8	s
212	60,6			-0,4	s
217	55,29	0,29	-8,2	-1,6	s
243	61,6	15,4	-0,1	-0,2	s
249	62	6,29	-0,1	-0,1	s
262	62,9	10	0,1	0,1	s

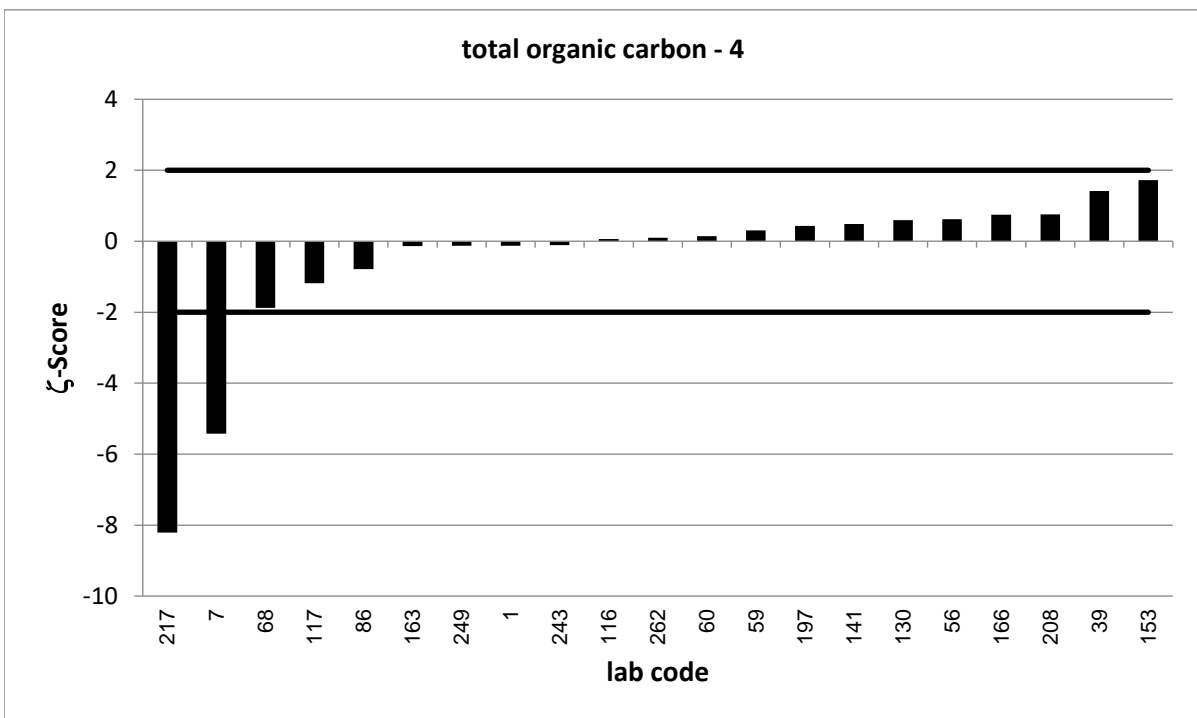
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory





Strongly deviating values are not correctly shown in the diagram.

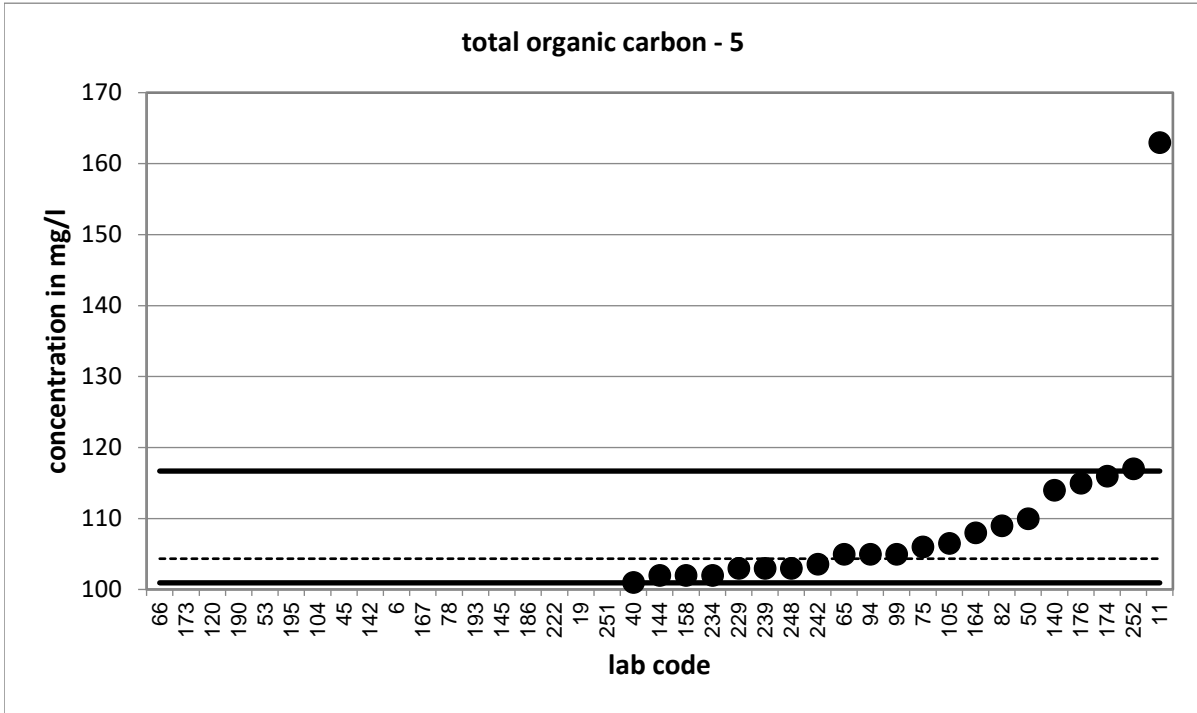




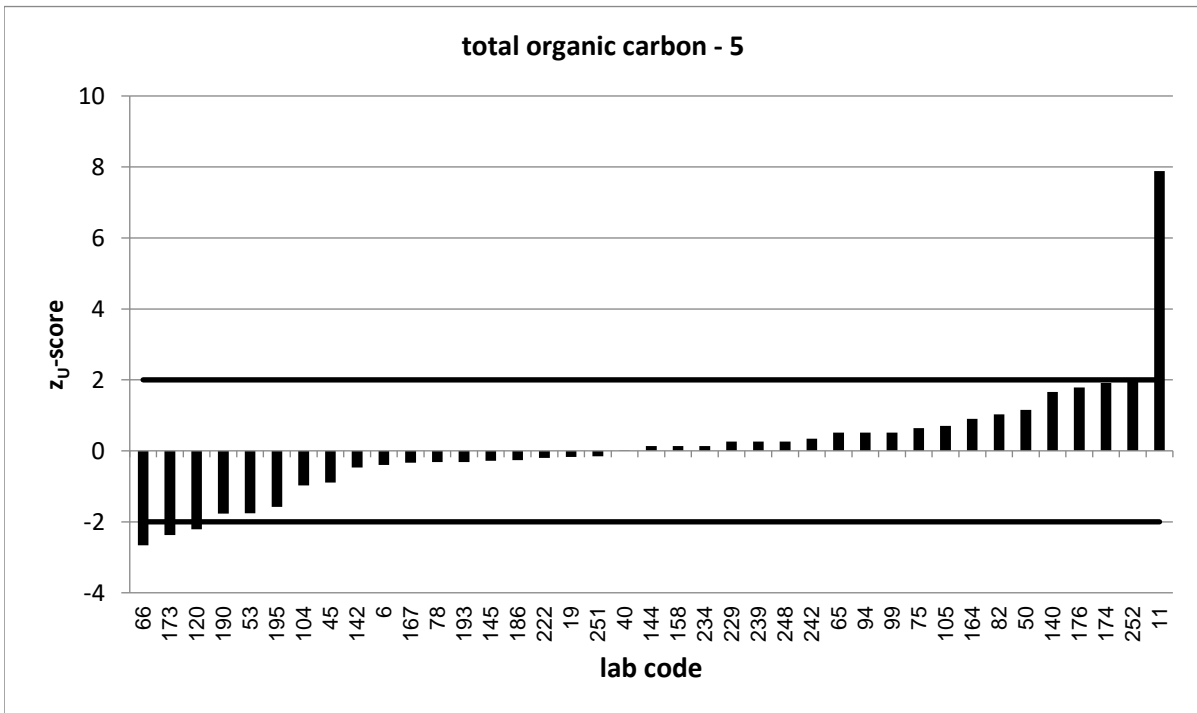
PT 10/23		total organic carbon - 5			
assigned value [mg/l]*		100,9 ± 3,4			
upper tolerance limit [mg/l]		116,7			
lower tolerance limit [mg/l]		86,32			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
6	98			-0,4	s
11	163	53,3	2,3	7,9	u
19	99,7	7	-0,3	-0,2	s
40	101	18,4	0,0	0,0	s
45	94,4	13,2	-1,0	-0,9	s
50	110	8,95	1,9	1,2	s
53	88,1			-1,8	s
65	105			0,5	s
66	81,5	2,5	-9,2	-2,7	q
75	106			0,6	s
78	98,6			-0,3	s
82	109	5,4	2,5	1,0	s
94	105	2,73	1,9	0,5	s
99	105			0,5	s
104	93,8	17,3	-0,8	-1,0	s
105	106,5	18,4	0,6	0,7	s
120	84,8	10,7	-2,9	-2,2	q
140	114			1,7	s
142	97,5	13,5	-0,5	-0,5	s
144	102			0,1	s
145	98,9	14,8	-0,3	-0,3	s
158	102			0,1	s
164	108	5	2,3	0,9	s
167	98,5	24,6	-0,2	-0,3	s
173	83,6	9,7	-3,4	-2,4	q
174	116	29	1,0	1,9	s
176	115	10	2,7	1,8	s
186	99	15	-0,3	-0,3	s
190	88	11	-2,2	-1,8	s
193	98,6	24,7	-0,2	-0,3	s
195	89,4	12,5	-1,8	-1,6	s
222	99,5	10	-0,3	-0,2	s
229	103	32	0,1	0,3	s
234	102			0,1	s
239	103			0,3	s
242	103,6	18,7	0,3	0,3	s
248	103	8	0,5	0,3	s
251	99,8	7,81	-0,3	-0,2	s
252	117	11,6	2,7	2,0	s

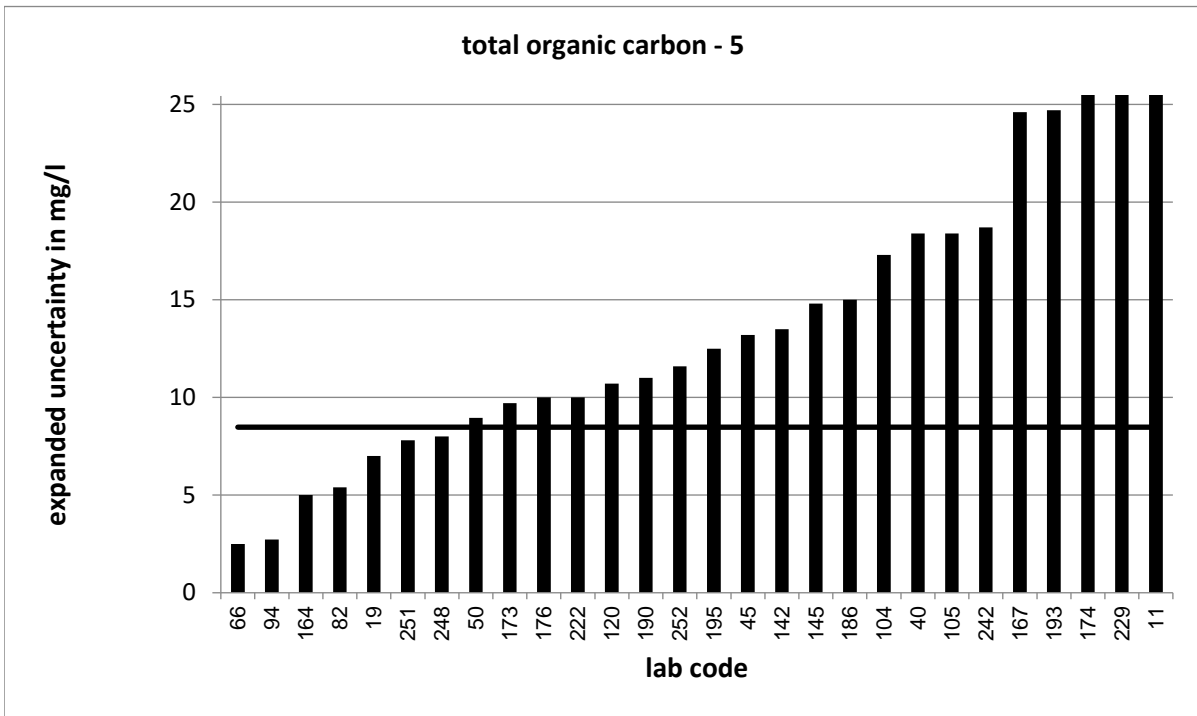
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

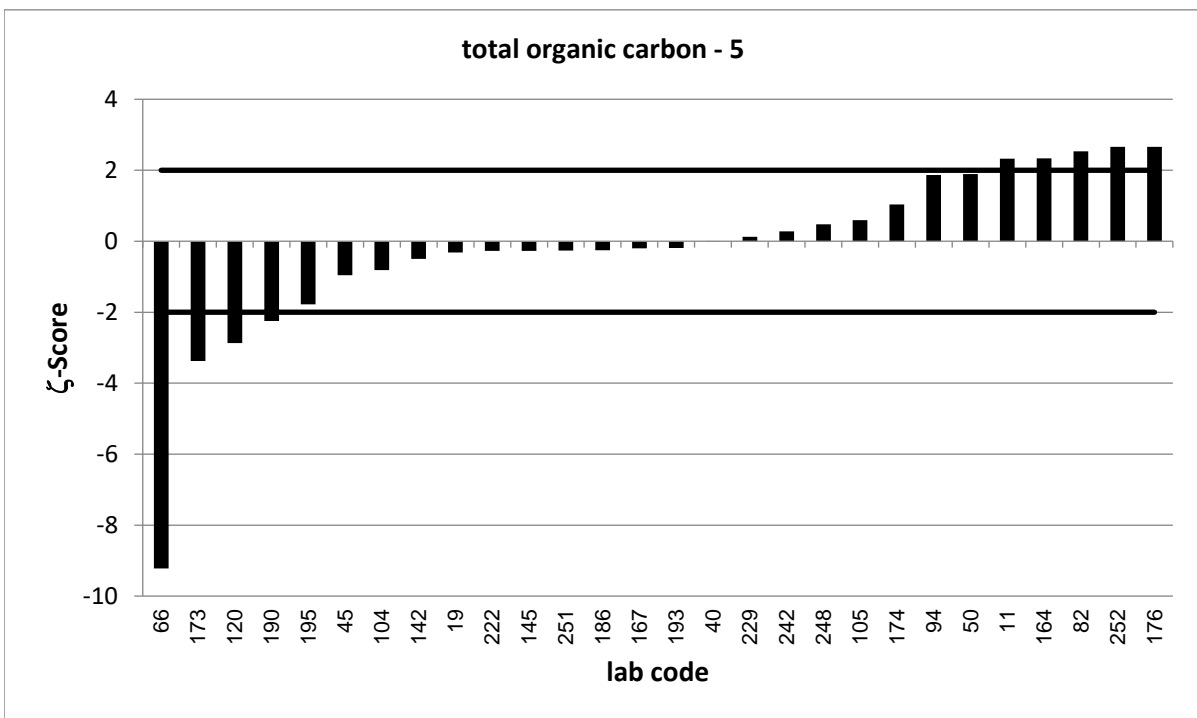


Strongly deviating values are not shown in the diagram.





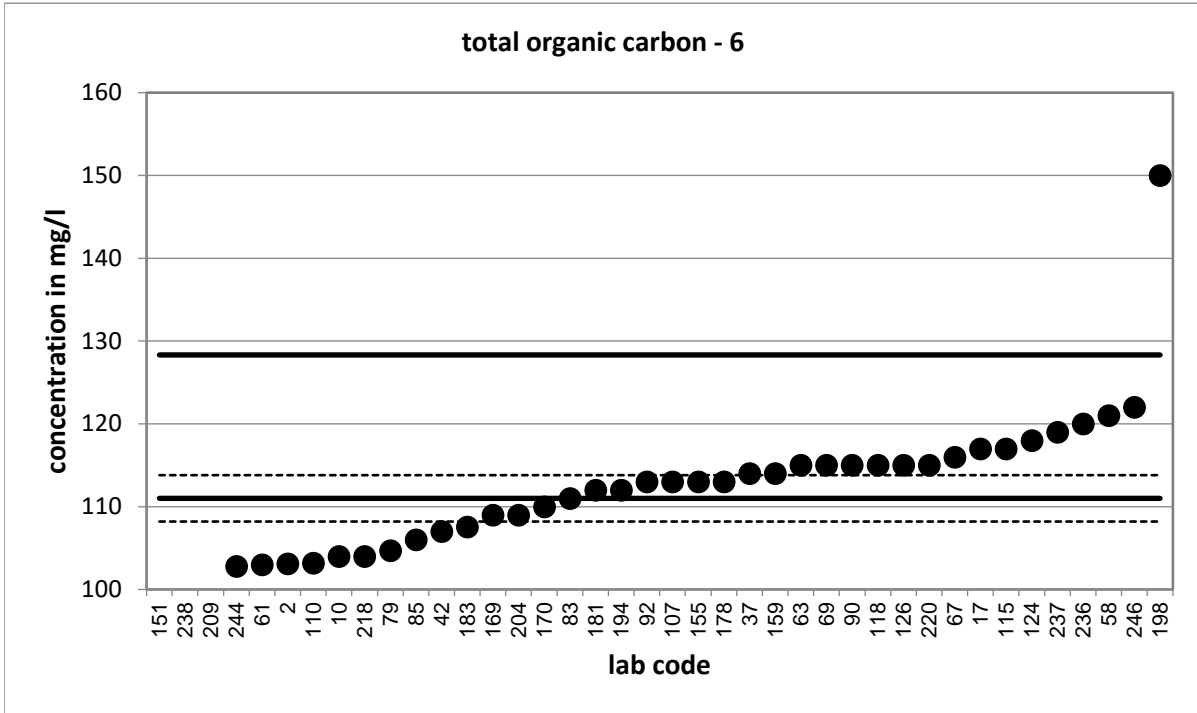
Strongly deviating values are not correctly shown in the diagram.



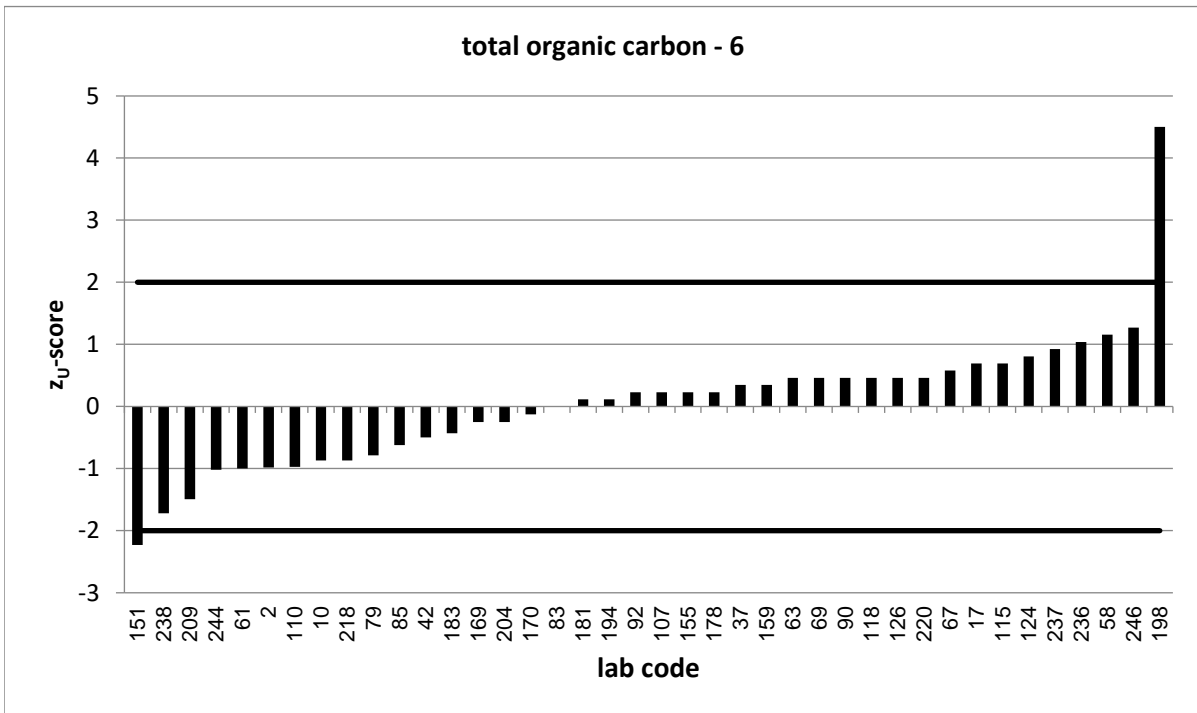
PT 10/23		total organic carbon - 6			
assigned value [mg/l]*		111 ± 2,8			
upper tolerance limit [mg/l]		128,3			
lower tolerance limit [mg/l]		94,93			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
2	103,1			-1,0	s
10	104	10,4	-1,3	-0,9	s
17	117	12,9	0,9	0,7	s
37	114	16	0,4	0,3	s
42	107			-0,5	s
58	121			1,2	s
61	103			-1,0	s
63	115	11,5	0,7	0,5	s
67	116	21	0,5	0,6	s
69	115	18	0,4	0,5	s
79	104,7	5	-2,2	-0,8	s
83	111	29	0,0	0,0	s
85	106	10,6	-0,9	-0,6	s
90	115	10,3	0,7	0,5	s
92	113	28,2	0,1	0,2	s
107	113	19,6	0,2	0,2	s
110	103,2			-1,0	s
115	117	14	0,8	0,7	s
118	115			0,5	s
124	118	17,7	0,8	0,8	s
126	115	10	0,8	0,5	s
151	93,1	22,8	-1,6	-2,2	q
155	113	20	0,2	0,2	s
159	114			0,3	s
169	109	8,5	-0,4	-0,2	s
170	110			-0,1	s
178	113			0,2	s
181	112	16,8	0,1	0,1	s
183	107,56	25,84	-0,3	-0,4	s
194	112	1	0,7	0,1	s
198	150			4,5	u
204	109	12,38	-0,3	-0,2	s
209	99	9,9	-2,3	-1,5	s
218	104			-0,9	s
220	115			0,5	s
236	120	7,82	2,2	1,0	s
237	119	10	1,5	0,9	s
238	97,2	0,5	-9,7	-1,7	s
244	102,8			-1,0	s
246	122	7,32	2,8	1,3	s

