

**University of Stuttgart**  
Germany



# Analytische Qualitätssicherung Baden-Württemberg

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Proficiency Test 5/24  
- TW S11 – Haloacetic acids in drinking water -

## 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

**AQS** Baden-  
Württemberg

And  
IWW Analytik und Service GmbH  
Moritzstr. 26, 45476 Mülheim an der Ruhr, Germany

IWW

Stuttgart, in August 2024

**AQS Baden-Württemberg at  
Institute of Sanitary Engineering,  
Water Quality and Solid Waste Management  
at University of Stuttgart  
Bandtäle 2  
70569 Stuttgart-Büsnaus  
Germany  
<http://www.aqsbw.de>  
Tel.: +49 (0)711 / 685-65446  
Fax: +49 (0)711 / 685-53769  
E-Mail: 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>	Dr. Vasil Valkov (IWW)
<b>Release of the report:</b>	Dr.-Ing. Michael Koch      on 8.8.24
<b>Version of the report</b>	1

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## 1. General

This PT was provided by AQS Baden-Württemberg in cooperation with IWW Analytik und Service GmbH in Mülheim an der Ruhr and with the network “NORMAN” (Network of reference laboratories for monitoring of emerging environmental pollutants).

The following parameters were offered:

- monochloroacetic acid
- dichloroacetic acid
- trichloroacetic acid
- monobromoacetic acid
- dibromoacetic acid

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 mentioned parameter in 1000-ml ground glass bottles (brown) with ground glass plug. Preservation by adding sodium thiosulfate.

3 different concentration levels/batches were produced. All participants received the same samples.

## 3. Sample preparation

The samples for the determination of the haloacetic acids were based on a real ground water matrix. The ground water was used without treatment for the sample preparation.

The ground water was spiked with stock solutions and the concentrations covered drinking and ground water relevant ranges.

## 4. Sample distribution

The samples were dispatched on 25.06.2024 by express service.

## 5. Analytical methods

The participants were free to choose a suitable method, but a limit of quantification of 1 µg/l for all parameters was required.

The participants were informed that the samples had to be analysed in the own laboratory, with own personal and own equipment. Subcontracting of the analysis was not allowed.

The participants were informed to cool the samples after receipt and to start with the analysis one day after receipt at the latest.

The samples had to be analysed in duplicate over the complete method (sample preparation and measurement). The participants were asked to report the results as average means from both determinations in µg/l with three significant digits.

## 6. Submission of the results

The deadline for the submission of results was on 15.07.2024.

## 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).

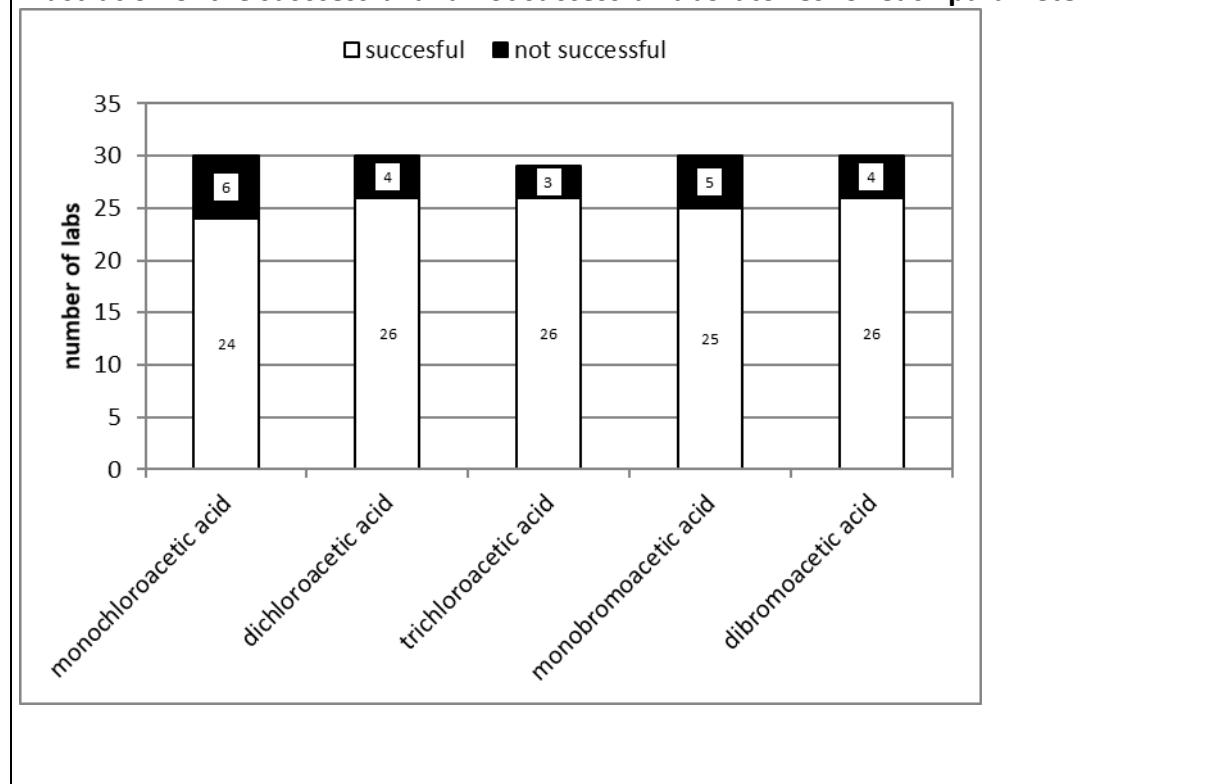
This PT was evaluated as follows:

<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
<b>Upper limit of <math>\sigma_{pt}</math>:</b>	25 %
<b>Lower limit of <math>\sigma_{pt}</math>:</b>	5 %
<b>Assessment:</b>	$z_U$ -Score
<b>Classification of the single results:</b>	$ 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>	32 One laboratory did not report results
<b>Number of reported values</b>	446
<b>Number of accepted values:</b>	382 (85,7 %)

### 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	31
Number of labs with valid values and reported measurement uncertainties	20 (64,5 %)
Number of valid values	446
Number of valid values with measurement uncertainties	273 (61,2 %)

### Measurement uncertainties against the accreditation status

Accreditation status of the values	Number of values	Number of values with measurement uncertainty
accredited	266	183 (68,8 %)
not accredited	180	90 (50 %)

### 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.

Number of values with reported measurement uncertainty having a $ z_U  \leq 2,0$	246
Number of values with a magnitude of $\zeta$ -scores $> 2$ The own requirements of the laboratory are not fulfilled and the estimation of the measurement uncertainty is too low	32 (9,3 %)

## 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)

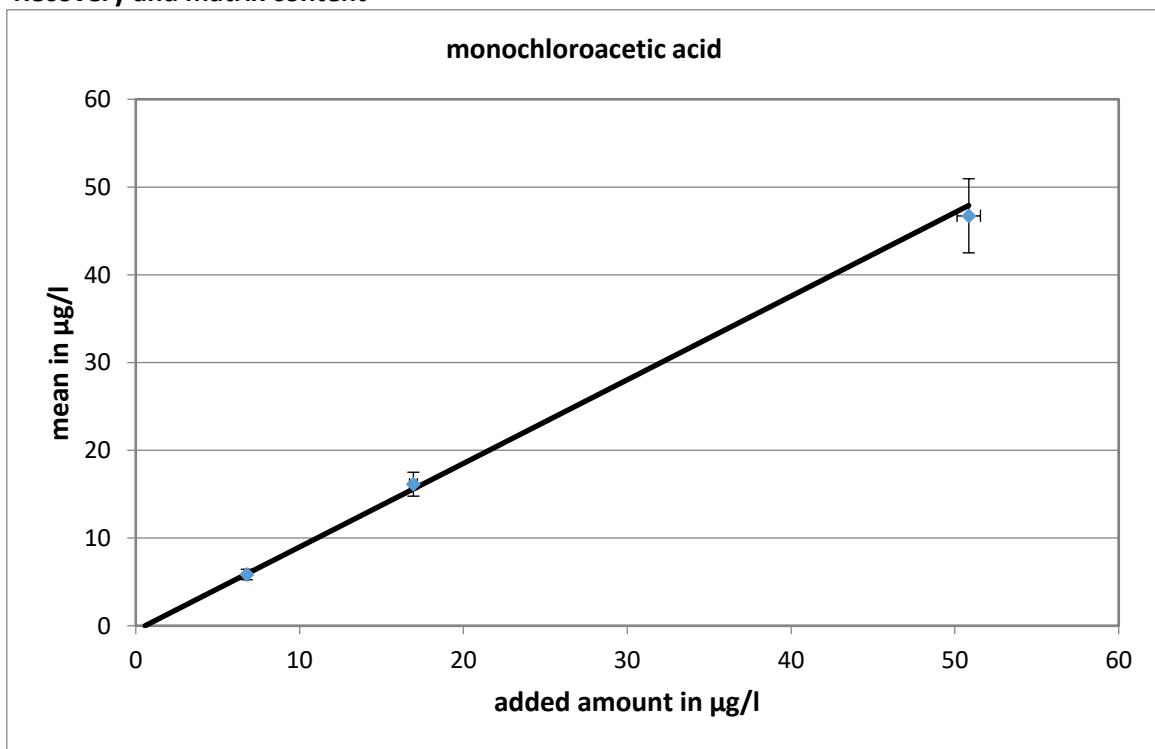
## 12. Internet

The report is available on the following webpage: [www.aqsbw/pdf/306/report\\_306.pdf](http://www.aqsbw/pdf/306/report_306.pdf)

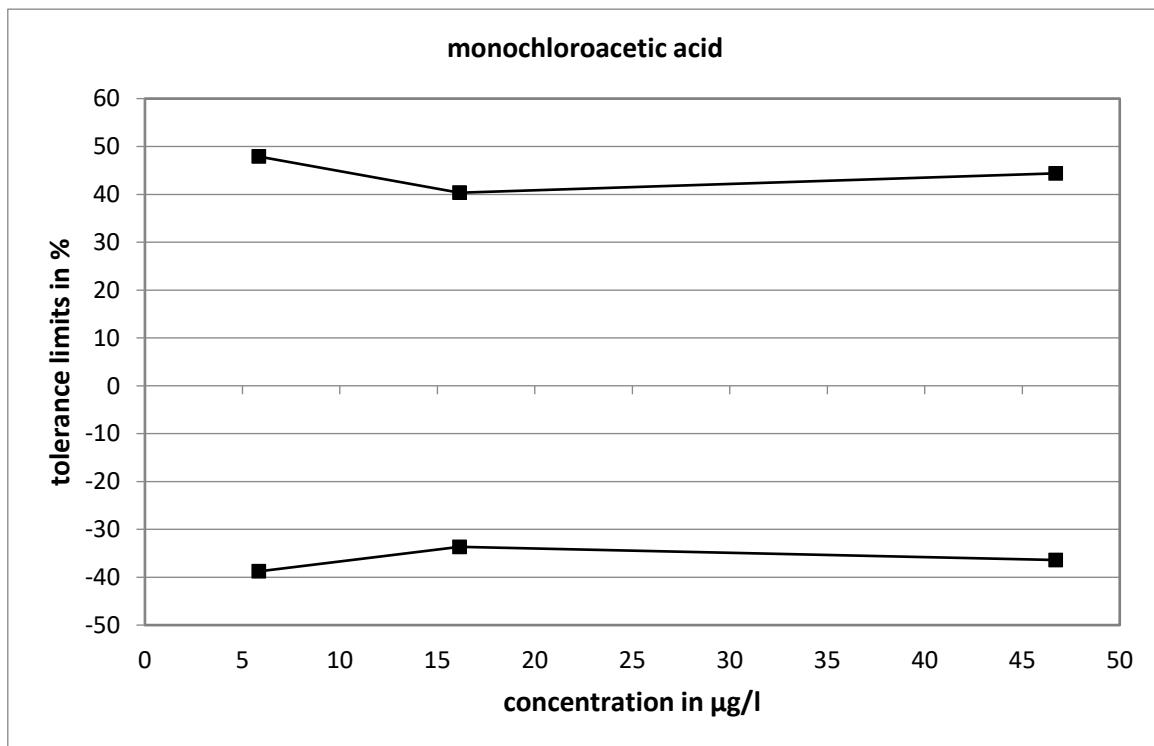
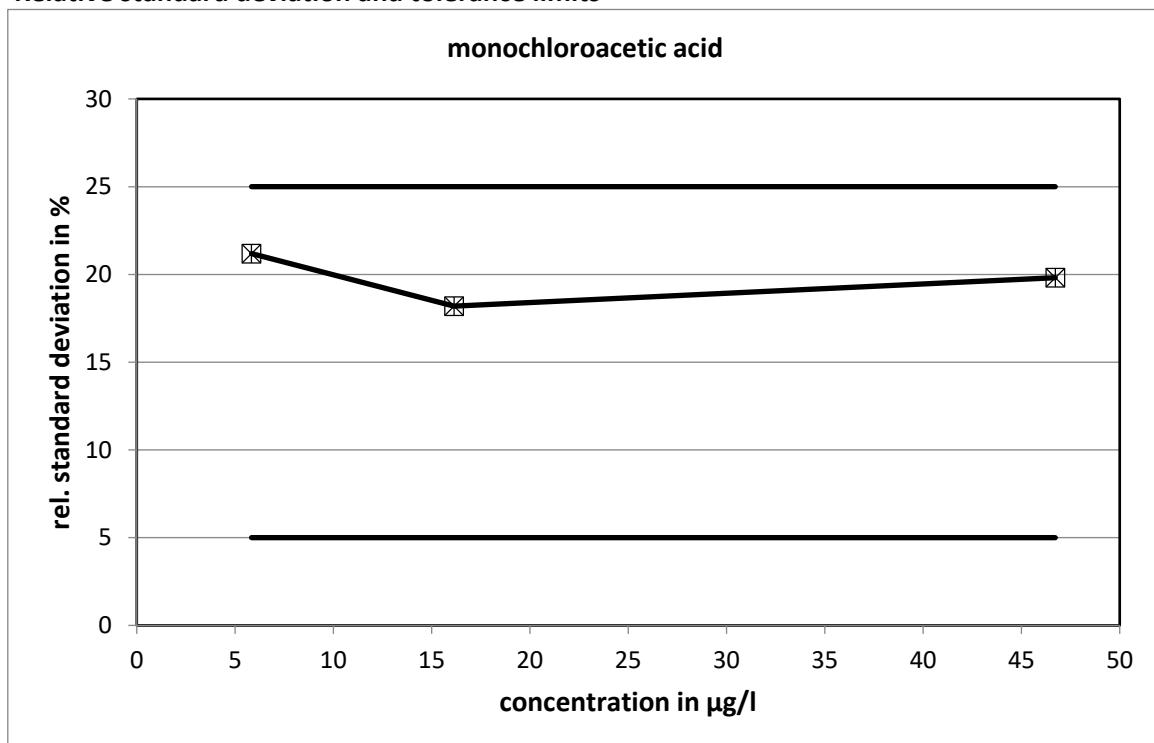
# monochloroacetic acid

level		assigned value [ $\mu\text{g/l}$ ]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [ $\mu\text{g/l}$ ]	standard deviation for proficiency assessment [ $\mu\text{g/l}$ ]	standard deviation for proficiency assessment [%]	upper tolerance limit [ $\mu\text{g/l}$ ]	lower tolerance limit [ $\mu\text{g/l}$ ]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	5,839	10,19	1,237	1,237	21,19	8,636	3,575	47,89	-38,78	27	3	4	23,3	
2	16,13	8,45	2,935	2,935	18,19	22,64	10,71	40,34	-33,65	29	4	2	20,0	
3	46,72	9,04	9,254	9,254	19,81	67,45	29,70	44,38	-36,43	30	3	1	13,3	
							sum	86	10	7	19,8			

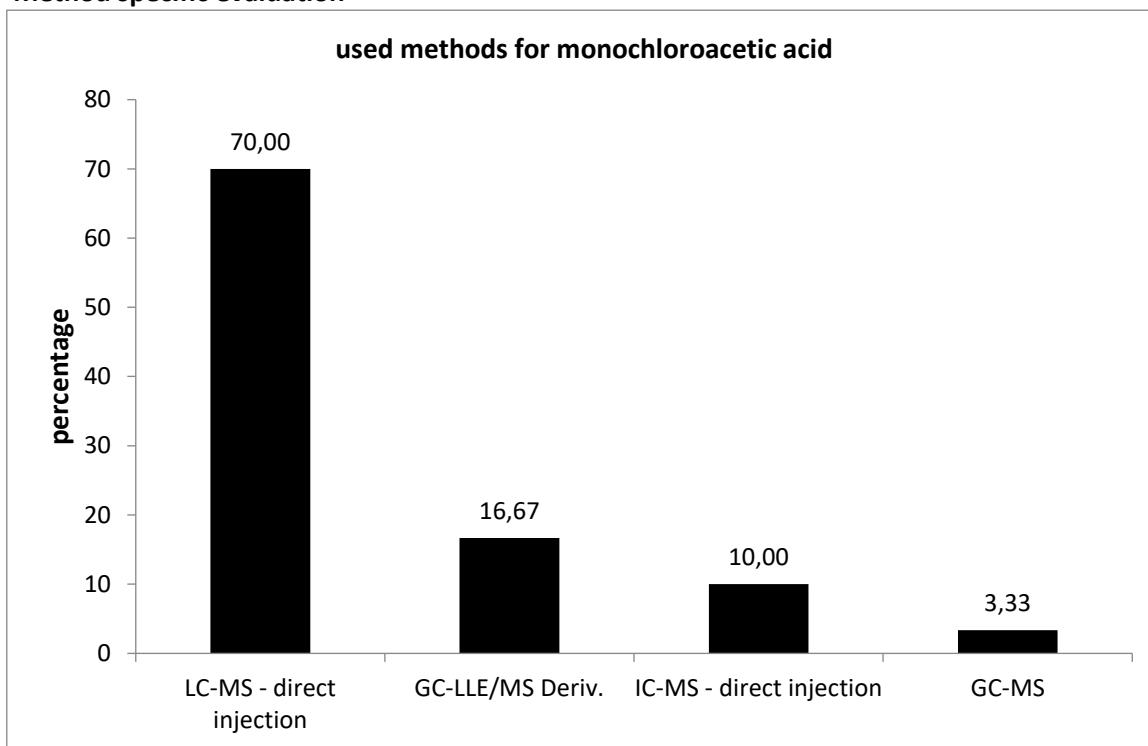
## Recovery and matrix content



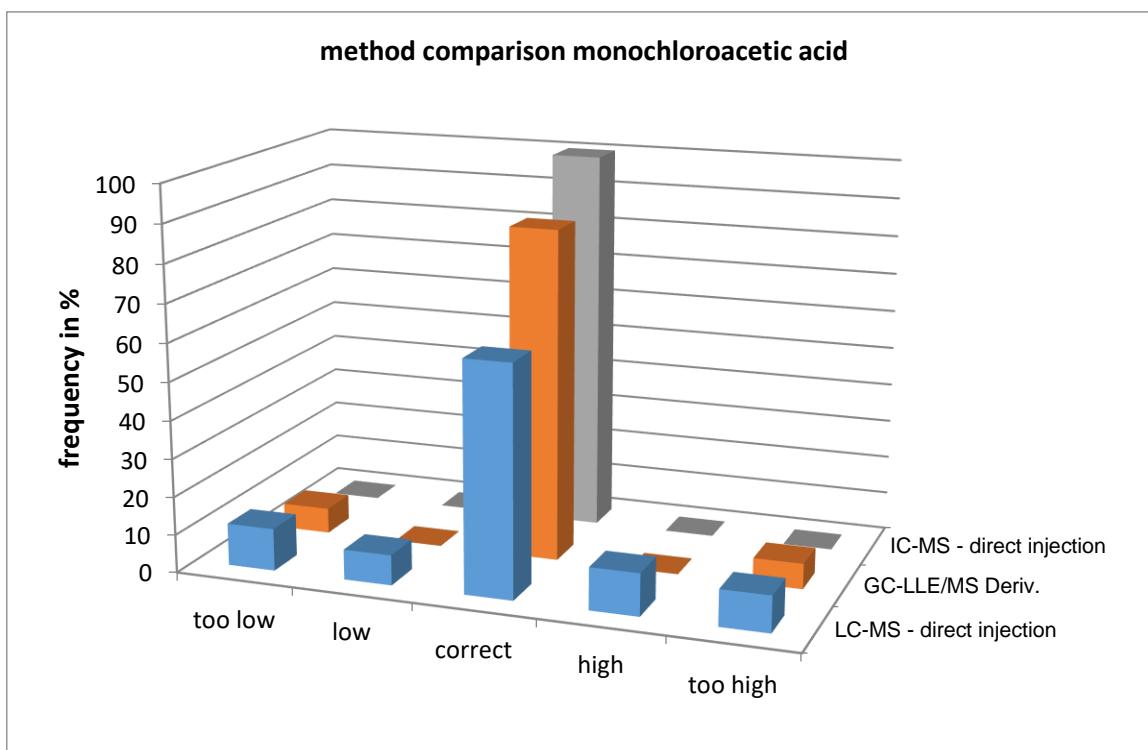
**Relative standard deviation and tolerance limits**



**Method specific evaluation**



No significant differences between the methods



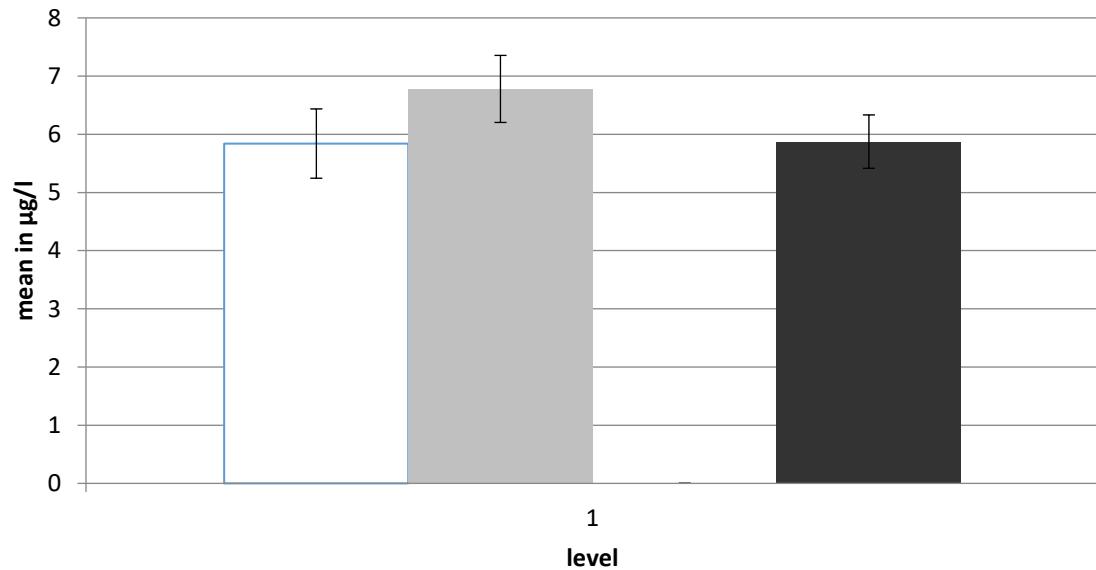
No significant differences between the methods

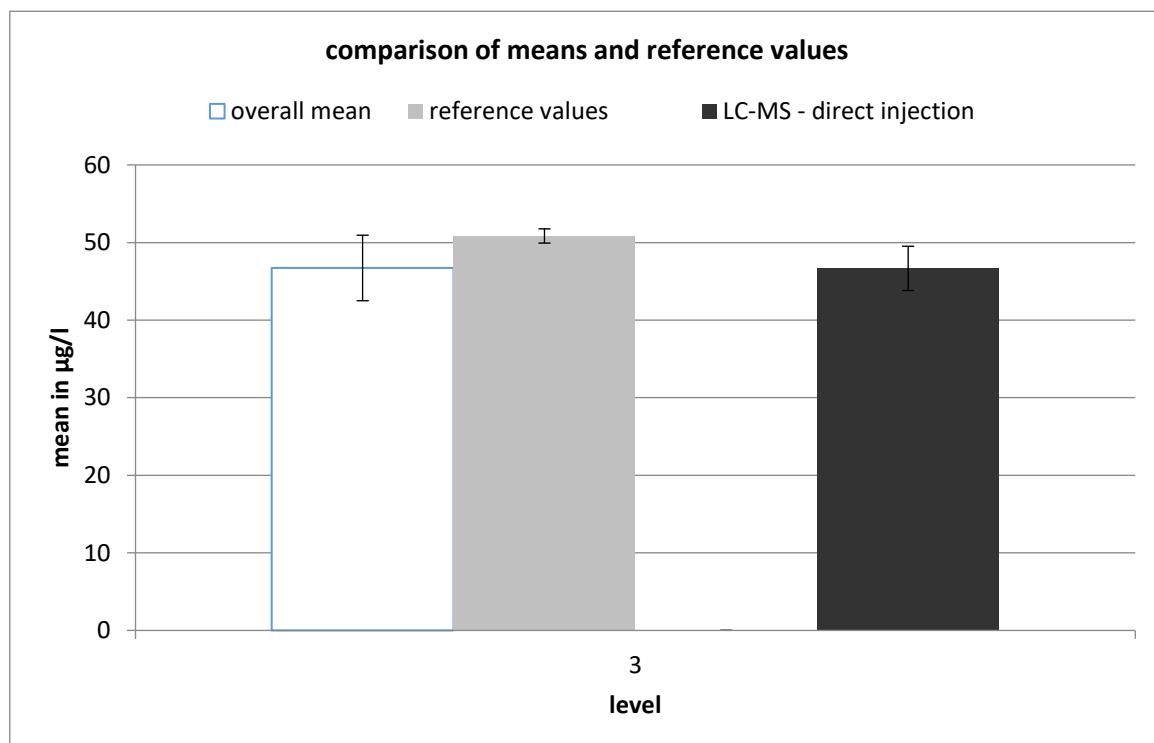
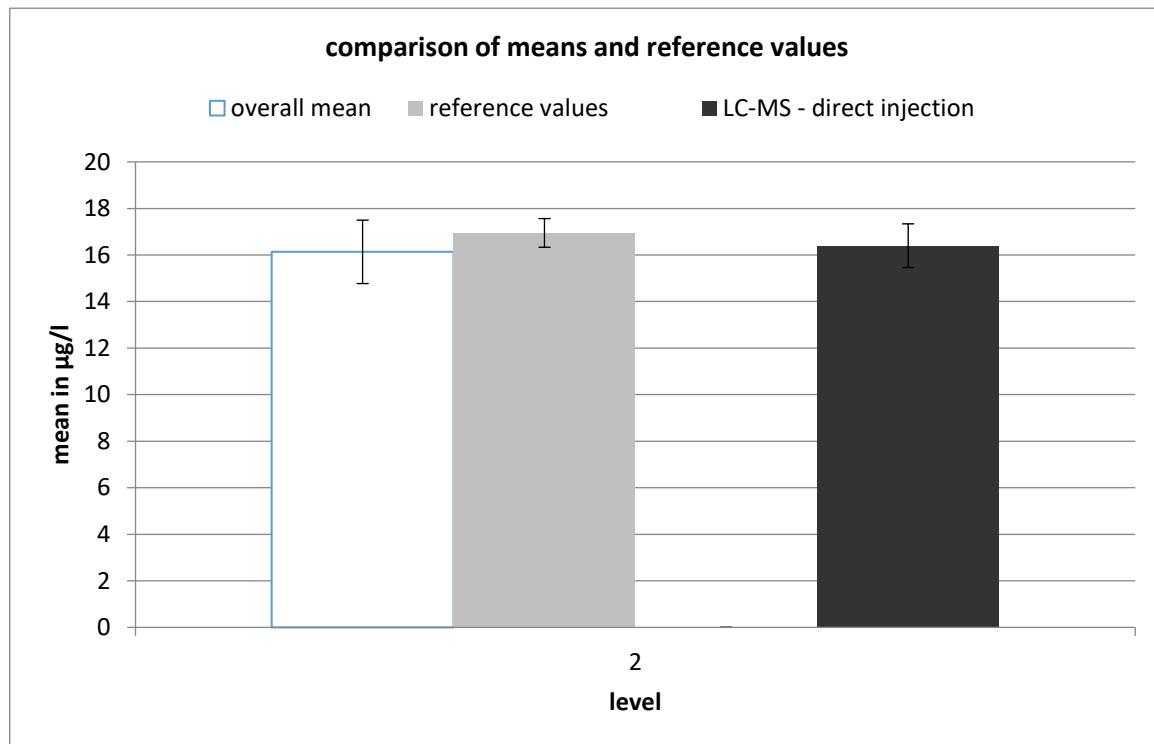
**Comparison of means and reference values**

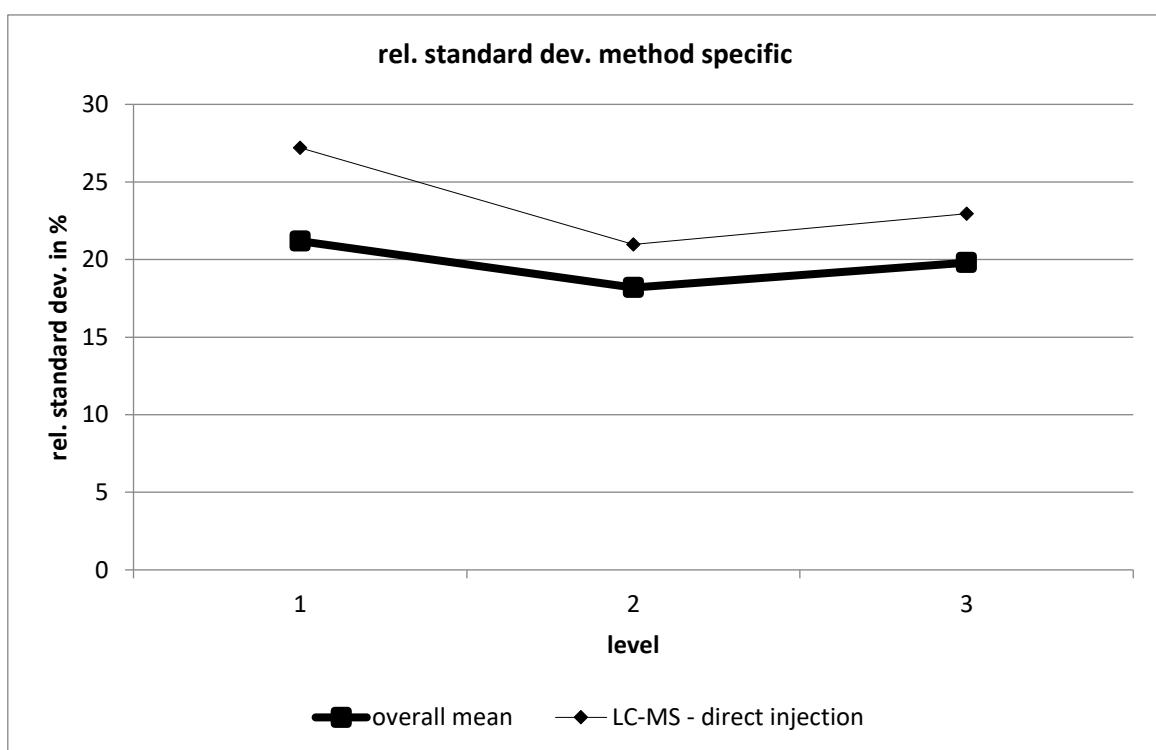
level	mean [ $\mu\text{g/l}$ ]			reference value [ $\mu\text{g/l}$ ]		
	exp. uncertainty [ $\mu\text{g/l}$ ]	exp. uncertainty [%]		exp. uncertainty [ $\mu\text{g/l}$ ]	exp. uncertainty [%]	
1	5,839	0,595	10,2	6,779	0,576	8,5
2	16,13	1,36	8,4	16,95	0,62	3,6
3	46,72	4,22	9,0	50,84	0,91	1,8

**comparison of means and reference values**

□ overall mean    ■ reference values    ■ LC-MS - direct injection





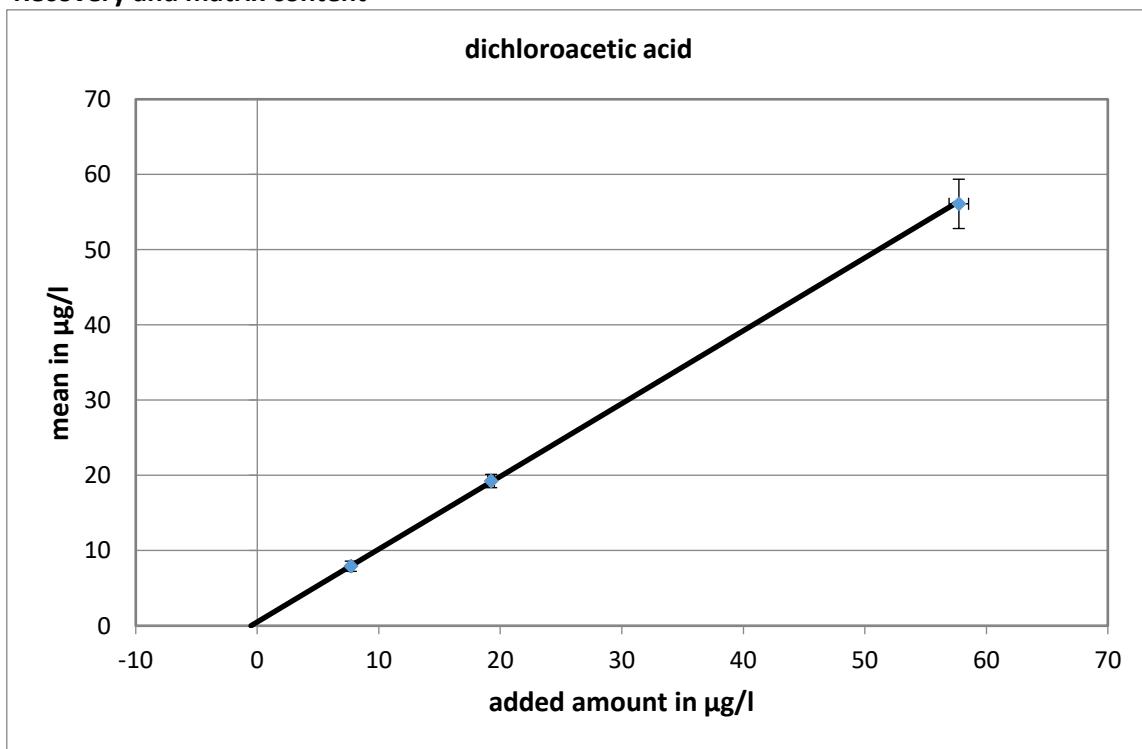


<b>LC-MS - direct injection</b>										
level	robust mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [%]	robust standard deviation [ $\mu\text{g/l}$ ]	robust standard deviation [%]	number of results	out below	out above	out [%]	
1	5,87	0,458	7,801	1,598	27,202	19	2	0	10,53	
2	16,4	0,938	5,721	3,44	20,975	21	2	1	14,29	
3	46,7	2,856	6,12	10,72	22,962	22	4	0	18,18	

# dichloroacetic acid

level	assigned value [µg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [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	7,914	8,62	1,495	1,495	18,89	11,24	5,156	42,06	-34,85	30	0	2	6,7
2	19,24	4,61	1,944	1,944	10,10	23,35	15,53	21,33	-19,29	30	3	1	13,3
3	56,09	5,85	7,184	7,184	12,81	71,51	42,53	27,47	-24,18	30	3	2	16,7
				sum	90	6	5	12,2					

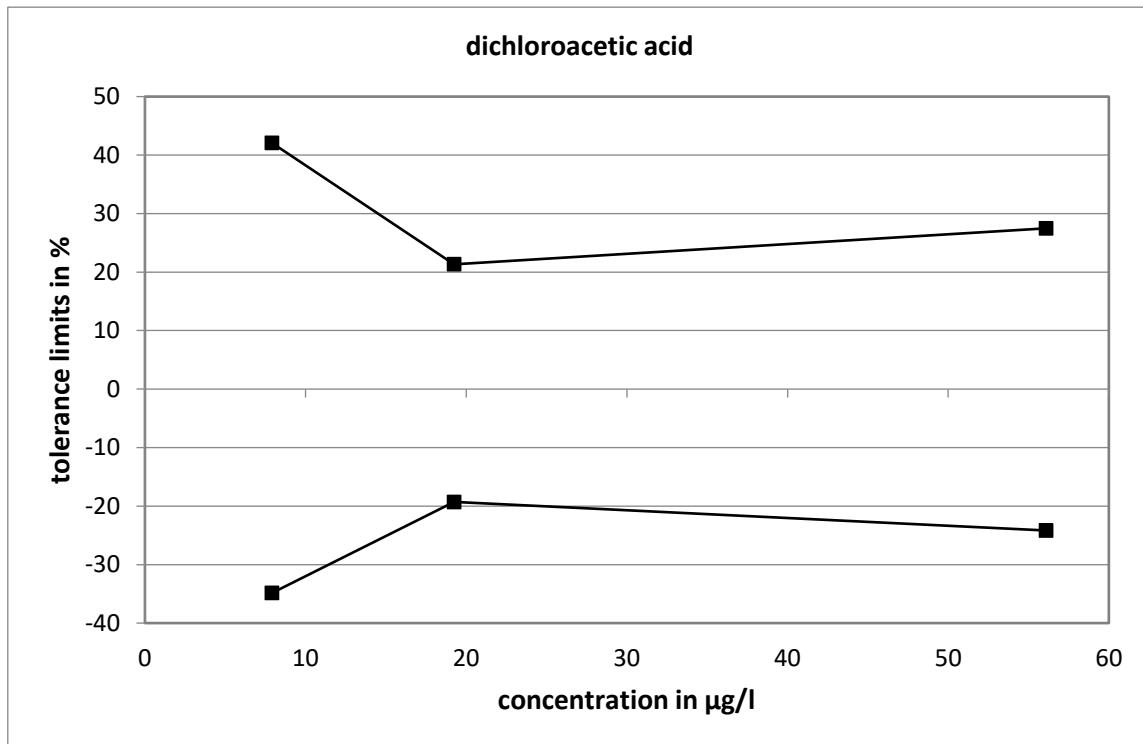
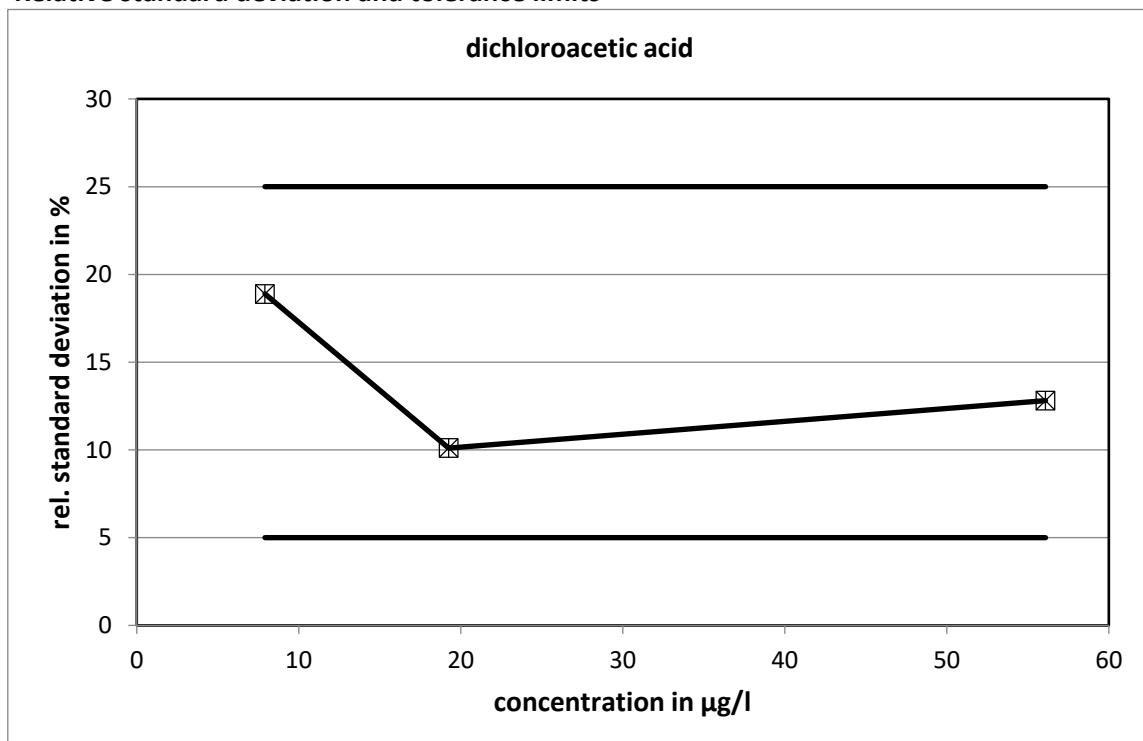
## Recovery and matrix content



