

University of Stuttgart
Germany



Analytische Qualitätssicherung Baden-Württemberg

Proficiency Test 3/11 Sum parameters in waste water

AOX, COD, BOD₅, TN_b, TOC

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

Stuttgart, in August 2011

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1. General

This PT was provided by AQS Baden-Württemberg in the framework of the nationwide 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 in 250-ml-bottles in amber ground bottles for the determination of AOX. Preservation by adding nitric acid (pH 2,1) and by cooling.
- 3 samples in 100-ml-glass bottles with screw cap for the determination of COD. Preservation by adding sulphuric acid (pH 2,1) and by autoclaving.
- 3 samples in 2 x 1000-ml-glass bottles with screw cap for the determination of BOD₅. Preservation by autoclaving and cooling.
- 3 samples in 100-ml-glass bottles with screw cap for the determination of TN_b. Preservation by adding hydrochloric acid (pH 2,1) and by autoclaving.
- 3 samples in 100-ml-glass bottles with screw cap for the determination of TOC. Preservation by adding hydrochloric acid (pH 2,1) and by autoclaving.

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 lower concentration range (level 1-3).

3. Sample preparation

The samples were based on a real waste water (effluent of the microsieve of the waste water treatment plant Stuttgart-Büsnau).

The waste water was kept one day in an intermediate bulk container for sedimentation. For the preparation of the samples, 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 was pasteurised at 80 °C in a stainless steel tank overnight. During pasteurisation the waste water was aerated with a mixture of nitrogen and carbon dioxide to prevent degassing of carbon dioxide followed by precipitation of calcium carbonate.

For the preparation of the samples, the matrices were spiked with stock solutions and the concentrations covered waste water relevant ranges.

The samples were cooled directly after preparation. The samples were dispatched with freezer packs added to the packages.

4. Sample distribution

The samples were distributed on 17th May 2011 with a post express service (DHL within Germany and TNT outside Germany).

5. Analytical methods

The participants were restricted to use analytical methods 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 limits of quantifications were required:

parameter	limit of quantification
AOX	10 µg/l
COD	15 mg/l
BOD ₅	3 mg/l
TN _b	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 the parameter AOX in µg/l with three significant results.

6. Submission of results

The deadline for the submission of results was on 09th June 2011.

7. Evaluation procedure

The statistical evaluation was executed according to DIN 38402-A45 and ISO TS 20612 "Interlaboratory comparisons for proficiency testing of analytical chemistry laboratories". From the participants' results a relative standard deviation was calculated for each concentration level and parameter using the Q-method. The Hampel estimator was used for the calculation of the consensus mean which was used as assigned value x_a . The standard deviation for proficiency assessment $\hat{\sigma}$ was taken for the calculation of the z_U -score according to DIN 38402-A45 or ISO TS 20612 respectively. $\hat{\sigma}$ was limited as follows:

- lower limit: 5 %
- upper limit: 25 %

A z-score was calculated for each measurement result derived from the assigned value x_a and the standard deviation for proficiency assessment:

$$z - score = \frac{result - x_a}{\hat{\sigma}}$$

The z-score was modified to a z_U -score with a correction factor for proficiency assessment (as described in the standards mentioned above). The tolerance limit was defined as $|z_U|=2.0$.

8. Assessment

For laboratories which participated within the requirements of LAWA, at least 80 % of the determined values of a laboratory must be within the tolerance limits and at least 80% of the parameters must be determined as successful for a successful participation. For all other participants there was no overall assessment. In any case a parameter was determined as successful if at least 50 % of the concentration levels (2 out of 3 values are within the tolerance limits) were analysed as successful.

Not successful were:

- 1) Values which were not determined,
- 2) Values, which were indicated with "lower than limit of quantification",
- 3) Values, which were subcontracted,
- 4) Values, which were submitted after the deadline of submission of results.

9. Evaluation (according to LAWA rules)

Number of participants: 158

Number of reported values: 1974

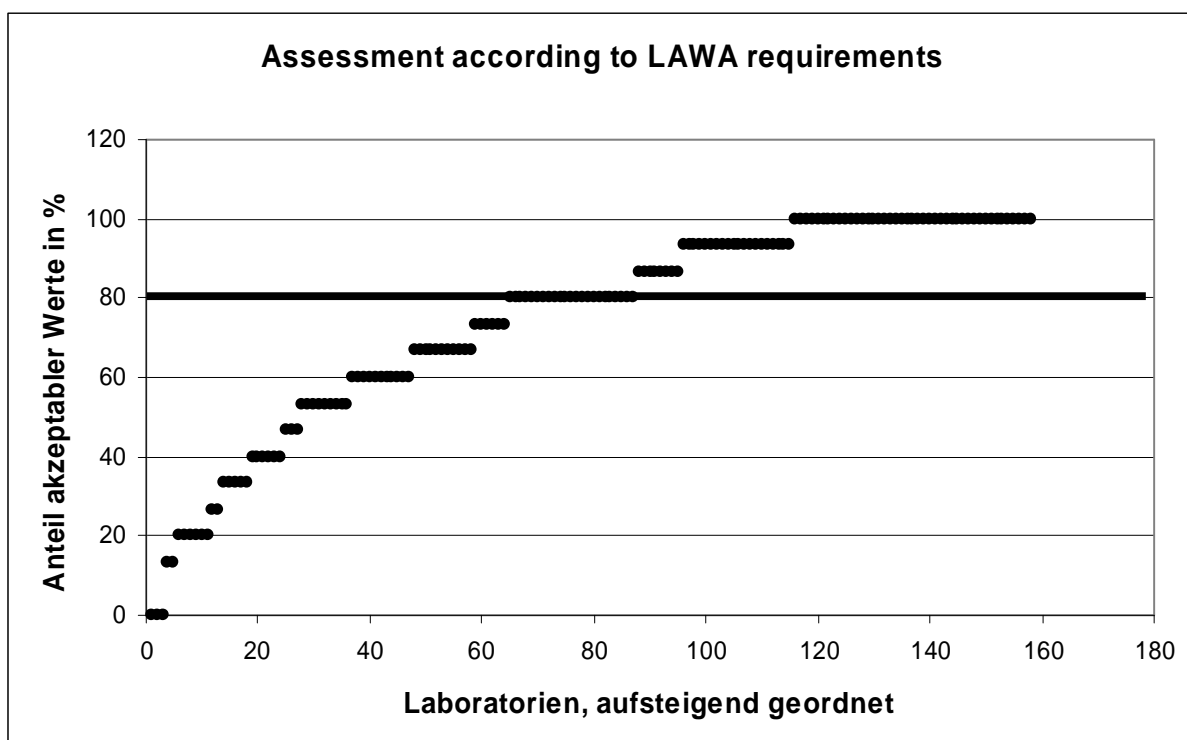
Number of accepted values: 1764 (89,36%)

Number of successful laboratories:

according to LAWA-leaflet A-3: 94 (59,49%)

3 laboratories reported no results

In the following figure the proportions of the acceptable values for each laboratory are illustrated in ascending order. 43 laboratories reported values with all of the values within the tolerance limits. In this PT the success limit was 80 %.



10. Explanation of Appendix A

Appendix A contains for each parameter

- parameter tables
- a figure of participants' means versus the spiked amount for the determination of the recovery rate and the matrix content
- a figure of the relative standard deviations versus the concentrations
- a figure of the tolerance limits in the PT versus the concentrations
- the frequency of application of analytical methods
- the method specific evaluation
- a comparison of mean and reference values for each concentration level
- a comparison of the relative standard deviations of the different methods
- the statistical characteristics of the method specific evaluation
- a tabular comparison of the means with the reference values and their uncertainties

Parameter tables

In these tables the following values for each concentration level are listed:

- assigned value
- expanded uncertainty of the assigned value in %, calculated according to ISO 13528 using the formula

$$U = 2 \cdot 1.25 \cdot \frac{\text{rel. standard deviation}}{\sqrt{\text{number of values}}}$$

- standard deviation, calculated using robust statistical method
- standard deviation for proficiency assessment for the calculation of z_U -scores
- rel. standard deviation for proficiency assessment
- tolerance limits above and below
- permitted deviations above and below in %
- number of values in this level
- number of not satisfactory values below and above the assigned value and the percentage of these values in total.

Determination of recovery rate

In the diagrams of the assigned values versus the spiked amount of analyte a linear regression line was calculated using a generalized least square regression which takes into account the uncertainties of the values in both directions. From these values the recovery rate for each parameter was determined (see diagrams). The slope of the line indicates the average recovery rate. The diagrams also contain the expanded uncertainty ($k=2$) of the mass values and the assigned values.

Relative standard deviations and tolerance limits

The diagrams for the relative standard deviation vs. the assigned value show the concentration dependency of the standard deviation and the tolerance limits in percent.

The relative standard deviations calculated from participants' data are the stars connected by an interrupted line, the rel. standard deviation taken from the variance function (and sometimes limited by the upper or lower limit) are given by squares, connected by a continuous line.

Method specific evaluation

For each parameter the methods used by the participants are shown in a diagram.

In a second diagram for each method with a frequency of more than 5 %, values are sorted in 5 categories:

too low	results with z_U -score < -2
low	results with $-2 \leq z_U$ -score < -1
correct	results with $-1 \leq z_U$ -score $\leq +1$
high	results with $+1 < z_U$ -score $\leq +2$
too high	results with z_U -score $> +2$

Comparison of means and reference values for each concentration level

Finally the mean value calculated from all results (used as assigned value) is compared with mean values calculated for all methods separately (in this case using the Hampel estimator described in ISO/TS 20612). Mean values were calculated only, if more than 7 results were within a z-score-range of ± 2 . The means are reported with their expanded uncertainty calculated according to ISO 13528.

11. Explanation of Appendix B

Participants were asked to report expanded uncertainties of their results on a voluntary basis. In this diagram for each parameter the reported uncertainties for all concentration levels with the reproducibility standard deviation (horizontal line) are displayed. Values which deviate from the reproducibility standard deviation with a factor more than 2 are usually not realistic.

12. Explanation of Appendix C

In the last part of the report, for all concentration levels the results of all participants are illustrated. Confidentiality of participants is ensured by using lab codes. The lab codes were sent to participants with the certificates.

In detail Appendix C contains:

- a table with all data
- figures with
 - o all reported results
 - o all z_U -scores
 - o all reported expanded uncertainties
 - o all ζ -scores

Table with all data

The assigned value with the expanded uncertainty and the tolerance limits for the concentration level is illustrated in the table. For each participant the following data are given:

- lab code
- reported result
- measurement uncertainty of the value (if reported)
- ζ -score for this value, calculated with the following formula

$$\zeta = \frac{x - \bar{x}}{\sqrt{u_{lab}^2 + u_{ref}^2}}, \text{ with}$$

$x - \bar{x}$ = difference from the measured value and the assigned value

- u_{lab} = standard uncertainty of the value, reported by the participant
- u_{ref} = standard uncertainty of the assigned value
- z_U -score for proficiency assessment
- assessment of the value according to its z-score

Meaning of ζ -scores:

The assessment of ζ -scores is similar to that of z-scores. If the data are normally distributed and the uncertainties are well estimated, ζ -scores will lie between -2 and +2 with a probability of around 95 %.

ζ -scores are mainly influenced by the measurement uncertainties reported by the laboratory. Therefore ζ -scores are usually not appropriate for the assessment of the reported results, unless the reported measurement uncertainty is checked for fitness-for-purpose.

Therefore we do not use the ζ -scores for the assessment of the laboratories.

Nevertheless ζ -scores are appropriate to check the plausibility of the reported measurement uncertainty:

If the z-score of a result is within the tolerance limit and the ζ -score is outside, then the measurement uncertainty is underestimated.

If the z-score is outside the tolerance limits and the absolute value of the ζ -score is lower than two, then the requirements of the proficiency test were stronger compared with the reported measurement uncertainty.

Diagrams of uncertainty data

In the first figure for all lab codes the measurement uncertainty (together with the reproducibility standard deviation) is illustrated. The second figure shows the associated ζ -scores.

13. Measurement uncertainty

76 (49,03 %) out of 155 laboratories with valid values reported measurement uncertainties. In total 930 (47,84 %) out of 1944 valid values were given with the measurement uncertainty.

The following table displays the number of values with measurement uncertainty against the accreditation status.

Accreditation status of the values	Number of values	Number of values with measurement uncertainty
accredited	1212	642 (52,97%)
not accredited	351	162 (46,15%)
not specified	381	126 (33,07%)

We would like to put emphasis on the fact that reporting of measurement uncertainties in our PT scheme is absolutely voluntary. The only objective is to help all participants to reasonably handle measurement uncertainties and their estimation.

The diagrams show that the spread of reported uncertainties is vast, from unrealistic low values up to very high. A plausibility check using reproducibility standard deviations of the PT round could be helpful here.

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

184 (21,6%) of the 851 values reported with uncertainties and having a z_U -score $|z_U| \leq 2.0$ had a ζ -score > 2.0 . This means that the requirements of the PT scheme have been fulfilled, but not the “own” requirements, the uncertainty is underestimated.

14. Traceable reference values

Traceability of analytical results to national and international references is of increasing importance in all laboratories. This is not easy to realise for chemical analyses

and often can only be done by analysing certified reference materials. But availability of these reference materials in the water sector is very limited. Therefore we try to provide reference values for the proficiency test samples, traceable to national and international references.

Since our PT samples without exception are spiked, real water samples, reference values can be calculated from the sum of matrix content and spiked amount of analyte. For both summands traceable values and their uncertainty have to be determined. Thereby we assume that no unrecognised bias resulting from sample preparation and transport is present and that we recognise all uncertainty components.

Determination of the spiked amount and its uncertainty

All spiking of samples was controlled gravimetrically. Conversion to concentration was done by measuring the density of the resulting samples using a pycnometer. This procedure allows the preparation of a complete uncertainty budget. The first step is the specification of the measurand with a formula. This shows the links between the result and all influence quantities

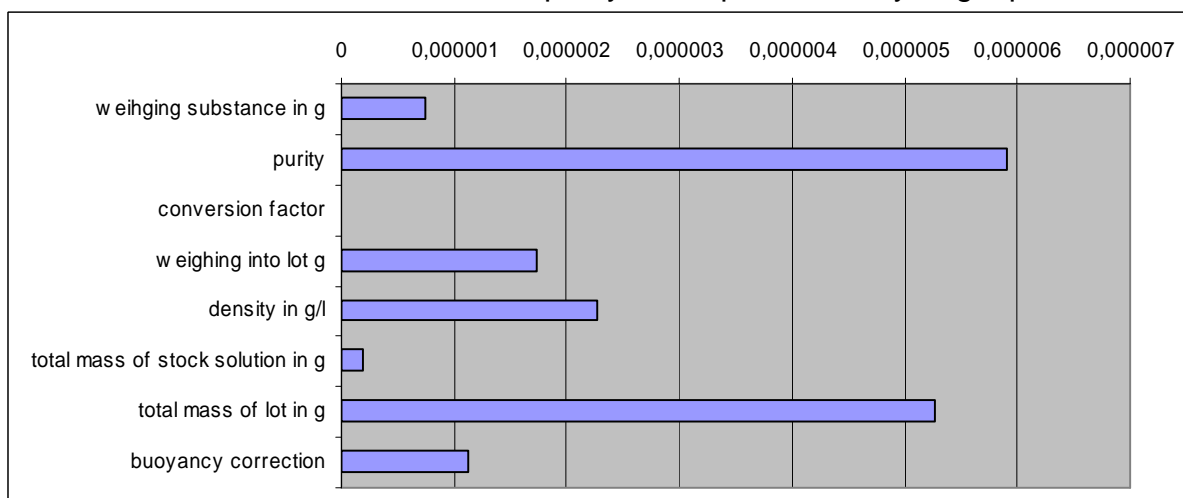
$$c_{lot} = \frac{m_{subst_ss} \cdot P \cdot F \cdot m_{ss_lot} \cdot \rho_{lot}}{m_{ss} \cdot m_{lot} \cdot K}$$

with:

c_{lot}	concentration of the analyte in the lot resulting from the spike in g/l
m_{subst_ss}	mass of substance added for preparation of the stock solution in g
m_{ss_lot}	mass of stock solution added into the lot in g
m_{ss}	total mass of stock solution in g
m_{lot}	total mass of the lot in g
ρ_{lot}	density of the lot in g/l
P	purity of the used substance
F	conversion factor
K	buoyancy correction

Based on this formula the uncertainty budget can be prepared and all components be quantified. The following figure shows a typical distribution of the contributions, here for TOC as an example.

The main contribution results from the purity of the potassium hydrogenphthalate.



All weighings were done as difference weighings. The precision of these weighings was determined in experiments by multiple (20fold) measurements of mass pieces with similar masses as a type A uncertainty. The trueness of the weighing, that has to

be considered twice for each weighing, was taken from the calibration certificate of the balance. Maintaining of these tolerances is assured by regular maintenance of the balances by a calibration laboratory and by supervision with our mass pieces (calibrated by an accredited calibration laboratory).

The determination of the density was also made using weighings (of the pycnometer). The above said also applies here.

Temperature measurement was made with a calibrated thermometer.

The purity of the used potassium hydrogenphthalate (99,9%) was taken from the certificate of the manufacturer. The uncertainty of the purity was estimated with 0,1% as rectangular distribution.

With all these uncertainty components the combined uncertainty, as described in the EURACHEM/CITAC-Guide „Quantifying Uncertainty in Analytical Measurement“, was calculated using the sensitivity coefficients determined by partial derivation of the formula to the respective influence quantities.

So traceability was assured by using calibrated balances and thermometers.

Determination of the matrix content

Because the same matrix was used for preparation of all samples, the matrix content could be calculated from the mean values of the participants and the spiked amounts in a standard-addition-like way^{1,2}.

The uncertainties of the spiked amounts were known from the uncertainty budgets. The expanded uncertainties of the mean values of participants' result were calculated according to ISO 13528 (Statistical Methods for Use in Proficiency Testing by Interlaboratory Comparisons) as

$$u_{mean} = 2 \cdot 1,25 \cdot \frac{s_R}{\sqrt{n}}$$

with:

- s_R reproducibility standard deviation
- n number of data for this level
- 2 coverage factor for the expanded uncertainty
- 1,25 correction factor (according to ISO 13528 to be used for robust methods)

The content of the matrix can be derived from a linear regression of means vs. spiked amounts. Since uncertainties of all data points were available for x- as well as y-direction a generalised least square regression was used as described in DIN EN 6143. The computer program B_LEAST (from BAM) was used for this purpose.

With this method a value for matrix and its uncertainty are obtained.

Because of statistical variation of the input values the calculated matrix content might result in a negative value. From a scientific point of view this of course is nonsense. In those cases the matrix content is set to zero.

The lower end of the uncertainty range of the matrix content also might be negative. Therefore the expanded uncertainty of the matrix content was set to the matrix content itself in this case.

¹ Rienitz, O., Schiel, D., Güttler, B., Koch, M., Borchers, U.: A convenient and economic approach to achieve SI-traceable reference values to be used in drinking-water interlaboratory comparisons. Accred Qual Assur (2007) 12: 615-622.

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

The matrix content is not directly traceable to national or international references, but it does not considerably compromise the traceability of the final content due to its comparably low contribution.

15. Internet

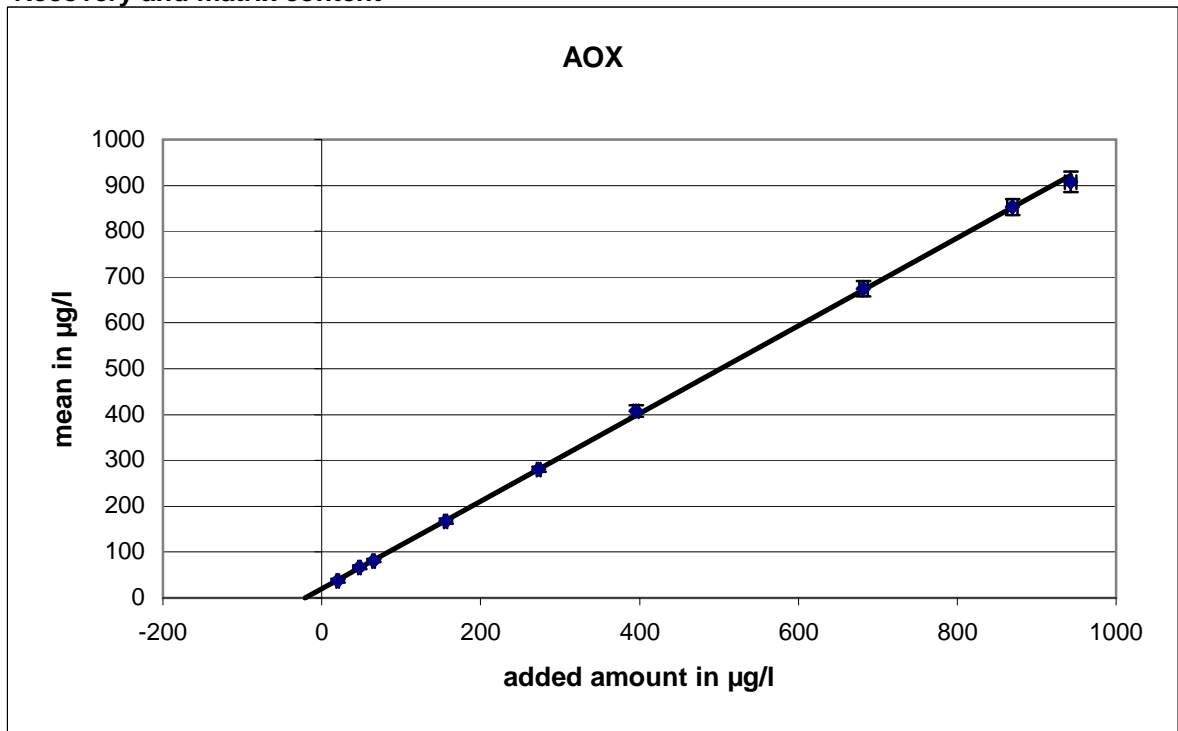
The report is available on the following webpage:

<http://www.aqsbw/pdf/report311.pdf>

AOX

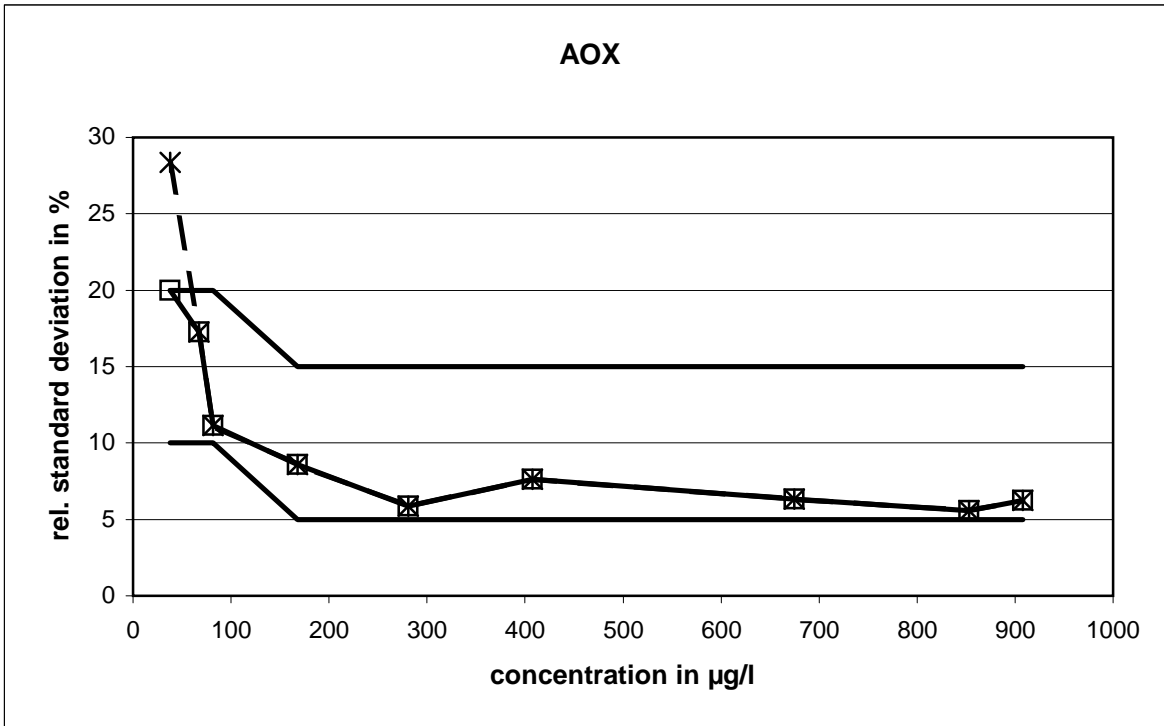
level	assigned value [µg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [µg/l]	standard deviation for proficiency assessment [µg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [µg/l]	lower tolerance limit [µg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	38,13	7,73	10,81	7,626	20,00	55,23	24,12	44,86	-36,75	38	1	5	15,8
2	67,14	4,64	11,58	11,58	17,24	92,65	45,65	38,01	-32,00	45	0	2	4,4
3	81,41	3,70	9,081	9,081	11,15	100,7	64,15	23,70	-21,20	45	2	2	8,9
4	168,1	1,90	14,44	14,44	8,59	198,4	140,4	17,98	-16,51	42	1	1	4,8
5	280,8	1,28	16,45	16,45	5,86	314,7	248,8	12,08	-11,39	46	0	1	2,2
6	407,9	1,04	31,08	31,08	7,62	472,6	347,9	15,87	-14,71	40	1	4	12,5
7	674,5	0,85	42,56	42,56	6,31	762,5	591,9	13,04	-12,25	43	3	1	9,3
8	853,0	0,81	47,51	47,51	5,57	950,8	760,5	11,47	-10,85	45	3	3	13,3
9	907,8	0,80	56,78	56,78	6,25	1025	797,6	12,92	-12,14	40	1	2	7,5
sum										384	12	21	8,6

Recovery and matrix content

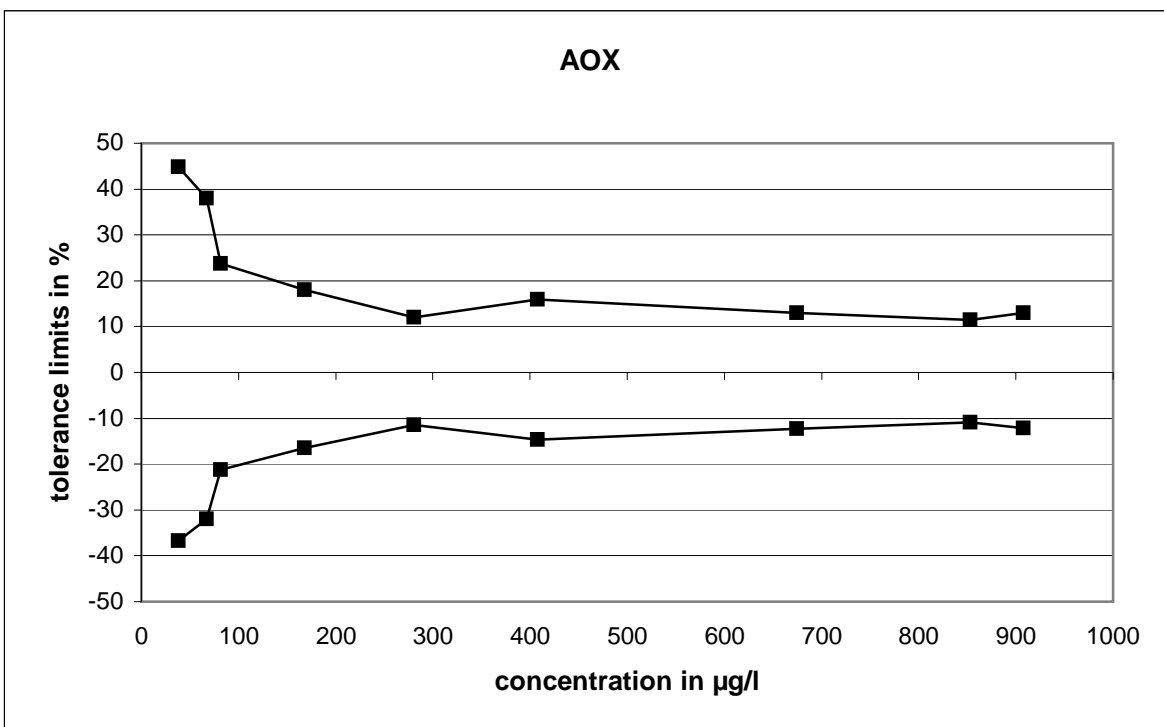


Slope of the regression line: 0,957, recovery: 95,7 %
 neg. x-axis-intercept = matrix content: 20,73 µg/l
 expanded uncertainty of the matrix content: 2,84 µg/l = 13,7 %

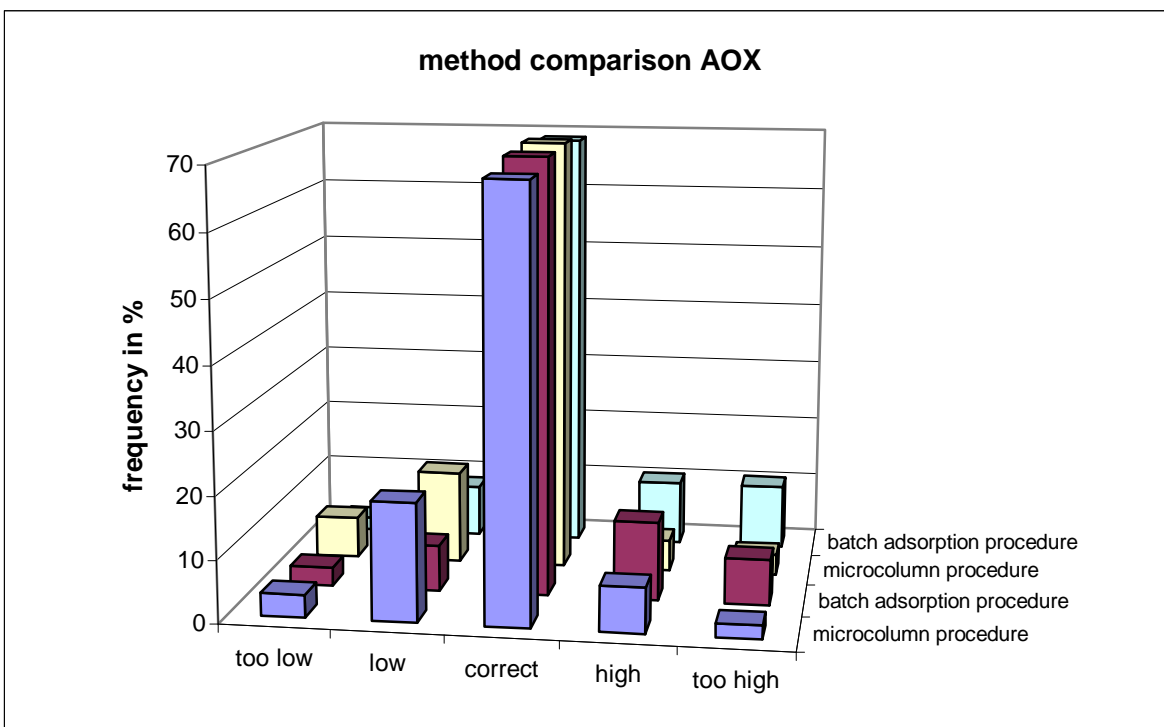
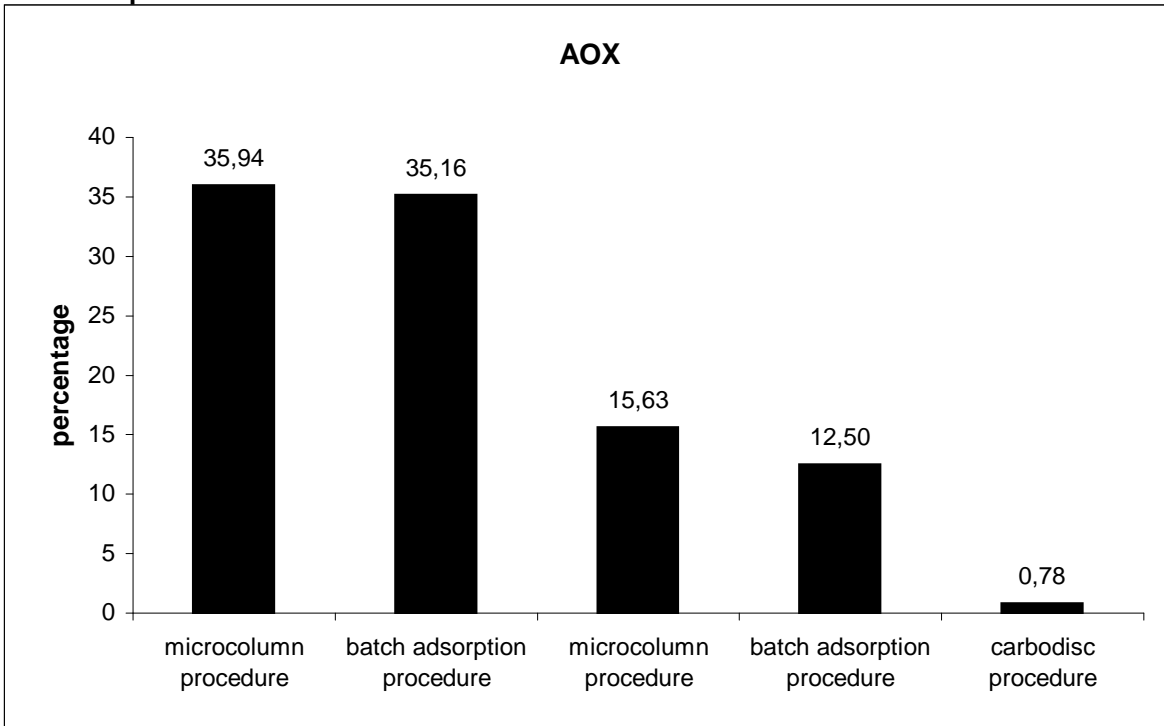
Relative standard deviation and tolerance limits



The relative standard deviation, calculated with the Q-method, reached the upper limit with one concentration level.



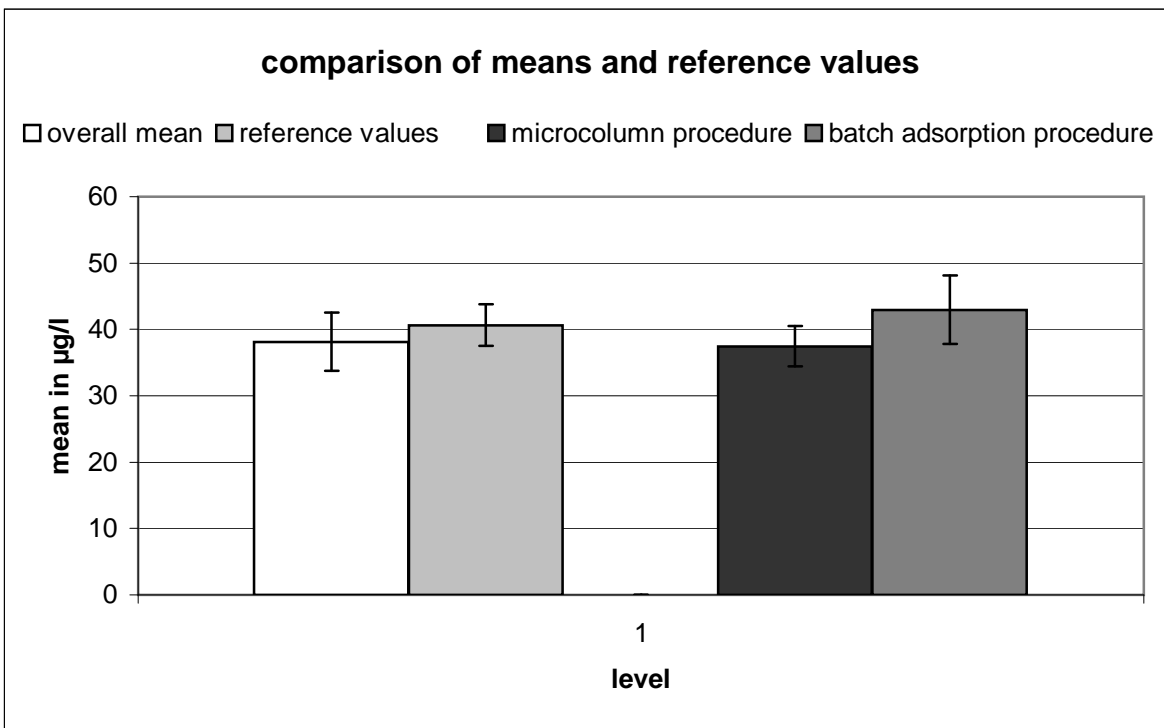
Method specific evaluation

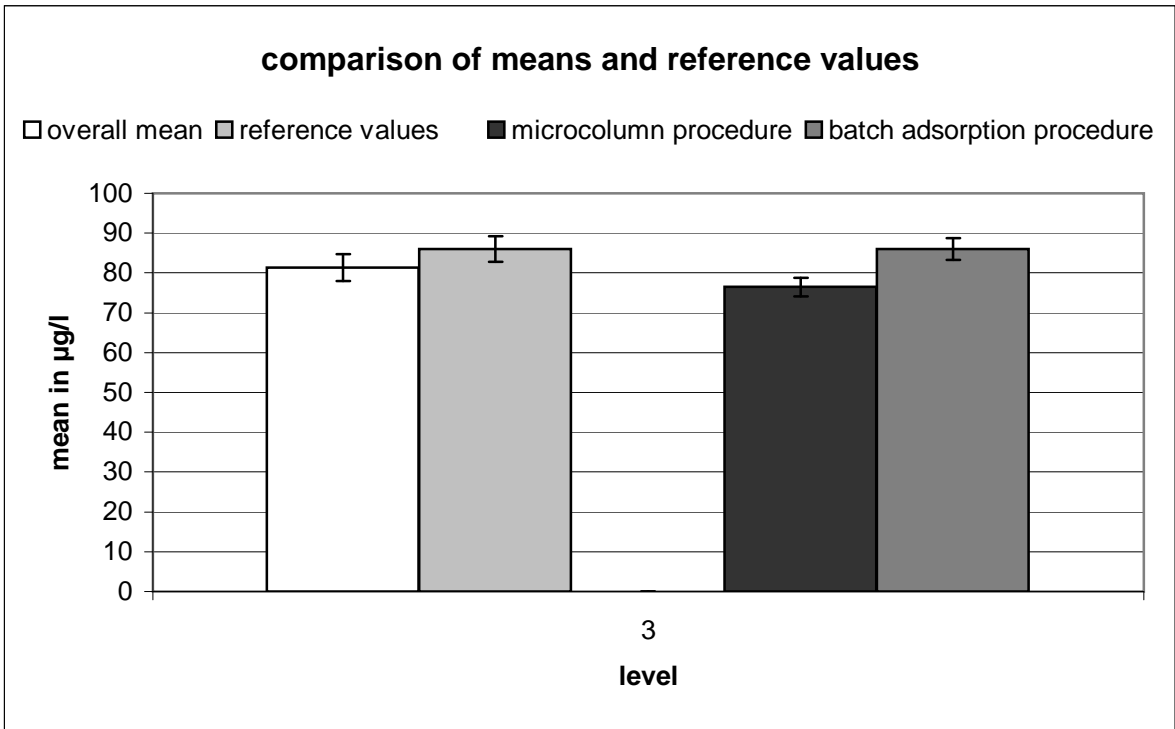
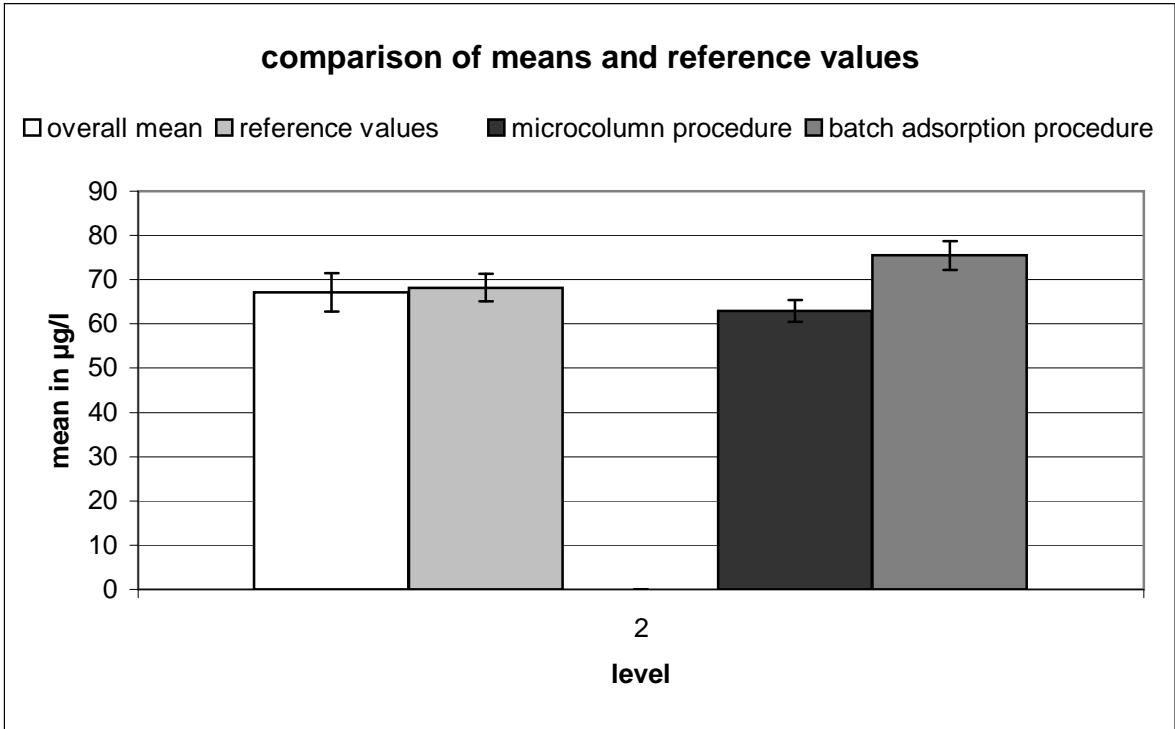


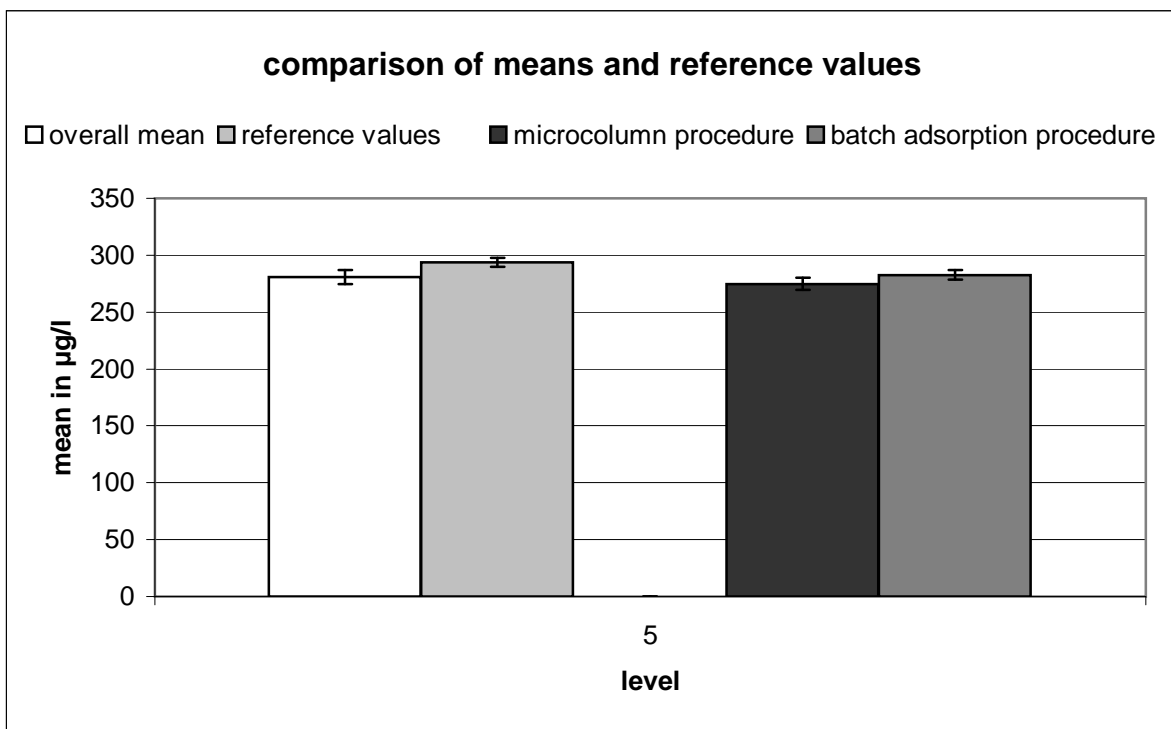
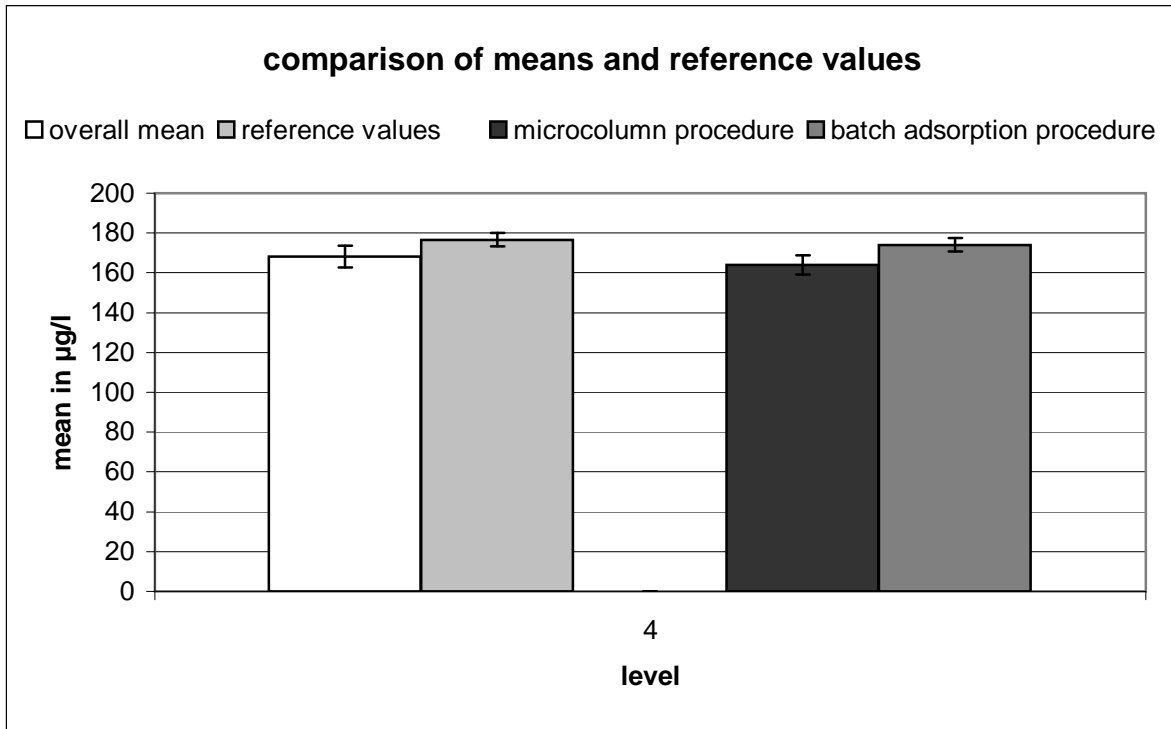
The differences between the methods were not significant.