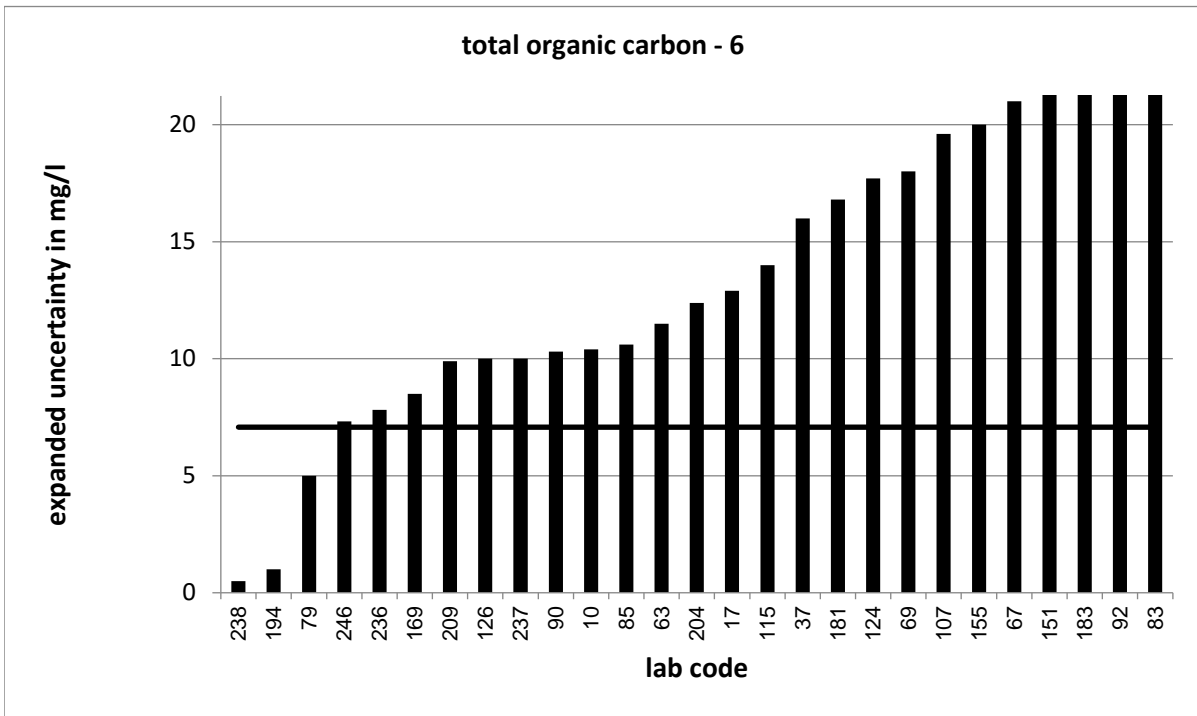
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

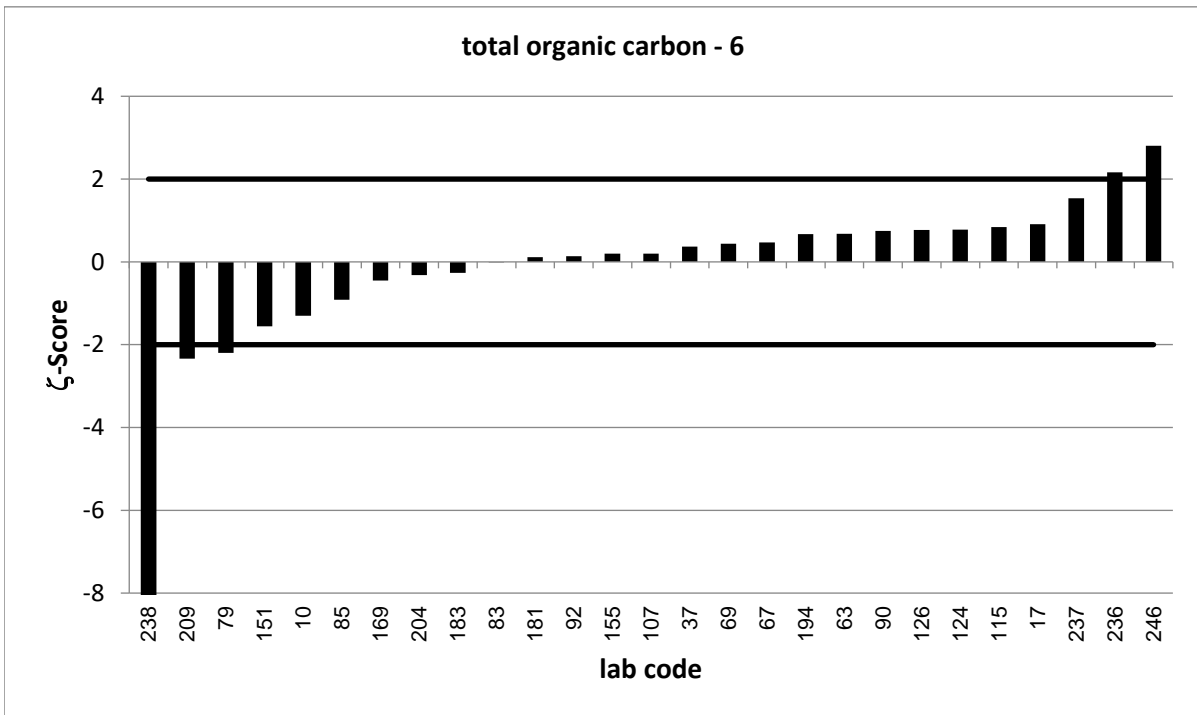


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

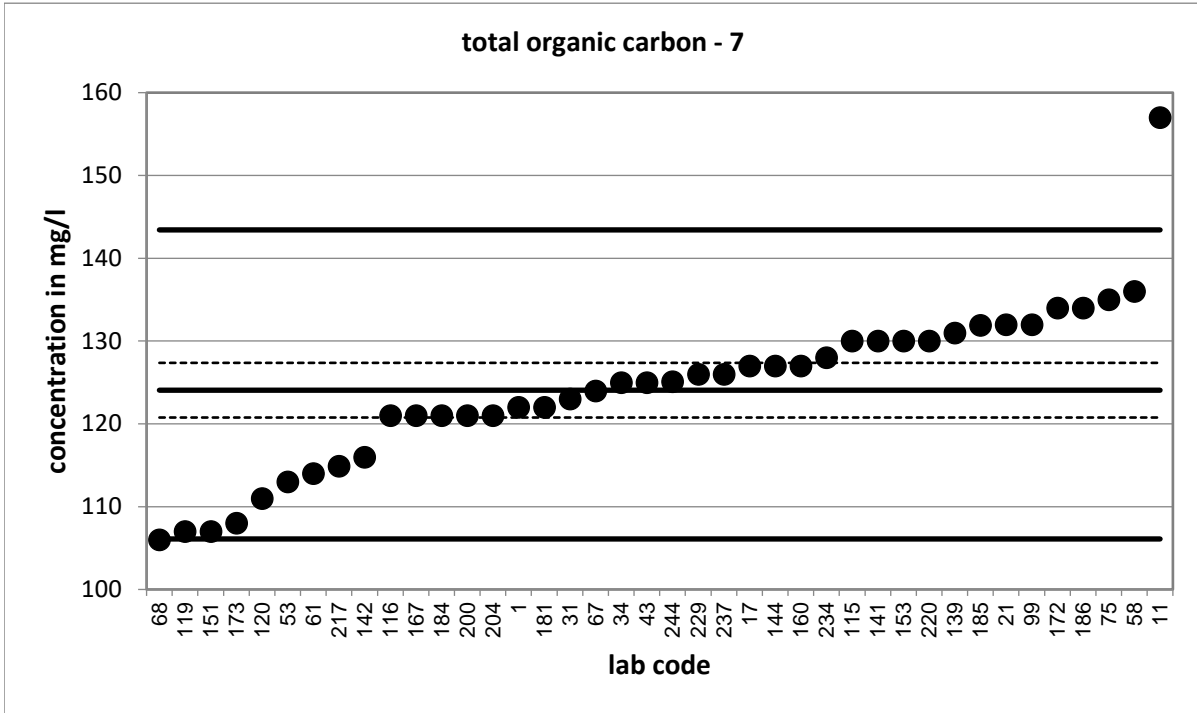


Strongly deviating values are not correctly shown in the diagram.

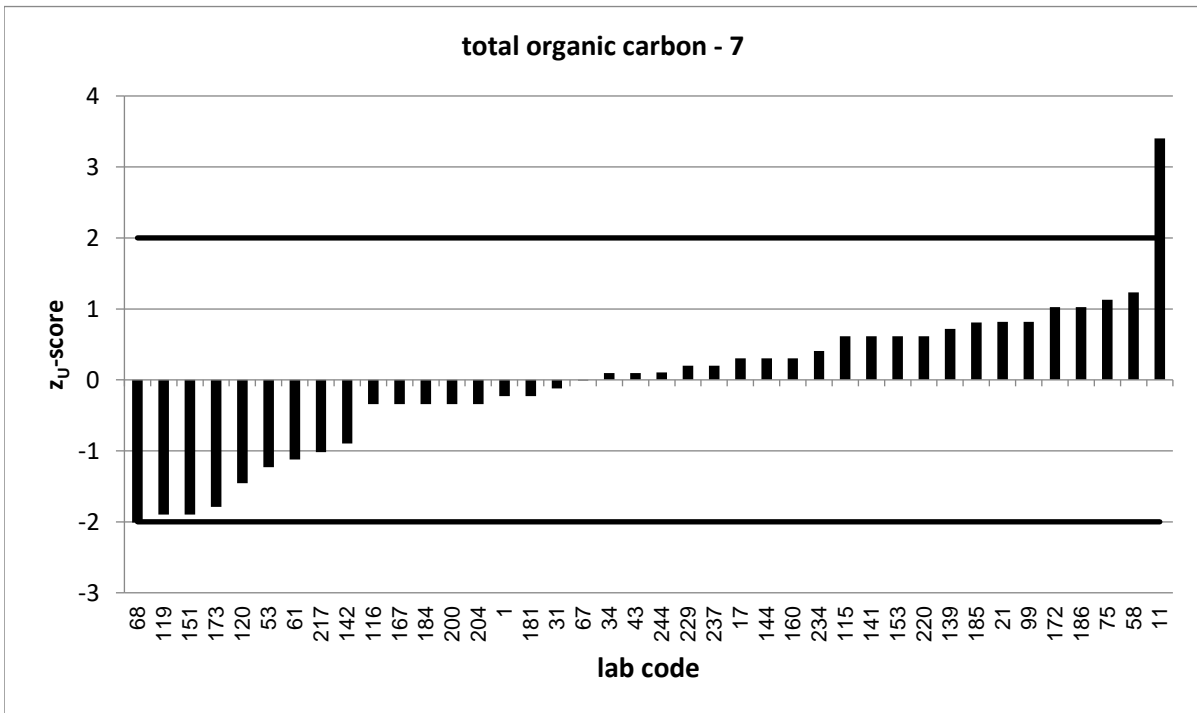
PT 10/23		total organic carbon - 7			
assigned value [mg/l]*		124,1 ± 3,3			
upper tolerance limit [mg/l]		143,4			
lower tolerance limit [mg/l]		106,1			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	122	16	-0,3	-0,2	s
11	157	51,3	1,3	3,4	u
17	127	14	0,4	0,3	s
21	132			0,8	s
31	123			-0,1	s
34	125			0,1	s
43	125			0,1	s
53	113			-1,2	s
58	136			1,2	s
61	114			-1,1	s
67	124	22,5	0,0	0,0	s
68	106	24,4	-1,5	-2,0	s
75	135			1,1	s
99	132			0,8	s
115	130	15,6	0,7	0,6	s
116	121	25	-0,2	-0,3	s
119	107			-1,9	s
120	111	13,9	-1,8	-1,5	s
139	131			0,7	s
141	130	20	0,6	0,6	s
142	116	16,1	-1,0	-0,9	s
144	127			0,3	s
151	107	26,2	-1,3	-1,9	s
153	130	13	0,9	0,6	s
160	127			0,3	s
167	121	30,2	-0,2	-0,3	s
172	134			1,0	s
173	108	12,5	-2,5	-1,8	s
181	122	18,3	-0,2	-0,2	s
184	121			-0,3	s
185	131,9			0,8	s
186	134	20	1,0	1,0	s
200	121			-0,3	s
204	121	13,65	-0,4	-0,3	s
217	114,9	0,29	-5,6	-1,0	s
220	130			0,6	s
229	126	39	0,1	0,2	s
234	128			0,4	s
237	126	10	0,4	0,2	s
244	125,1			0,1	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

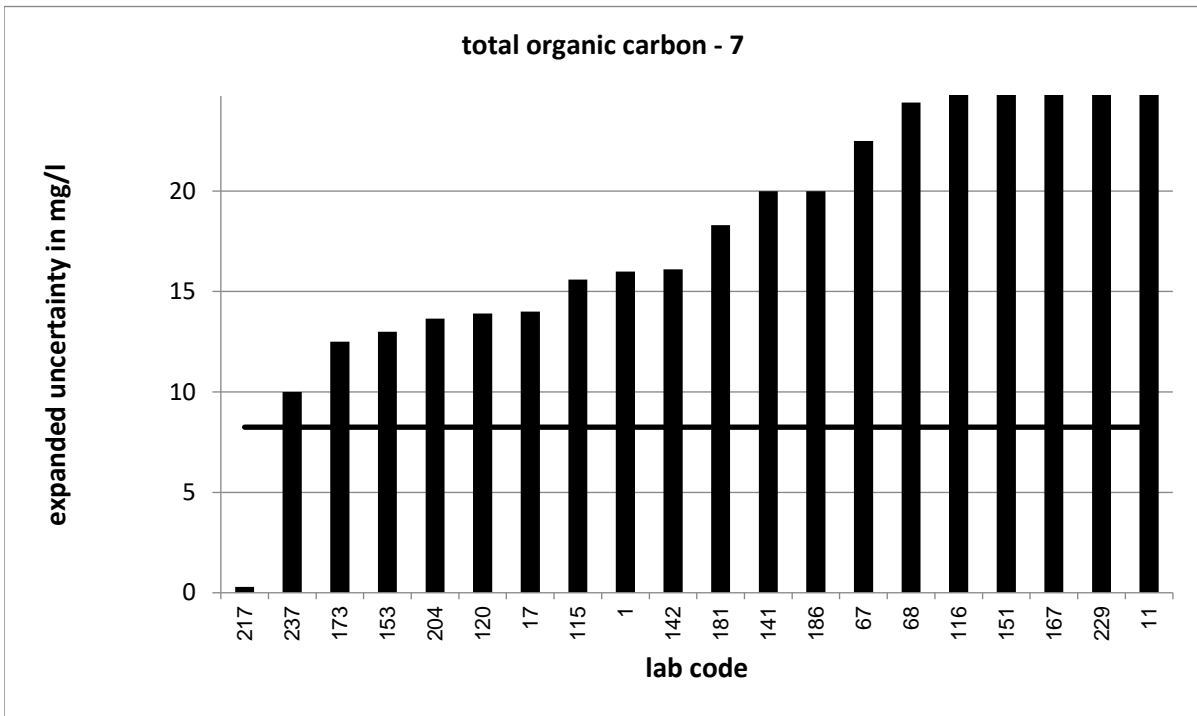
\*\* s = satisfactory, q = questionable, u = unsatisfactory



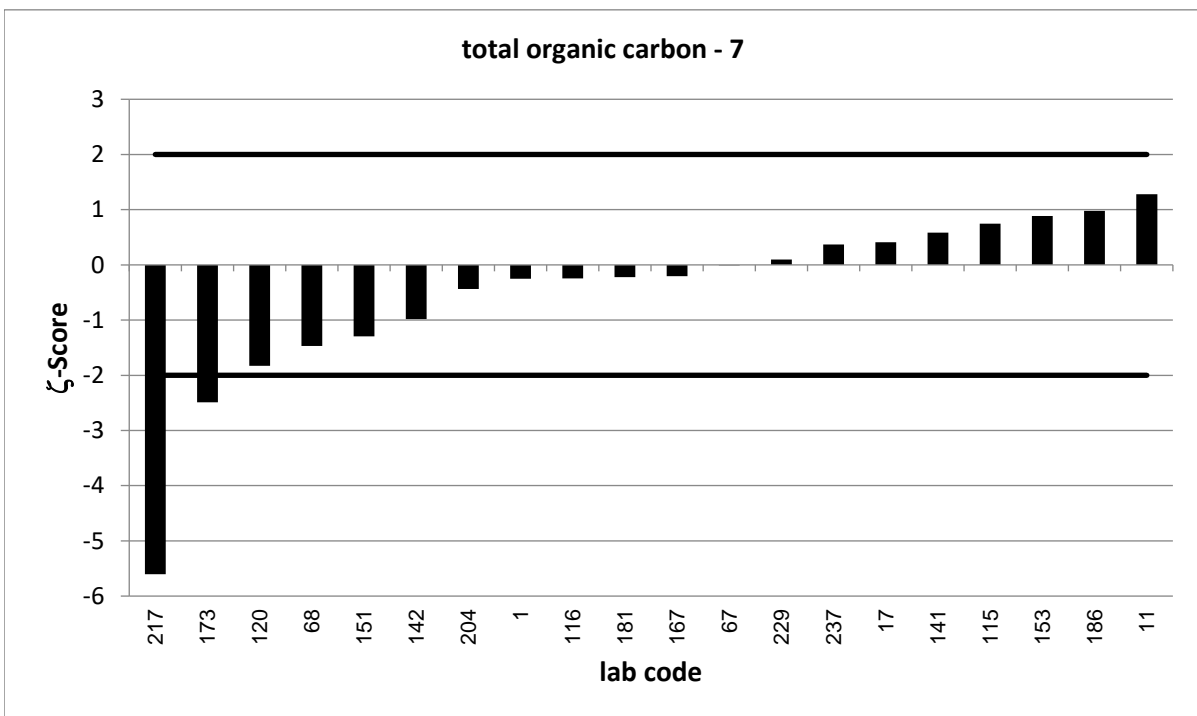
Strongly deviating values are not shown in the diagram.







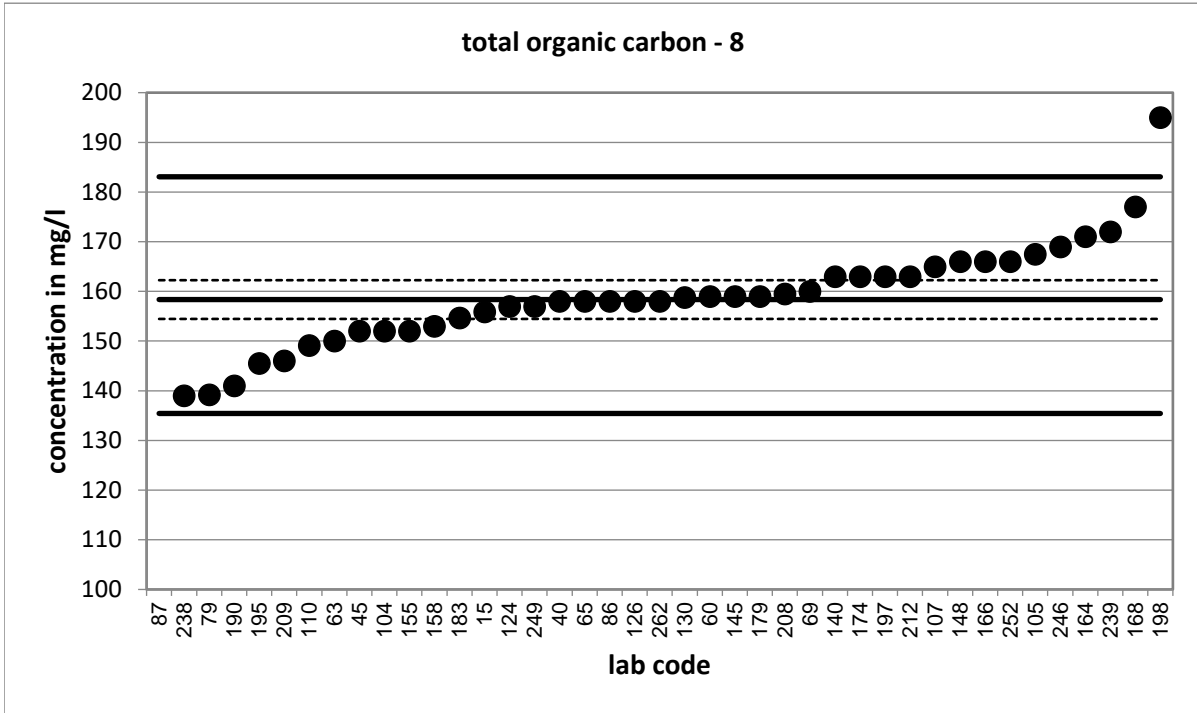
Strongly deviating values are not correctly shown in the diagram.