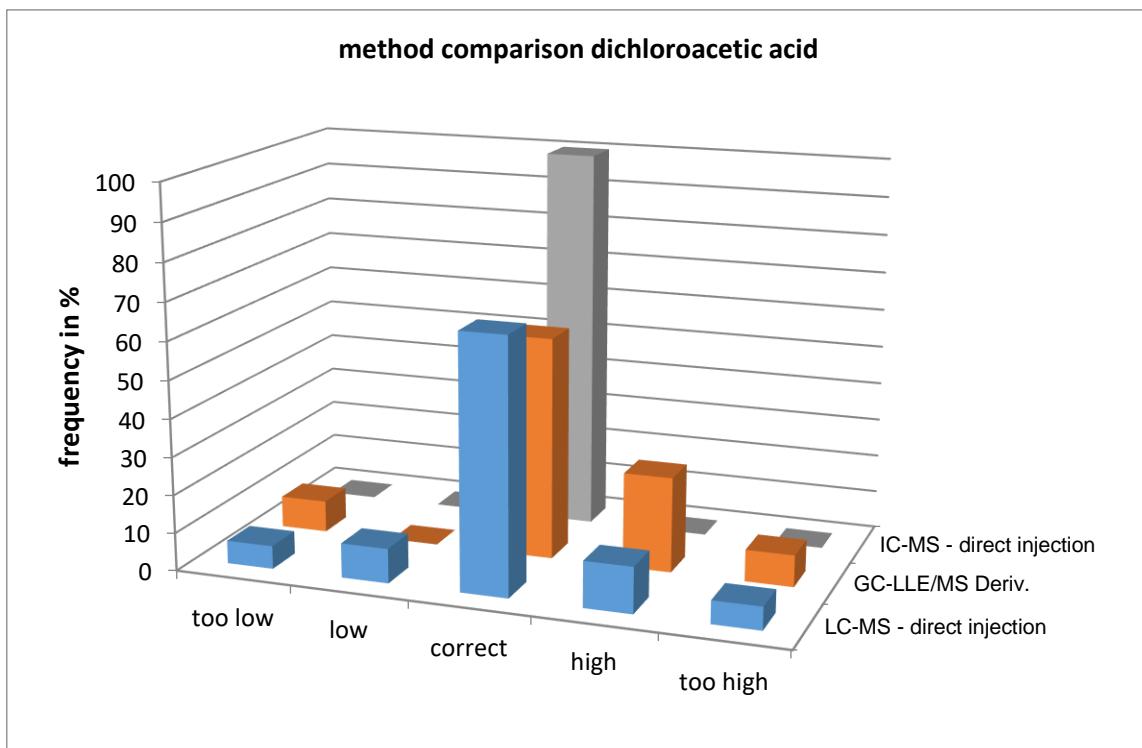
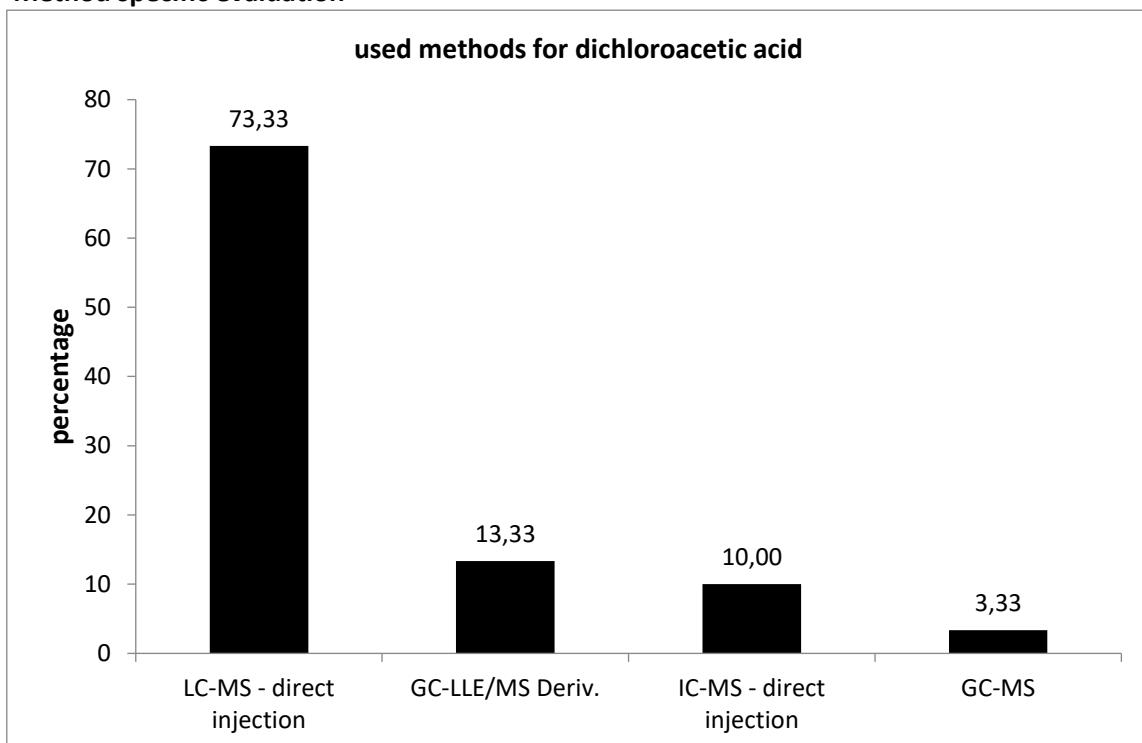
calculated matrix content: 0,52 µg/l

average recovery: 96,8%

**Relative standard deviation and tolerance limits**



**Method specific evaluation**



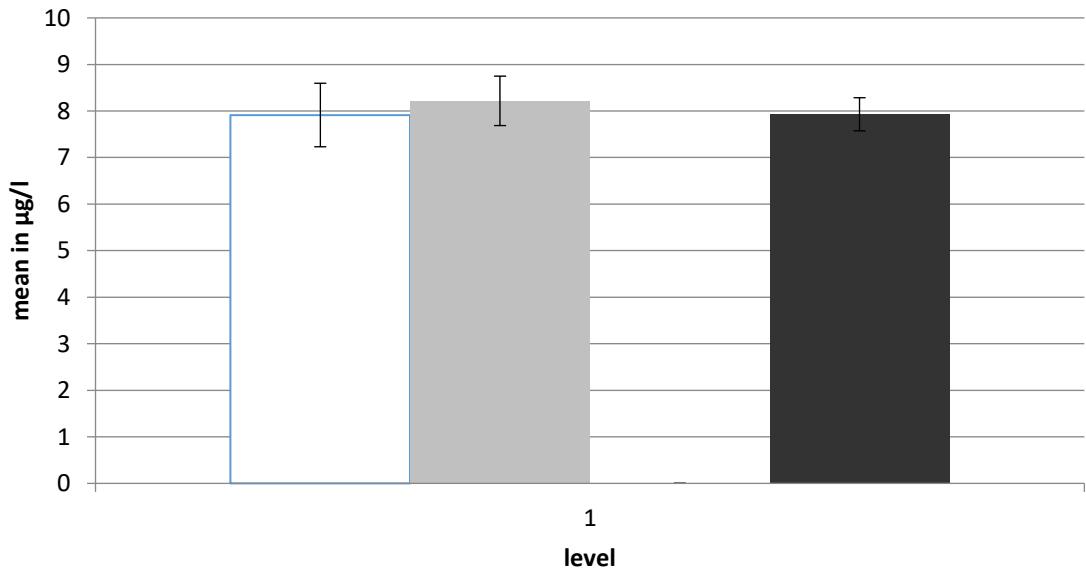
No significant differences between the methods (for IC-MS method only 3 participants)

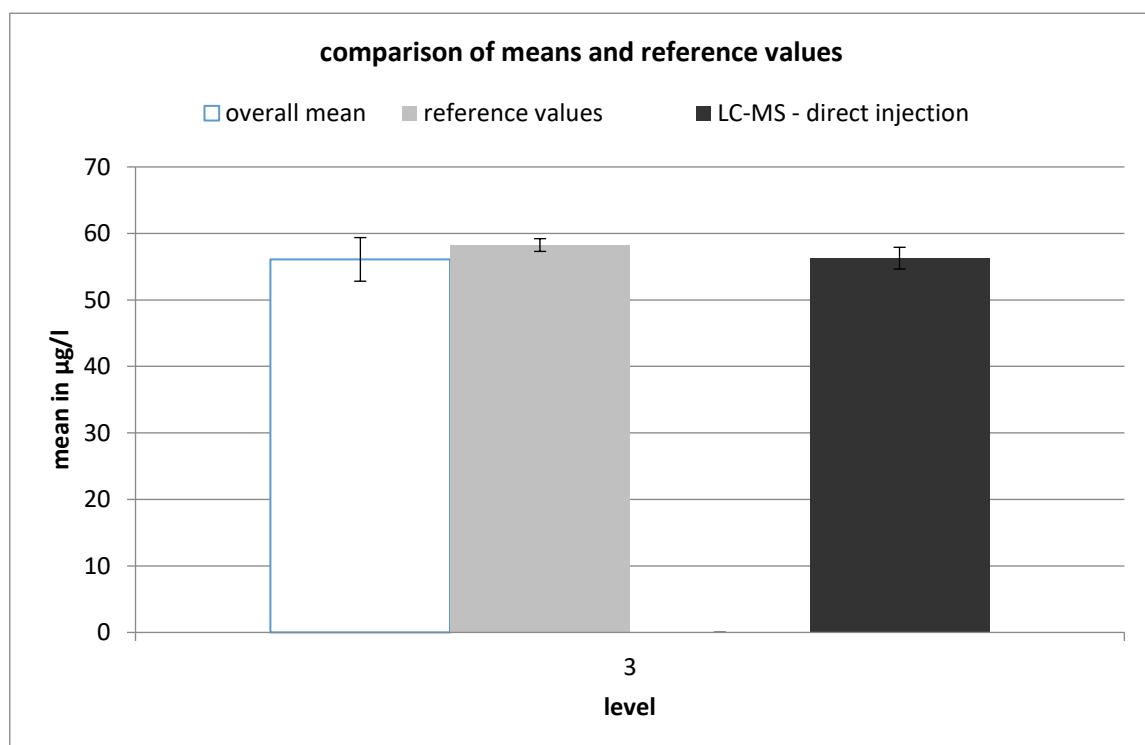
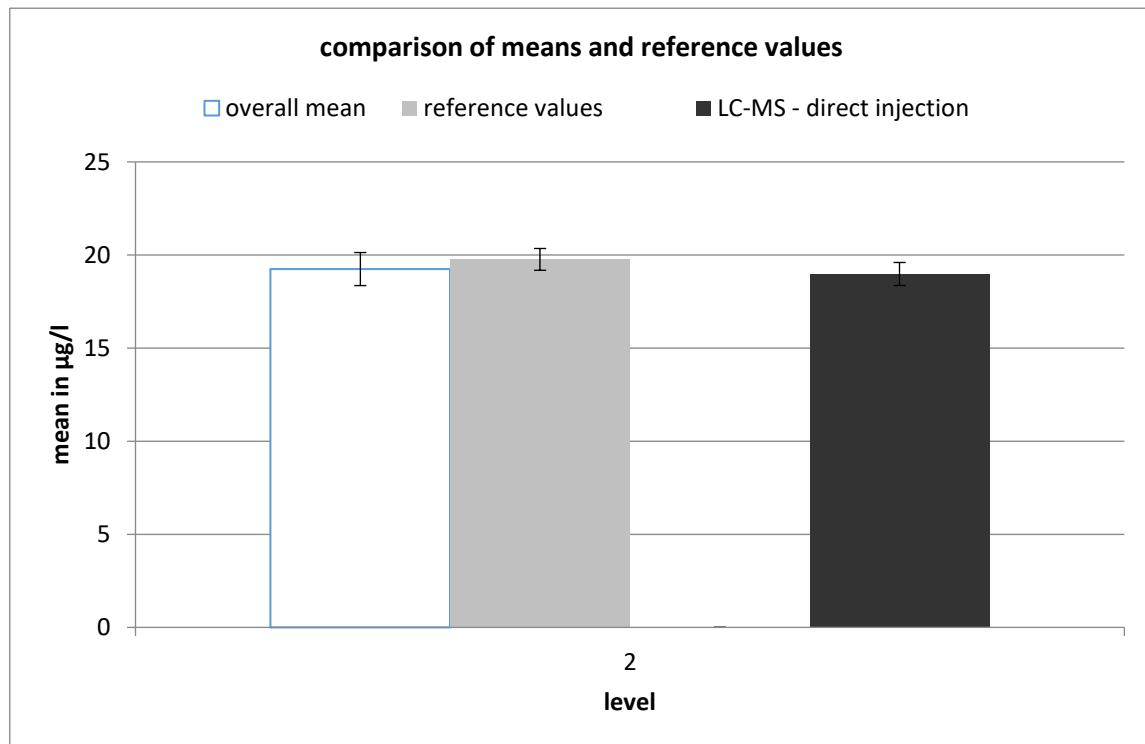
**Comparison of means and reference values**

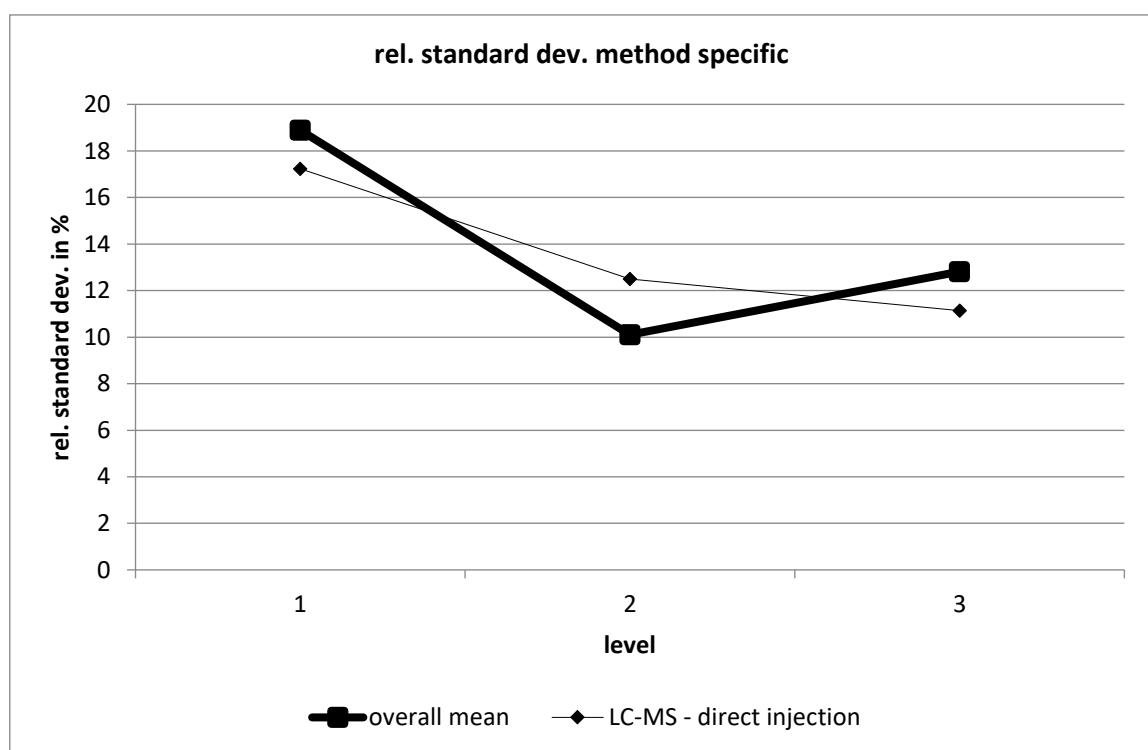
level	mean [ $\mu\text{g/l}$ ]		exp. uncertainty [ $\mu\text{g/l}$ ]		reference value [ $\mu\text{g/l}$ ]		exp. uncertainty [%]	
	1	2	1	2	1	2	1	2
1	7,914	0,682	8,6		8,218	0,531	6,5	
2	19,24	0,89	4,6		19,76	0,59	3,0	
3	56,09	3,28	5,8		58,25	0,96	1,6	

**comparison of means and reference values**

□ overall mean    ■ reference values    ■ LC-MS - direct injection



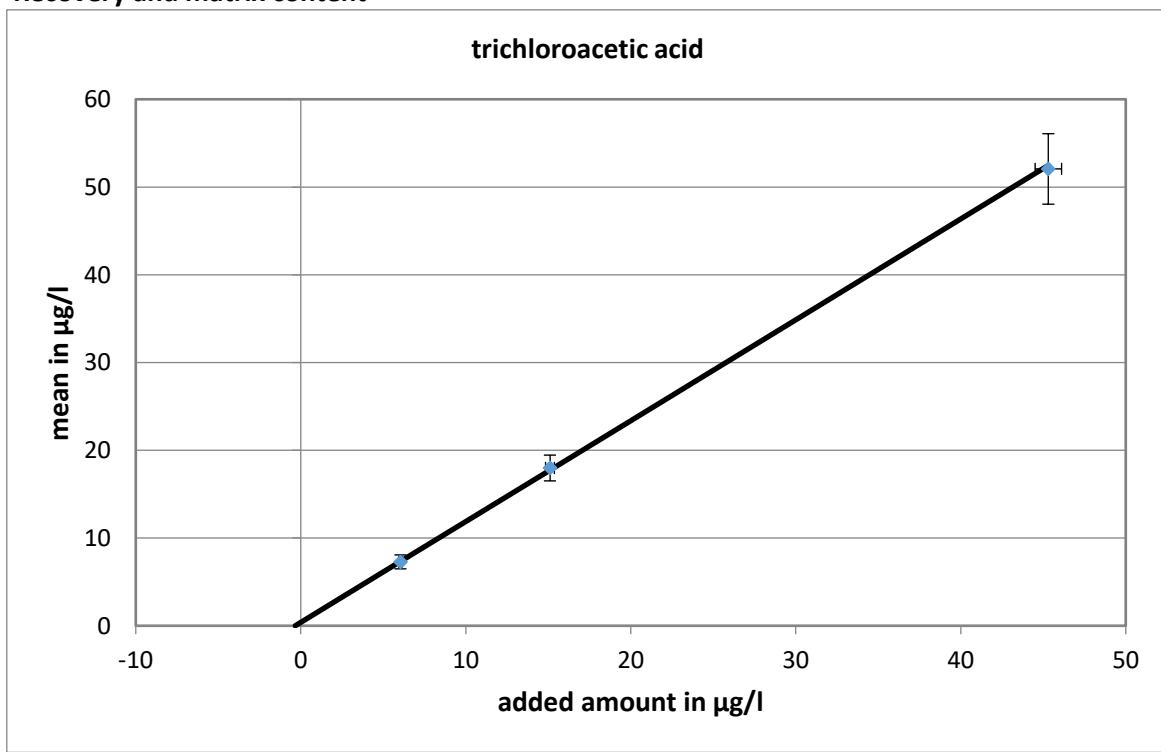




<b>LC-MS - direct injection</b>										
	level	robust mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [%]	robust standard deviation [ $\mu\text{g/l}$ ]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	7,93	0,356	4,492	1,366	17,23	23	2	2	2	17,39
2	19	0,618	3,259	2,373	12,5	23	3	1	1	17,39
3	56,3	1,634	2,903	6,269	11,14	23	2	2	2	17,39

# trichloroacetic acid

level	assigned value [µg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [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	7,277	10,89	1,648	1,648	22,64	11,04	4,276	51,68	-41,24	27	1	1	7,1
2	17,98	8,18	3,170	3,170	17,63	24,98	12,11	38,94	-32,67	29	1	1	6,9
3	52,06	7,71	8,650	8,650	16,62	71,05	35,97	36,48	-30,91	29	3	1	13,8
								sum		85	5	3	9,4

**Recovery and matrix content**


calculated matrix content:

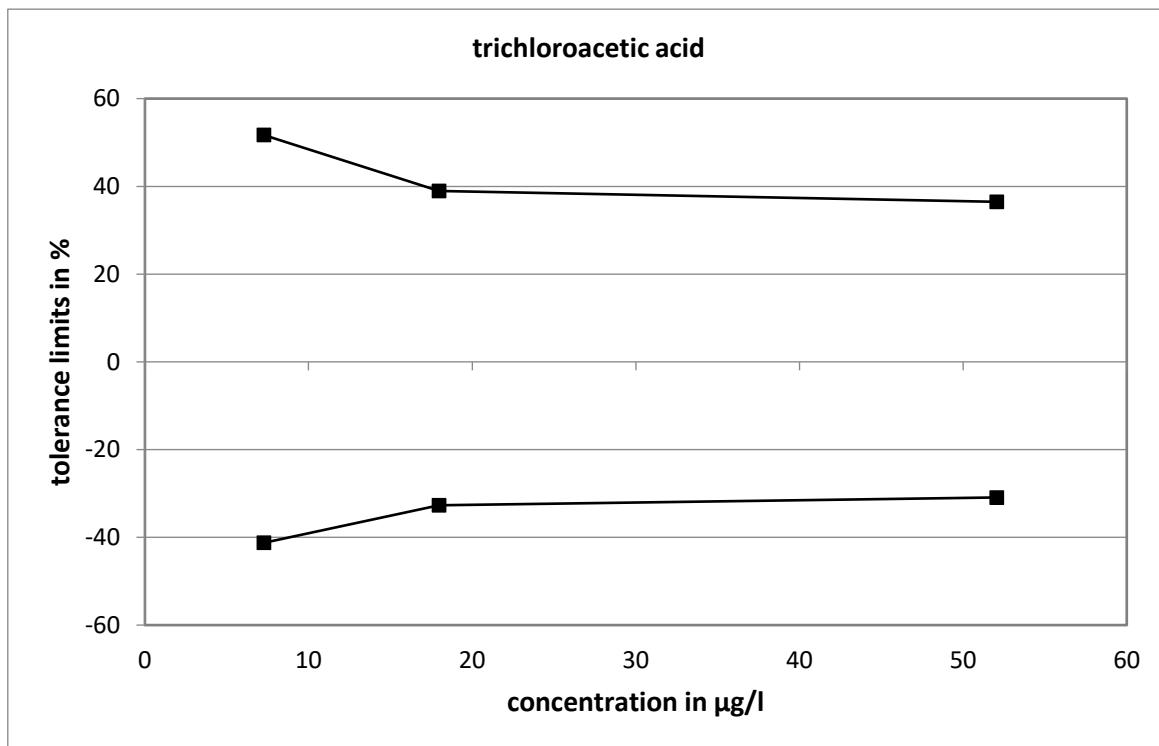
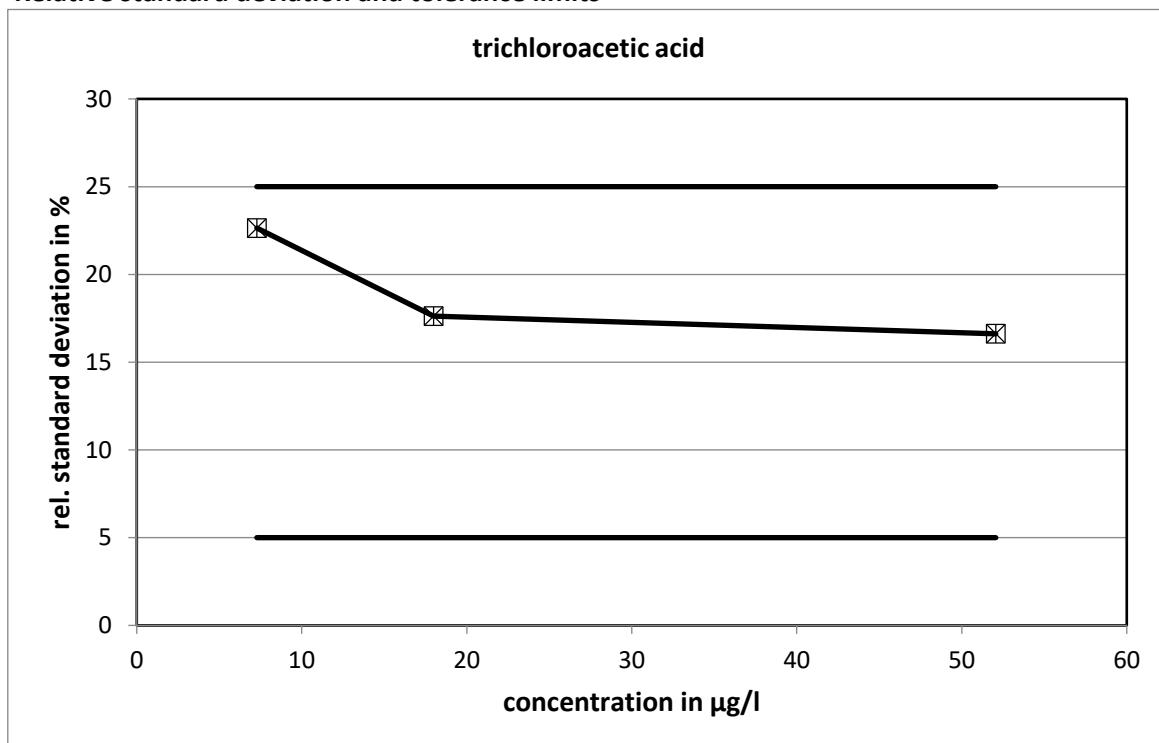
0,33 µg/l

average recovery:

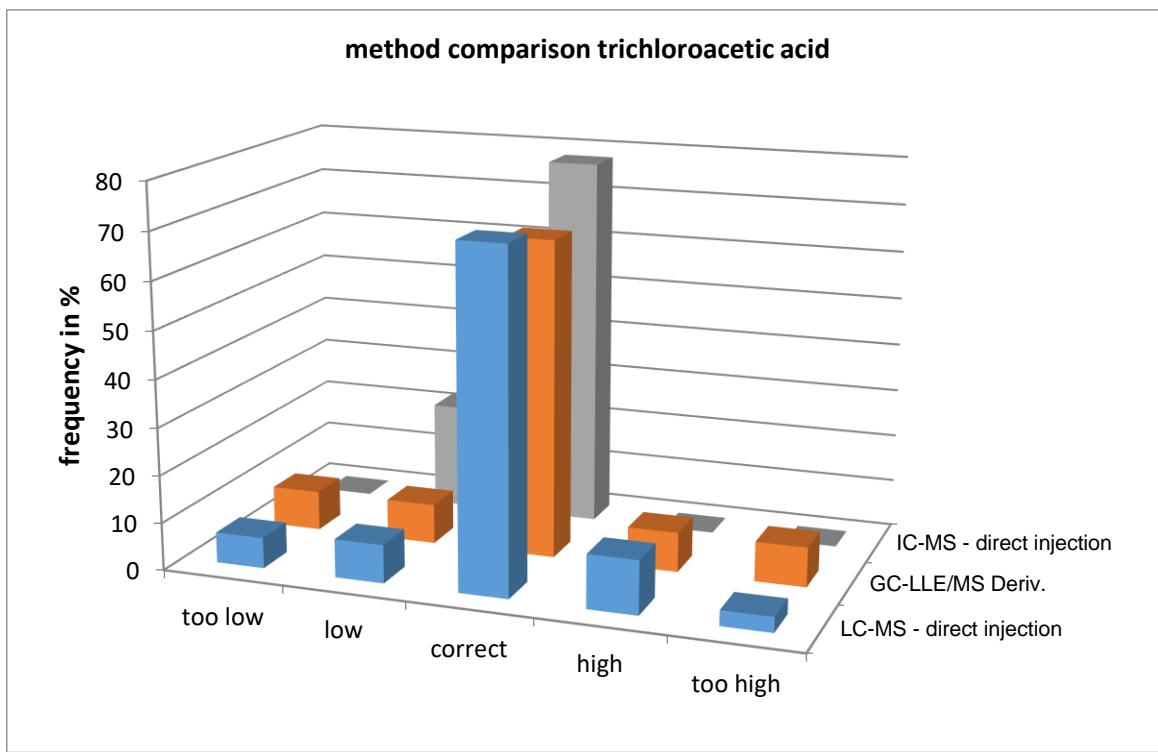
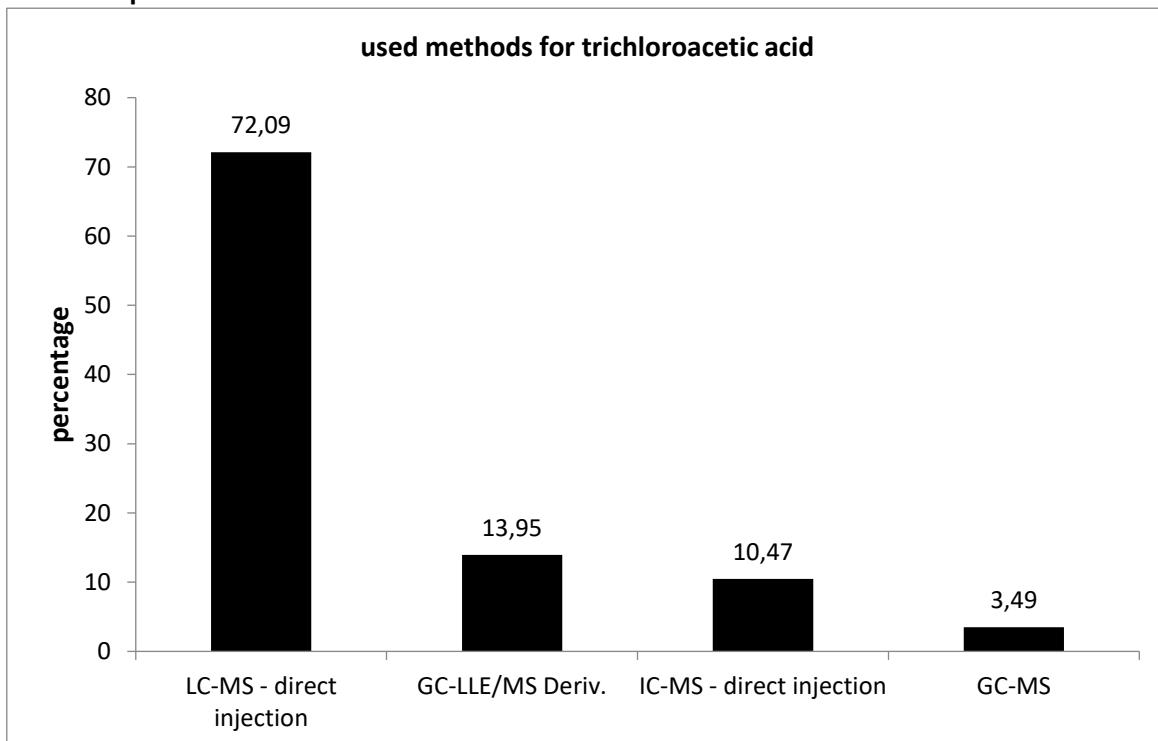
115,0%

(We suspect an incorrect indication of purity  
on the certificate of the pure substance used)

**Relative standard deviation and tolerance limits**



**Method specific evaluation**



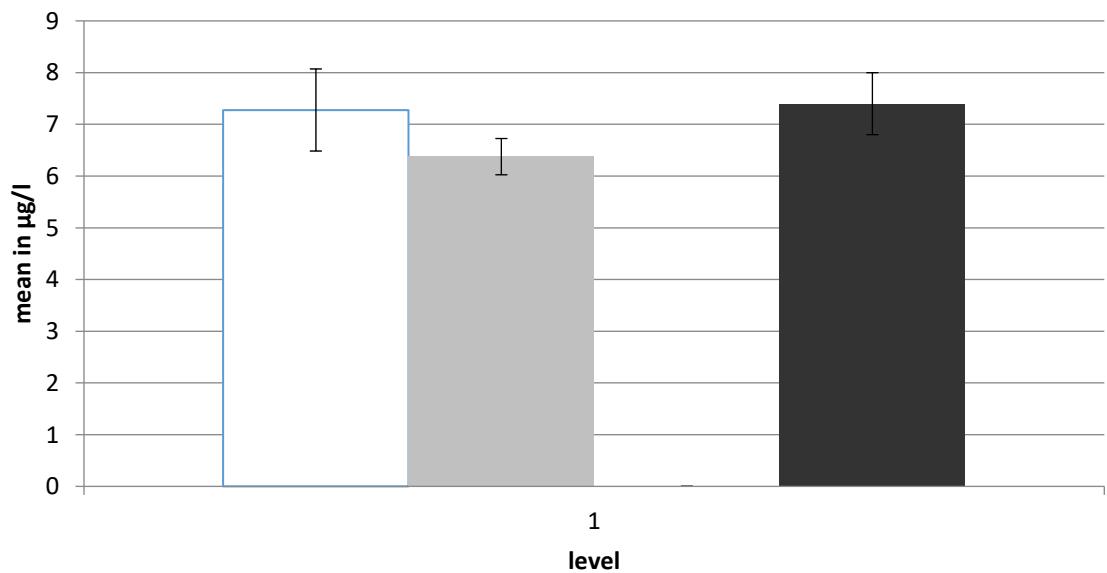
No significant differences between the methods (for IC-MS method only 3 participants)

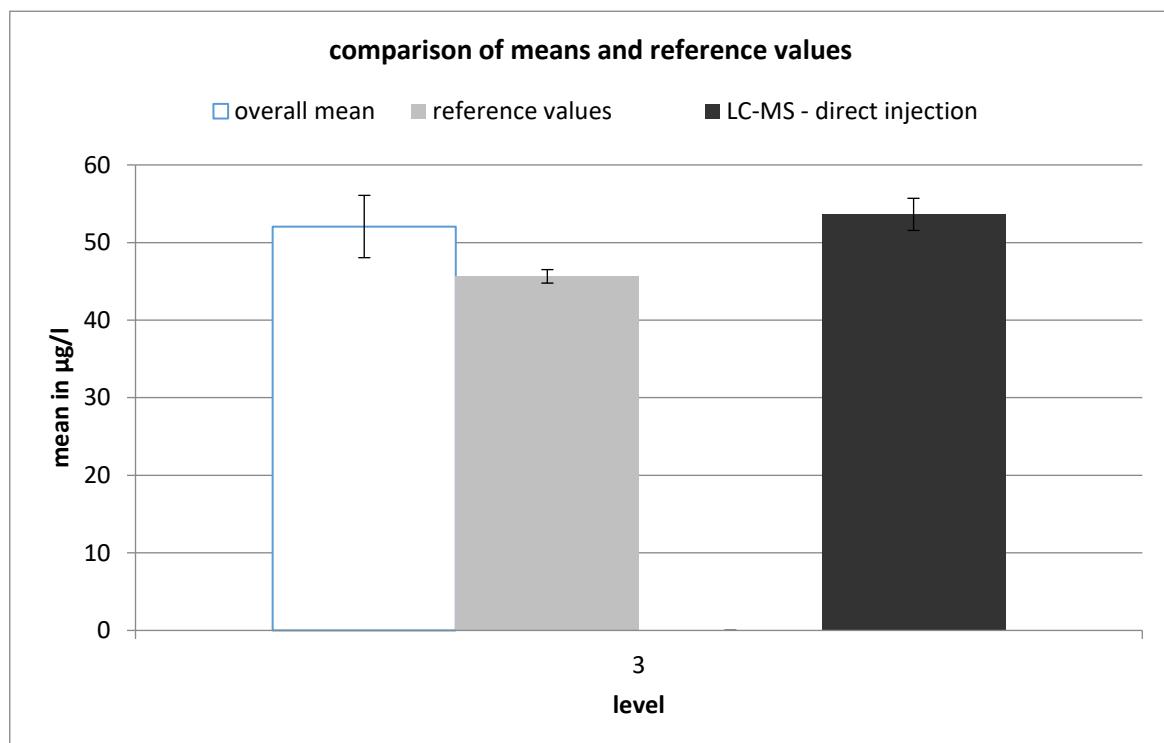
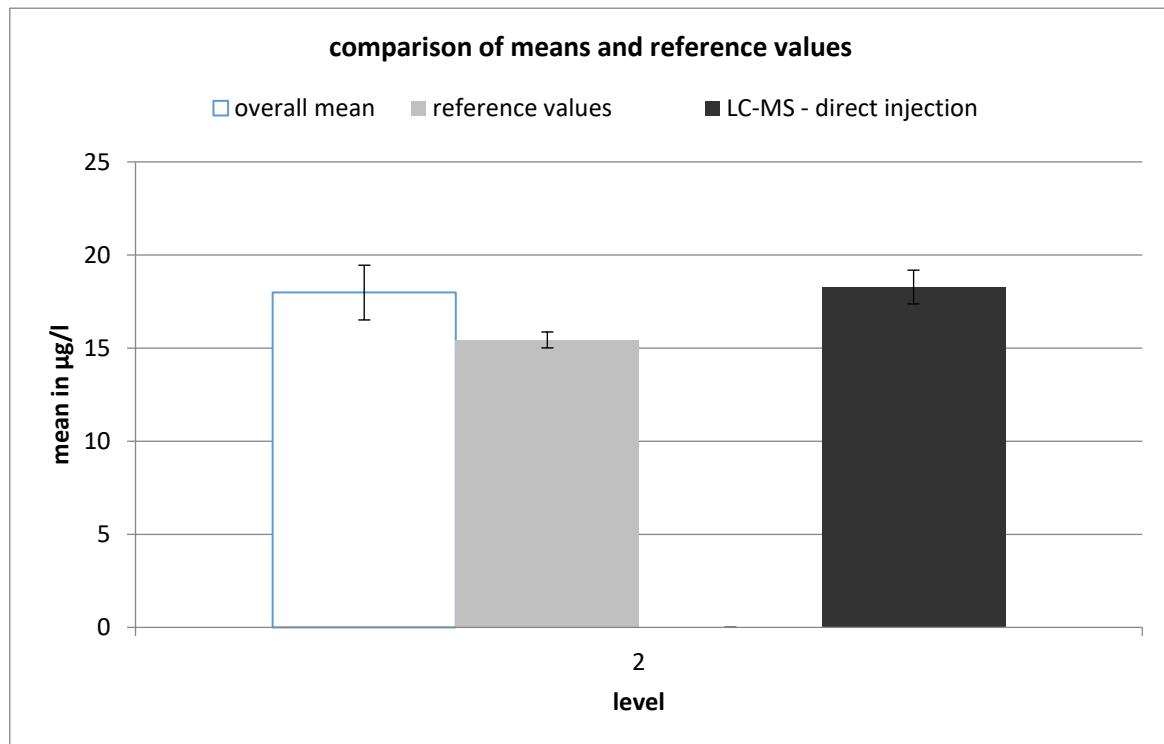
**Comparison of means and reference values**

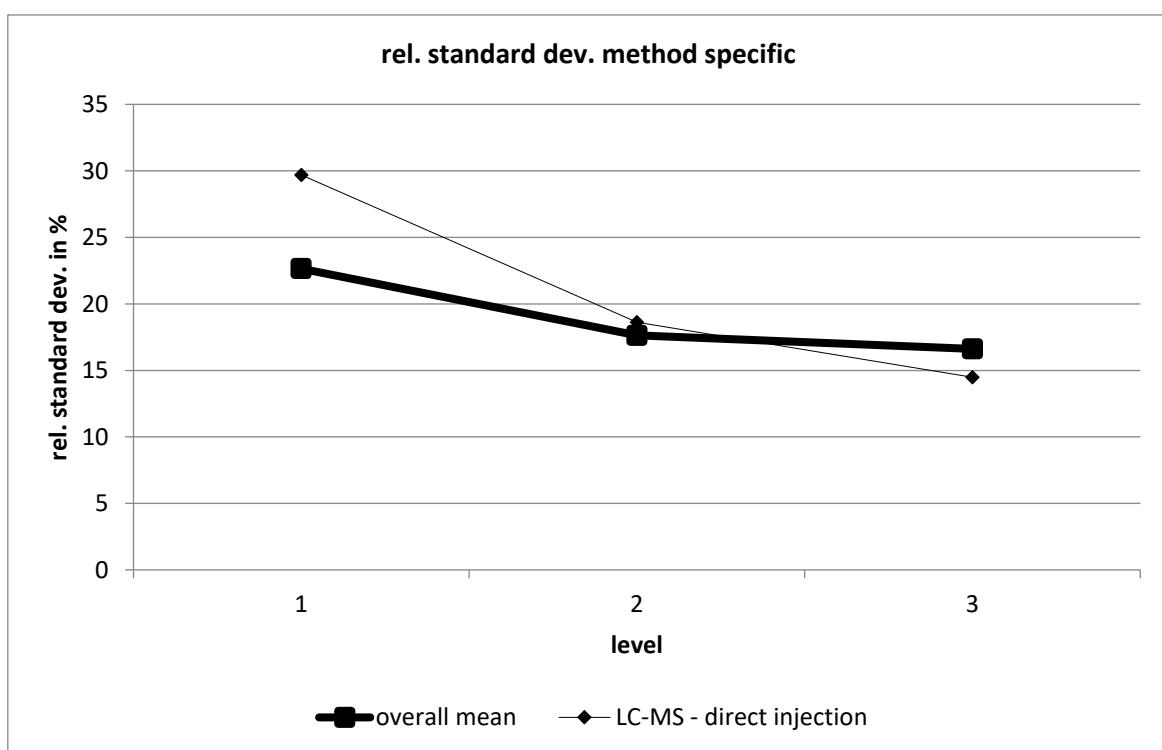
level	mean [ $\mu\text{g/l}$ ]			exp. uncertainty [ $\mu\text{g/l}$ ]		
1	7,277	0,793	10,9	6,375	0,351	5,5
2	17,98	1,47	8,2	15,44	0,43	2,8
3	52,06	4,02	7,7	45,64	0,87	1,9