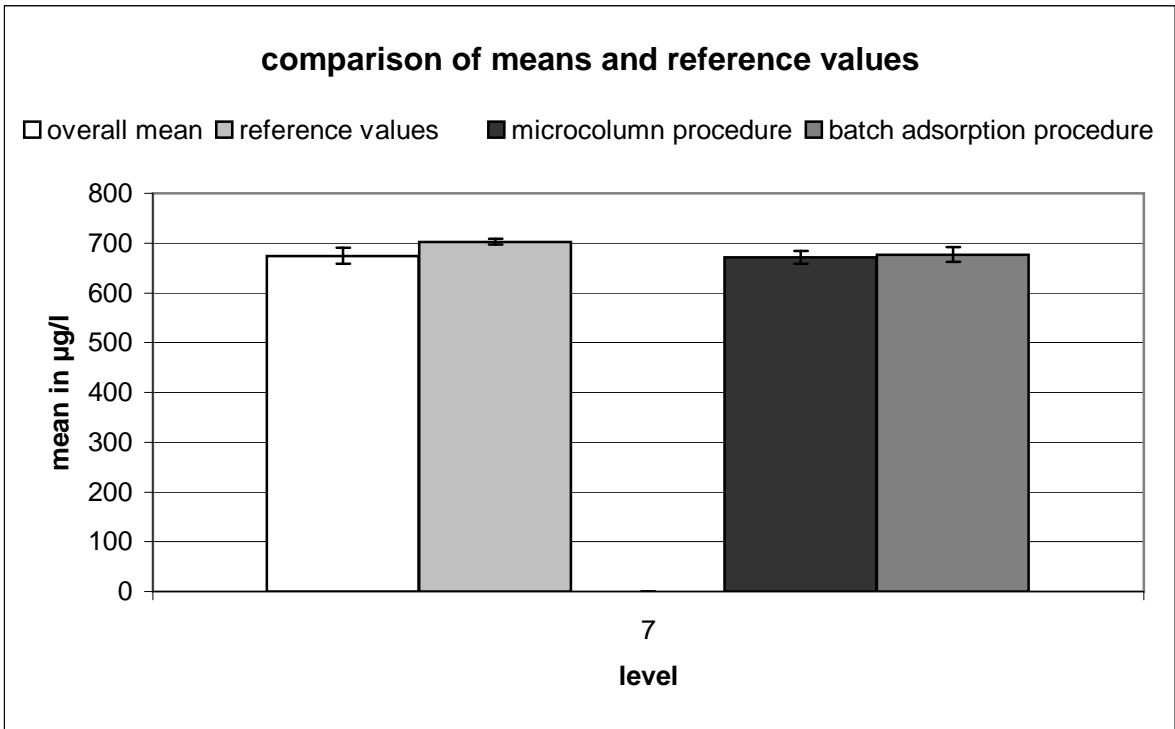
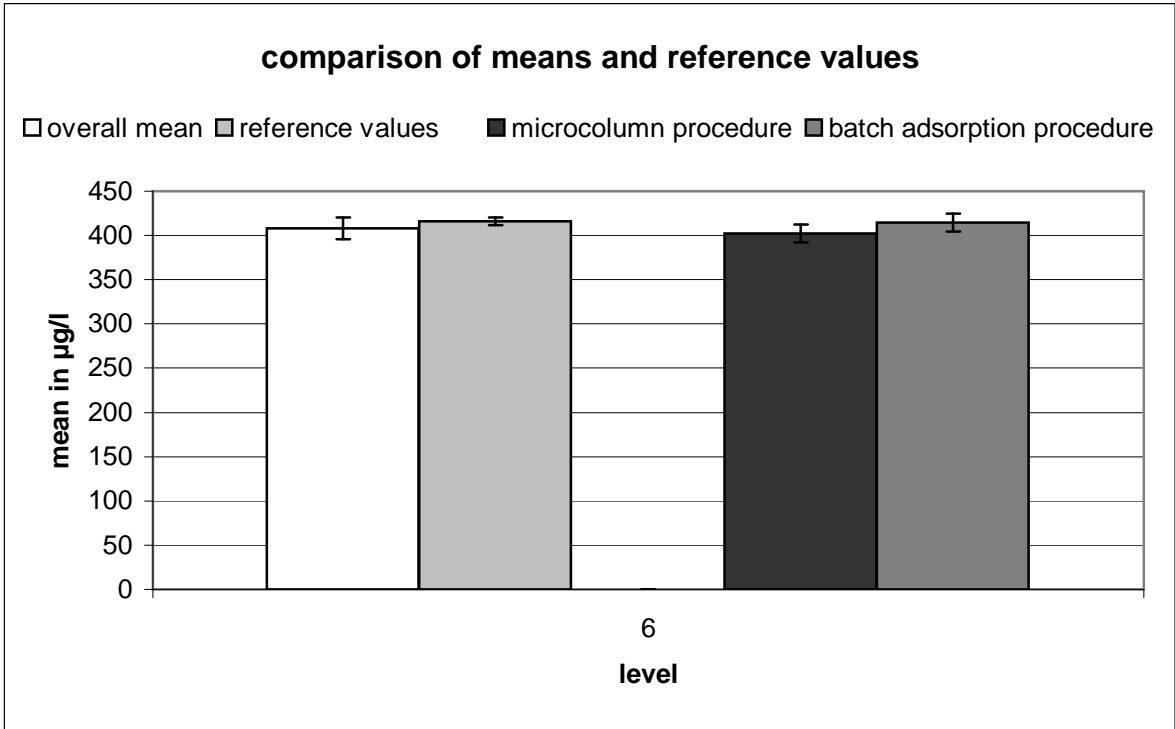
Comparison of means and reference values

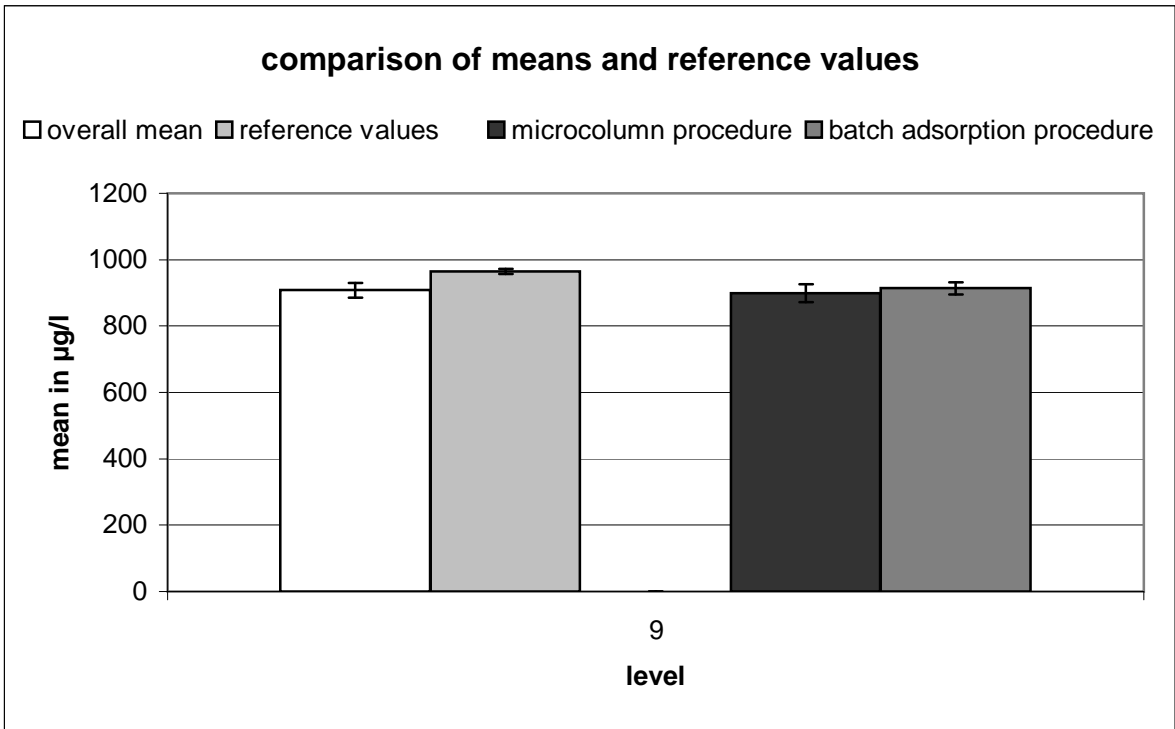
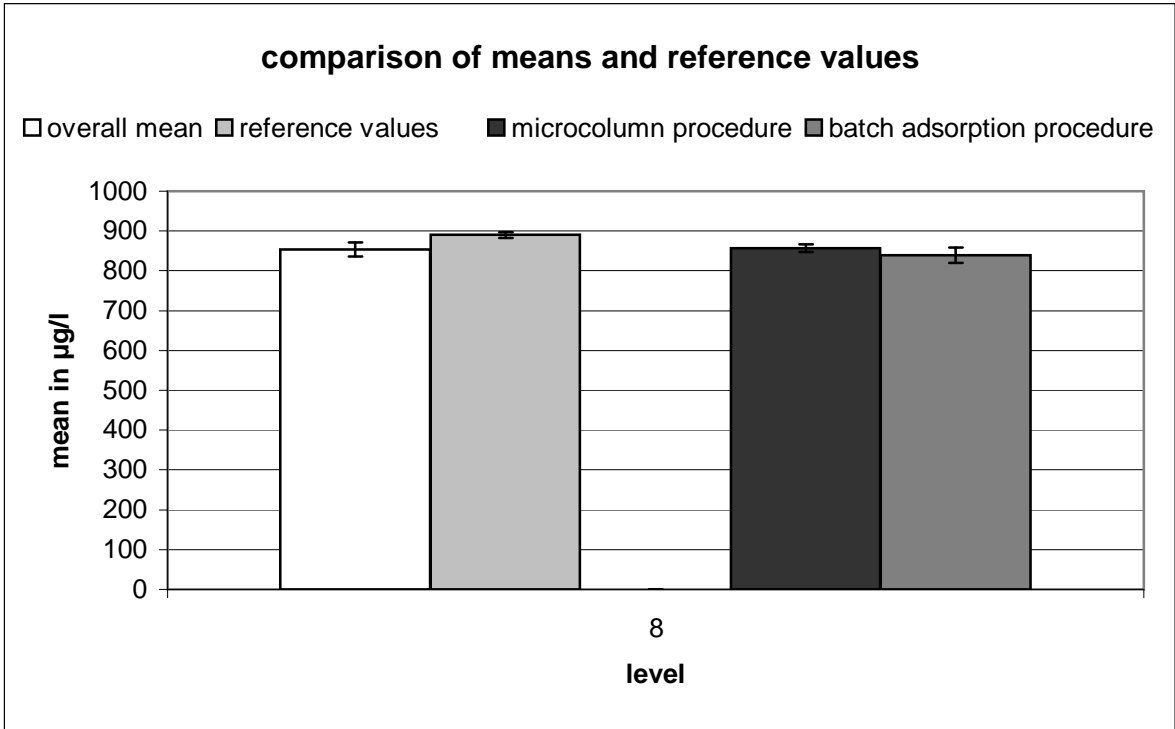
level	microcolumn procedure			batch adsorption procedure		
	mean [µg/l]	exp. uncertainty [µg/l]	exp. uncertainty [%]	reference value [µg/l]	exp. uncertainty [µg/l]	exp. uncertainty [%]
1	38,13	4,38	11,5	40,64	3,14	7,7
2	67,14	4,31	6,4	68,21	3,16	4,6
3	81,41	3,38	4,2	85,99	3,18	3,7
4	168,1	5,6	3,3	176,6	3,4	1,9
5	280,8	6,1	2,2	293,8	3,8	1,3
6	407,9	12,3	3,0	415,9	4,3	1,0
7	674,5	16,2	2,4	702,6	6,0	0,9
8	853,0	17,7	2,1	890,4	7,2	0,8
9	907,8	22,4	2,5	963,8	7,7	0,8

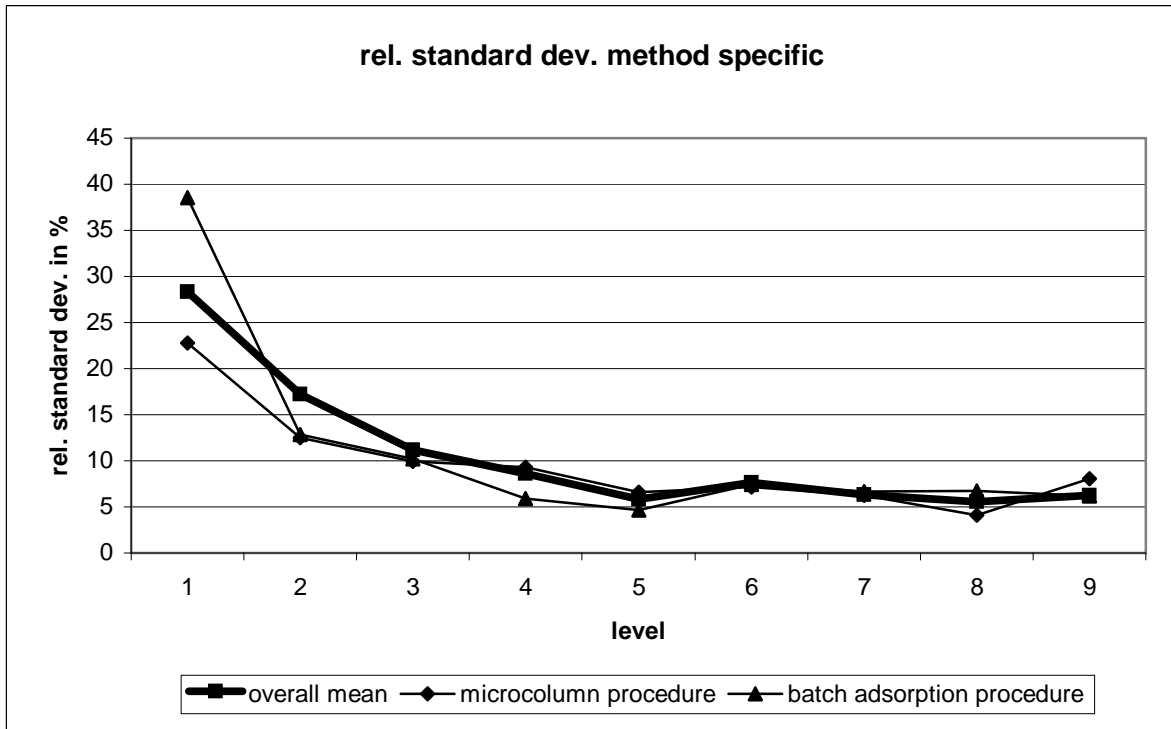












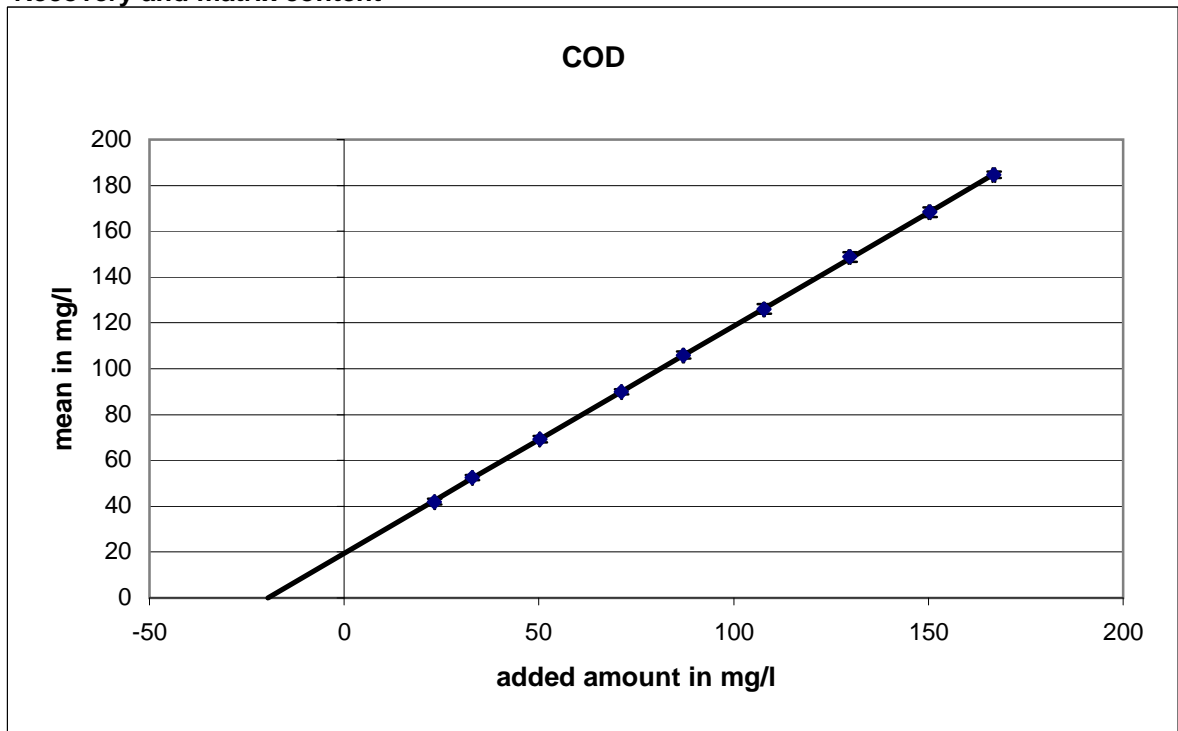
microcolumn procedure									
level	robust mean [µg/l]	exp. uncertainty of the mean [µg/l]	exp. uncertainty of the mean [%]	robust standard deviation [µg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	37,47	3,078	8,215	8,53	22,77	12	1	1	16,67
2	62,99	2,462	3,908	7,878	12,51	16	1	1	12,5
3	76,48	2,302	3,01	7,594	9,928	17	1	1	11,76
4	163,9	4,774	2,912	15,28	9,319	16	1	0	6,25
5	274,8	5,34	1,943	18,13	6,596	18	1	0	5,556
6	402,2	9,979	2,481	28,78	7,157	13	1	0	7,692
7	671,2	13,12	1,954	41,98	6,254	16	2	0	12,5
8	857,3	10	1,166	34,87	4,068	19	3	1	21,05
9	899,3	27,39	3,046	72,68	8,081	11	0	0	0

batch adsorption procedure									
level	robust mean [µg/l]	exp. uncertainty of the mean [µg/l]	exp. uncertainty of the mean [%]	robust standard deviation [µg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	42,96	5,171	12,04	16,55	38,52	16	0	3	18,75
2	75,46	3,234	4,286	9,681	12,83	14	0	1	7,143
3	86	2,739	3,185	8,766	10,19	16	0	1	6,25
4	174,1	3,313	1,903	10,27	5,896	15	1	0	6,667
5	282,6	4,268	1,51	13,22	4,68	15	3	1	26,67
6	414,6	10,33	2,49	30,91	7,455	14	1	2	21,43
7	677	14,61	2,158	45,26	6,686	15	2	1	20
8	839,2	18,9	2,253	56,59	6,743	14	3	0	21,43
9	913,8	17,69	1,936	56,6	6,194	16	0	1	6,25

COD

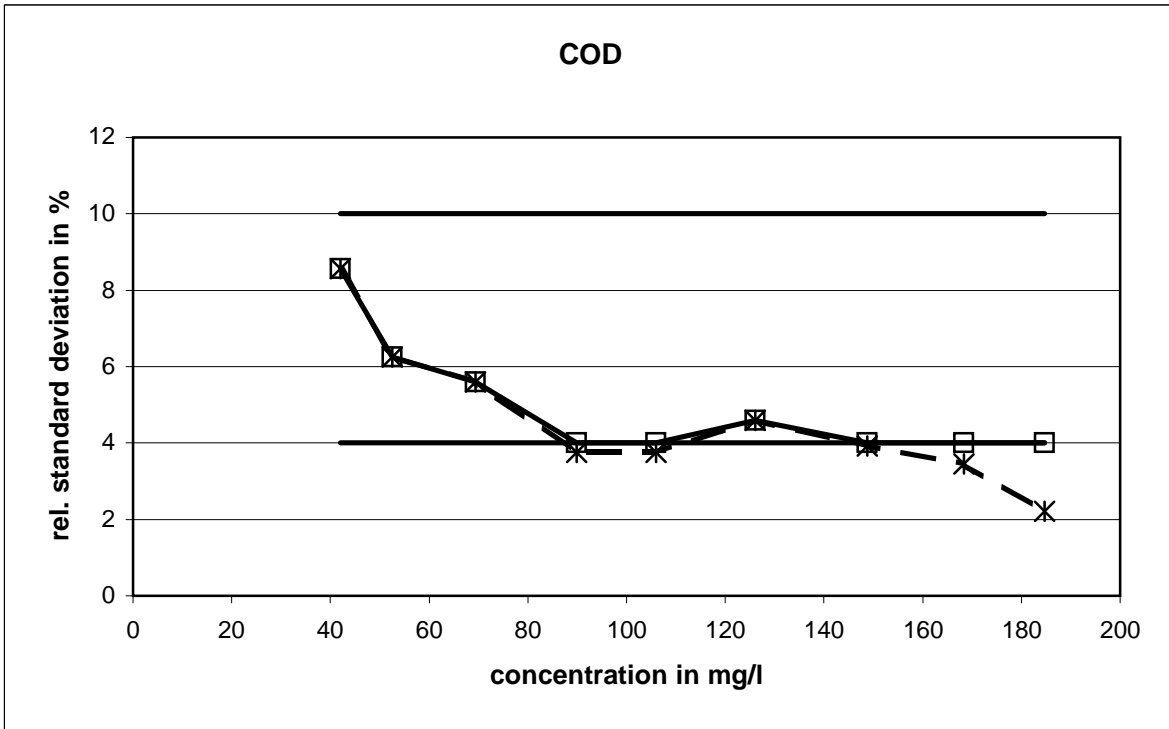
level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [mg/l]	standard deviation for proficiency assessment [mg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [mg/l]	lower tolerance limit [mg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	42,01	2,61	3,597	3,597	8,56	49,53	35,09	17,92	-16,46	49	4	2	12,2
2	52,47	2,13	3,284	3,284	6,26	59,25	46,09	12,93	-12,15	49	2	2	8,2
3	69,37	1,60	3,879	3,879	5,59	77,36	61,81	11,51	-10,89	50	3	4	14,0
4	89,94	1,24	3,383	3,598	4,00	97,28	82,88	8,17	-7,85	51	1	5	11,8
5	106,0	1,06	3,971	4,240	4,00	114,7	97,68	8,17	-7,85	48	1	1	4,2
6	126,0	0,89	5,784	5,784	4,59	137,9	114,7	9,40	-8,98	49	1	0	2,0
7	148,7	0,76	5,835	5,950	4,00	160,9	137,1	8,17	-7,85	48	3	3	12,5
8	168,4	0,67	5,807	6,734	4,00	182,1	155,1	8,17	-7,85	50	0	1	2,0
9	184,7	0,62	4,088	7,389	4,00	199,8	170,2	8,17	-7,85	50	2	0	4,0
sum										444	17	18	7,9

Recovery and matrix content

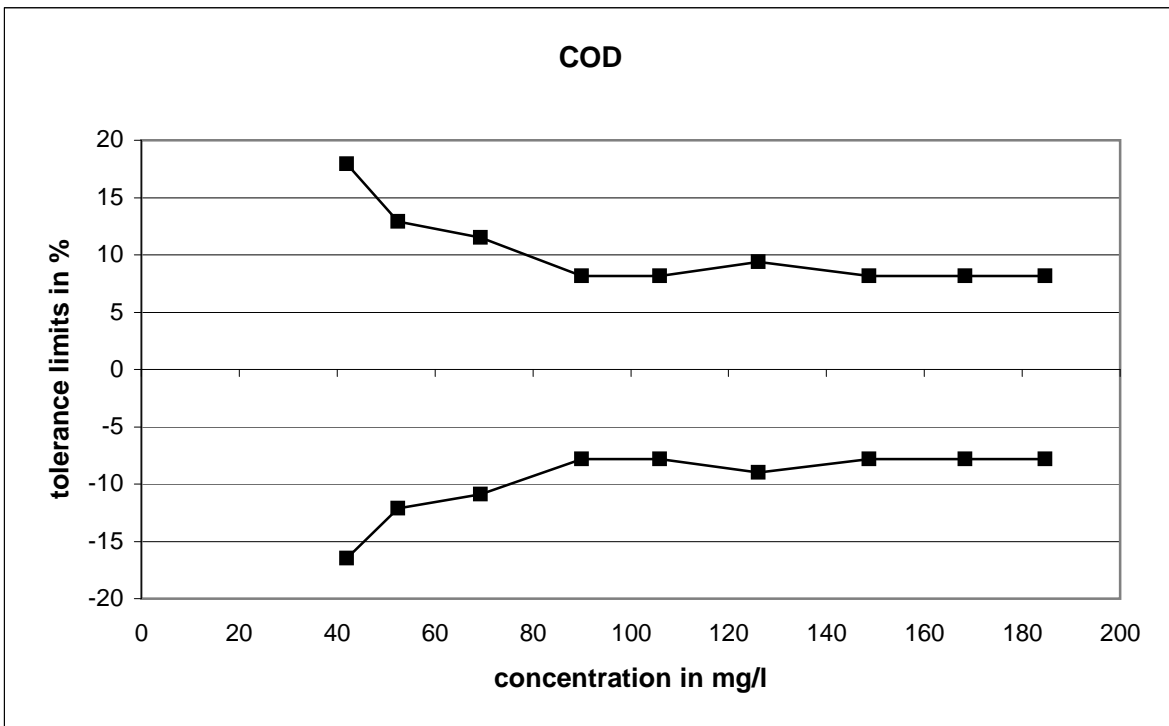


Slope of the regression line: 0,992, recovery: 99,2 %
 neg. x-axis-intercept = matrix content: 19,64 mg/l
 expanded uncertainty of the matrix content: 1,12 mg/l = 5,7 %

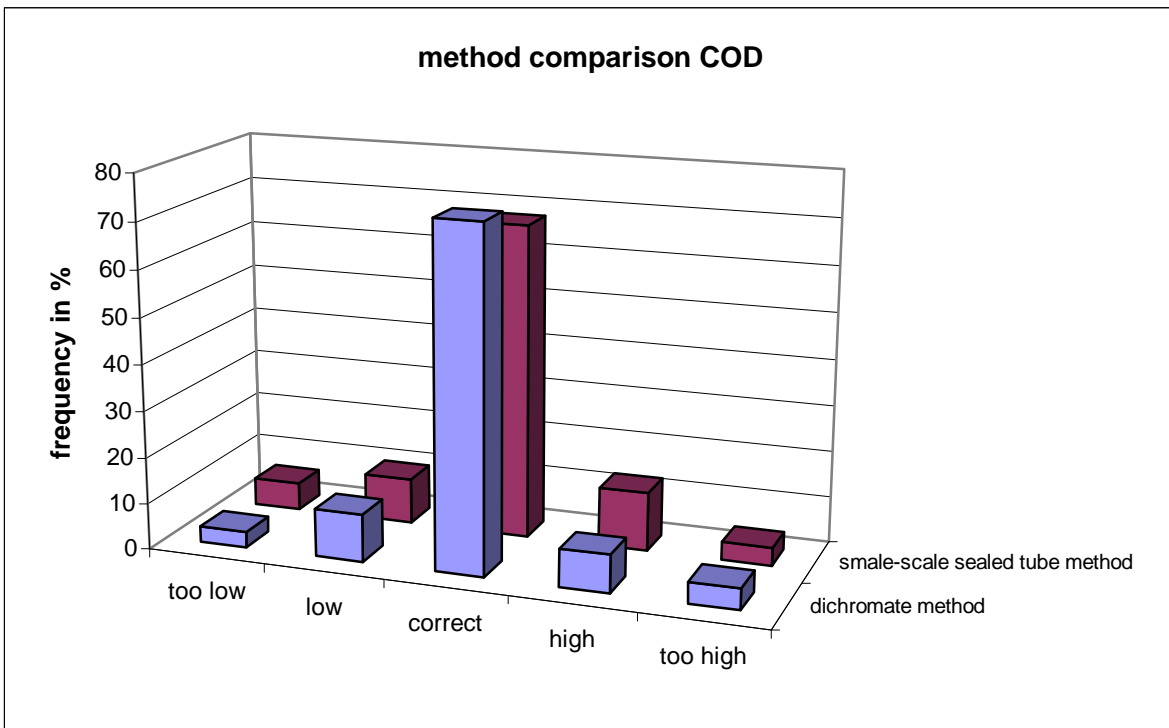
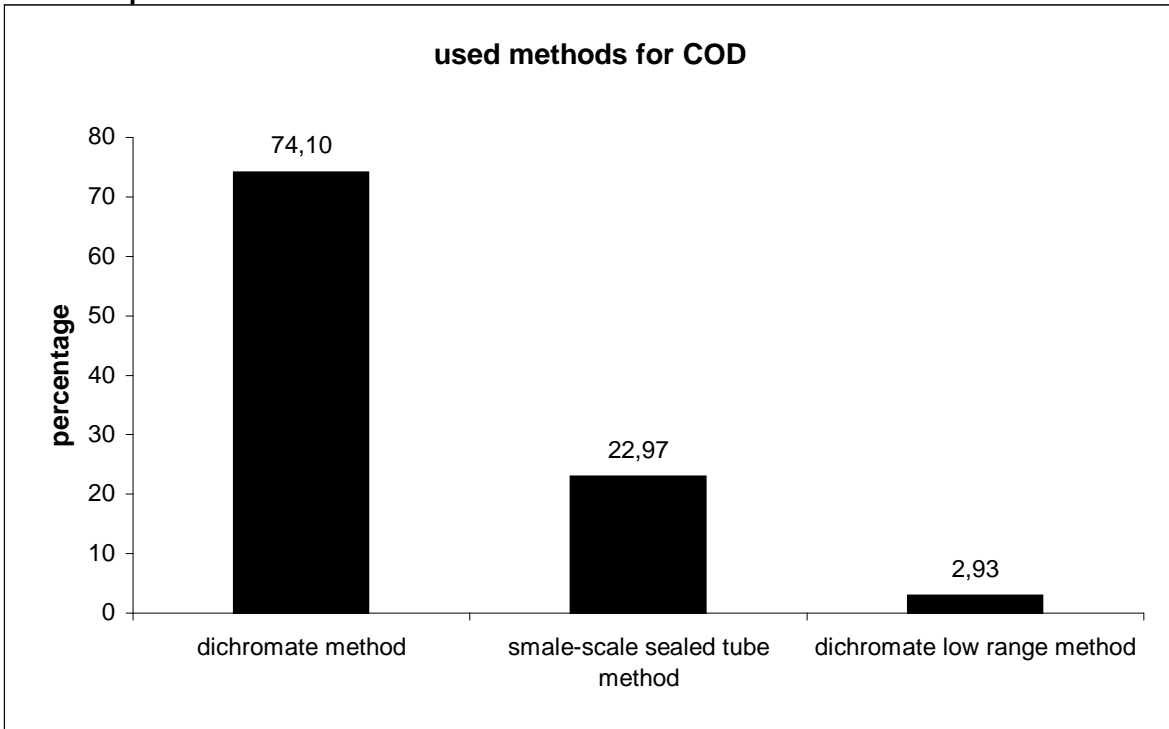
Relative standard deviation and tolerance limits



The relative standard deviation, calculated with the Q-method, reached the lower limit with five concentration levels.



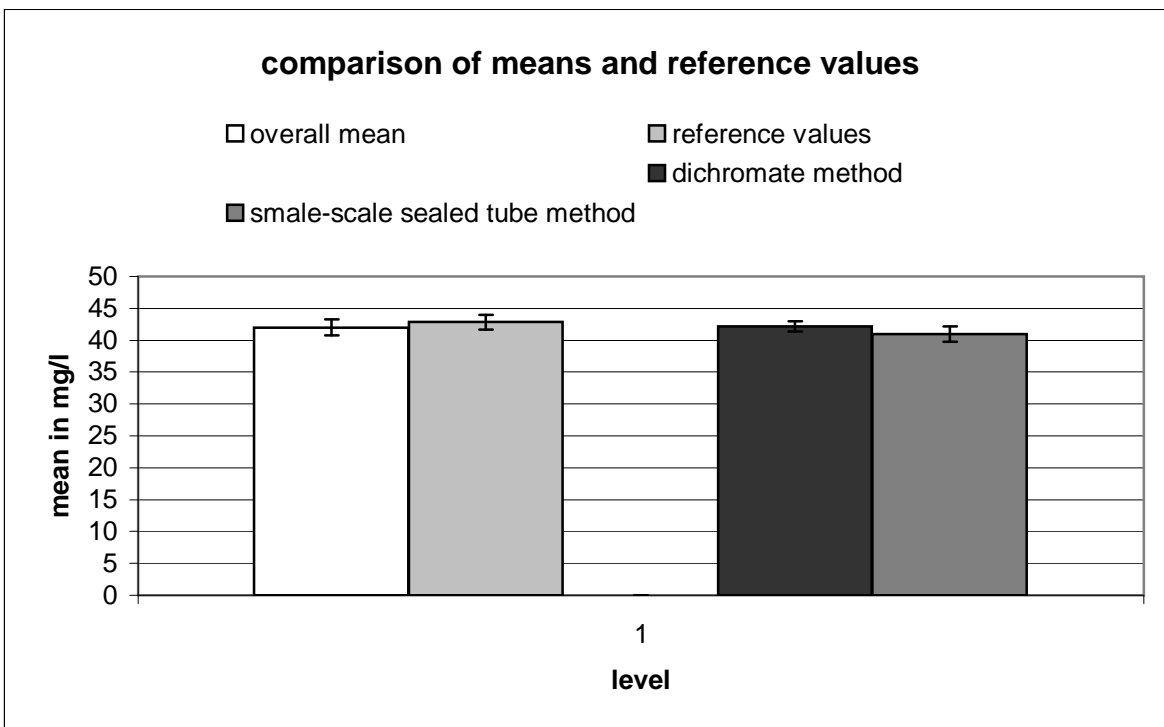
Method specific evaluation

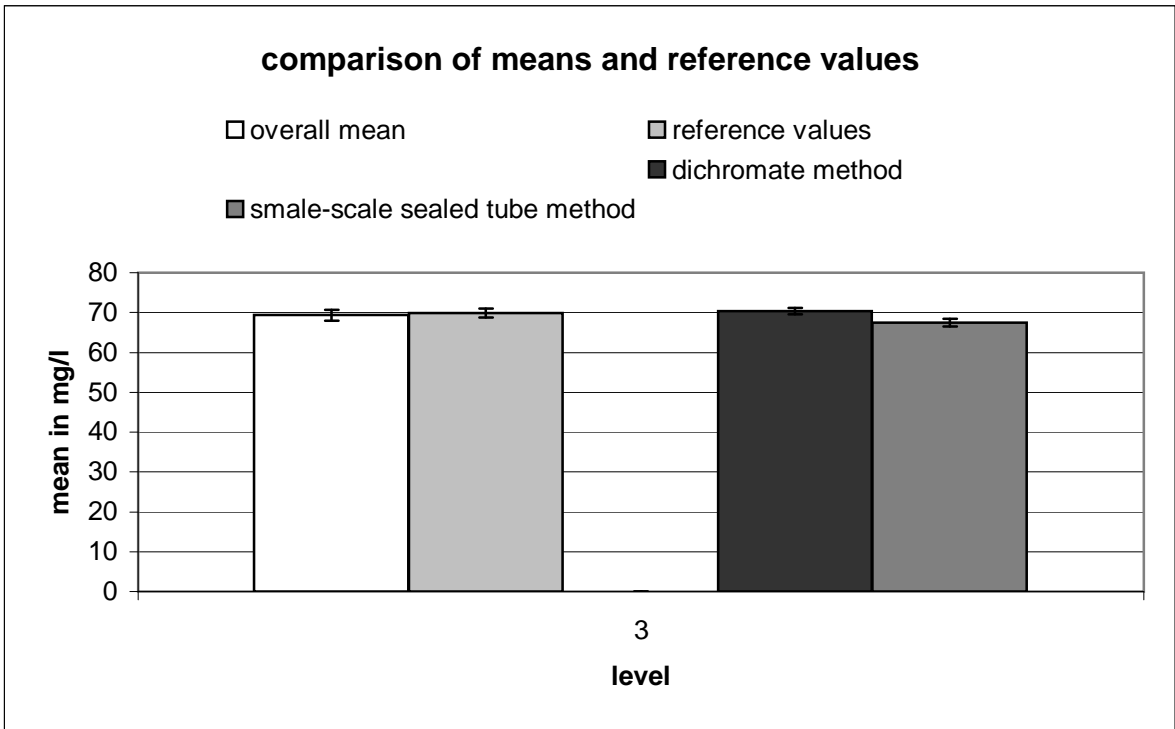
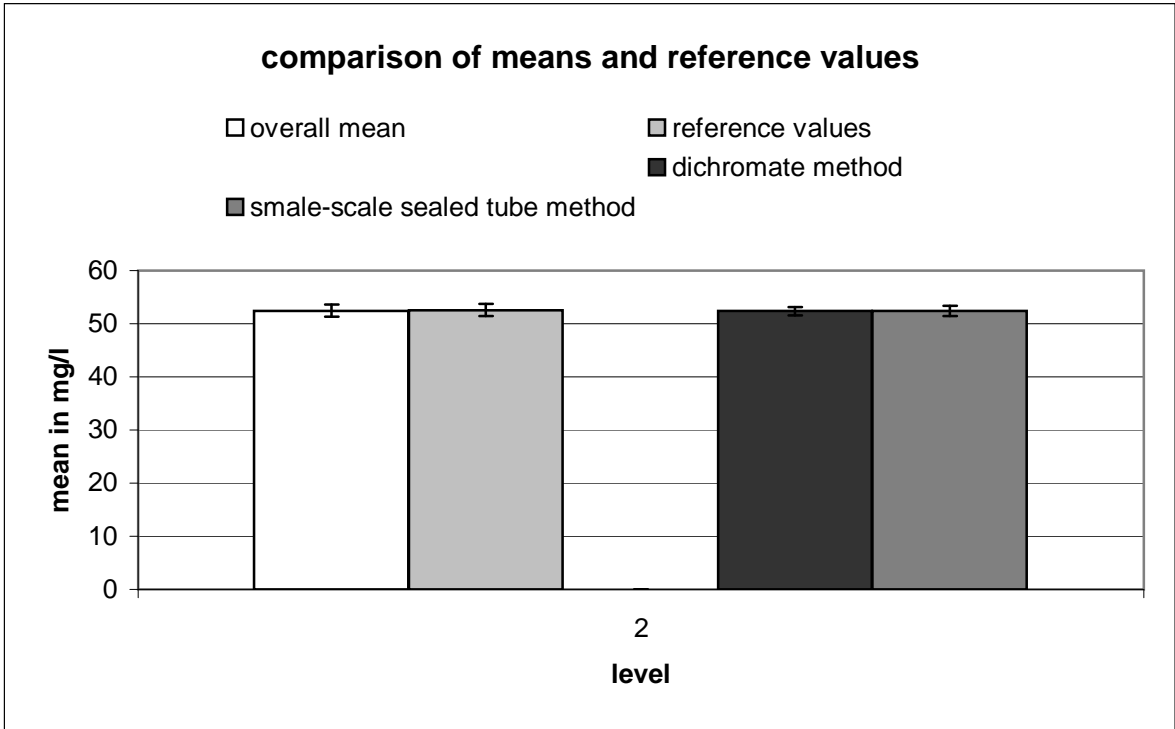


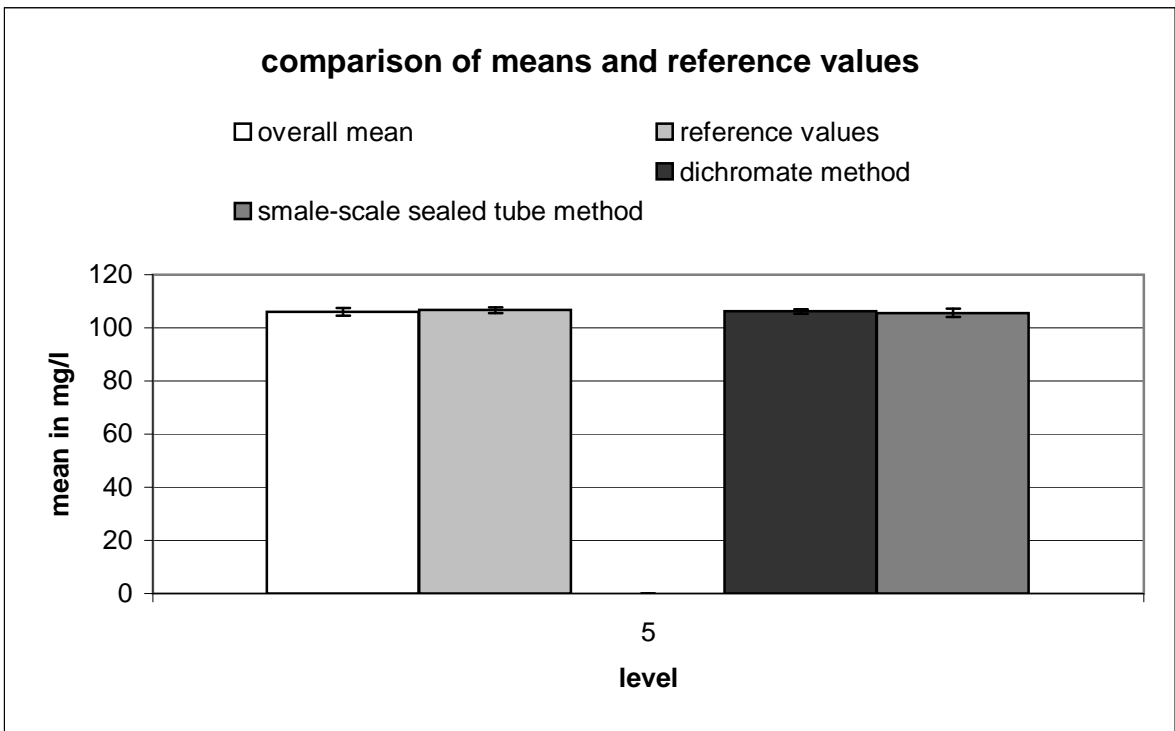
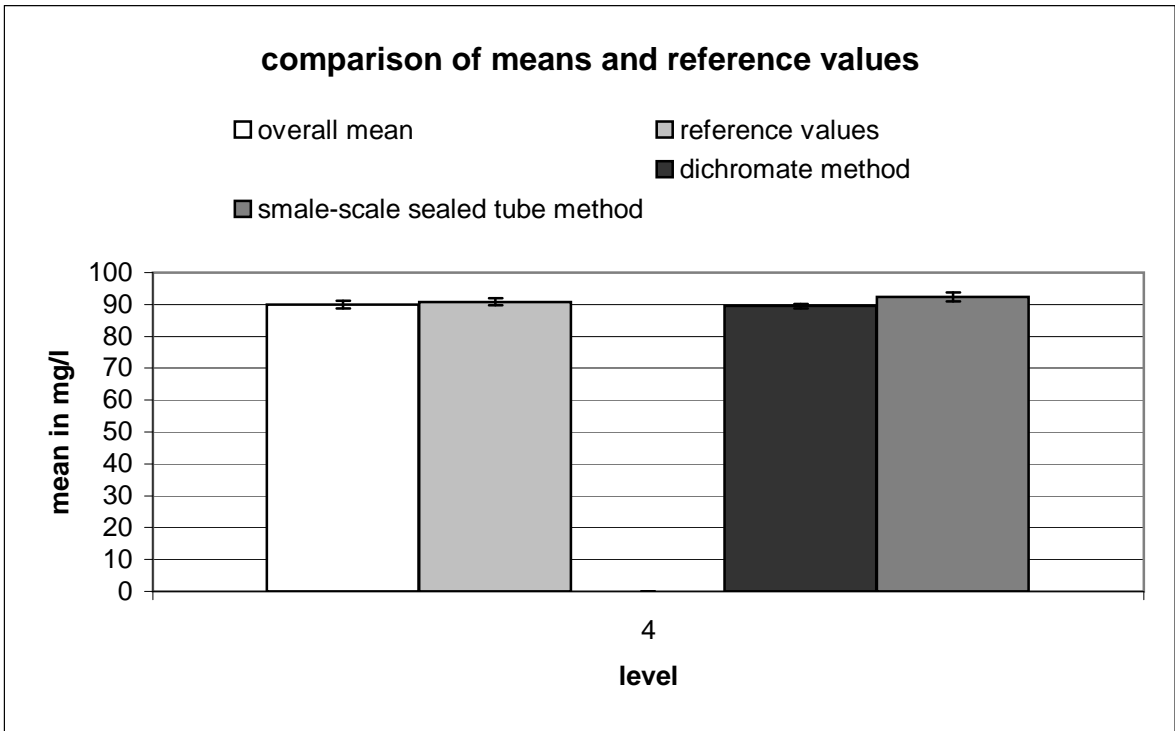
The differences between the methods were not significant.