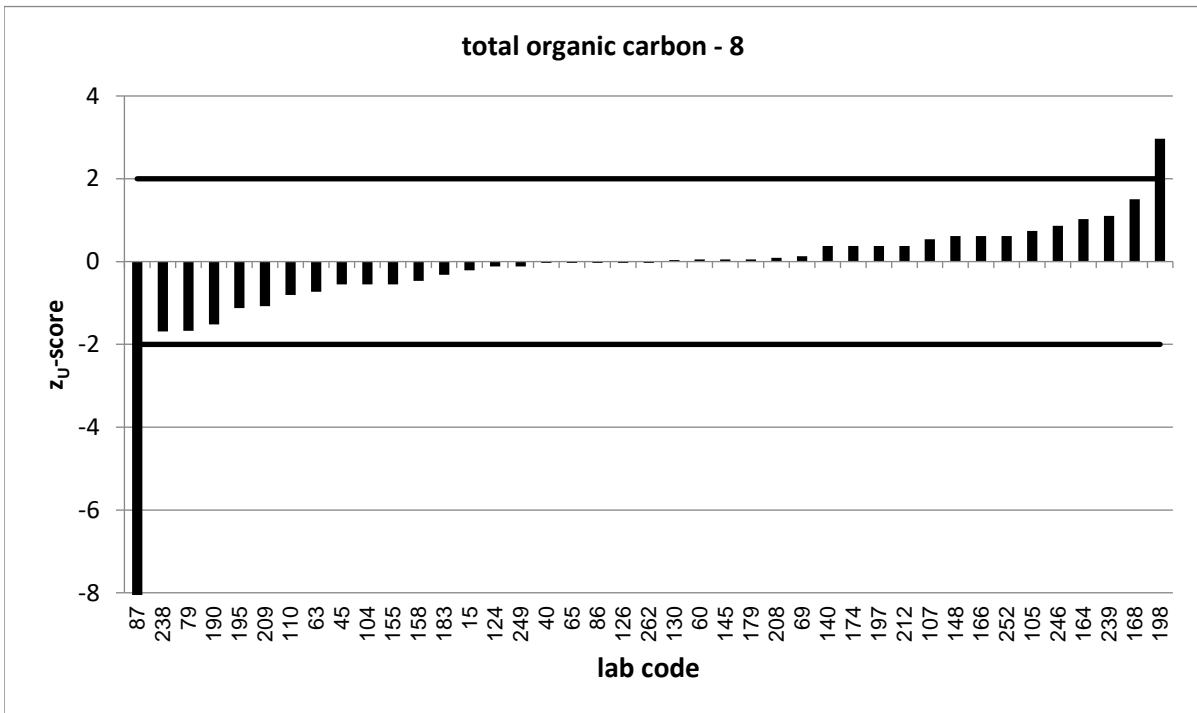
PT 10/23		total organic carbon - 8			
assigned value [mg/l]*		158,4 ± 3,9			
upper tolerance limit [mg/l]		183,1			
lower tolerance limit [mg/l]		135,4			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
15	155,9			-0,2	s
40	158	29	0,0	0,0	s
45	152	21,3	-0,6	-0,6	s
60	159	23,9	0,1	0,1	s
63	150	15	-1,1	-0,7	s
65	158			0,0	s
69	160	25	0,1	0,1	s
79	139,2	6,7	-4,9	-1,7	s
86	158	44,4	0,0	0,0	s
87	25			-11,6	u
104	152	28	-0,4	-0,6	s
105	167,5	29	0,6	0,7	s
107	165	28,6	0,5	0,5	s
110	149,1			-0,8	s
124	157	23,6	-0,1	-0,1	s
126	158	15	0,0	0,0	s
130	158,8	15,9	0,1	0,0	s
140	163			0,4	s
145	159	23,9	0,1	0,1	s
148	166			0,6	s
155	152	27	-0,5	-0,6	s
158	153			-0,5	s
164	171	10,7	2,2	1,0	s
166	166	18	0,8	0,6	s
168	177			1,5	s
174	163	40,8	0,2	0,4	s
179	159			0,1	s
183	154,66	37,15	-0,2	-0,3	s
190	141	18,3	-1,9	-1,5	s
195	145,5	20,3	-1,2	-1,1	s
197	163	36,3	0,3	0,4	s
198	195			3,0	u
208	159,5	24	0,1	0,1	s
209	146	14,6	-1,6	-1,1	s
212	163			0,4	s
238	139	0,5	-9,8	-1,7	s
239	172			1,1	s
246	169	10,14	2,0	0,9	s
249	157	16	-0,2	-0,1	s
252	166	16,4	0,9	0,6	s
262	158	25,2	0,0	0,0	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

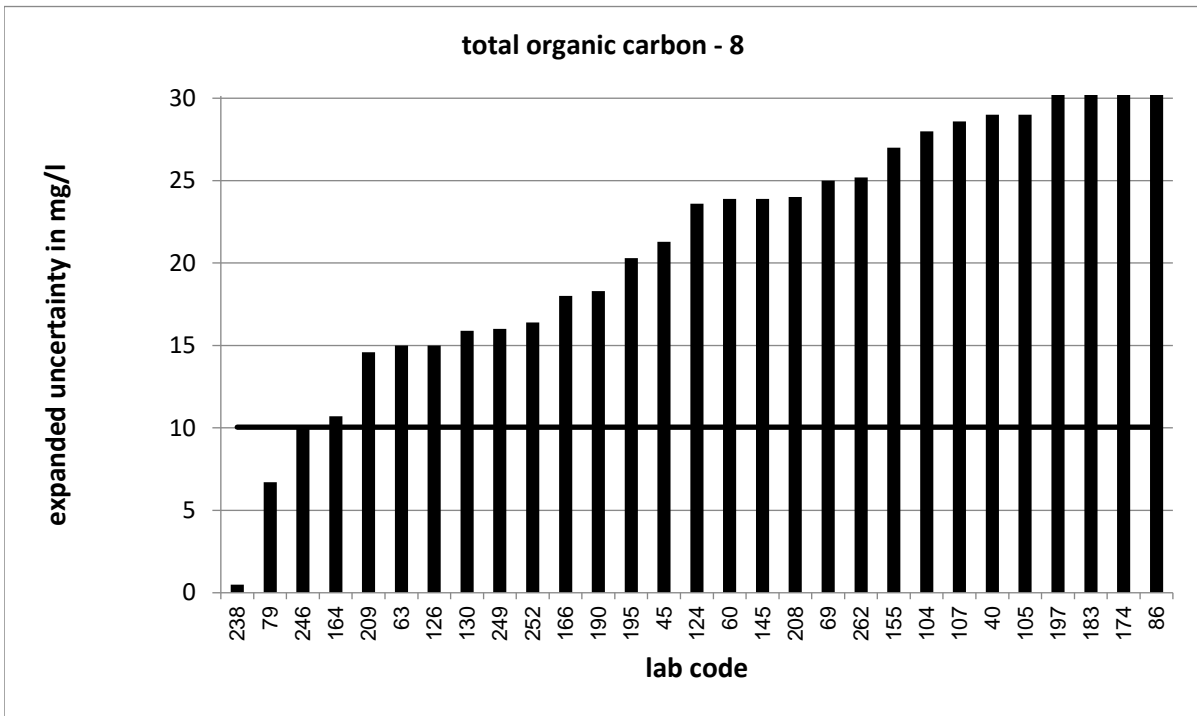
\*\* s = satisfactory, q = questionable, u = unsatisfactory



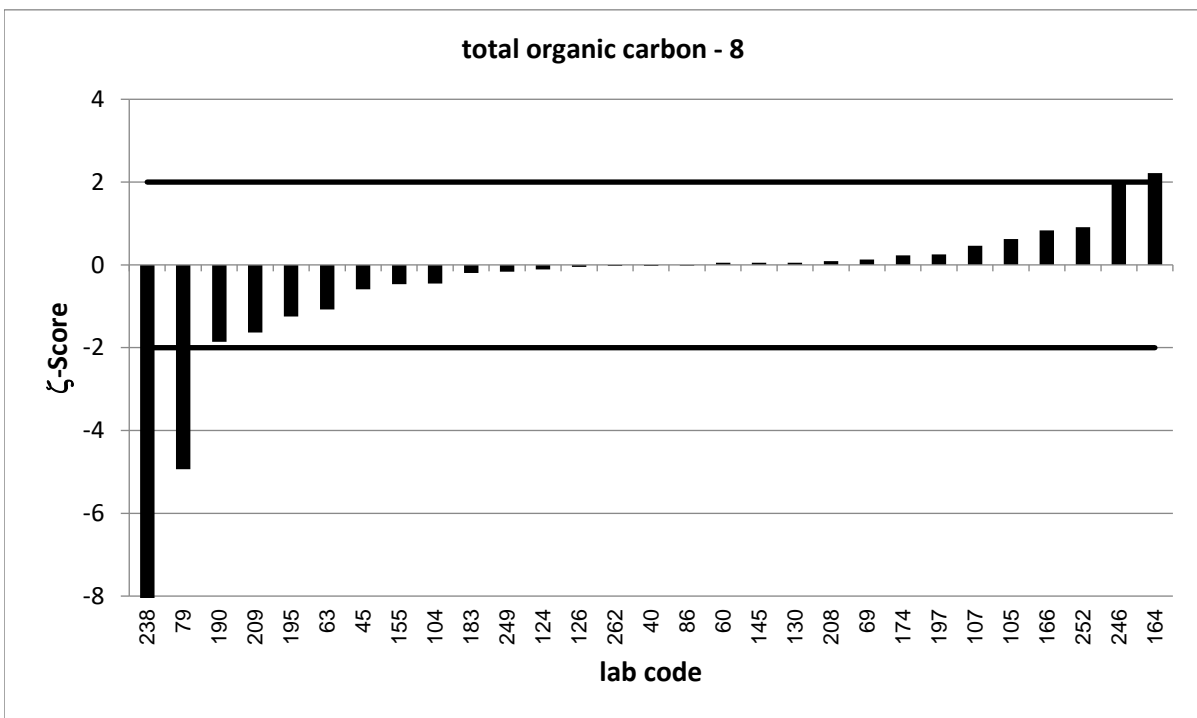
Strongly deviating values are not shown in the diagram.



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Strongly deviating values are not correctly shown in the diagram.

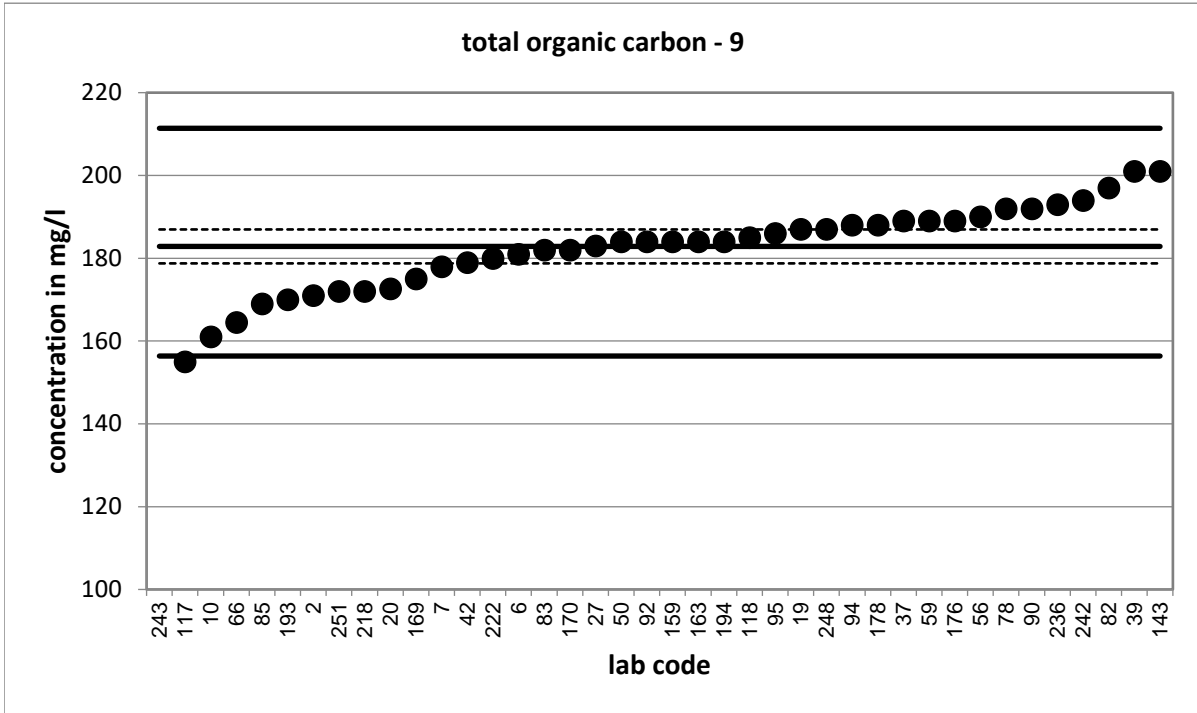


Strongly deviating values are not correctly shown in the diagram.

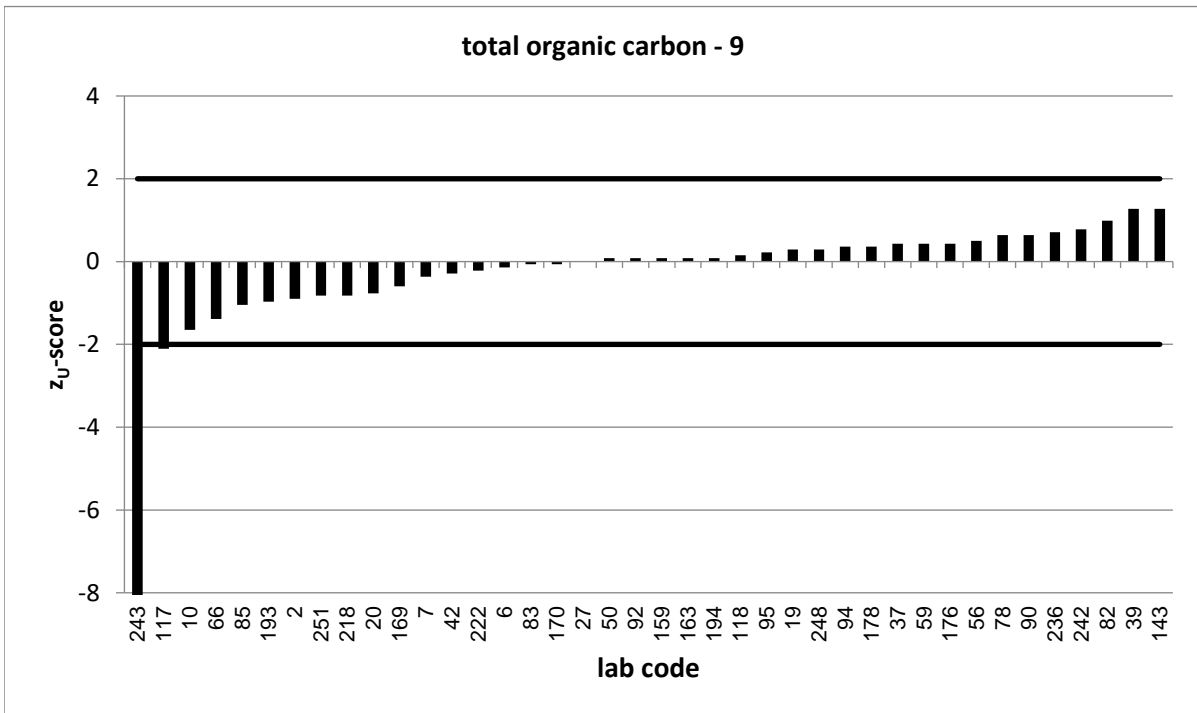
PT 10/23		total organic carbon - 9			
assigned value [mg/l]*		182,9 ± 4,1			
upper tolerance limit [mg/l]		211,4			
lower tolerance limit [mg/l]		156,4			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
2	171			-0,9	s
6	181			-0,1	s
7	178	2,2	-2,1	-0,4	s
10	161	16,1	-2,6	-1,7	s
19	187	13	0,6	0,3	s
20	172,67			-0,8	s
27	183			0,0	s
37	189	26	0,5	0,4	s
39	201	28,2	1,3	1,3	s
42	179			-0,3	s
50	184	15	0,1	0,1	s
56	190	15,2	0,9	0,5	s
59	189	36,1	0,3	0,4	s
66	164,5	5	-5,7	-1,4	s
78	192			0,6	s
82	197	3,9	5,0	1,0	s
83	182	48	0,0	-0,1	s
85	169	16,9	-1,6	-1,0	s
90	192	17,3	1,0	0,6	s
92	184	46	0,0	0,1	s
94	188	3,44	1,9	0,4	s
95	186			0,2	s
117	155	42,2	-1,3	-2,1	q
118	185			0,1	s
143	201			1,3	s
159	184			0,1	s
163	184	38,6	0,1	0,1	s
169	175	14	-1,1	-0,6	s
170	182			-0,1	s
176	189	17	0,7	0,4	s
178	188			0,4	s
193	170	42,5	-0,6	-1,0	s
194	184	1	0,5	0,1	s
218	172			-0,8	s
222	180	18	-0,3	-0,2	s
236	193	12,6	1,5	0,7	s
242	194	34,9	0,6	0,8	s
243	38,4	9,6	-27,7	-10,9	u
248	187	15	0,5	0,3	s
251	171,98	13,4	-1,6	-0,8	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

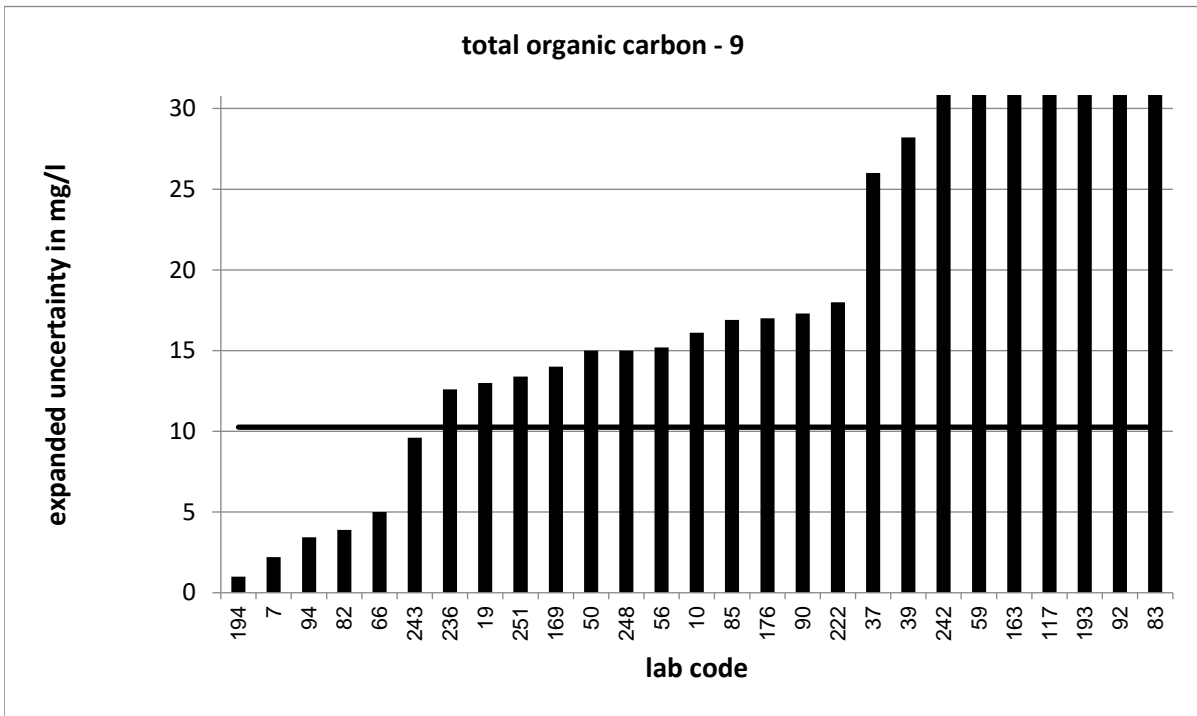
\*\* s = satisfactory, q = questionable, u = unsatisfactory



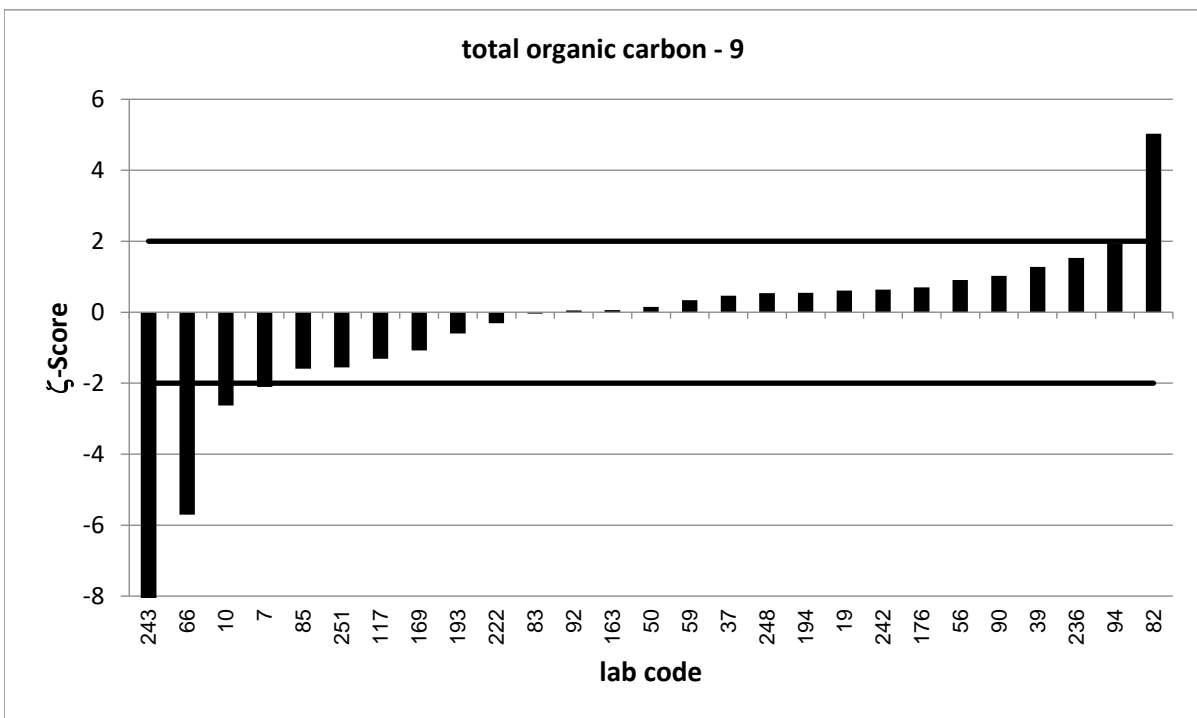
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