**comparison of means and reference values**

□ overall mean    ■ reference values    ■ LC-MS - direct injection





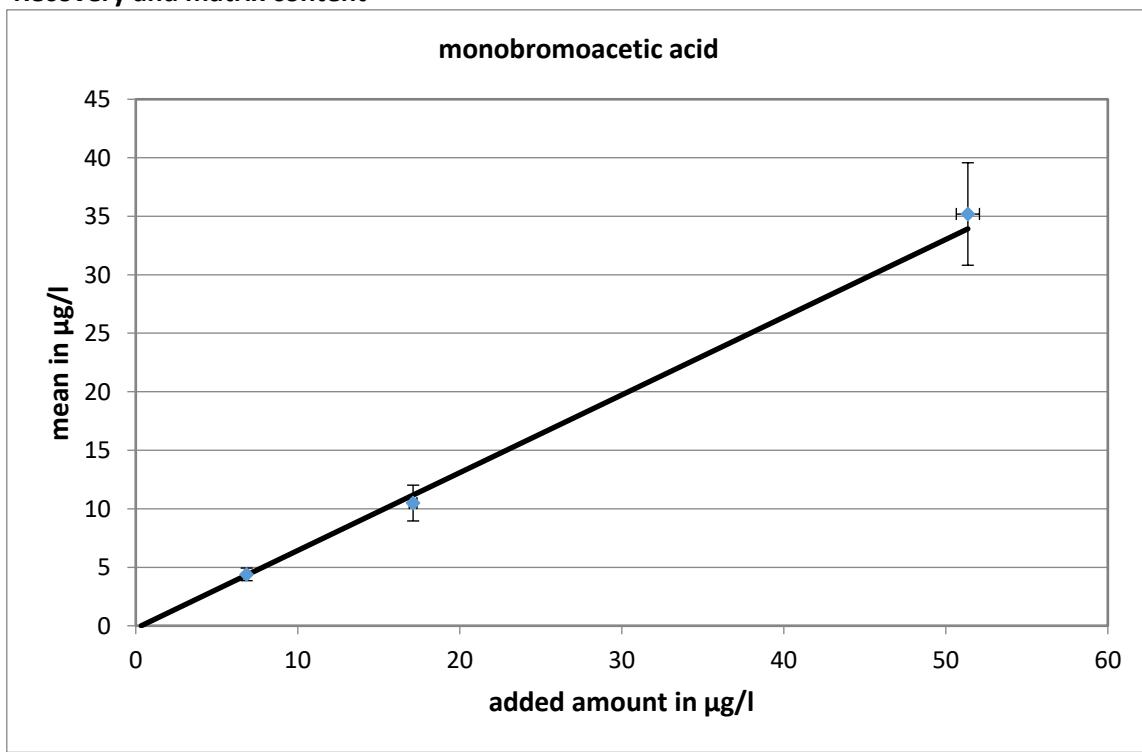


<b>LC-MS - direct injection</b>										
	level	robust mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [%]	robust standard deviation [ $\mu\text{g/l}$ ]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	7,4	0,599	8,099	2,197	29,692	21	1	1	1	9,524
2	18,3	0,907	4,965	3,405	18,629	22	1	2	1	13,64
3	53,6	2,07	3,86	7,767	14,483	22	2	1	1	13,64

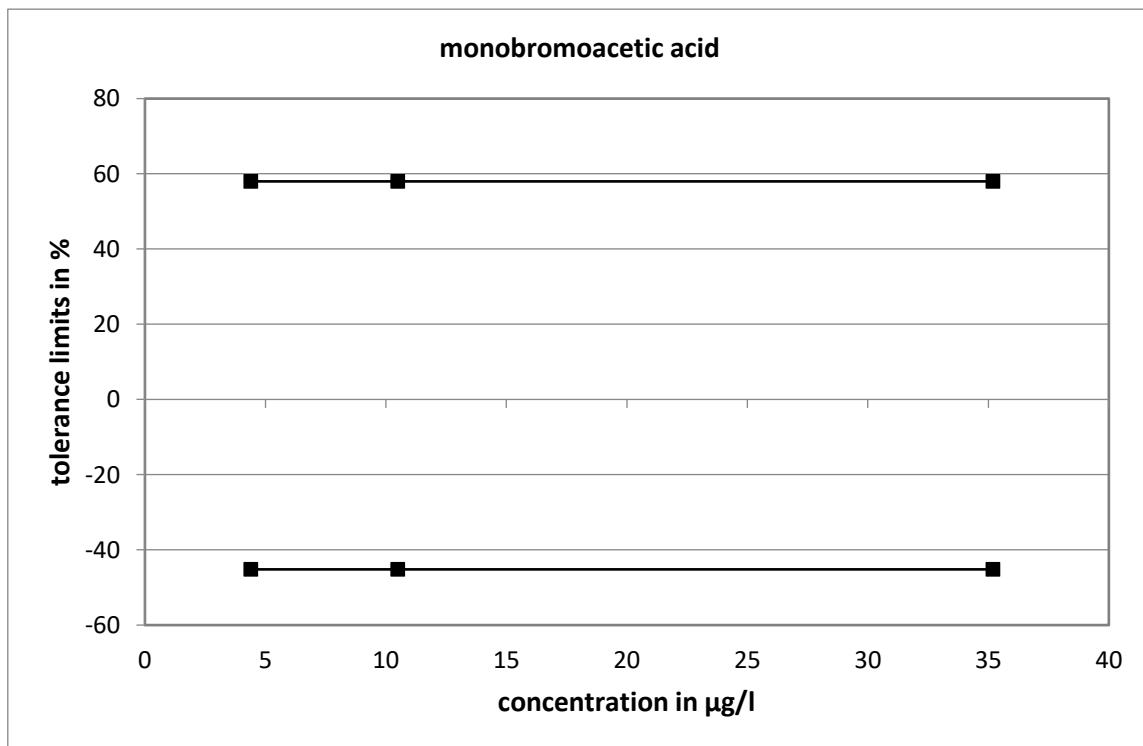
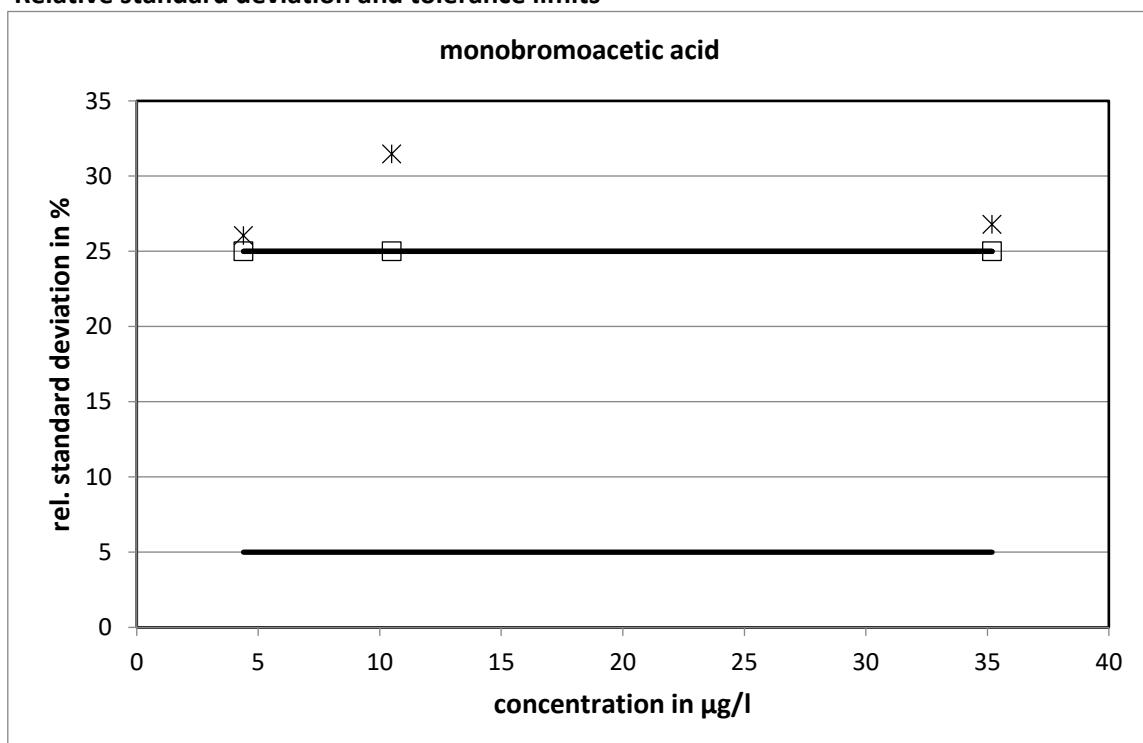
# monobromoacetic acid

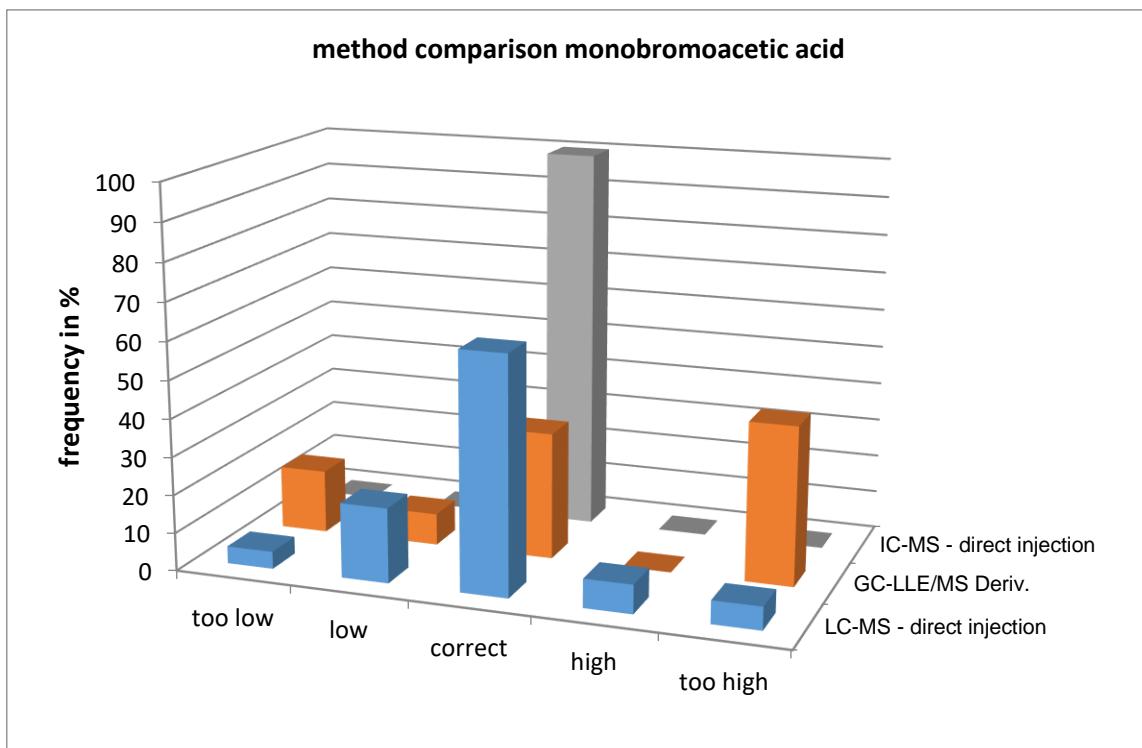
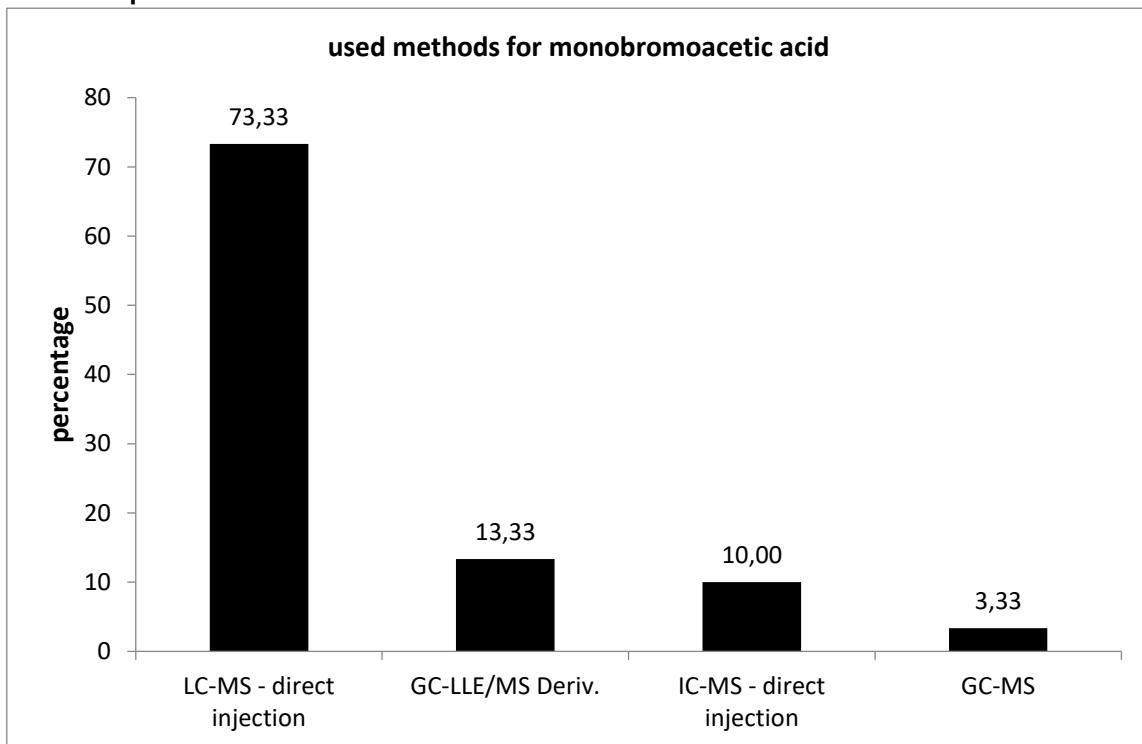
level	assigned value [µg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [µg/l]	standard deviation for proficiency assessment [µg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [µg/l]	lower tolerance limit [µg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	4,394	12,31	1,145	1,098	25,00	6,942	2,408	57,99	-45,19	28	2	4	20,0
2	10,49	14,61	3,300	2,621	25,00	16,57	5,747	57,99	-45,19	29	2	3	16,7
3	35,19	12,44	9,431	8,799	25,00	55,60	19,29	57,99	-45,19	29	3	2	16,7
				sum	86	7	9	18,6					

## Recovery and matrix content



**Relative standard deviation and tolerance limits**



**Method specific evaluation**

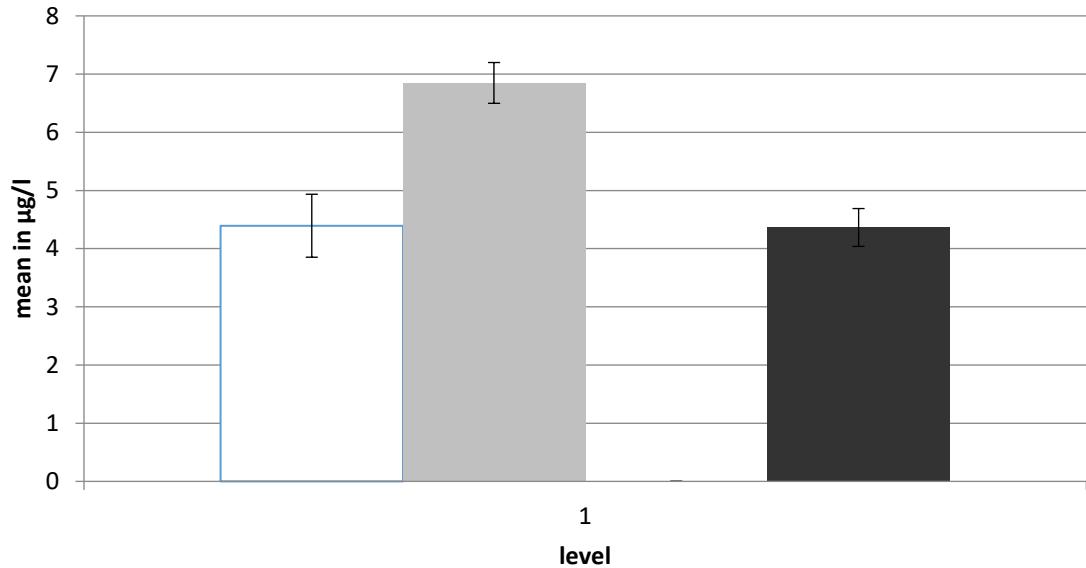
The analysis with GC-LLE/MS after derivatization seems to be prone to errors.

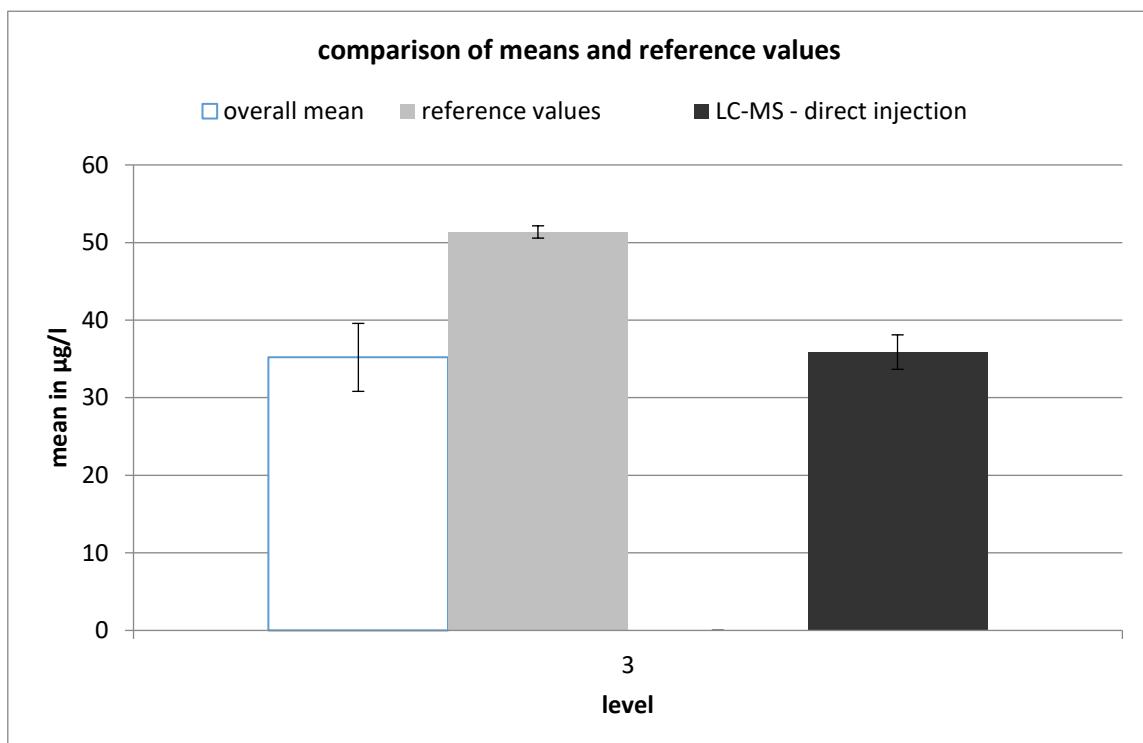
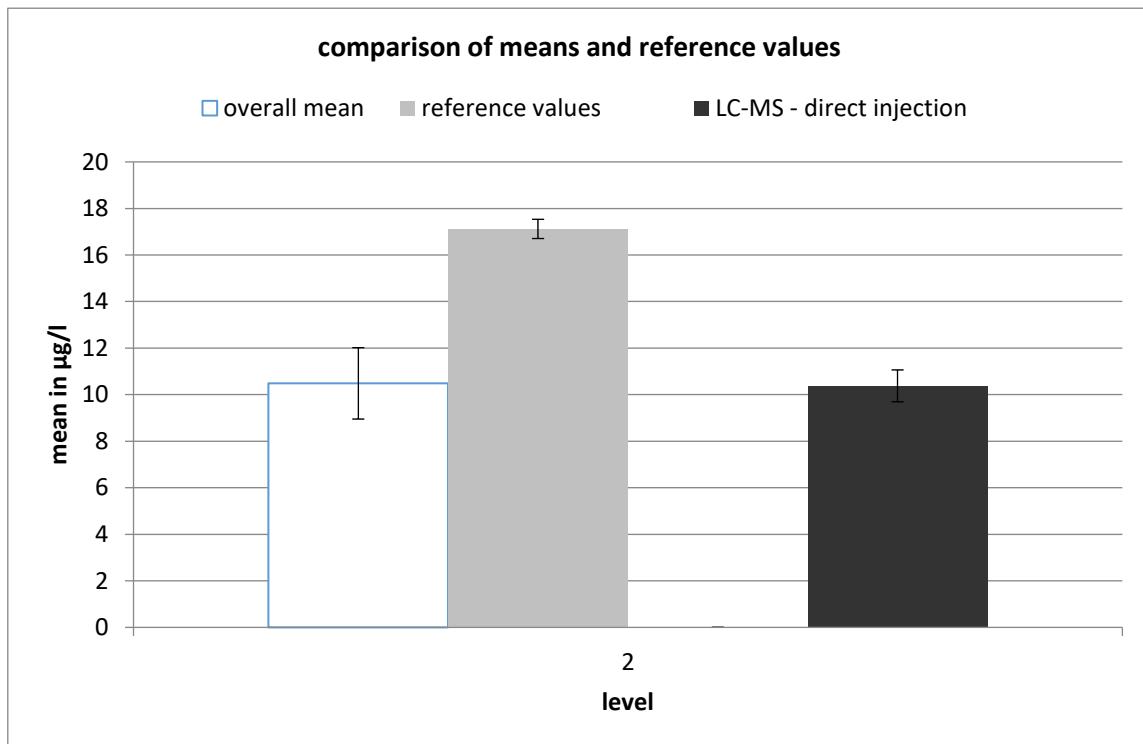
**Comparison of means and reference values**

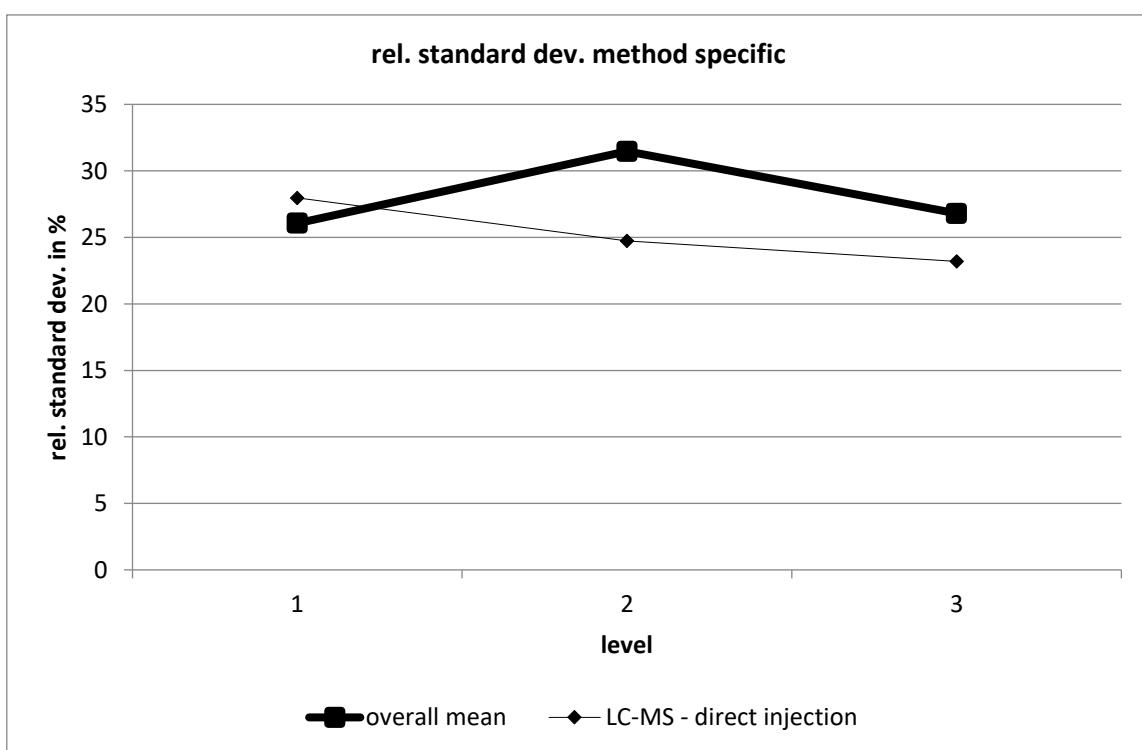
level	mean [ $\mu\text{g/l}$ ]			reference value [ $\mu\text{g/l}$ ]		
	exp. uncertainty [ $\mu\text{g/l}$ ]	exp. uncertainty [%]		exp. uncertainty [ $\mu\text{g/l}$ ]	exp. uncertainty [%]	exp. uncertainty [%]
1	4,394	0,541	12,3	6,848	0,351	5,1
2	10,49	1,53	14,6	17,12	0,41	2,4
3	35,19	4,38	12,4	51,36	0,79	1,5

**comparison of means and reference values**

□ overall mean    ■ reference values    ■ LC-MS - direct injection





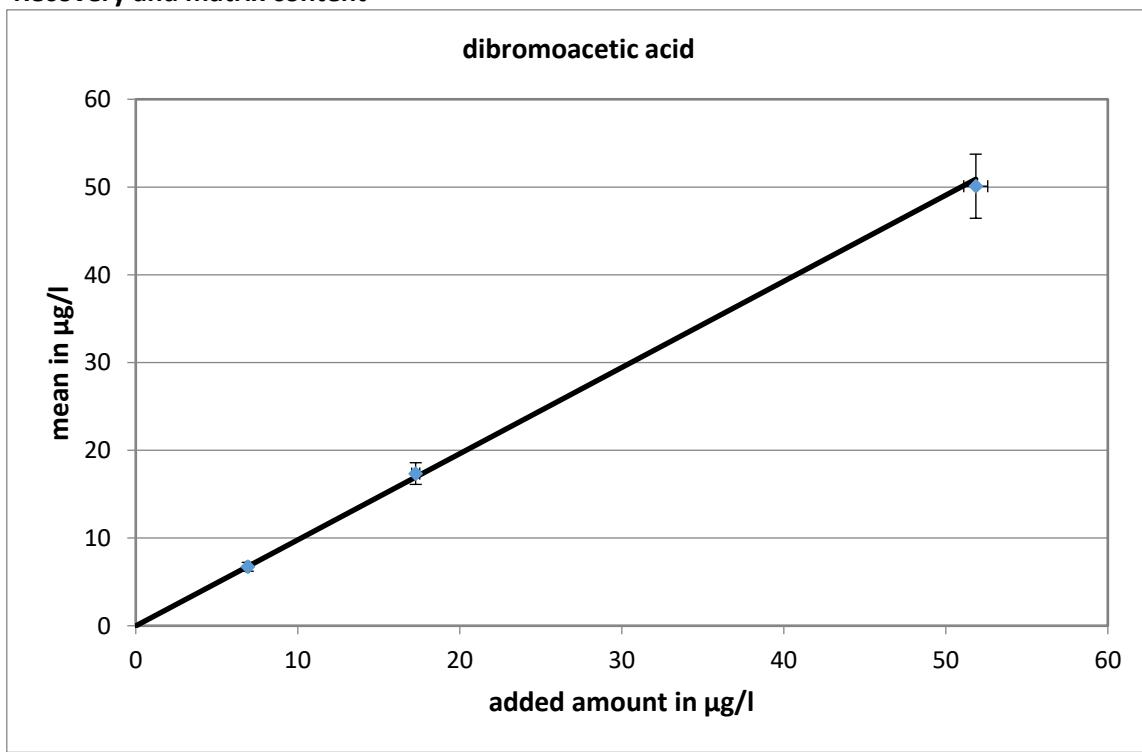


<b>LC-MS - direct injection</b>										
	level	robust mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [%]	robust standard deviation [ $\mu\text{g/l}$ ]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	4,36	0,325	7,454	1,221	27,97	22	0	3	13,64	
2	10,4	0,684	6,589	2,566	24,72	22	0	2	9,091	
3	35,9	2,218	6,181	8,322	23,19	22	0	1	4,545	

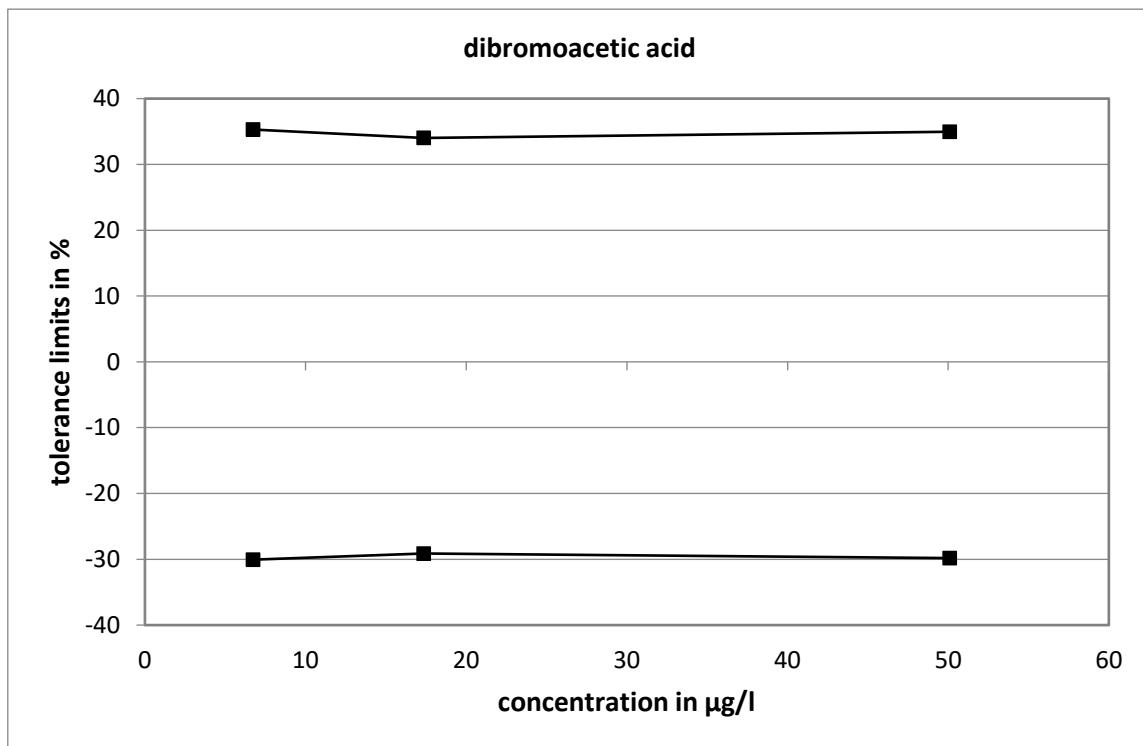
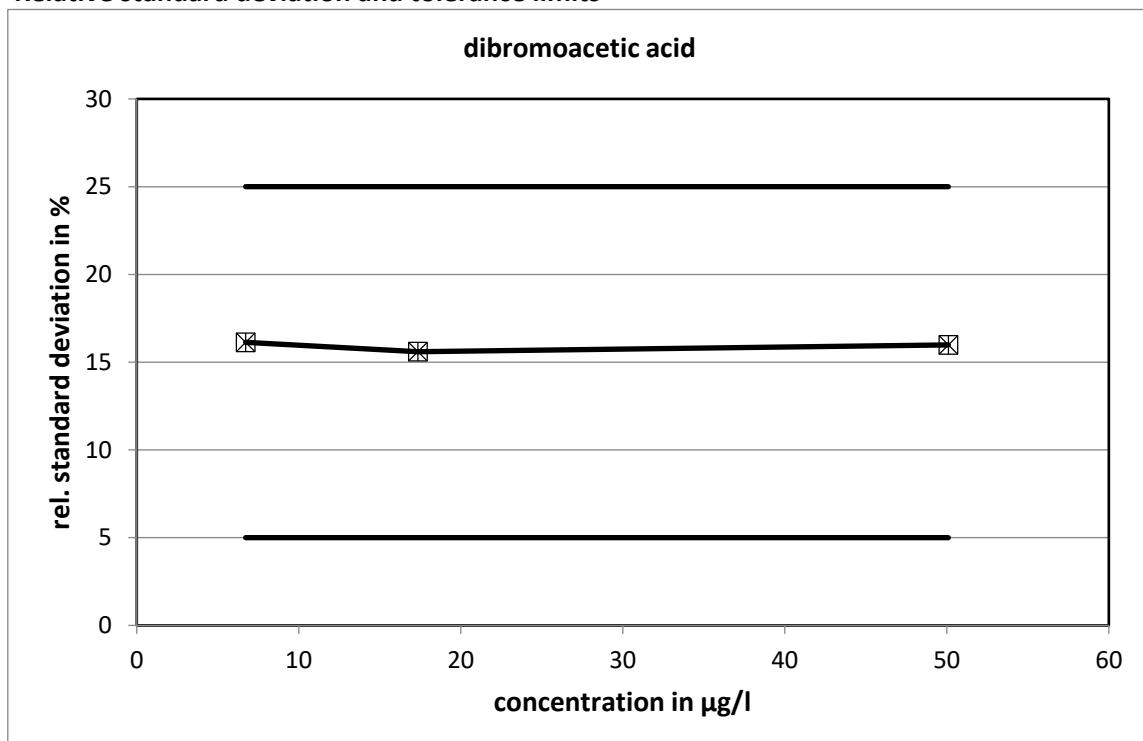
# dibromoacetic acid

level	assigned value [µg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [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	6,722	7,49	1,084	1,084	16,13	9,095	4,701	35,30	-30,06	29	2	2	13,3
2	17,34	7,12	2,705	2,705	15,60	23,24	12,29	34,02	-29,12	30	2	1	10,0
3	50,09	7,29	8,005	8,005	15,98	67,60	35,17	34,94	-29,80	30	4	1	16,7
				sum	89	8	4	13,5					

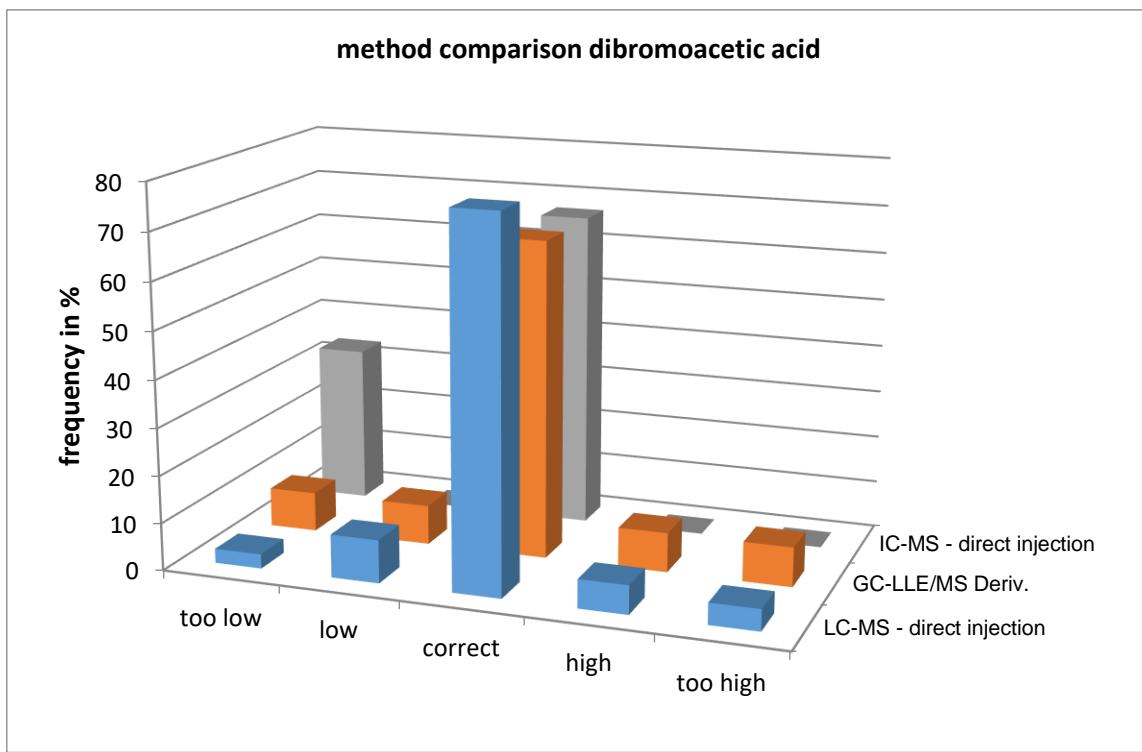
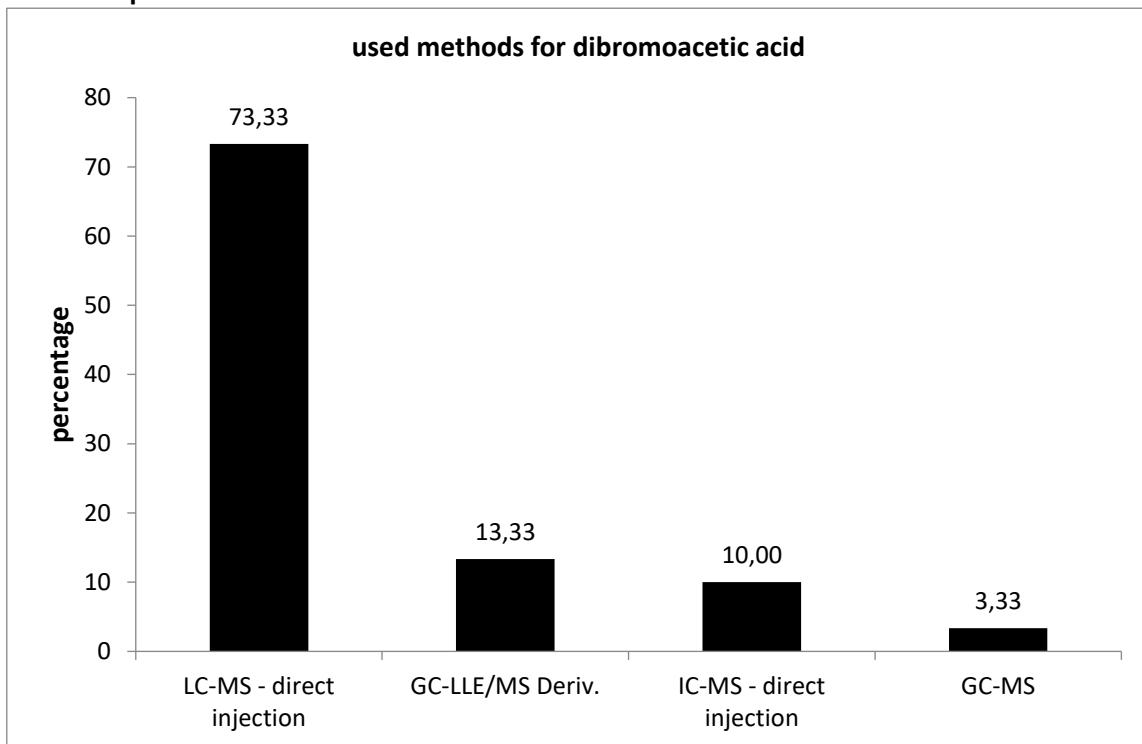
## Recovery and matrix content



**Relative standard deviation and tolerance limits**



#### Method specific evaluation



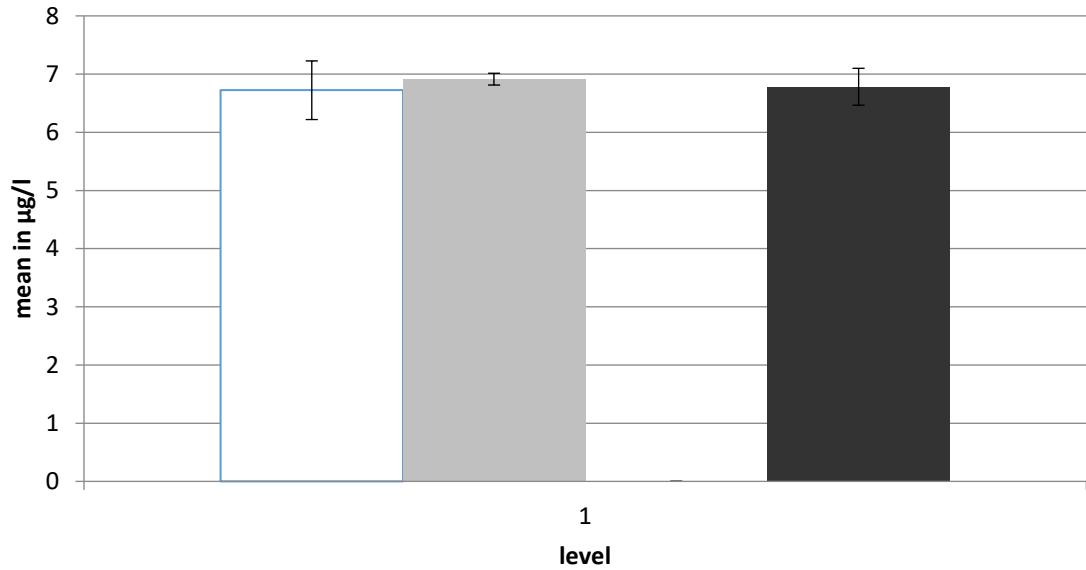
No significant differences between the methods (for IC-MS method only 3 participants)