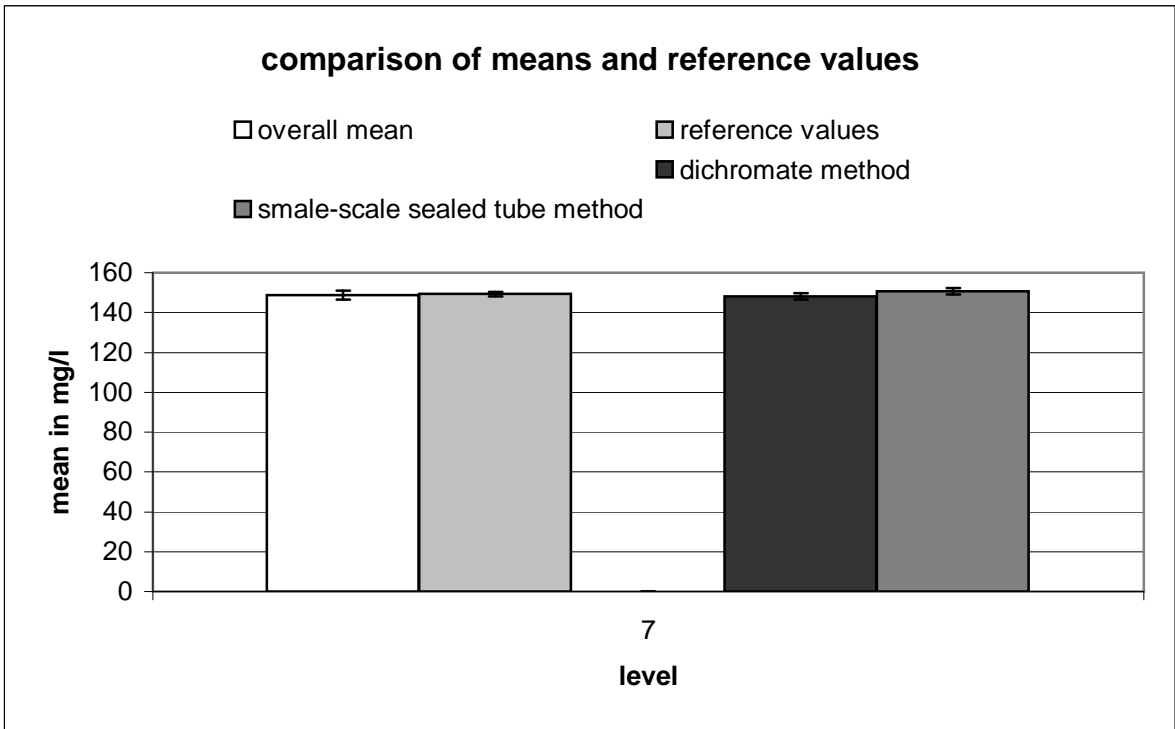
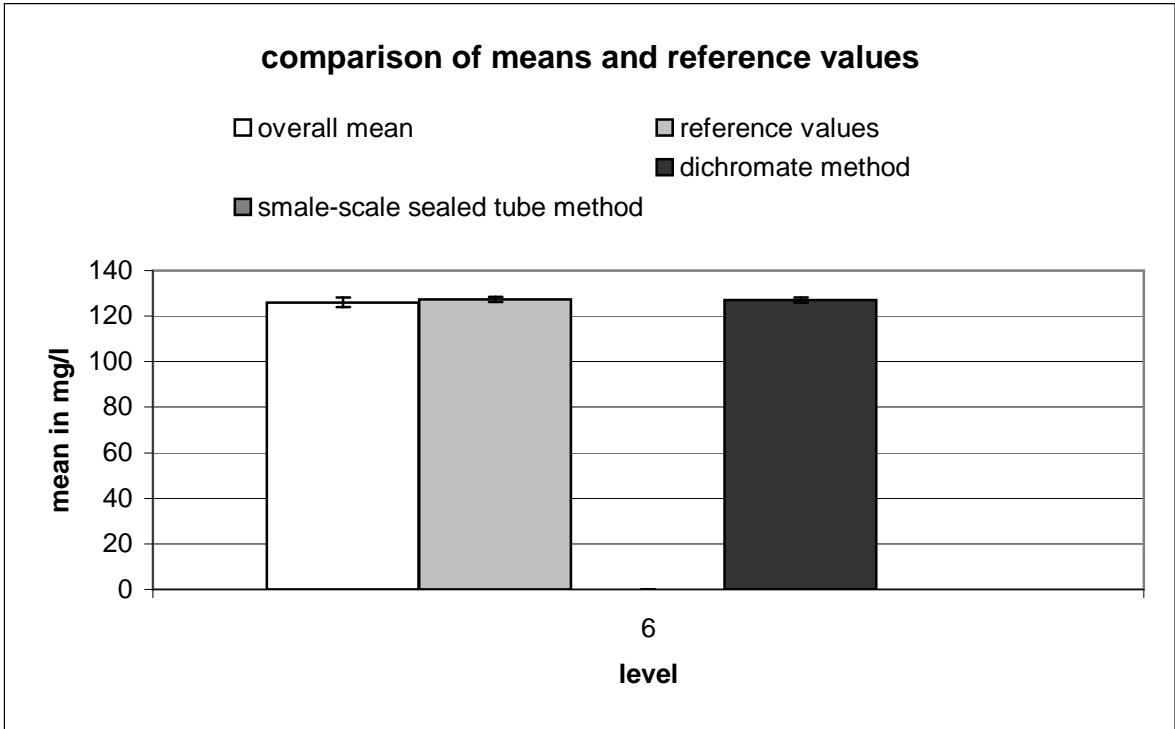
Comparison of means and reference values

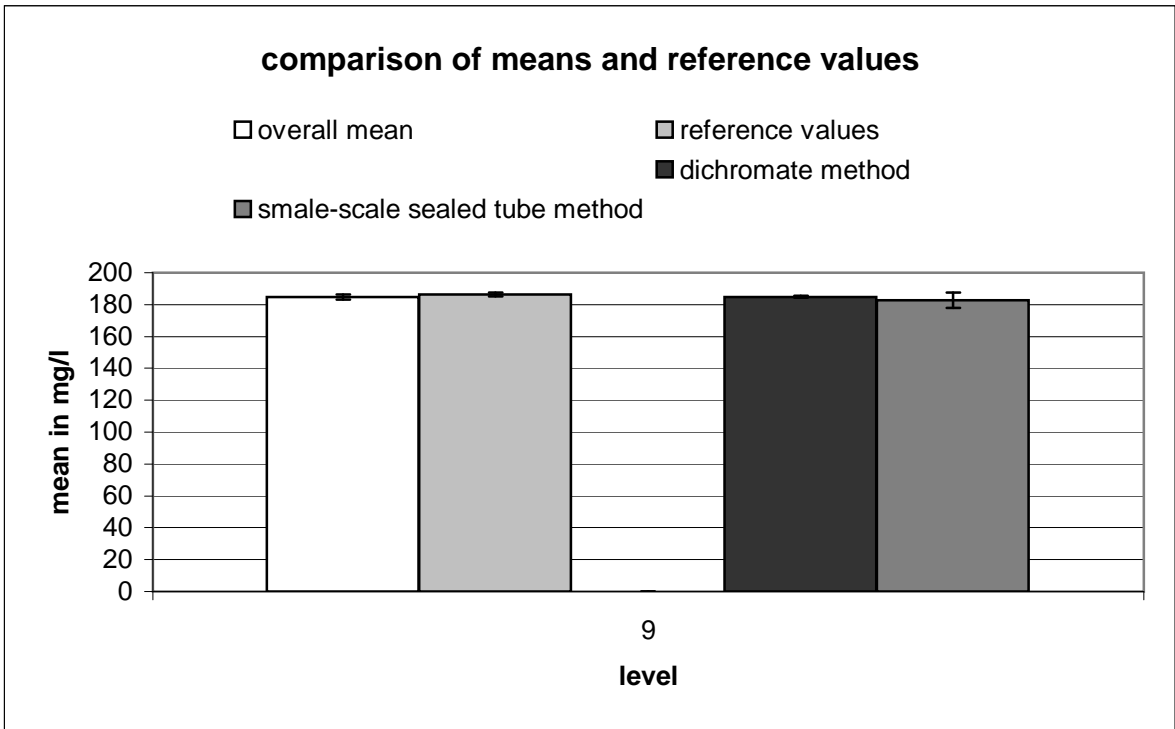
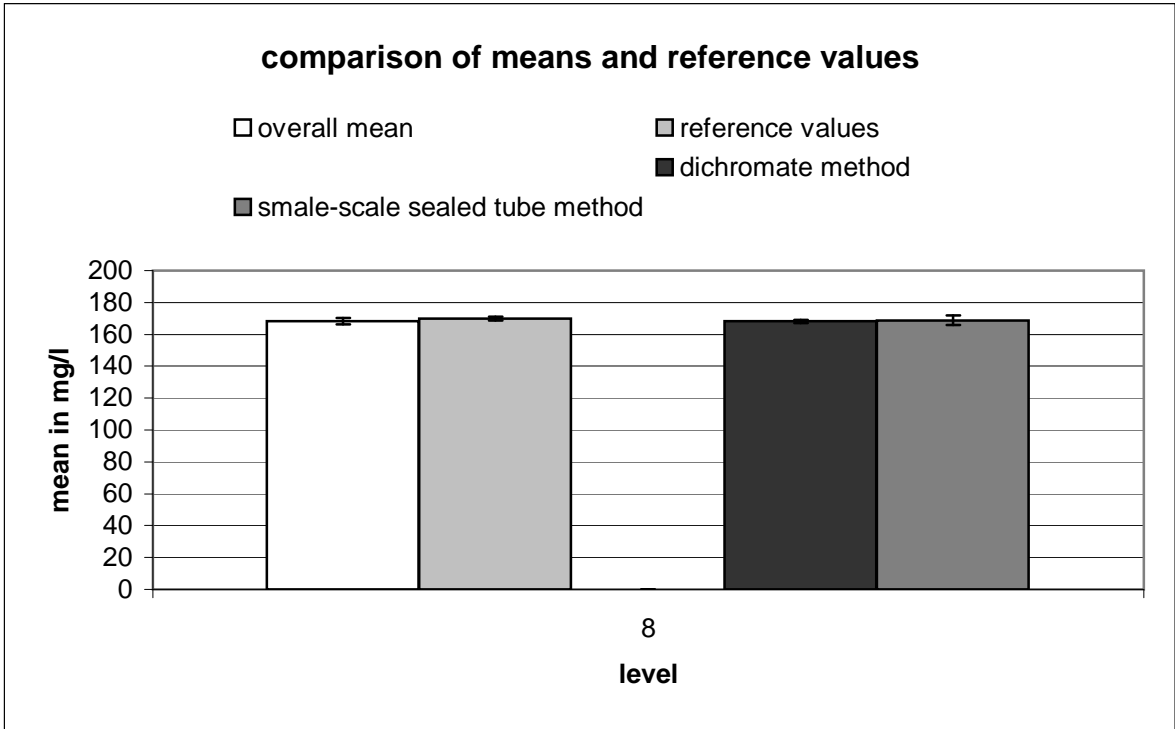
level	mean [mg/l]			reference value [mg/l]		
	mean [mg/l]	exp. uncertainty [mg/l]	exp. uncertainty [%]	reference value [mg/l]	exp. uncertainty [mg/l]	exp. uncertainty [%]
1	42,01	1,28	3,1	42,83	1,12	2,6
2	52,47	1,17	2,2	52,56	1,12	2,1
3	69,37	1,37	2,0	69,84	1,12	1,6
4	89,94	1,18	1,3	90,84	1,12	1,2
5	106,0	1,4	1,4	106,7	1,1	1,1
6	126,0	2,1	1,6	127,4	1,1	0,9
7	148,7	2,1	1,4	149,4	1,1	0,8
8	168,4	2,1	1,2	170,0	1,1	0,7
9	184,7	1,4	0,8	186,4	1,2	0,6

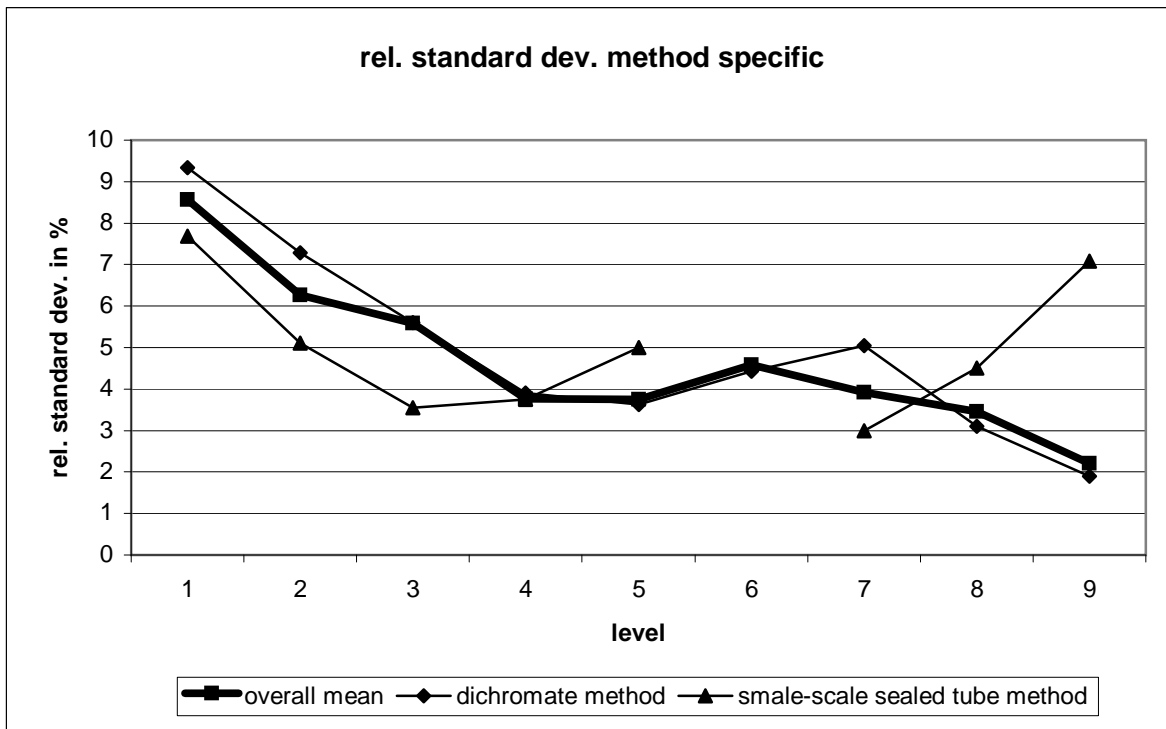












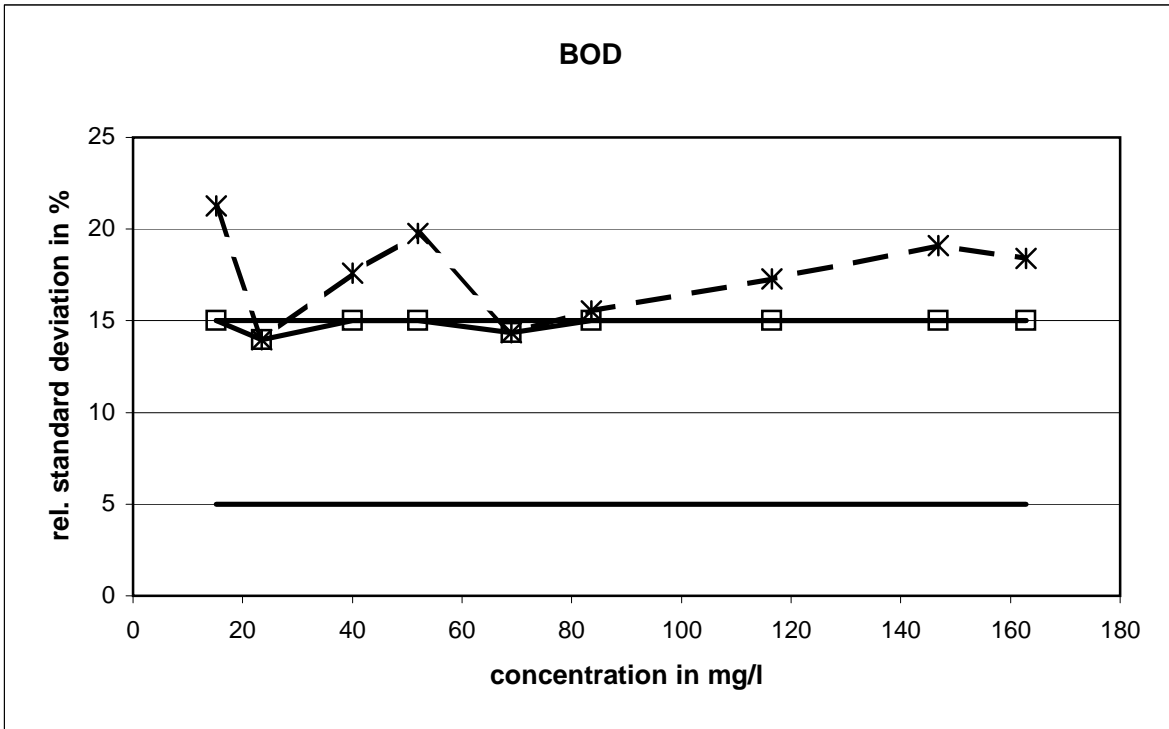
dichromate method									
level	robust mean [mg/l]	exp. uncertainty of the mean [mg/l]	exp. uncertainty of the mean [%]	robust standard deviation [mg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	42,21	0,81	1,918	3,94	9,334	37	3	2	13,51
2	52,36	0,817	1,561	3,813	7,282	34	3	1	11,76
3	70,3	0,798	1,136	3,937	5,6	38	3	3	15,79
4	89,51	0,709	0,792	3,497	3,907	38	2	4	15,79
5	106,2	0,85	0,8	3,845	3,62	32	2	1	9,375
6	126,9	1,111	0,875	5,623	4,429	40	1	0	2,5
7	148	1,602	1,082	7,472	5,048	34	1	1	5,882
8	168,2	1,046	0,622	5,228	3,108	39	1	1	5,128
9	184,9	0,721	0,39	3,51	1,899	37	3	1	10,81

smale-scale sealed tube method									
level	robust mean [mg/l]	exp. uncertainty of the mean [mg/l]	exp. uncertainty of the mean [%]	robust standard deviation [mg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	40,99	1,187	2,896	3,15	7,685	11	1	1	18,18
2	52,46	0,965	1,84	2,676	5,1	12	0	3	25
3	67,48	0,901	1,336	2,391	3,544	11	1	0	9,091
4	92,37	1,367	1,48	3,459	3,745	10	1	0	10
5	105,6	1,648	1,56	5,274	4,993	16	0	1	6,25
7	150,6	1,63	1,083	4,517	3	12	1	1	16,67
8	168,7	3,008	1,783	7,61	4,511	10	0	0	0
9	182,7	4,665	2,553	12,93	7,076	12	2	0	16,67

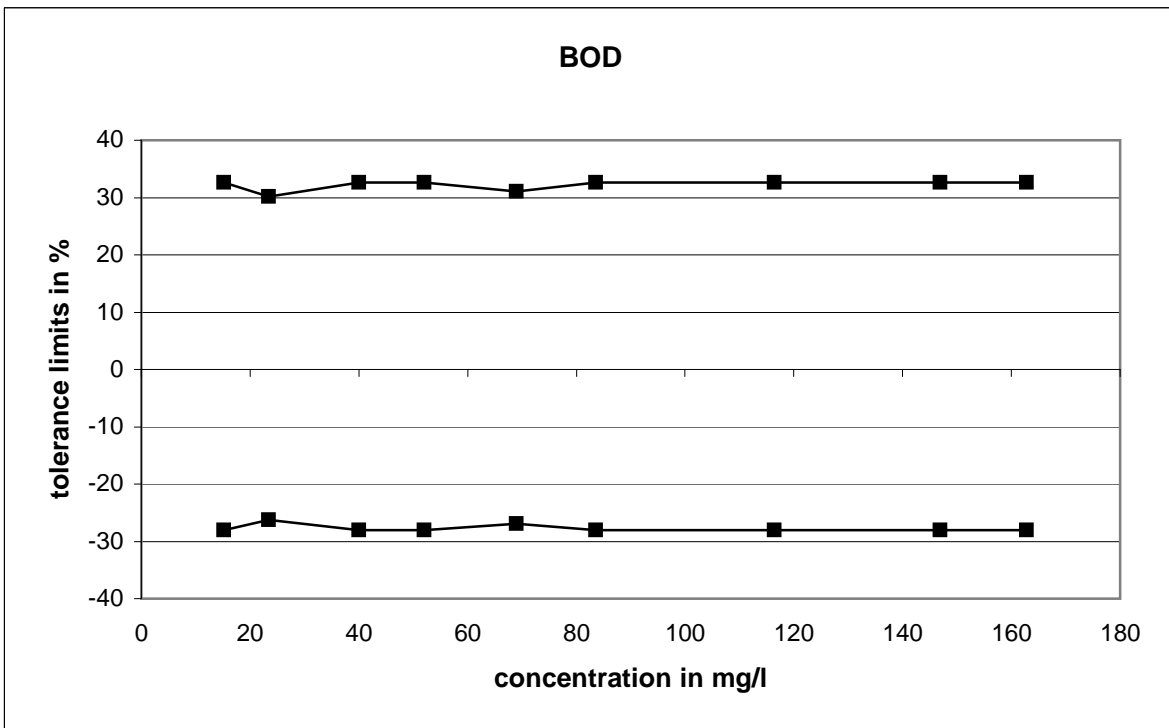
BOD

level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [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	15,17	6,63	3,222	2,275	15,00	20,11	10,91	32,60	-28,07	46	3	8	23,9
2	23,42	4,17	3,272	3,272	13,97	30,49	17,27	30,18	-26,26	41	1	2	7,3
3	40,08	2,66	7,050	6,011	15,00	53,14	28,82	32,60	-28,07	39	3	2	12,8
4	51,98	1,98	10,27	7,797	15,00	68,92	37,39	32,60	-28,07	37	1	2	8,1
5	68,98	1,52	9,910	9,910	14,37	90,43	50,38	31,11	-26,96	42	3	0	7,1
6	83,61	1,25	13,00	12,54	15,00	110,9	60,13	32,60	-28,07	47	3	2	10,6
7	116,5	0,92	20,12	17,47	15,00	154,4	83,77	32,60	-28,07	42	7	3	23,8
8	146,9	0,72	28,06	22,03	15,00	194,8	105,6	32,60	-28,07	39	4	1	12,8
9	162,8	0,62	29,94	24,42	15,00	215,9	117,1	32,60	-28,07	45	4	1	11,1
sum										378	29	21	13,2

Relative standard deviation and tolerance limits



The relative standard deviation, calculated with the Q-method, reached the upper limit with seven concentration levels.

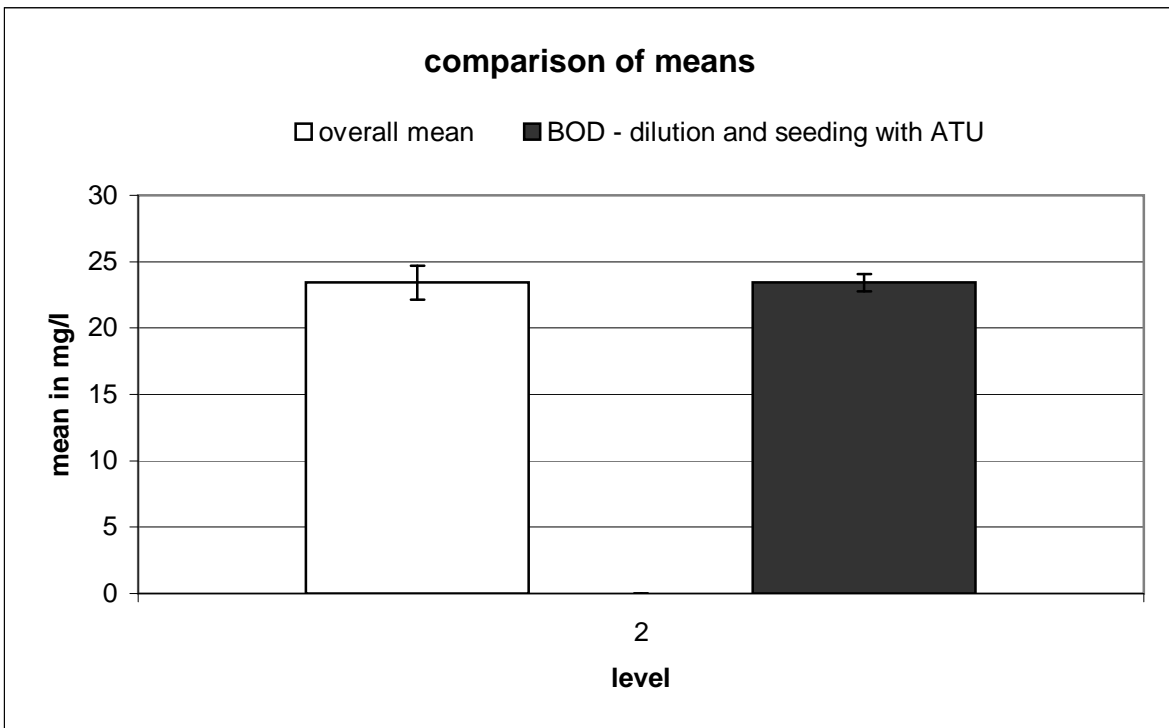
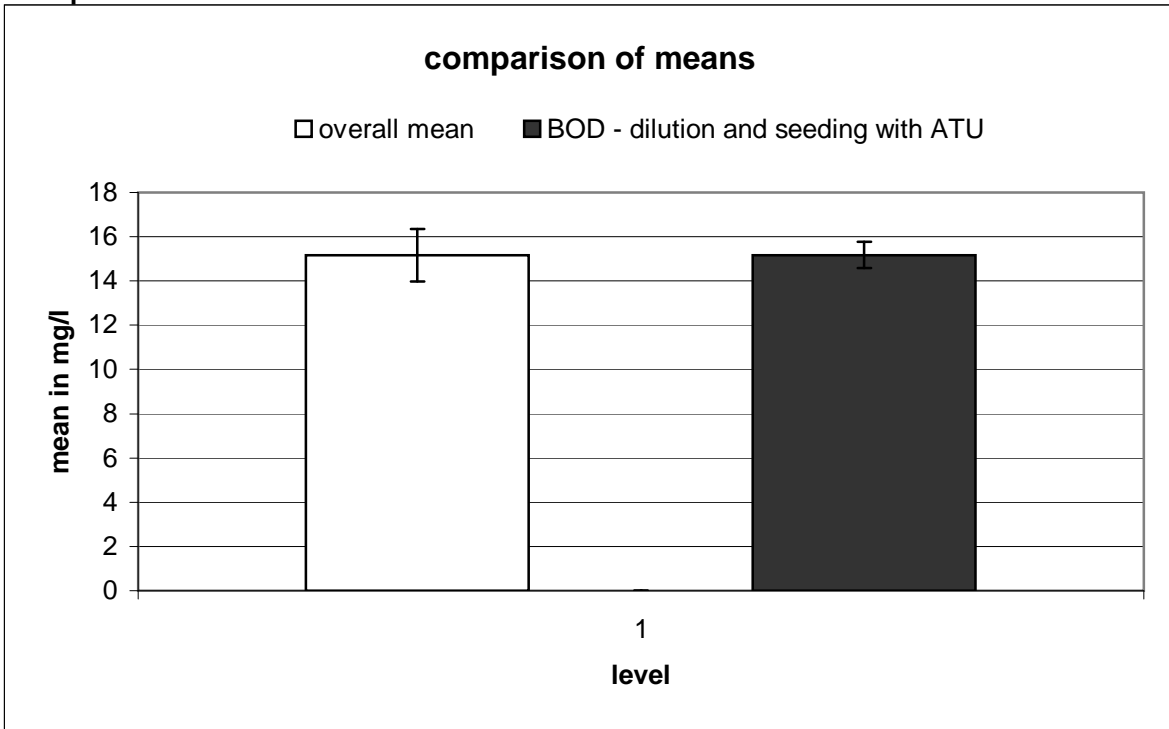


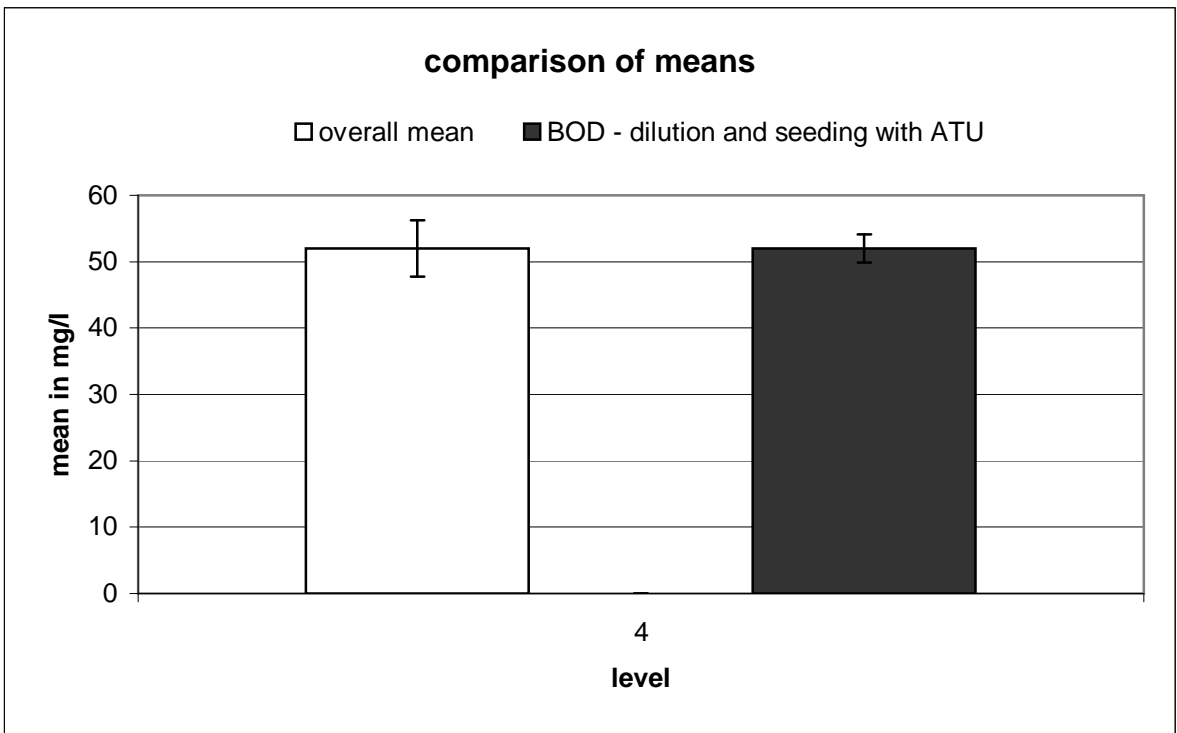
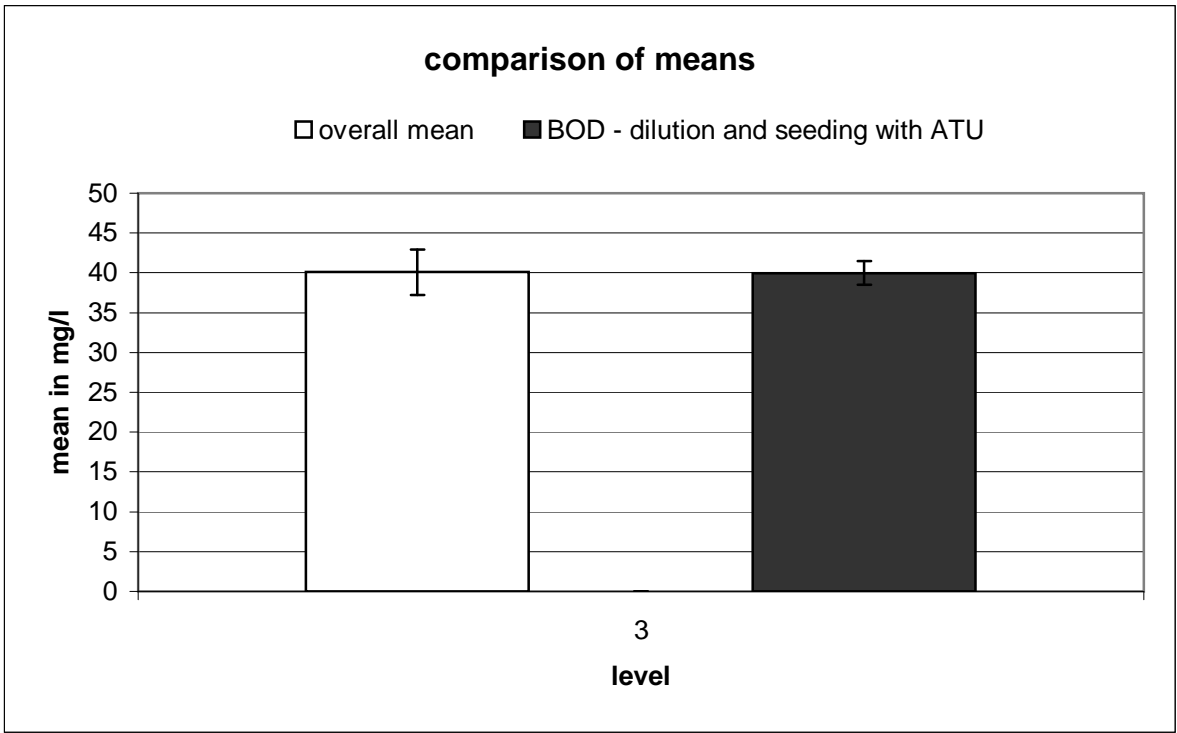
PT 3/11 -

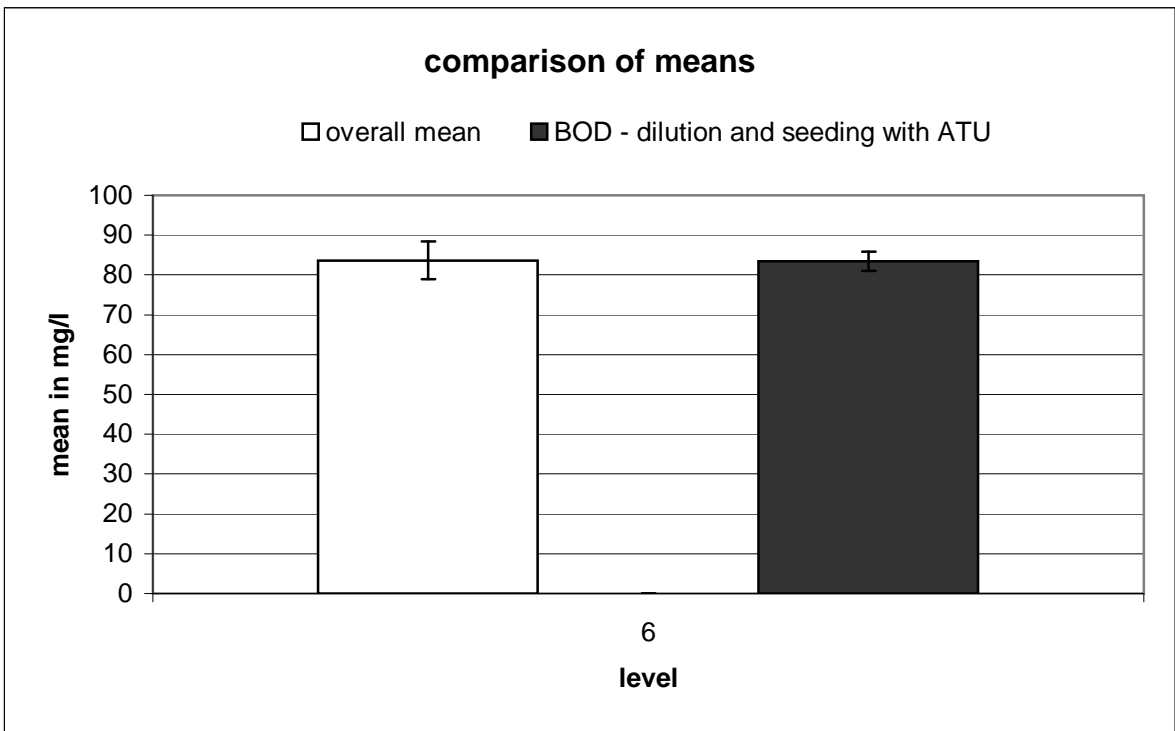
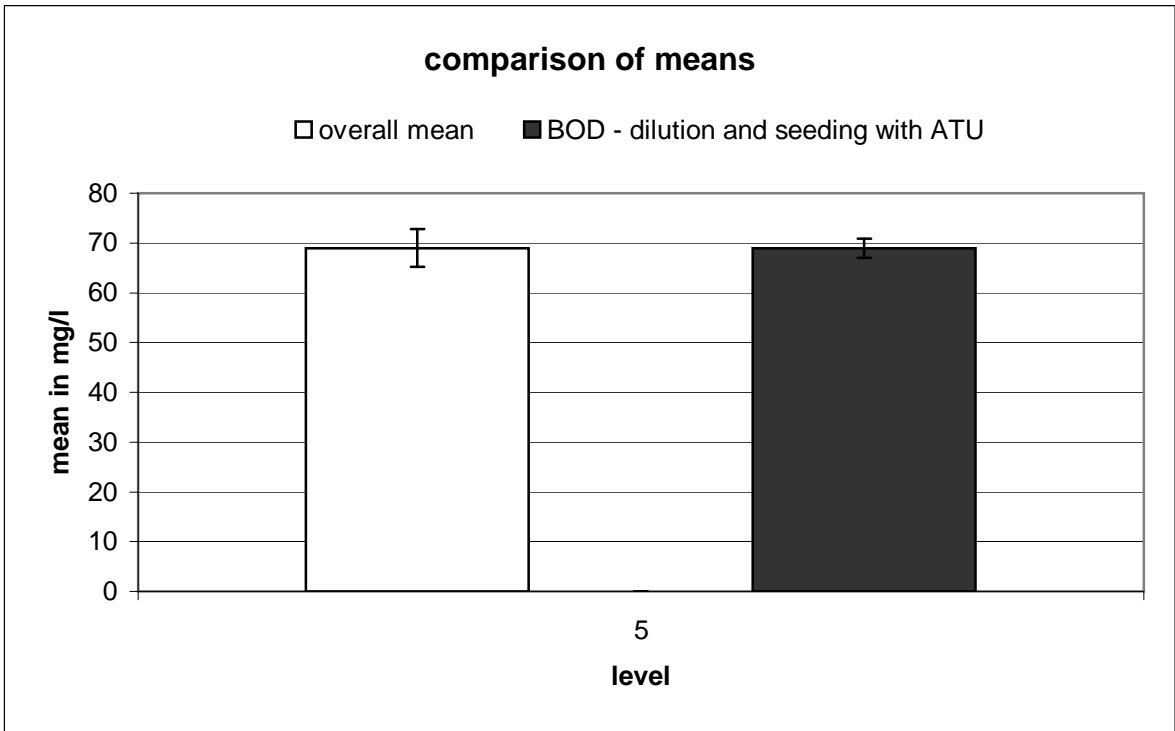
Method specific evaluation

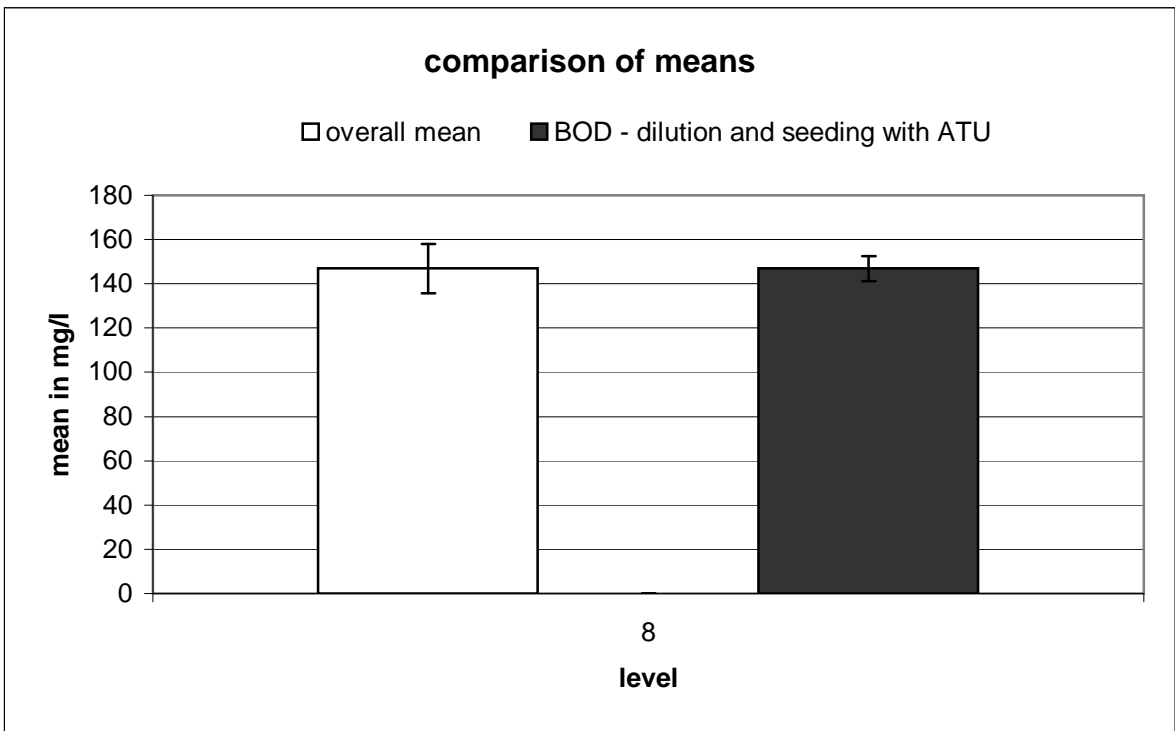
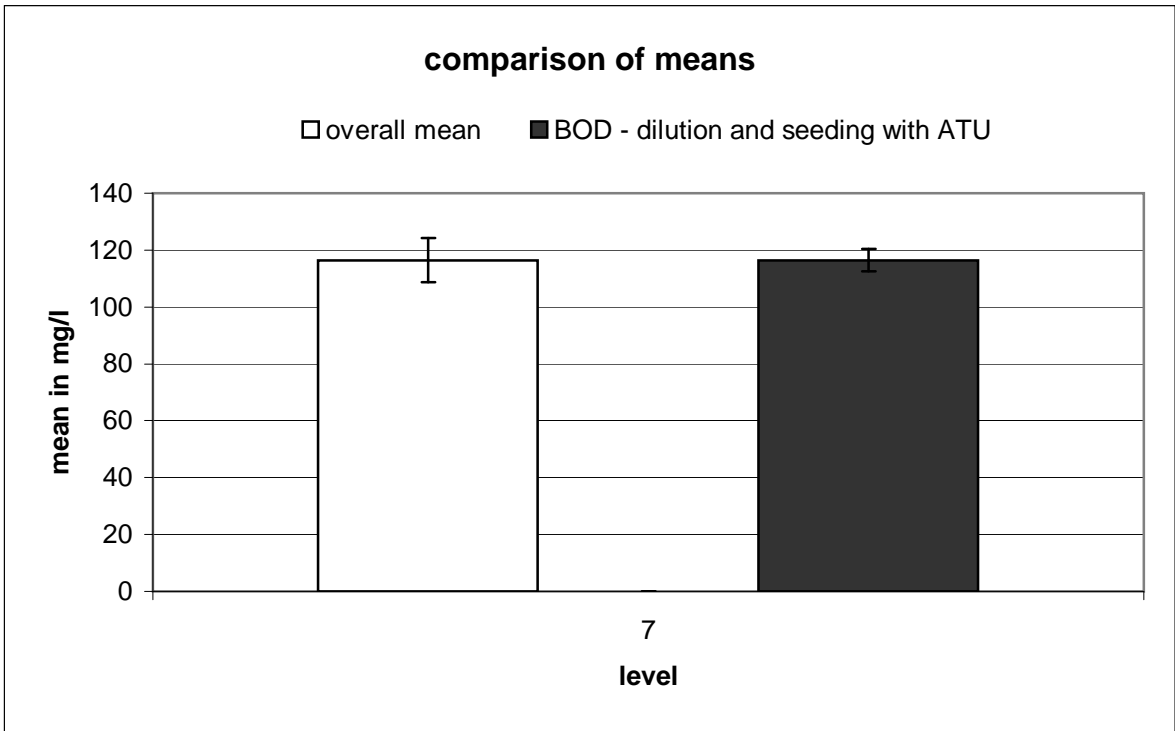
An evaluation of the methods is not applicable, because only one method was used.