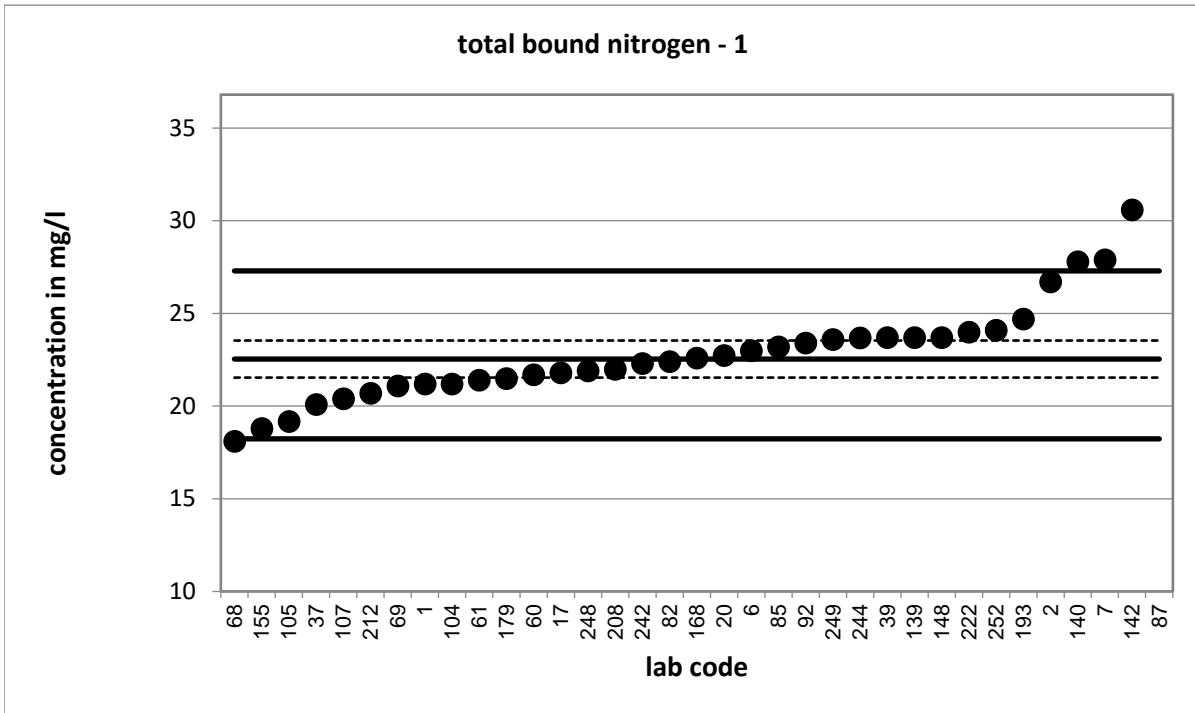
Strongly deviating values are not correctly shown in the diagram.

PT 10/23		total bound nitrogen - 1			
assigned value [mg/l]*		22,54 ± 1			
upper tolerance limit [mg/l]		27,29			
lower tolerance limit [mg/l]		18,23			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	21,2	3,8	-0,7	-0,6	s
2	26,7			1,8	s
6	23			0,2	s
7	27,9	0,4	10,0	2,3	q
17	21,8	1,58	-0,8	-0,3	s
20	22,73			0,1	s
37	20,1	2,8	-1,6	-1,1	s
39	23,7	4,13	0,5	0,5	s
60	21,7	2,82	-0,6	-0,4	s
61	21,4			-0,5	s
68	18,1	2,42	-3,4	-2,1	q
69	21,1	3,8	-0,7	-0,7	s
82	22,4	3,8	-0,1	-0,1	s
85	23,2	2,32	0,5	0,3	s
87	155,5			55,9	u
92	23,4	7,65	0,2	0,4	s
104	21,2	4,4	-0,6	-0,6	s
105	19,17	2,66	-2,4	-1,6	s
107	20,4	4,6	-0,9	-1,0	s
139	23,7			0,5	s
140	27,8			2,2	q
142	30,6	7,65	2,1	3,4	u
148	23,7			0,5	s
155	18,8	2,7	-2,6	-1,7	s
168	22,6			0,0	s
179	21,5			-0,5	s
193	24,7	3,46	1,2	0,9	s
208	22	3,3	-0,3	-0,3	s
212	20,7			-0,9	s
222	24	3,6	0,8	0,6	s
242	22,3	4,01	-0,1	-0,1	s
244	23,68			0,5	s
248	21,9	3,5	-0,4	-0,3	s
249	23,6	4,32	0,5	0,4	s
252	24,1	4,19	0,7	0,7	s

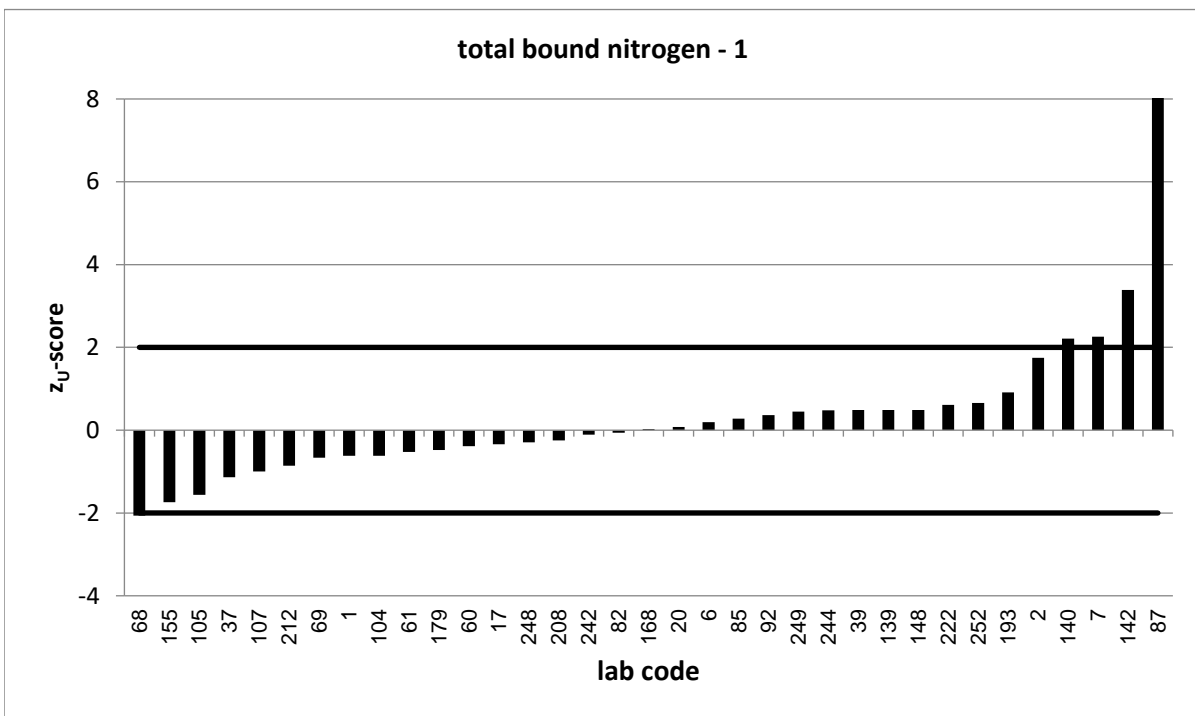
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

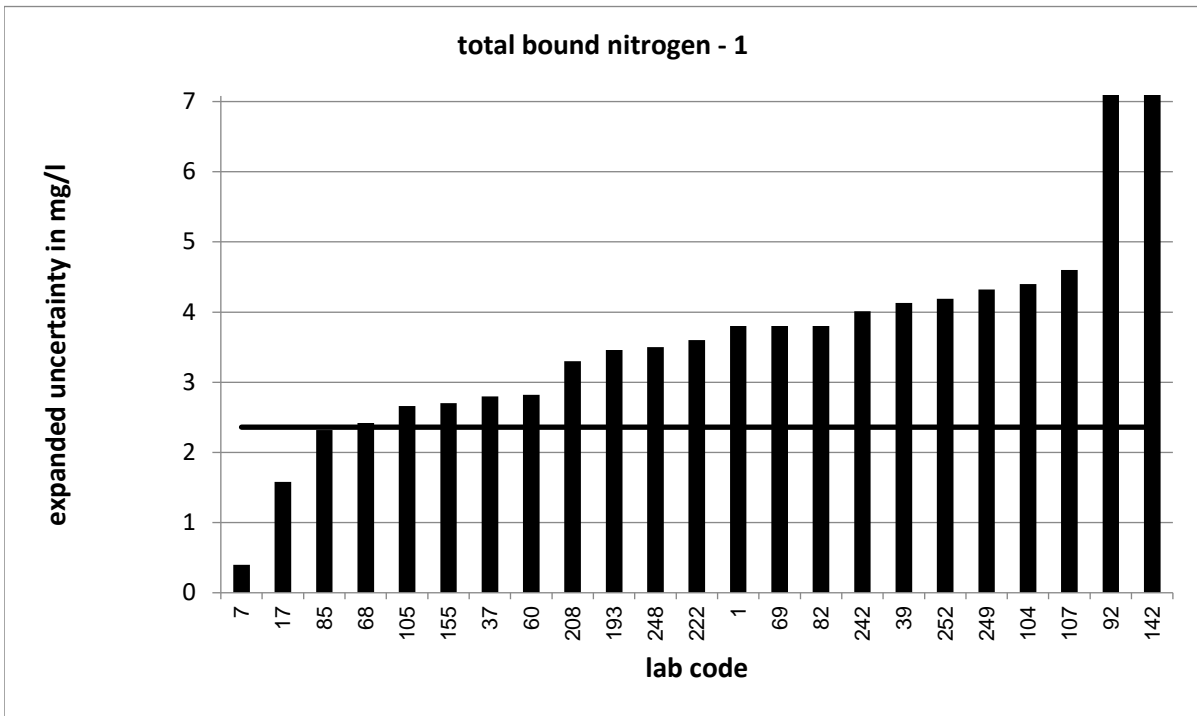




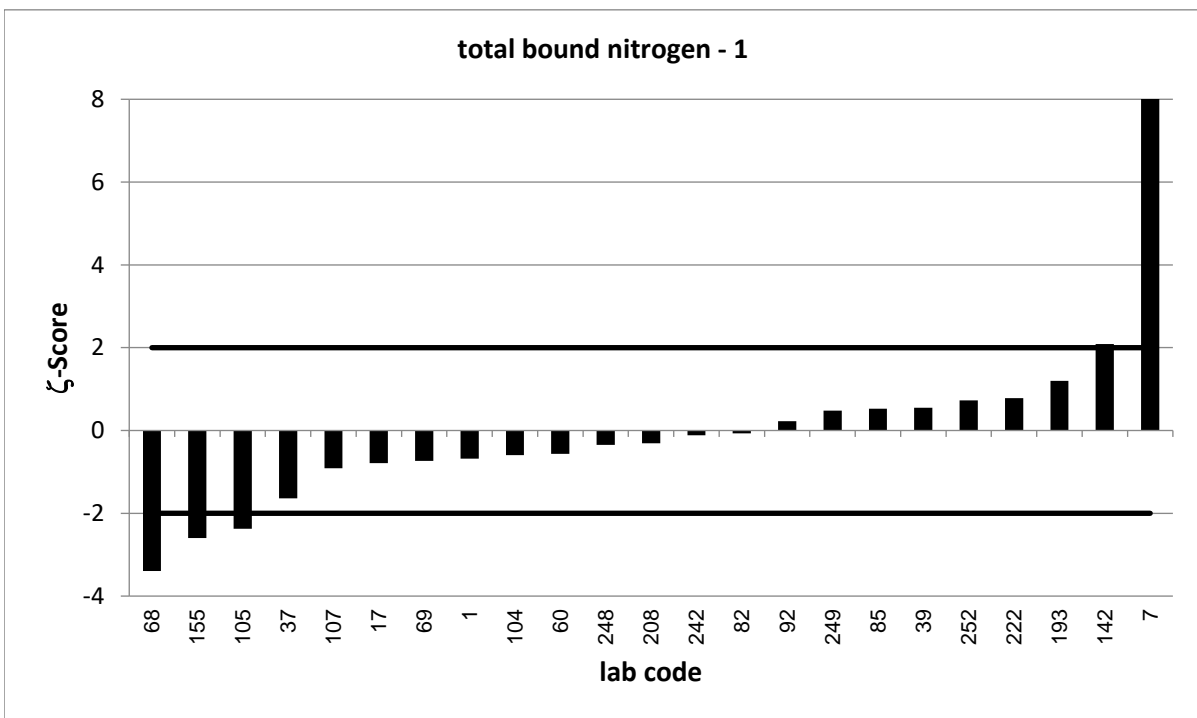
Strongly deviating values are not shown in the diagram.



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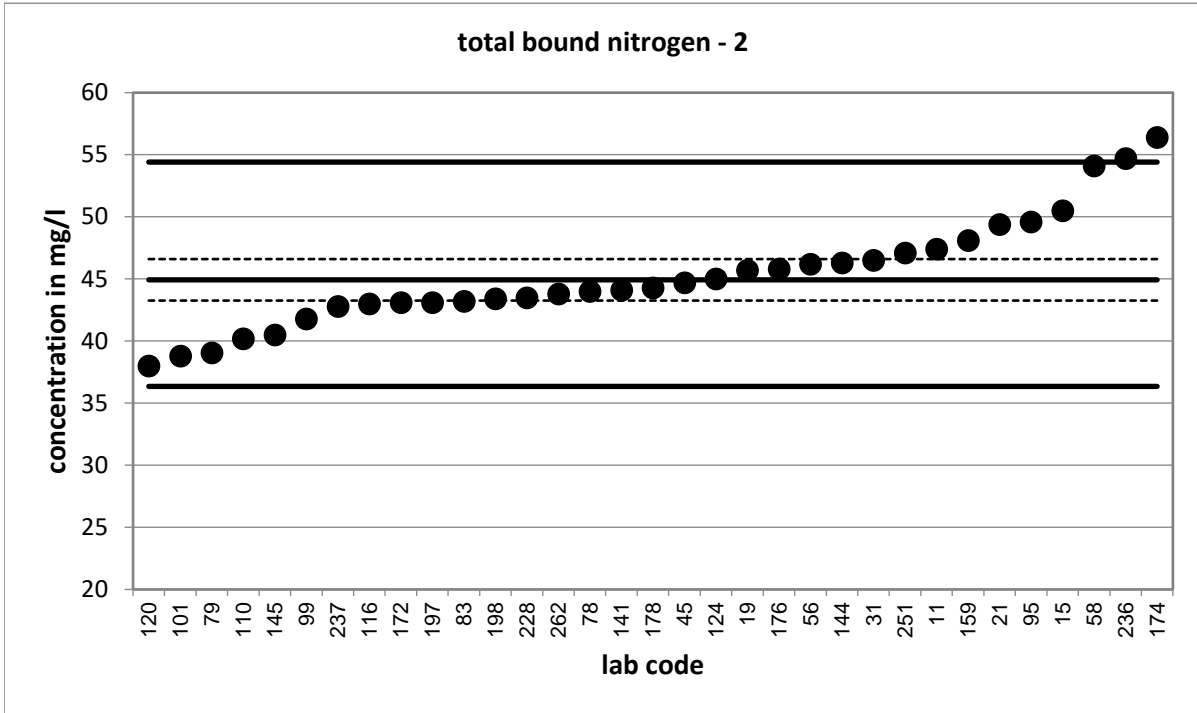


Strongly deviating values are not correctly shown in the diagram.

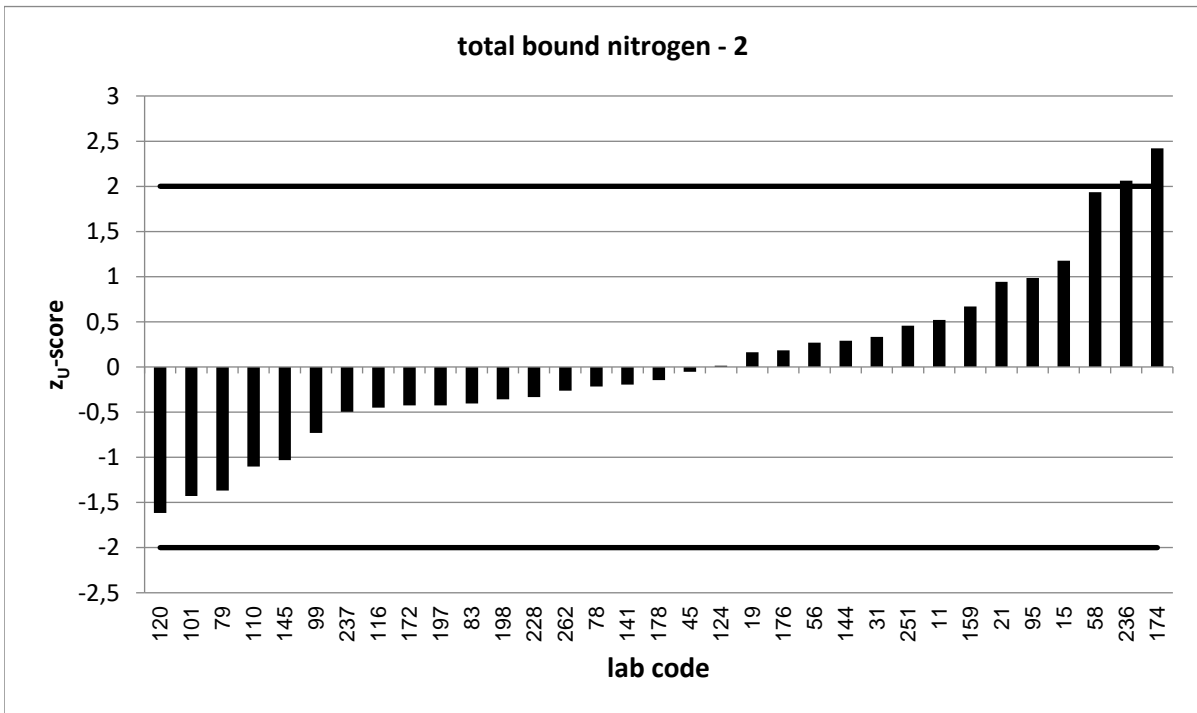
PT 10/23		total bound nitrogen - 2			
assigned value [mg/l]*		44,93 ± 1,67			
upper tolerance limit [mg/l]		54,41			
lower tolerance limit [mg/l]		36,35			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
11	47,4	6,49	0,7	0,5	s
15	50,5			1,2	s
19	45,7	3,7	0,4	0,2	s
21	49,4			0,9	s
31	46,5			0,3	s
45	44,7	7,33	-0,1	-0,1	s
56	46,2	7,85	0,3	0,3	s
58	54,1			1,9	s
78	44			-0,2	s
79	39,06	1,8	-4,8	-1,4	s
83	43,2	8,7	-0,4	-0,4	s
95	49,6			1,0	s
99	41,8			-0,7	s
101	38,8			-1,4	s
110	40,2			-1,1	s
116	43	10	-0,4	-0,4	s
120	38	8,9	-1,5	-1,6	s
124	45	6,77	0,0	0,0	s
141	44,1	5	-0,3	-0,2	s
144	46,3			0,3	s
145	40,5	0,92	-4,6	-1,0	s
159	48,1			0,7	s
172	43,1			-0,4	s
174	56,4	25,4	0,9	2,4	q
176	45,8	0,9	0,9	0,2	s
178	44,3			-0,1	s
197	43,1	7,16	-0,5	-0,4	s
198	43,4			-0,4	s
228	43,5			-0,3	s
236	54,7	4,91	3,8	2,1	q
237	42,8	5	-0,8	-0,5	s
251	47,1	10,93	0,4	0,5	s
262	43,8	4,8	-0,4	-0,3	s

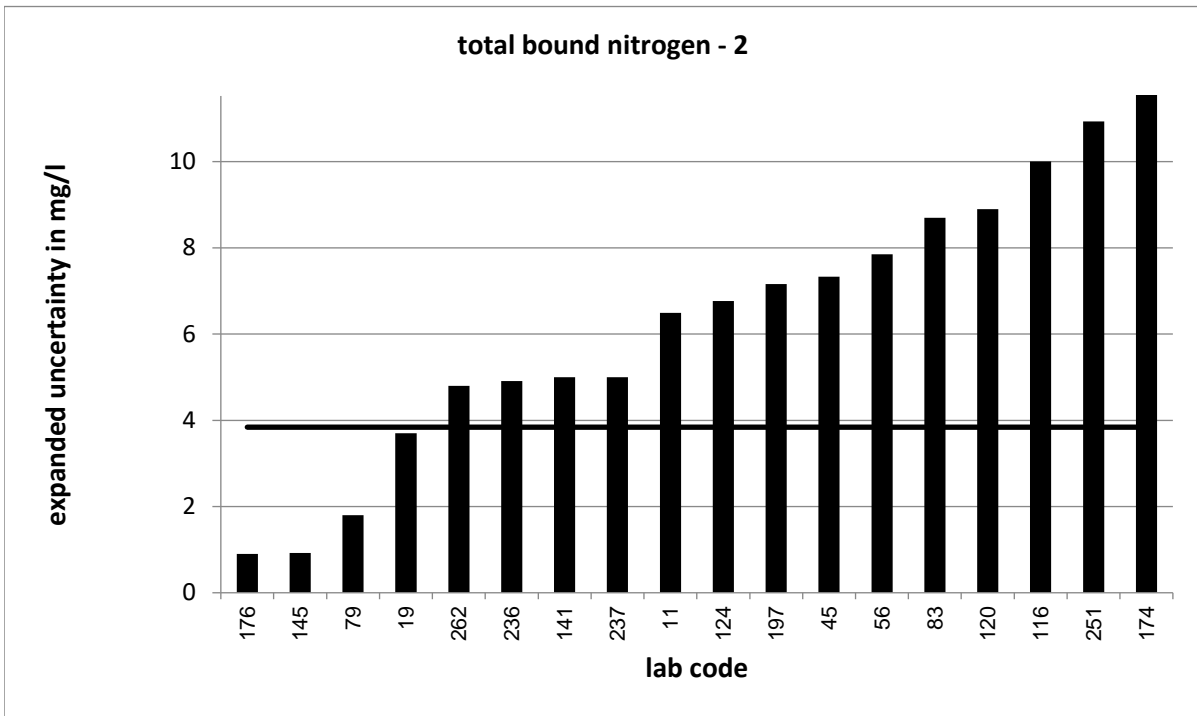
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