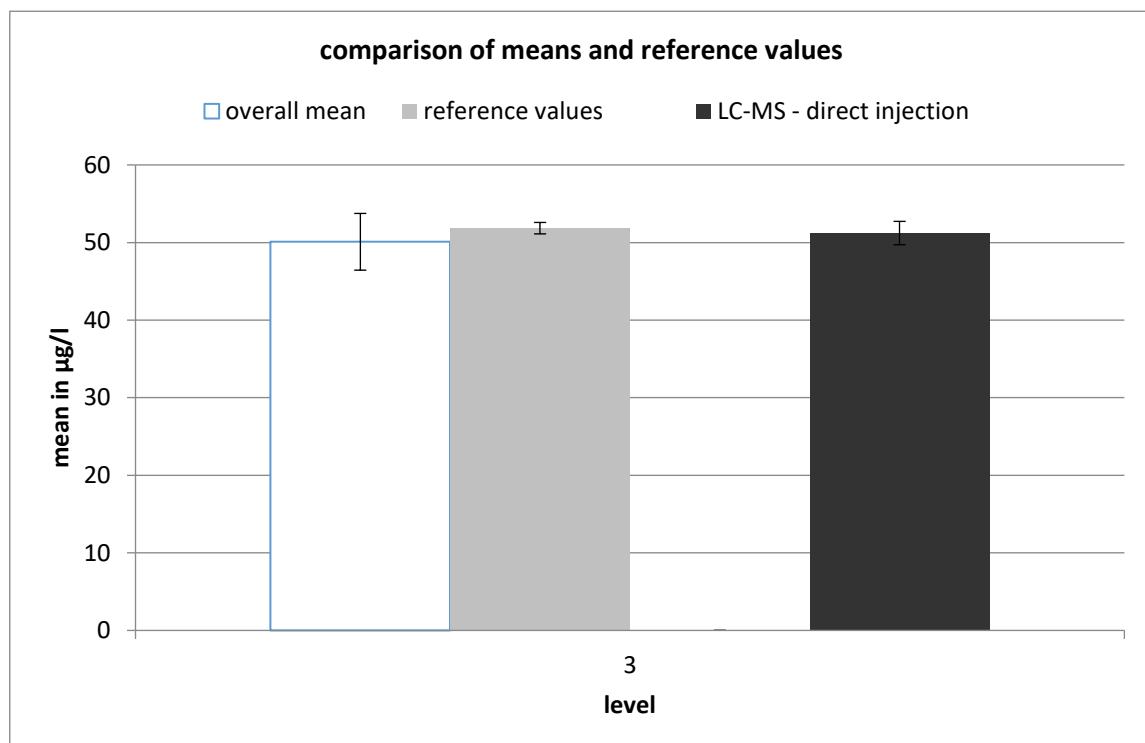
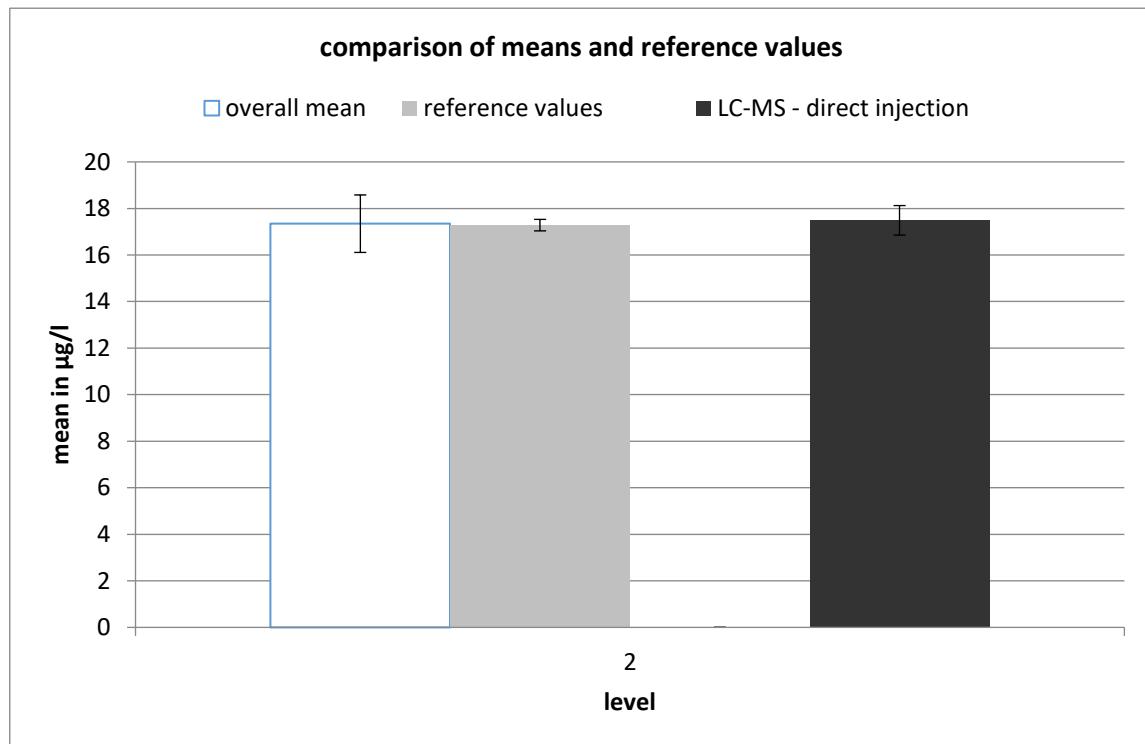
**Comparison of means and reference values**

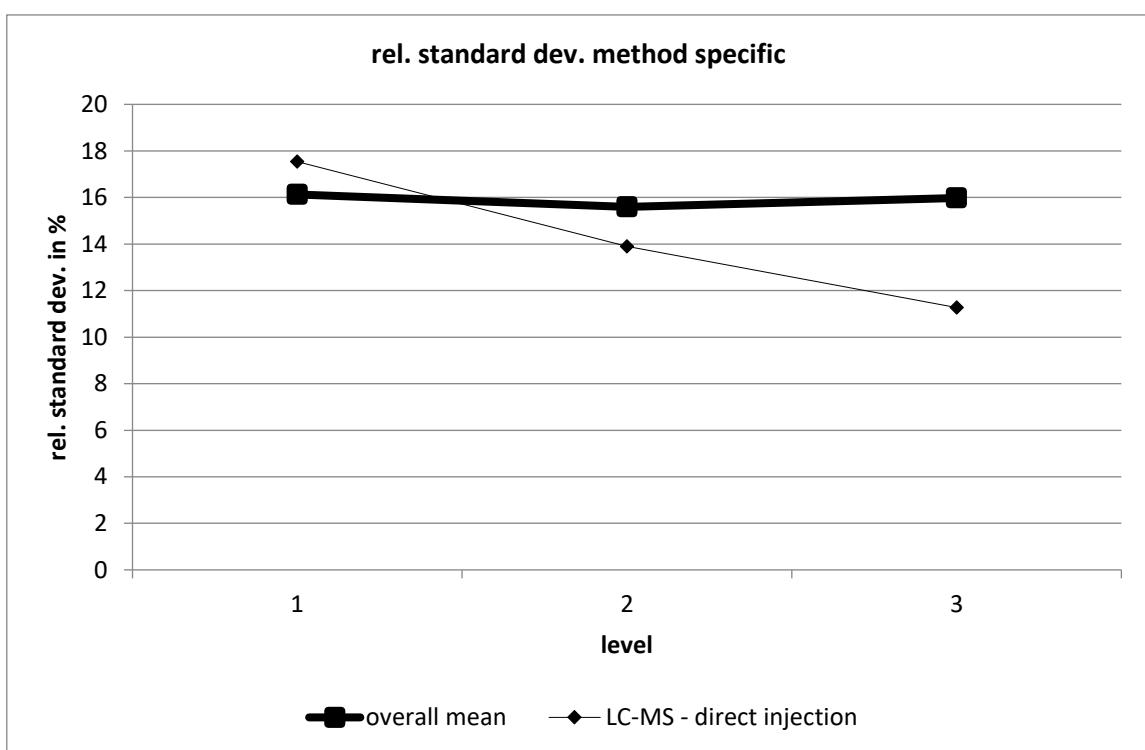
level	mean [ $\mu\text{g/l}$ ]		exp. uncertainty [ $\mu\text{g/l}$ ]		reference value [ $\mu\text{g/l}$ ]		exp. uncertainty [%]	
	1	2	1	2	1	2	1	2
1	6,722	0,503	7,5		6,913	0,101	1,5	
2	17,34	1,23	7,1		17,28	0,25	1,4	
3	50,09	3,65	7,3		51,85	0,74	1,4	

**comparison of means and reference values**

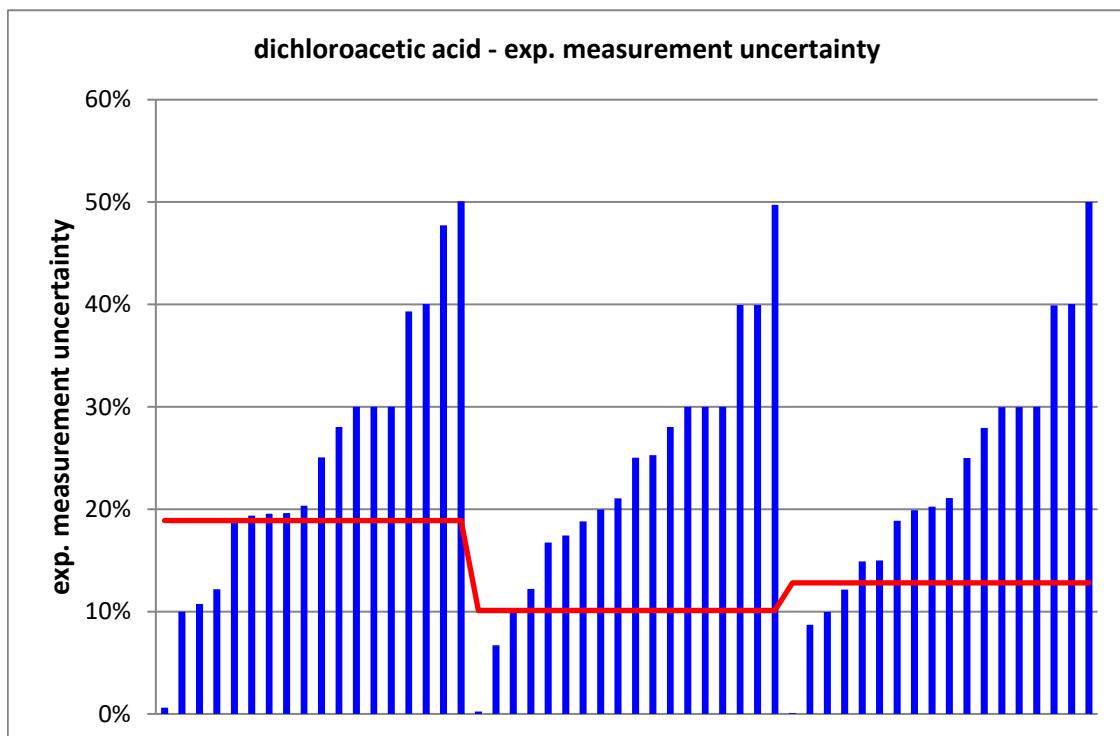
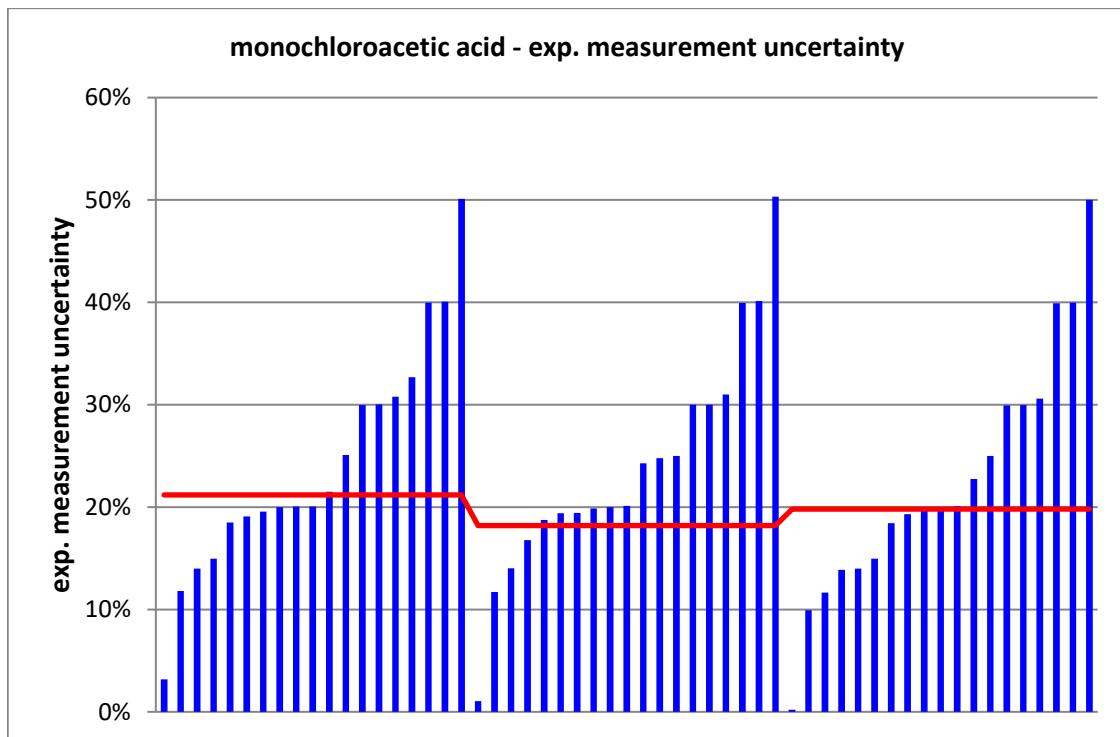
□ overall mean    ■ reference values    ■ LC-MS - direct injection

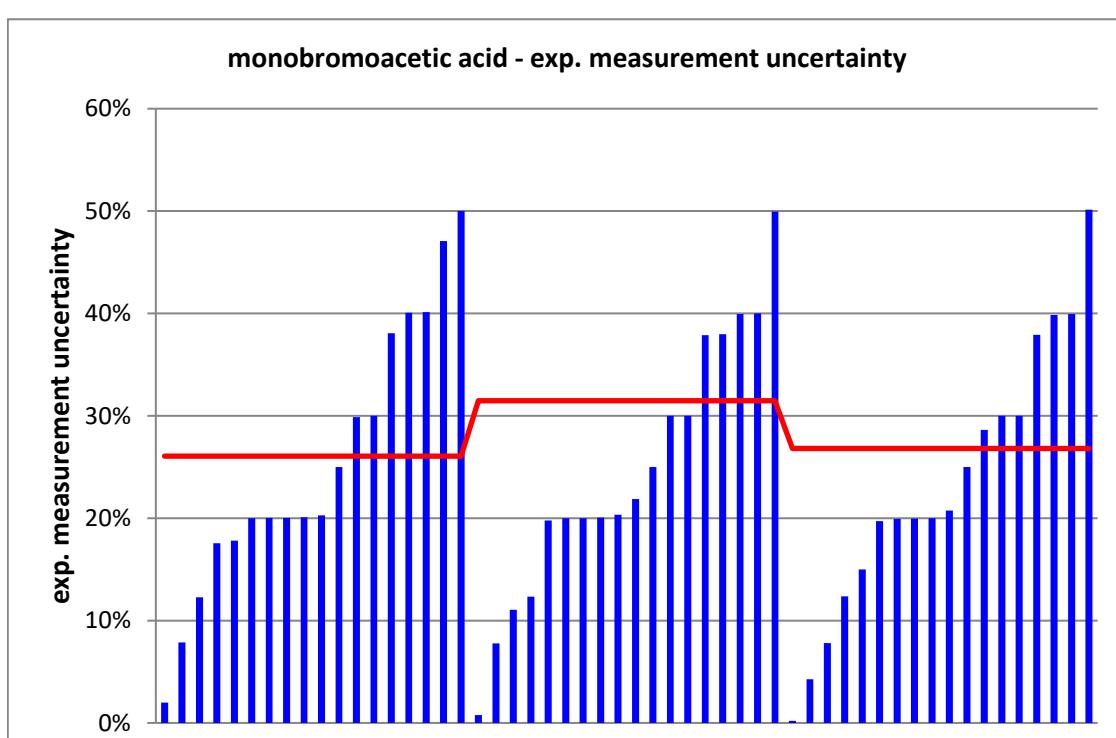
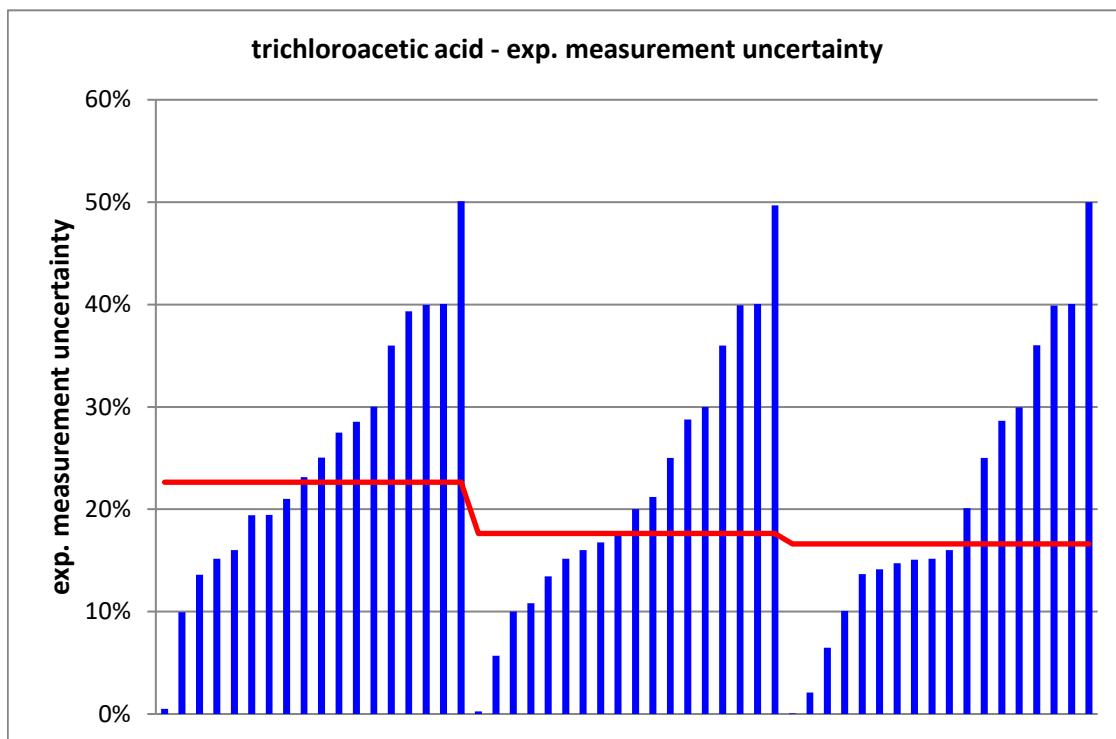


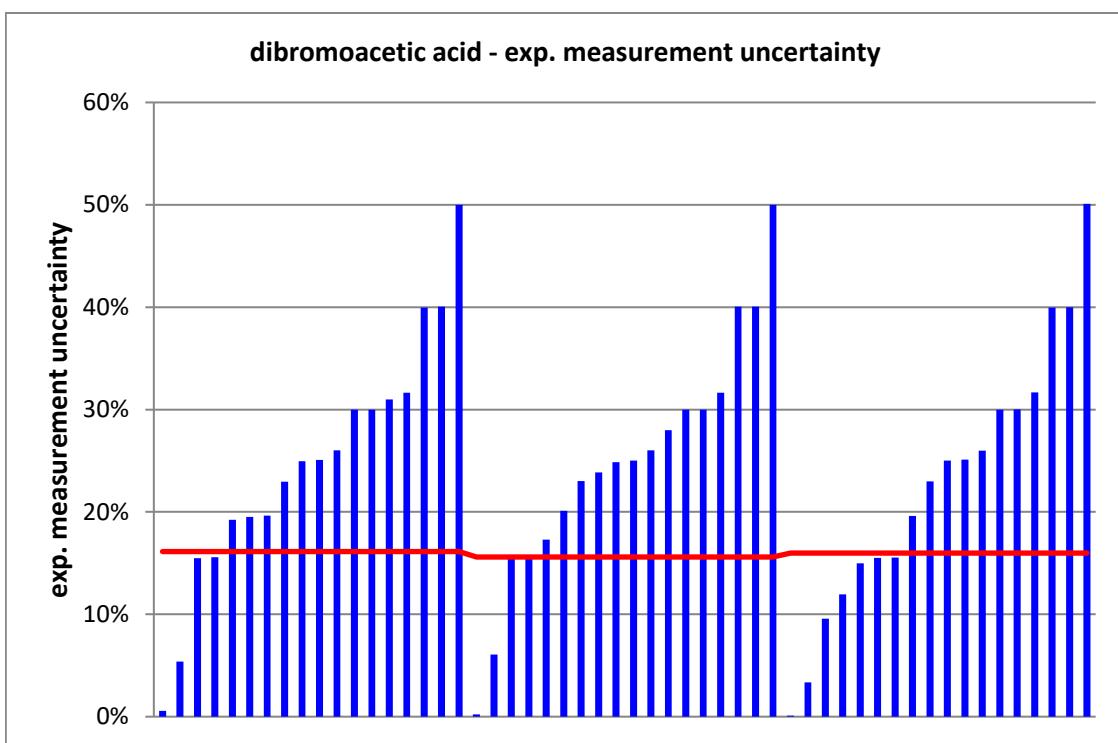




<b>LC-MS - direct injection</b>									
level	robust mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [ $\mu\text{g/l}$ ]	exp. unc. of the mean [%]	robust standard deviation [ $\mu\text{g/l}$ ]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	6,78	0,317	4,674	1,189	17,54	22	1	2	13,64
2	17,5	0,633	3,621	2,43	13,89	23	1	0	4,348
3	51,2	1,505	2,938	5,773	11,27	23	3	1	17,39



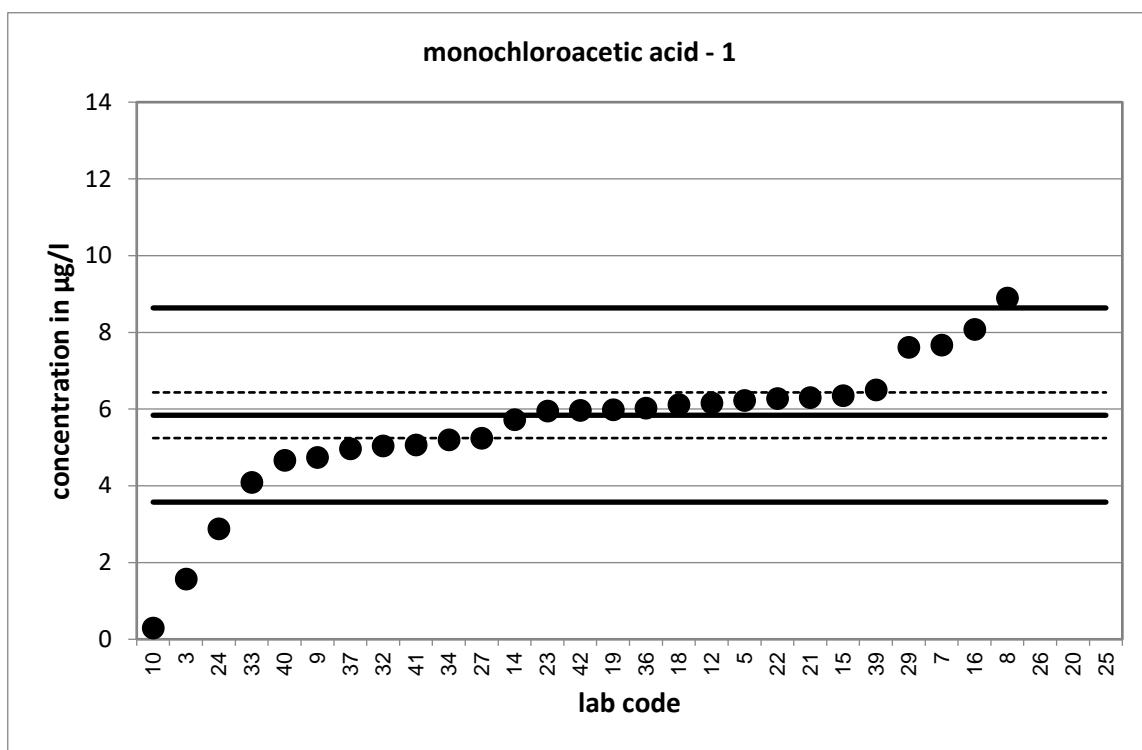




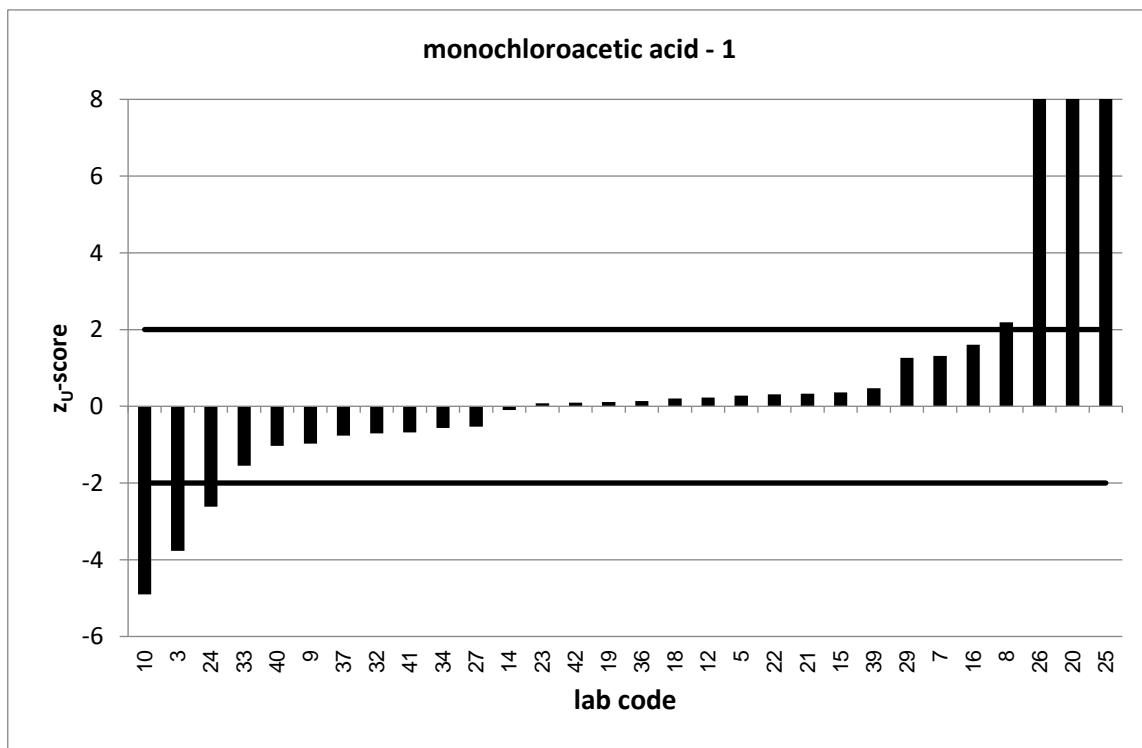
PT 5/24 - TW S11		monochloroacetic acid - 1			
assigned value [ $\mu\text{g/l}$ ]*		$5,839 \pm 0,595$			
upper tolerance limit [ $\mu\text{g/l}$ ]		8,636			
lower tolerance limit [ $\mu\text{g/l}$ ]		3,575			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	1,569	0,05	-14,3	-3,8	u
5	6,23	1,34	0,5	0,3	s
7	7,67			1,3	s
8	8,9			2,2	q
9	4,74	0,95	-2,0	-1,0	s
10	0,293			-4,9	u
12	6,16	1,85	0,3	0,2	s
14	5,73	1,06	-0,2	-0,1	s
15	6,35	0,95	0,9	0,4	s
16	8,08	3,23	1,4	1,6	s
18	6,12	2	0,3	0,2	s
19	5,99			0,1	s
20	60,2			38,9	u
21	6,3	1,58	0,5	0,3	s
22	6,28	1,26	0,6	0,3	s
23	5,95			0,1	s
24	2,88	0,34	-8,6	-2,6	q
25	70,49			46,2	u
26	17,38	2,43	9,2	8,3	u
27	5,24	1	-1,0	-0,5	s
29	7,61			1,3	s
32	5,04	2,02	-0,8	-0,7	s
33	4,09	0,8	-3,5	-1,5	s
34	5,2	1,6	-0,7	-0,6	s
36	6,03			0,1	s
37	4,97			-0,8	s
39	6,5	1,3	0,9	0,5	s
40	4,67	1,4	-1,5	-1,0	s
41	5,07	2,54	-0,6	-0,7	s
42	5,97			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%

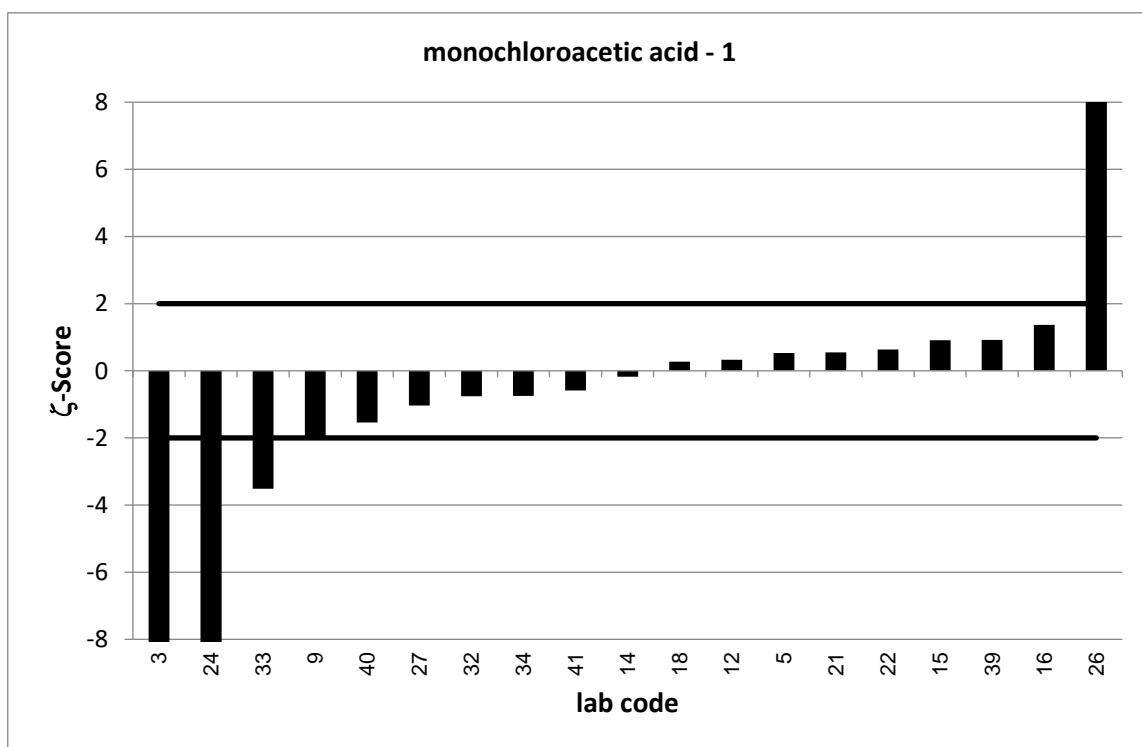
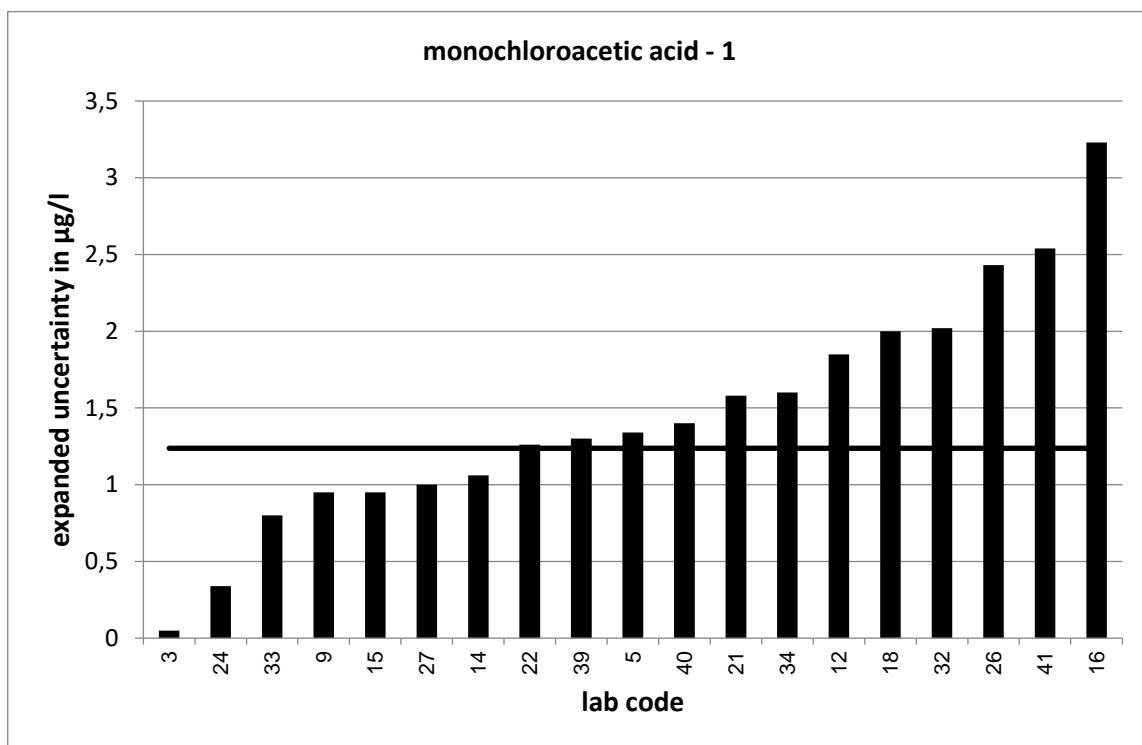
\*\* s = satisfactory, q = questionable, u = unsatisfactory



Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.

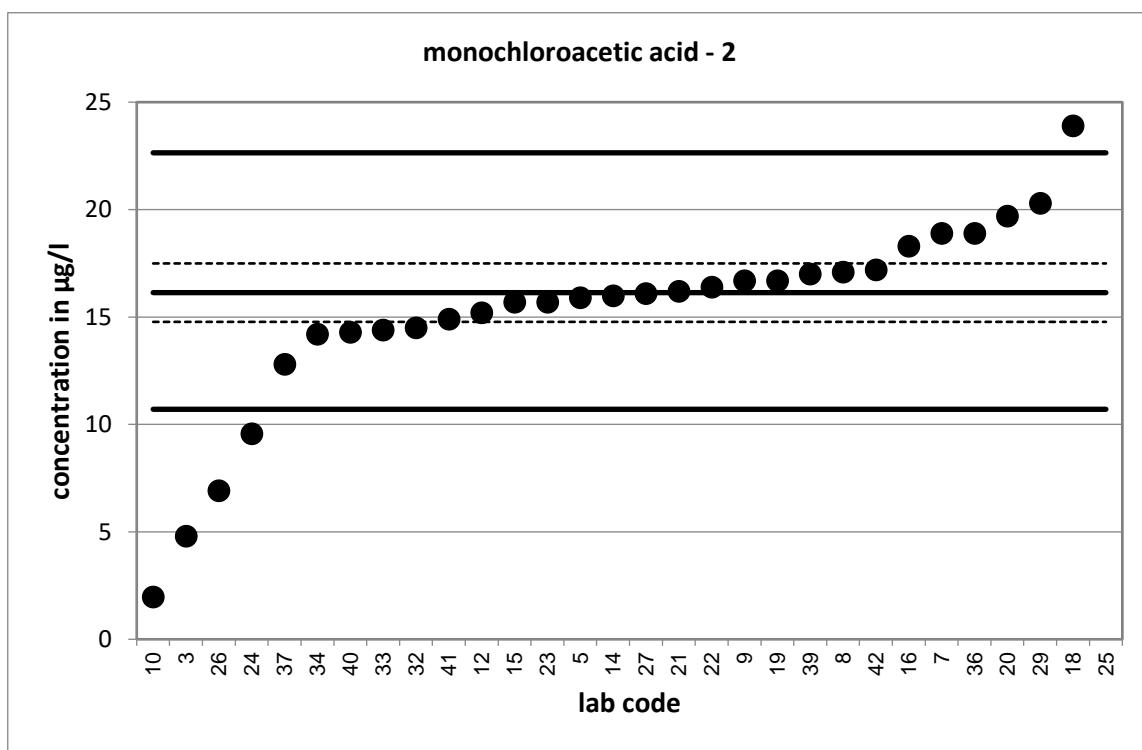


Strongly deviating values are not correctly shown in the diagram.

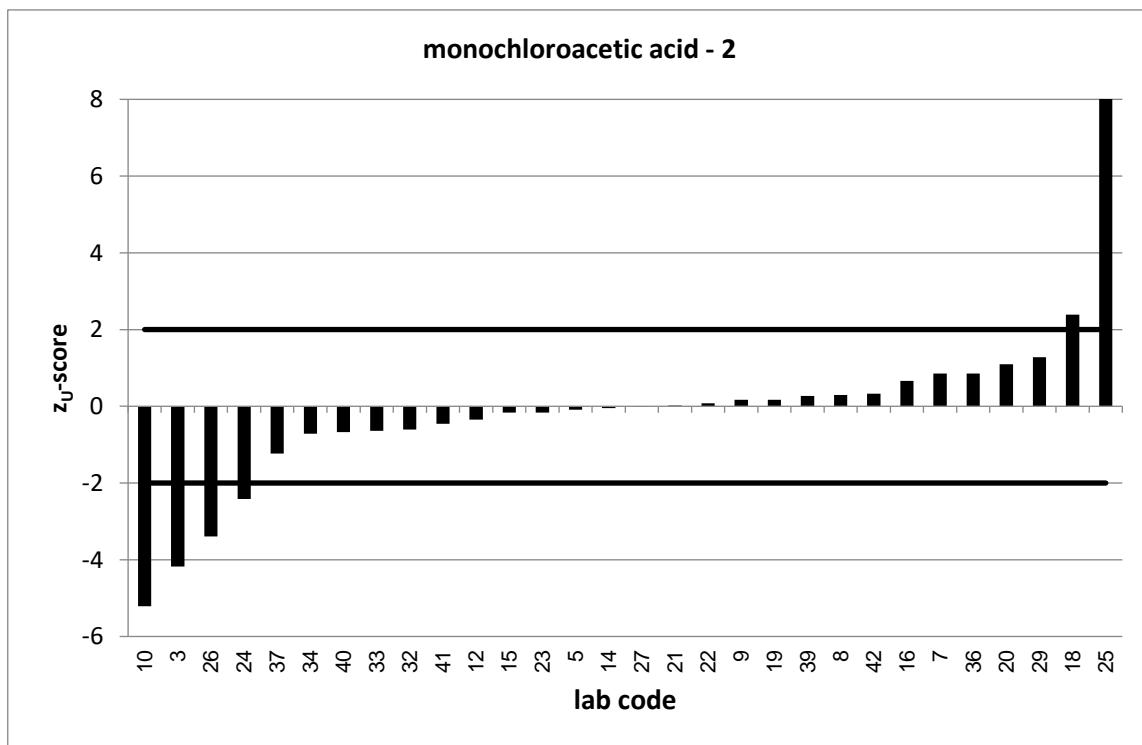
PT 5/24 - TW S11		monochloroacetic acid - 2			
assigned value [ $\mu\text{g/l}$ ]*			16,13	$\pm 1,36$	
upper tolerance limit [ $\mu\text{g/l}$ ]			22,64		
lower tolerance limit [ $\mu\text{g/l}$ ]			10,71		
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	4,8	0,05	-16,6	-4,2	u
5	15,9	3,94	-0,1	-0,1	s
7	18,9			0,8	s
8	17,1			0,3	s
9	16,7	3,34	0,3	0,2	s
10	1,98			-5,2	u
12	15,2	4,56	-0,4	-0,3	s
14	16	3	-0,1	0,0	s
15	15,7	3,12	-0,3	-0,2	s
16	18,3	7,31	0,6	0,7	s
18	23,9	5,8	2,6	2,4	q
19	16,7			0,2	s
20	19,7			1,1	s
21	16,2	4,05	0,0	0,0	s
22	16,4	3,3	0,1	0,1	s
23	15,7			-0,2	s
24	9,57	1,12	-7,4	-2,4	q
25	76,9			18,7	u
26	6,92	0,97	-11,0	-3,4	u
27	16,1	2,7	0,0	0,0	s
29	20,3			1,3	s
32	14,5	5,82	-0,5	-0,6	s
33	14,4	2,8	-1,1	-0,6	s
34	14,2	4,4	-0,8	-0,7	s
36	18,9			0,8	s
37	12,8			-1,2	s
39	17	3,3	0,5	0,3	s
40	14,3	4,29	-0,8	-0,7	s
41	14,9	7,5	-0,3	-0,5	s
42	17,2			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%

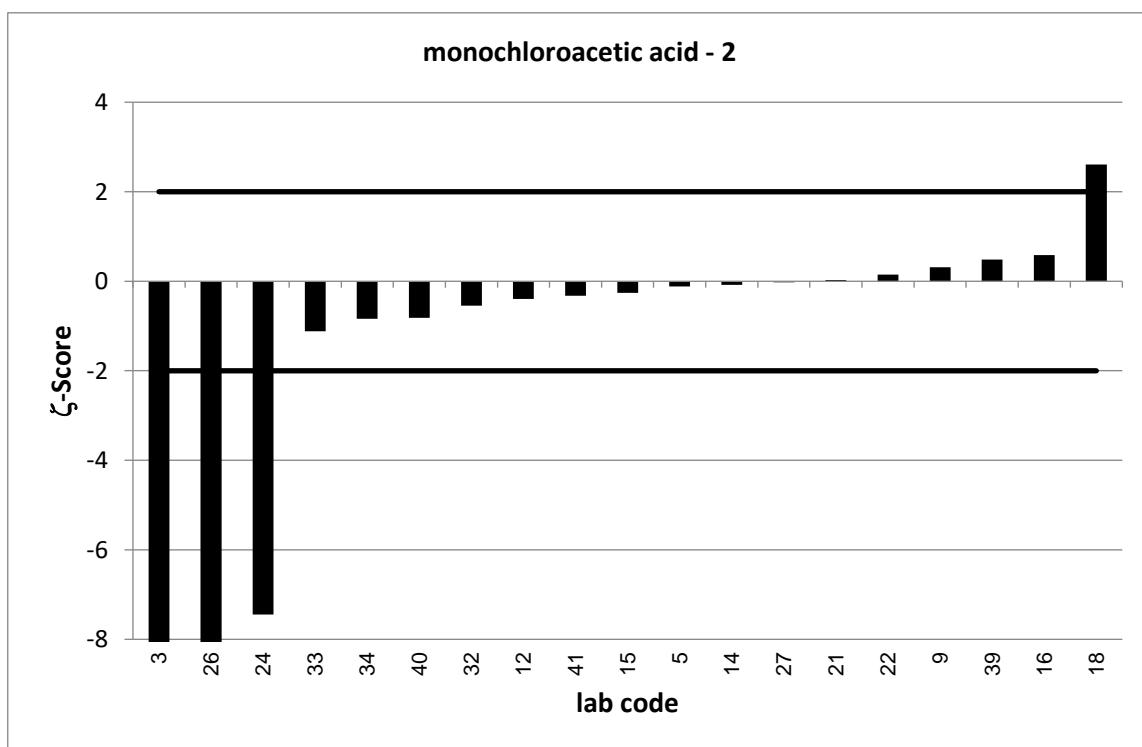
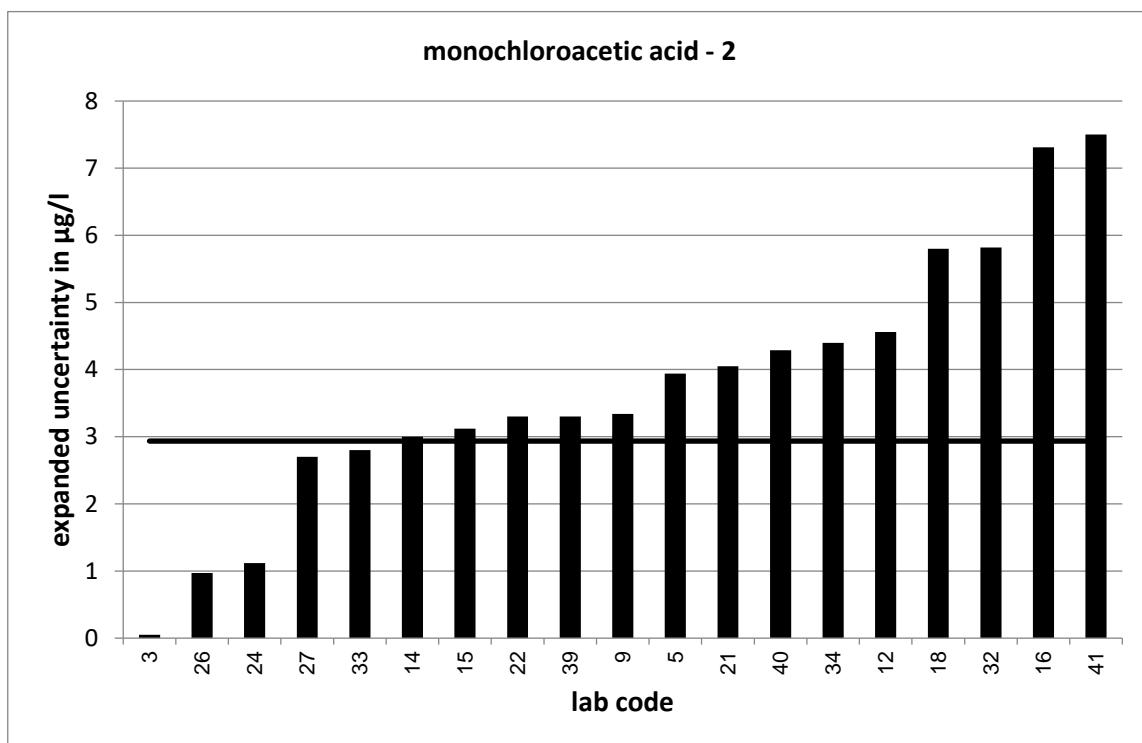
\*\* s = satisfactory, q = questionable, u = unsatisfactory



Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.