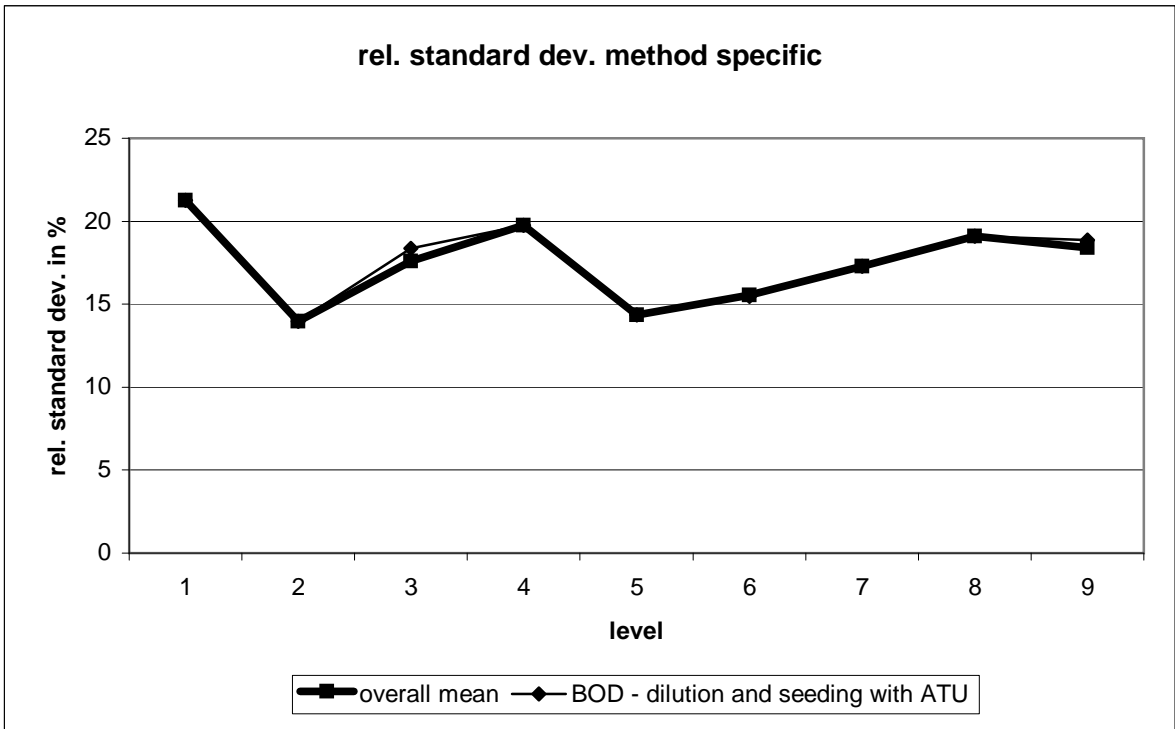
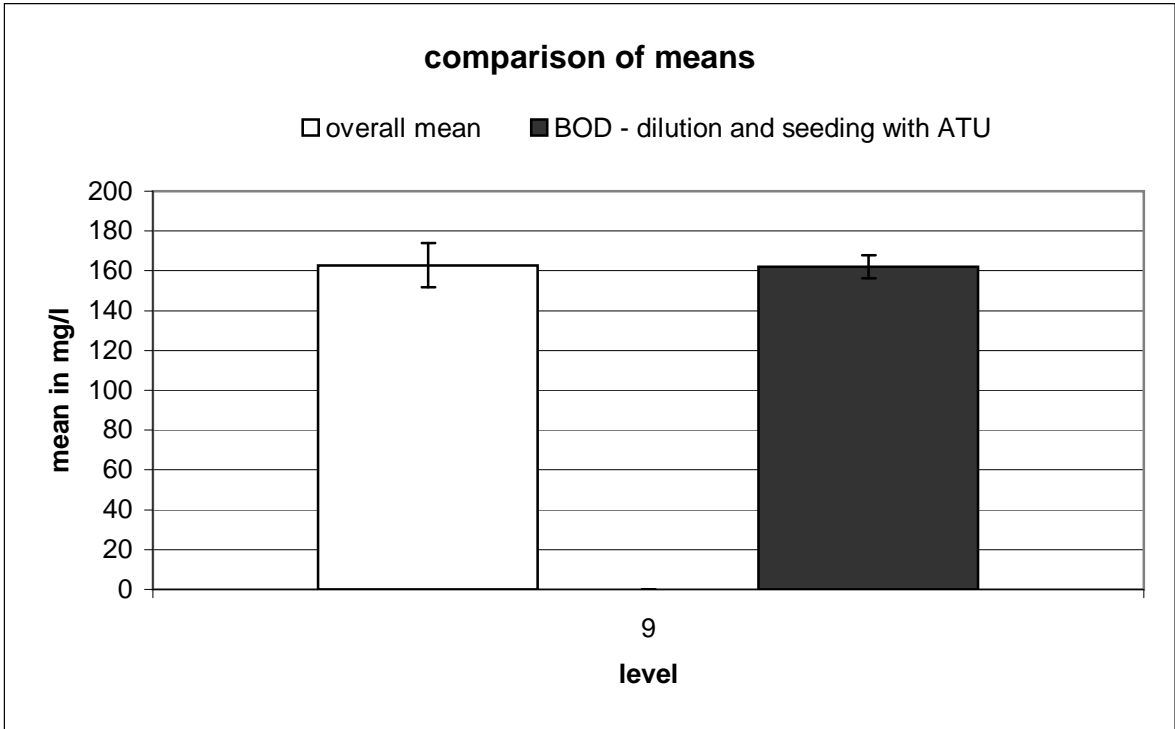
Comparison of means









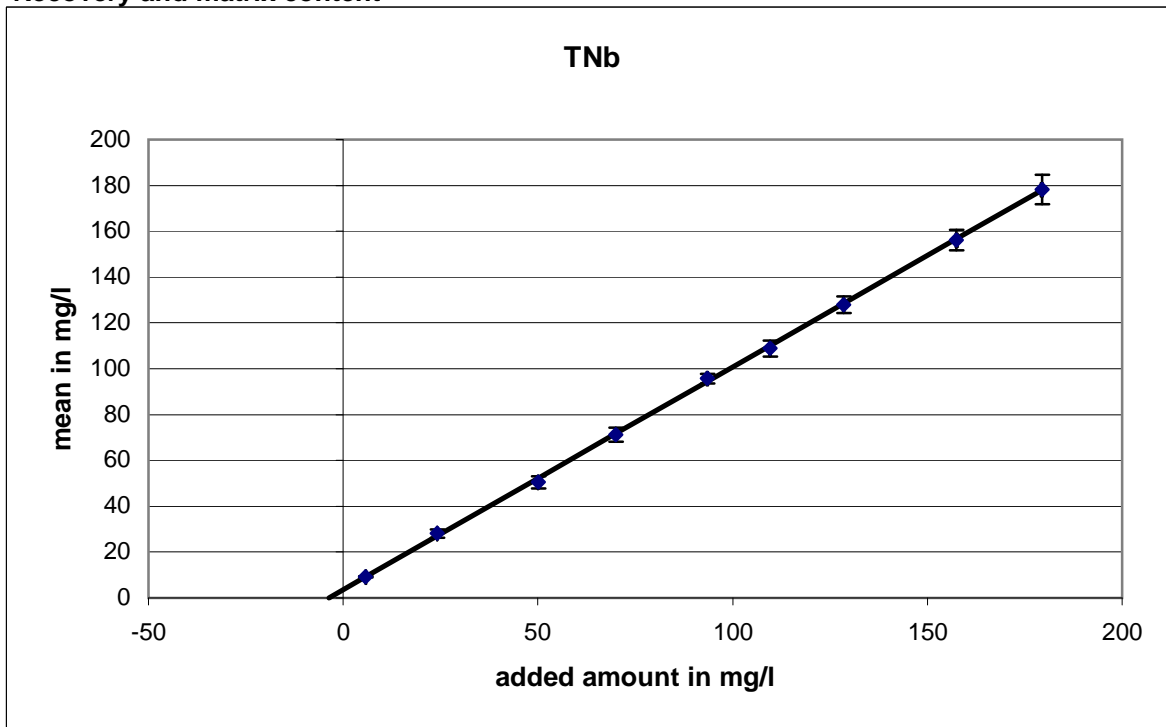


BOD - dilution and seeding with ATU									
level	robust mean [mg/l]	exp. uncertainty of the mean [mg/l]	exp. uncertainty of the mean [%]	robust standard deviation [mg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	15,17	0,594	3,916	3,222	21,25	46	1	7	17,39
2	23,42	0,639	2,728	3,272	13,97	41	2	2	9,756
3	39,99	1,488	3,72	7,336	18,35	38	3	1	10,53
4	51,98	2,11	4,06	10,27	19,76	37	0	2	5,405
5	68,98	1,911	2,771	9,91	14,37	42	4	0	9,524
6	83,4	2,377	2,851	12,9	15,47	46	4	2	13,04
7	116,5	3,88	3,332	20,12	17,27	42	7	3	23,81
8	146,9	5,616	3,823	28,06	19,1	39	3	0	7,692
9	162	5,753	3,552	30,53	18,85	44	3	1	9,091

TNb

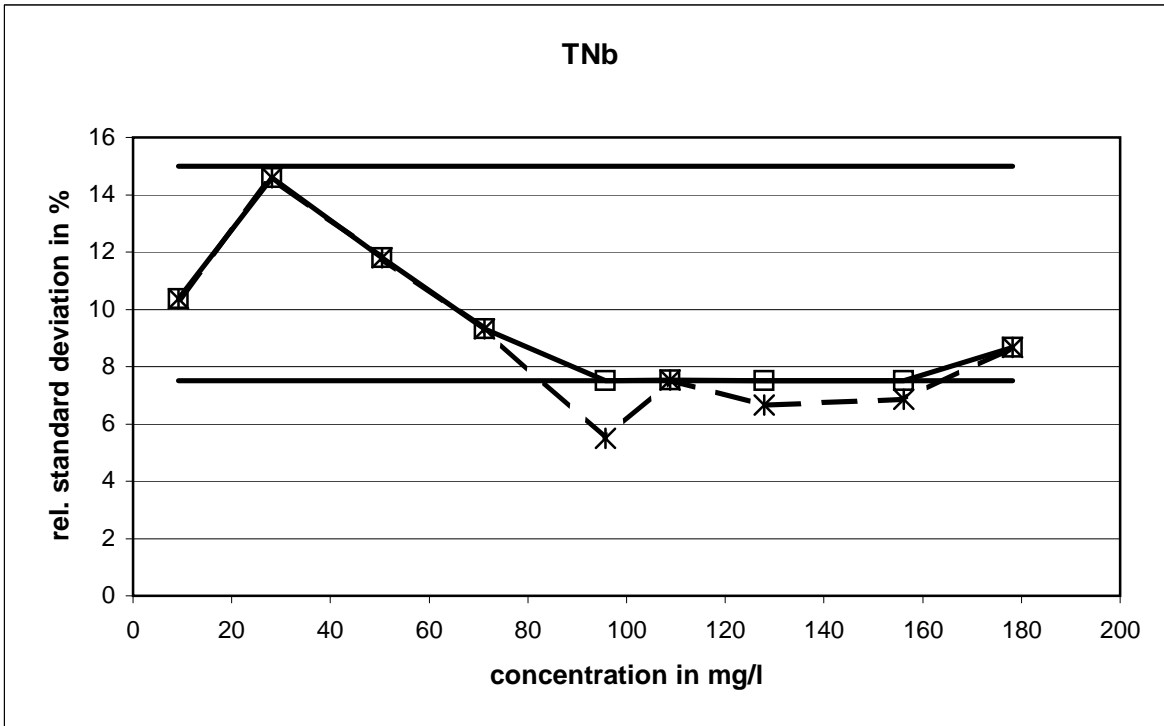
level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [mg/l]	standard deviation for proficiency assessment [mg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [mg/l]	lower tolerance limit [mg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	9,192	4,63	0,9530	0,9530	10,37	11,21	7,375	21,92	-19,77	40	0	2	5,0
2	28,13	1,58	4,103	4,103	14,58	37,03	20,44	31,61	-27,34	34	0	3	8,8
3	50,45	0,83	5,956	5,956	11,80	63,15	39,16	25,17	-22,38	31	1	0	3,2
4	71,22	0,61	6,632	6,632	9,31	85,16	58,51	19,57	-17,84	30	0	1	3,3
5	95,74	2,21	5,274	7,181	7,50	110,7	81,88	15,60	-14,48	39	1	1	5,1
6	108,8	0,41	8,189	8,189	7,52	125,9	93,02	15,66	-14,52	36	2	2	11,1
7	127,9	0,36	8,529	9,591	7,50	147,8	109,4	15,60	-14,48	33	1	2	9,1
8	156,2	0,30	10,73	11,71	7,50	180,5	133,6	15,60	-14,48	37	2	1	8,1
9	178,2	0,27	15,46	15,46	8,68	210,6	148,5	18,17	-16,66	35	3	2	14,3
sum										315	10	14	7,6

Recovery and matrix content

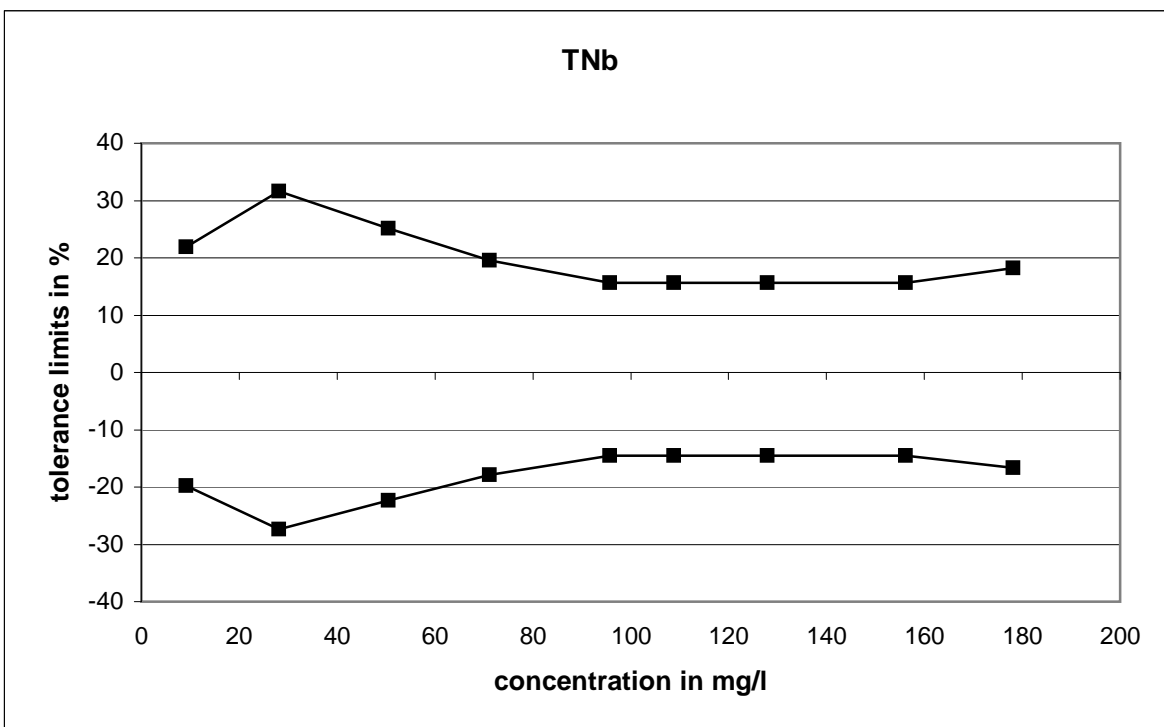


Slope of the regression line: 0,971, recovery: 97,1 %
 neg. x-axis-intercept = matrix content: 3,71 mg/l
 expanded uncertainty of the matrix content: 0,44 mg/l = 11,9 %

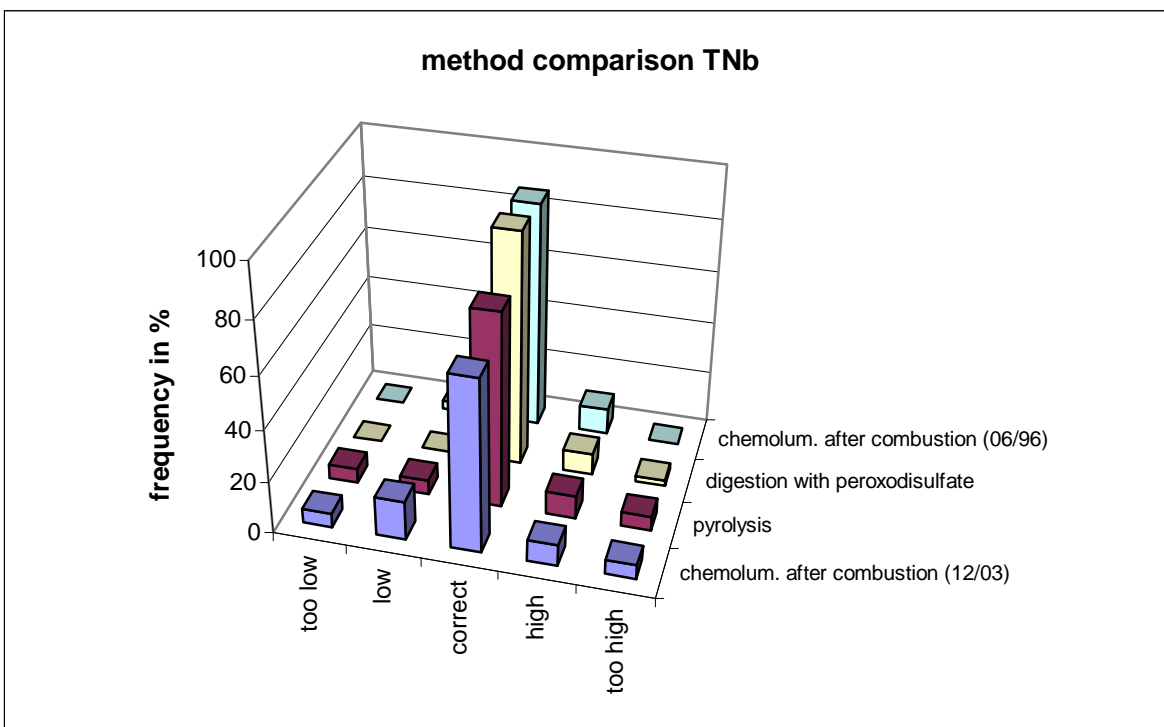
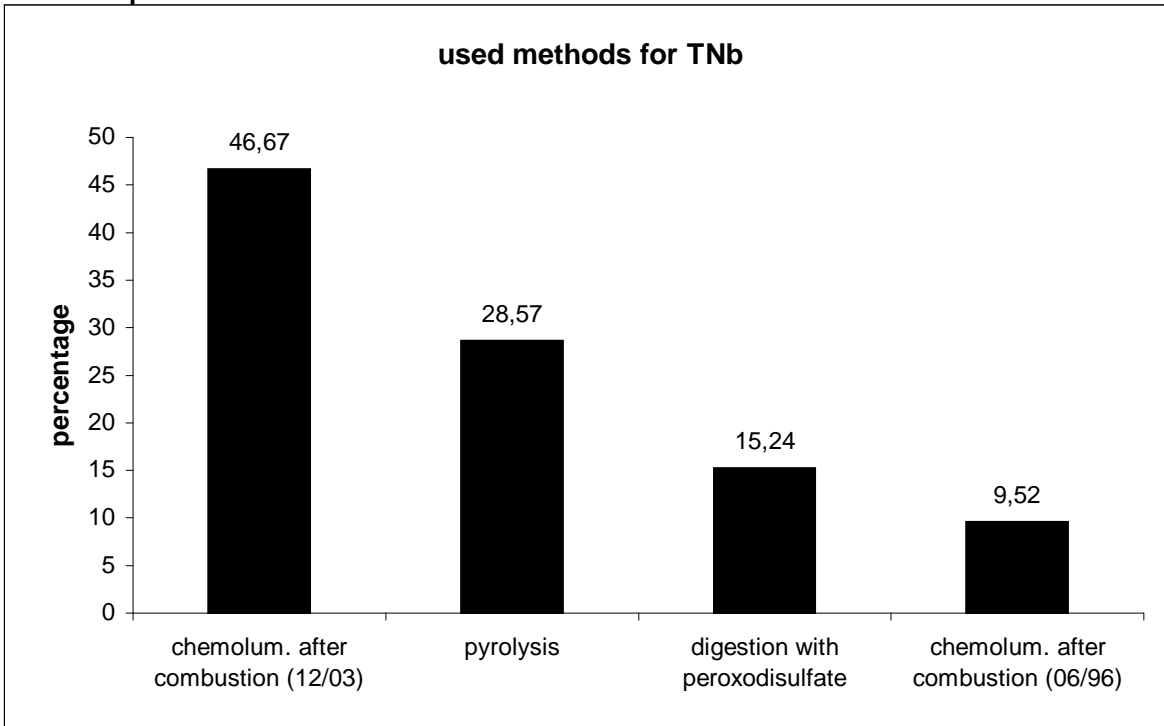
Relative standard deviation and tolerance limits



The relative standard deviation, calculated with the Q-method, reached the lower limit with three concentration levels.



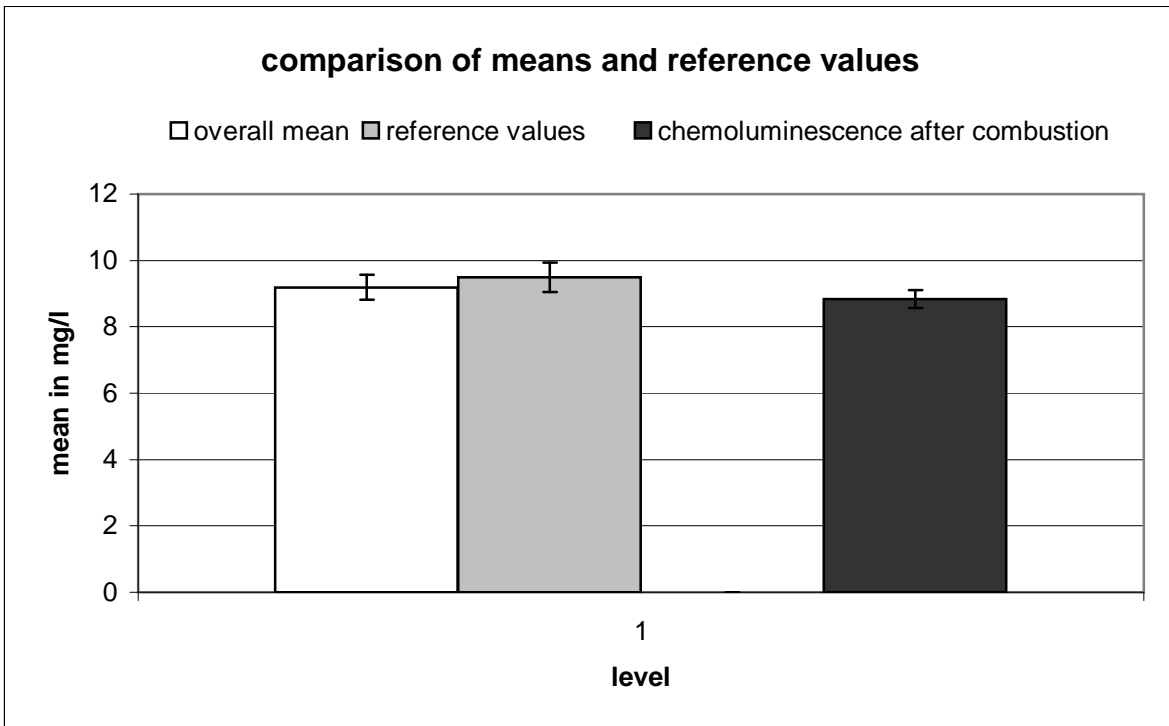
Method specific evaluation

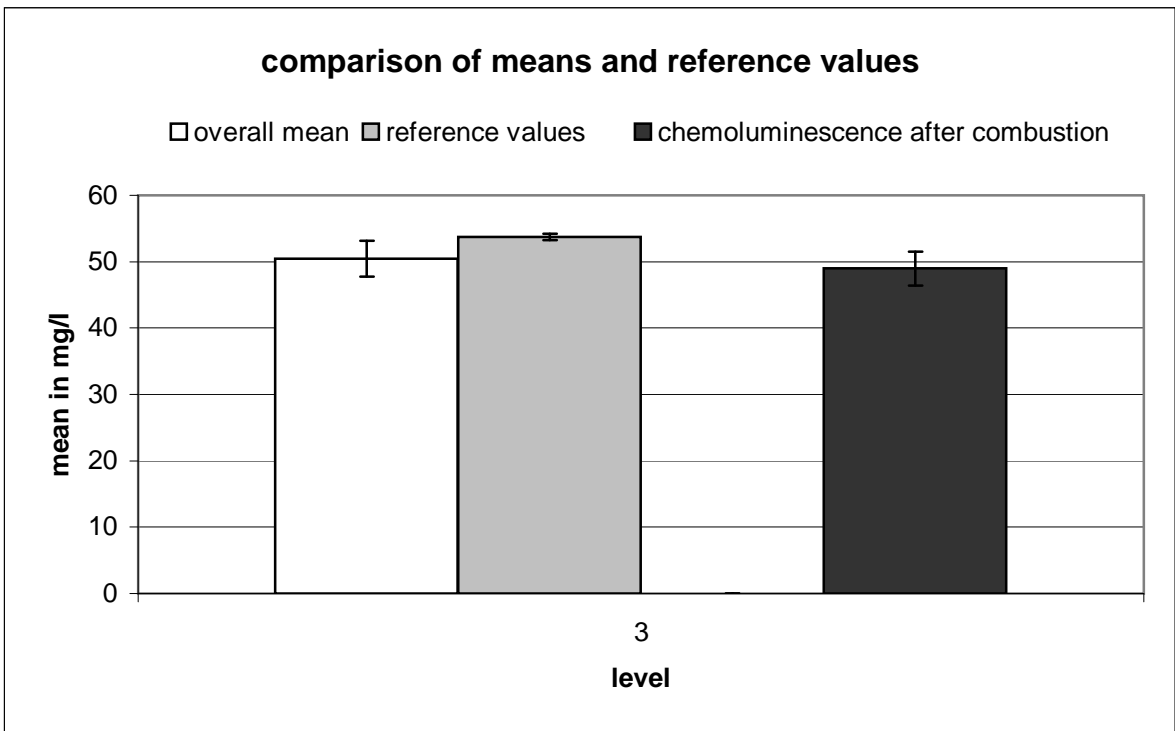
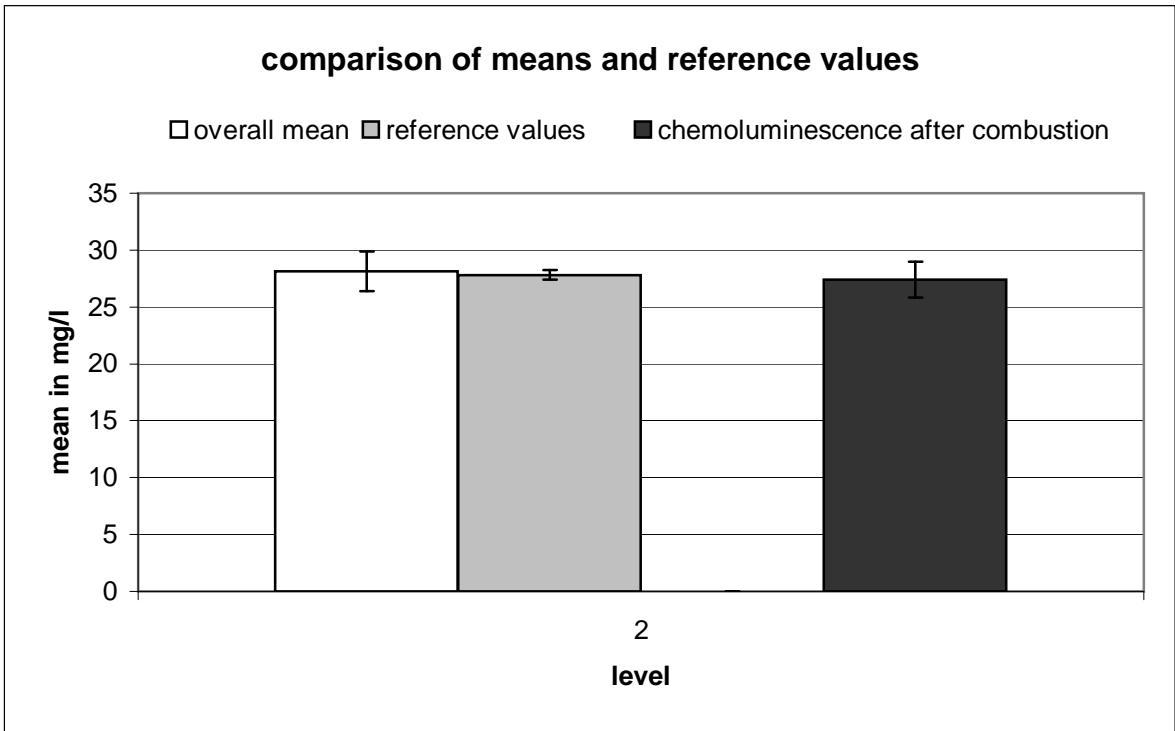


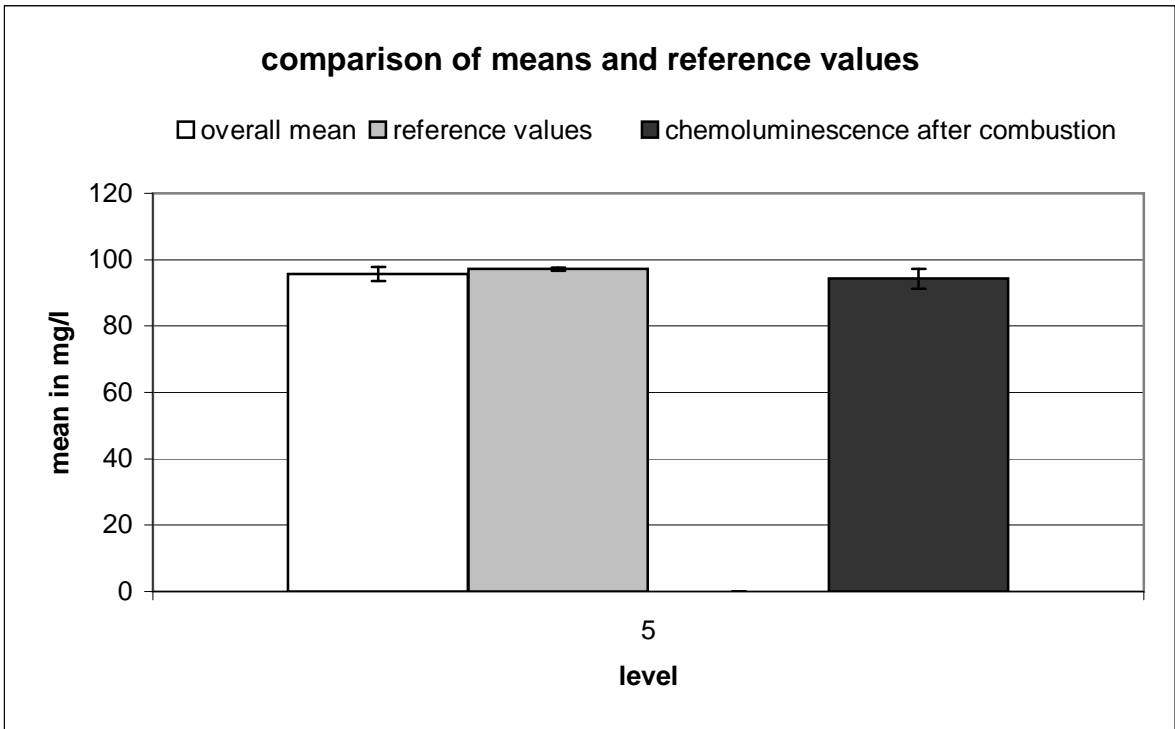
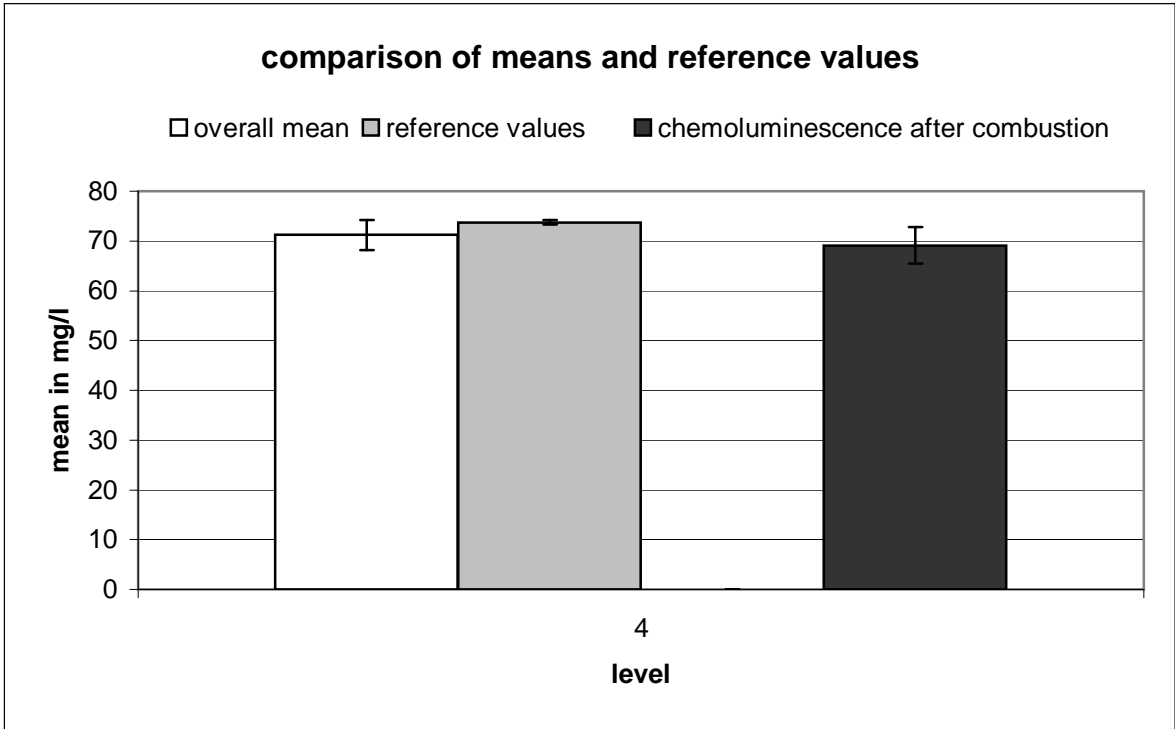
The differences between the methods were not significant.

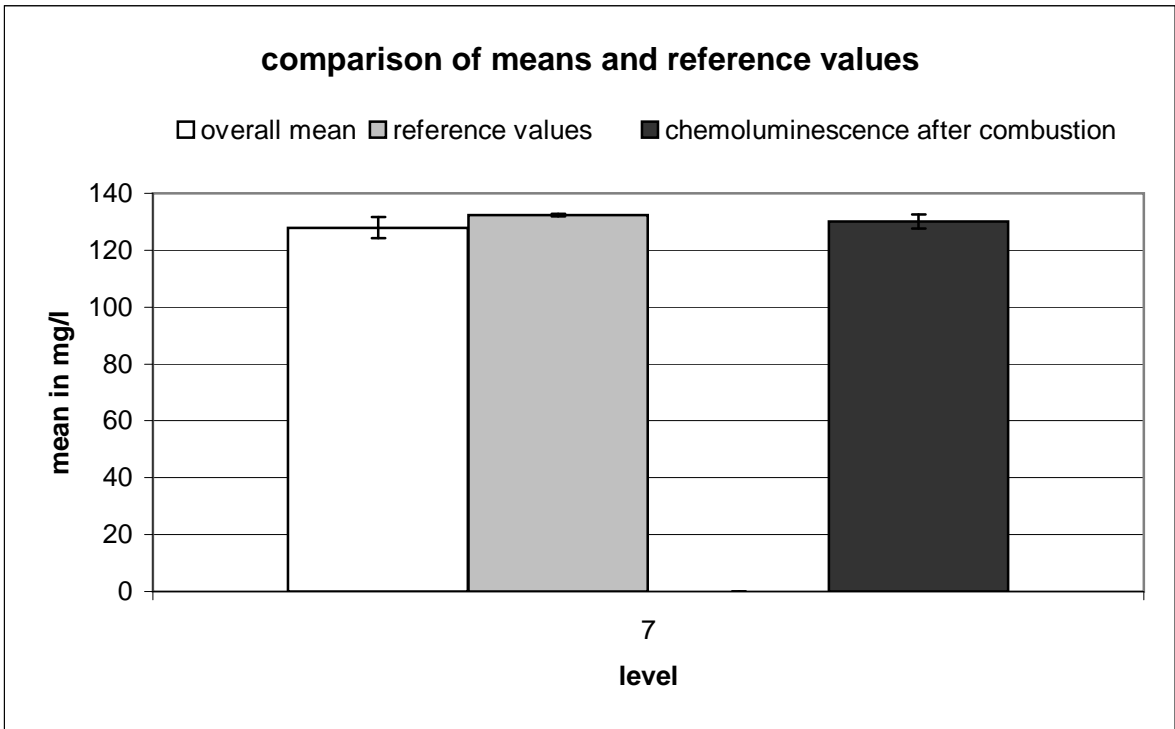
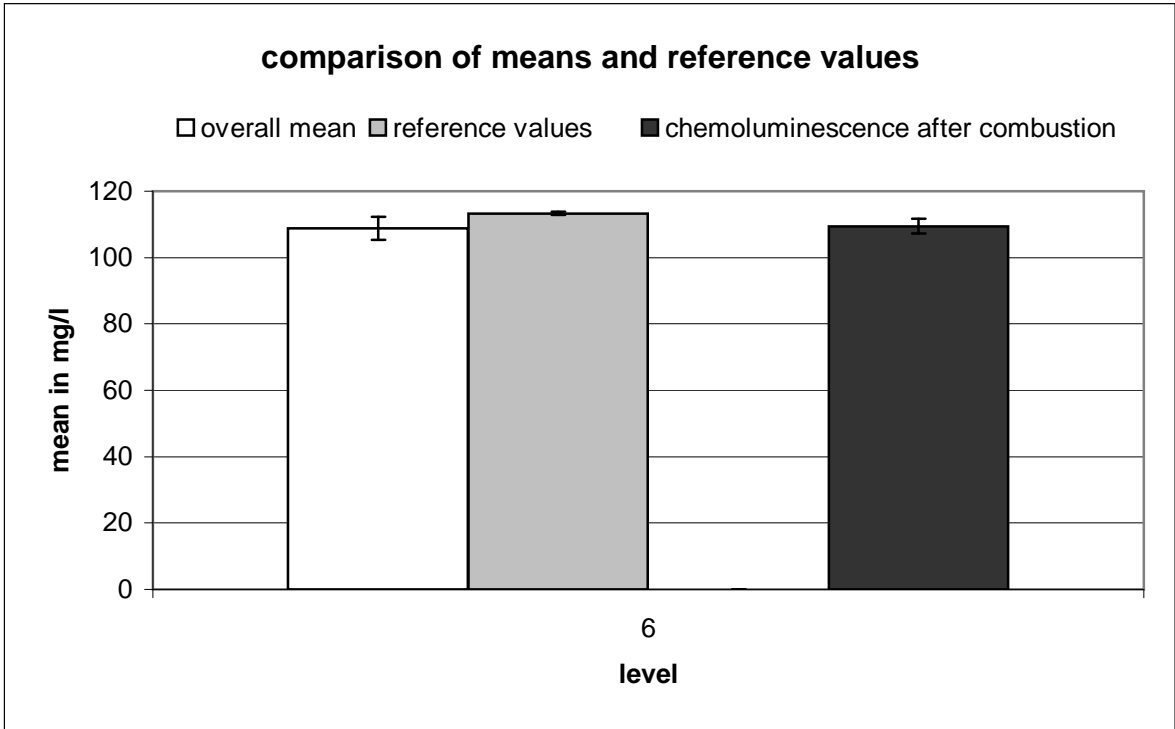
Comparison of means and reference values

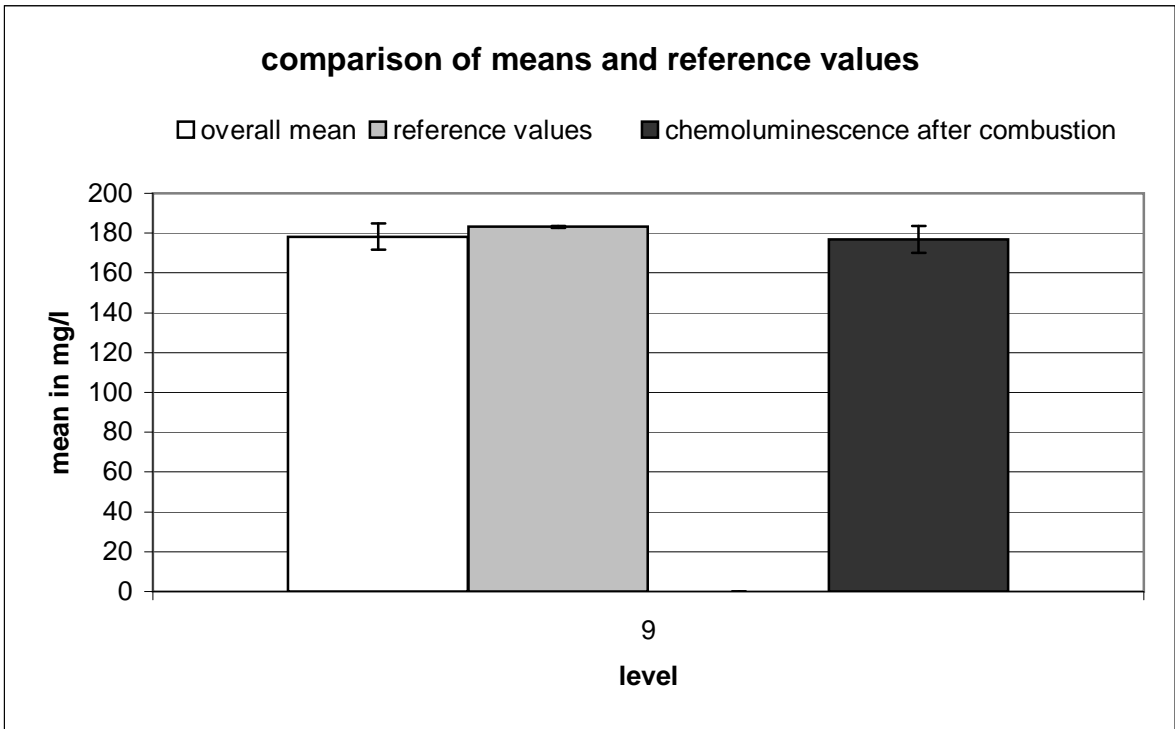
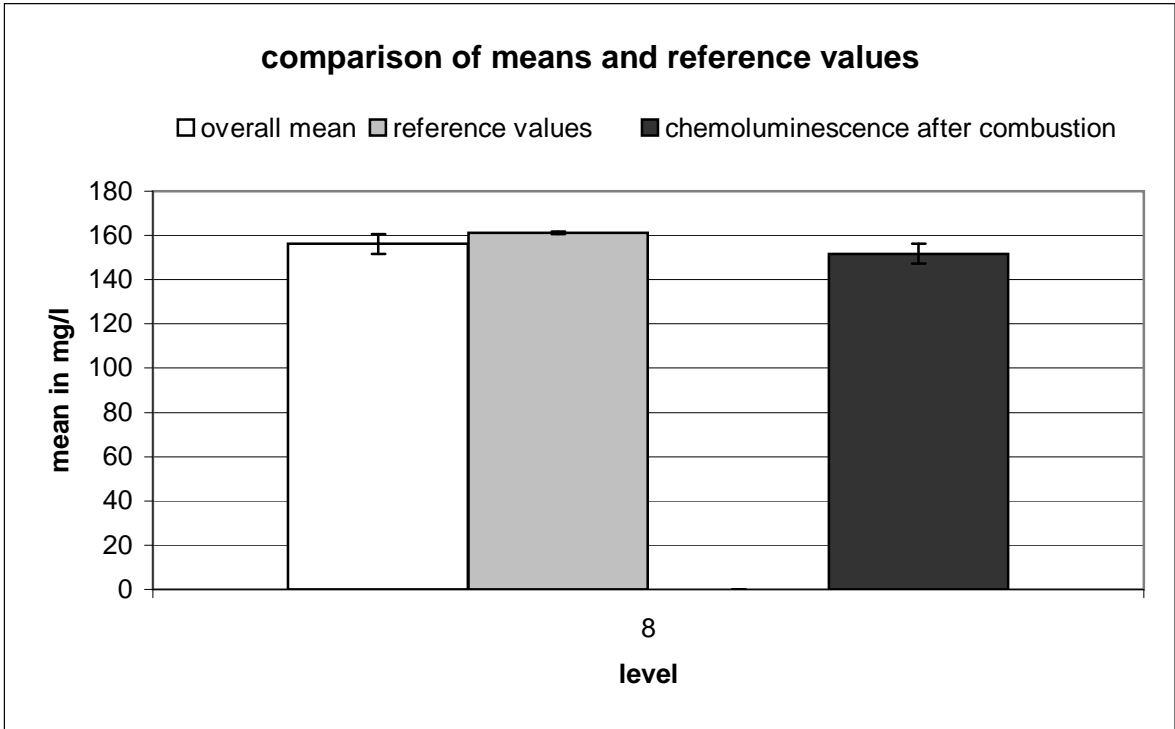
level	mean [mg/l]	exp. uncertainty [mg/l]	exp. uncertainty [%]	reference value [mg/l]	exp. uncertainty [mg/l]	exp. uncertainty [%]
1	9,192	0,377	4,1	9,491	0,439	4,6
2	28,13	1,76	6,3	27,82	0,44	1,6
3	50,45	2,67	5,3	53,73	0,44	0,8
4	71,22	3,03	4,3	73,75	0,45	0,6
5	95,74	2,11	2,2	97,18	0,46	0,5
6	108,8	3,4	3,1	113,3	0,5	0,4
7	127,9	3,7	2,9	132,3	0,5	0,4
8	156,2	4,4	2,8	161,2	0,5	0,3
9	178,2	6,5	3,7	183,1	0,5	0,3