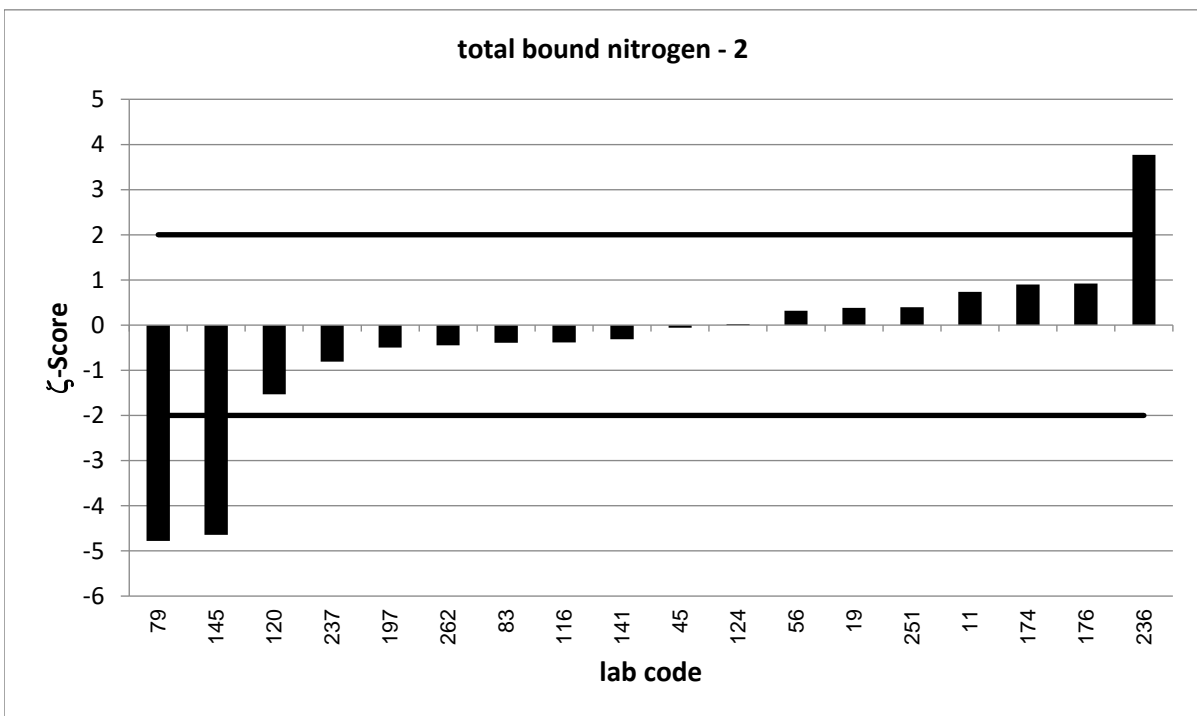


Strongly deviating values are not shown in the diagram.





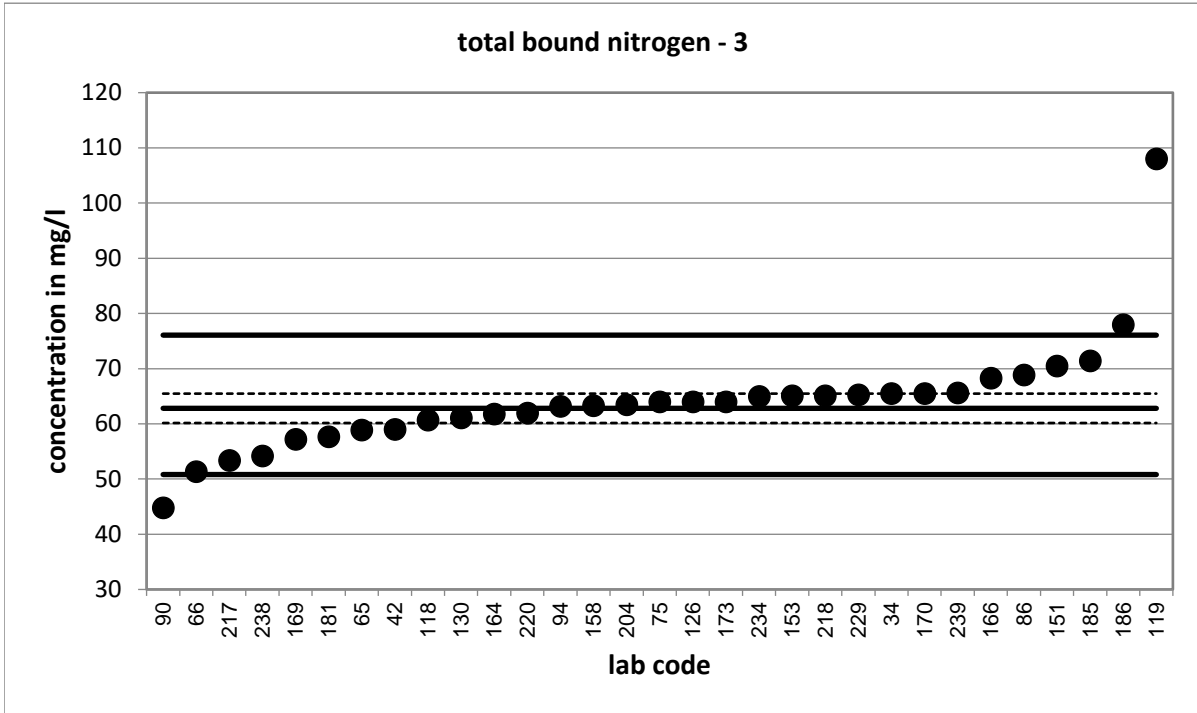
Strongly deviating values are not correctly shown in the diagram.



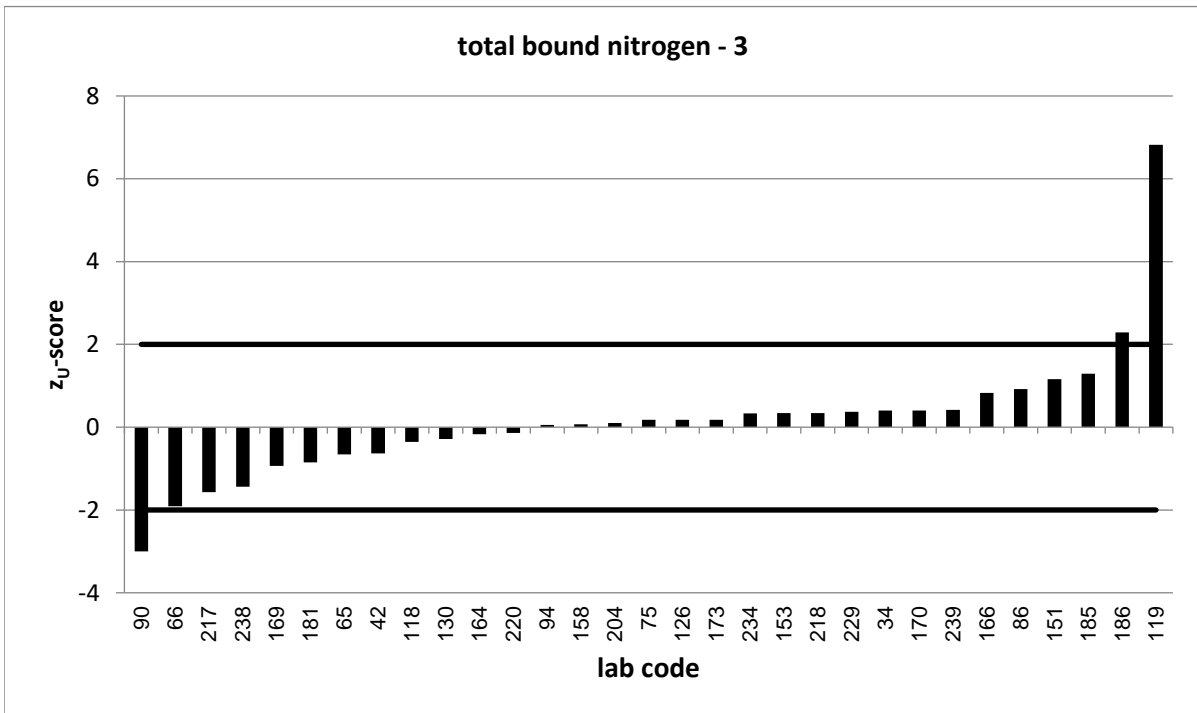
PT 10/23		total bound nitrogen - 3			
assigned value [mg/l]*		62,82 ± 2,66			
upper tolerance limit [mg/l]		76,07			
lower tolerance limit [mg/l]		50,82			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
34	65,5			0,4	s
42	59			-0,6	s
65	58,9			-0,7	s
66	51,35	1,54	-7,5	-1,9	s
75	64			0,2	s
86	68,9	15,2	0,8	0,9	s
90	44,8	4,8	-6,6	-3,0	u
94	63,2	2,12	0,2	0,1	s
118	60,7			-0,4	s
119	108			6,8	u
126	64	10	0,2	0,2	s
130	61,08	6,7	-0,5	-0,3	s
151	70,5	7,97	1,8	1,2	s
153	65,1	6,51	0,6	0,3	s
158	63,3			0,1	s
164	61,8	3,1	-0,5	-0,2	s
166	68,3	22,5	0,5	0,8	s
169	57,2	6,3	-1,6	-0,9	s
170	65,5			0,4	s
173	64	12,4	0,2	0,2	s
181	57,7	8,66	-1,1	-0,9	s
185	71,4			1,3	s
186	78	12	2,5	2,3	q
204	63,5	8,25	0,2	0,1	s
217	53,4			-1,6	s
218	65,1			0,3	s
220	62			-0,1	s
229	65,3	10	0,5	0,4	s
234	65			0,3	s
238	54,2	1	-6,1	-1,4	s
239	65,6			0,4	s

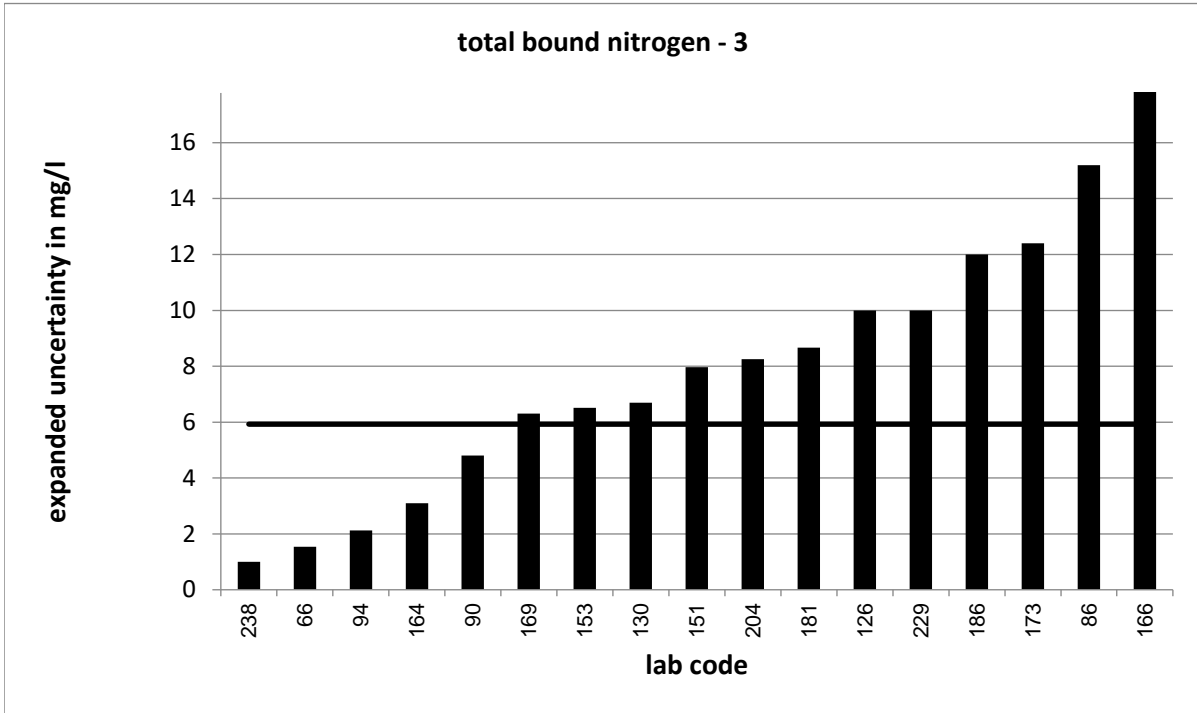
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

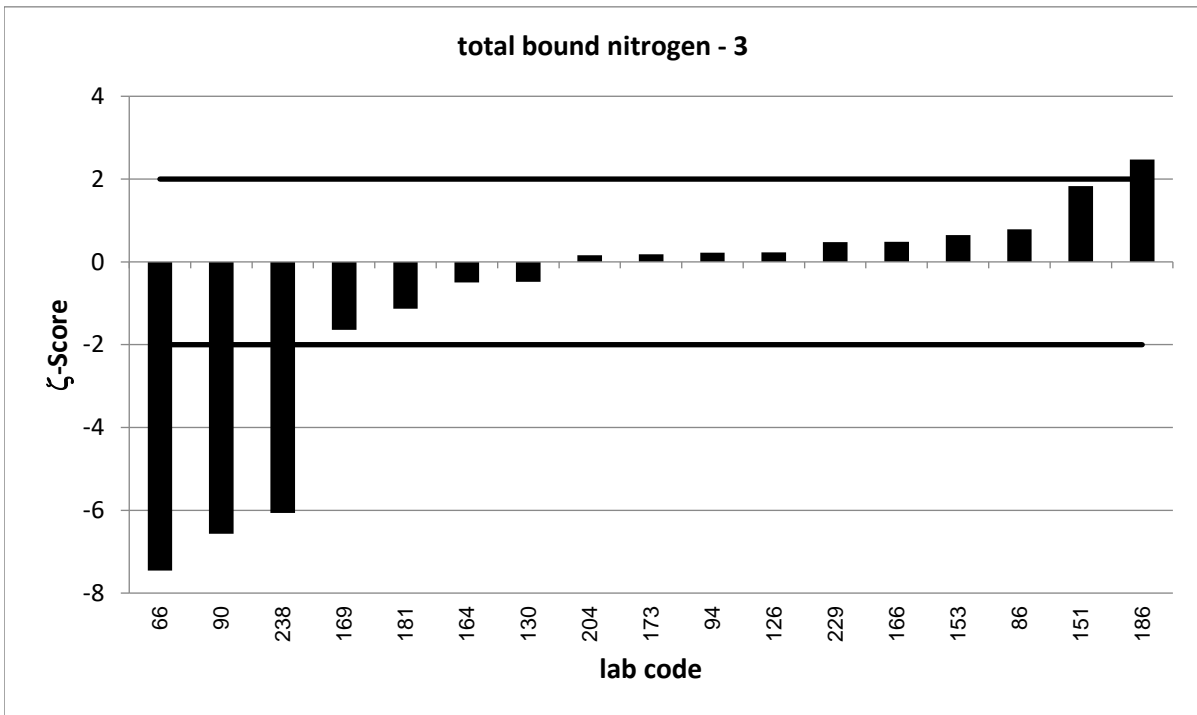


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

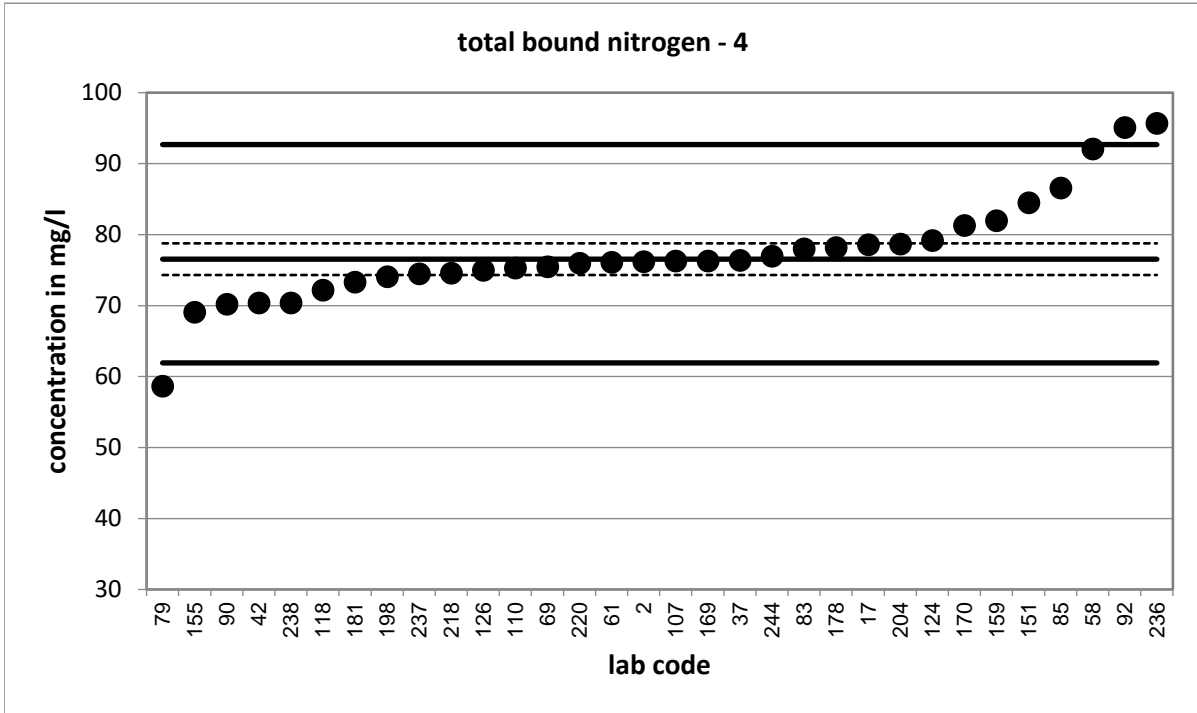




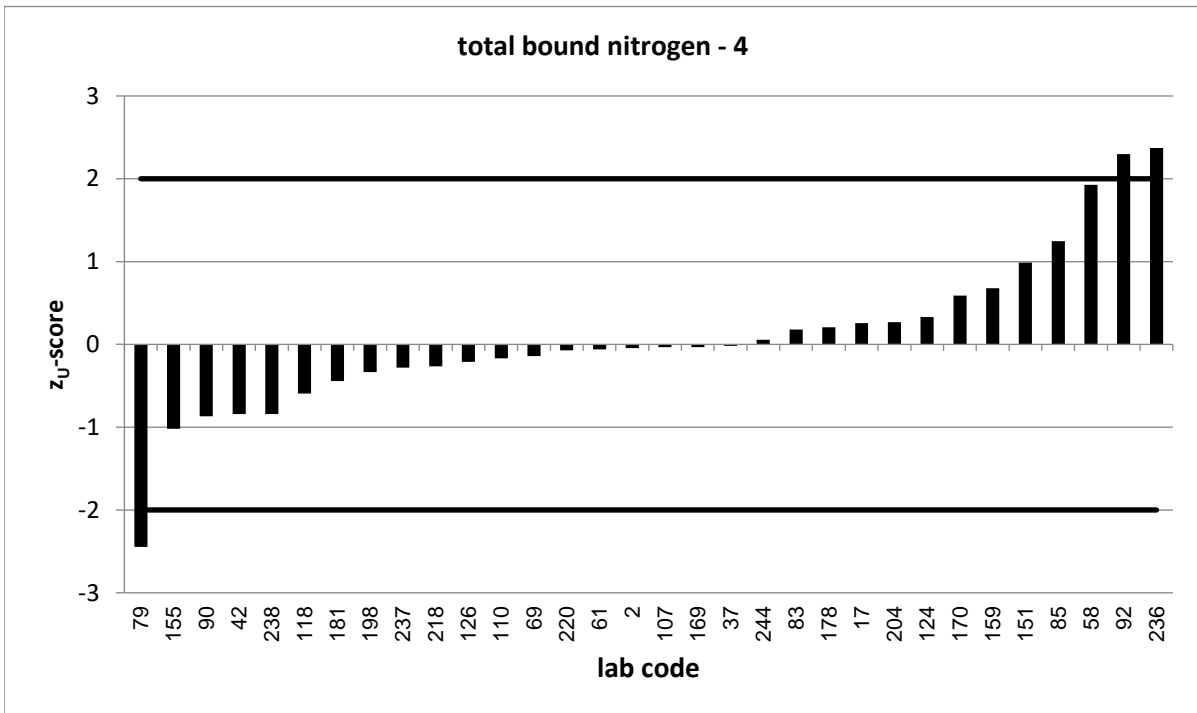
PT 10/23		total bound nitrogen - 4			
assigned value [mg/l]*		76,54 ± 2,23			
upper tolerance limit [mg/l]		92,69			
lower tolerance limit [mg/l]		61,92			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
2	76,2			0,0	s
17	78,6	5,7	0,7	0,3	s
37	76,4	11	0,0	0,0	s
42	70,4			-0,8	s
58	92,1			1,9	s
61	76,1			-0,1	s
69	75,5	14	-0,1	-0,1	s
79	58,65	2,5	-10,7	-2,4	q
83	78	15,6	0,2	0,2	s
85	86,6	8,66	2,3	1,2	s
90	70,2	7	-1,7	-0,9	s
92	95,1	31,1	1,2	2,3	q
107	76,3	17,2	0,0	0,0	s
110	75,3			-0,2	s
118	72,2			-0,6	s
124	79,2	11,9	0,4	0,3	s
126	75	15	-0,2	-0,2	s
151	84,5	9,55	1,6	1,0	s
155	69,1	10	-1,5	-1,0	s
159	82			0,7	s
169	76,3	8,5	-0,1	0,0	s
170	81,3			0,6	s
178	78,2			0,2	s
181	73,3	11	-0,6	-0,4	s
198	74,1			-0,3	s
204	78,7	10,23	0,4	0,3	s
218	74,6			-0,3	s
220	76			-0,1	s
236	95,7	8,71	4,3	2,4	q
237	74,5	8,6	-0,5	-0,3	s
238	70,4	1	-5,0	-0,8	s
244	76,98			0,1	s