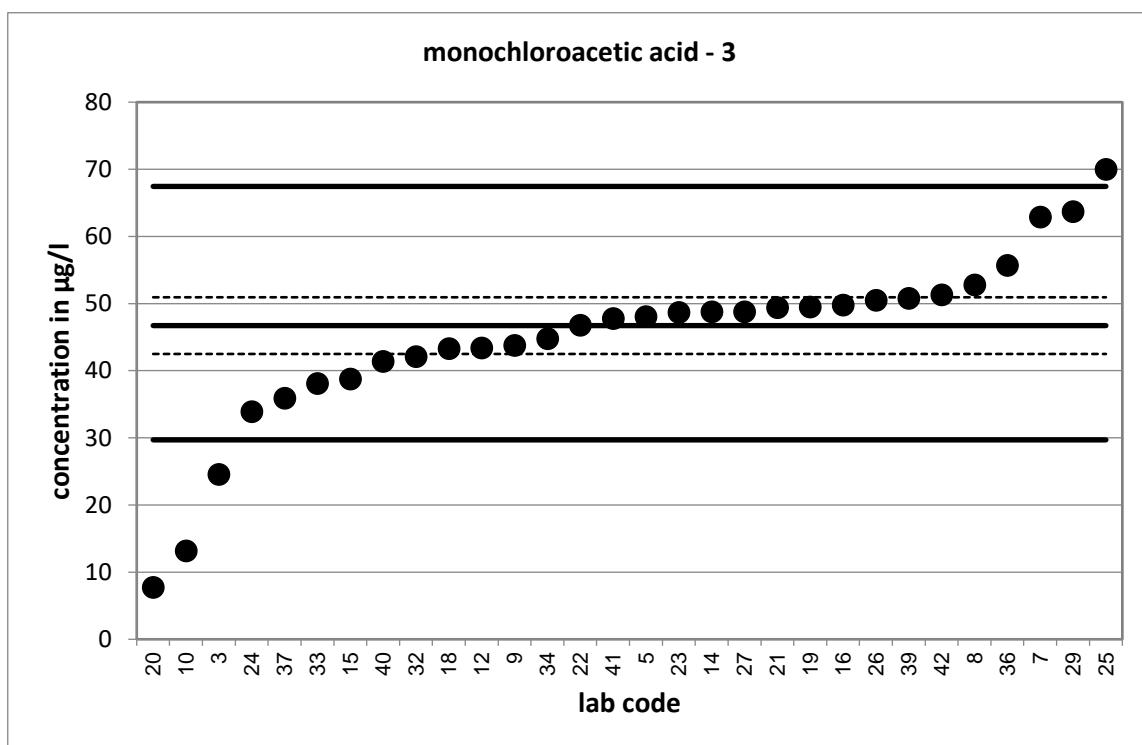


Strongly deviating values are not correctly shown in the diagram.

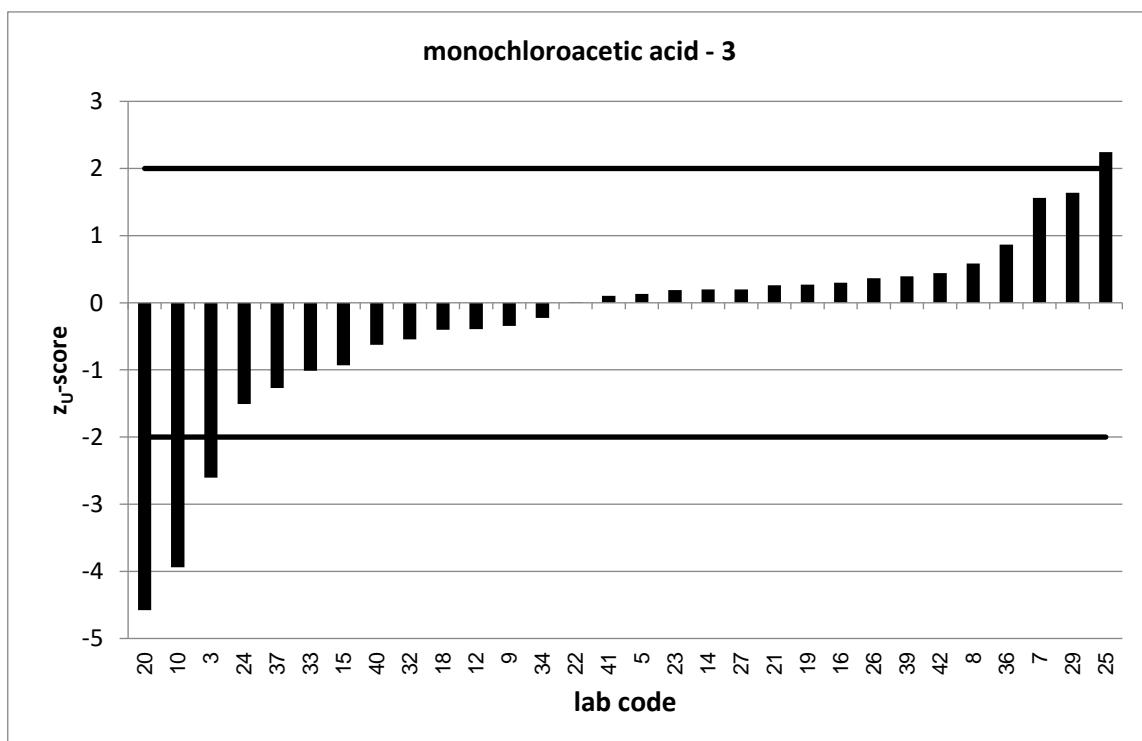
PT 5/24 - TW S11		monochloroacetic acid - 3			
assigned value [µg/l]*		46,72 ± 4,22			
upper tolerance limit [µg/l]		67,45			
lower tolerance limit [µg/l]		29,7			
lab code	result [µg/l]	±	ζ-score	z <sub>U</sub> -score	assessm.**
3	24,554	0,05	-10,5	-2,6	q
5	48,1	4,77	0,4	0,1	s
7	62,9			1,6	s
8	52,8			0,6	s
9	43,8	8,76	-0,6	-0,3	s
10	13,2			-3,9	u
12	43,4	13	-0,5	-0,4	s
14	48,8	9	0,4	0,2	s
15	38,8	8,82	-1,6	-0,9	s
16	49,8	19,9	0,3	0,3	s
18	43,3	6	-0,9	-0,4	s
19	49,5			0,3	s
20	7,77			-4,6	u
21	49,4	12,35	0,4	0,3	s
22	46,8	9,4	0,0	0,0	s
23	48,7			0,2	s
24	33,9	3,95	-4,4	-1,5	s
25	70			2,2	q
26	50,52	7,07	0,9	0,4	s
27	48,8	7,3	0,5	0,2	s
29	63,7			1,6	s
32	42,1	16,8	-0,5	-0,5	s
33	38,1	7,6	-2,0	-1,0	s
34	44,8	13,7	-0,3	-0,2	s
36	55,7			0,9	s
37	35,9			-1,3	s
39	50,8	9,8	0,8	0,4	s
40	41,4	12,4	-0,8	-0,6	s
41	47,8	23,9	0,1	0,1	s
42	51,3			0,4	s

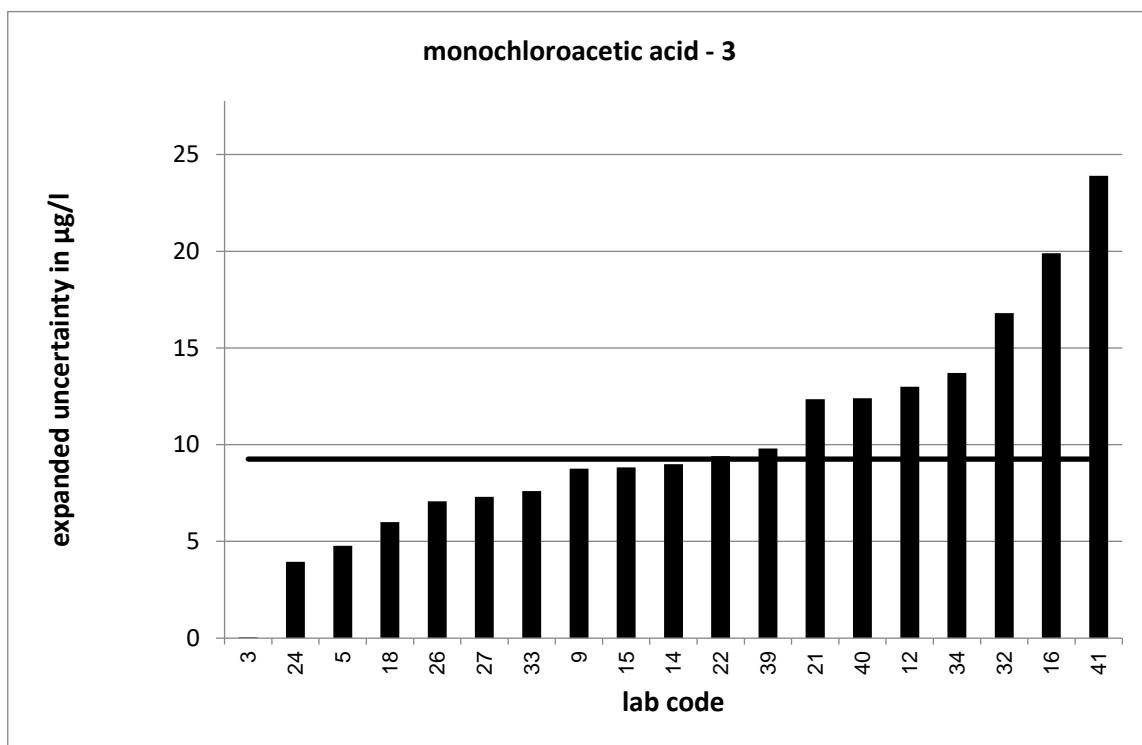
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

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

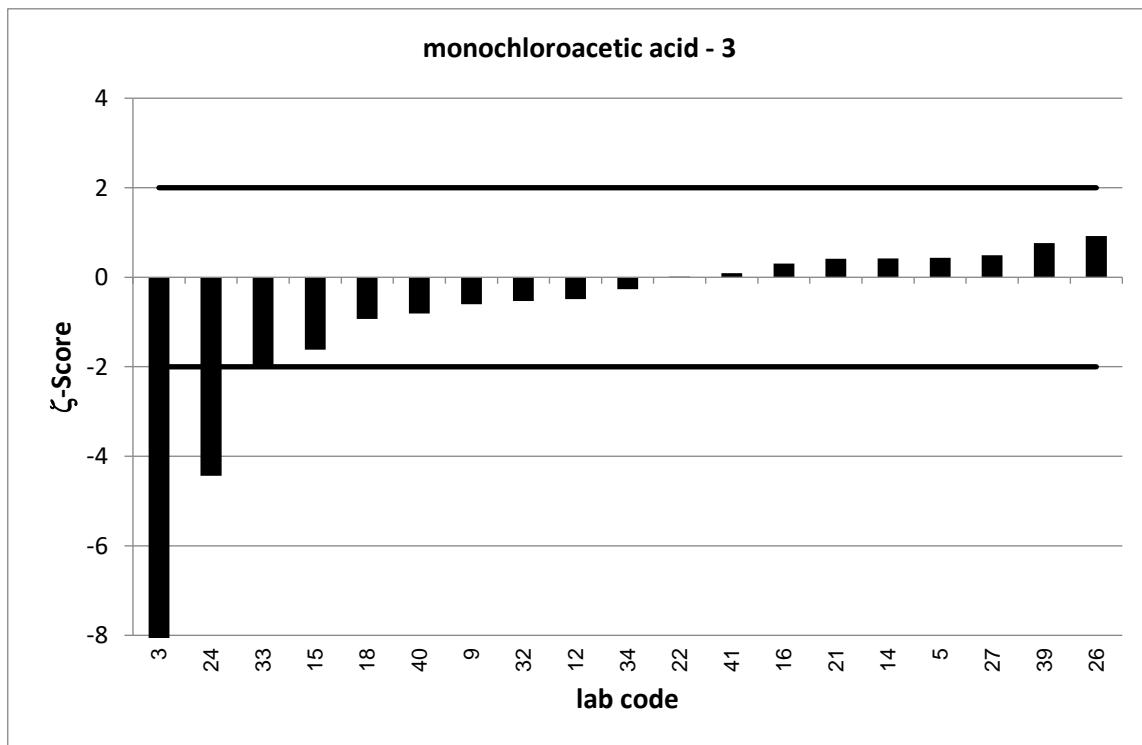


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

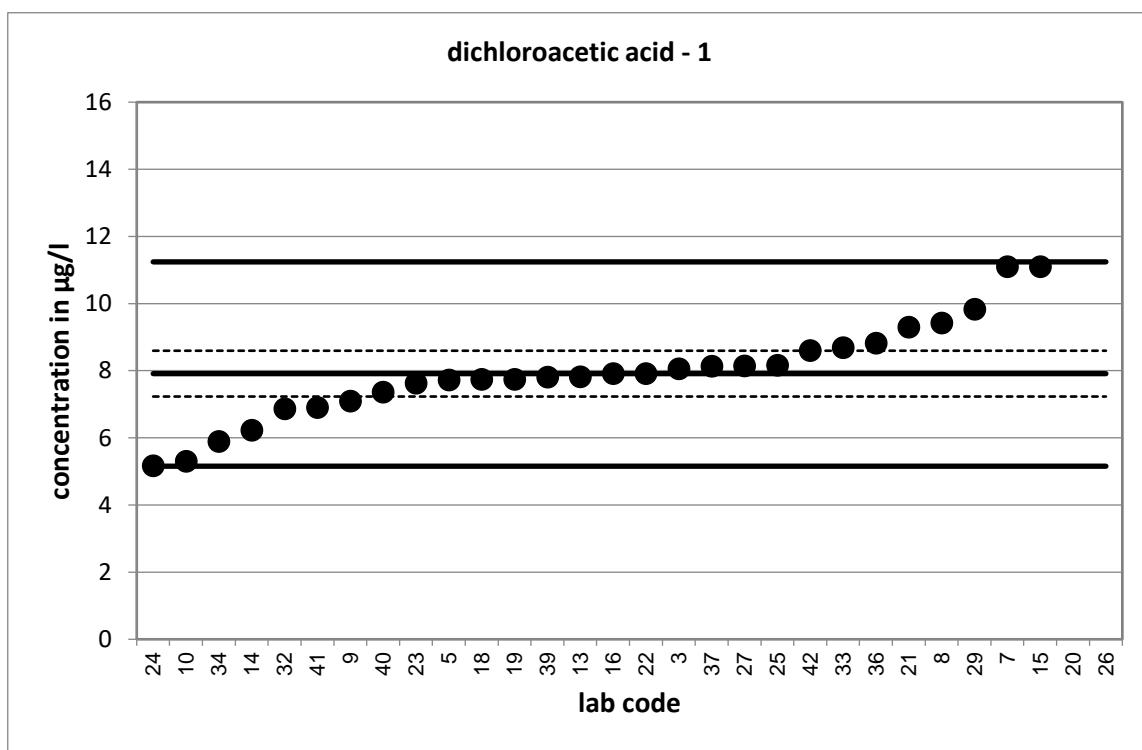


Strongly deviating values are not correctly shown in the diagram.

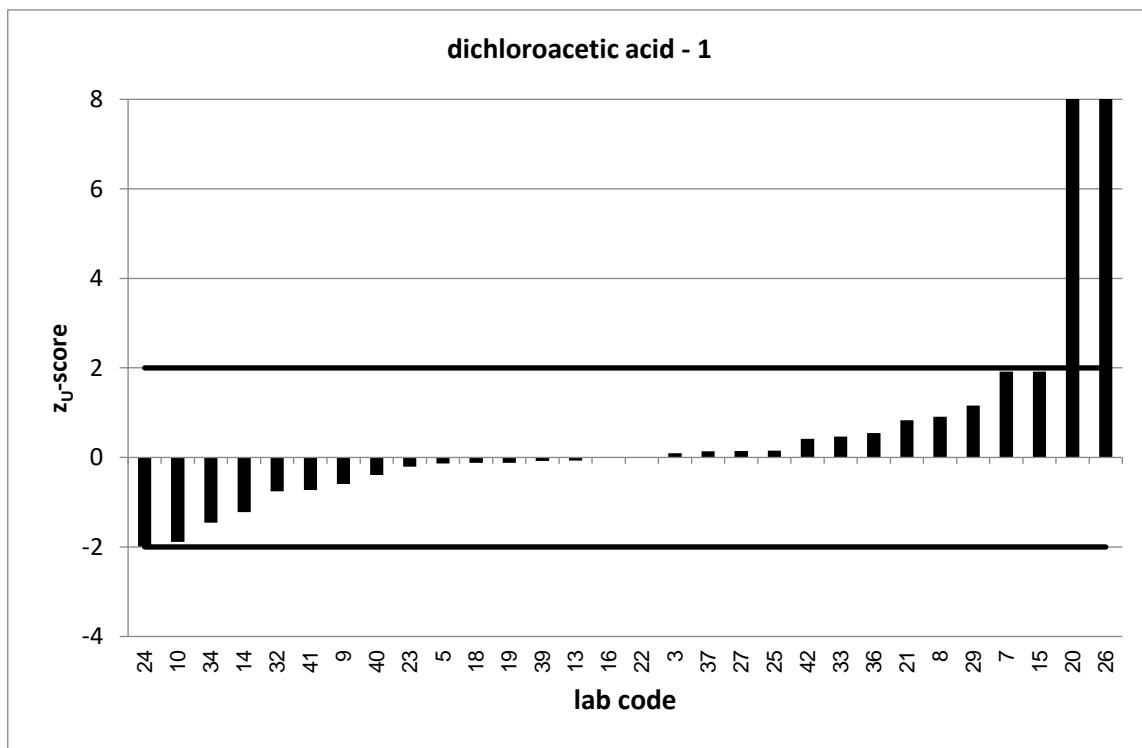
PT 5/24 - TW S11		dichloroacetic acid - 1			
assigned value [ $\mu\text{g/l}$ ]*			7,914	$\pm 0,682$	
upper tolerance limit [ $\mu\text{g/l}$ ]			11,24		
lower tolerance limit [ $\mu\text{g/l}$ ]			5,156		
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	8,066	0,05	0,4	0,1	s
5	7,73	0,83	-0,3	-0,1	s
7	11,1			1,9	s
8	9,43			0,9	s
9	7,1	1,99	-0,8	-0,6	s
10	5,31			-1,9	s
13	7,82	2,346	-0,1	-0,1	s
14	6,23	1,18	-2,5	-1,2	s
15	11,1	2,15	2,8	1,9	s
16	7,92	3,17	0,0	0,0	s
18	7,75	3,7	-0,1	-0,1	s
19	7,75			-0,1	s
20	31,9			14,4	u
21	9,3	2,33	1,1	0,8	s
22	7,92	0,79	0,0	0,0	s
23	7,63			-0,2	s
24	5,17	0,63	-5,9	-2,0	s
25	8,17			0,2	s
26	61,11	18,33	5,8	32,0	u
27	8,15	1,6	0,3	0,1	s
29	9,84			1,2	s
32	6,87	2,7	-0,7	-0,8	s
33	8,69	1,7	0,8	0,5	s
34	5,9	1,2	-2,9	-1,5	s
36	8,82			0,5	s
37	8,14			0,1	s
39	7,81			-0,1	s
40	7,37	2,21	-0,5	-0,4	s
41	6,91	3,46	-0,6	-0,7	s
42	8,61			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%

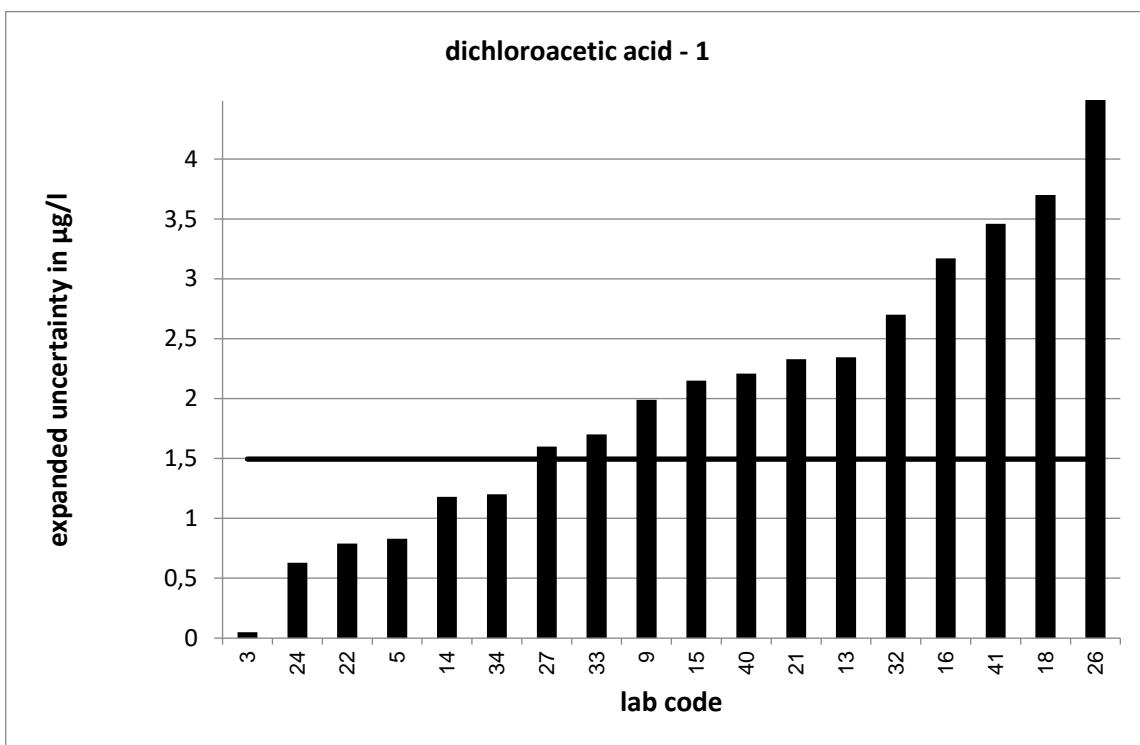
\*\* s = satisfactory, q = questionable, u = unsatisfactory



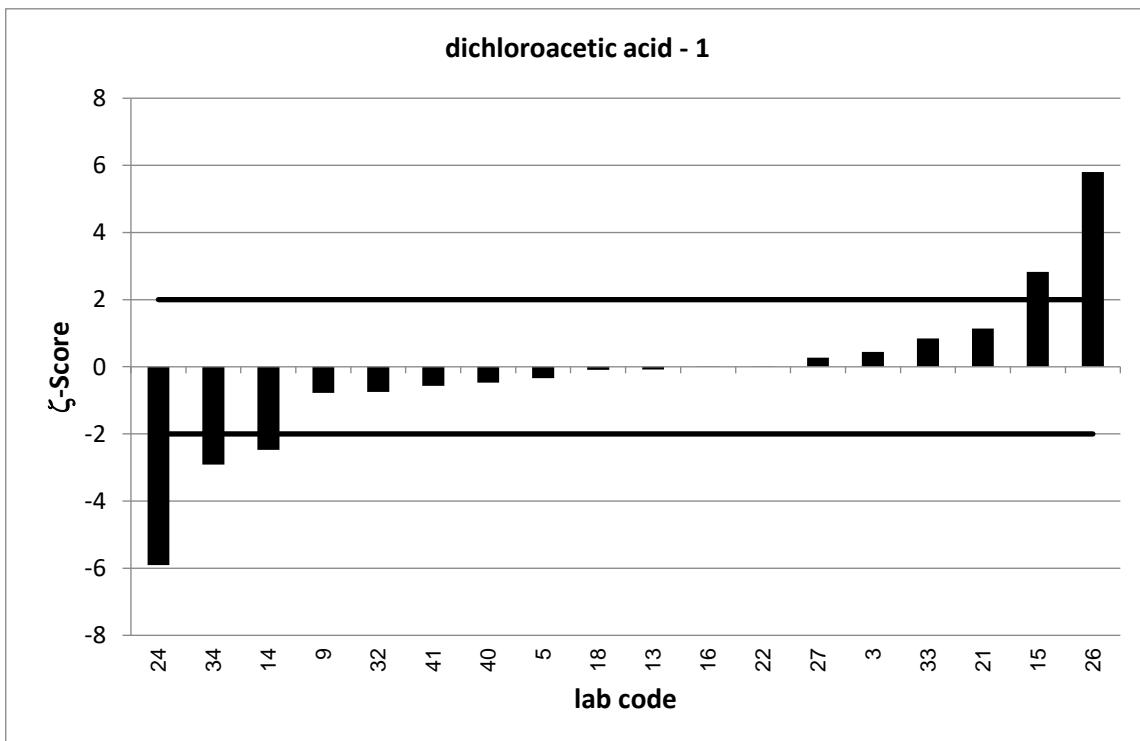
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



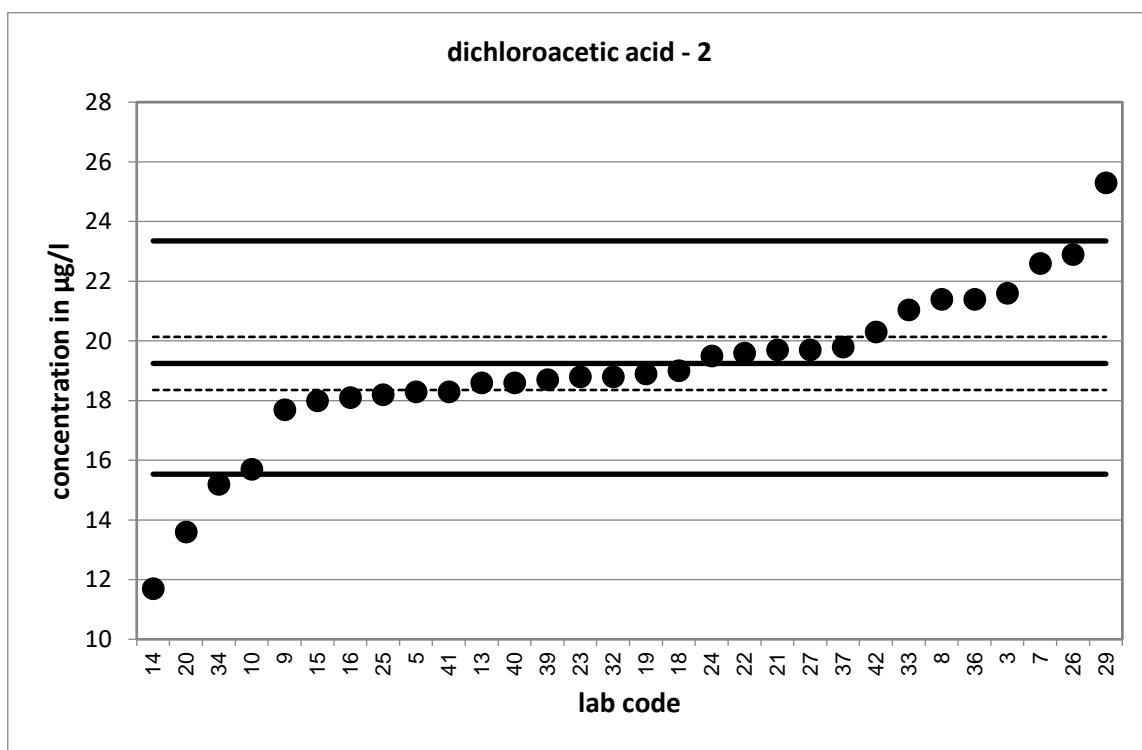
Strongly deviating values are not correctly shown in the diagram.



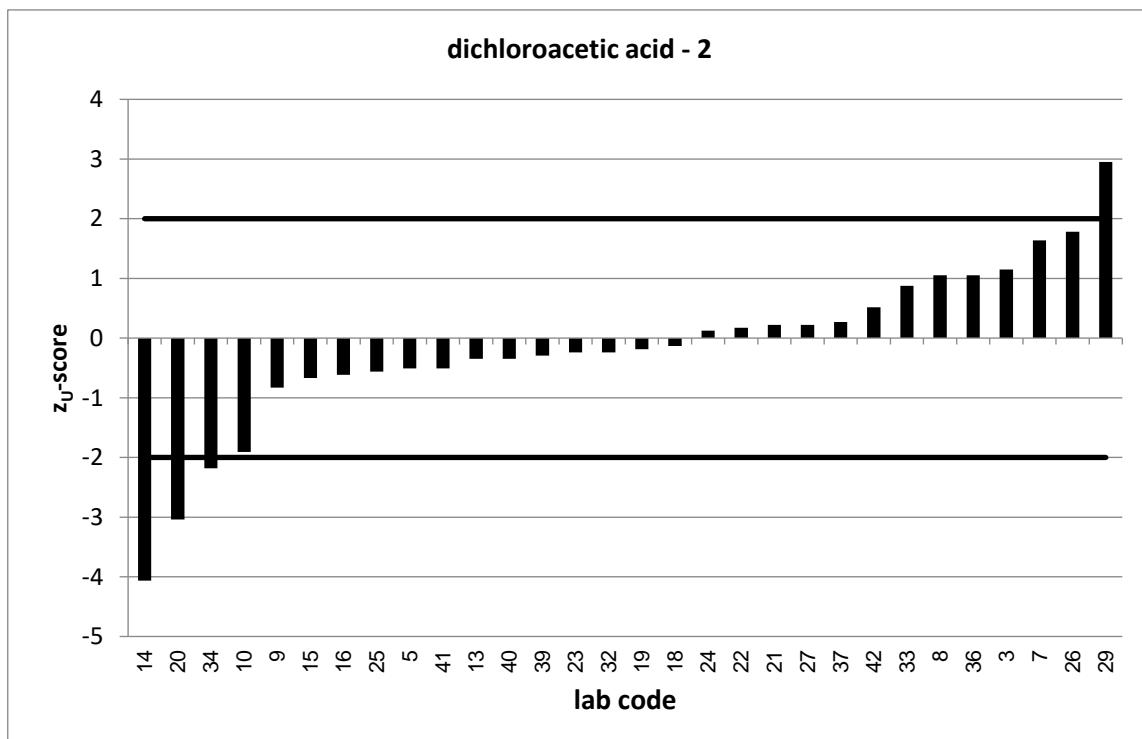
PT 5/24 - TW S11		dichloroacetic acid - 2			
assigned value [ $\mu\text{g/l}$ ]*		19,24	$\pm 0,89$		
upper tolerance limit [ $\mu\text{g/l}$ ]		23,35			
lower tolerance limit [ $\mu\text{g/l}$ ]		15,53			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	21,603	0,05	5,3	1,1	s
5	18,3	1,23	-1,2	-0,5	s
7	22,6			1,6	s
8	21,4			1,1	s
9	17,7	4,96	-0,6	-0,8	s
10	15,7			-1,9	s
13	18,6	5,58	-0,2	-0,3	s
14	11,7	2,2	-6,4	-4,1	u
15	18	3,14	-0,8	-0,7	s
16	18,1	7,23	-0,3	-0,6	s
18	19	4,8	-0,1	-0,1	s
19	18,9			-0,2	s
20	13,6			-3,0	u
21	19,7	4,93	0,2	0,2	s
22	19,6	2	0,3	0,2	s
23	18,8			-0,2	s
24	19,5	2,38	0,2	0,1	s
25	18,2			-0,6	s
26	22,9	6,87	1,1	1,8	s
27	19,7	3,3	0,3	0,2	s
29	25,3			3,0	u
32	18,8	7,51	-0,1	-0,2	s
33	21,04	4,2	0,8	0,9	s
34	15,2	3,2	-2,4	-2,2	q
36	21,4			1,1	s
37	19,8			0,3	s
39	18,7			-0,3	s
40	18,6	5,58	-0,2	-0,3	s
41	18,3	9,1	-0,2	-0,5	s
42	20,3			0,5	s

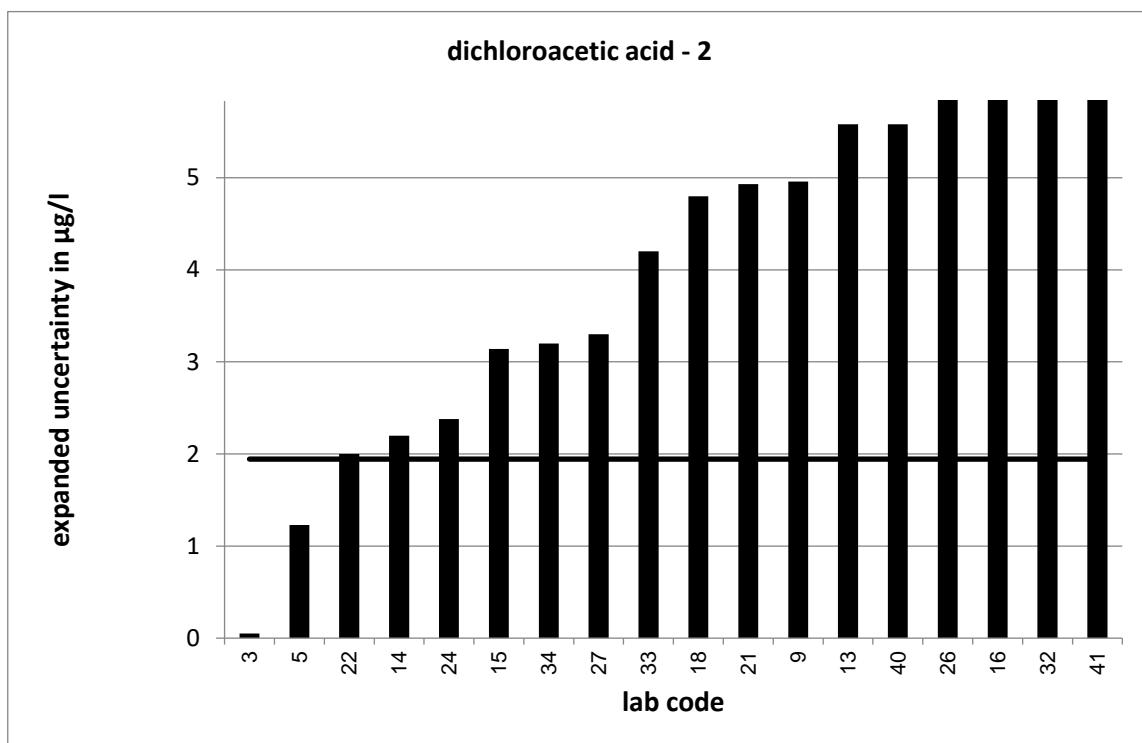
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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

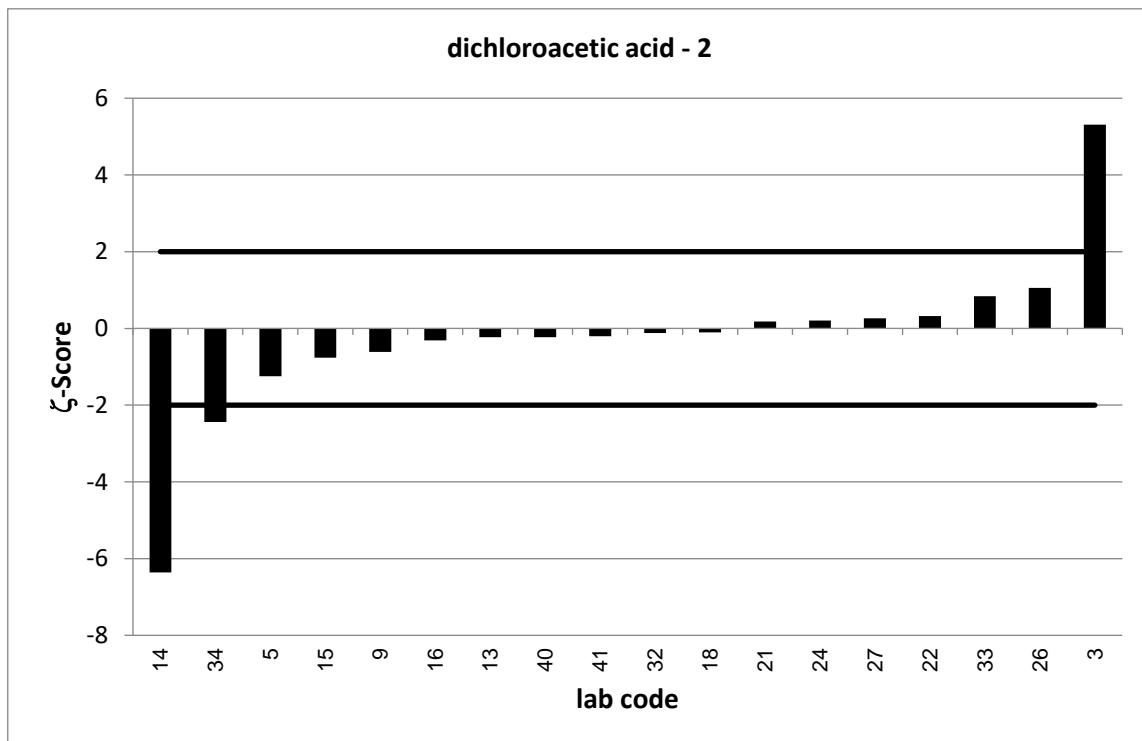


Strongly deviating values are not shown in the diagram.