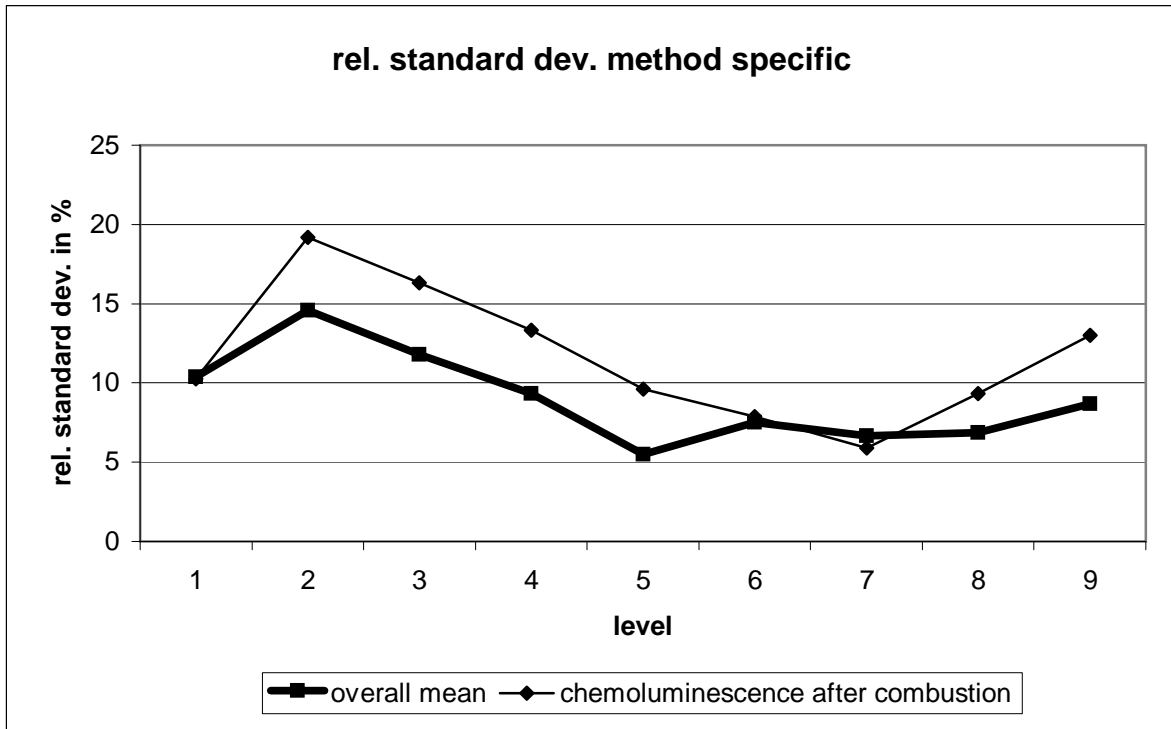










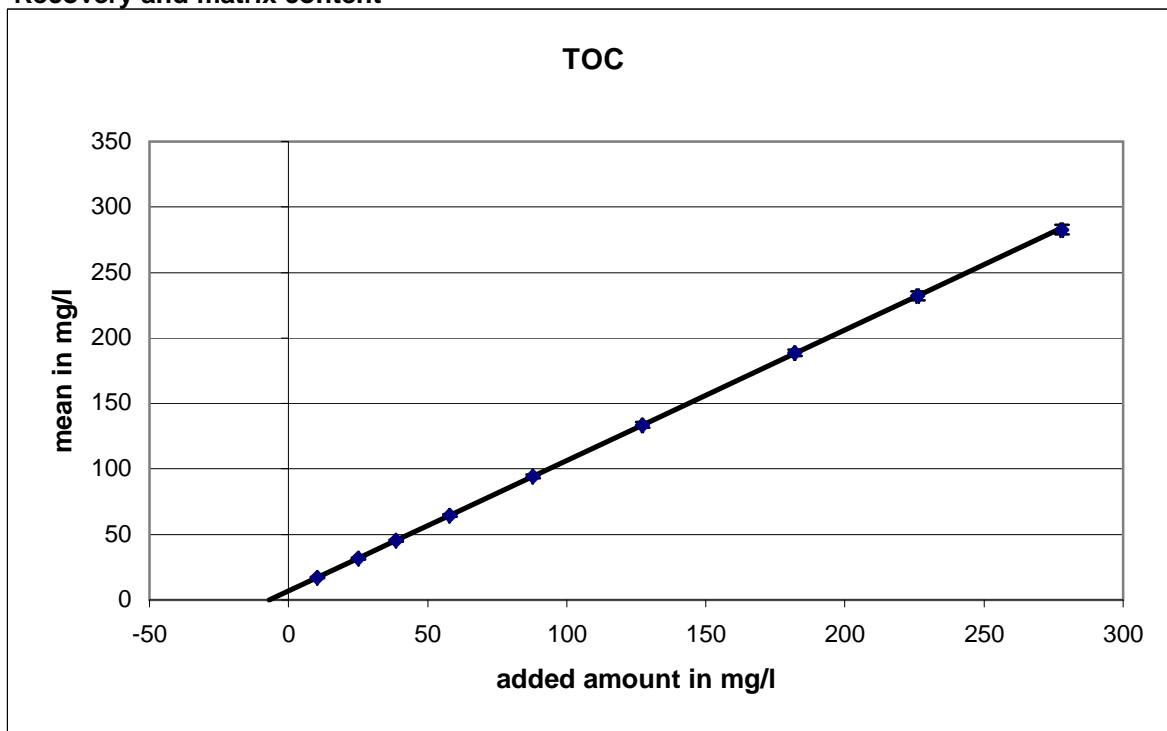


chemoluminescence after combustion									
level	robust mean [mg/l]	exp. uncertainty of the mean [mg/l]	exp. uncertainty of the mean [%]	robust standard deviation [mg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	8,838	0,275	3,111	0,9069	10,26	17	0	1	5,882
2	27,41	1,595	5,8215	5,2627	19,2	17	0	2	11,76
3	48,97	2,578	5,2657	7,9889	16,32	15	1	0	6,667
4	69,12	3,64	5,2664	9,2095	13,32	10	1	1	20
5	94,26	2,922	3,0995	9,0524	9,603	15	1	1	13,33
6	109,5	2,196	2,0064	8,6069	7,864	24	2	2	16,67
7	130,1	2,393	1,8396	7,6574	5,887	16	2	2	25
8	151,7	4,577	3,0161	14,18	9,345	15	2	0	13,33
9	176,8	6,778	3,8336	23,006	13,01	18	2	0	11,11

TOC

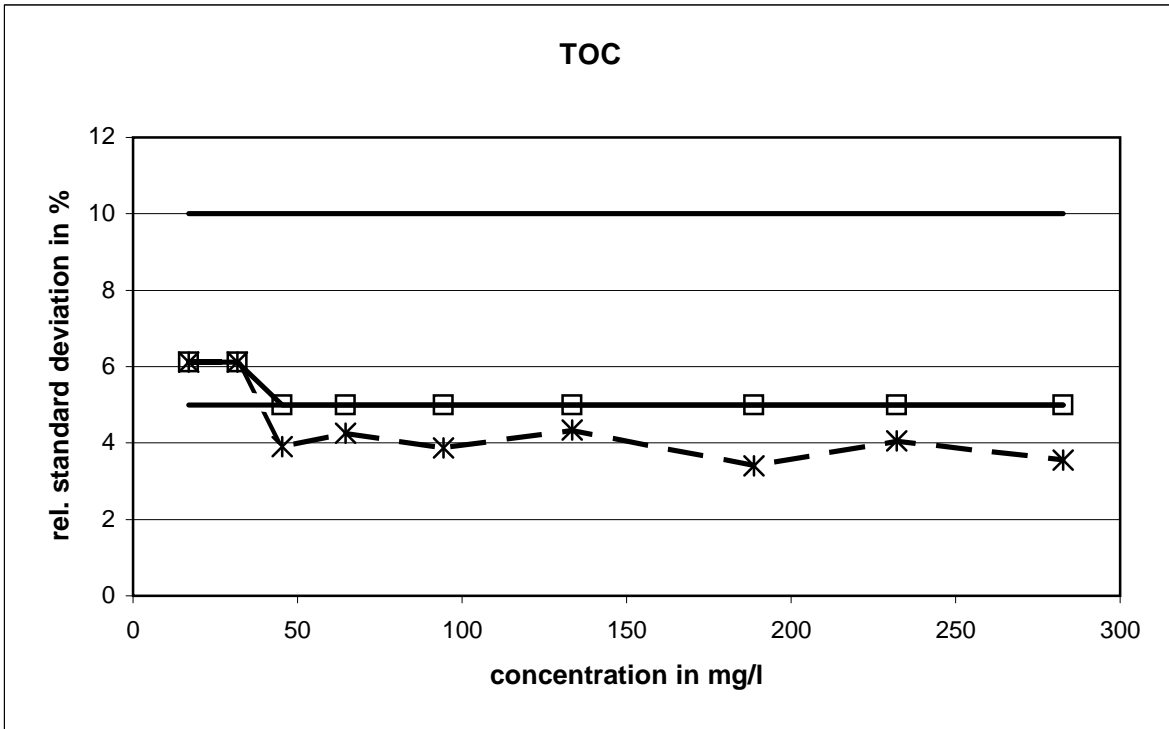
level	assigned value [mg/l]	expanded uncertainty of the assigned value [%]	standard deviation, calculated using robust statistics [mg/l]	standard deviation for proficiency assessment [mg/l]	standard deviation for proficiency assessment [%]	upper tolerance limit [mg/l]	lower tolerance limit [mg/l]	upper tolerance limit [%]	lower tolerance limit [%]	number of results	out below	out above	out [%]
1	17,02	2,29	1,041	1,041	6,12	19,17	15,00	12,63	-11,88	46	1	4	10,9
2	31,72	1,23	1,942	1,942	6,12	35,73	27,95	12,64	-11,89	45	5	3	17,8
3	45,32	0,87	1,773	2,266	5,00	49,97	40,90	10,26	-9,76	50	1	2	6,0
4	64,63	0,62	2,756	3,232	5,00	71,26	58,32	10,26	-9,76	50	4	0	8,0
5	94,27	0,44	3,656	4,714	5,00	103,9	85,07	10,26	-9,76	44	0	1	2,3
6	133,6	0,33	5,804	6,678	5,00	147,3	120,5	10,26	-9,76	47	3	1	8,5
7	188,8	0,26	6,431	9,439	5,00	208,2	170,4	10,26	-9,76	47	0	4	8,5
8	232,1	0,23	9,420	11,60	5,00	255,9	209,4	10,26	-9,76	47	1	2	6,4
9	282,6	0,21	10,06	14,13	5,00	311,6	255,0	10,26	-9,76	47	4	2	12,8
sum										423	19	19	9,0

Recovery and matrix content

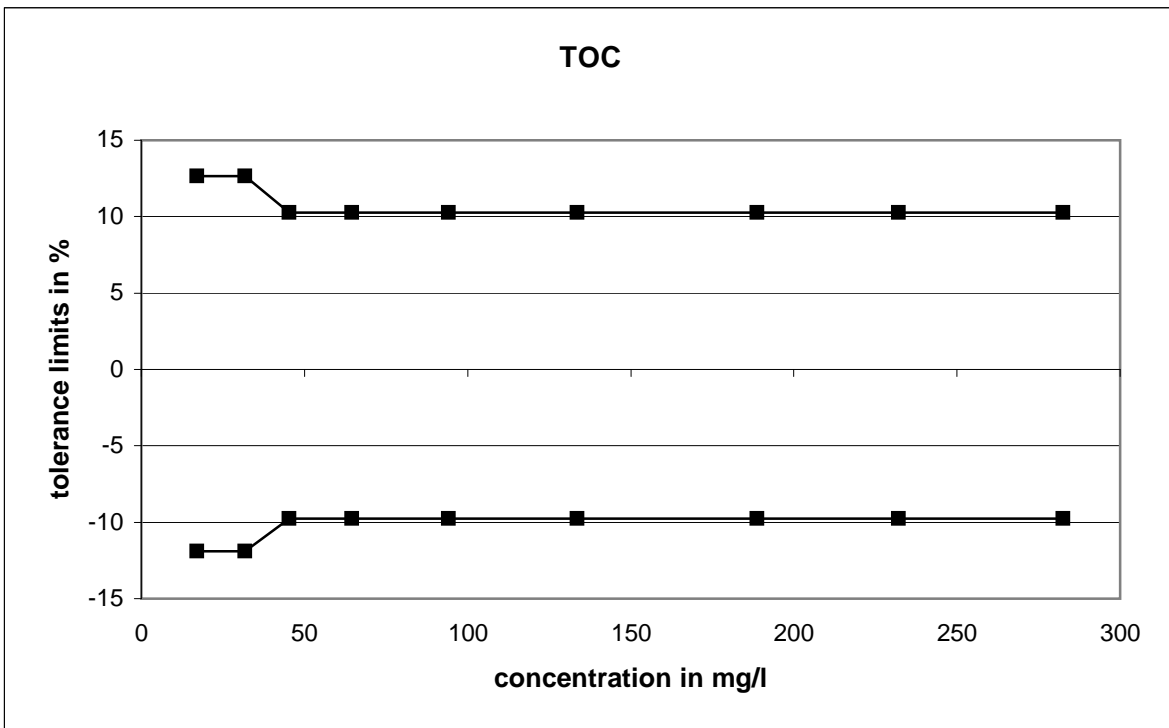


Slope of the regression line: 0,996, recovery: 99,6 %
 neg. x-axis-intercept = matrix content: 6,87 mg/l
 expanded uncertainty of the matrix content: 0,39 mg/l = 5,7 %

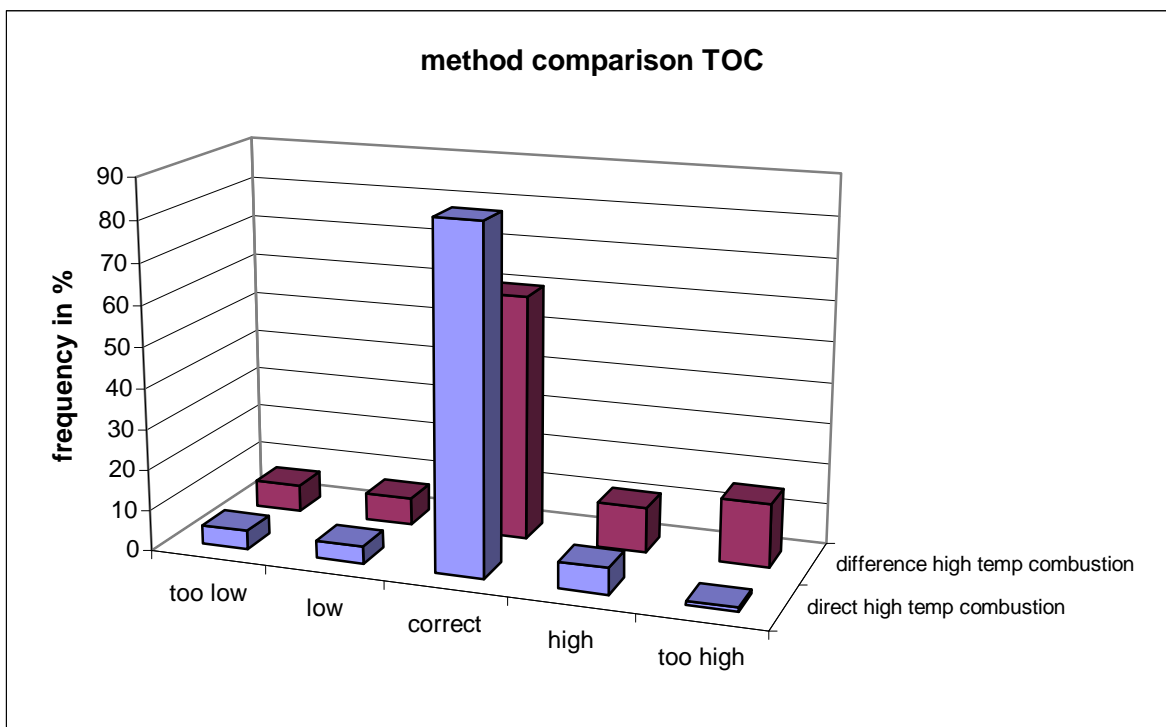
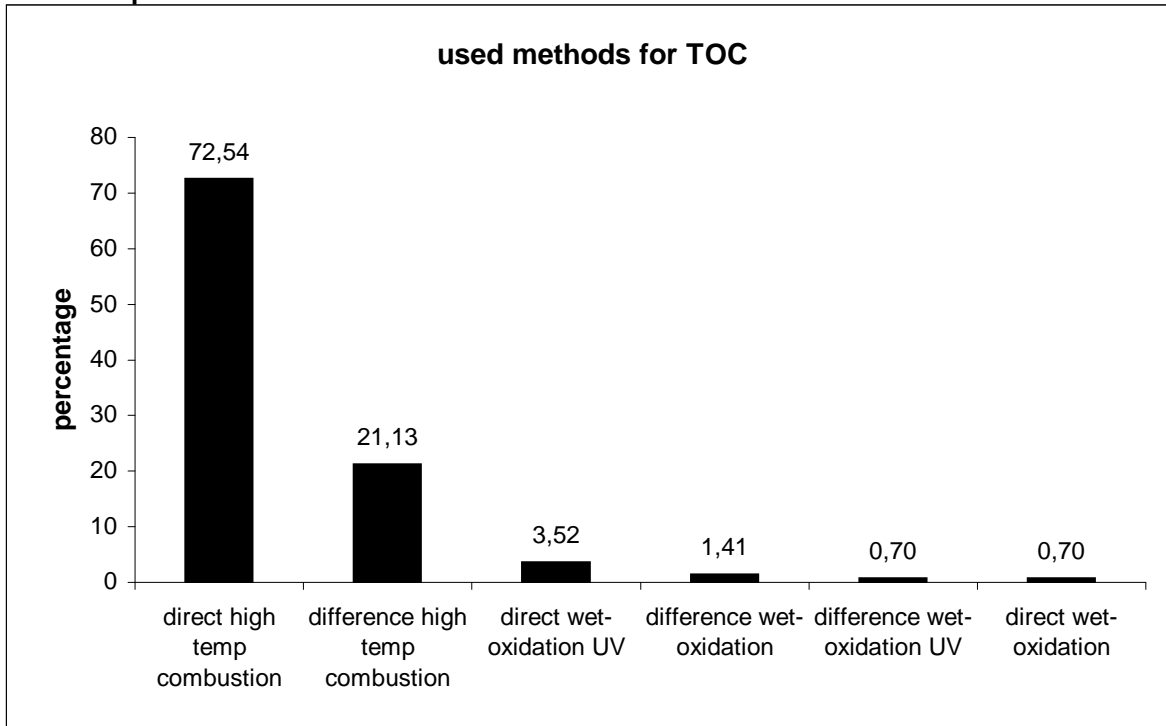
Relative standard deviation and tolerance limits



The relative standard deviation, calculated with the Q-method, reached the lower limit with seven concentration levels.



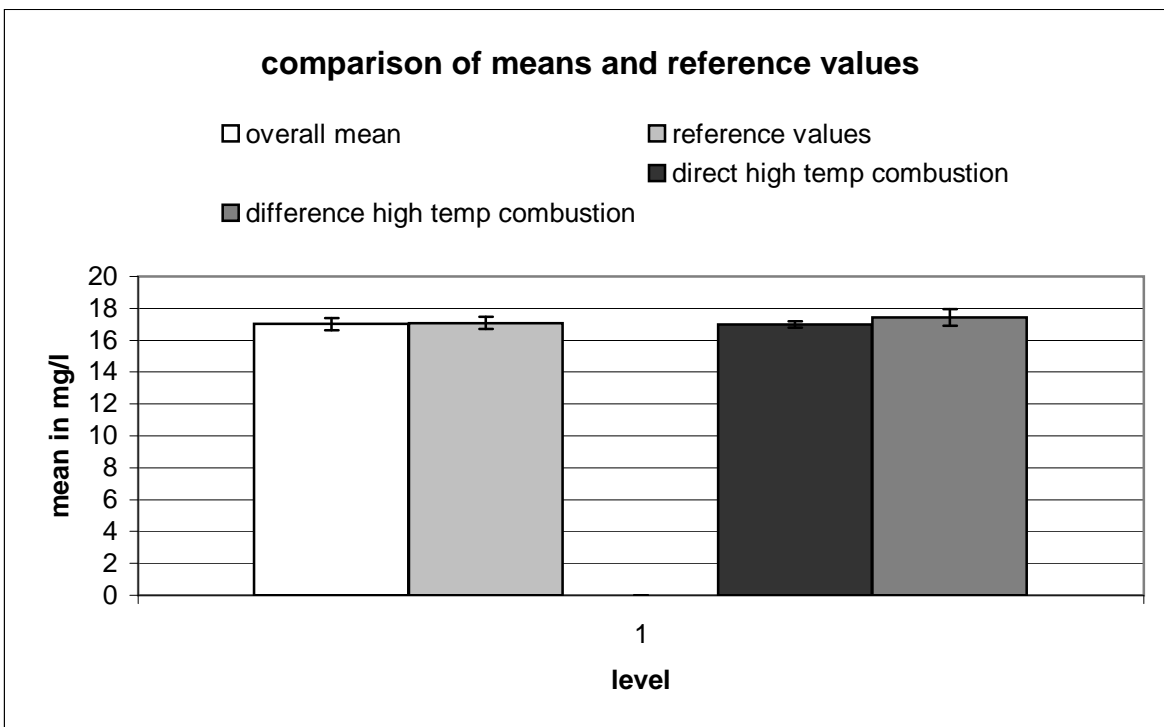
Method specific evaluation

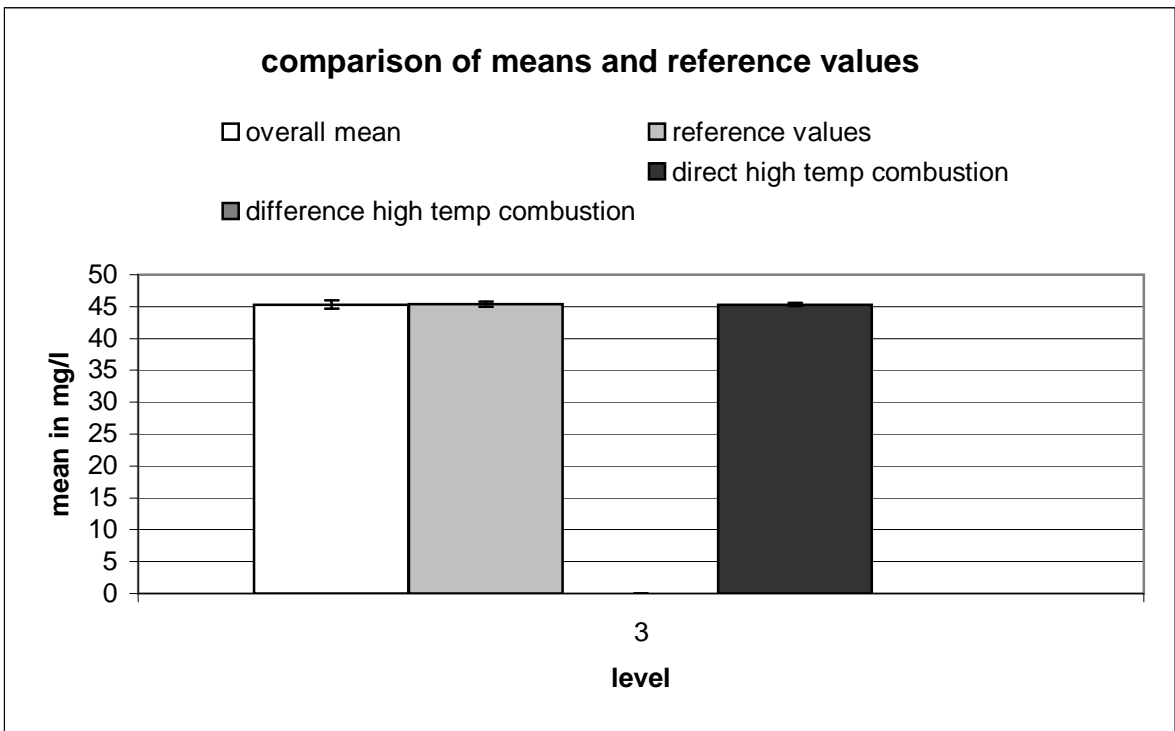
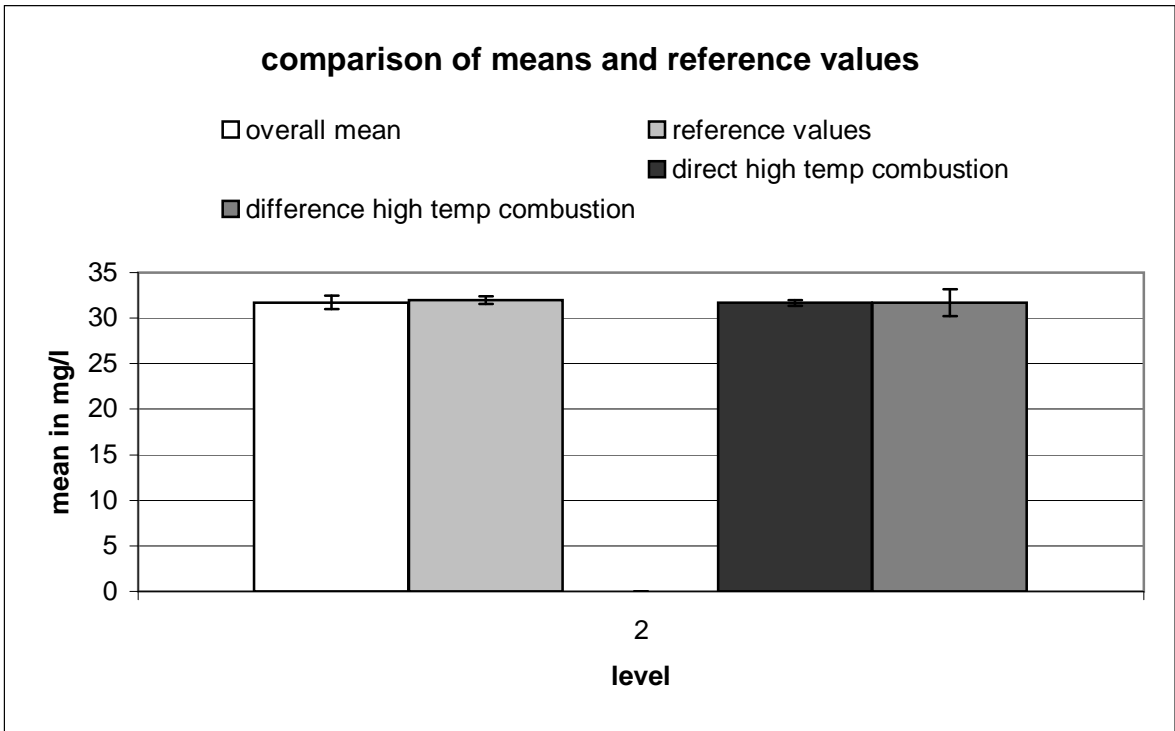


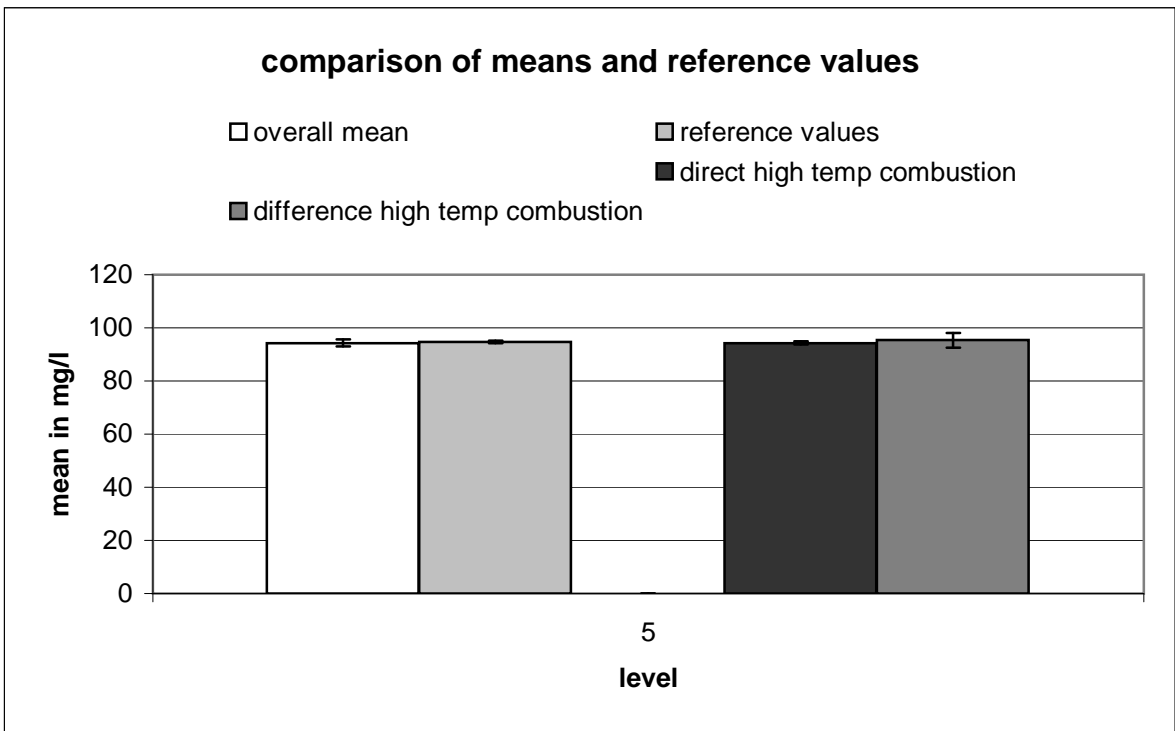
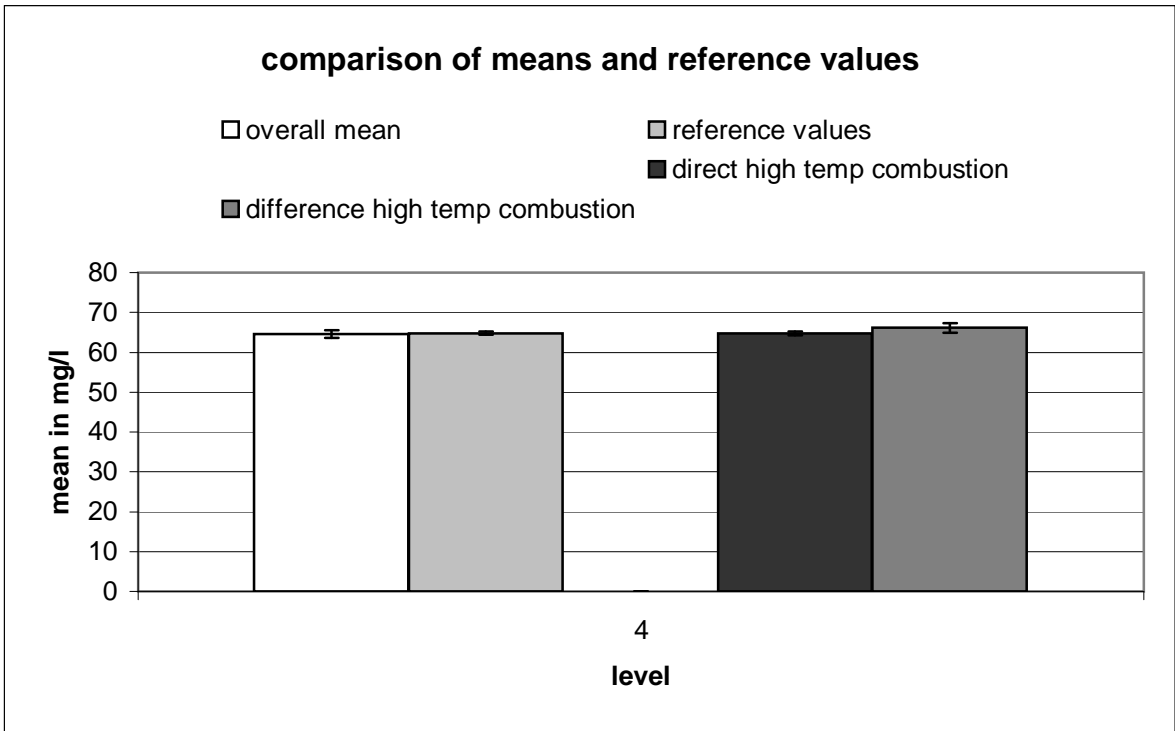
The method with difference high temp combustion delivered slightly higher values compared to the direct high temp combustion method.

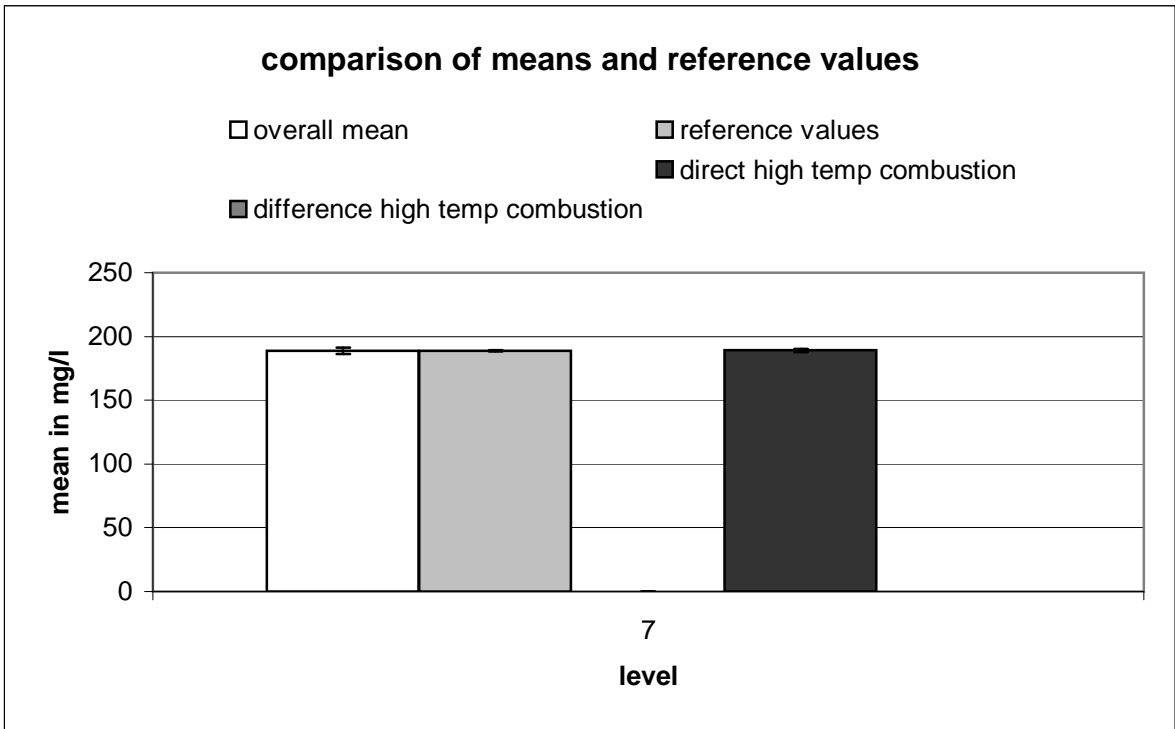
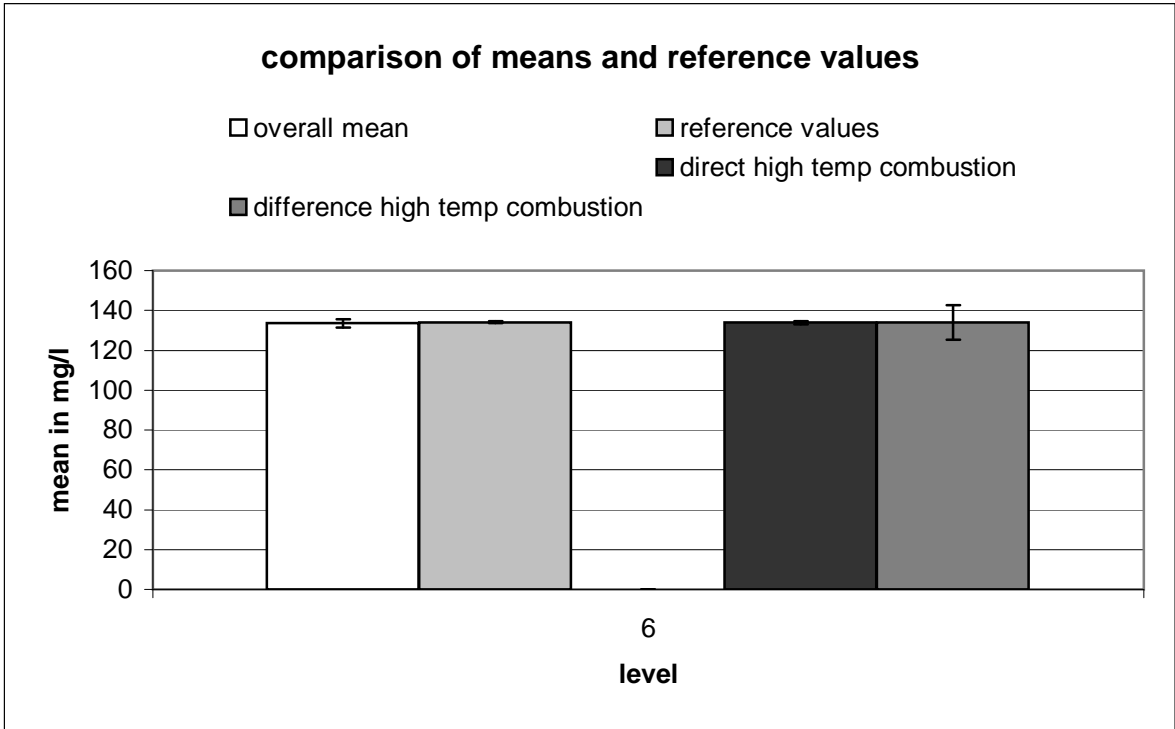
Comparison of means and reference values

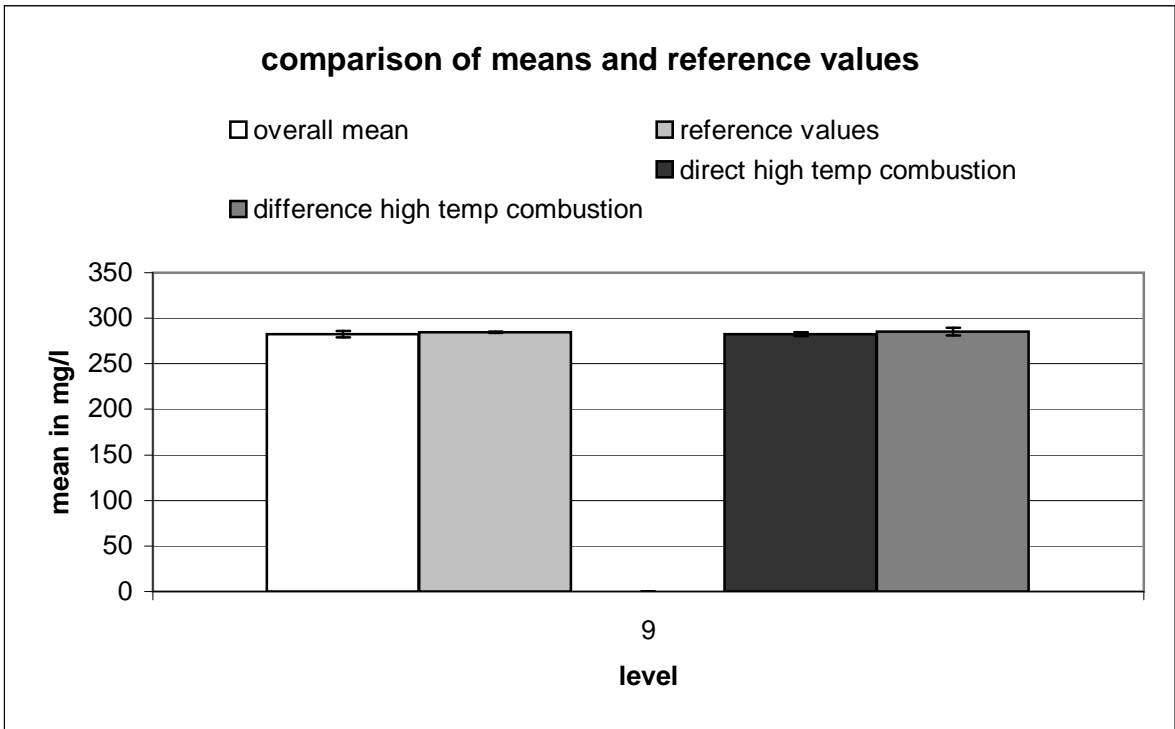
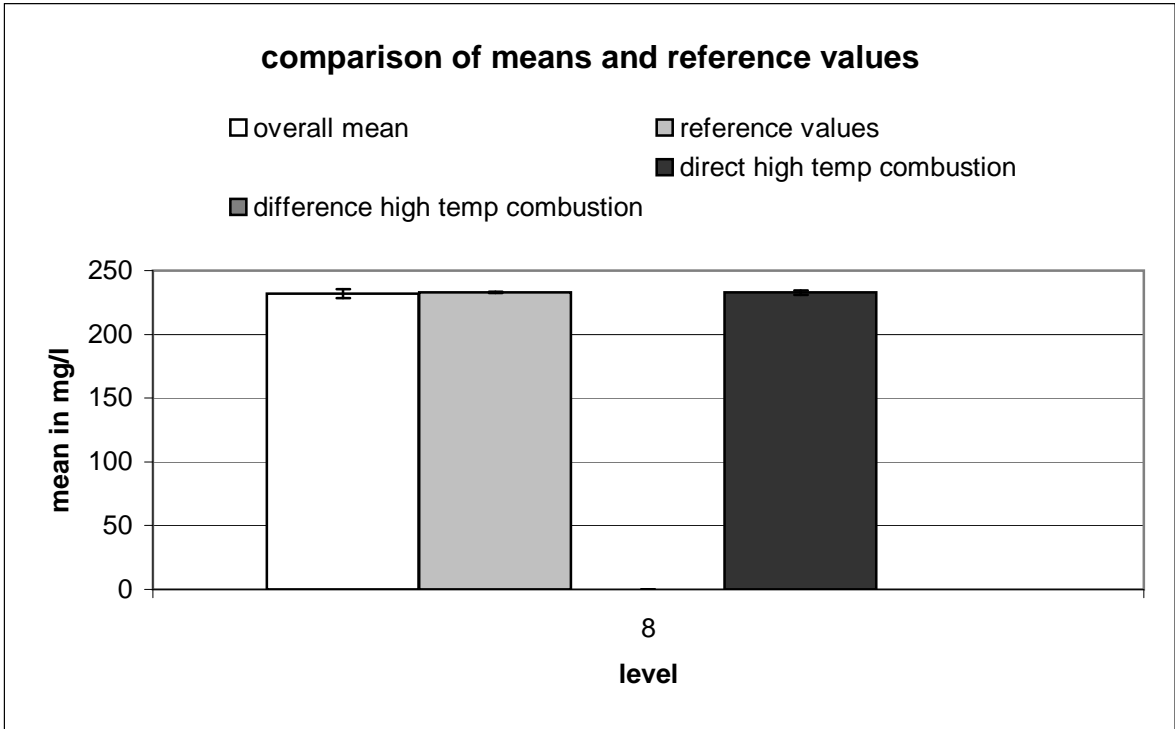
level	mean [mg/l]			reference value [mg/l]		
	mean [mg/l]	exp. uncertainty [mg/l]	exp. uncertainty [%]	reference value [mg/l]	exp. uncertainty [mg/l]	exp. uncertainty [%]
1	17,02	0,38	2,3	17,08	0,39	2,3
2	31,72	0,72	2,3	31,98	0,39	1,2
3	45,32	0,63	1,4	45,42	0,40	0,9
4	64,63	0,97	1,5	64,75	0,40	0,6
5	94,27	1,38	1,5	94,65	0,42	0,4
6	133,6	2,1	1,6	134,0	0,4	0,3
7	188,8	2,3	1,2	188,8	0,5	0,3
8	232,1	3,4	1,5	233,0	0,5	0,2
9	282,6	3,7	1,3	284,9	0,6	0,2