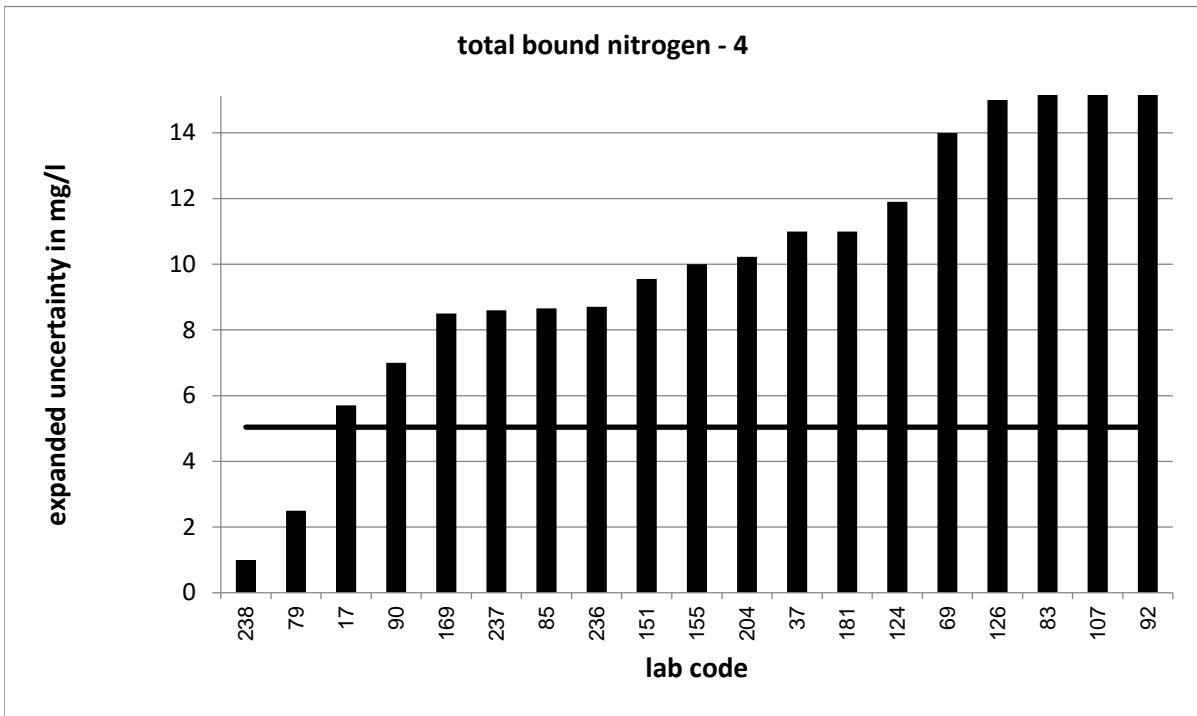
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

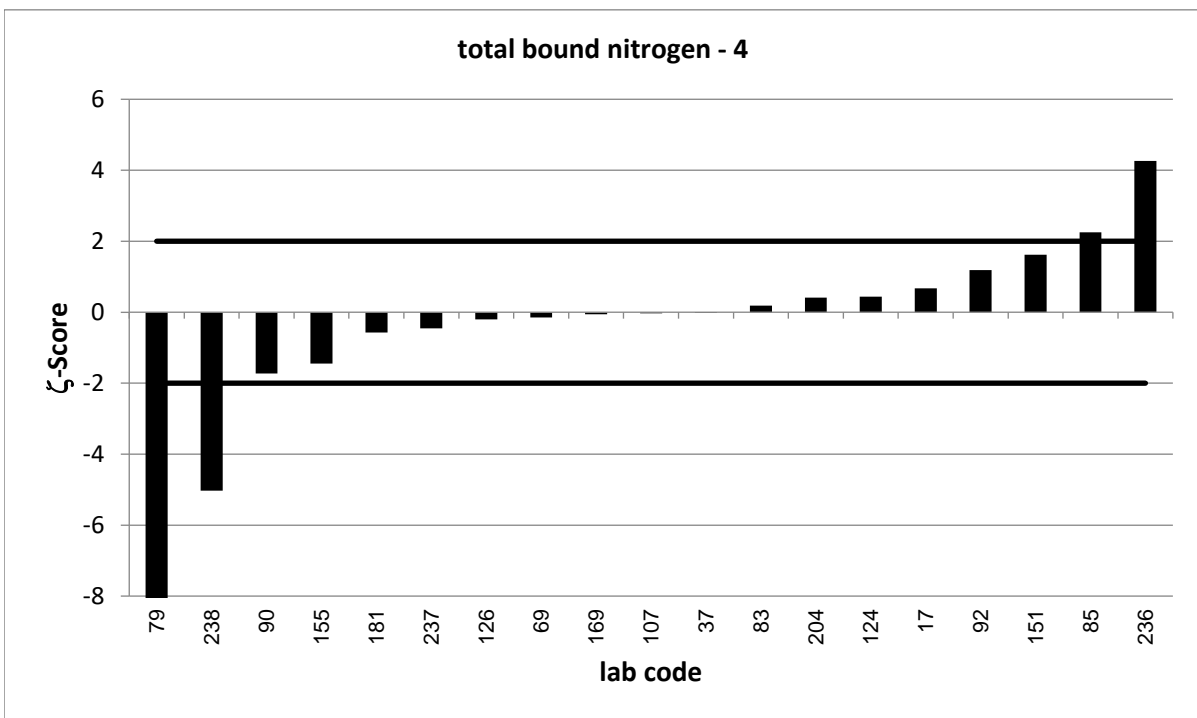


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

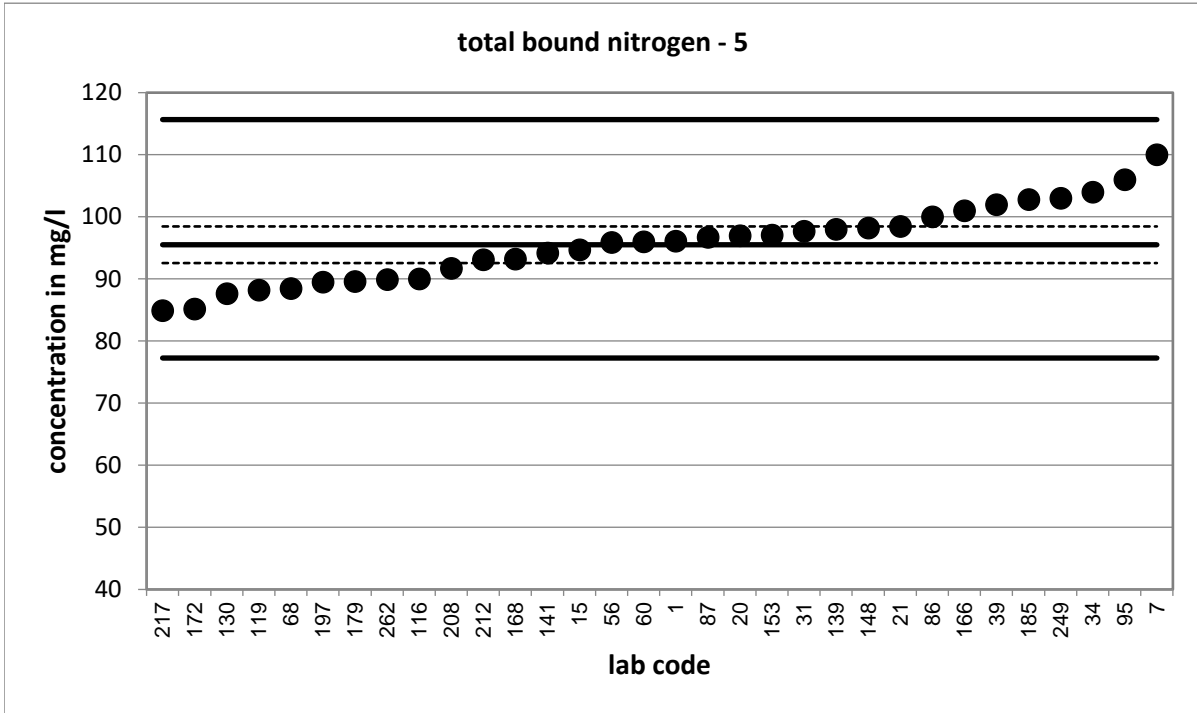


Strongly deviating values are not correctly shown in the diagram.

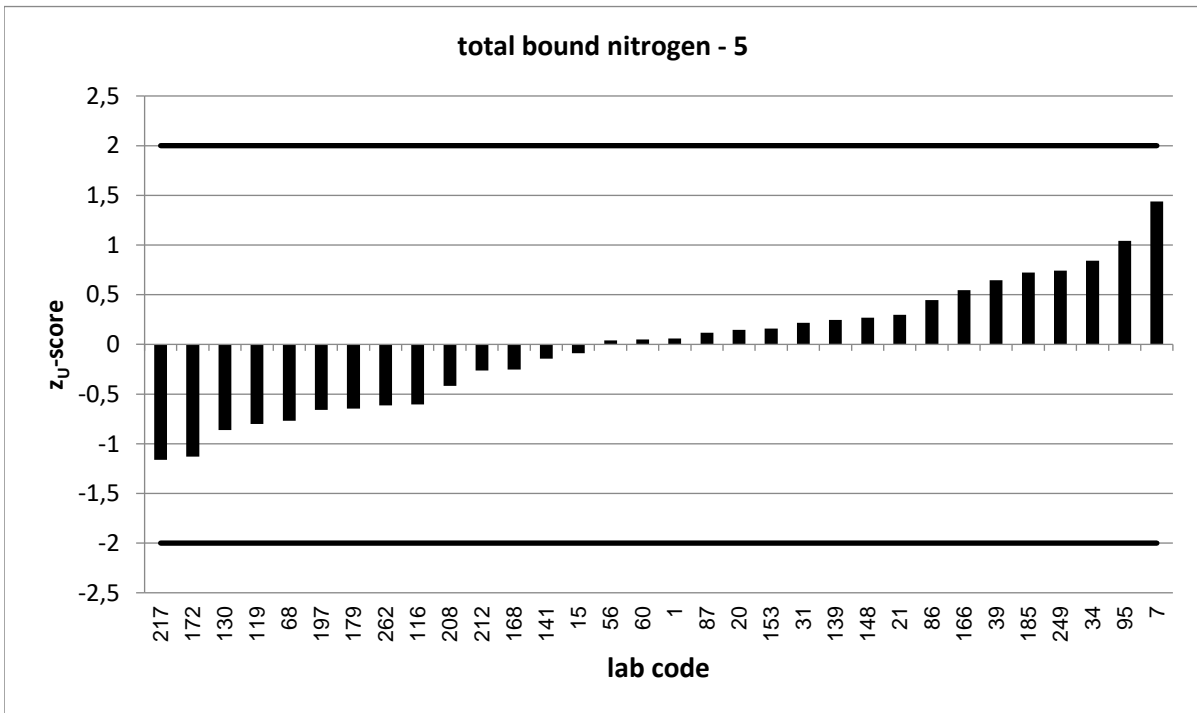
PT 10/23		total bound nitrogen - 5			
assigned value [mg/l]*		95,51 ± 2,95			
upper tolerance limit [mg/l]		115,7			
lower tolerance limit [mg/l]		77,27			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	96,1	17	0,1	0,1	s
7	110	1,4	8,9	1,4	s
15	94,7			-0,1	s
20	96,98			0,1	s
21	98,5			0,3	s
31	97,7			0,2	s
34	104			0,8	s
39	102	17,8	0,7	0,6	s
56	95,9	16,3	0,0	0,0	s
60	96	12,5	0,1	0,0	s
68	88,5	11,8	-1,2	-0,8	s
86	100	22	0,4	0,4	s
87	96,7			0,1	s
95	106			1,0	s
116	90	20	-0,5	-0,6	s
119	88,2			-0,8	s
130	87,65	9,6	-1,6	-0,9	s
139	98			0,2	s
141	94,2	10	-0,3	-0,1	s
148	98,2			0,3	s
153	97,1	9,71	0,3	0,2	s
166	101	21	0,5	0,5	s
168	93,2			-0,3	s
172	85,2			-1,1	s
179	89,6			-0,6	s
185	102,8			0,7	s
197	89,5	14,9	-0,8	-0,7	s
208	91,7	13,8	-0,5	-0,4	s
212	93,1			-0,3	s
217	84,9			-1,2	s
249	103	18,9	0,8	0,7	s
262	89,9	9,9	-1,1	-0,6	s

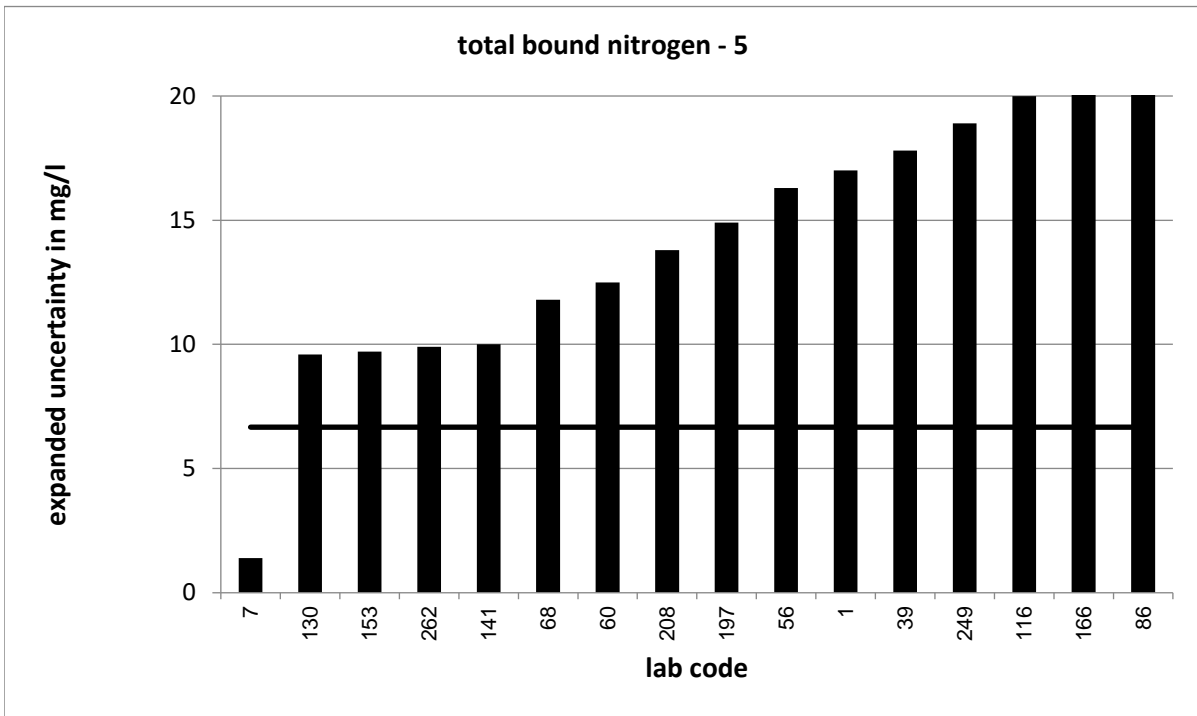
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

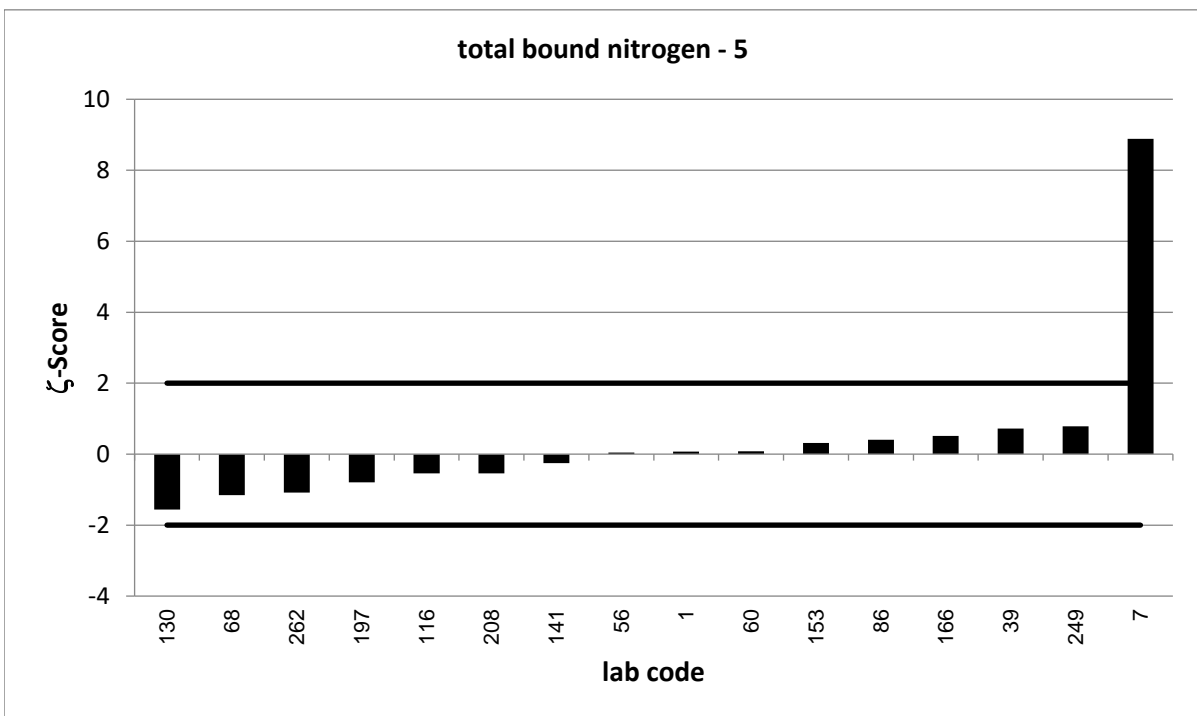


Strongly deviating values are not shown in the diagram.





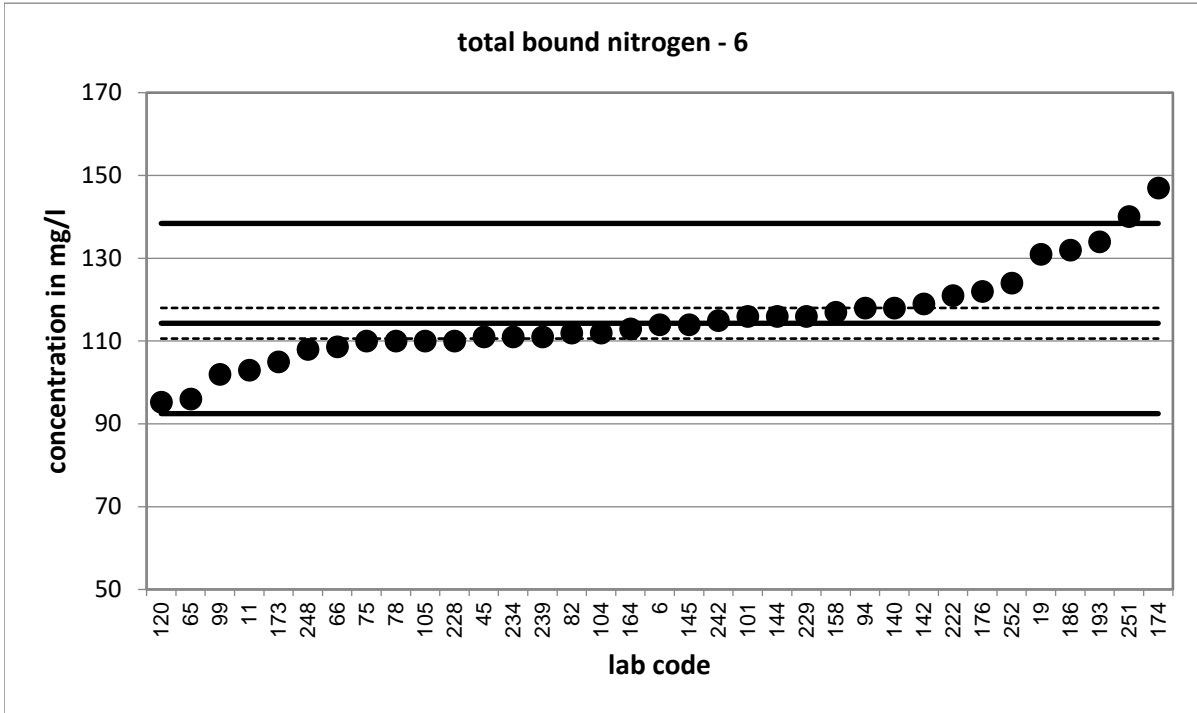
Strongly deviating values are not correctly shown in the diagram.