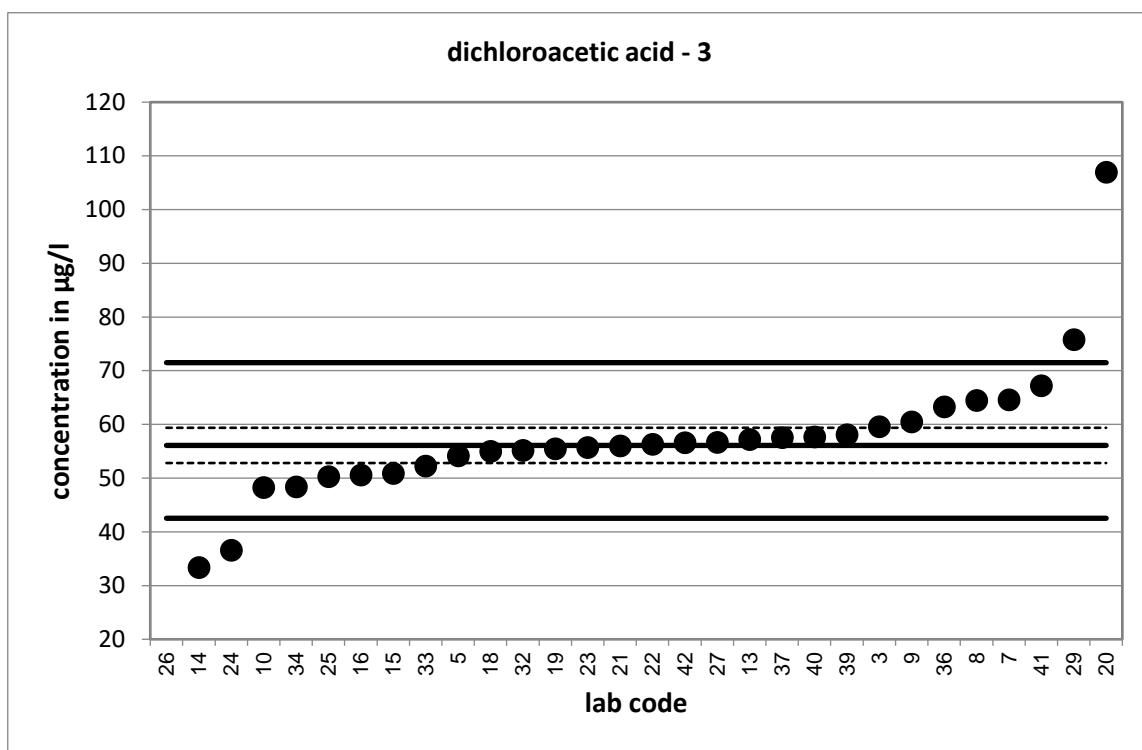
Strongly deviating values are not correctly shown in the diagram.



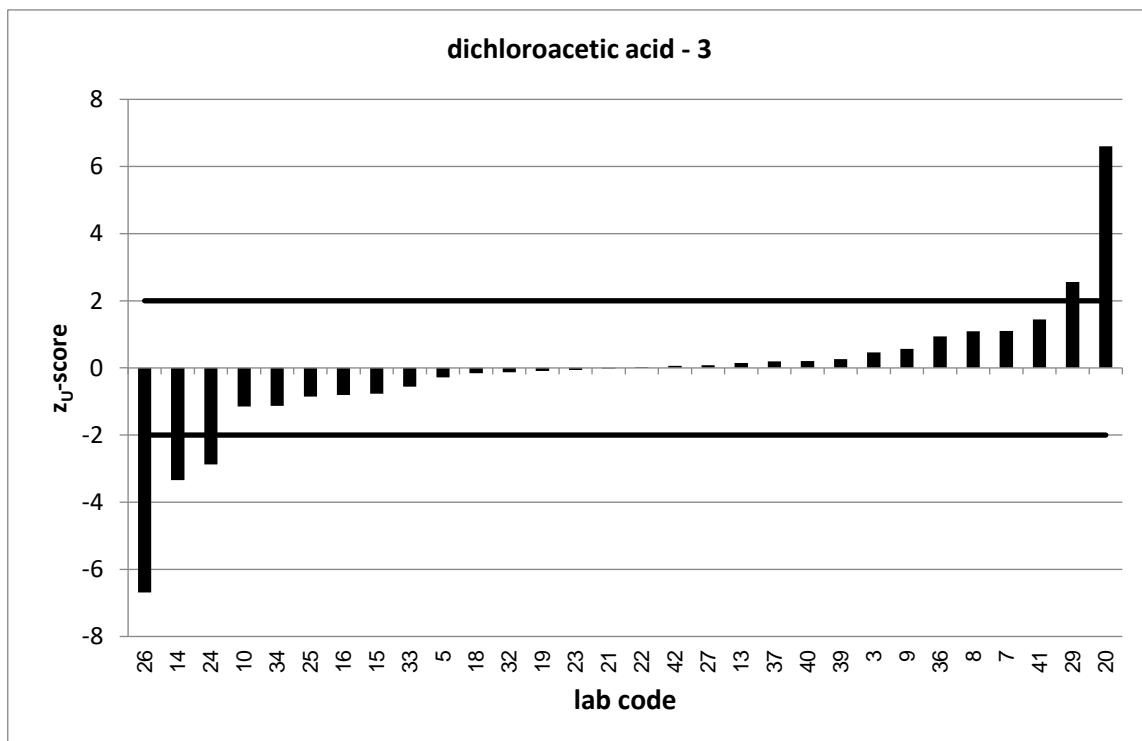
PT 5/24 - TW S11		dichloroacetic acid - 3			
assigned value [ $\mu\text{g/l}$ ]*		$56,09 \pm 3,28$			
upper tolerance limit [ $\mu\text{g/l}$ ]		71,51			
lower tolerance limit [ $\mu\text{g/l}$ ]		42,53			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	59,627	0,05	2,2	0,5	s
5	54,2	4,72	-0,7	-0,3	s
7	64,6			1,1	s
8	64,5			1,1	s
9	60,5	16,9	0,5	0,6	s
10	48,3			-1,1	s
13	57,2	17,16	0,1	0,1	s
14	33,4	6,3	-6,4	-3,3	u
15	50,9	10,3	-1,0	-0,8	s
16	50,6	20,2	-0,5	-0,8	s
18	55	8,2	-0,2	-0,2	s
19	55,5			-0,1	s
20	107			6,6	u
21	56	14	0,0	0,0	s
22	56,3	5,6	0,1	0,0	s
23	55,7			-0,1	s
24	36,6	4,45	-7,1	-2,9	q
25	50,3			-0,9	s
26	10,71	3,21	-19,8	-6,7	u
27	56,7	8,5	0,1	0,1	s
29	75,8			2,6	q
32	55,2	22,1	-0,1	-0,1	s
33	52,3	10,4	-0,7	-0,6	s
34	48,4	10,2	-1,4	-1,1	s
36	63,3			0,9	s
37	57,6			0,2	s
39	58,1			0,3	s
40	57,7	17,3	0,2	0,2	s
41	67,2	33,6	0,7	1,4	s
42	56,6			0,1	s

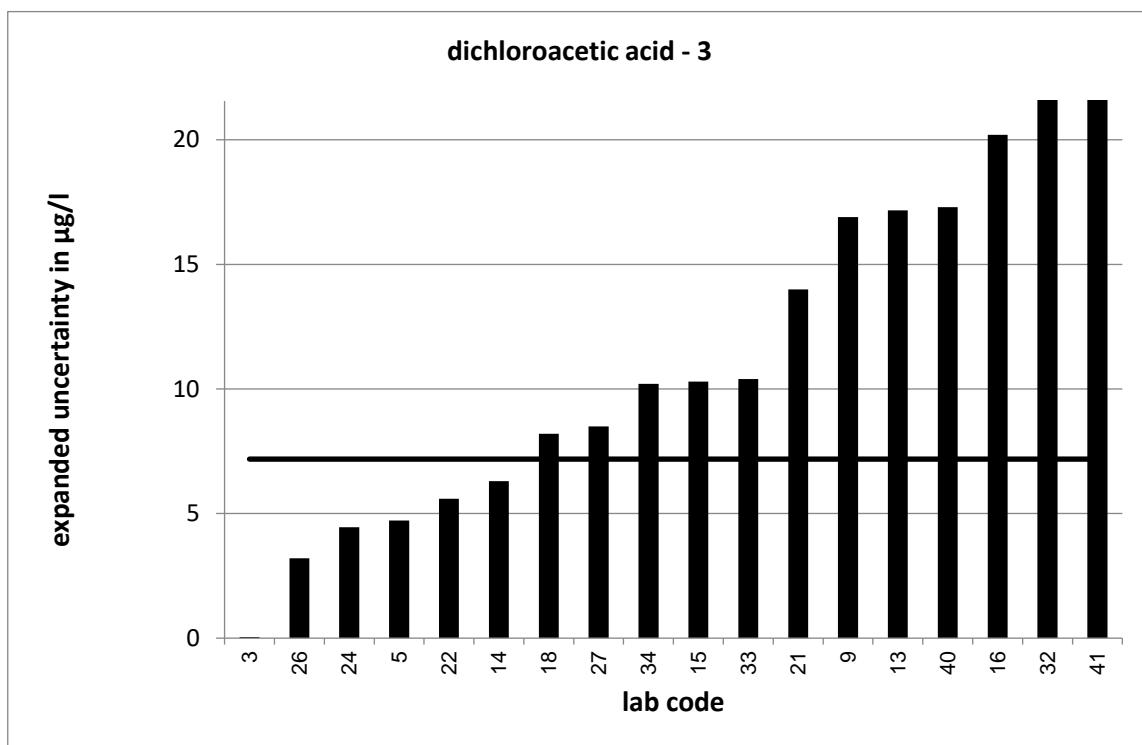
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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

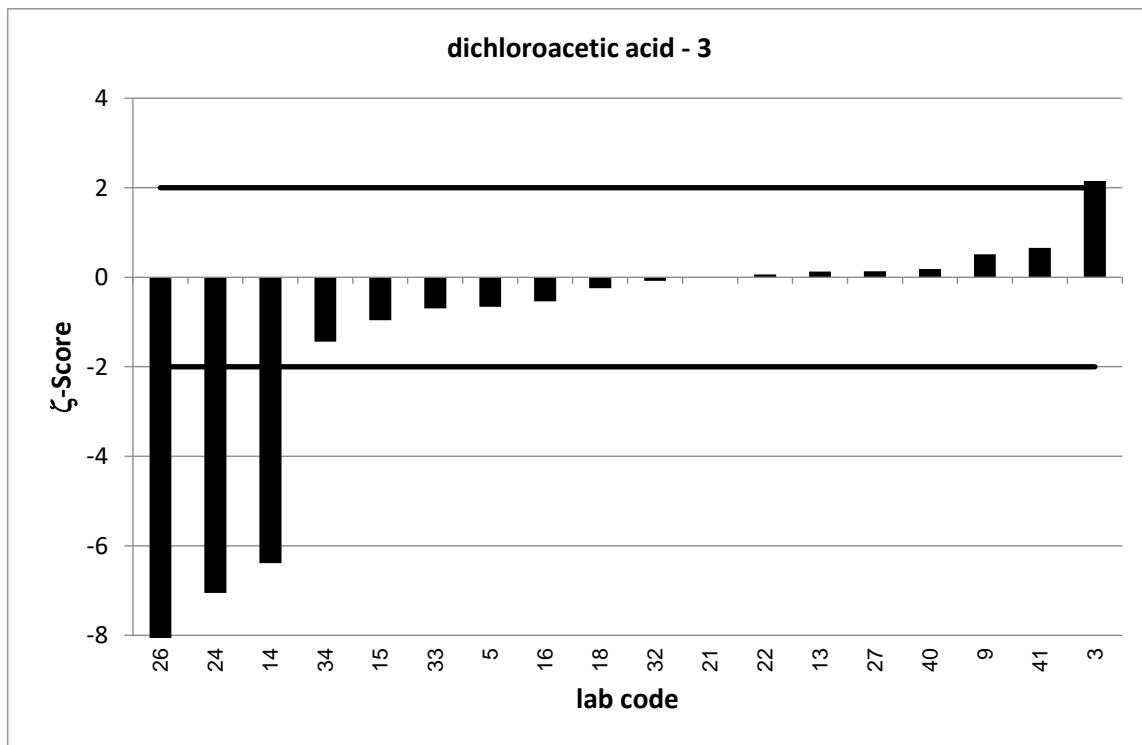


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

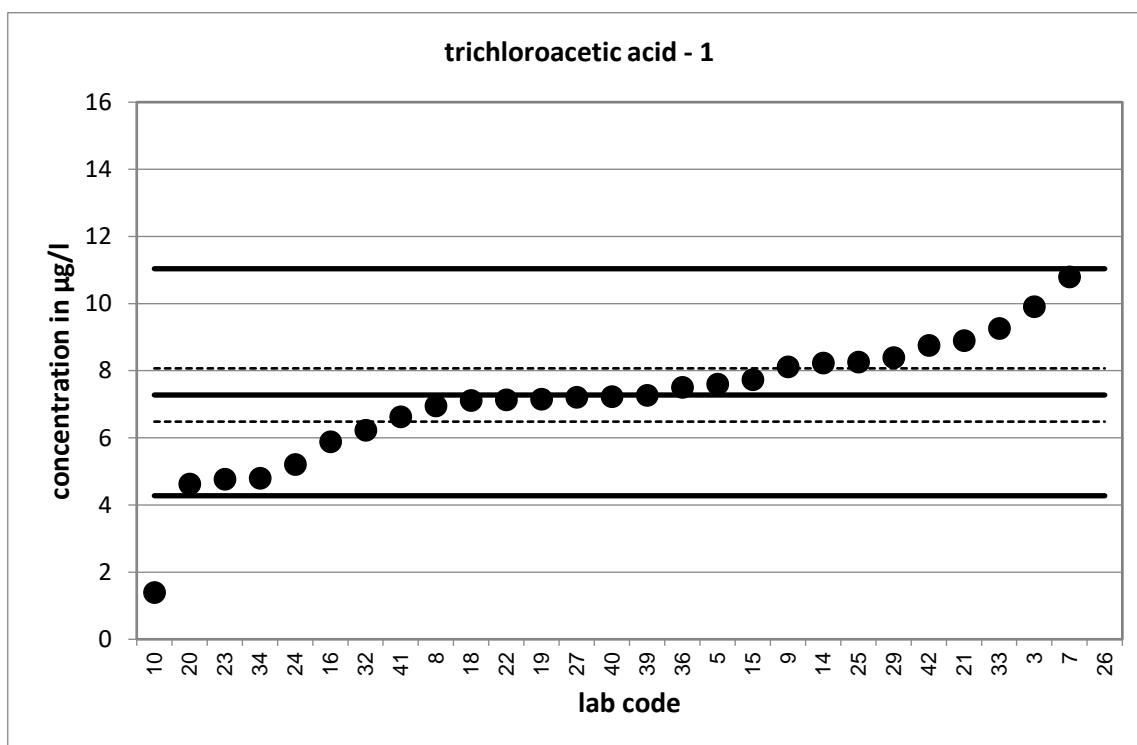


Strongly deviating values are not correctly shown in the diagram.

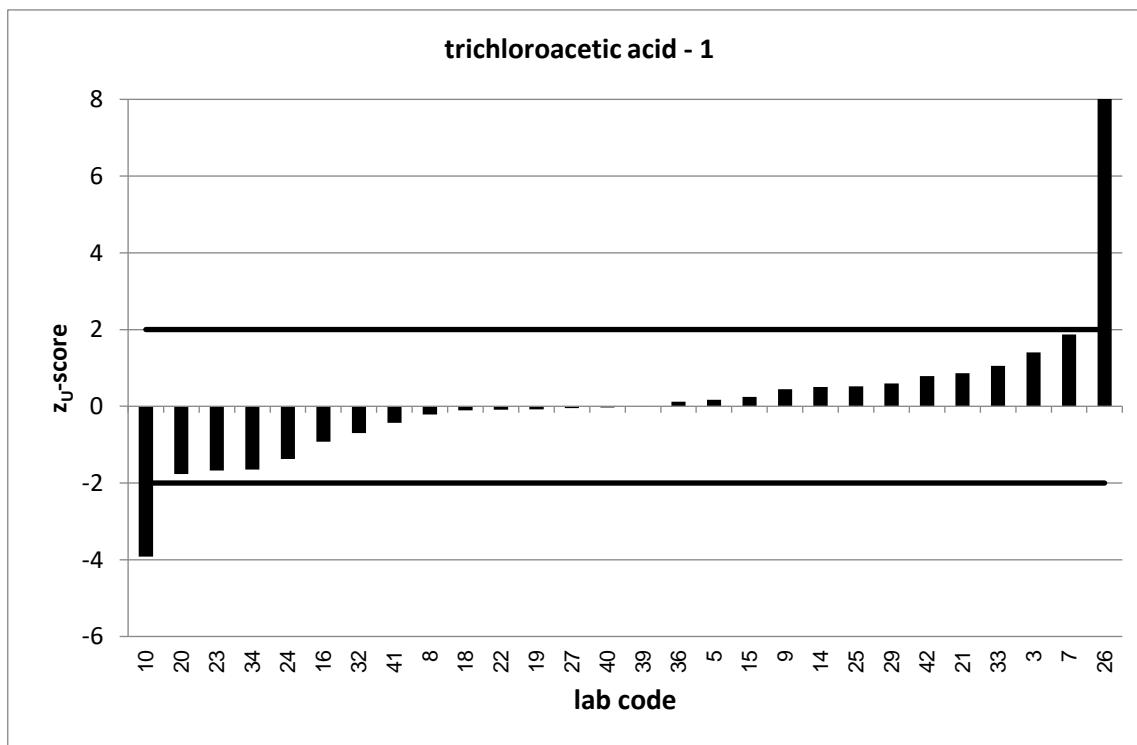
PT 5/24 - TW S11		trichloroacetic acid - 1			
assigned value [ $\mu\text{g/l}$ ]*		7,277	$\pm 0,793$		
upper tolerance limit [ $\mu\text{g/l}$ ]		11,04			
lower tolerance limit [ $\mu\text{g/l}$ ]		4,276			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	9,916	0,05	6,6	1,4	s
5	7,6	2,09	0,3	0,2	s
7	10,8			1,9	s
8	6,96			-0,2	s
9	8,12	1,3	1,1	0,4	s
10	1,4			-3,9	u
14	8,23	1,73	1,0	0,5	s
15	7,74	1,79	0,5	0,2	s
16	5,89	2,36	-1,1	-0,9	s
18	7,12	2,8	-0,1	-0,1	s
19	7,16			-0,1	s
20	4,63			-1,8	s
21	8,9	2,23	1,4	0,9	s
22	7,14	0,71	-0,3	-0,1	s
23	4,77			-1,7	s
24	5,21	0,79	-3,7	-1,4	s
25	8,26			0,5	s
26	62,28	22,42	4,9	29,2	u
27	7,21	1,4	-0,1	0,0	s
29	8,4			0,6	s
32	6,23	2,49	-0,8	-0,7	s
33	9,26	1,8	2,0	1,1	s
34	4,8	1,37	-3,1	-1,7	s
36	7,51			0,1	s
39	7,27	0,99	0,0	0,0	s
40	7,23	2,17	0,0	0,0	s
41	6,63	3,32	-0,4	-0,4	s
42	8,76			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%

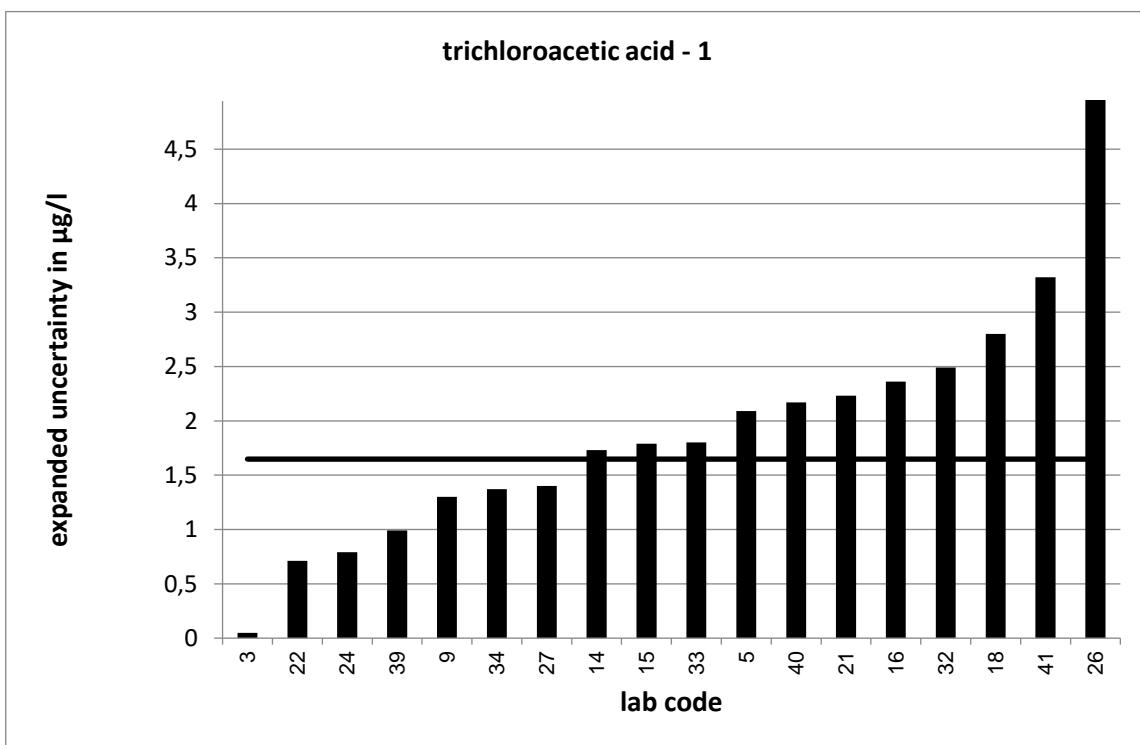
\*\* s = satisfactory, q = questionable, u = unsatisfactory



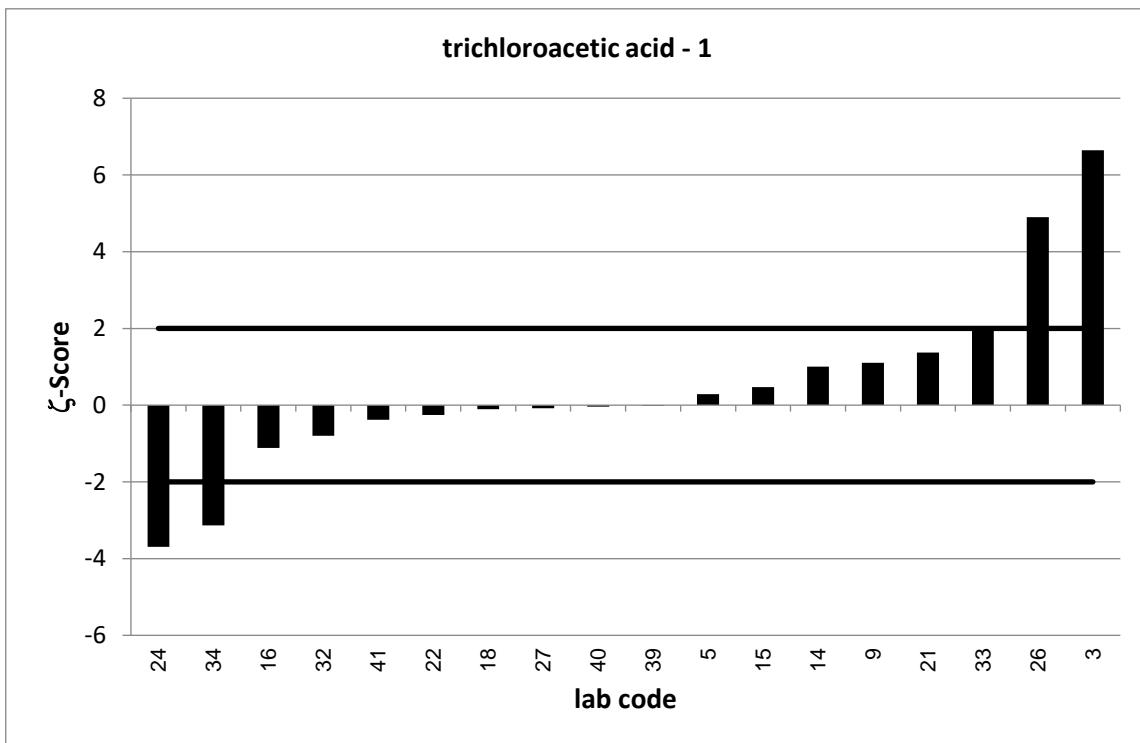
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



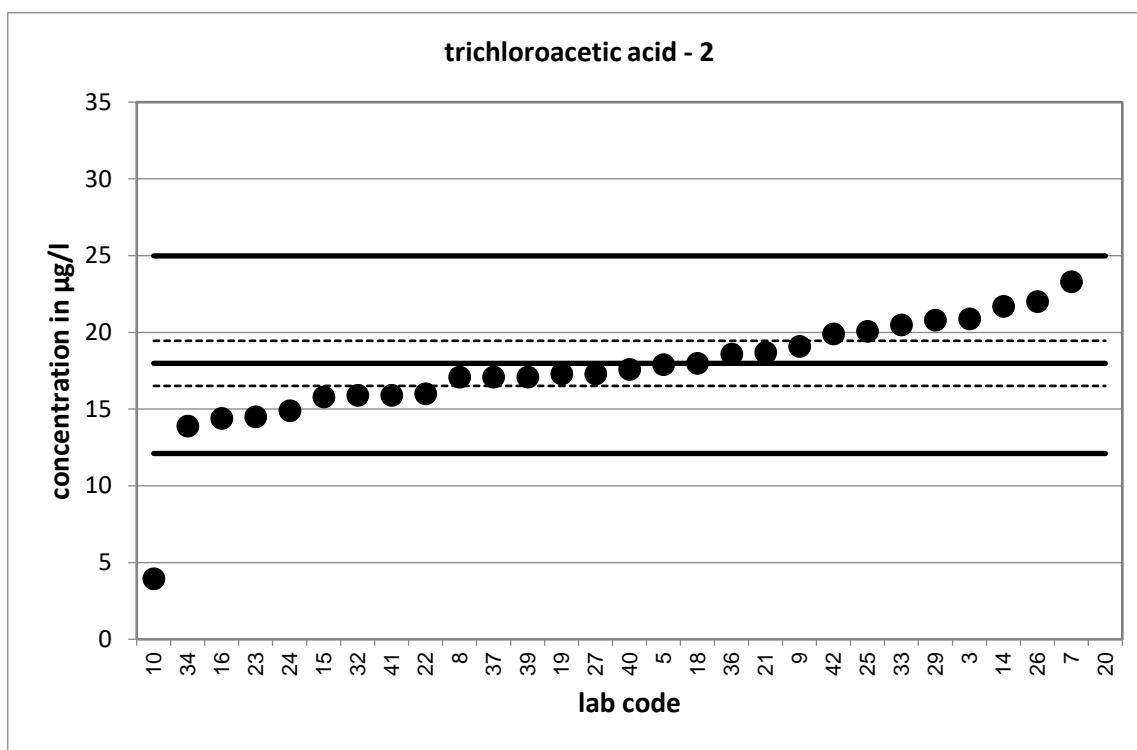
Strongly deviating values are not correctly shown in the diagram.



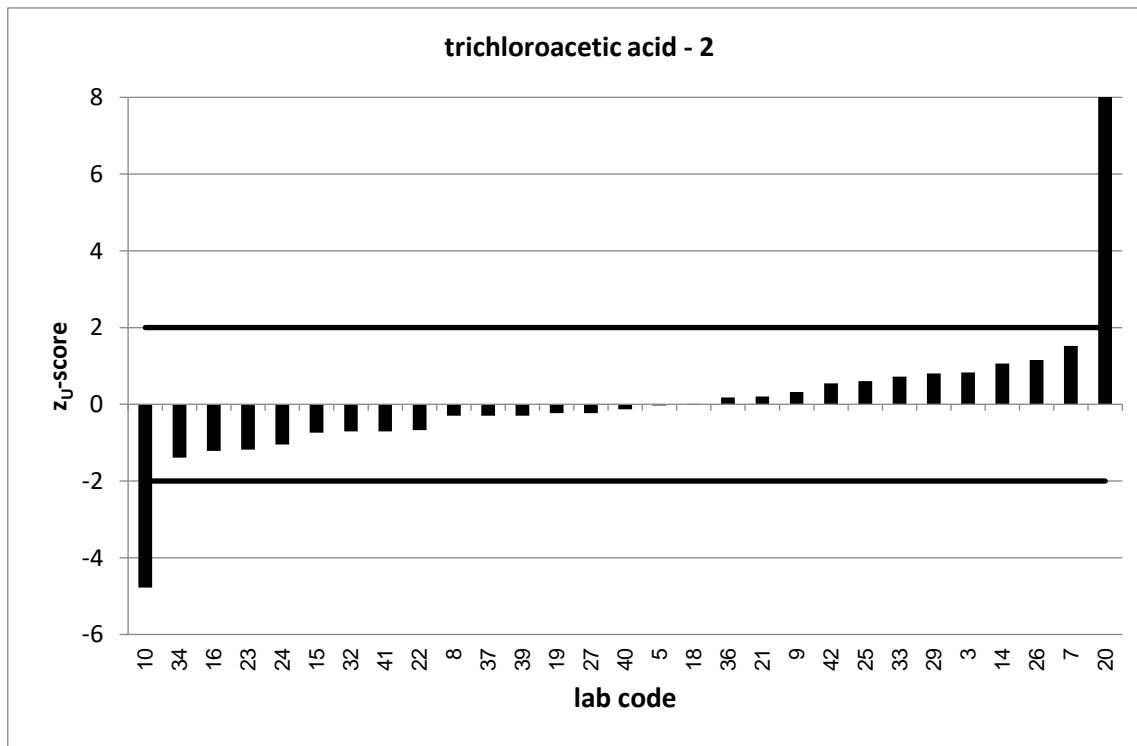
PT 5/24 - TW S11		trichloroacetic acid - 2			
assigned value [ $\mu\text{g/l}$ ]*		$17,98 \pm 1,47$			
upper tolerance limit [ $\mu\text{g/l}$ ]		24,98			
lower tolerance limit [ $\mu\text{g/l}$ ]		12,11			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	20,88	0,05	3,9	0,8	s
5	17,9	1,02	-0,1	0,0	s
7	23,3			1,5	s
8	17,1			-0,3	s
9	19,1	3,06	0,7	0,3	s
10	3,95			-4,8	u
14	21,7	4,6	1,5	1,1	s
15	15,8	1,71	-1,9	-0,7	s
16	14,4	5,77	-1,2	-1,2	s
18	18	3,2	0,0	0,0	s
19	17,3			-0,2	s
20	79,2			17,5	u
21	18,7	4,68	0,3	0,2	s
22	16	1,6	-1,8	-0,7	s
23	14,5			-1,2	s
24	14,9	2,26	-2,3	-1,0	s
25	20,08			0,6	s
26	22,01	7,92	1,0	1,2	s
27	17,3	2,9	-0,4	-0,2	s
29	20,8			0,8	s
32	15,9	6,35	-0,6	-0,7	s
33	20,5	4,1	1,2	0,7	s
34	13,9	4	-1,9	-1,4	s
36	18,6			0,2	s
37	17,1			-0,3	s
39	17,1	2,3	-0,6	-0,3	s
40	17,6	5,28	-0,1	-0,1	s
41	15,9	7,9	-0,5	-0,7	s
42	19,9			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%

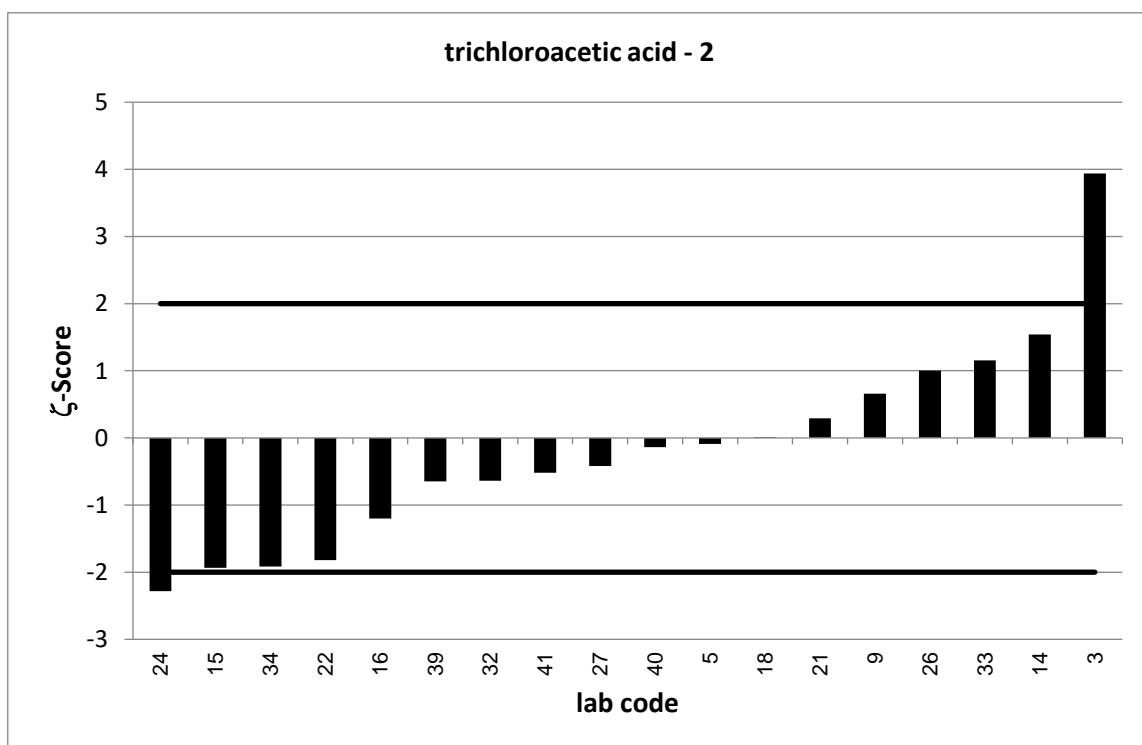
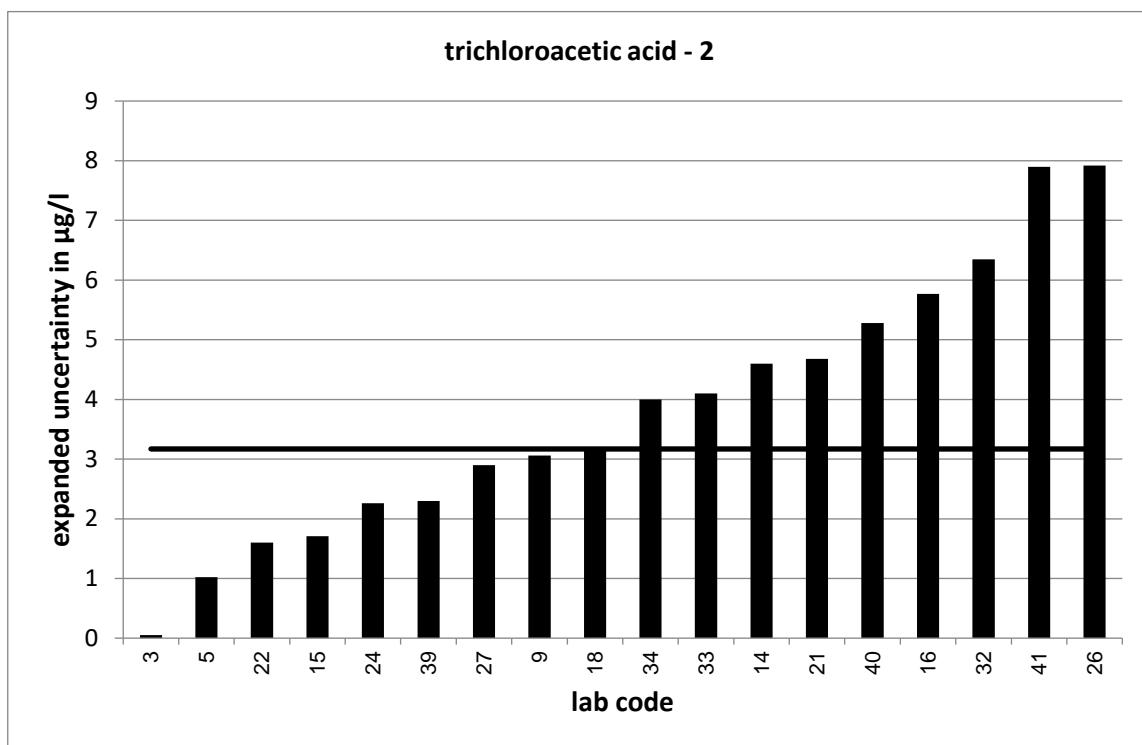
\*\* s = satisfactory, q = questionable, u = unsatisfactory



Strongly deviating values are not shown in the diagram.



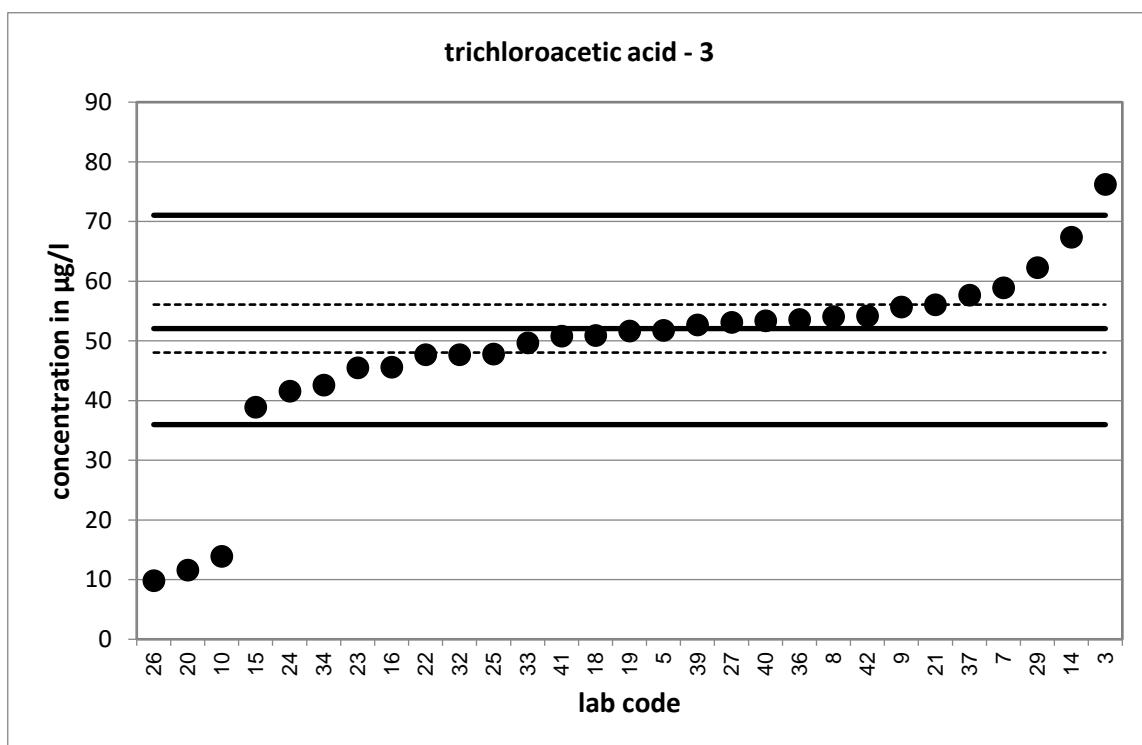
Strongly deviating values are not correctly shown in the diagram.