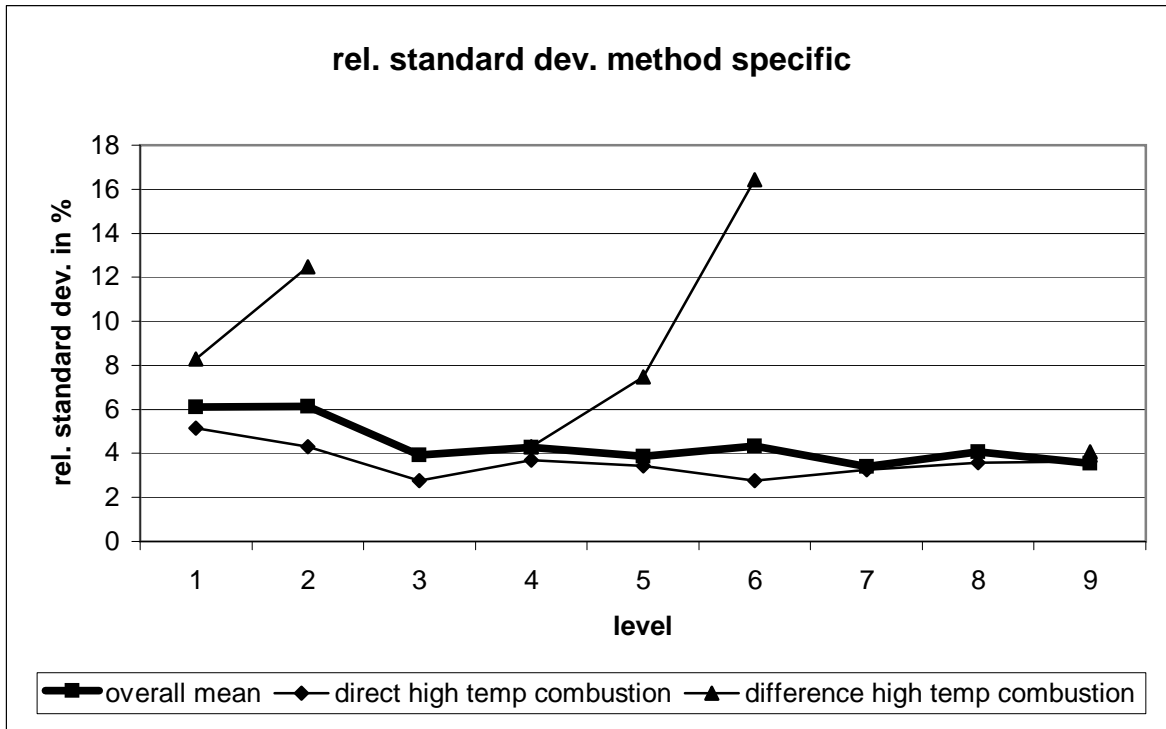






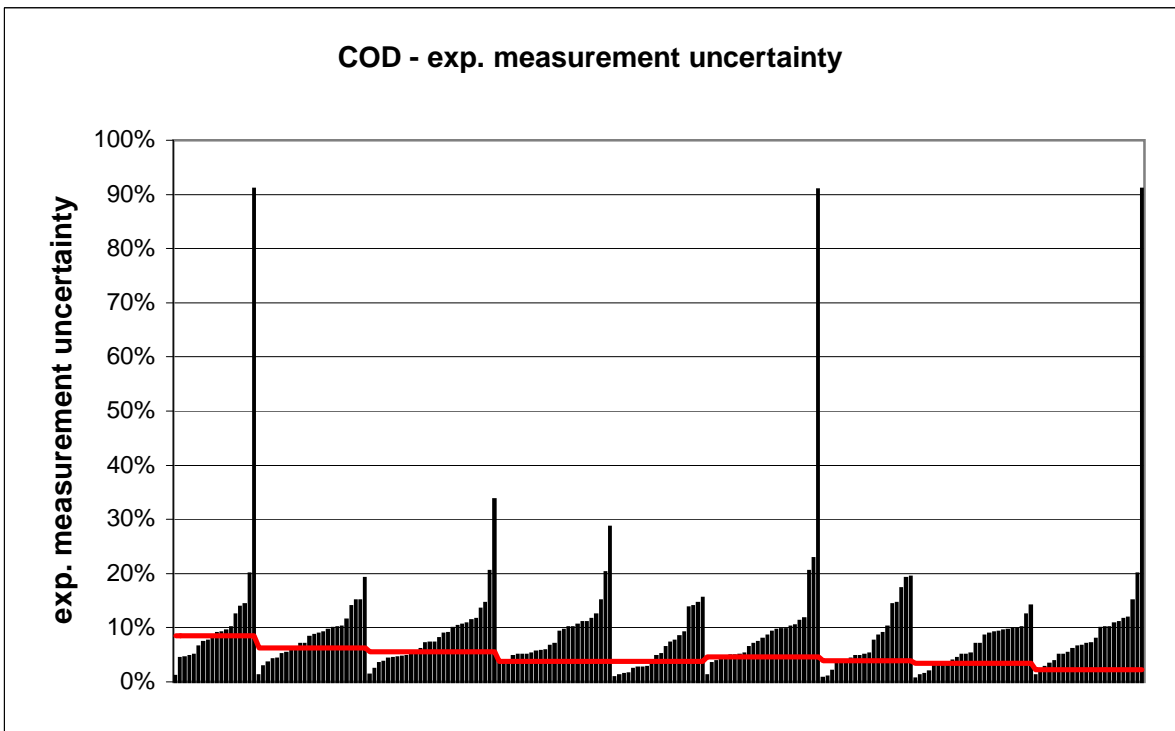
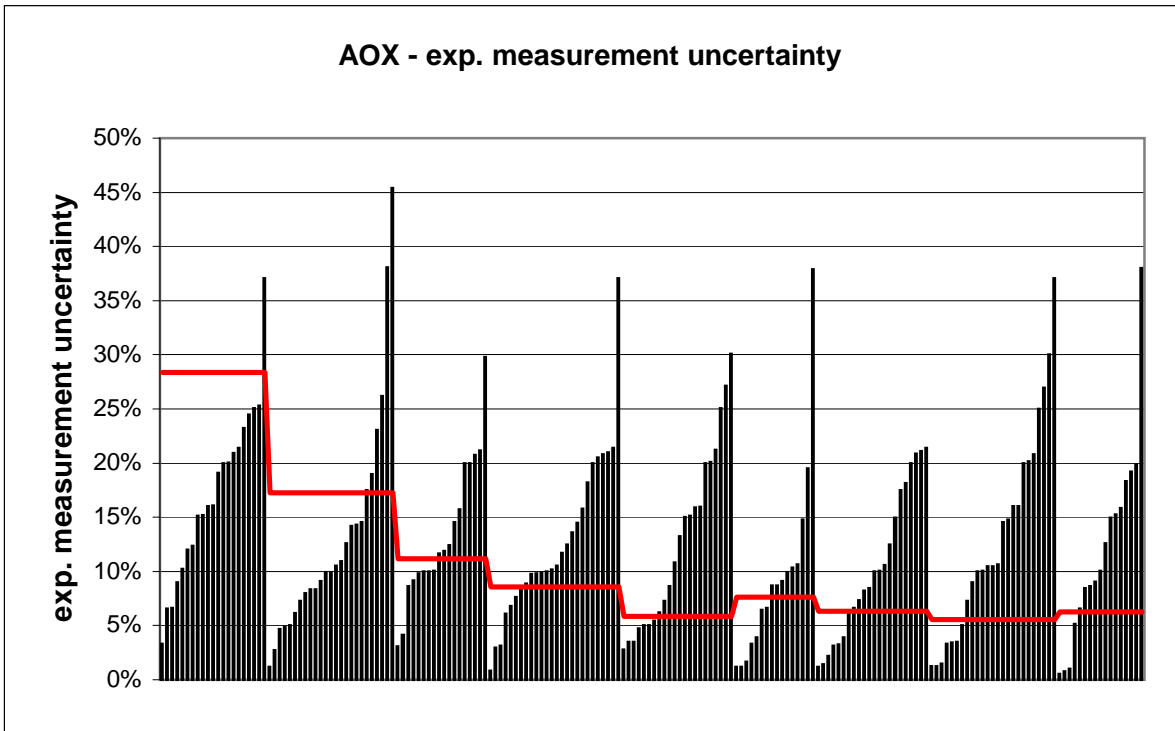


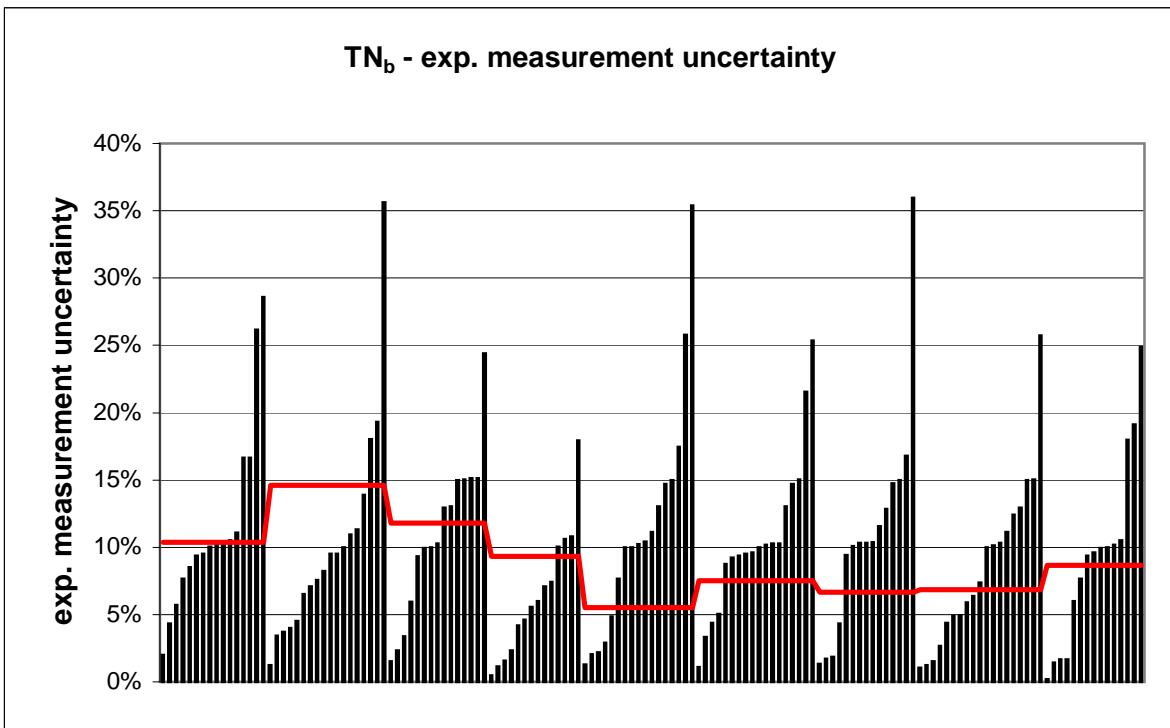
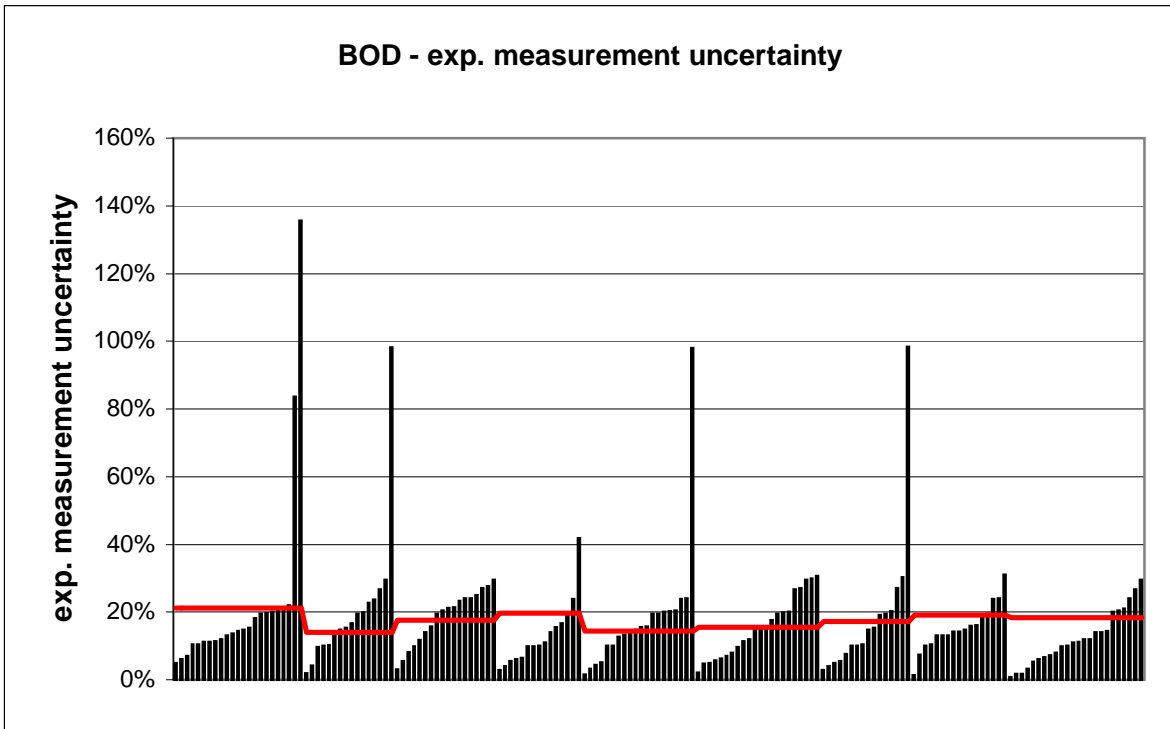


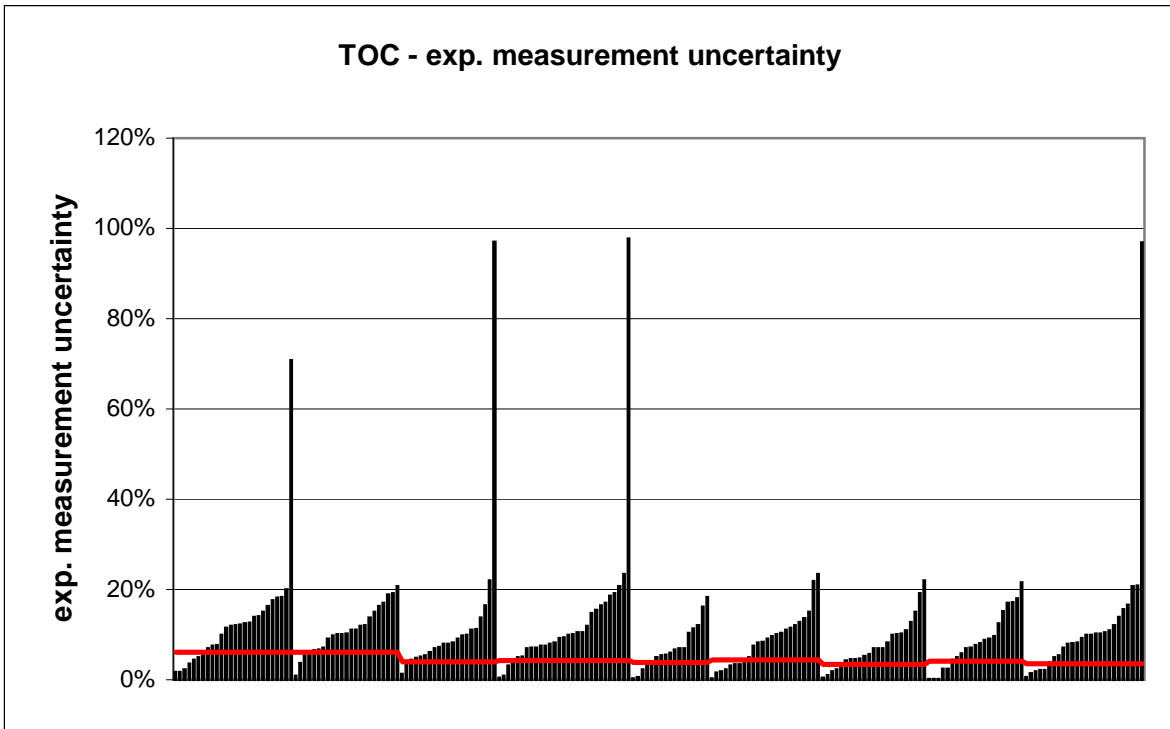


direct high temp combustion									
level	robust mean [mg/l]	exp. uncertainty of the mean [mg/l]	exp. uncertainty of the mean [%]	robust standard deviation [mg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	16,99	0,194	1,14	0,876	5,158	32	2	3	15,63
2	31,67	0,306	0,967	1,363	4,306	31	3	0	9,677
3	45,33	0,25	0,552	1,25	2,758	39	2	5	17,95
4	64,67	0,486	0,752	2,397	3,707	38	5	1	15,79
5	94,32	0,703	0,746	3,233	3,427	33	1	0	3,03
6	133,9	0,808	0,603	3,713	2,772	33	3	2	15,15
7	189,2	1,28	0,677	6,145	3,249	36	2	3	13,89
8	232,8	1,715	0,736	8,344	3,584	37	3	1	10,81
9	282,5	2,342	0,829	10,26	3,634	30	5	0	16,67

difference high temp combustion									
level	robust mean [mg/l]	exp. uncertainty of the mean [mg/l]	exp. uncertainty of the mean [%]	robust standard deviation [mg/l]	robust standard deviation [%]	number of results	out below	out above	out [%]
1	17,42	0,52	2,988	1,442	8,281	12	0	3	25
2	31,69	1,492	4,706	3,957	12,49	11	2	0	18,18
4	66,15	1,184	1,789	2,841	4,294	9	1	0	11,11
5	95,36	2,821	2,958	7,136	7,484	10	1	0	10
6	134,1	8,706	6,493	22,03	16,43	10	2	0	20
9	285,3	3,892	1,364	11,65	4,082	14	1	2	21,43

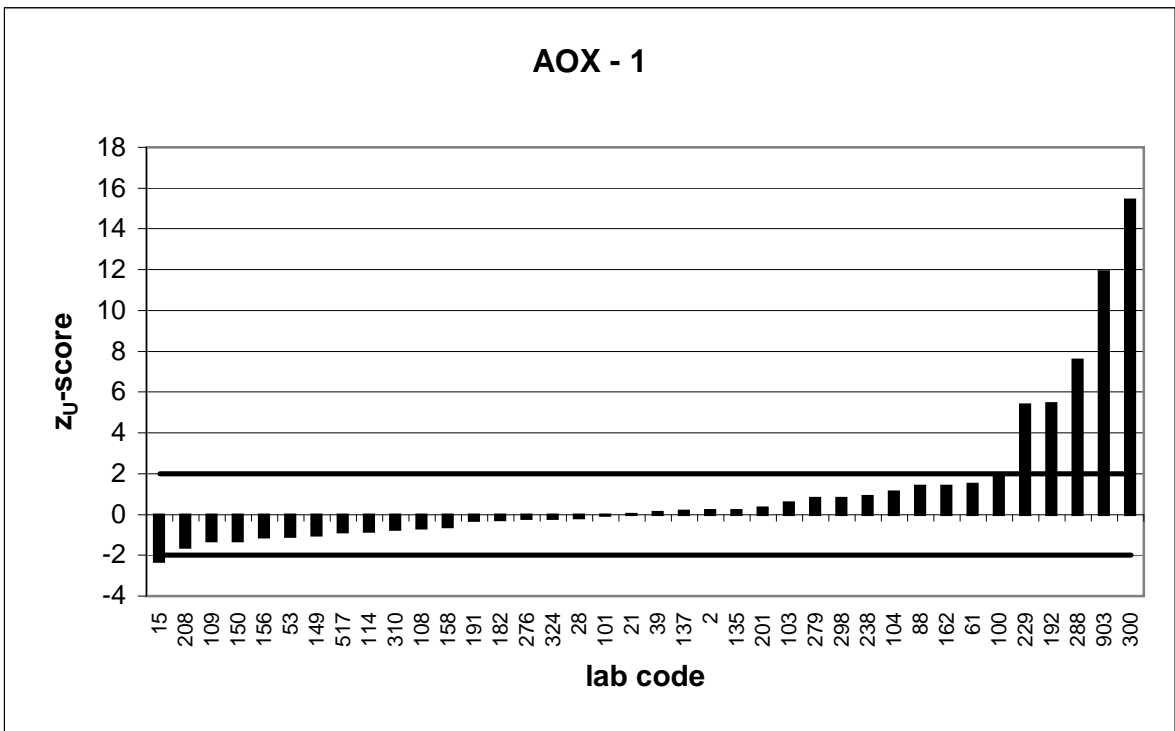
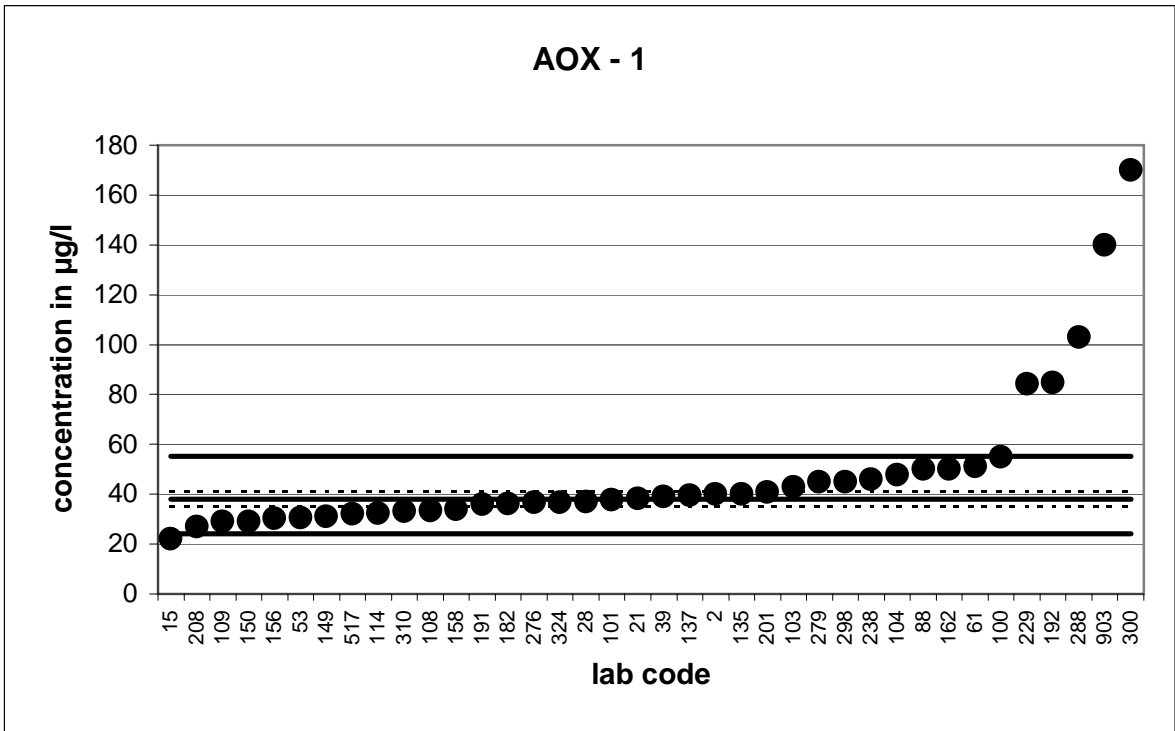


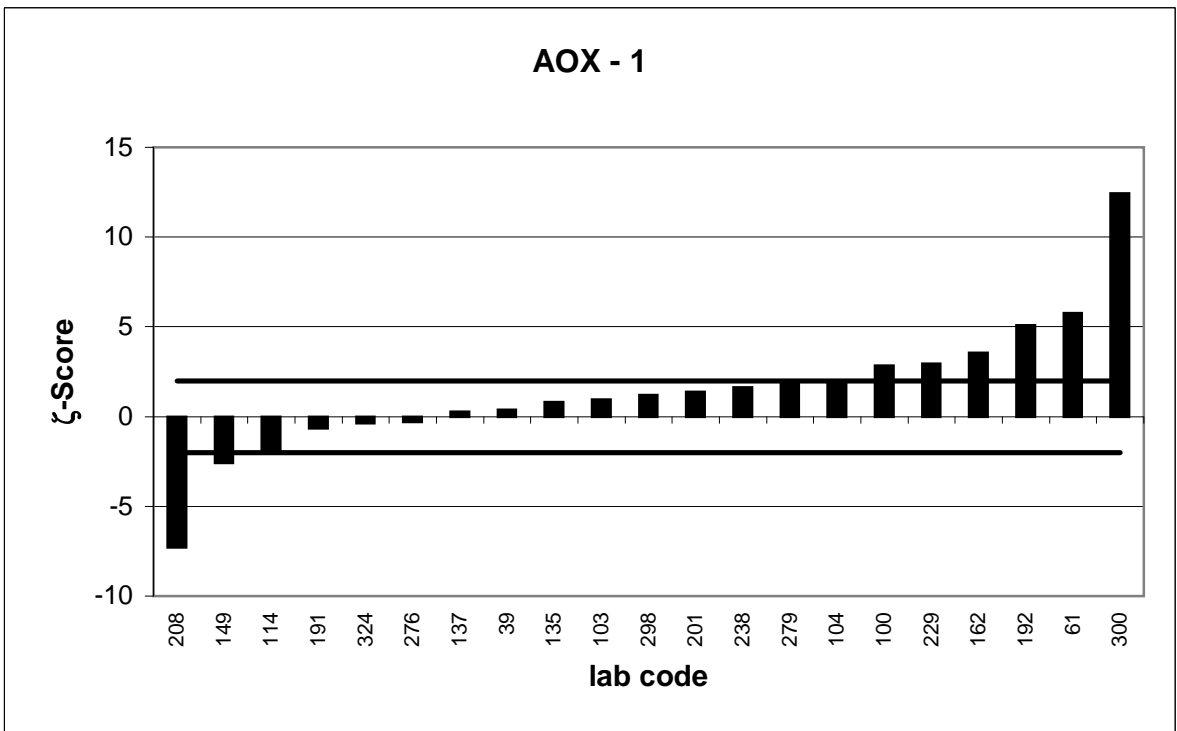
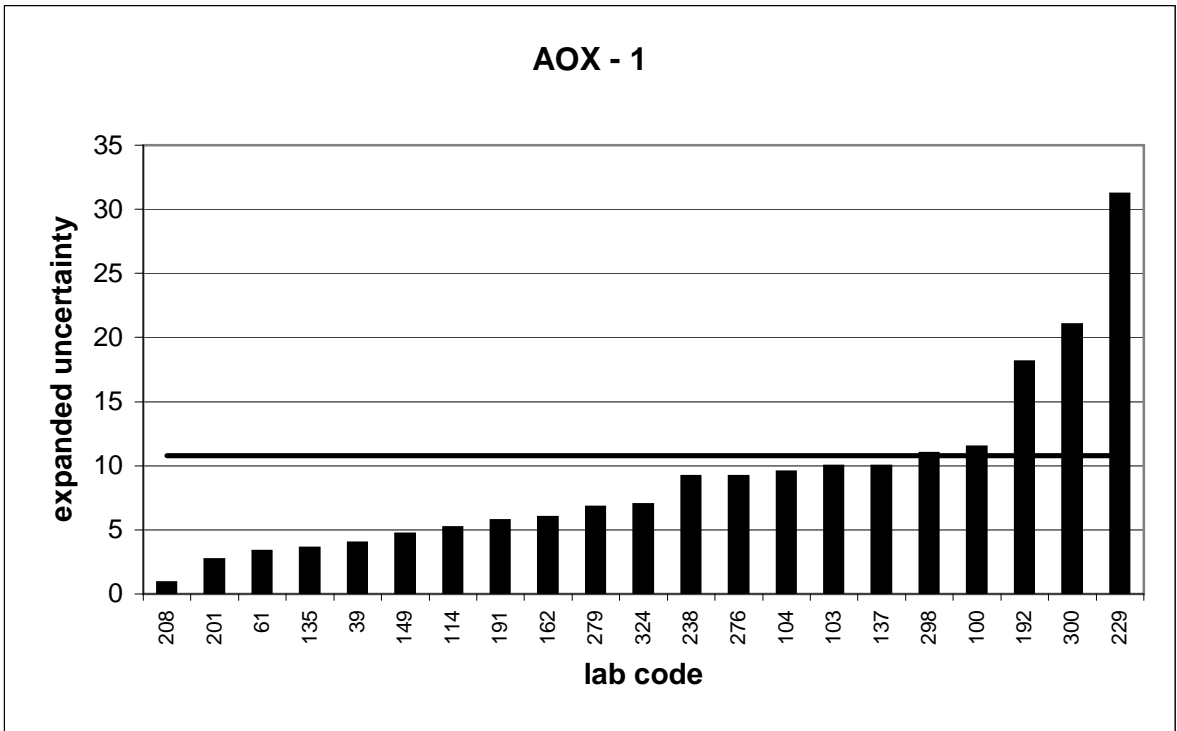




PT 3/11		AOX - 1			
assigned value [$\mu\text{g/l}$]*		38,13 \pm 2,95			
upper tolerance limit [$\mu\text{g/l}$]		55,23			
lower tolerance limit [$\mu\text{g/l}$]		24,12			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
2	40			0,2	+
15	22			-2,3	-
21	38,3			0,0	+
28	37			-0,2	+
39	39,1	4	0,4	0,1	+
53	30,5			-1,1	+
61	51	3,36	5,8	1,5	+
88	50			1,4	+
100	54,9	11,5	2,8	2,0	+
101	37,7			-0,1	+
103	43	10	0,9	0,6	+
104	47,7	9,54	1,9	1,1	+
108	33,5			-0,7	+
109	29			-1,3	+
114	32,4	5,2	-1,9	-0,8	+
135	40	3,6	0,8	0,2	+
137	39,5	10	0,3	0,2	+
149	31	4,7	-2,6	-1,0	+
150	29,1			-1,3	+
156	30,3			-1,1	+
158	33,8			-0,6	+
162	50	6	3,6	1,4	+
182	36,2			-0,3	+
191	36	5,76	-0,7	-0,3	+
192	84,7	18,1	5,1	5,4	-
201	40,9	2,71	1,4	0,3	+
208	26,9	0,89	-7,3	-1,6	+
229	84,2	31,2	2,9	5,4	-
238	45,9	9,2	1,6	0,9	+
276	36,7	9,2	-0,3	-0,2	+
279	45	6,8	1,9	0,8	+
288	103			7,6	-
298	45	11	1,2	0,8	+
300	170	21	12,4	15,4	-
310	33			-0,7	+
324	36,7	7	-0,4	-0,2	+
517	32,1			-0,9	+
903	140			11,9	-

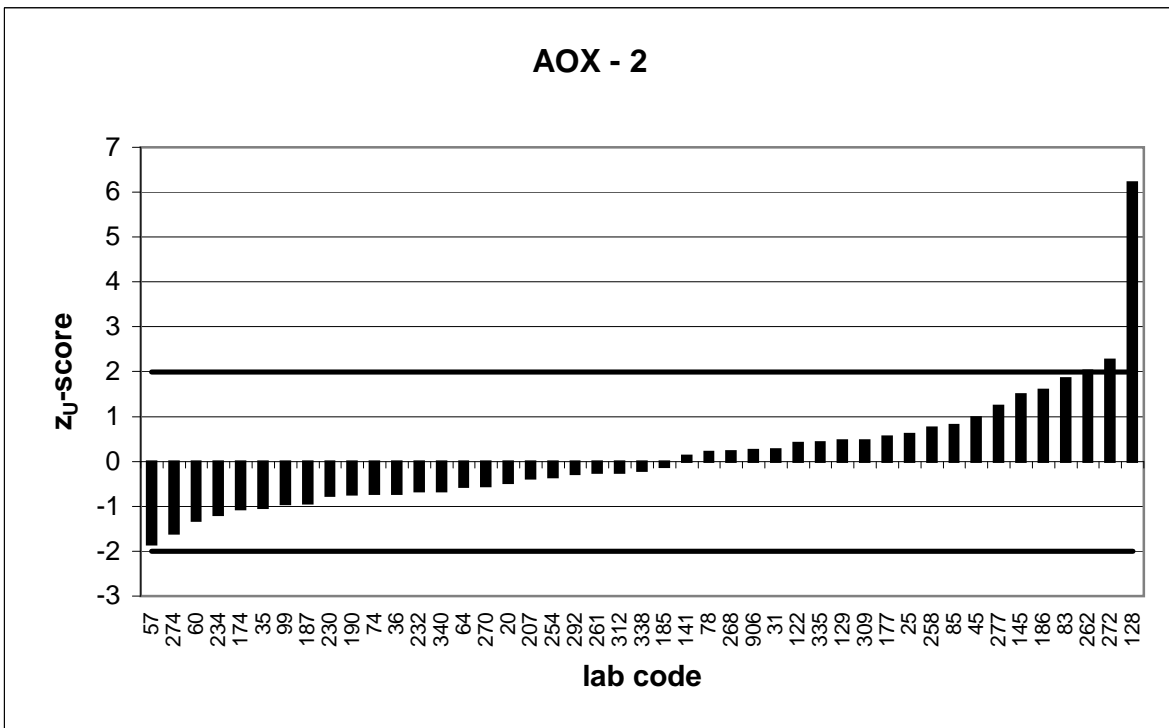
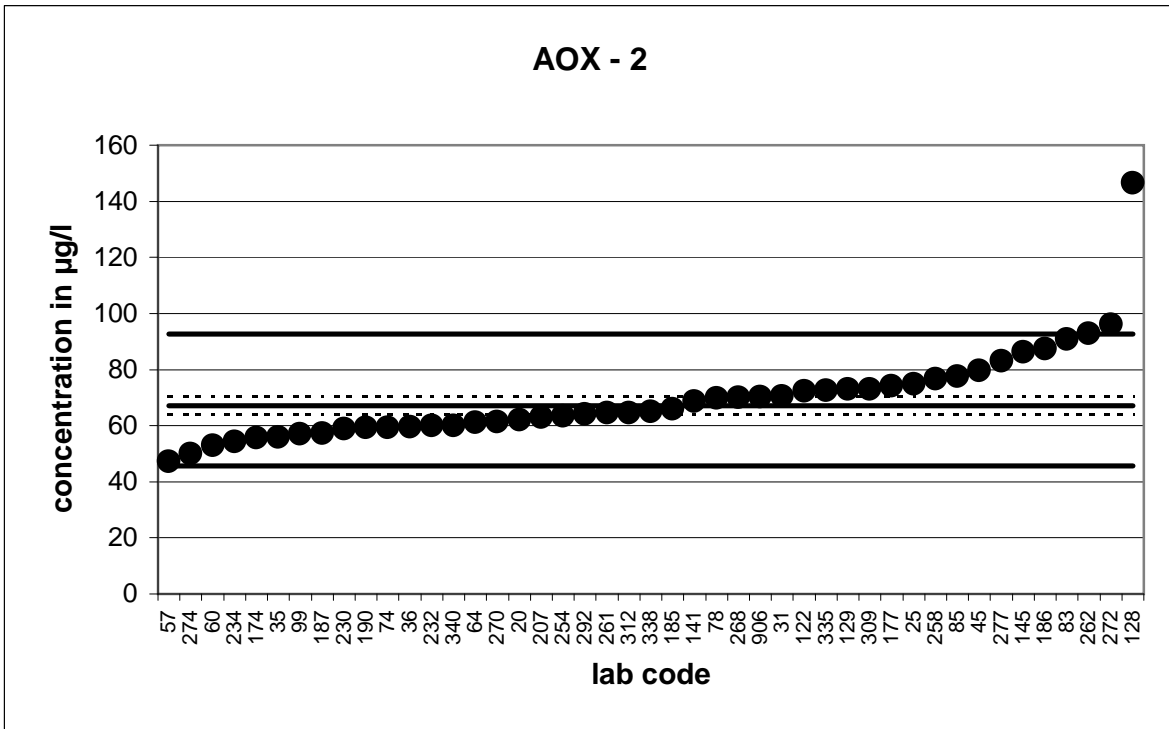
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

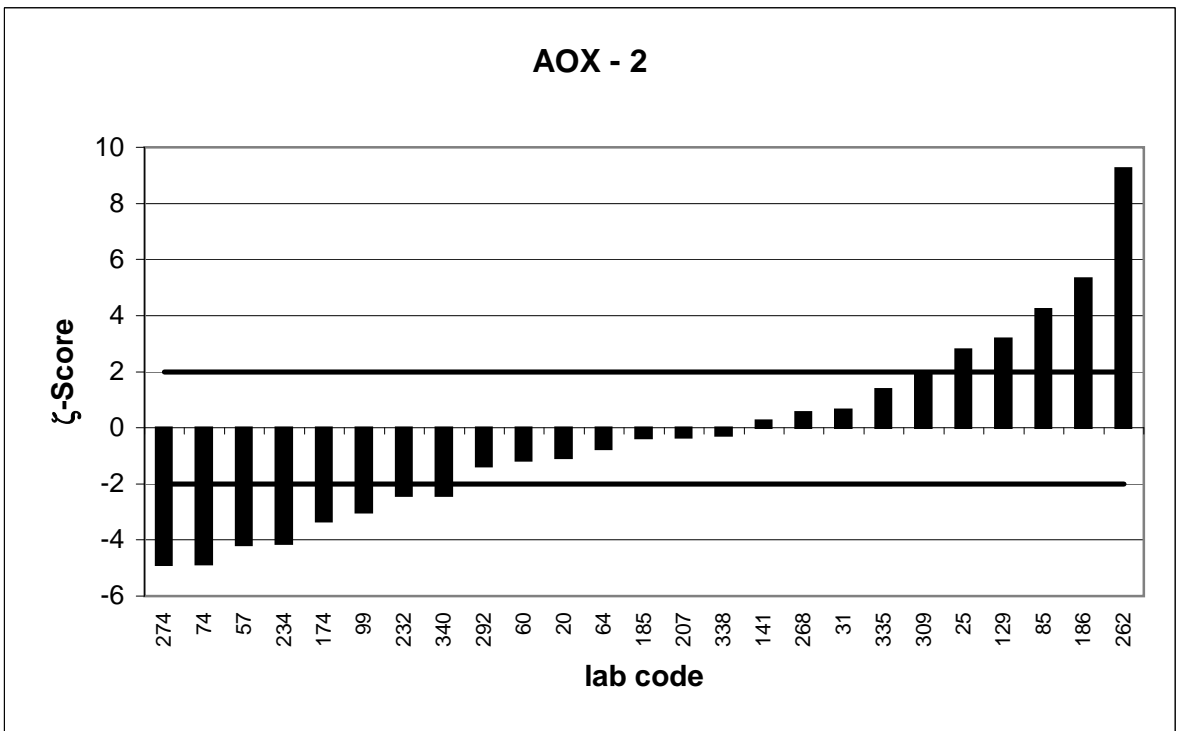
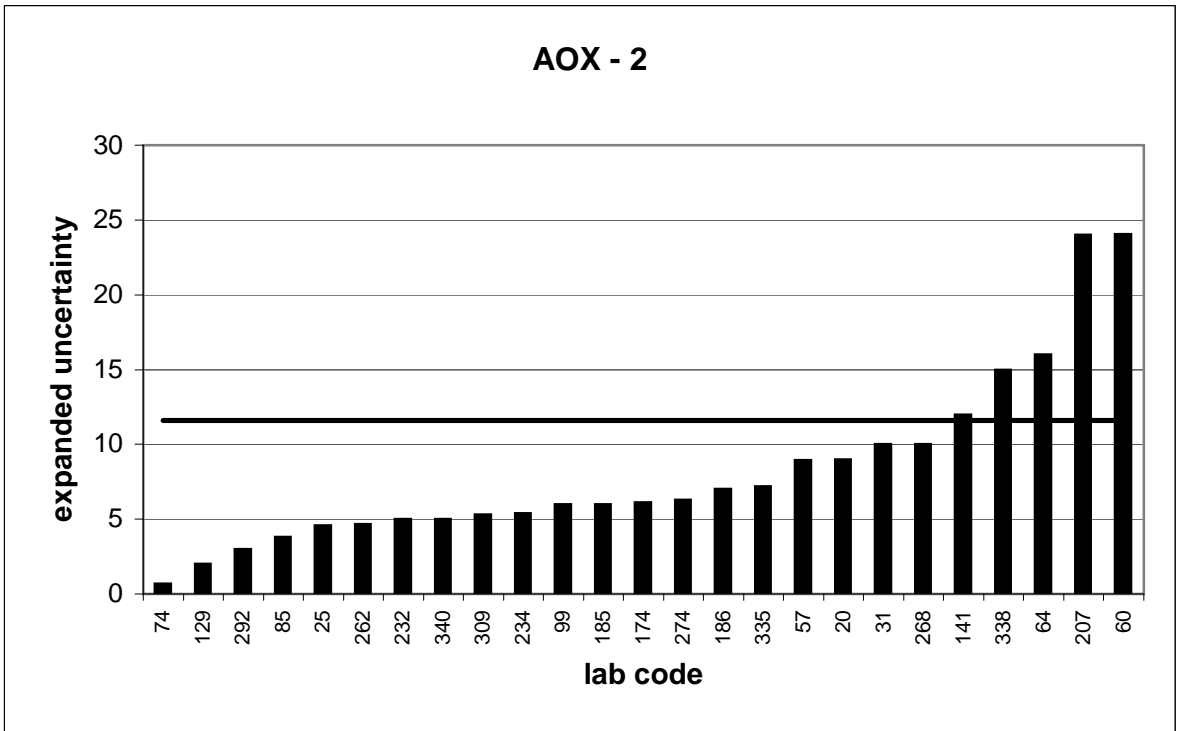




PT 3/11		AOX - 2			
assigned value [$\mu\text{g/l}$]*		67,14 \pm 3,11			
upper tolerance limit [$\mu\text{g/l}$]		92,65			
lower tolerance limit [$\mu\text{g/l}$]		45,65			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
20	62	9	-1,1	-0,5	+
25	74,9	4,6	2,8	0,6	+
31	70,5	10	0,6	0,3	+
35	56			-1,0	+
36	59,5			-0,7	+
45	79,7			1,0	+
57	47,3	8,96	-4,2	-1,8	+
60	53	24,07	-1,2	-1,3	+
64	61,1	16	-0,7	-0,6	+
74	59,4	0,7	-4,9	-0,7	+
78	69,9			0,2	+
83	90,8			1,9	+
85	77,5	3,8	4,2	0,8	+
99	57	6	-3,0	-0,9	+
122	72,4			0,4	+
128	146,5			6,2	-
129	73	2	3,2	0,5	+
141	68,7	12	0,3	0,1	+
145	86,2			1,5	+
174	55,7	6,1	-3,3	-1,1	+
177	74,18			0,6	+
185	65,9	6	-0,4	-0,1	+
186	87,5	7	5,3	1,6	+
187	57,2			-0,9	+
190	59,3			-0,7	+
207	63,1	24	-0,3	-0,4	+
230	58,9			-0,8	+
232	60	5	-2,4	-0,7	+
234	54,3	5,4	-4,1	-1,2	+
254	63,4			-0,3	+
258	76,8			0,8	+
261	64,5			-0,2	+
262	93	4,65	9,2	2,0	+
268	70	10	0,5	0,2	+
270	61,3			-0,5	+
272	96			2,3	-
274	50	6,3	-4,9	-1,6	+
277	83			1,2	+
292	64,2	3	-1,4	-0,3	+
309	73,1	5,3	1,9	0,5	+
312	64,5			-0,2	+
335	72,5	7,2	1,4	0,4	+
338	65	15	-0,3	-0,2	+
340	60	5	-2,4	-0,7	+
906	70,3			0,2	+

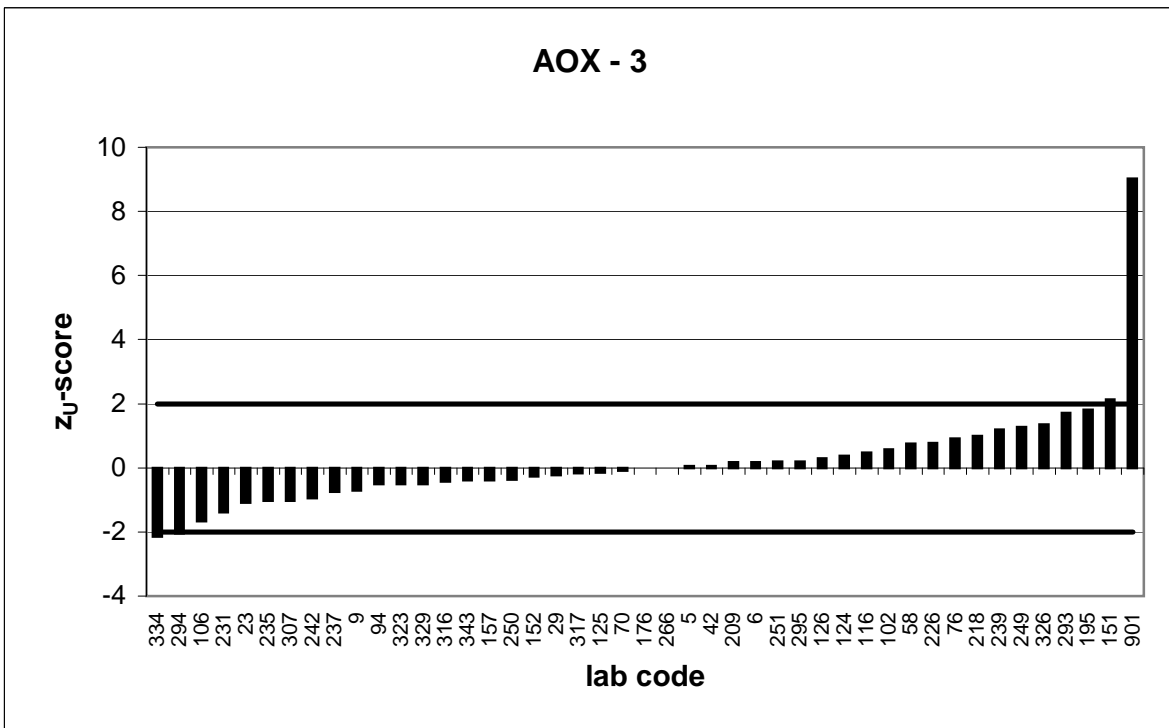
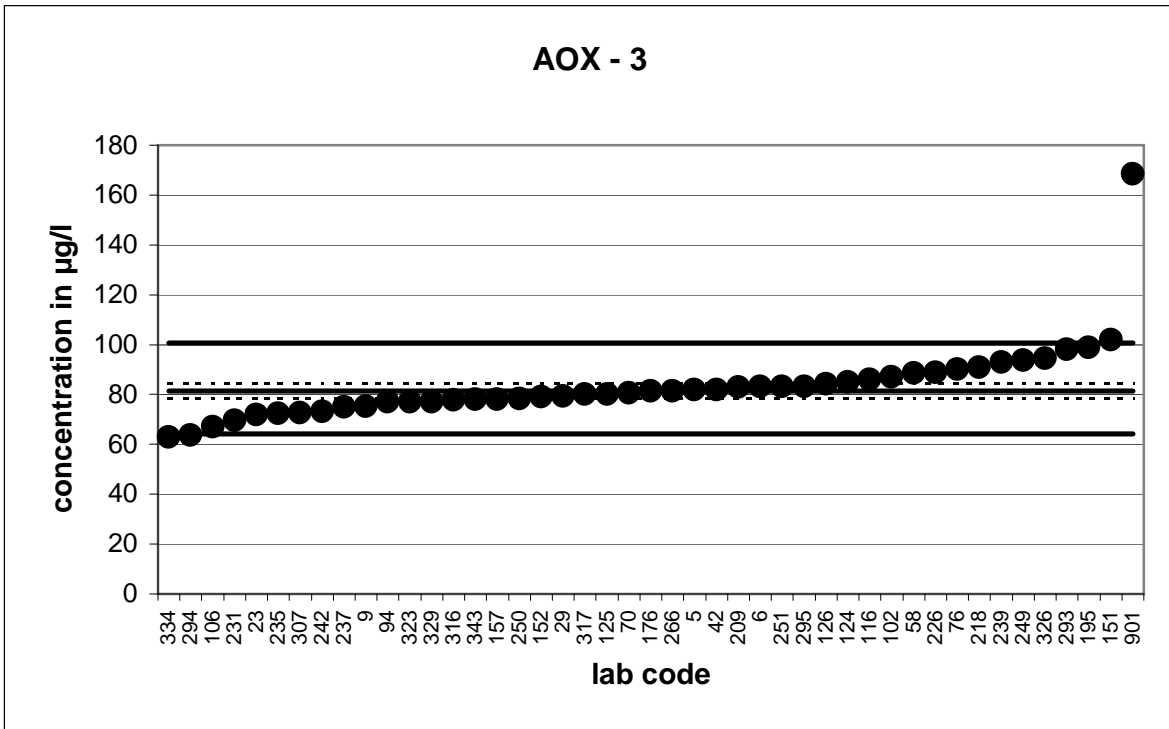
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