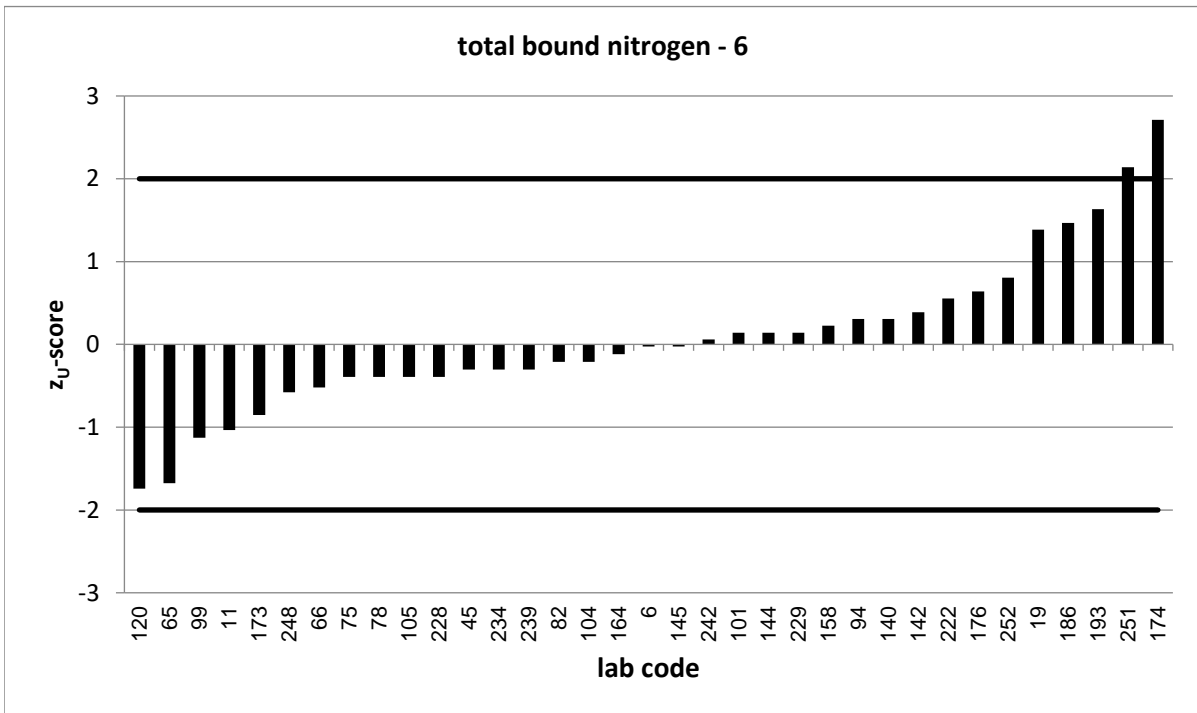
PT 10/23		total bound nitrogen - 6			
assigned value [mg/l]*		114,3 ± 3,7			
upper tolerance limit [mg/l]		138,4			
lower tolerance limit [mg/l]		92,47			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
6	114			0,0	s
11	103	14,1	-1,5	-1,0	s
19	131	10,5	3,0	1,4	s
45	111	18,2	-0,4	-0,3	s
65	96			-1,7	s
66	108,63	3,3	-2,3	-0,5	s
75	110			-0,4	s
78	110			-0,4	s
82	112	3,2	-0,9	-0,2	s
94	118	3,99	1,4	0,3	s
99	102			-1,1	s
101	116			0,1	s
104	112	23	-0,2	-0,2	s
105	110	15,3	-0,5	-0,4	s
120	95,3	22,5	-1,7	-1,7	s
140	118			0,3	s
142	119	29,8	0,3	0,4	s
144	116			0,1	s
145	114	4,53	-0,1	0,0	s
158	117			0,2	s
164	113	8,2	-0,3	-0,1	s
173	105	20,3	-0,9	-0,9	s
174	147	65,9	1,0	2,7	q
176	122	2	3,6	0,6	s
186	132	20	1,7	1,5	s
193	134	18,8	2,1	1,6	s
222	121	18	0,7	0,6	s
228	110			-0,4	s
229	116	19	0,2	0,1	s
234	111			-0,3	s
239	111			-0,3	s
242	115	20,7	0,1	0,1	s
248	108	17	-0,7	-0,6	s
251	140,1	32,51	1,6	2,1	q
252	124	21,6	0,9	0,8	s

\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

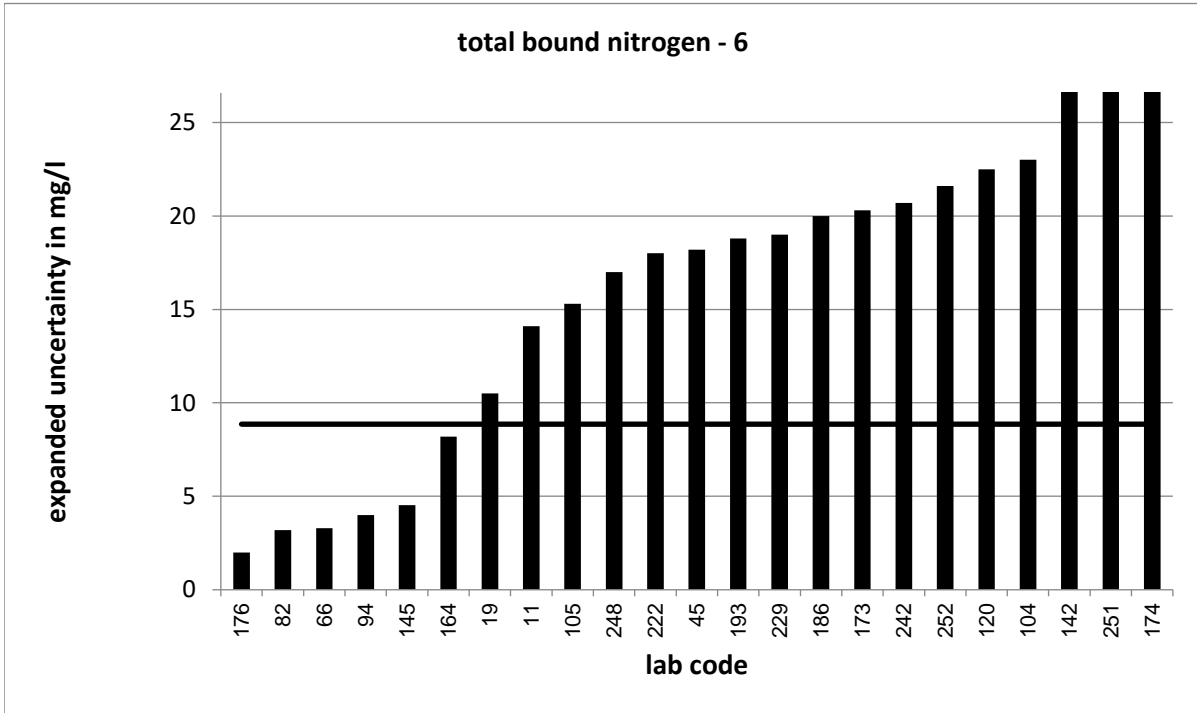
\*\* s = satisfactory, q = questionable, u = unsatisfactory



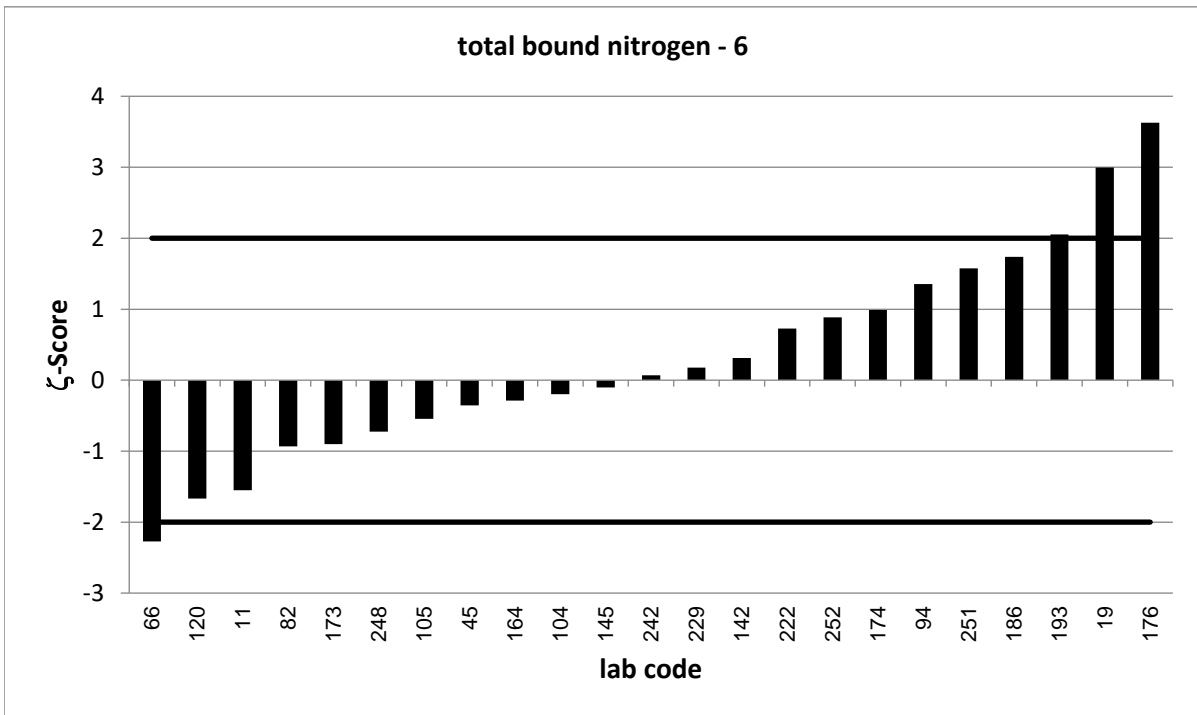
Strongly deviating values are not shown in the diagram.







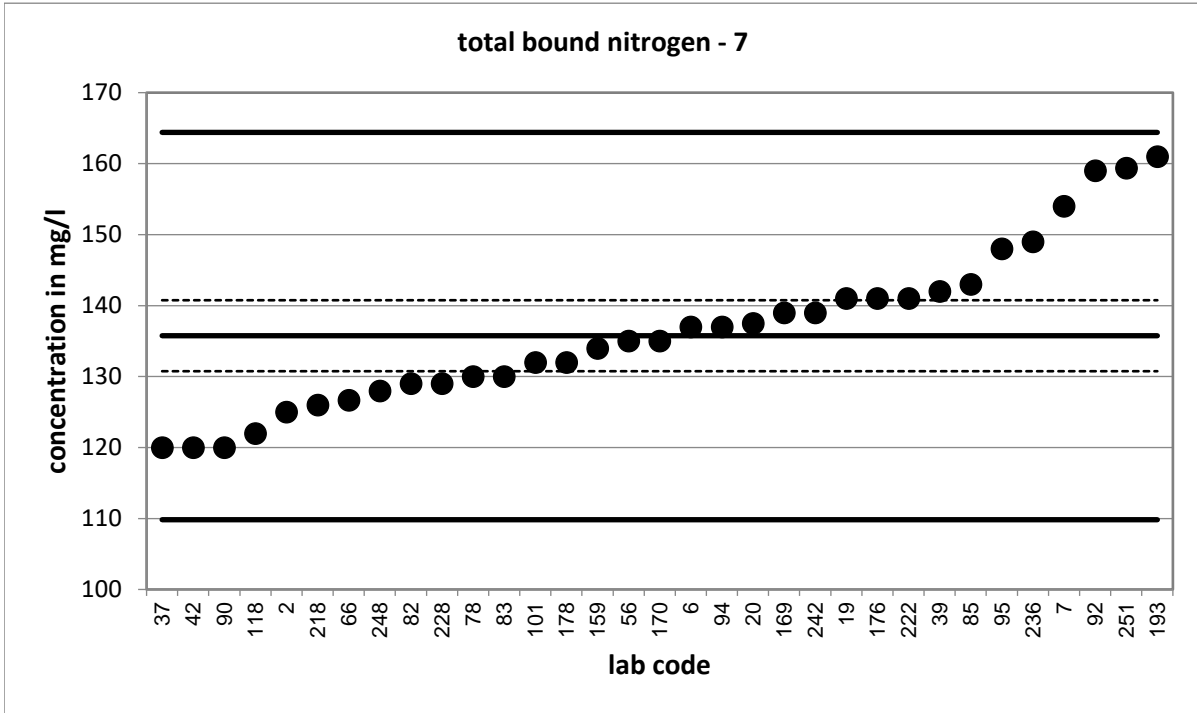
Strongly deviating values are not correctly shown in the diagram.



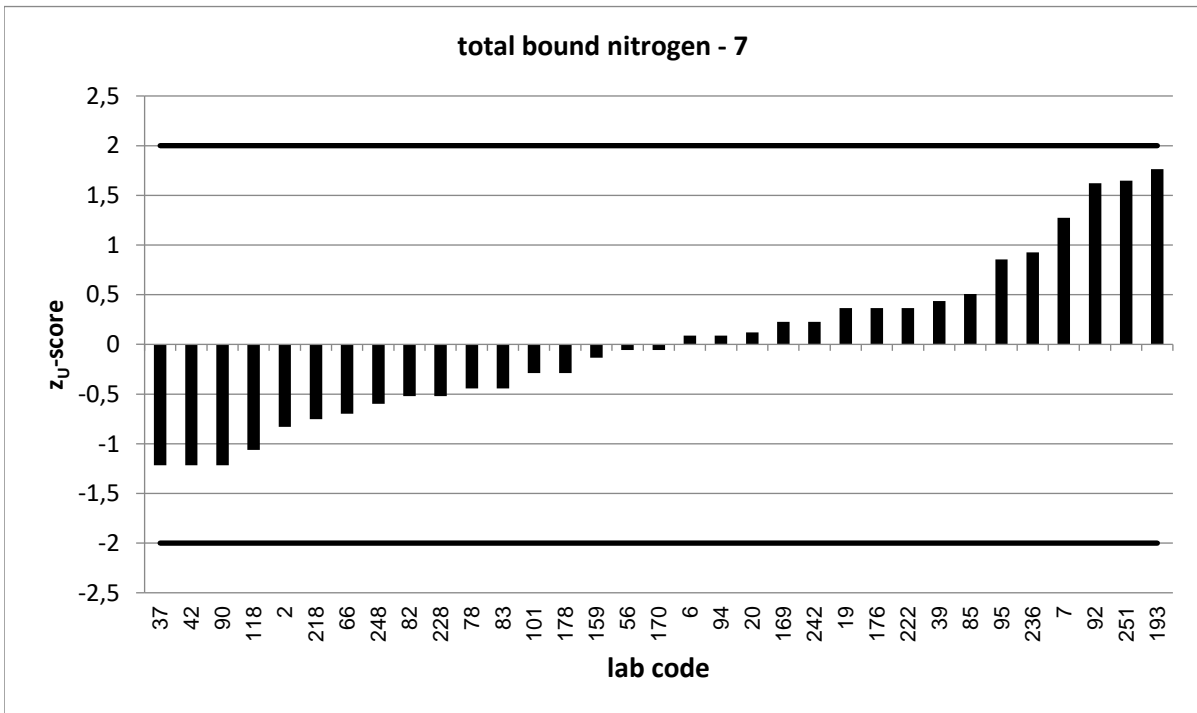
PT 10/23		total bound nitrogen - 7			
assigned value [mg/l]*		135,8 ± 5			
upper tolerance limit [mg/l]		164,4			
lower tolerance limit [mg/l]		109,8			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
2	125			-0,8	s
6	137			0,1	s
7	154	5,6	4,9	1,3	s
19	141	11	0,9	0,4	s
20	137,5			0,1	s
37	120	17	-1,8	-1,2	s
39	142	24,7	0,5	0,4	s
42	120			-1,2	s
56	135	23	-0,1	-0,1	s
66	126,69	3,8	-2,9	-0,7	s
78	130			-0,4	s
82	129	4,4	-2,0	-0,5	s
83	130	26	-0,4	-0,4	s
85	143	14,3	1,0	0,5	s
90	120	12	-2,4	-1,2	s
92	159	52	0,9	1,6	s
94	137	5,28	0,3	0,1	s
95	148			0,9	s
101	132			-0,3	s
118	122			-1,1	s
159	134			-0,1	s
169	139	15	0,4	0,2	s
170	135			-0,1	s
176	141	3	1,8	0,4	s
178	132			-0,3	s
193	161	22,5	2,2	1,8	s
218	126			-0,8	s
222	141	21	0,5	0,4	s
228	129			-0,5	s
236	149	13,3	1,9	0,9	s
242	139	25	0,3	0,2	s
248	128	20	-0,8	-0,6	s
251	159,37	36,99	1,3	1,6	s

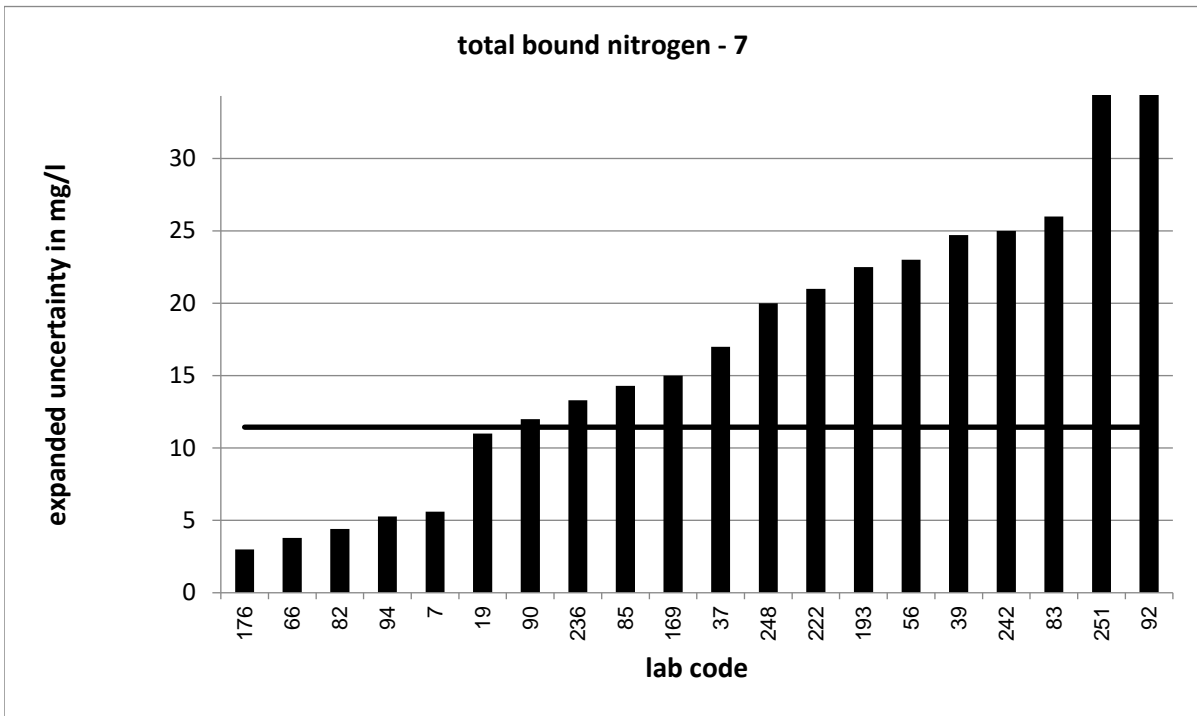
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

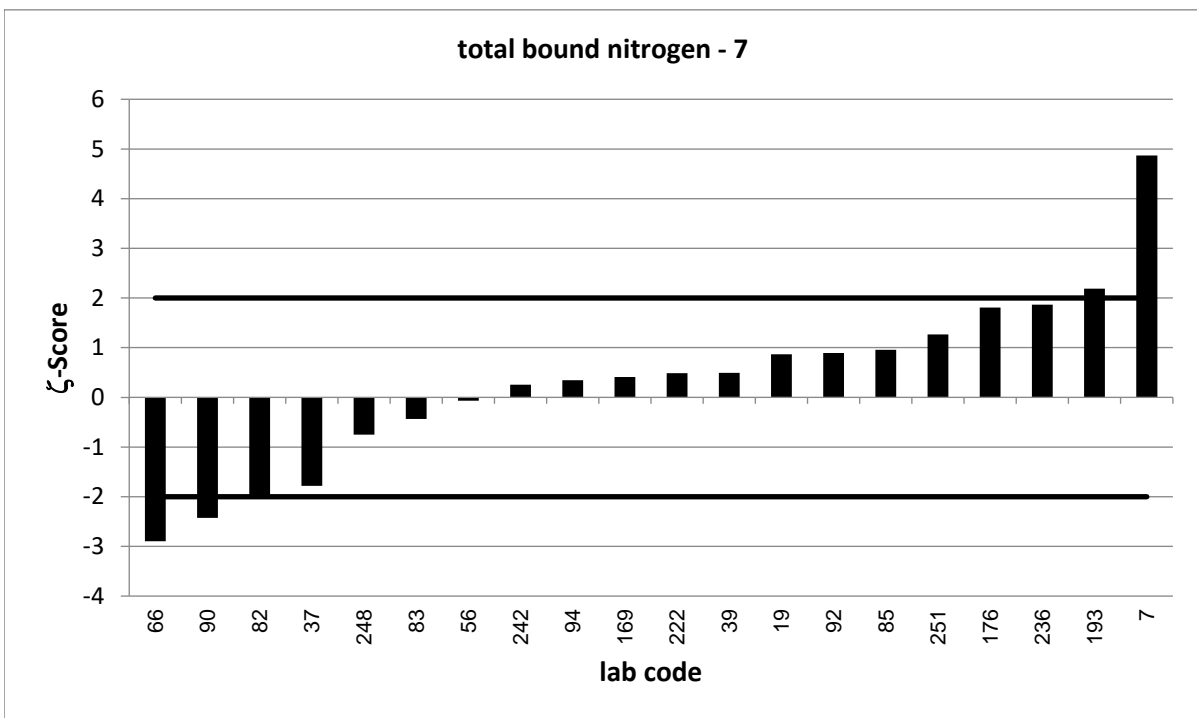


Strongly deviating values are not shown in the diagram.