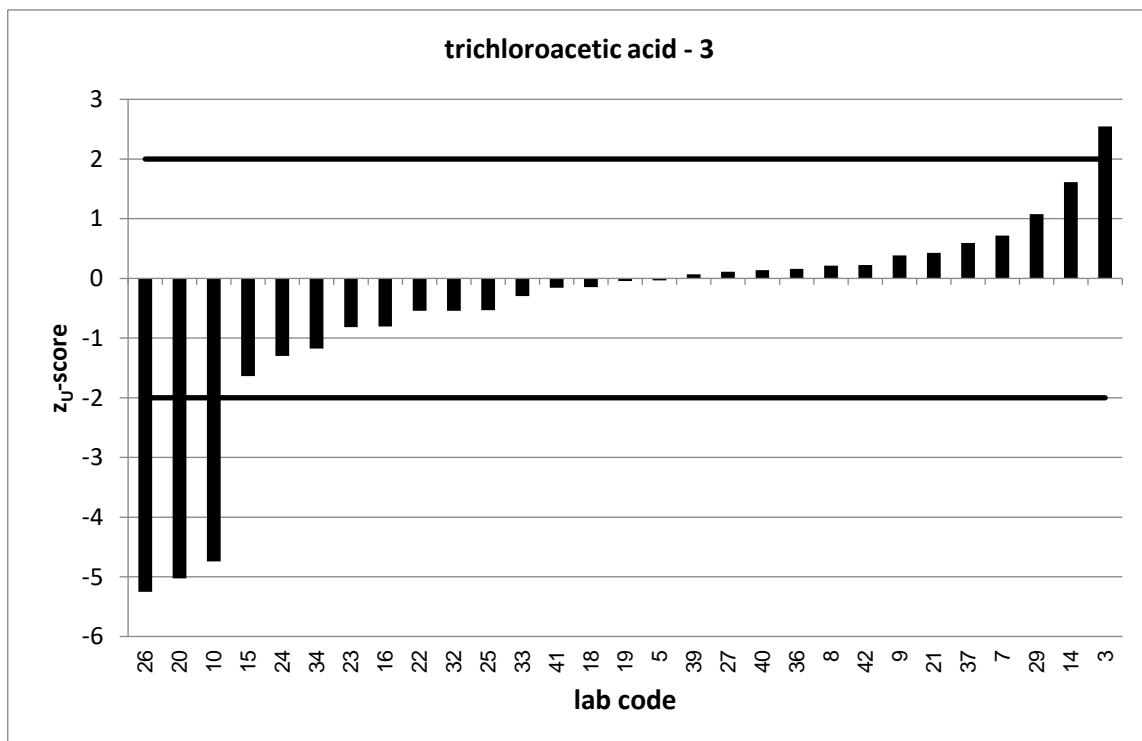
PT 5/24 - TW S11		trichloroacetic acid - 3			
assigned value [ $\mu\text{g/l}$ ]*			52,06	$\pm 4,02$	
upper tolerance limit [ $\mu\text{g/l}$ ]			71,05		
lower tolerance limit [ $\mu\text{g/l}$ ]			35,97		
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	76,235	0,05	12,0	2,5	q
5	51,8	3,35	-0,1	0,0	s
7	58,9			0,7	s
8	54,1			0,2	s
9	55,7	8,91	0,7	0,4	s
10	13,9			-4,7	u
14	67,4	1,42	7,2	1,6	s
15	38,9	5,73	-3,8	-1,6	s
16	45,6	18,2	-0,7	-0,8	s
18	50,9	7,2	-0,3	-0,1	s
19	51,7			0,0	s
20	11,6			-5,0	u
21	56,1	14,03	0,6	0,4	s
22	47,7	4,8	-1,4	-0,5	s
23	45,5			-0,8	s
24	41,6	6,31	-2,8	-1,3	s
25	47,8			-0,5	s
26	9,83	3,54	-15,8	-5,2	u
27	53,1	8	0,2	0,1	s
29	62,3			1,1	s
32	47,7	19,1	-0,4	-0,5	s
33	49,7	10	-0,4	-0,3	s
34	42,6	12,2	-1,5	-1,2	s
36	53,6			0,2	s
37	57,7			0,6	s
39	52,7	7,2	0,2	0,1	s
40	53,4	16	0,2	0,1	s
41	50,8	25,4	-0,1	-0,2	s
42	54,2			0,2	s

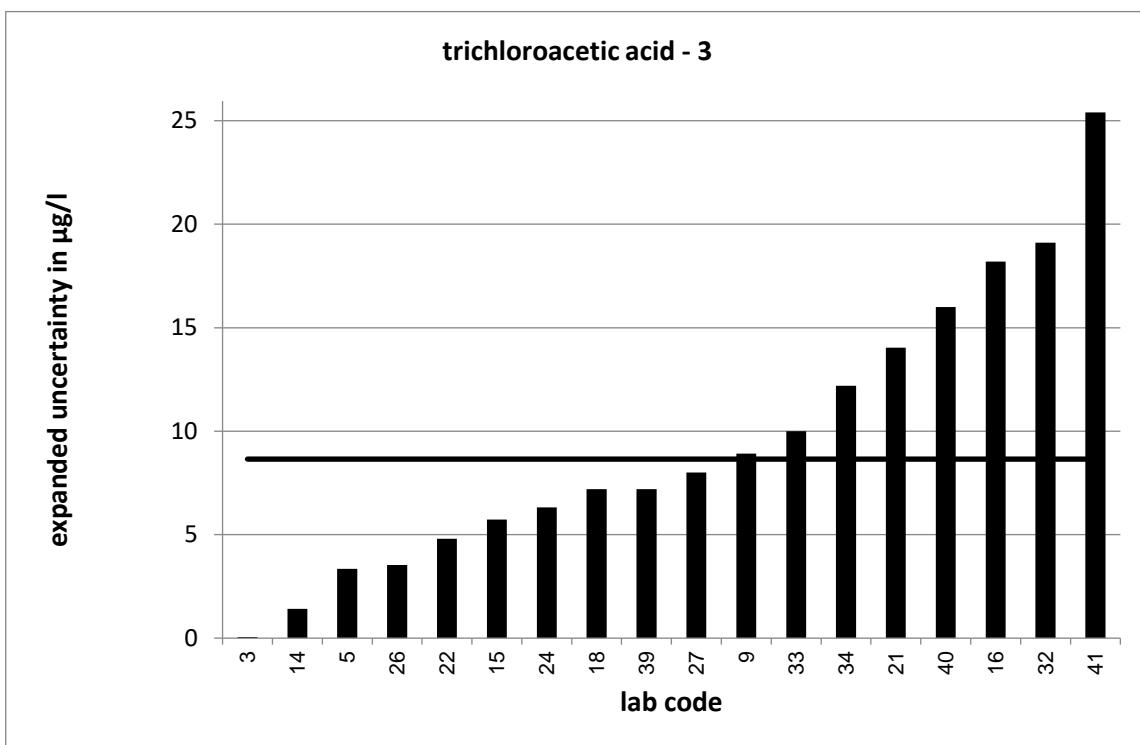
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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

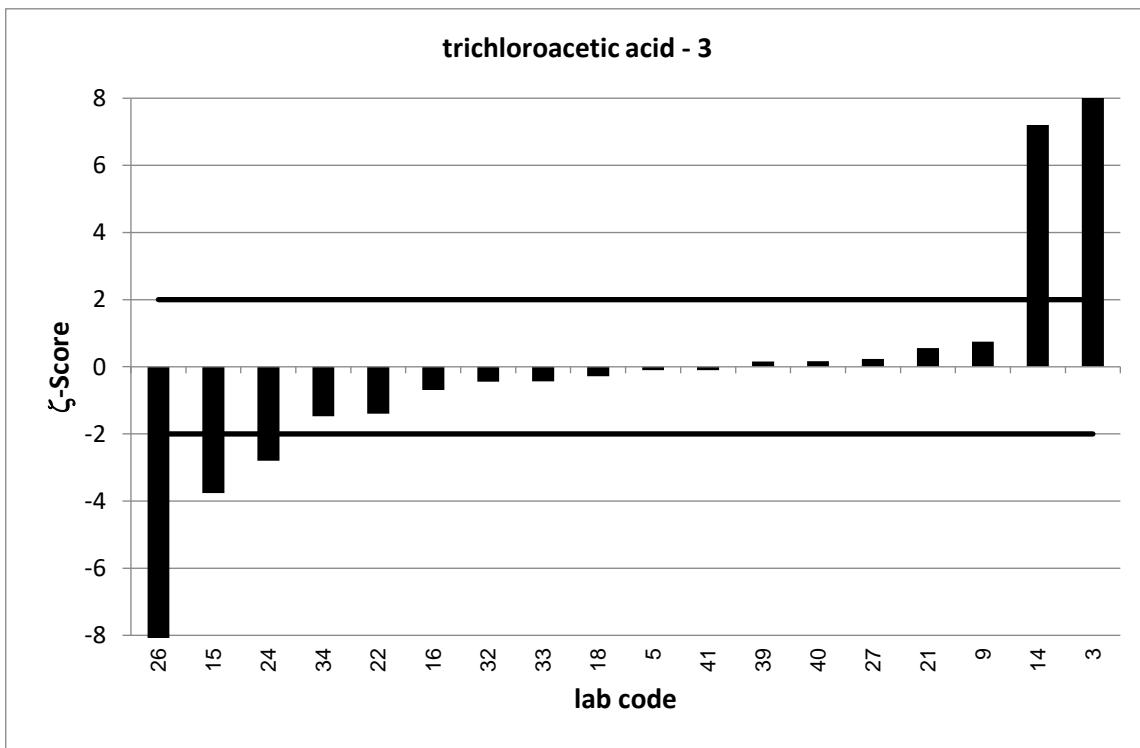


Strongly deviating values are not shown in the diagram.





Strongly deviating values are not correctly shown in the diagram.

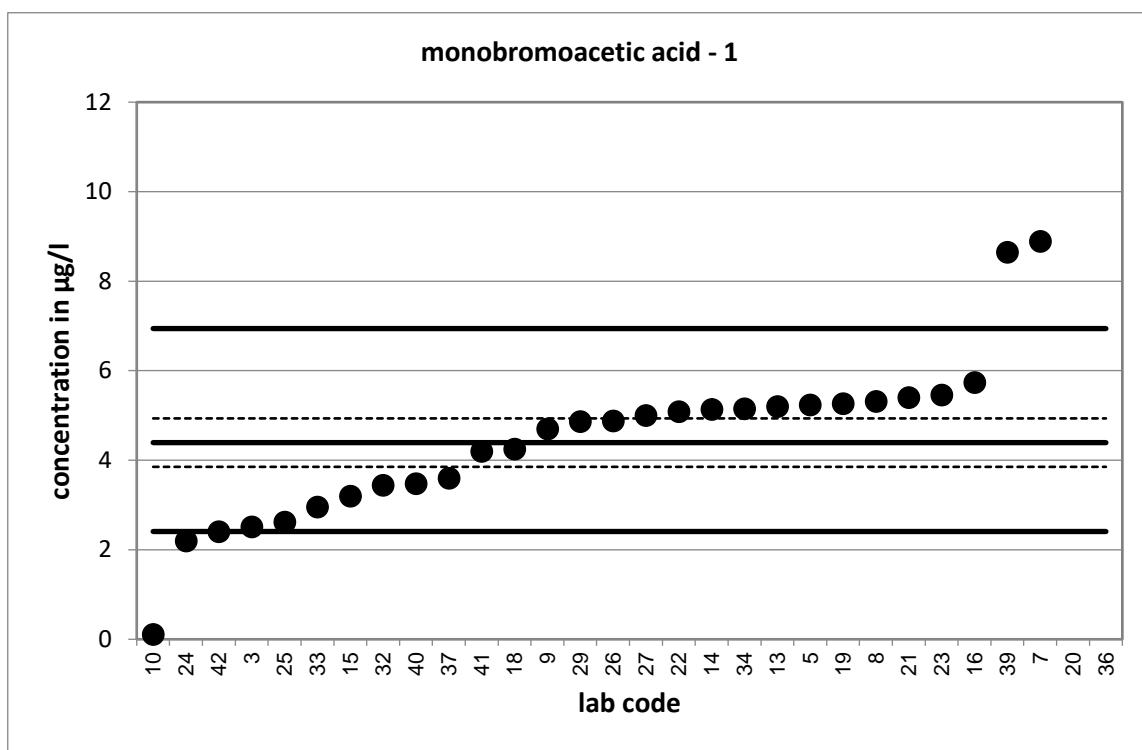


Strongly deviating values are not correctly shown in the diagram.

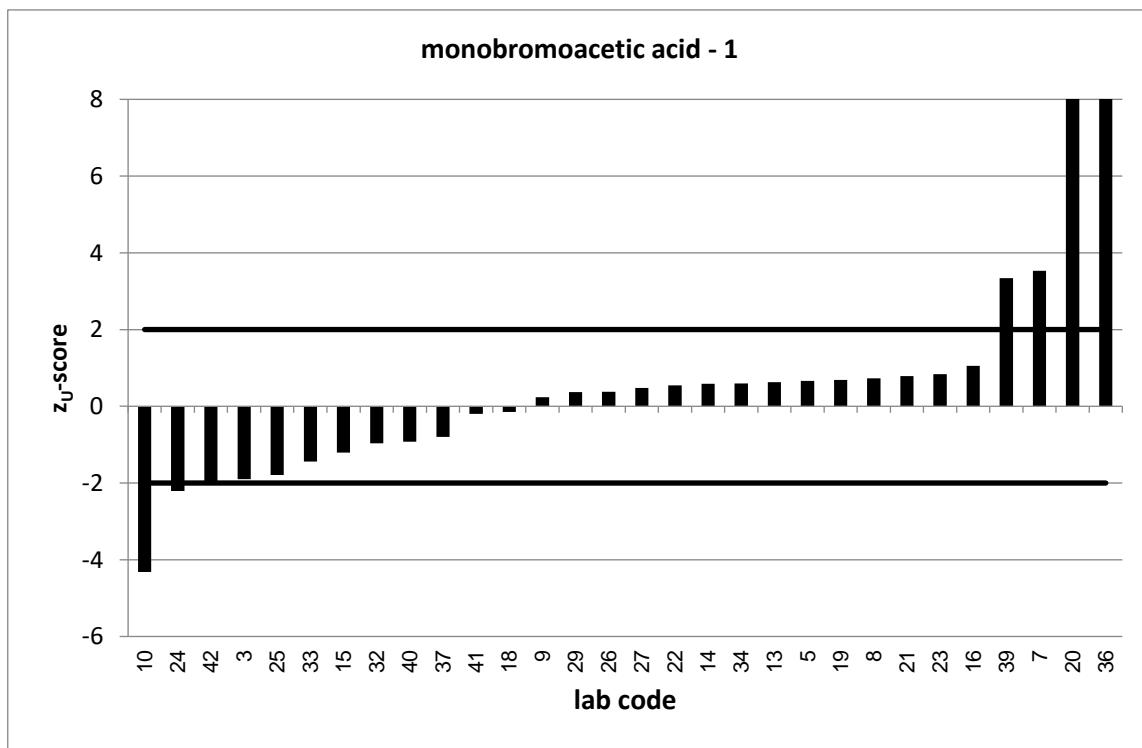
PT 5/24 - TW S11		monobromoacetic acid - 1			
assigned value [ $\mu\text{g/l}$ ]*		$4,394 \pm 0,541$			
upper tolerance limit [ $\mu\text{g/l}$ ]		6,942			
lower tolerance limit [ $\mu\text{g/l}$ ]		2,408			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	2,512	0,05	-6,9	-1,9	s
5	5,24	0,92	1,6	0,7	s
7	8,89			3,5	u
8	5,32			0,7	s
9	4,7	0,37	0,9	0,2	s
10	0,11			-4,3	u
13	5,2	1,56	1,0	0,6	s
14	5,14	1,03	1,3	0,6	s
15	3,2	0,57	-3,0	-1,2	s
16	5,74	2,3	1,1	1,1	s
18	4,25	2	-0,1	-0,1	s
19	5,27			0,7	s
20	20,3			12,5	u
21	5,4	1,35	1,4	0,8	s
22	5,09	1,02	1,2	0,5	s
23	5,46			0,8	s
24	2,2	0,27	-7,3	-2,2	q
25	2,62			-1,8	s
26	4,88	0,98	0,9	0,4	s
27	5	1	1,1	0,5	s
29	4,87			0,4	s
32	3,44	1,38	-1,3	-1,0	s
33	2,96	0,6	-3,5	-1,4	s
34	5,15	1,96	0,7	0,6	s
36	55,7			40,3	u
37	3,6			-0,8	s
39	8,65			3,3	u
40	3,48	1,04	-1,6	-0,9	s
41	4,2	2,1	-0,2	-0,2	s
42	2,41			-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%

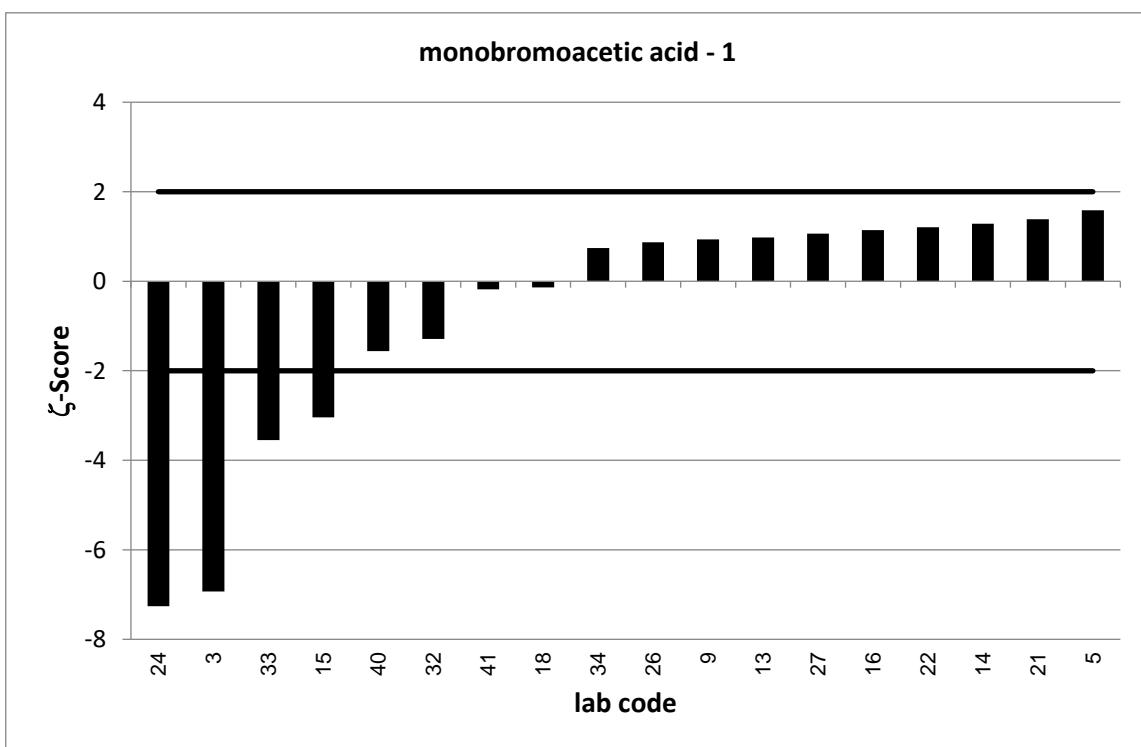
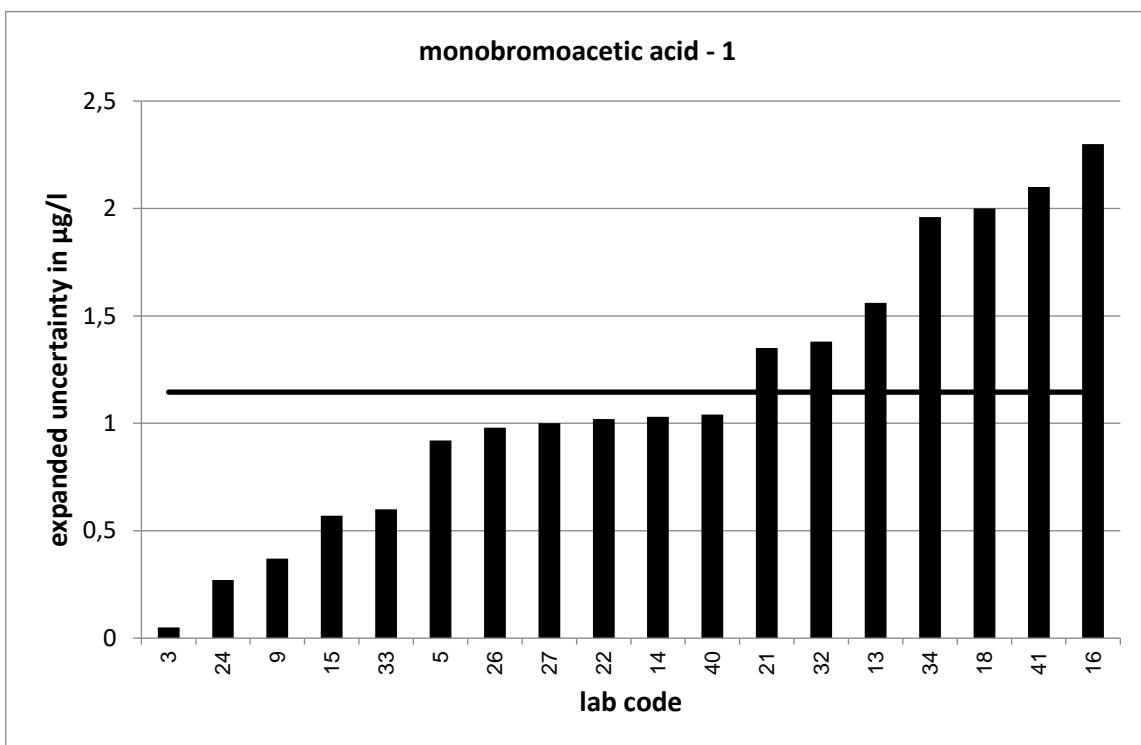
\*\* s = satisfactory, q = questionable, u = unsatisfactory



Strongly deviating values are not shown in the diagram.



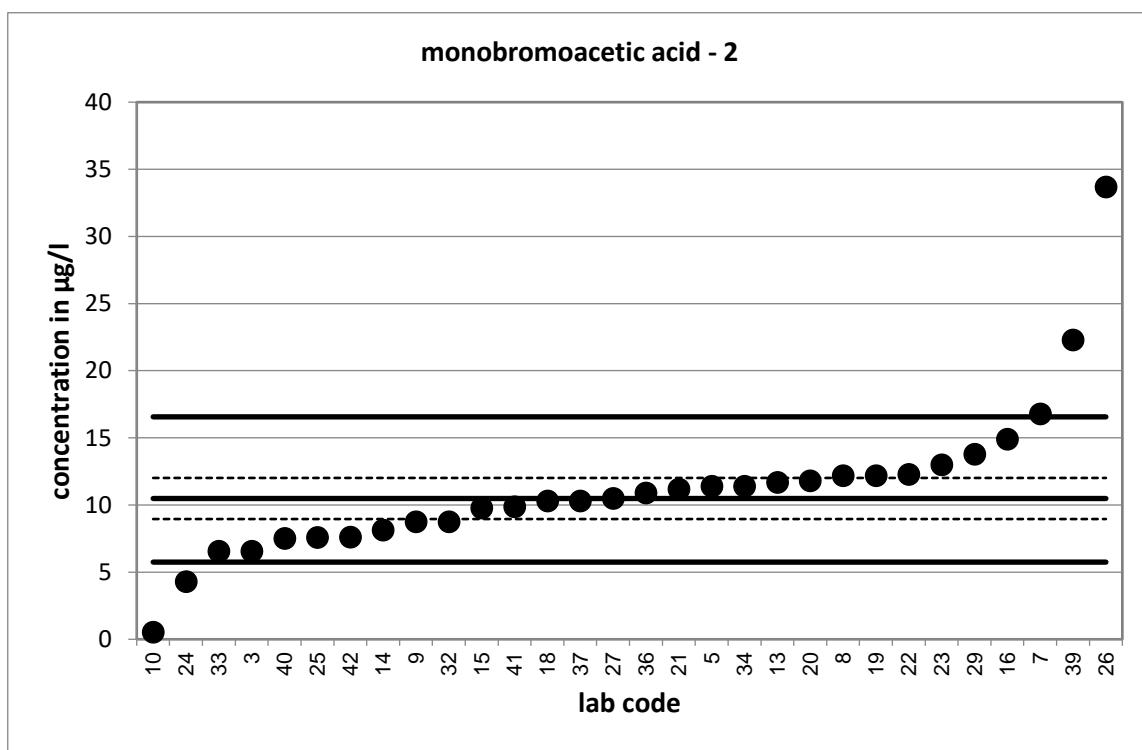
Strongly deviating values are not correctly shown in the diagram.



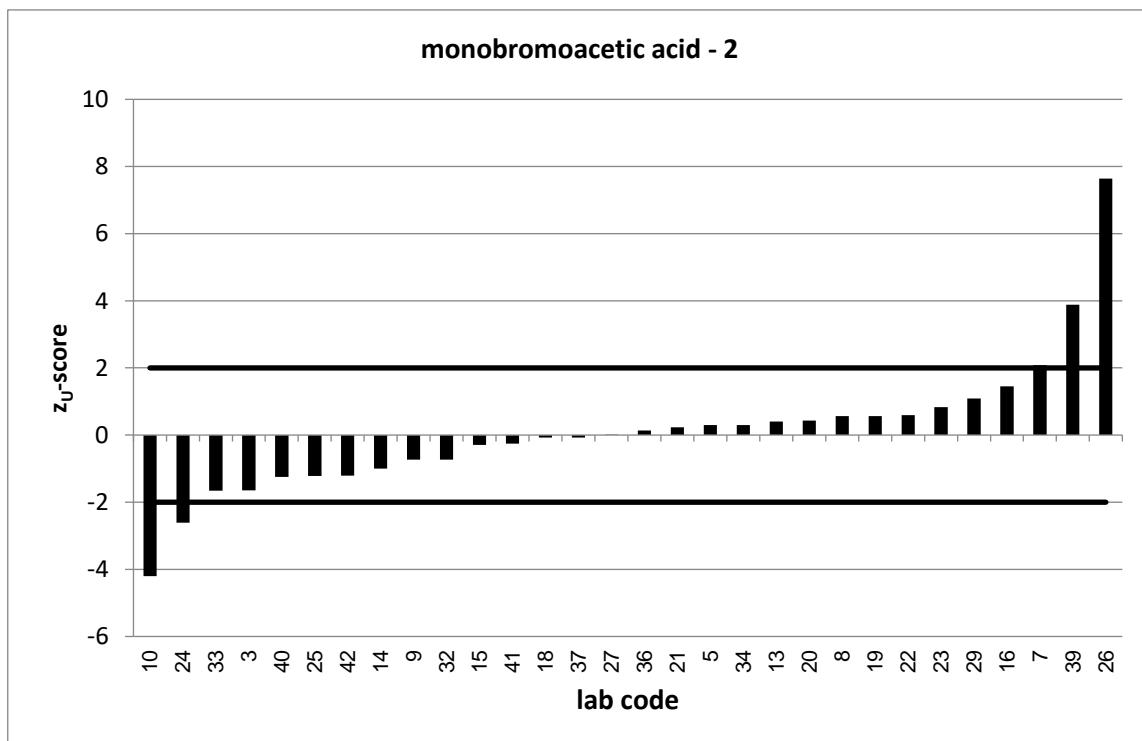
PT 5/24 - TW S11		monobromoacetic acid - 2			
assigned value [ $\mu\text{g/l}$ ]*		$10,49 \pm 1,53$			
upper tolerance limit [ $\mu\text{g/l}$ ]		16,57			
lower tolerance limit [ $\mu\text{g/l}$ ]		5,747			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	6,574	0,05	-5,1	-1,7	s
5	11,4	1,26	0,9	0,3	s
7	16,8			2,1	q
8	12,2			0,6	s
9	8,75	0,68	-2,1	-0,7	s
10	0,533			-4,2	u
13	11,7	3,51	0,6	0,4	s
14	8,13	1,63	-2,1	-1,0	s
15	9,79	2,14	-0,5	-0,3	s
16	14,9	5,96	1,4	1,5	s
18	10,3	3,9	-0,1	-0,1	s
19	12,2			0,6	s
20	11,8			0,4	s
21	11,2	2,8	0,4	0,2	s
22	12,3	2,5	1,2	0,6	s
23	13			0,8	s
24	4,3	0,53	-7,6	-2,6	q
25	7,59			-1,2	s
26	33,7	6,74	6,7	7,6	u
27	10,5	2,1	0,0	0,0	s
29	13,8			1,1	s
32	8,76	3,5	-0,9	-0,7	s
33	6,57	1,3	-3,9	-1,7	s
34	11,4	4,33	0,4	0,3	s
36	10,9			0,1	s
37	10,3			-0,1	s
39	22,3			3,9	u
40	7,53	2,26	-2,2	-1,2	s
41	9,89	4,94	-0,2	-0,3	s
42	7,62			-1,2	s

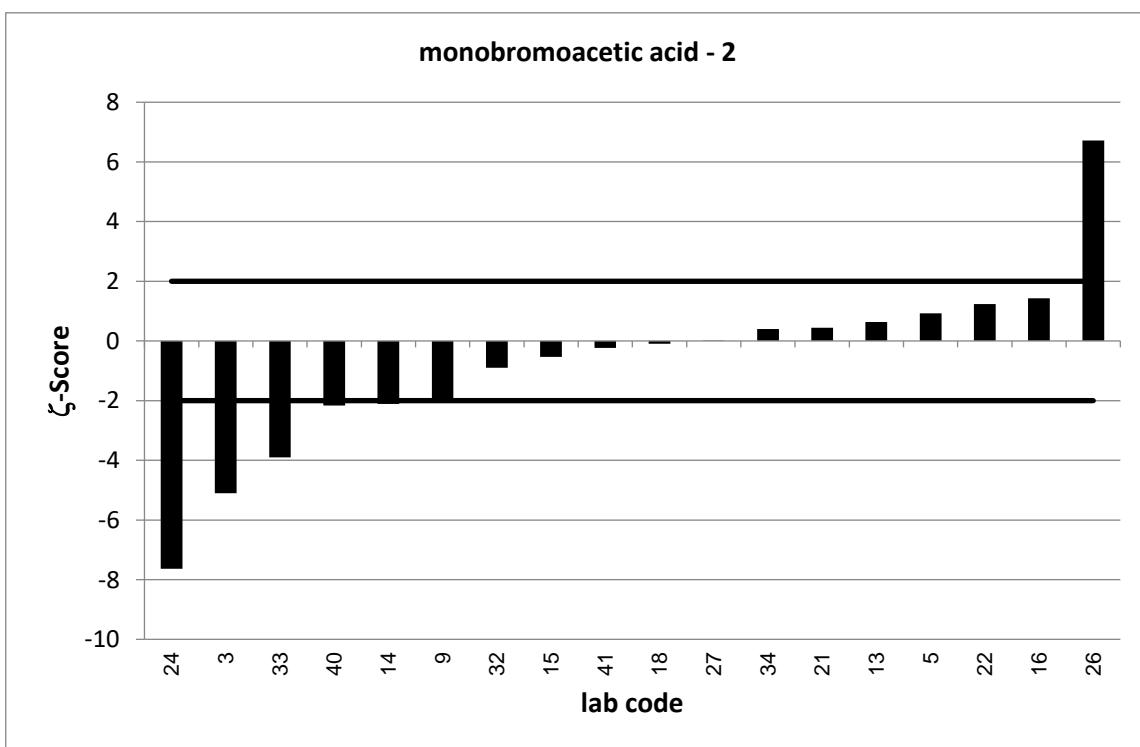
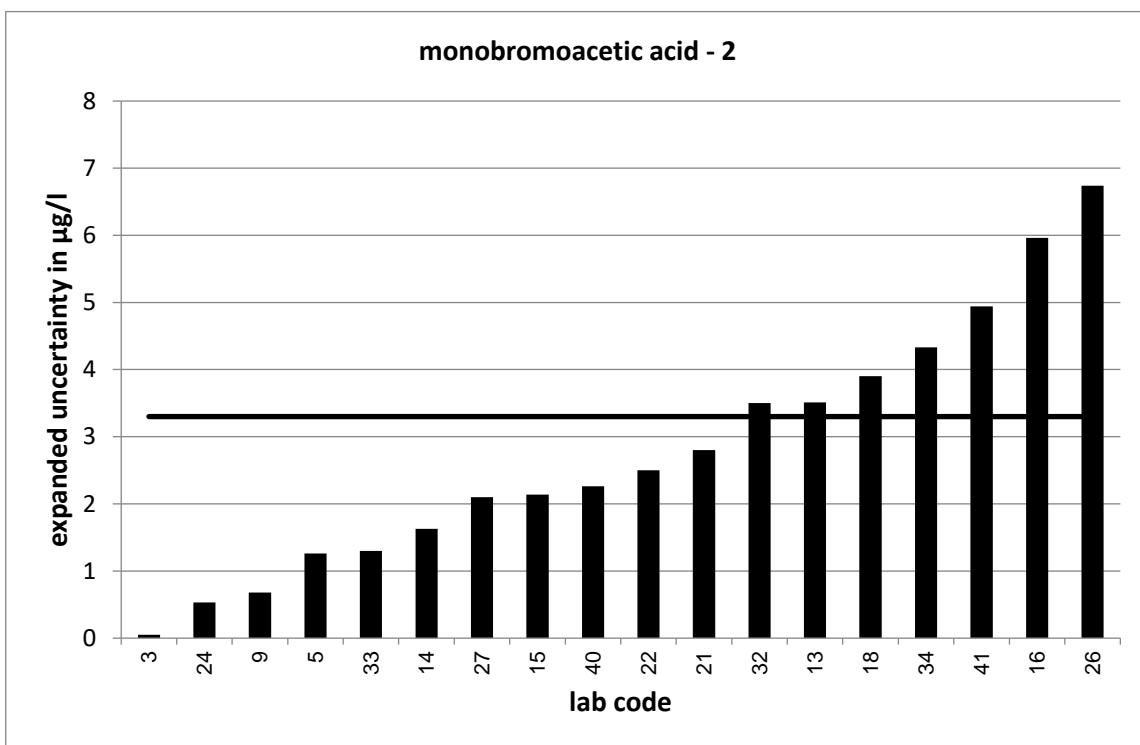
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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



Strongly deviating values are not shown in the diagram.

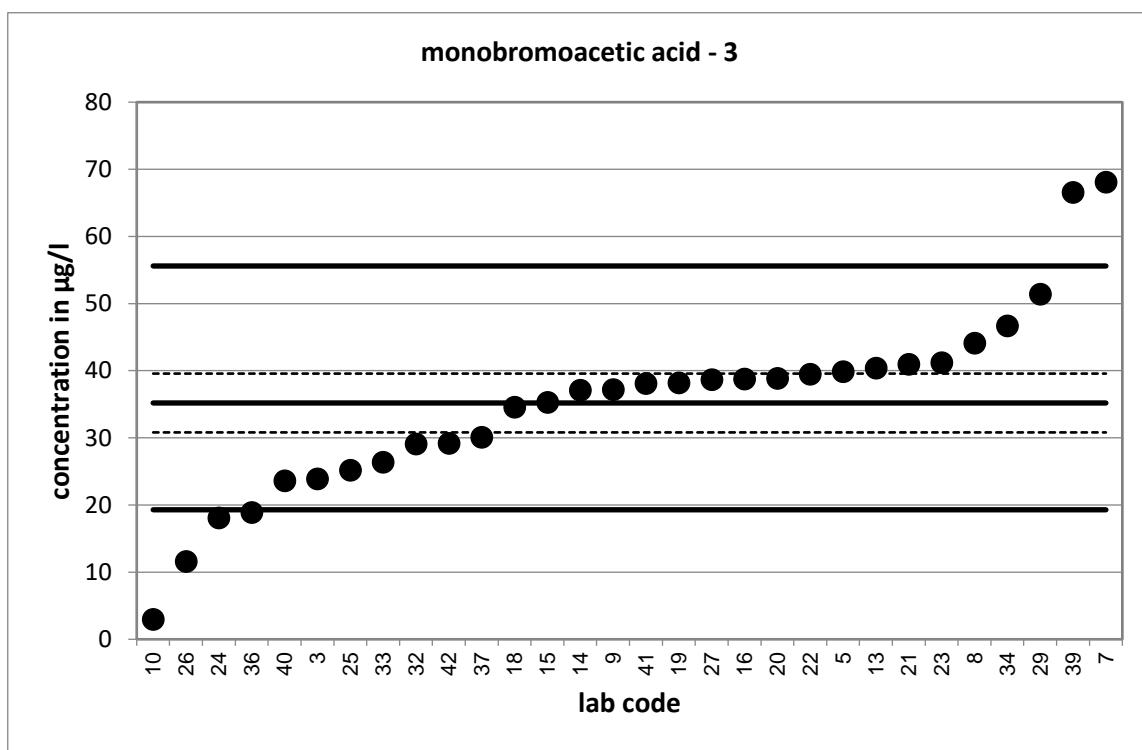




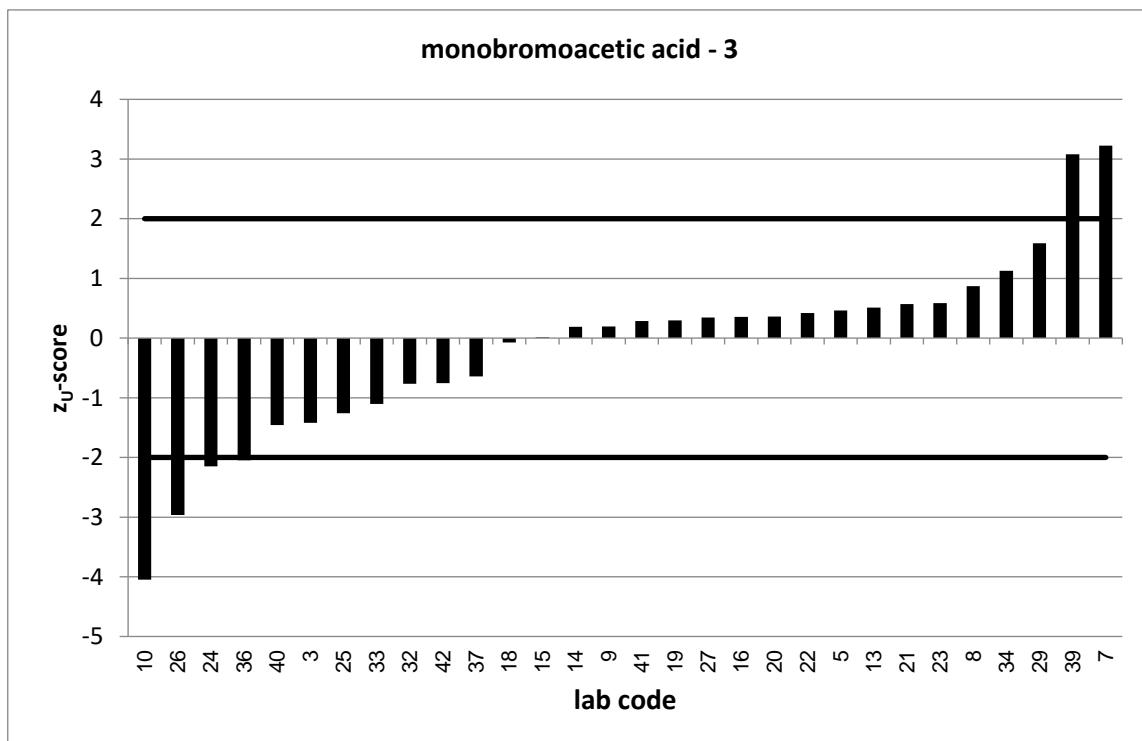
PT 5/24 - TW S11		monobromoacetic acid - 3			
assigned value [ $\mu\text{g/l}$ ]*		$35,19 \pm 4,38$			
upper tolerance limit [ $\mu\text{g/l}$ ]		55,6			
lower tolerance limit [ $\mu\text{g/l}$ ]		19,29			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	23,889	0,05	-5,2	-1,4	s
5	39,9	1,7	2,0	0,5	s
7	68,1			3,2	u
8	44,1			0,9	s
9	37,2	2,9	0,8	0,2	s
10	3			-4,0	u
13	40,4	12,12	0,8	0,5	s
14	37,1	7,4	0,4	0,2	s
15	35,3	7,32	0,0	0,0	s
16	38,8	15,5	0,4	0,4	s
18	34,6	9,9	-0,1	-0,1	s
19	38,2			0,3	s
20	38,9			0,4	s
21	41	10,25	1,0	0,6	s
22	39,5	7,9	1,0	0,4	s
23	41,2			0,6	s
24	18,1	2,24	-7,0	-2,1	q
25	25,2			-1,3	s
26	11,62	2,32	-9,5	-3,0	u
27	38,7	5,8	1,0	0,3	s
29	51,4			1,6	s
32	29,1	11,6	-1,0	-0,8	s
33	26,4	5,2	-2,6	-1,1	s
34	46,7	17,7	1,3	1,1	s
36	18,9			-2,0	s
37	30,1			-0,6	s
39	66,6			3,1	u
40	23,6	7,08	-2,8	-1,5	s
41	38,1	19,1	0,3	0,3	s
42	29,2			-0,8	s

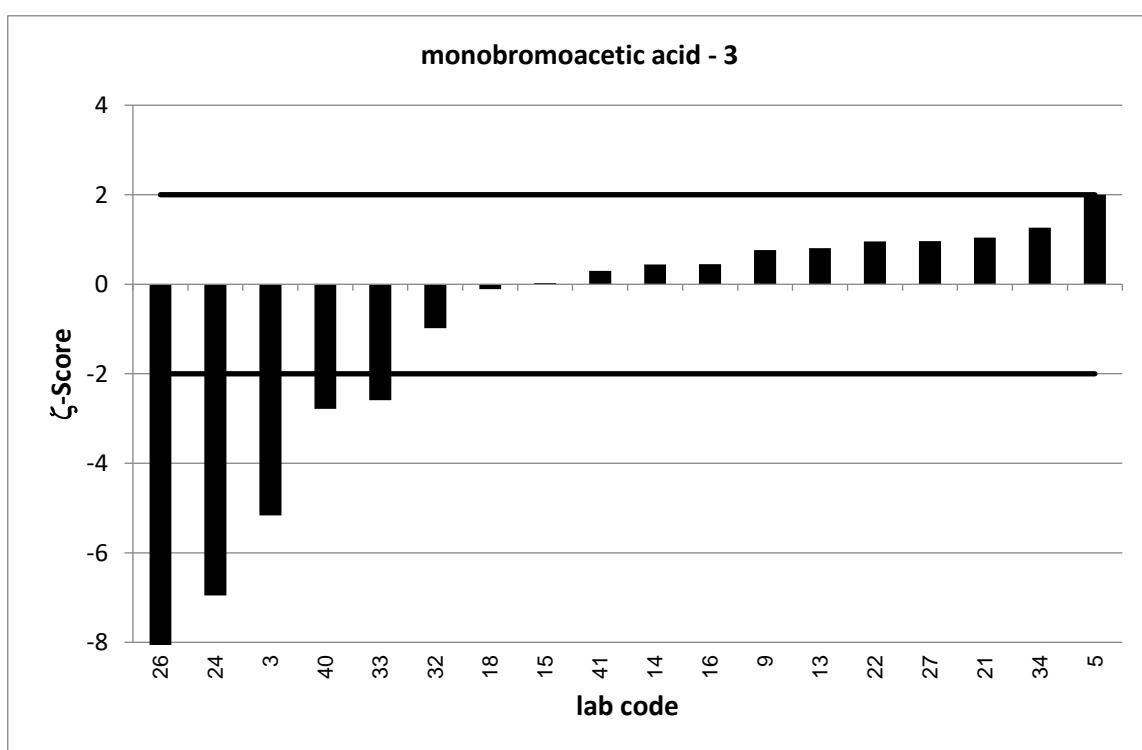
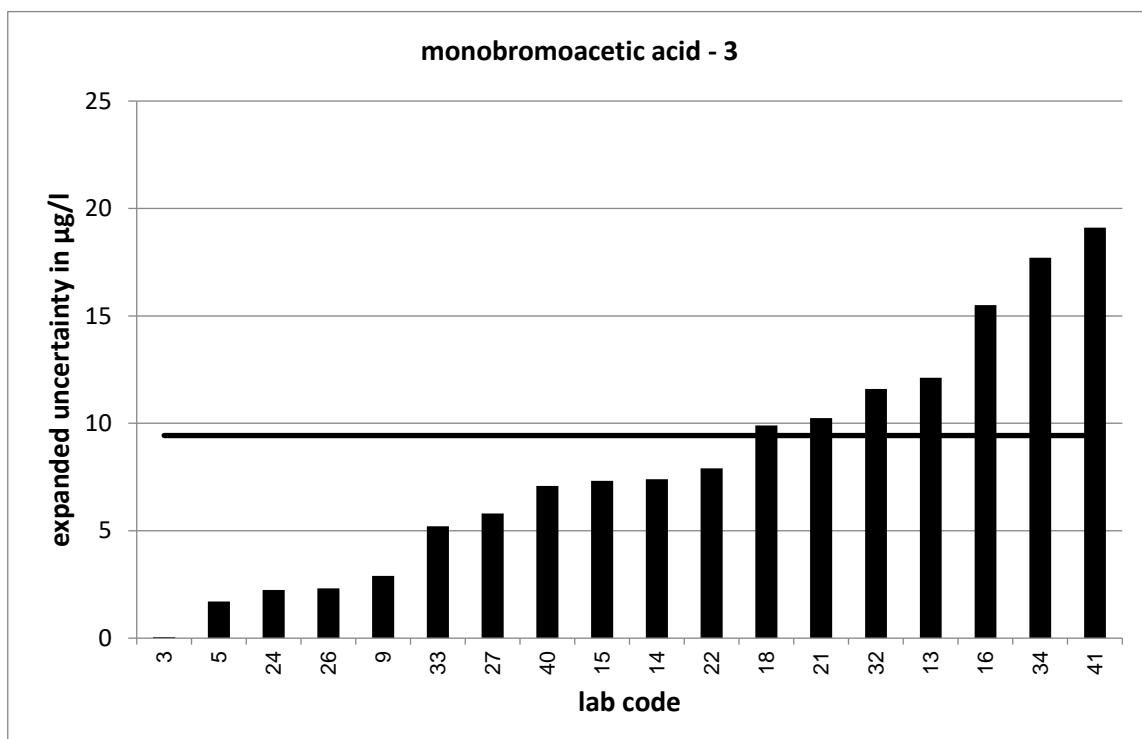
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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



Strongly deviating values are not shown in the diagram.