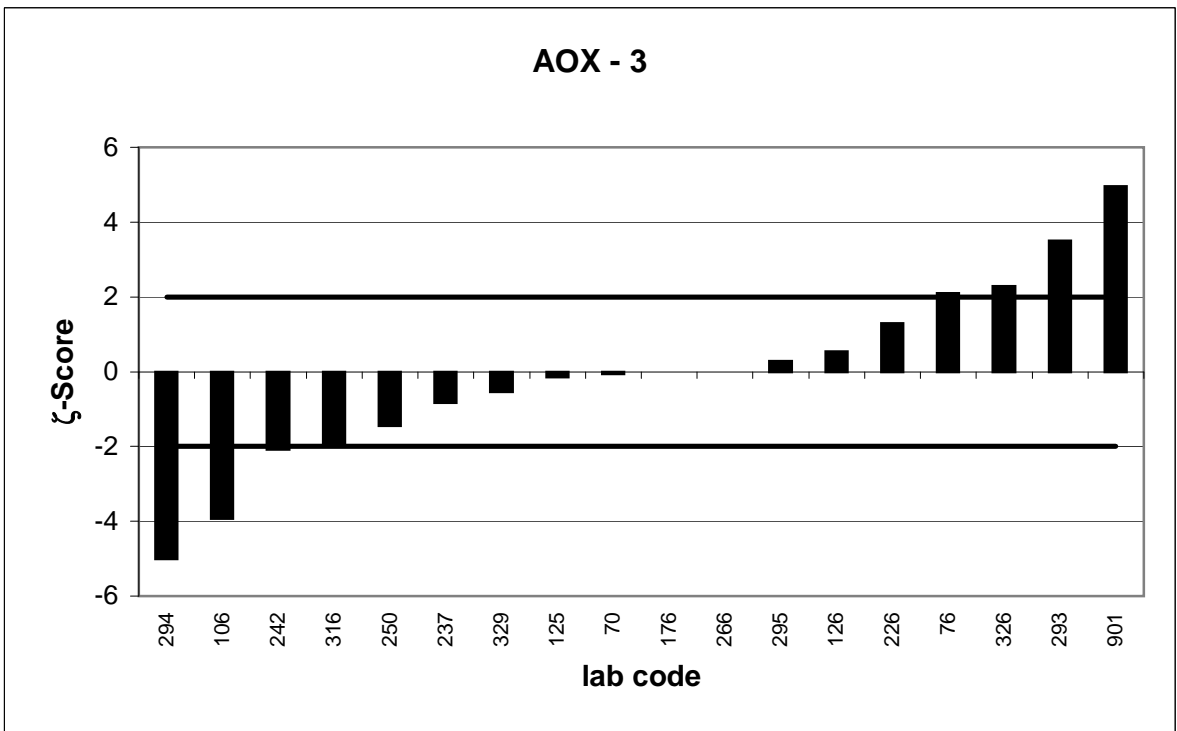
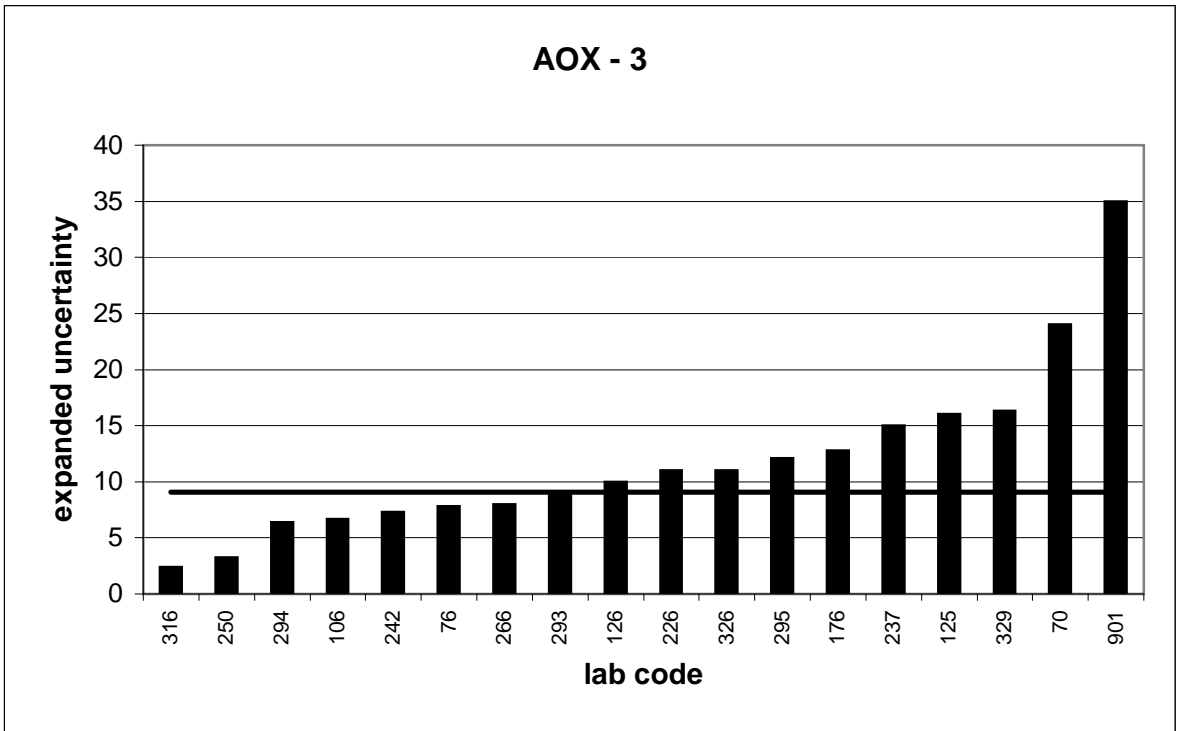




PT 3/11		AOX - 3			
assigned value [$\mu\text{g/l}$]*		81,41 \pm 3,01			
upper tolerance limit [$\mu\text{g/l}$]		100,7			
lower tolerance limit [$\mu\text{g/l}$]		64,15			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
5	82			0,1	+
6	83,1			0,2	+
9	75,3			-0,7	+
23	72			-1,1	+
29	79,4			-0,2	+
42	82			0,1	+
58	88,7			0,8	+
70	80,6	24	-0,1	-0,1	+
76	90,2	7,8	2,1	0,9	+
94	77			-0,5	+
102	87			0,6	+
106	67	6,7	-3,9	-1,7	+
116	86			0,5	+
124	85			0,4	+
125	80,2	16,04	-0,1	-0,1	+
126	84,2	10	0,5	0,3	+
151	102			2,1	-
152	79,1			-0,3	+
157	78,1			-0,4	+
176	81,3	12,8	0,0	0,0	+
195	98,86			1,8	+
209	83			0,2	+
218	91			1,0	+
226	88,8	11	1,3	0,8	+
231	69,5			-1,4	+
235	72,5			-1,0	+
237	75	15	-0,8	-0,7	+
239	93			1,2	+
242	73,2	7,3	-2,1	-1,0	+
249	93,6			1,3	+
250	78,2	3,24	-1,5	-0,4	+
251	83,2			0,2	+
266	81,4	8	0,0	0,0	+
293	98	9	3,5	1,7	+
294	63,7	6,4	-5,0	-2,1	-
295	83,2	12,1	0,3	0,2	+
307	72,6			-1,0	+
316	77,7	2,4	-1,9	-0,4	+
317	80			-0,2	+
323	77			-0,5	+
326	94,4	11	2,3	1,3	+
329	77	16,3	-0,5	-0,5	+
334	63			-2,1	-
343	78			-0,4	+
901	168,5	35	5,0	9,0	-

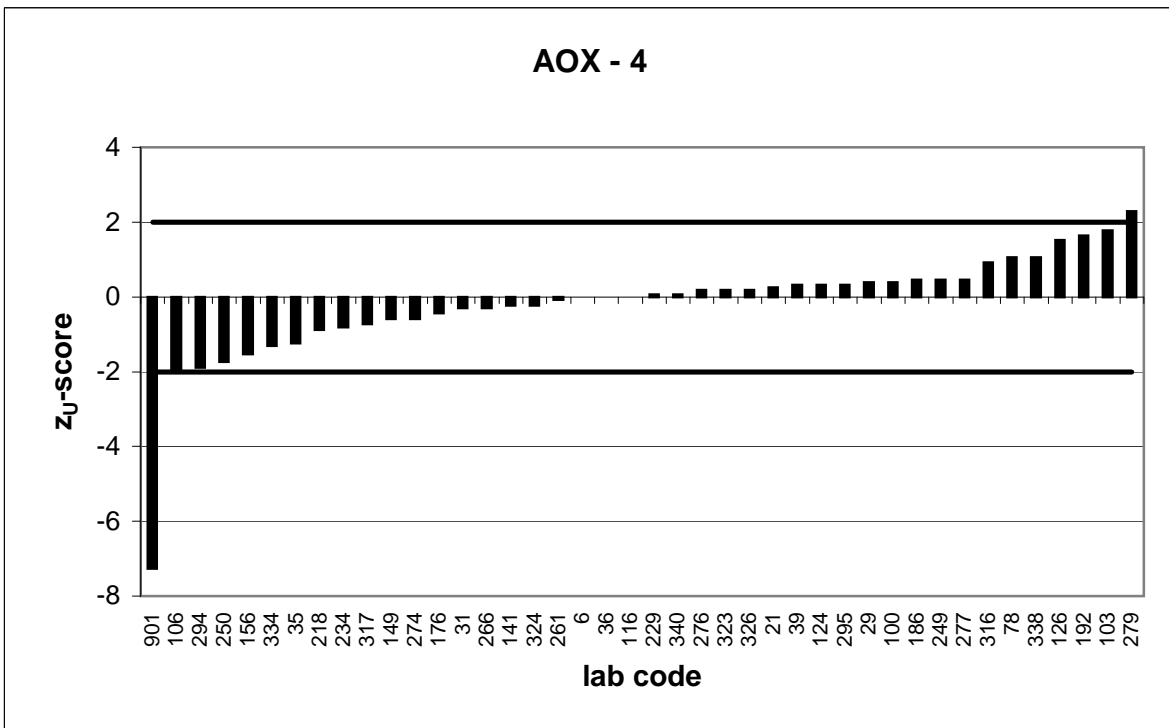
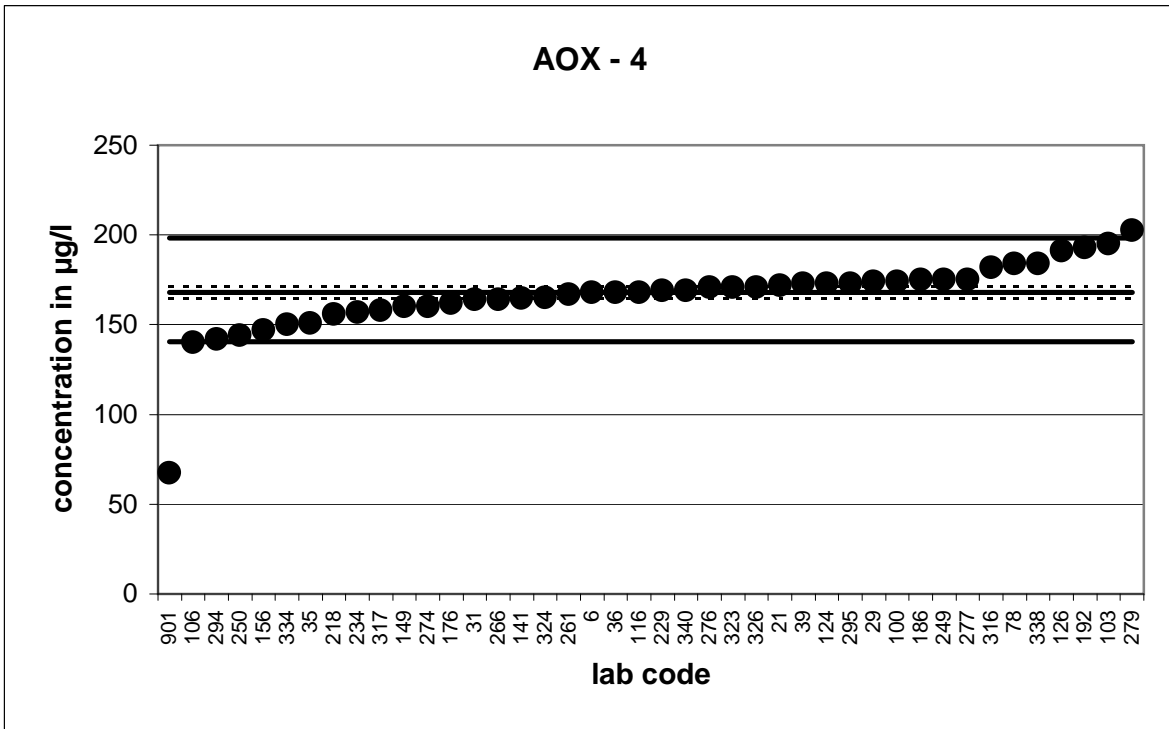
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

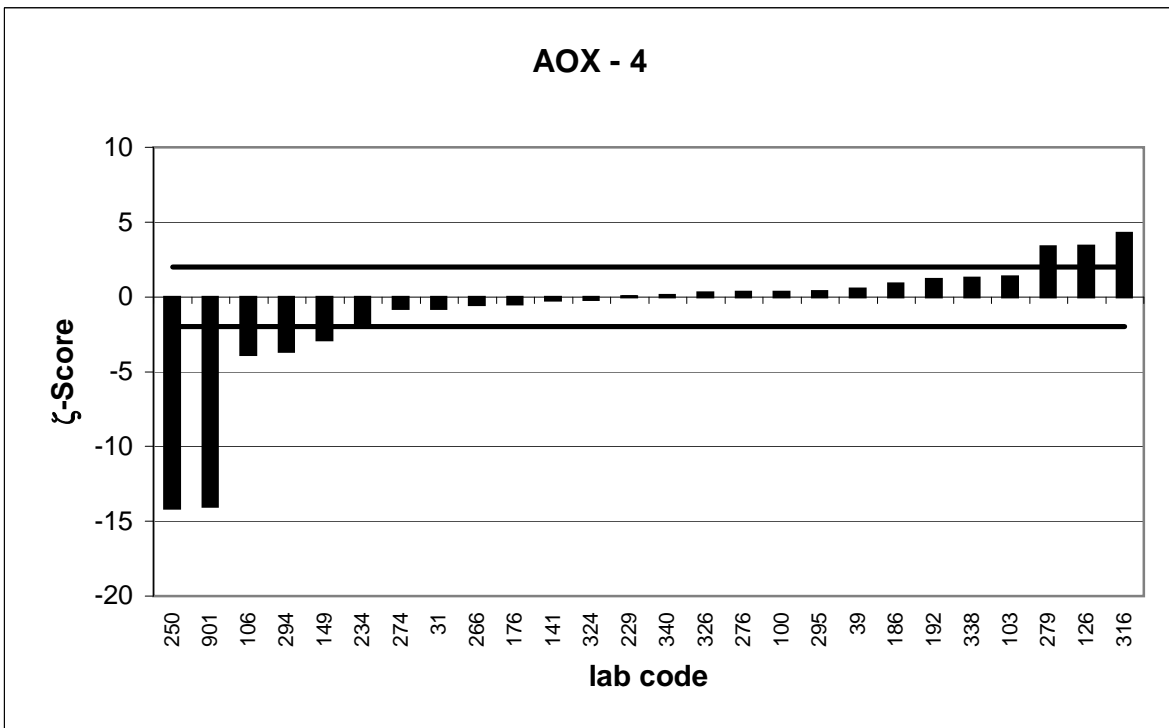
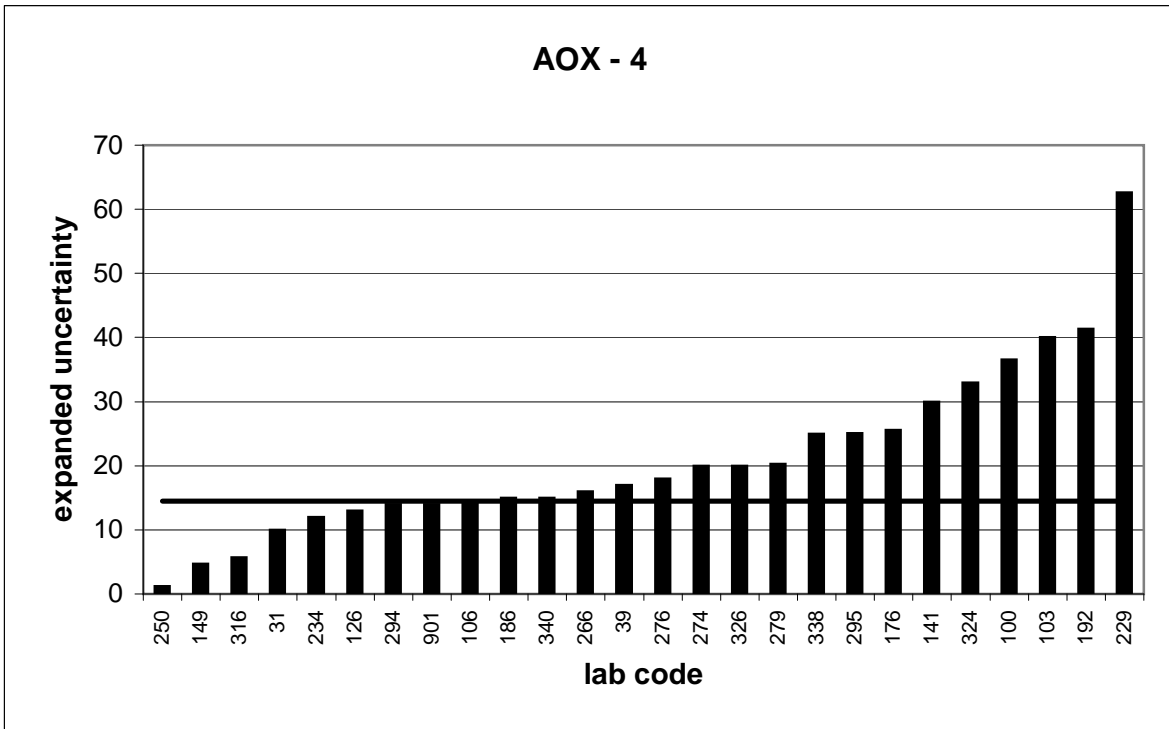




PT 3/11		AOX - 4			
assigned value [$\mu\text{g/l}$]*		168,1 \pm 3,2			
upper tolerance limit [$\mu\text{g/l}$]		198,4			
lower tolerance limit [$\mu\text{g/l}$]		140,4			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
6	168			0,0	+
21	172			0,3	+
29	174			0,4	+
31	164	10	-0,8	-0,3	+
35	151			-1,2	+
36	168			0,0	+
39	173	17	0,6	0,3	+
78	184			1,0	+
100	174	36,5	0,3	0,4	+
103	195	40	1,3	1,8	+
106	140	14,2	-3,9	-2,0	+
116	168			0,0	+
124	173			0,3	+
126	191	13	3,4	1,5	+
141	164,9	30	-0,2	-0,2	+
149	160	4,7	-2,9	-0,6	+
156	147			-1,5	+
176	162	25,6	-0,5	-0,4	+
186	175	15	0,9	0,5	+
192	193	41,3	1,2	1,6	+
218	156			-0,9	+
229	169	62,6	0,0	0,1	+
234	157	12	-1,8	-0,8	+
249	175			0,5	+
250	144	1,19	-14,2	-1,7	+
261	167			-0,1	+
266	164	16	-0,5	-0,3	+
274	160	20	-0,8	-0,6	+
276	171	18	0,3	0,2	+
277	175			0,5	+
279	202,7	20,3	3,4	2,3	-
294	142	14	-3,6	-1,9	+
295	173	25,1	0,4	0,3	+
316	182	5,7	4,2	0,9	+
317	158			-0,7	+
323	171			0,2	+
324	165	33	-0,2	-0,2	+
326	171	20	0,3	0,2	+
334	150			-1,3	+
338	184	25	1,3	1,0	+
340	169	15	0,1	0,1	+
901	67,38	14,01	-14,0	-7,3	-

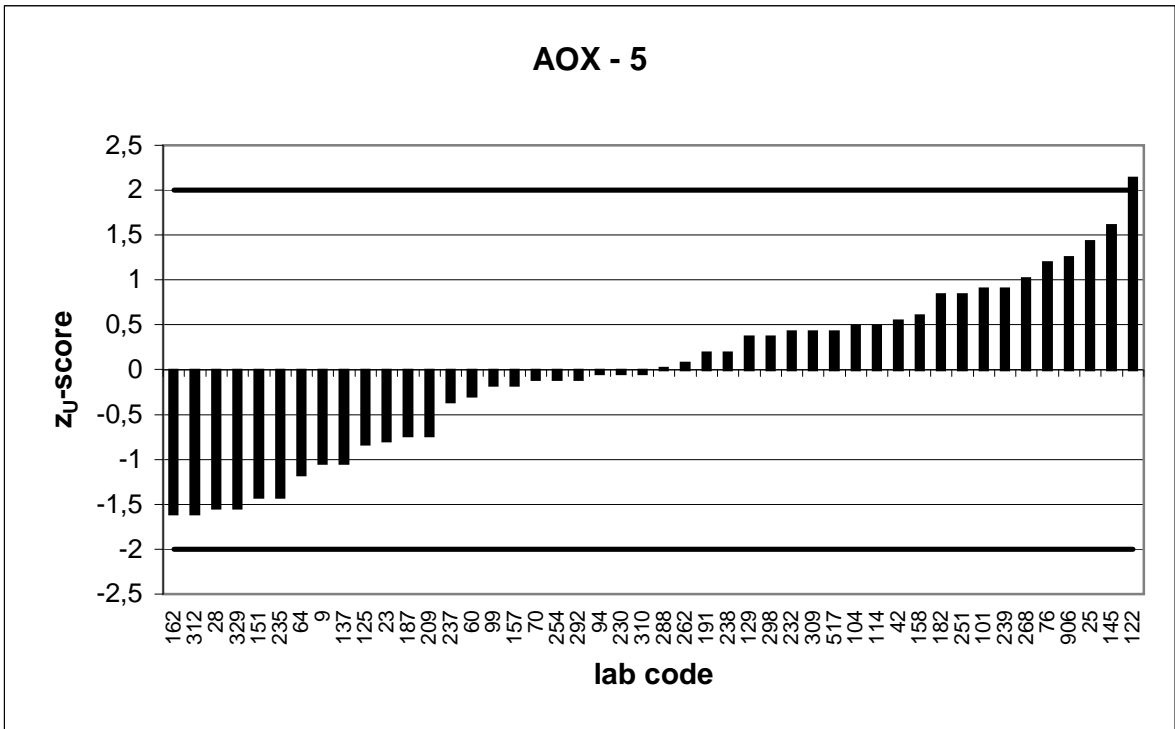
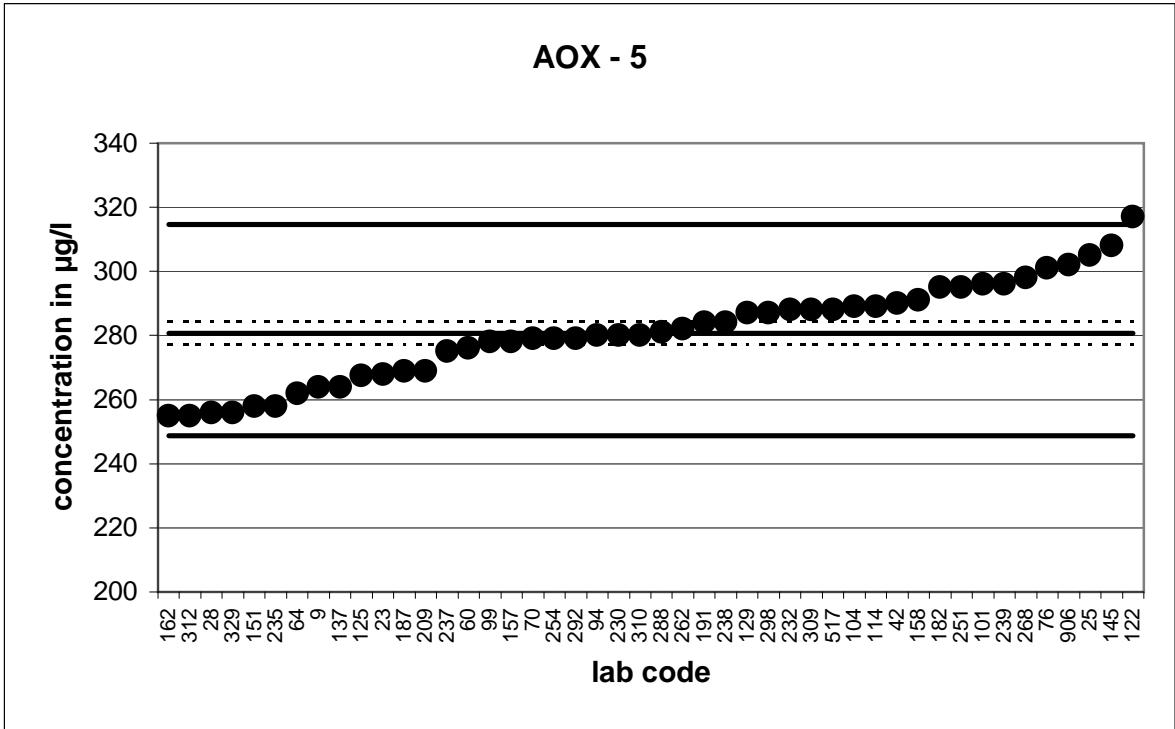
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

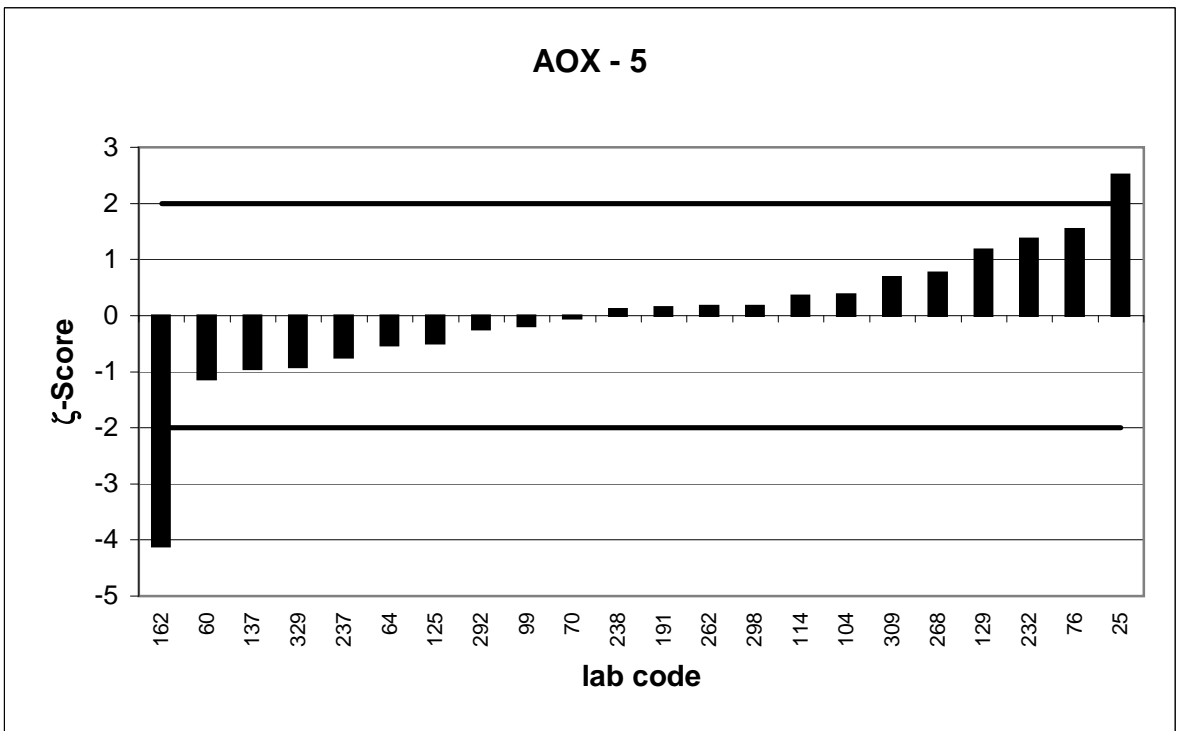
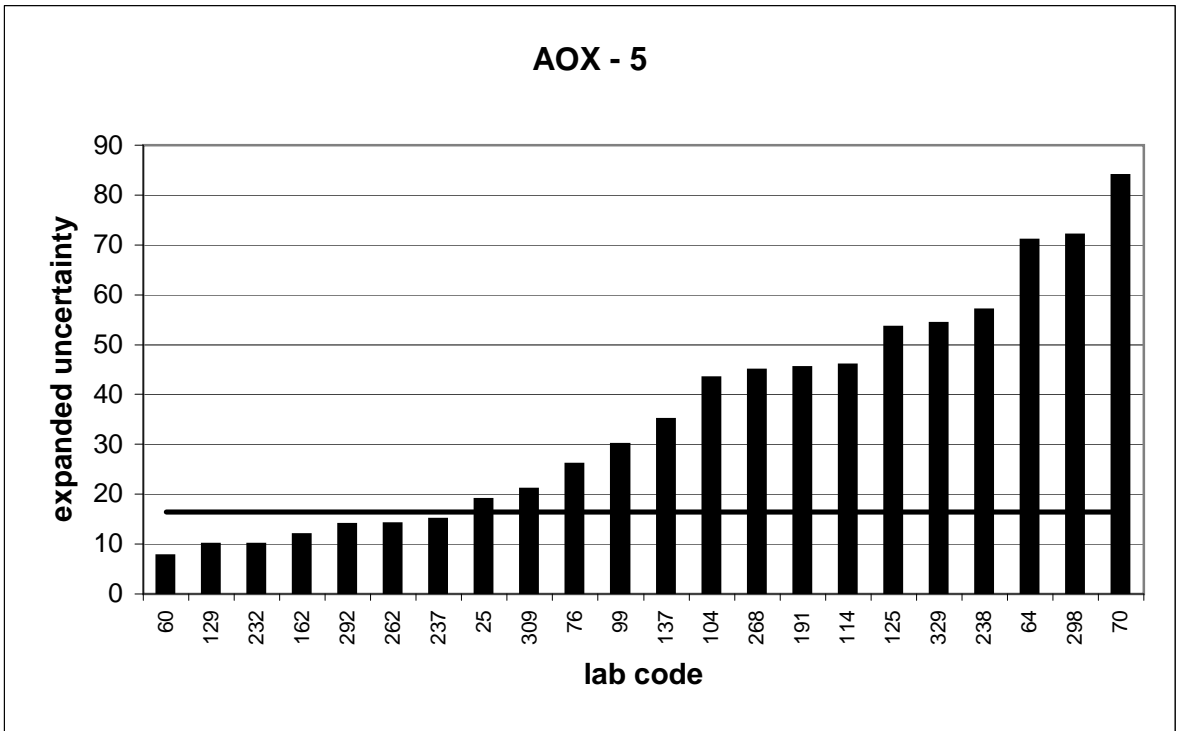




PT 3/11		AOX - 5			
assigned value [$\mu\text{g/l}$]*		280,8 \pm 3,6			
upper tolerance limit [$\mu\text{g/l}$]		314,7			
lower tolerance limit [$\mu\text{g/l}$]		248,8			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
9	264			-1,0	+
23	268			-0,8	+
25	305	19	2,5	1,4	+
28	256			-1,5	+
42	290			0,5	+
60	276	7,643	-1,1	-0,3	+
64	262	71	-0,5	-1,2	+
70	279	84	0,0	-0,1	+
76	301	26	1,5	1,2	+
94	280			0,0	+
99	278	30	-0,2	-0,2	+
101	296			0,9	+
104	289	43,4	0,4	0,5	+
114	289	46	0,4	0,5	+
122	317			2,1	-
125	267,5	53,5	-0,5	-0,8	+
129	287	10	1,2	0,4	+
137	264	35	-1,0	-1,0	+
145	308			1,6	+
151	258			-1,4	+
157	278			-0,2	+
158	291			0,6	+
162	255	12	-4,1	-1,6	+
182	295			0,8	+
187	269			-0,7	+
191	284	45,4	0,1	0,2	+
209	269			-0,7	+
230	280			0,0	+
232	288	10	1,4	0,4	+
235	258			-1,4	+
237	275	15	-0,7	-0,4	+
238	284	57	0,1	0,2	+
239	296			0,9	+
251	295			0,8	+
254	279			-0,1	+
262	282	14,1	0,2	0,1	+
268	298	45	0,8	1,0	+
288	281			0,0	+
292	279	14	-0,2	-0,1	+
298	287	72	0,2	0,4	+
309	288	21	0,7	0,4	+
310	280			0,0	+
312	255			-1,6	+
329	256	54,3	-0,9	-1,5	+
517	288			0,4	+
906	302			1,3	+

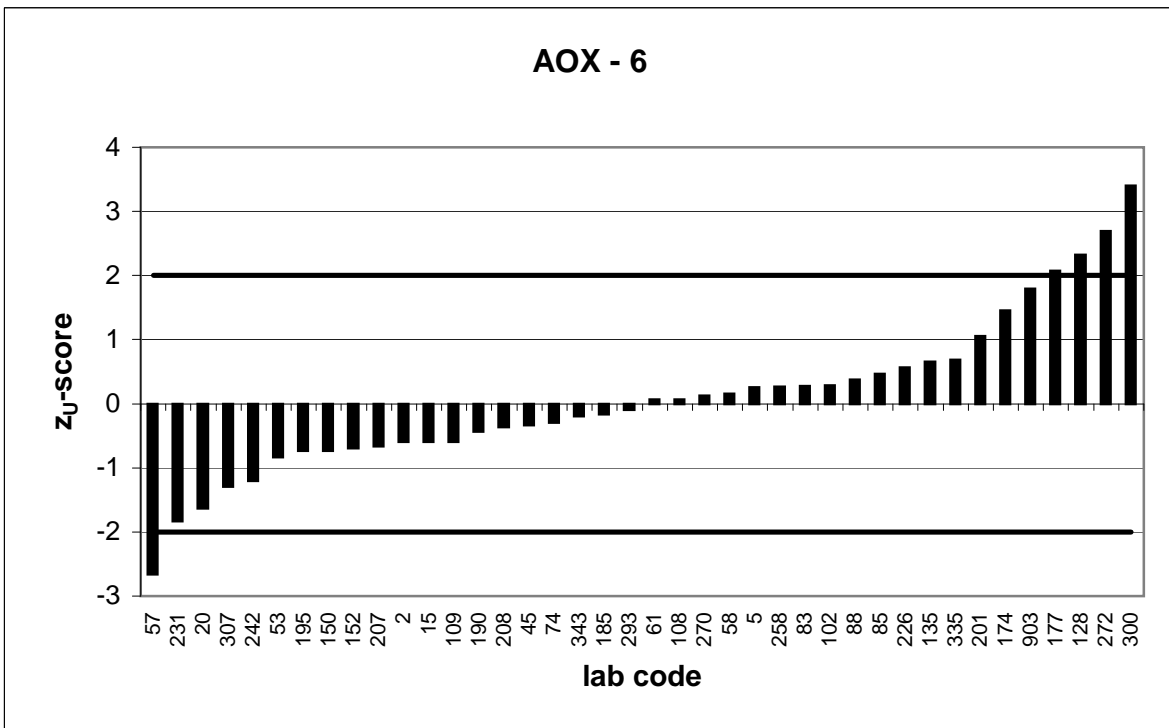
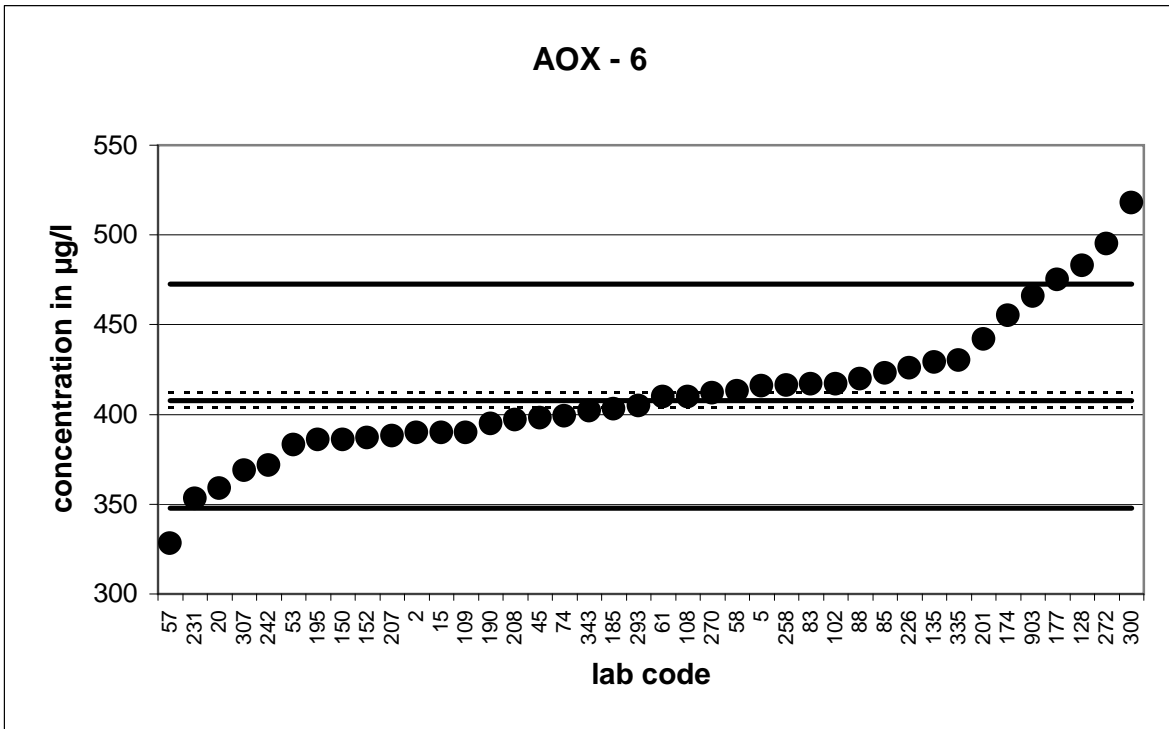
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

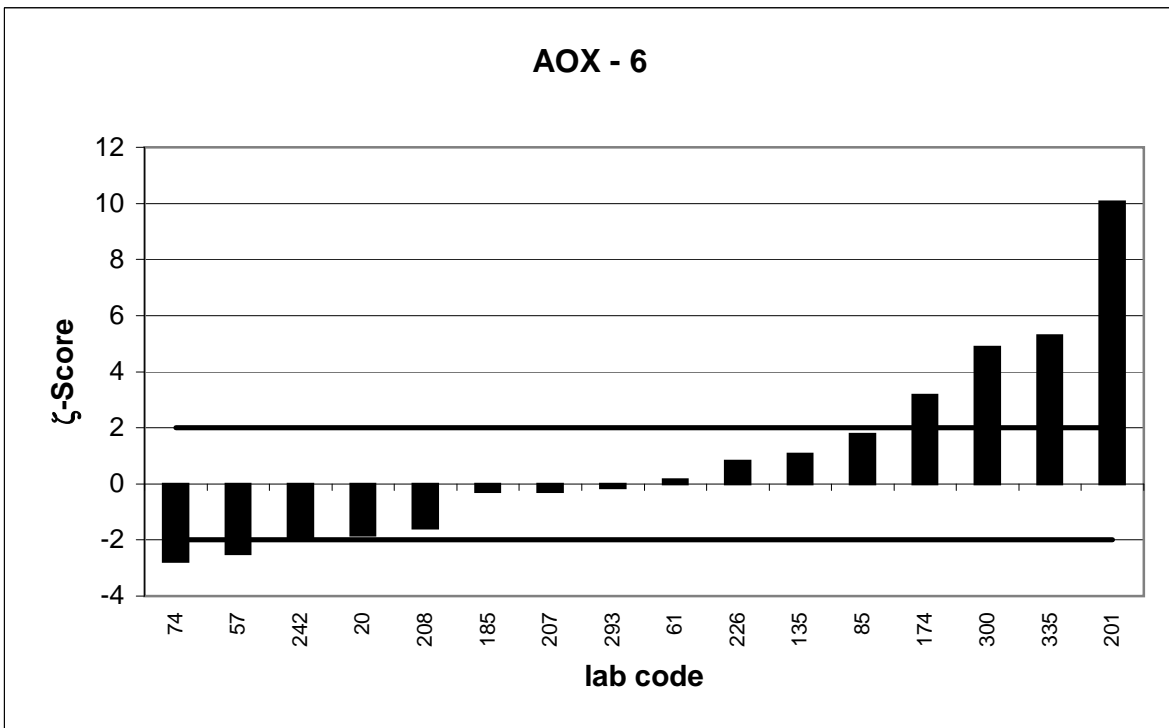
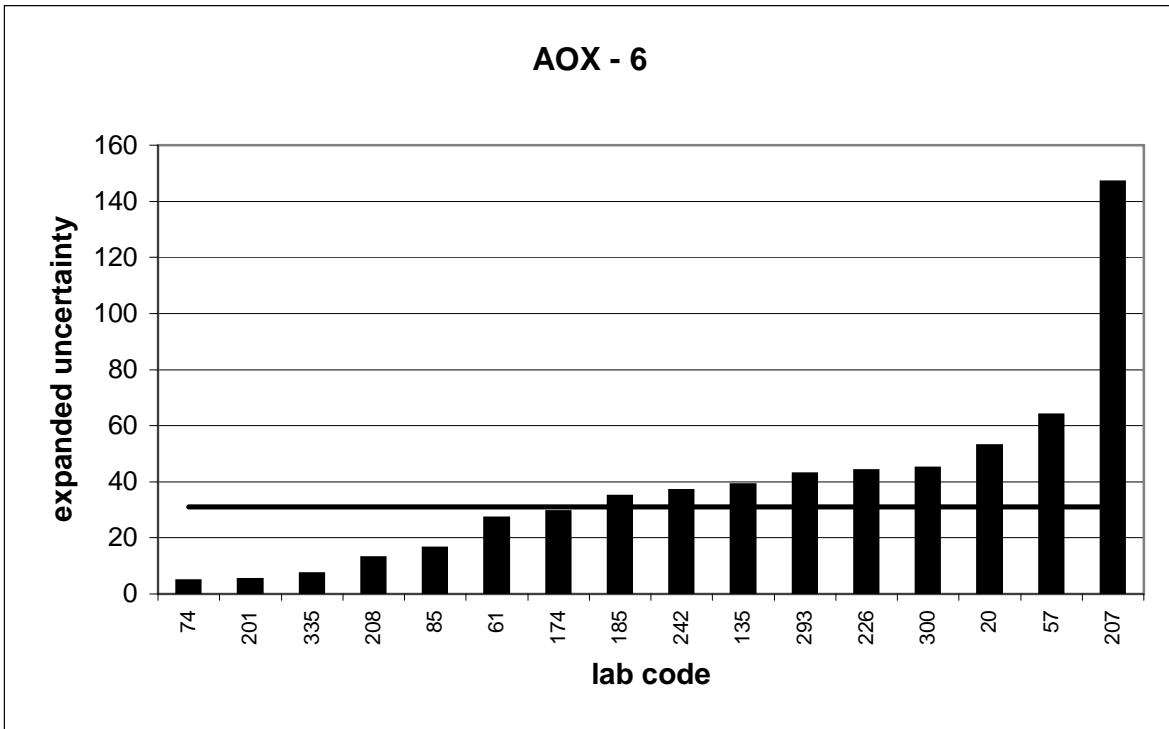




PT 3/11		AOX - 6			
assigned value [$\mu\text{g/l}$]*		407,9 \pm 4,2			
upper tolerance limit [$\mu\text{g/l}$]		472,6			
lower tolerance limit [$\mu\text{g/l}$]		347,9			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
2	390			-0,6	+
5	416			0,3	+
15	390			-0,6	+
20	359	53	-1,8	-1,6	+
45	398			-0,3	+
53	383			-0,8	+
57	328	63,9	-2,5	-2,7	-
58	413			0,2	+
61	410	27,1	0,2	0,1	+
74	399	4,8	-2,8	-0,3	+
83	416,8			0,3	+
85	423	16,5	1,8	0,5	+
88	420			0,4	+
102	417			0,3	+
108	410			0,1	+
109	390			-0,6	+
128	483,1			2,3	-
135	429	39	1,1	0,7	+
150	386			-0,7	+
152	387			-0,7	+
174	455	29,4	3,2	1,5	+
177	475			2,1	-
185	403	35	-0,3	-0,2	+
190	395			-0,4	+
195	385,86			-0,7	+
201	442	5,3	10,1	1,1	+
207	388	147	-0,3	-0,7	+
208	397	13,1	-1,6	-0,4	+
226	426	44	0,8	0,6	+
231	353			-1,8	+
242	371,7	37	-1,9	-1,2	+
258	416,4			0,3	+
270	412			0,1	+
272	495			2,7	-
293	405	43	-0,1	-0,1	+
300	518	45	4,9	3,4	-
307	369			-1,3	+
335	430	7,2	5,3	0,7	+
343	402			-0,2	+
903	466			1,8	+