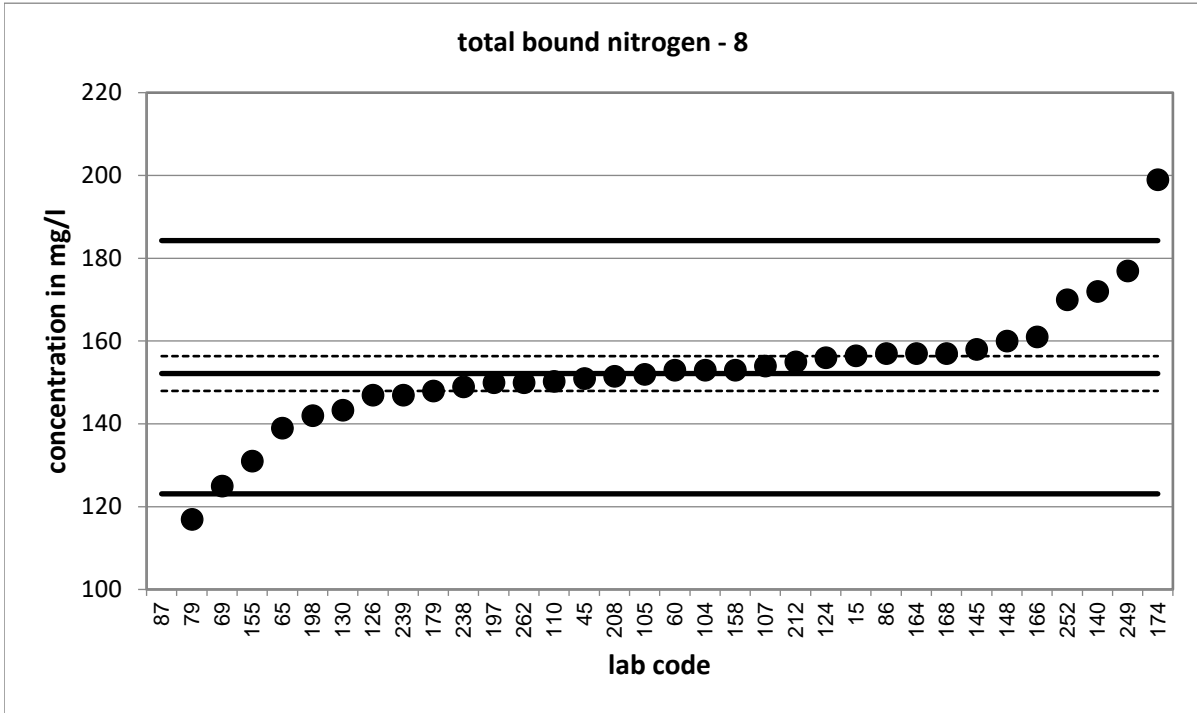
Strongly deviating values are not correctly shown in the diagram.



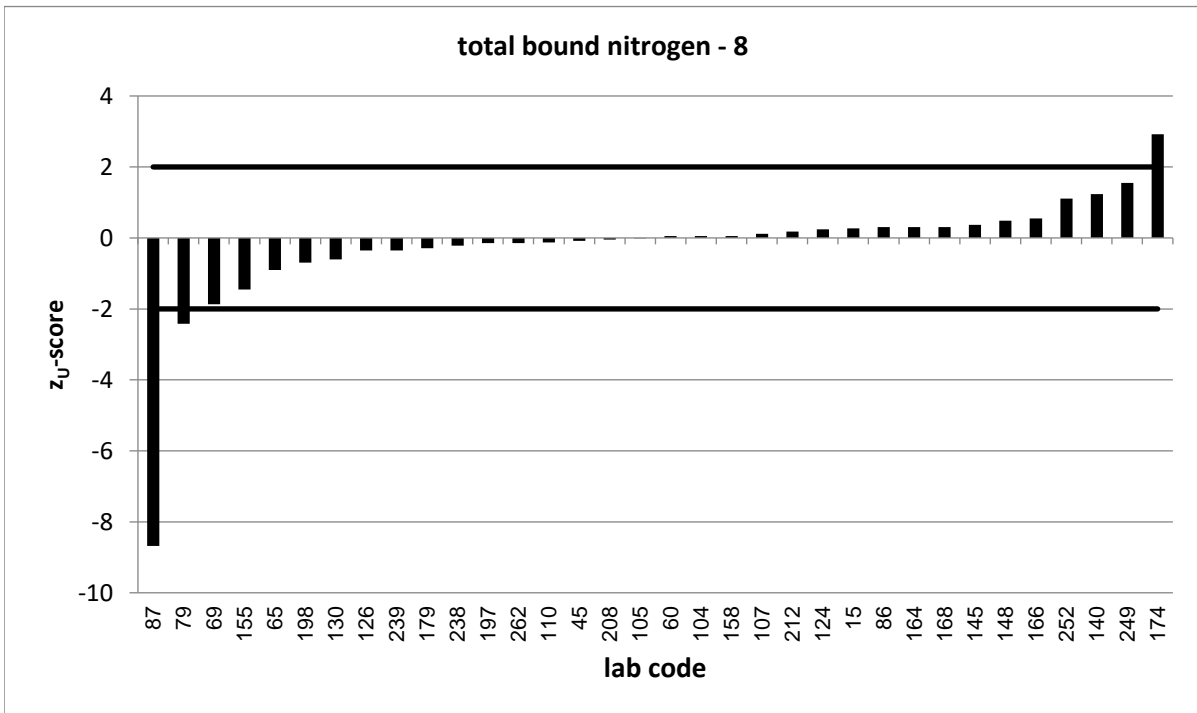
PT 10/23		total bound nitrogen - 8			
assigned value [mg/l]*		152,2 ± 4,2			
upper tolerance limit [mg/l]		184,3			
lower tolerance limit [mg/l]		123,1			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
15	156,5			0,3	s
45	151	24,8	-0,1	-0,1	s
60	153	19,9	0,1	0,1	s
65	139			-0,9	s
69	125	21	-2,5	-1,9	s
79	117	5,3	-10,3	-2,4	q
86	157	34,5	0,3	0,3	s
87	26,1			-8,7	u
104	153	32	0,1	0,1	s
105	152	21,13	0,0	0,0	s
107	154	34,7	0,1	0,1	s
110	150,3			-0,1	s
124	156	23,6	0,3	0,2	s
126	147	20	-0,5	-0,4	s
130	143,32	15,8	-1,1	-0,6	s
140	172			1,2	s
145	158	12,1	0,9	0,4	s
148	160			0,5	s
155	131	19	-2,2	-1,5	s
158	153			0,1	s
164	157	6,8	1,2	0,3	s
166	161	33	0,5	0,6	s
168	157			0,3	s
174	199	89,7	1,0	2,9	q
179	148			-0,3	s
197	150	24,9	-0,2	-0,1	s
198	142			-0,7	s
208	151,5	22,7	-0,1	0,0	s
212	155			0,2	s
238	149	1	-1,4	-0,2	s
239	147			-0,4	s
249	177	32,5	1,5	1,5	s
252	170	29,6	1,2	1,1	s
262	150	16,5	-0,3	-0,1	s

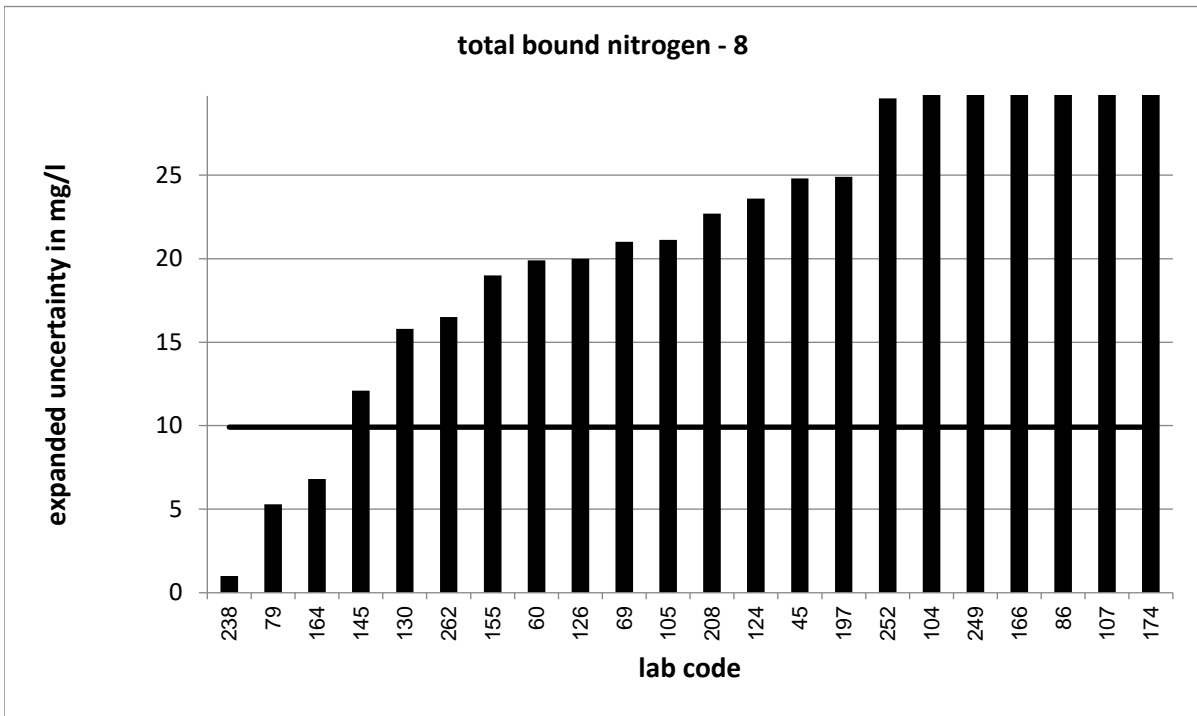
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

\*\* s = satisfactory, q = questionable, u = unsatisfactory

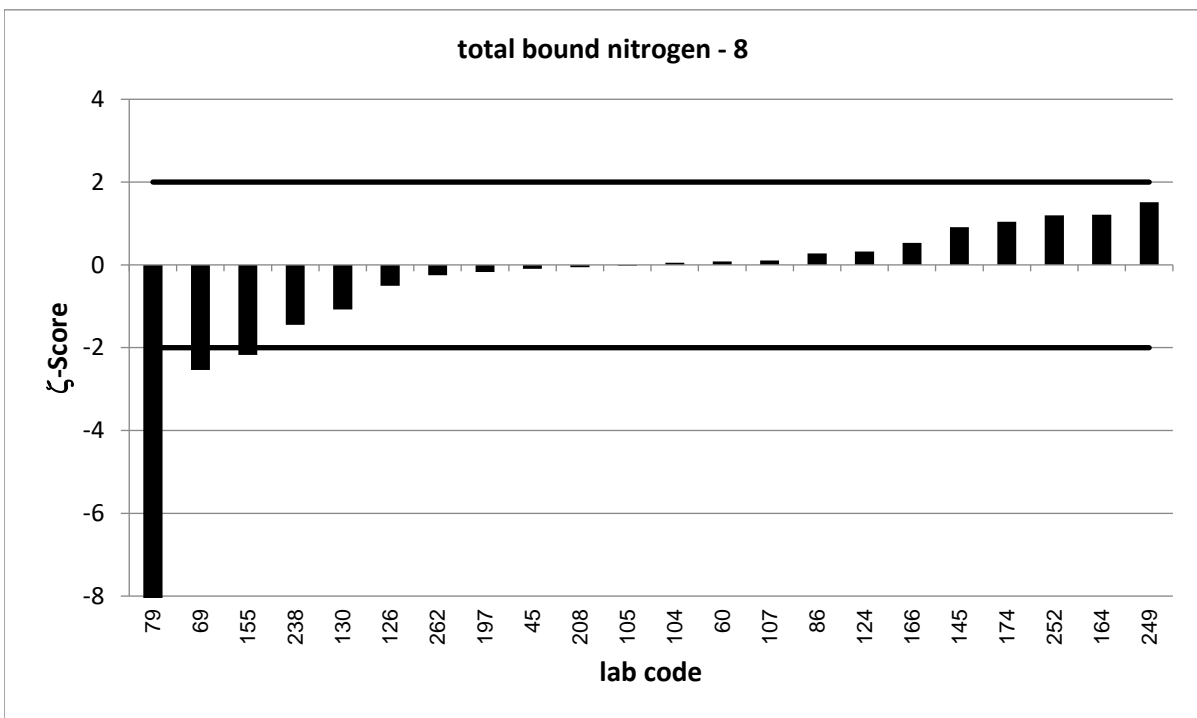


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.



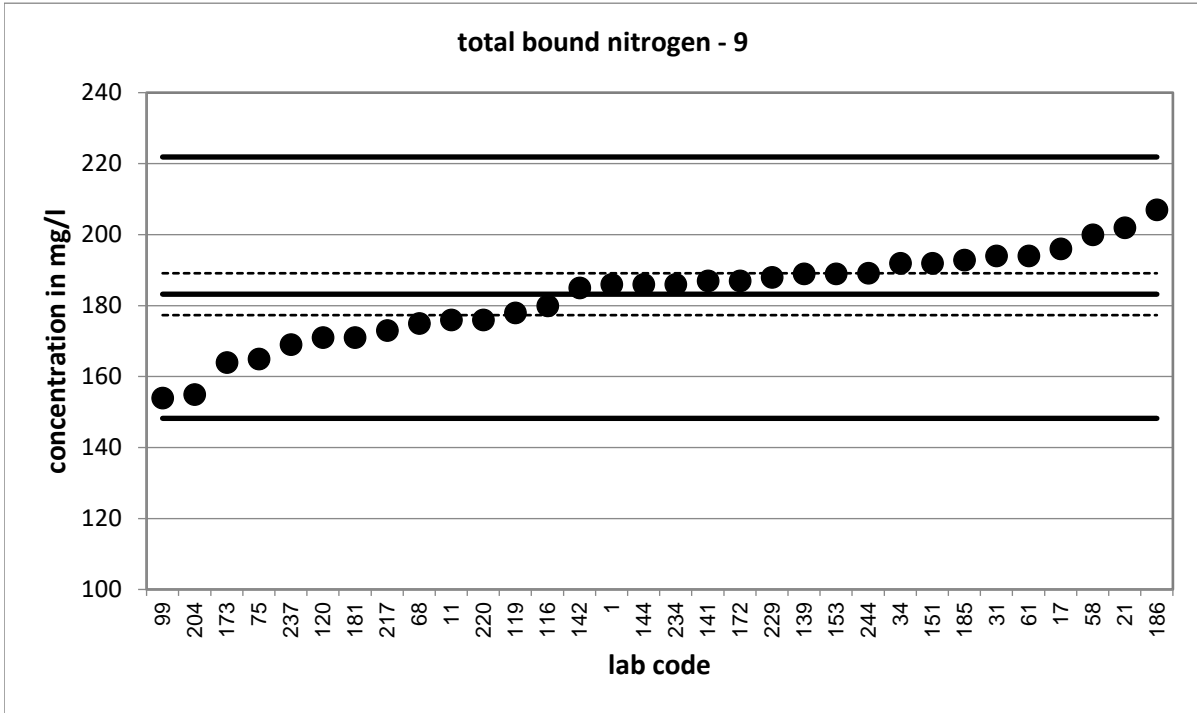
Strongly deviating values are not correctly shown in the diagram.

PT 10/23		total bound nitrogen - 9			
assigned value [mg/l]*		183,2 ± 5,9			
upper tolerance limit [mg/l]		221,9			
lower tolerance limit [mg/l]		148,2			
lab code	result [mg/l]	±	z-score	z <sub>U</sub> -score	assessm.**
1	186	34	0,2	0,1	s
11	176	24,1	-0,6	-0,4	s
17	196	14,2	1,7	0,7	s
21	202			1,0	s
31	194			0,6	s
34	192			0,5	s
58	200			0,9	s
61	194			0,6	s
68	175	23,5	-0,7	-0,5	s
75	165			-1,0	s
99	154			-1,7	s
116	180	40	-0,2	-0,2	s
119	178			-0,3	s
120	171	40,3	-0,6	-0,7	s
139	189			0,3	s
141	187	19	0,4	0,2	s
142	185	46,3	0,1	0,1	s
144	186			0,1	s
151	192	21,7	0,8	0,5	s
153	189	18,9	0,6	0,3	s
172	187			0,2	s
173	164	31,7	-1,2	-1,1	s
181	171	25,7	-0,9	-0,7	s
185	192,9			0,5	s
186	207	31	1,5	1,2	s
204	155	20,15	-2,7	-1,6	s
217	173			-0,6	s
220	176			-0,4	s
229	188	30	0,3	0,2	s
234	186			0,1	s
237	169	20	-1,4	-0,8	s
244	189,2			0,3	s

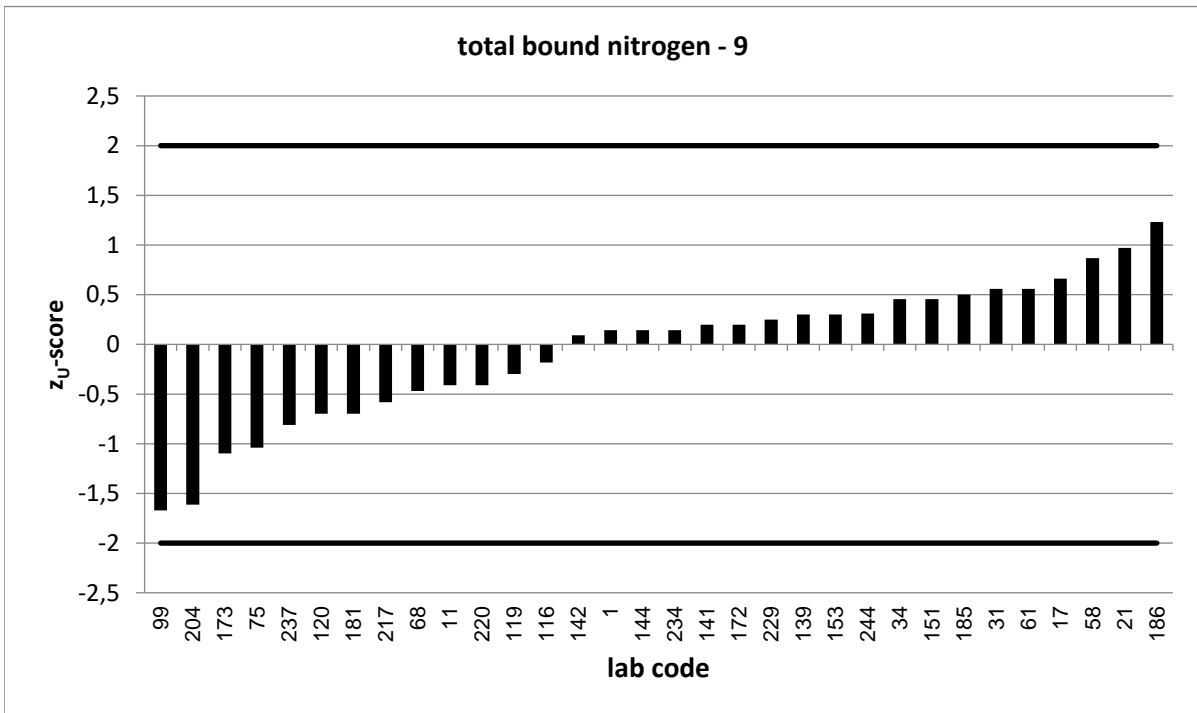
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

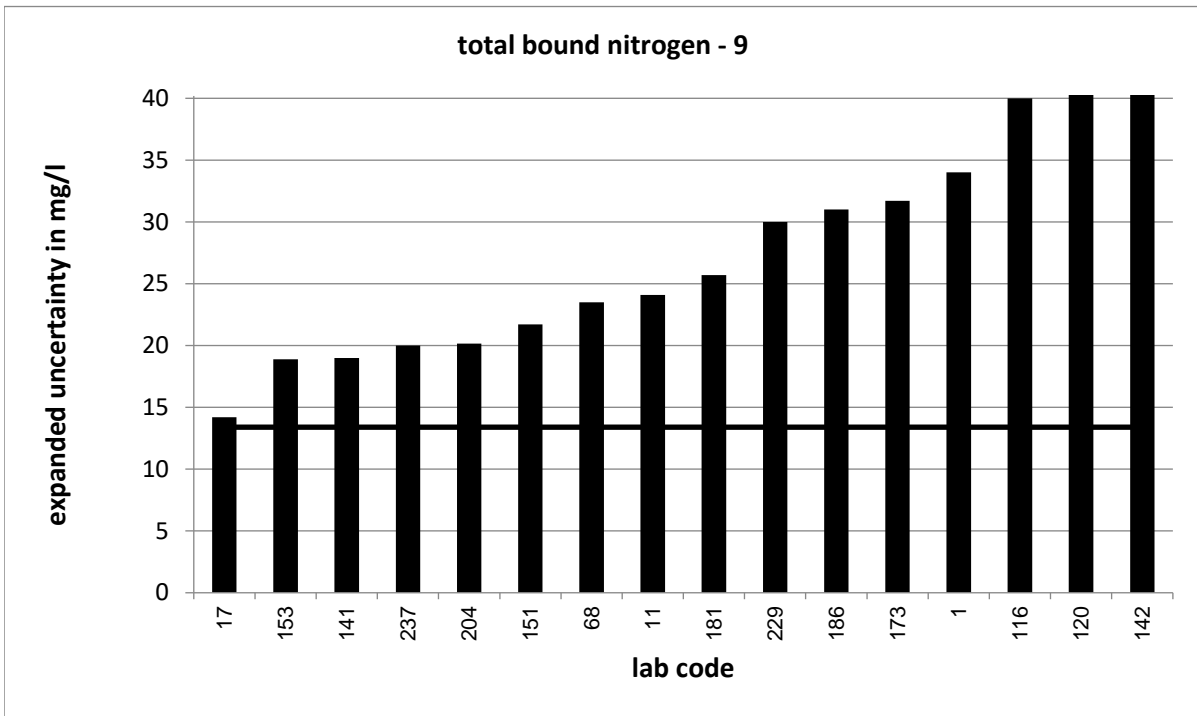
\*\* s = satisfactory, q = questionable, u = unsatisfactory





Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