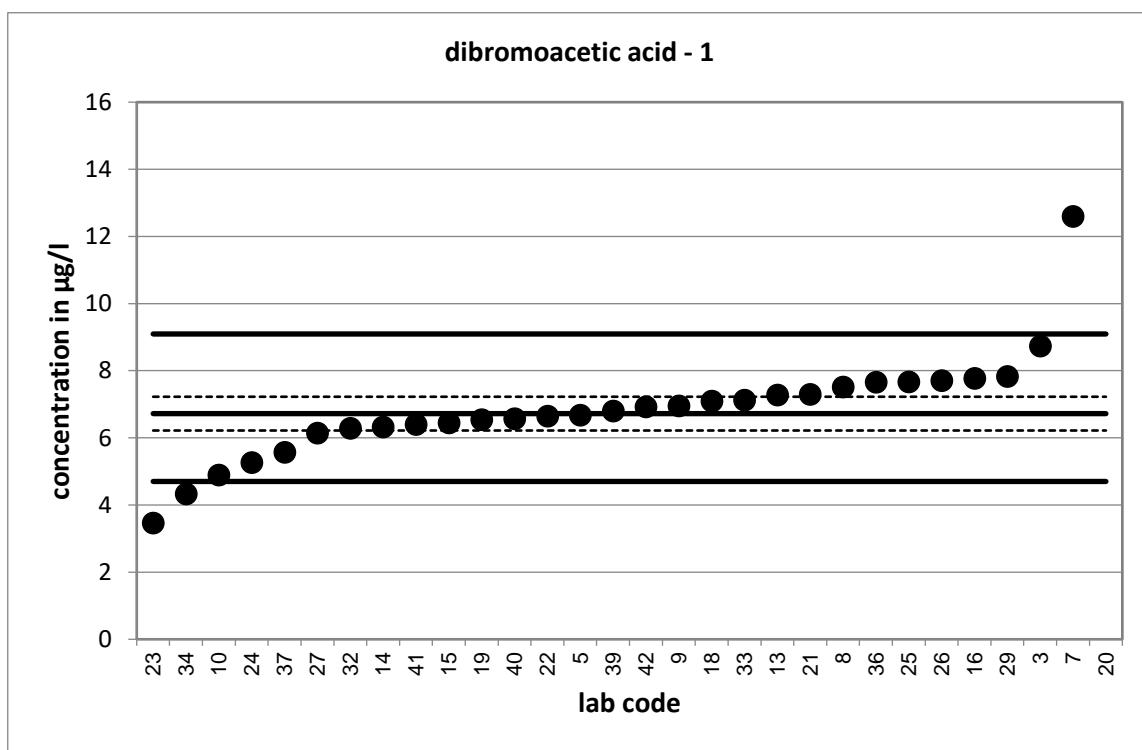


Strongly deviating values are not correctly shown in the diagram.

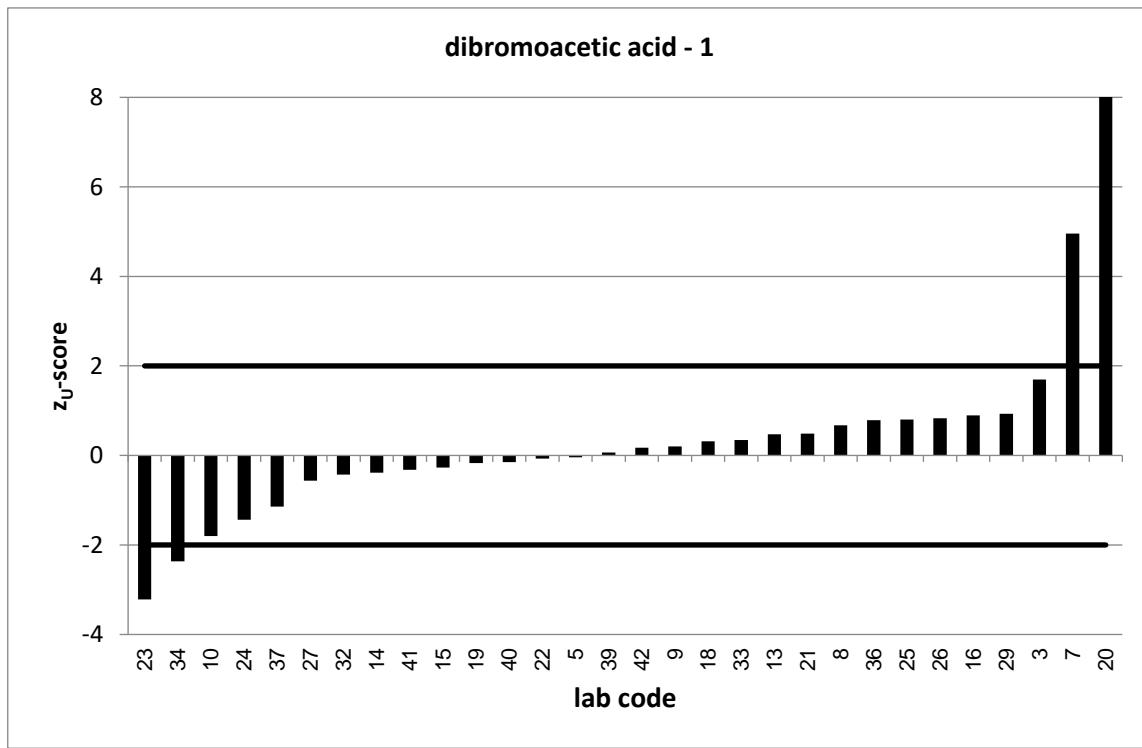
PT 5/24 - TW S11		dibromoacetic acid - 1			
assigned value [ $\mu\text{g/l}$ ]*		6,722	$\pm 0,503$		
upper tolerance limit [ $\mu\text{g/l}$ ]		9,095			
lower tolerance limit [ $\mu\text{g/l}$ ]		4,701			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	8,737	0,05	8,0	1,7	s
5	6,68	0,36	-0,1	0,0	s
7	12,6			5,0	u
8	7,52			0,7	s
9	6,96	1,81	0,3	0,2	s
10	4,9			-1,8	s
13	7,28	2,184	0,5	0,5	s
14	6,33	0,98	-0,7	-0,4	s
15	6,45	1,24	-0,4	-0,3	s
16	7,78	3,11	0,7	0,9	s
18	7,1	2,2	0,3	0,3	s
19	6,55			-0,2	s
20	54,5			40,3	u
21	7,3	1,83	0,6	0,5	s
22	6,65	1,66	-0,1	-0,1	s
23	3,47			-3,2	u
24	5,27	0,82	-3,0	-1,4	s
25	7,67			0,8	s
26	7,71	1,77	1,1	0,8	s
27	6,15	1,2	-0,9	-0,6	s
29	7,83			0,9	s
32	6,29	2,52	-0,3	-0,4	s
33	7,13	1,4	0,5	0,3	s
34	4,33	1,37	-3,3	-2,4	q
36	7,66			0,8	s
37	5,57			-1,1	s
39	6,8			0,1	s
40	6,57	1,97	-0,1	-0,2	s
41	6,4	3,2	-0,2	-0,3	s
42	6,93			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%

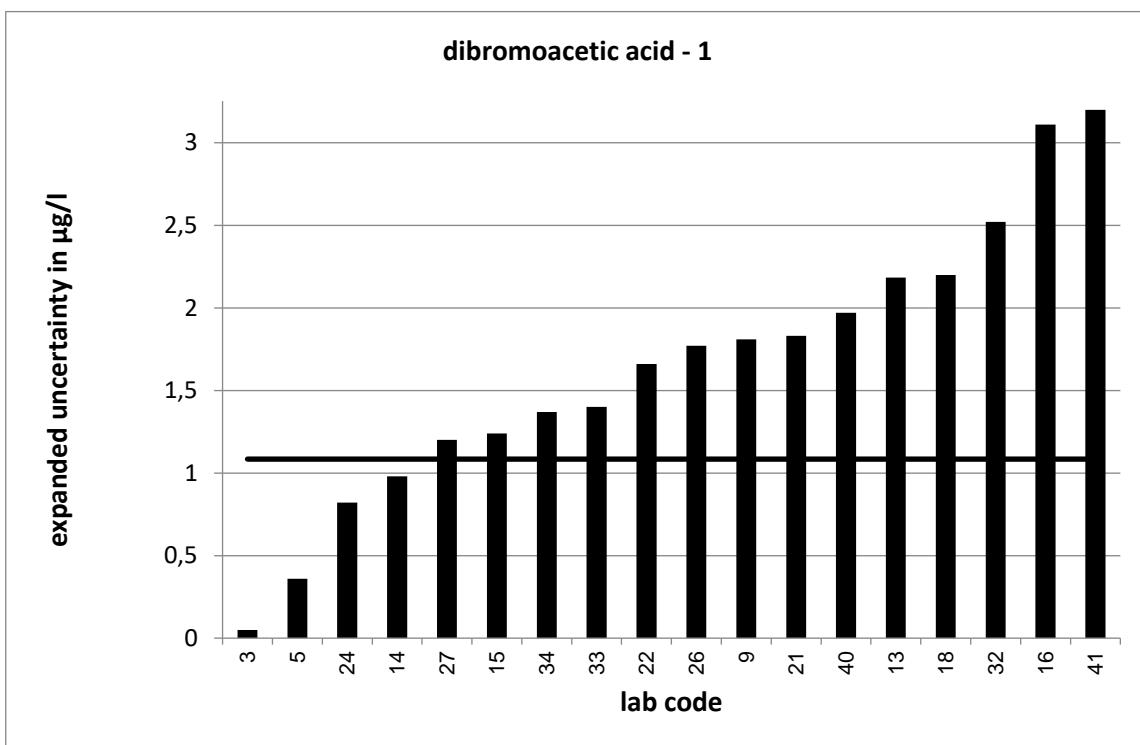
\*\* s = satisfactory, q = questionable, u = unsatisfactory



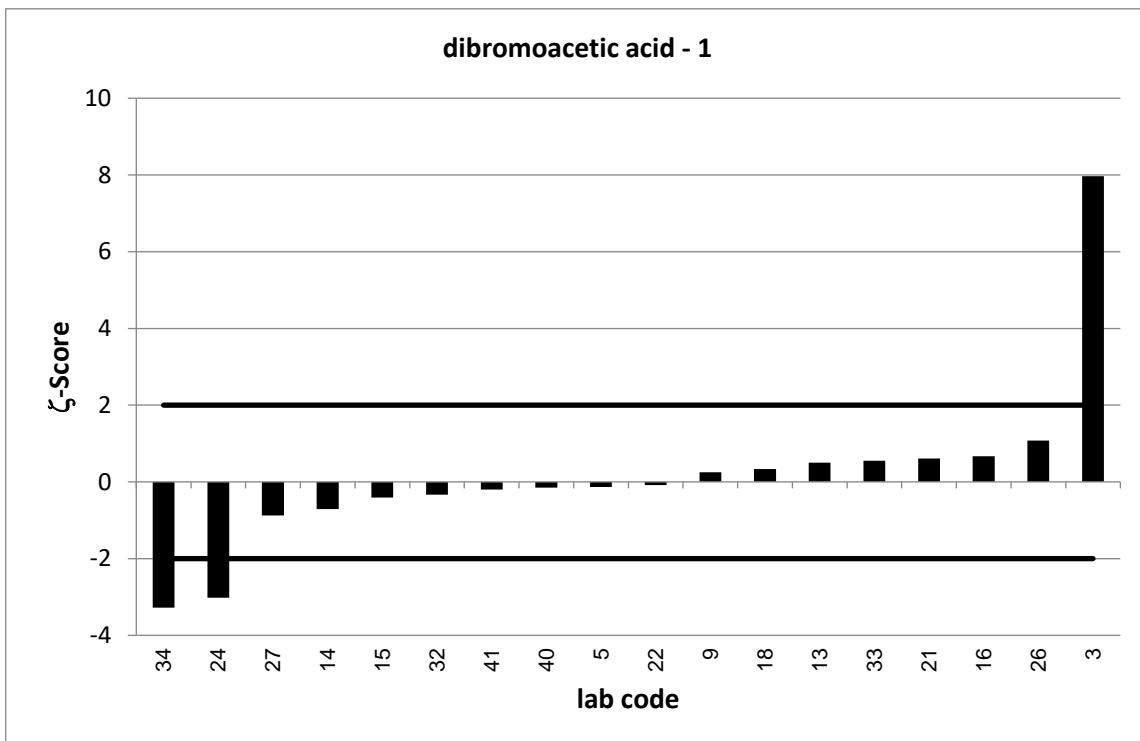
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



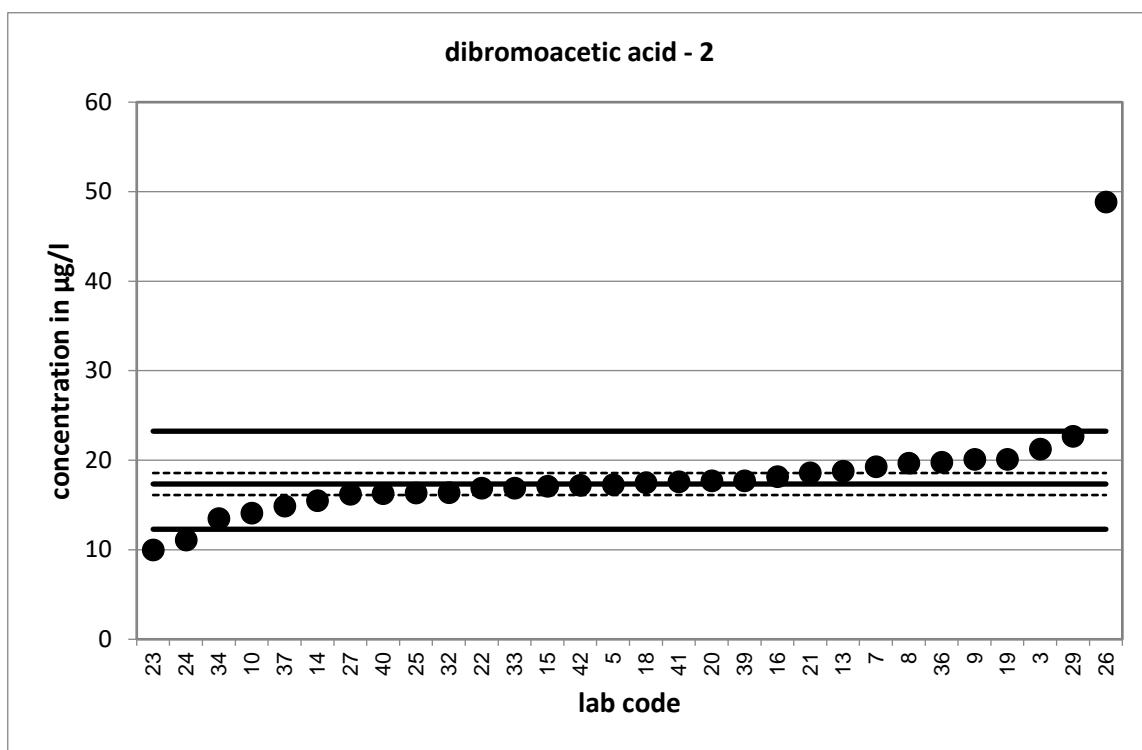
Strongly deviating values are not correctly shown in the diagram.



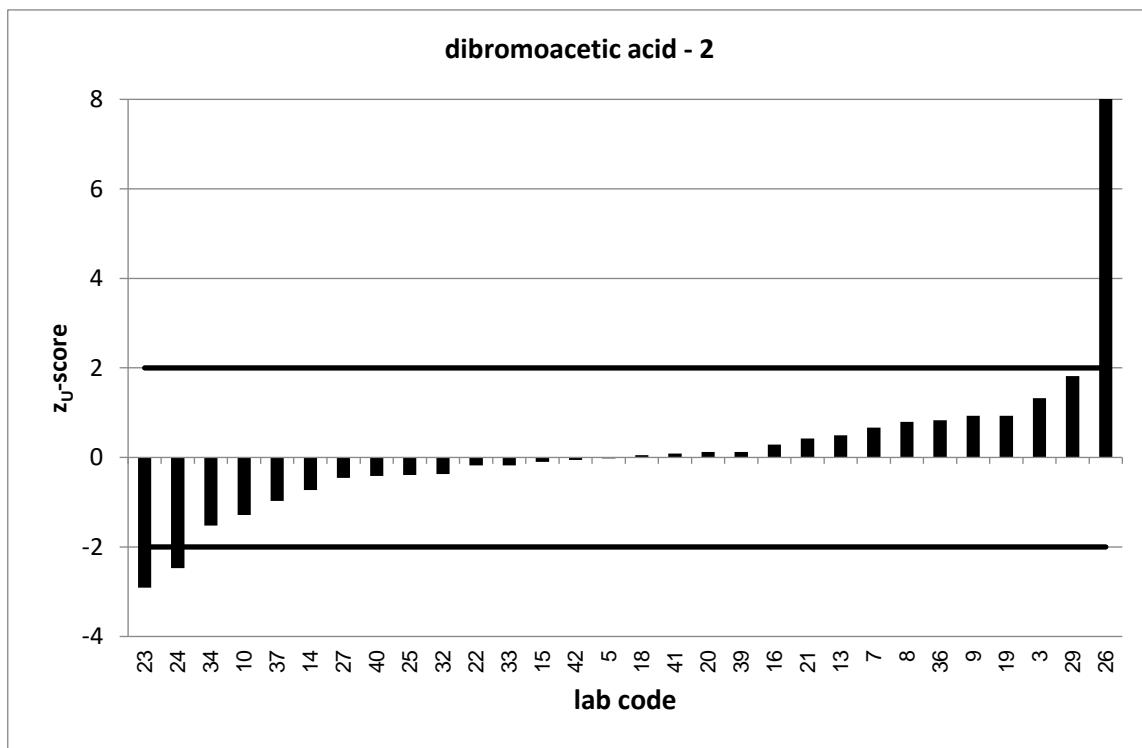
PT 5/24 - TW S11		dibromoacetic acid - 2			
assigned value [ $\mu\text{g/l}$ ]*		$17,34 \pm 1,23$			
upper tolerance limit [ $\mu\text{g/l}$ ]		23,24			
lower tolerance limit [ $\mu\text{g/l}$ ]		12,29			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	21,246	0,05	6,3	1,3	s
5	17,3	1,05	-0,1	0,0	s
7	19,3			0,7	s
8	19,7			0,8	s
9	20,1	5,23	1,0	0,9	s
10	14,1			-1,3	s
13	18,8	5,64	0,5	0,5	s
14	15,5	2,4	-1,4	-0,7	s
15	17,1	4,08	-0,1	-0,1	s
16	18,2	7,29	0,2	0,3	s
18	17,5	4,9	0,1	0,1	s
19	20,1			0,9	s
20	17,7			0,1	s
21	18,6	4,65	0,5	0,4	s
22	16,9	4,2	-0,2	-0,2	s
23	10			-2,9	q
24	11,1	1,73	-5,9	-2,5	q
25	16,36			-0,4	s
26	48,86	11,24	5,6	10,7	u
27	16,2	2,8	-0,7	-0,5	s
29	22,7			1,8	s
32	16,4	6,57	-0,3	-0,4	s
33	16,9	3,4	-0,2	-0,2	s
34	13,5	4,27	-1,7	-1,5	s
36	19,8			0,8	s
37	14,9			-1,0	s
39	17,7			0,1	s
40	16,3	4,89	-0,4	-0,4	s
41	17,6	8,8	0,1	0,1	s
42	17,2			-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%

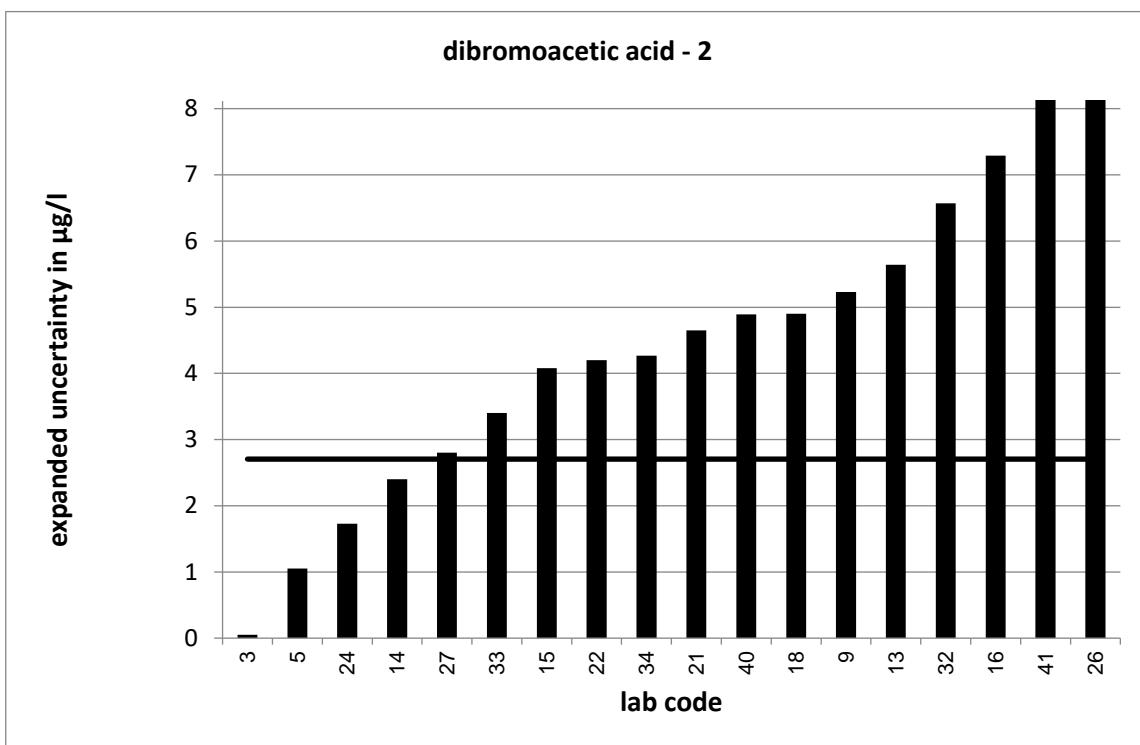
\*\* s = satisfactory, q = questionable, u = unsatisfactory



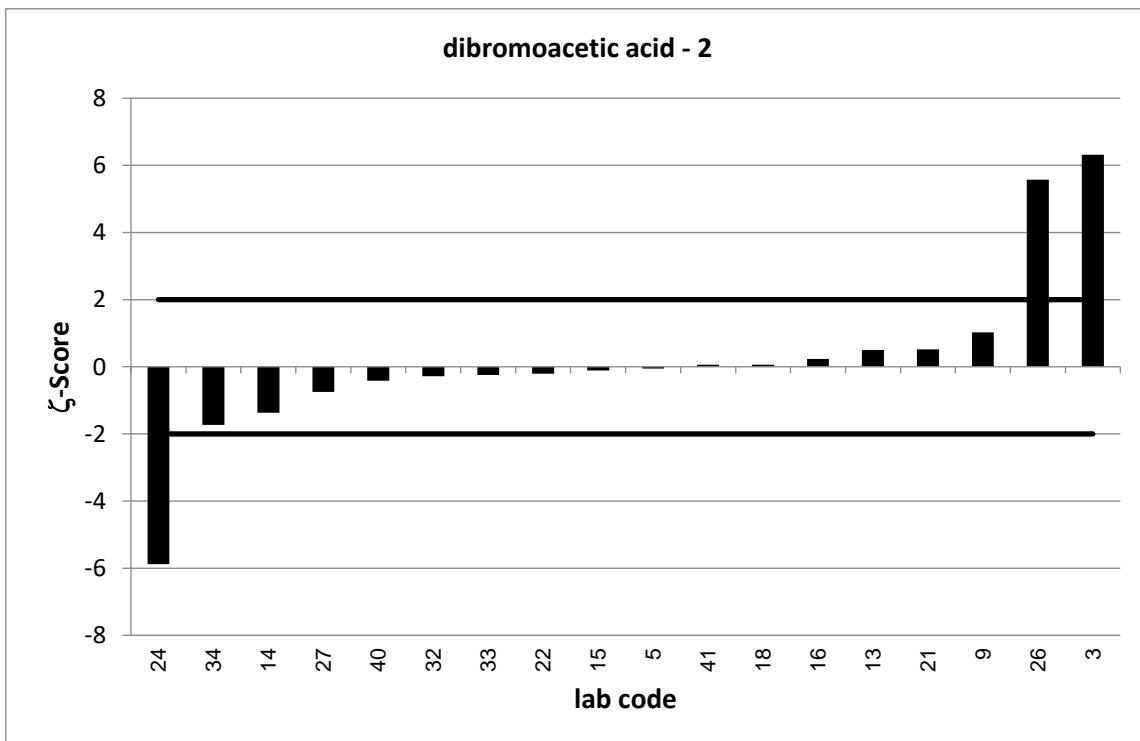
Strongly deviating values are not shown in the diagram.



Strongly deviating values are not correctly shown in the diagram.



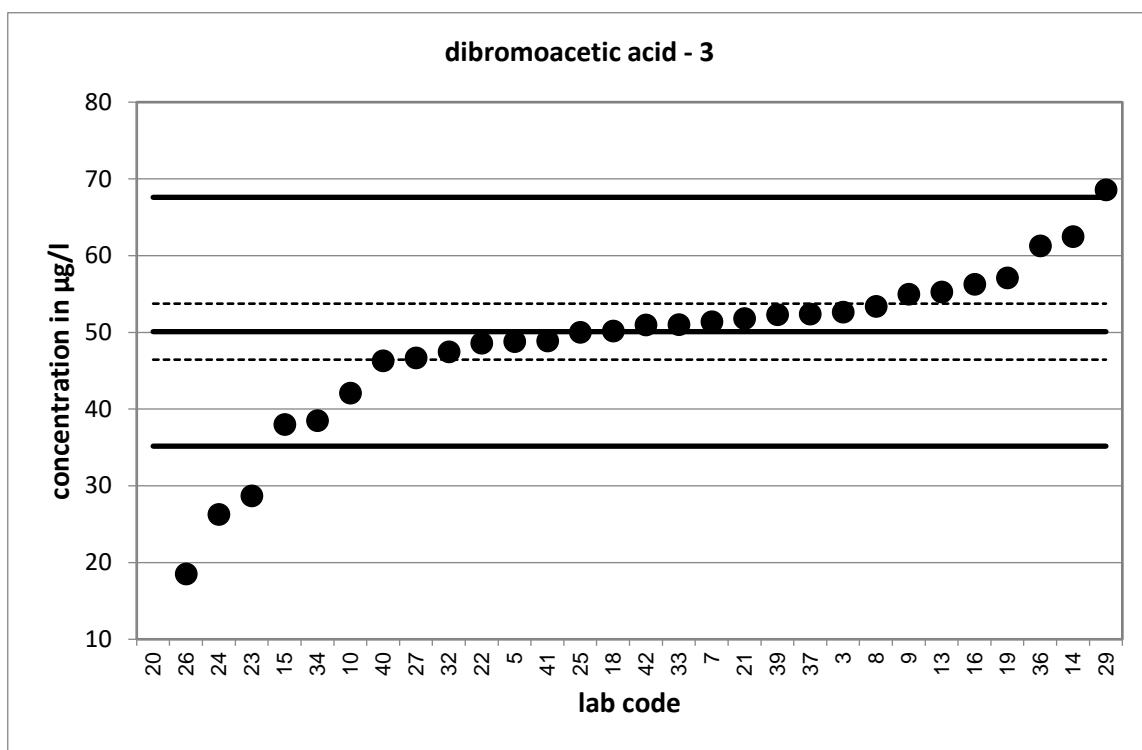
Strongly deviating values are not correctly shown in the diagram.



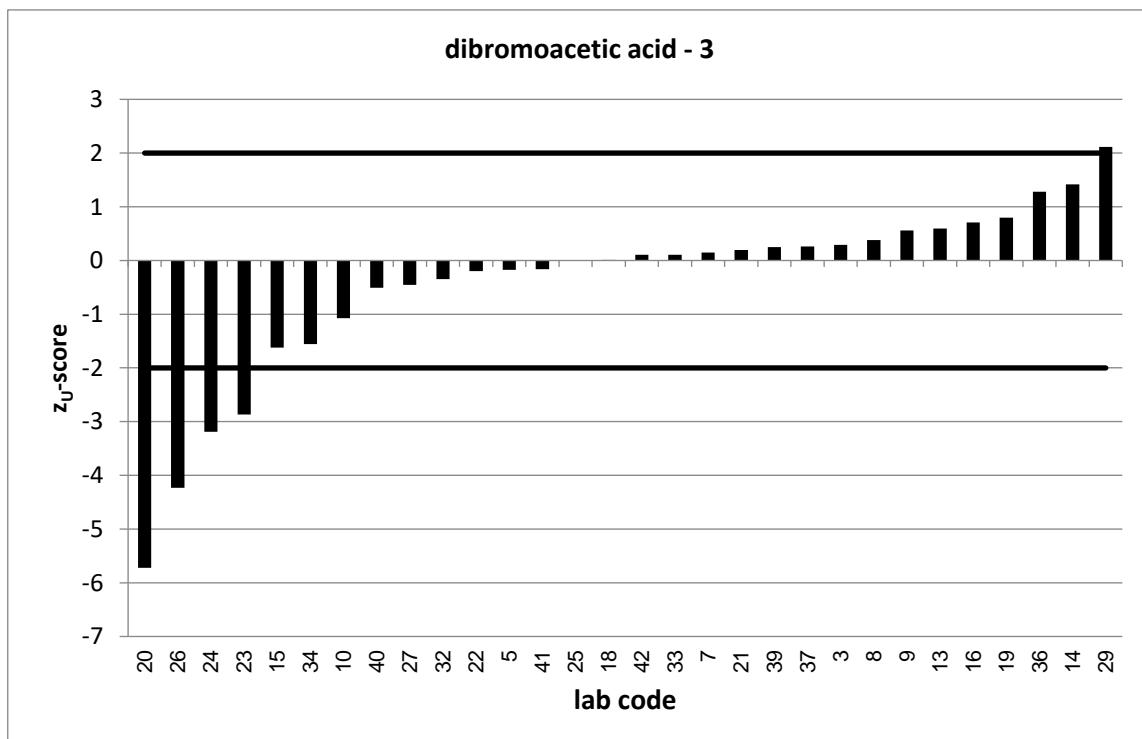
PT 5/24 - TW S11		dibromoacetic acid - 3			
assigned value [ $\mu\text{g/l}$ ]*		$50,09 \pm 3,65$			
upper tolerance limit [ $\mu\text{g/l}$ ]		67,6			
lower tolerance limit [ $\mu\text{g/l}$ ]		35,17			
lab code	result [ $\mu\text{g/l}$ ]	$\pm$	$\zeta$ -score	$z_U$ -score	assessm.**
3	52,643	0,05	1,4	0,3	s
5	48,8	1,64	-0,6	-0,2	s
7	51,4			0,1	s
8	53,4			0,4	s
9	55	14,3	0,7	0,6	s
10	42,1			-1,1	s
13	55,3	16,59	0,6	0,6	s
14	62,5	9,7	2,4	1,4	s
15	38	3,64	-4,7	-1,6	s
16	56,3	22,5	0,5	0,7	s
18	50,2	6	0,0	0,0	s
19	57,1			0,8	s
20	7,39			-5,7	u
21	51,8	12,95	0,3	0,2	s
22	48,6	12,2	-0,2	-0,2	s
23	28,7			-2,9	q
24	26,3	4,09	-8,7	-3,2	u
25	50,04			0,0	s
26	18,53	4,26	-11,2	-4,2	u
27	46,7	7	-0,9	-0,5	s
29	68,6			2,1	q
32	47,5	19	-0,3	-0,3	s
33	51,03	10	0,2	0,1	s
34	38,5	12,2	-1,8	-1,6	s
36	61,3			1,3	s
37	52,4			0,3	s
39	52,3			0,3	s
40	46,3	13,9	-0,5	-0,5	s
41	48,9	24,5	-0,1	-0,2	s
42	51			0,1	s

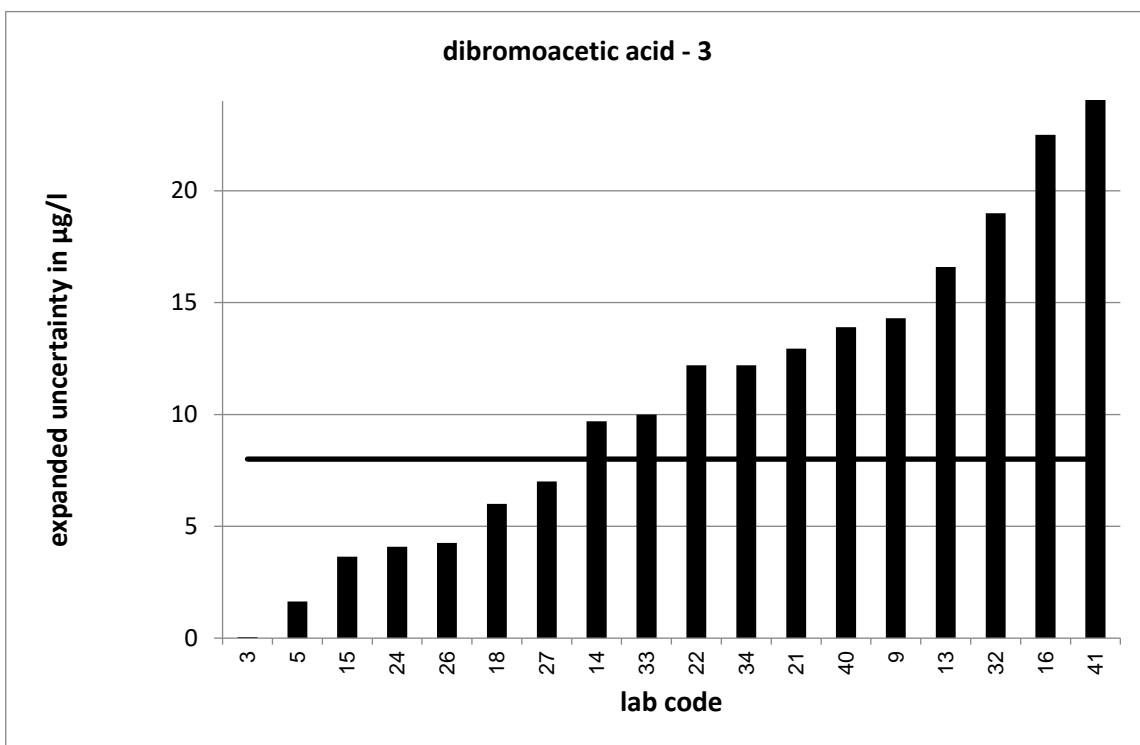
\* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor  $k=2$  corresponding to a confidence level of about 95%

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

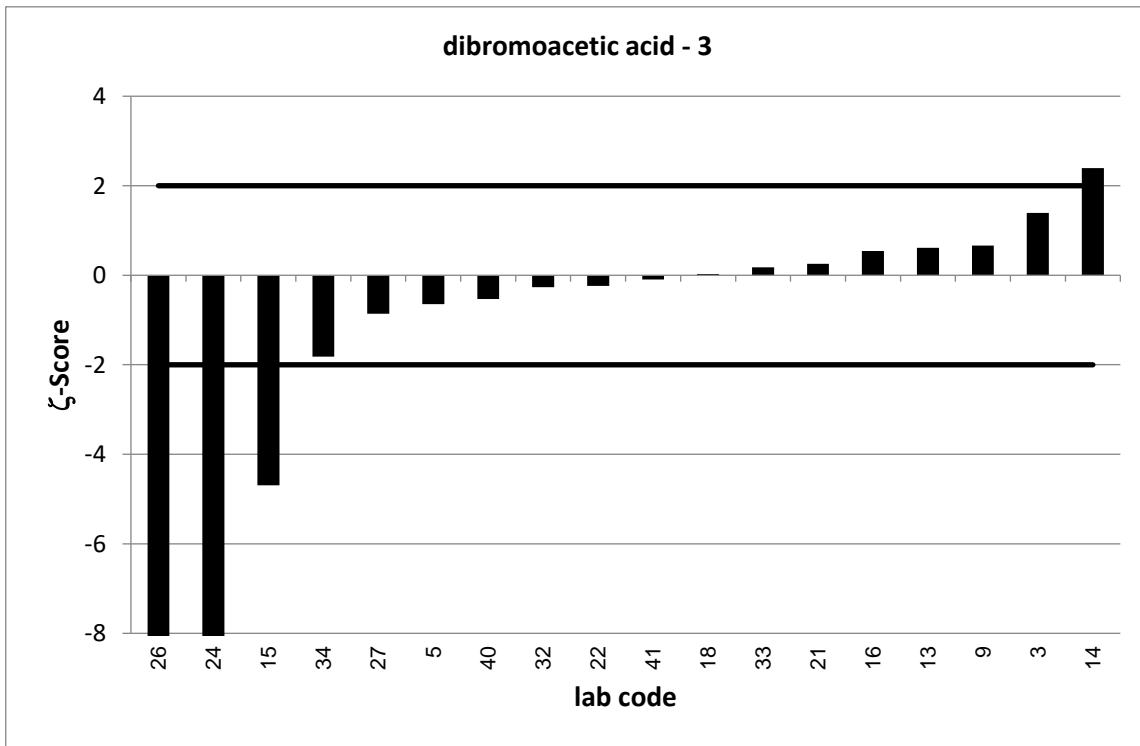


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