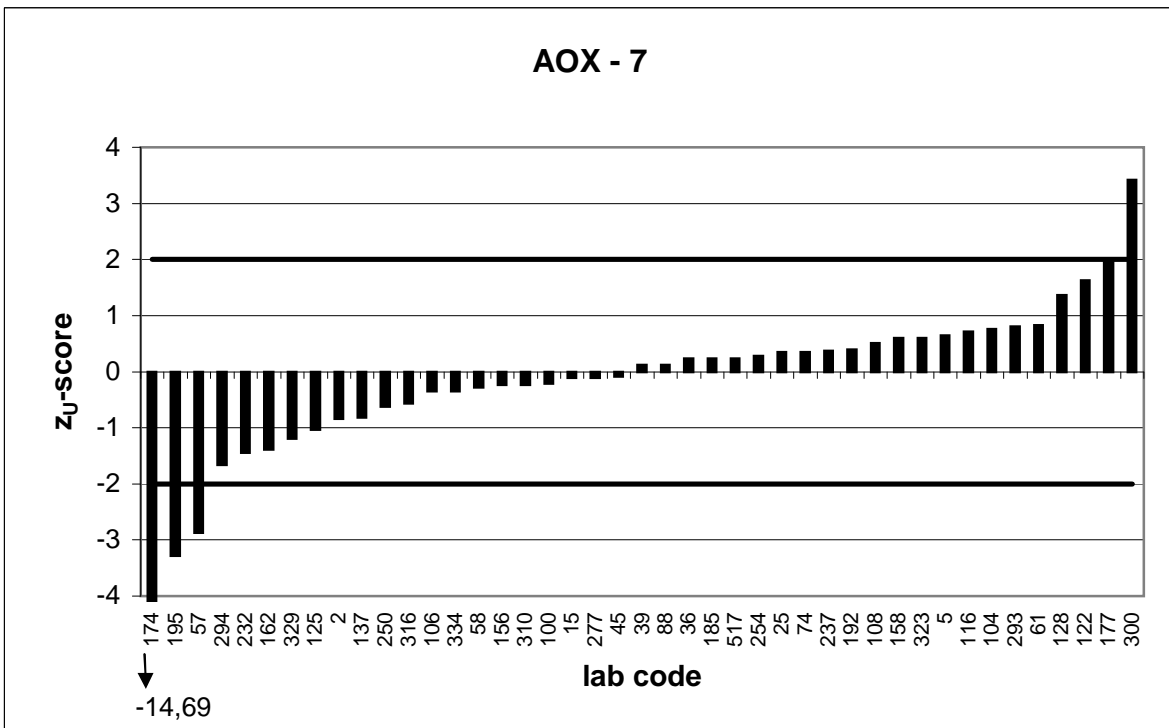
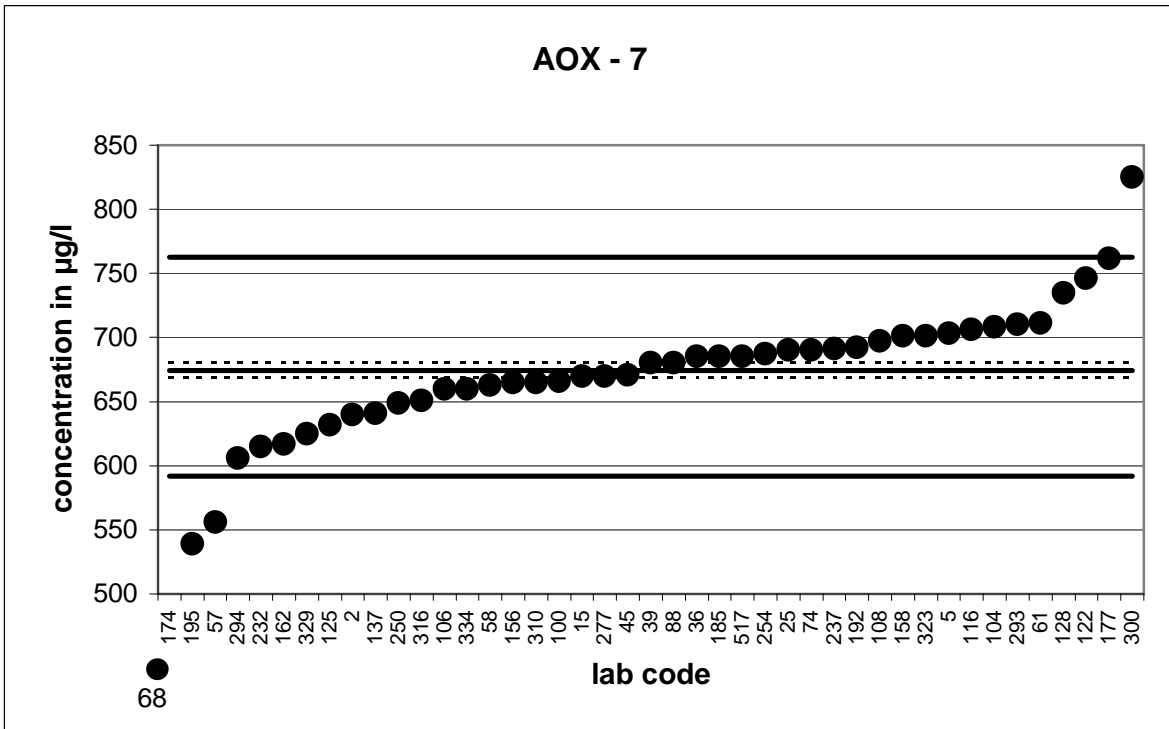
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

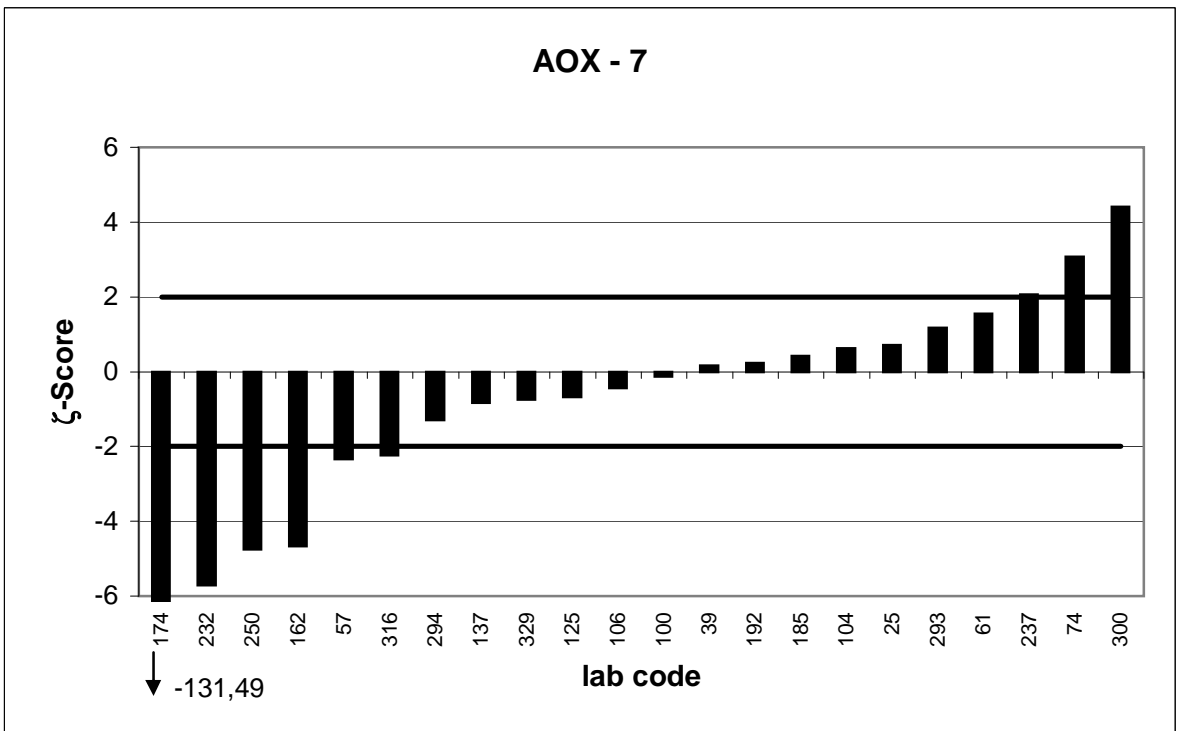
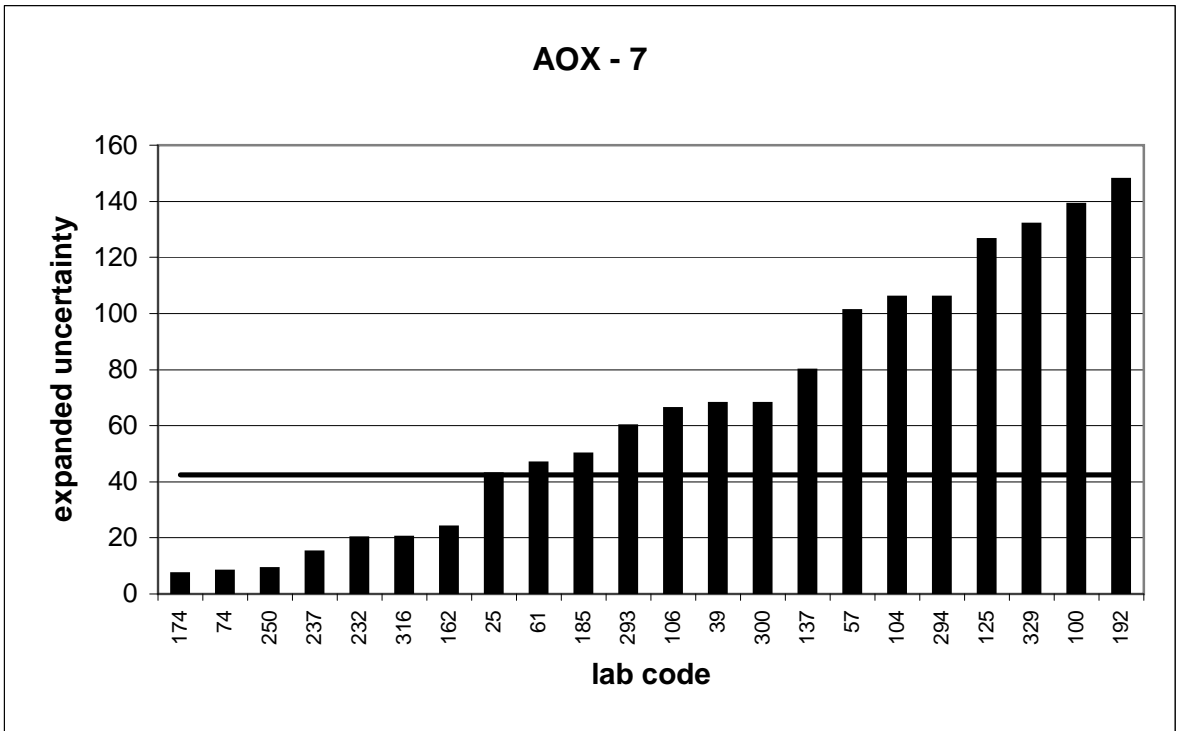




PT 3/11		AOX - 7			
assigned value [$\mu\text{g/l}$]*		674,5 \pm 5,8			
upper tolerance limit [$\mu\text{g/l}$]		762,5			
lower tolerance limit [$\mu\text{g/l}$]		591,9			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
2	640			-0,8	+
5	703			0,6	+
15	670			-0,1	+
25	690	43	0,7	0,4	+
36	685			0,2	+
39	680	68	0,2	0,1	+
45	671			-0,1	+
57	556	101	-2,3	-2,9	-
58	663			-0,3	+
61	711	46,9	1,5	0,8	+
74	690	8,3	3,1	0,4	+
88	680			0,1	+
100	666	139	-0,1	-0,2	+
104	708	106	0,6	0,8	+
106	660	66,3	-0,4	-0,4	+
108	697			0,5	+
116	706			0,7	+
122	746			1,6	+
125	632	126,4	-0,7	-1,0	+
128	734,7			1,4	+
137	641	80	-0,8	-0,8	+
156	665			-0,2	+
158	701			0,6	+
162	617	24	-4,7	-1,4	+
174	68	7,2	-131,5	-14,7	-
177	761,5			2,0	+
185	685	50	0,4	0,2	+
192	692	148	0,2	0,4	+
195	539,12			-3,3	-
232	615	20	-5,7	-1,4	+
237	691	15	2,1	0,4	+
250	649	9,05	-4,8	-0,6	+
254	687			0,3	+
277	670			-0,1	+
293	710	60	1,2	0,8	+
294	606	106	-1,3	-1,7	+
300	825	68	4,4	3,4	-
310	665			-0,2	+
316	651	20,3	-2,2	-0,6	+
323	701			0,6	+
329	625	132	-0,7	-1,2	+
334	660			-0,4	+
517	685			0,2	+

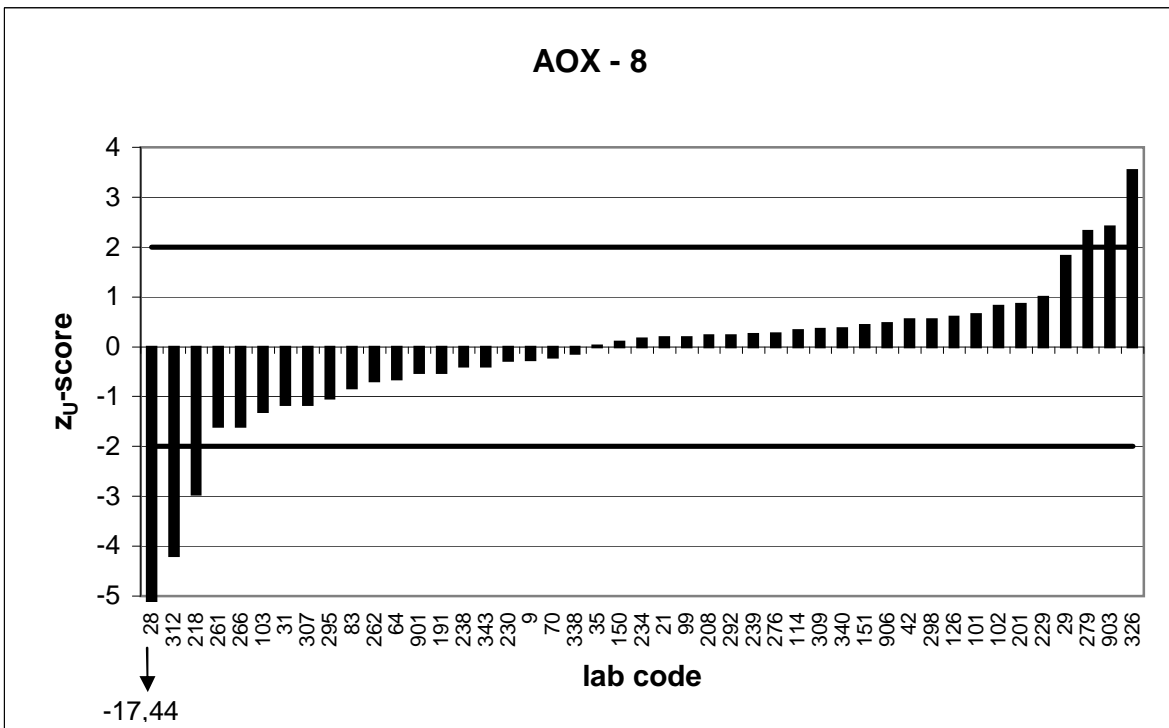
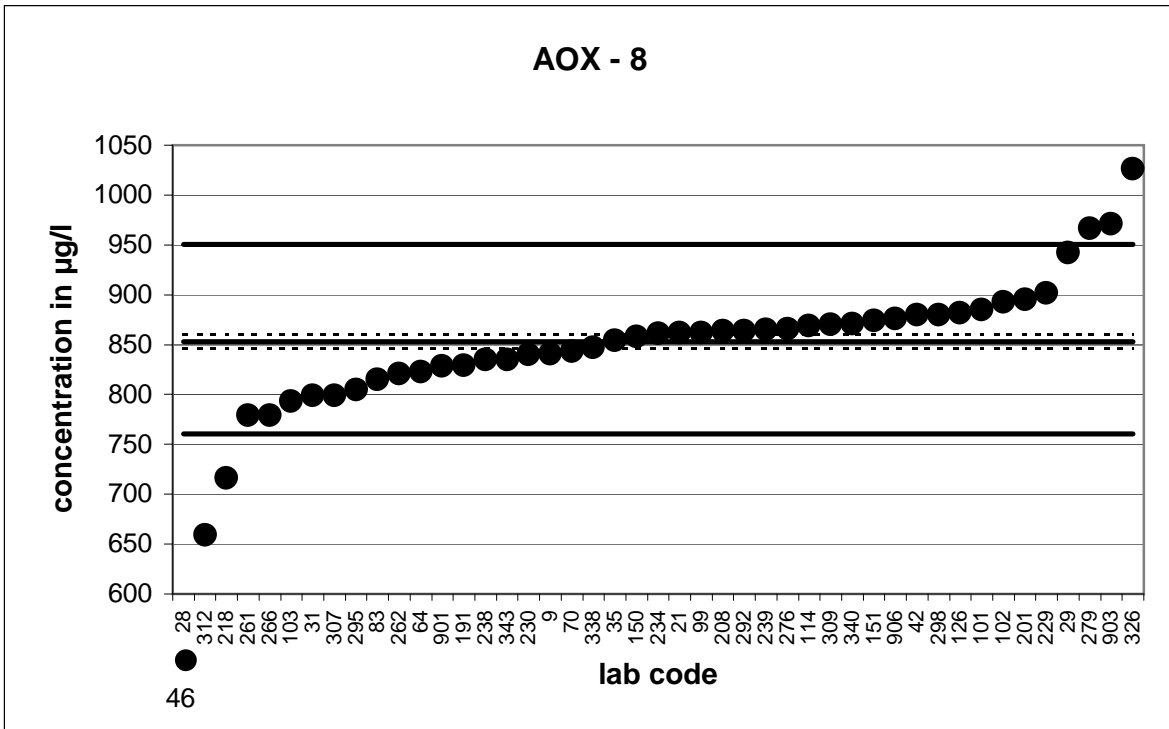
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

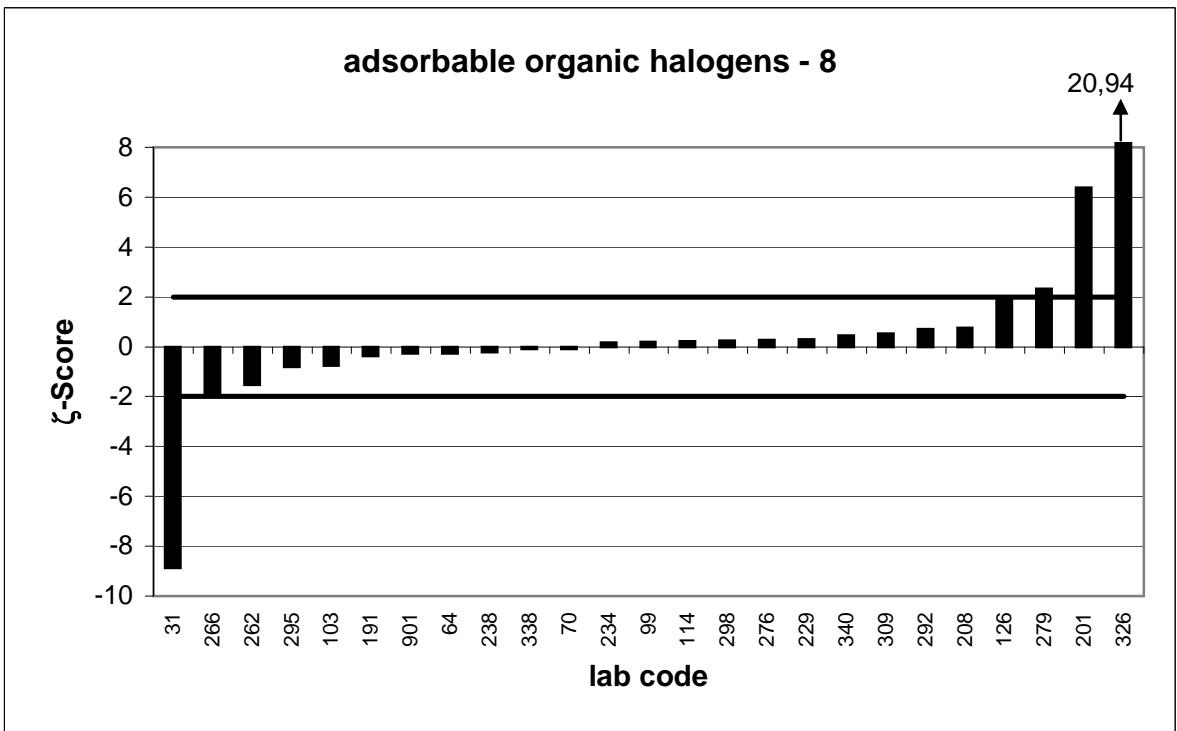
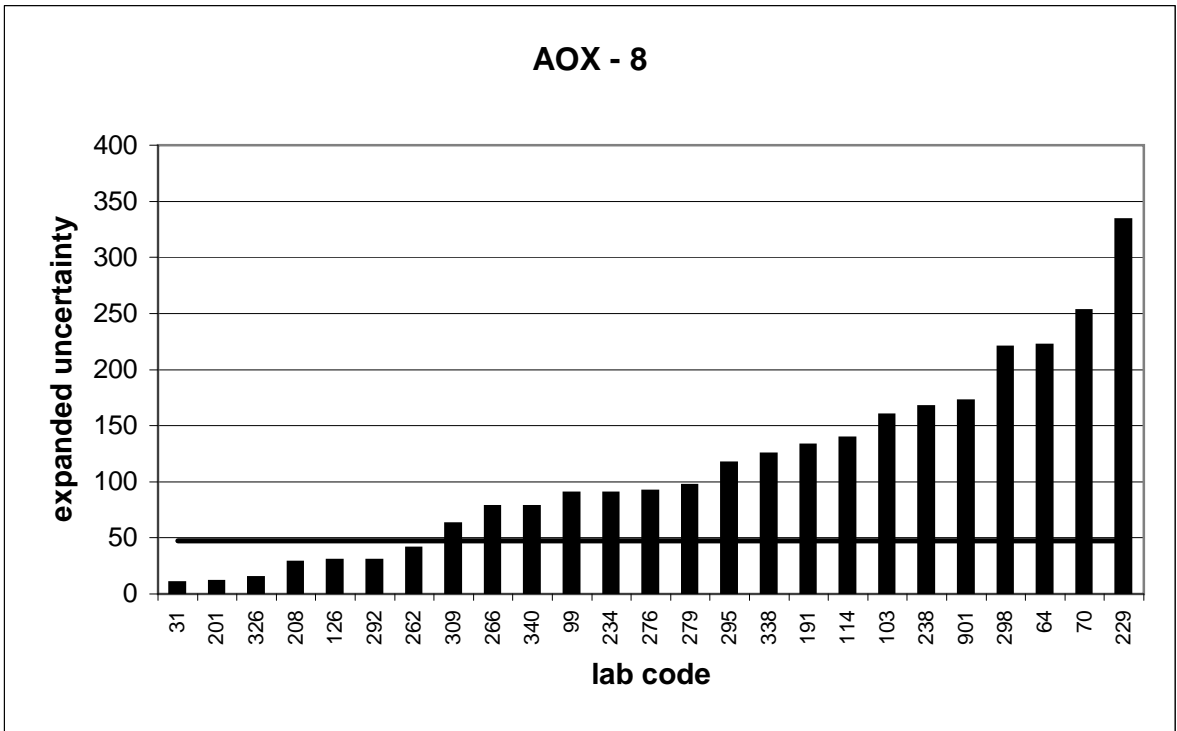




PT 3/11		AOX - 8			
assigned value [$\mu\text{g/l}$]*		853 \pm 6,9			
upper tolerance limit [$\mu\text{g/l}$]		950,8			
lower tolerance limit [$\mu\text{g/l}$]		760,5			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
9	841			-0,3	+
21	862			0,2	+
28	46			-17,4	-
29	942			1,8	+
31	799	10	-8,9	-1,2	+
35	854			0,0	+
42	880			0,6	+
64	823	222	-0,3	-0,6	+
70	843	253	-0,1	-0,2	+
83	814,8			-0,8	+
99	862	90	0,2	0,2	+
101	885			0,7	+
102	893			0,8	+
103	793	160	-0,7	-1,3	+
114	869	139	0,2	0,3	+
126	882	30	1,9	0,6	+
150	858			0,1	+
151	874			0,4	+
191	829	133	-0,4	-0,5	+
201	895	11,2	6,4	0,9	+
208	864	28,5	0,8	0,2	+
218	716			-3,0	-
229	902	334	0,3	1,0	+
230	840			-0,3	+
234	861	90	0,2	0,2	+
238	835	167	-0,2	-0,4	+
239	865			0,2	+
261	779			-1,6	+
262	821	41,1	-1,5	-0,7	+
266	779	78	-1,9	-1,6	+
276	866	92	0,3	0,3	+
279	966,4	97	2,3	2,3	-
292	864	30	0,7	0,2	+
295	805	117	-0,8	-1,0	+
298	880	220	0,2	0,6	+
307	799			-1,2	+
309	870	63	0,5	0,3	+
312	659			-4,2	-
326	1026	15	20,9	3,5	-
338	847	125	-0,1	-0,1	+
340	871	78	0,5	0,4	+
343	835			-0,4	+
901	828,8	172,4	-0,3	-0,5	+
903	971			2,4	-
906	876			0,5	+

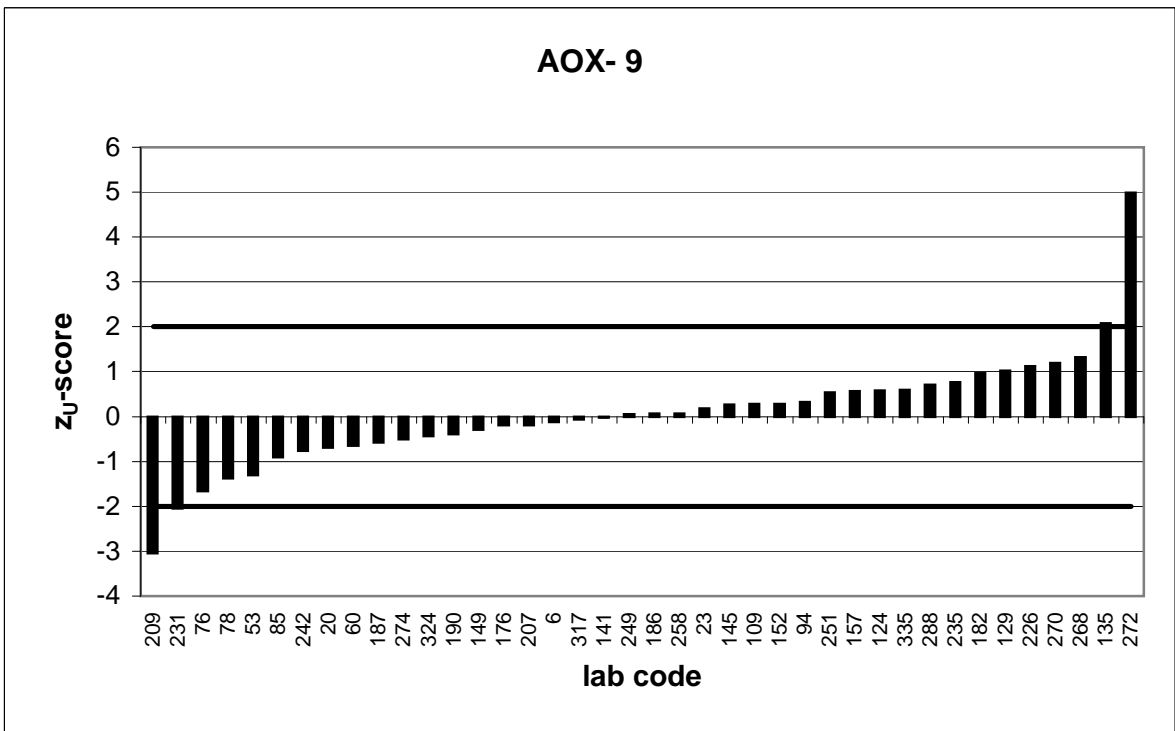
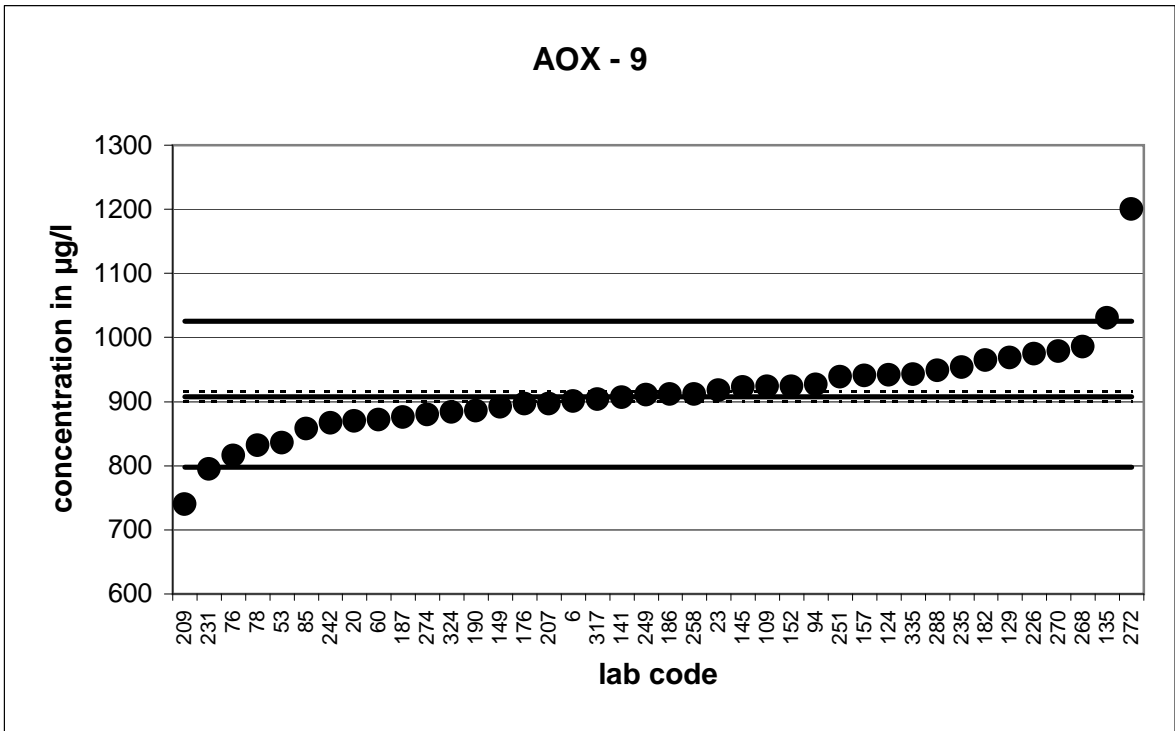
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

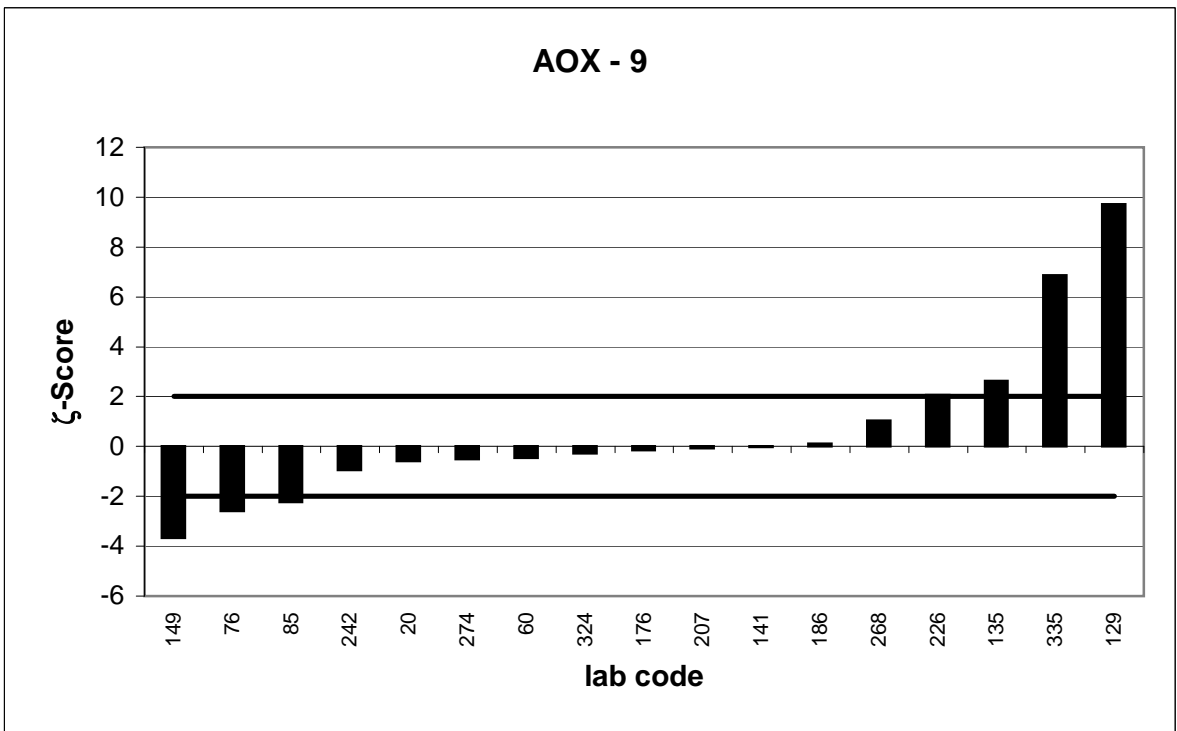
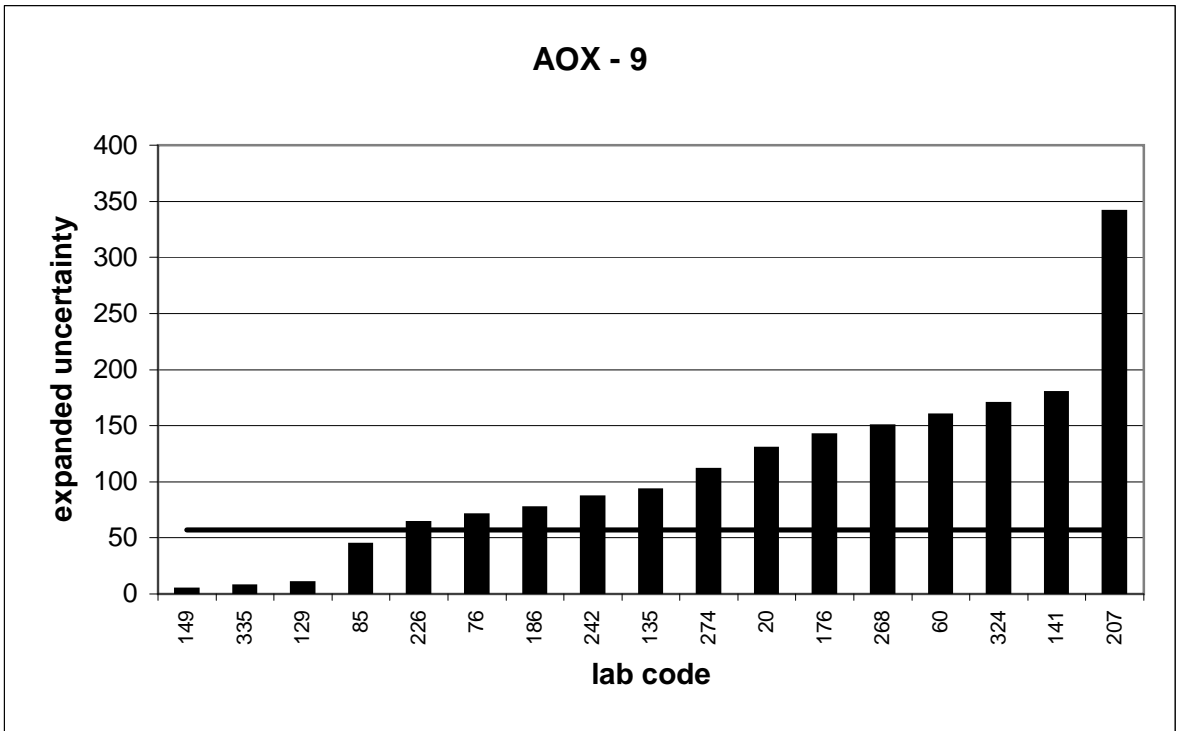




PT 3/11		AOX - 9			
assigned value [$\mu\text{g/l}$]*		907,8 \pm 7,3			
upper tolerance limit [$\mu\text{g/l}$]		1025			
lower tolerance limit [$\mu\text{g/l}$]		797,6			
lab code	result [$\mu\text{g/l}$]	\pm	ζ -score	z_U -score	assessm.
6	901			-0,1	+
20	870	130	-0,6	-0,7	+
23	918			0,2	+
53	836			-1,3	+
60	872	159,5	-0,4	-0,7	+
76	816	70,5	-2,6	-1,7	+
78	832			-1,4	+
85	858	44,27	-2,2	-0,9	+
94	927			0,3	+
109	924			0,3	+
124	942			0,6	+
129	968	10	9,7	1,0	+
135	1030	93	2,6	2,1	-
141	906,5	180	0,0	0,0	+
145	923			0,3	+
149	892	4,7	-3,7	-0,3	+
152	924			0,3	+
157	941			0,6	+
176	897	142	-0,2	-0,2	+
182	964			1,0	+
186	912	77	0,1	0,1	+
187	876			-0,6	+
190	886			-0,4	+
207	897	341	-0,1	-0,2	+
209	740			-3,0	-
226	974	64	2,1	1,1	+
231	795			-2,0	+
235	953			0,8	+
242	866,2	87	-1,0	-0,8	+
249	911			0,1	+
251	939			0,5	+
258	912			0,1	+
268	985	150	1,0	1,3	+
270	978			1,2	+
272	1200			5,0	-
274	880	111	-0,5	-0,5	+
288	949			0,7	+
317	904			-0,1	+
324	884	170	-0,3	-0,4	+
335	943	7,2	6,9	0,6	+

* 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%



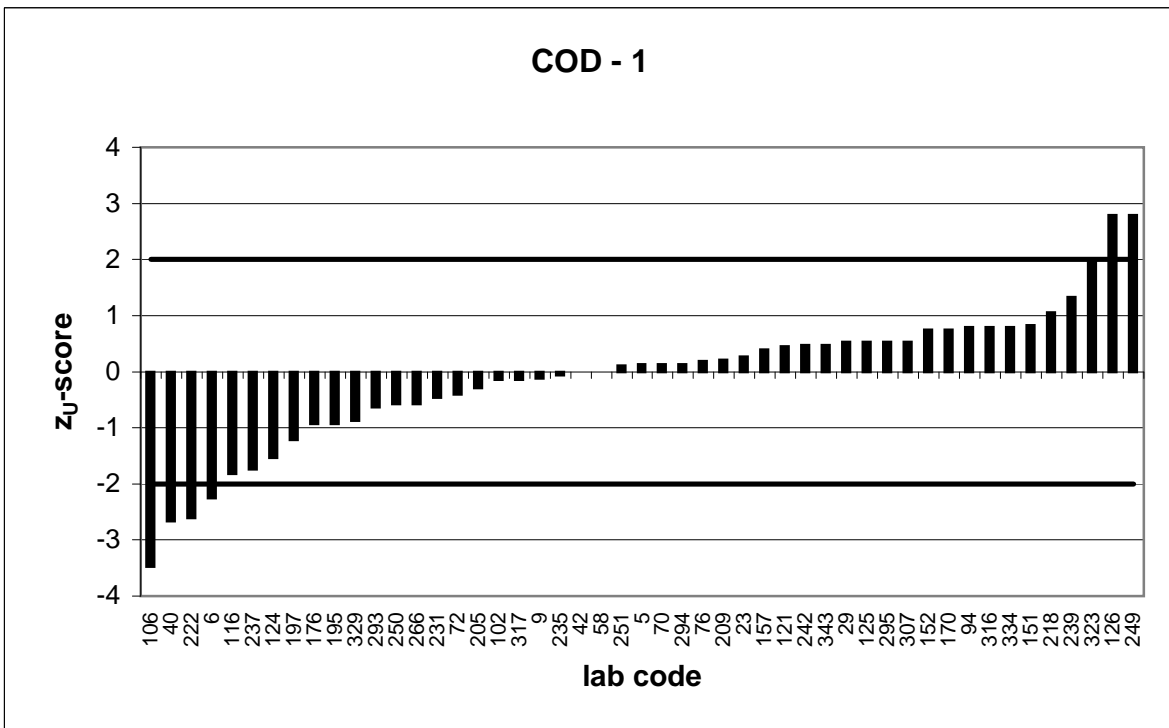
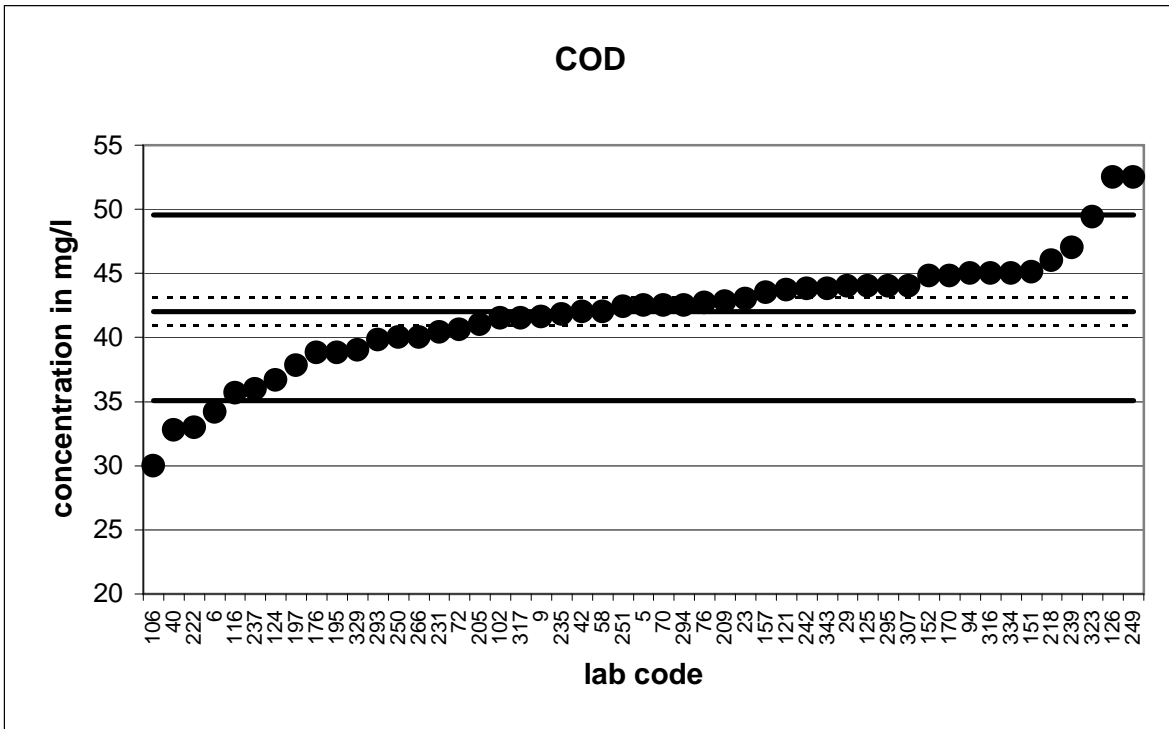


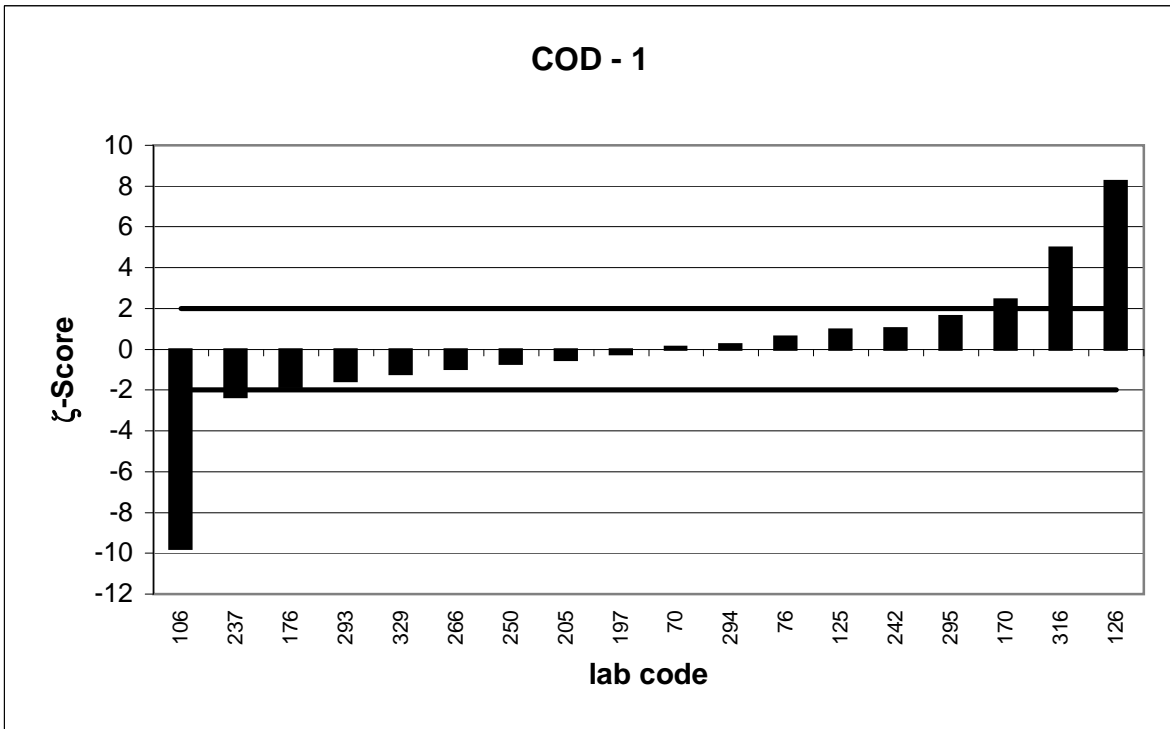
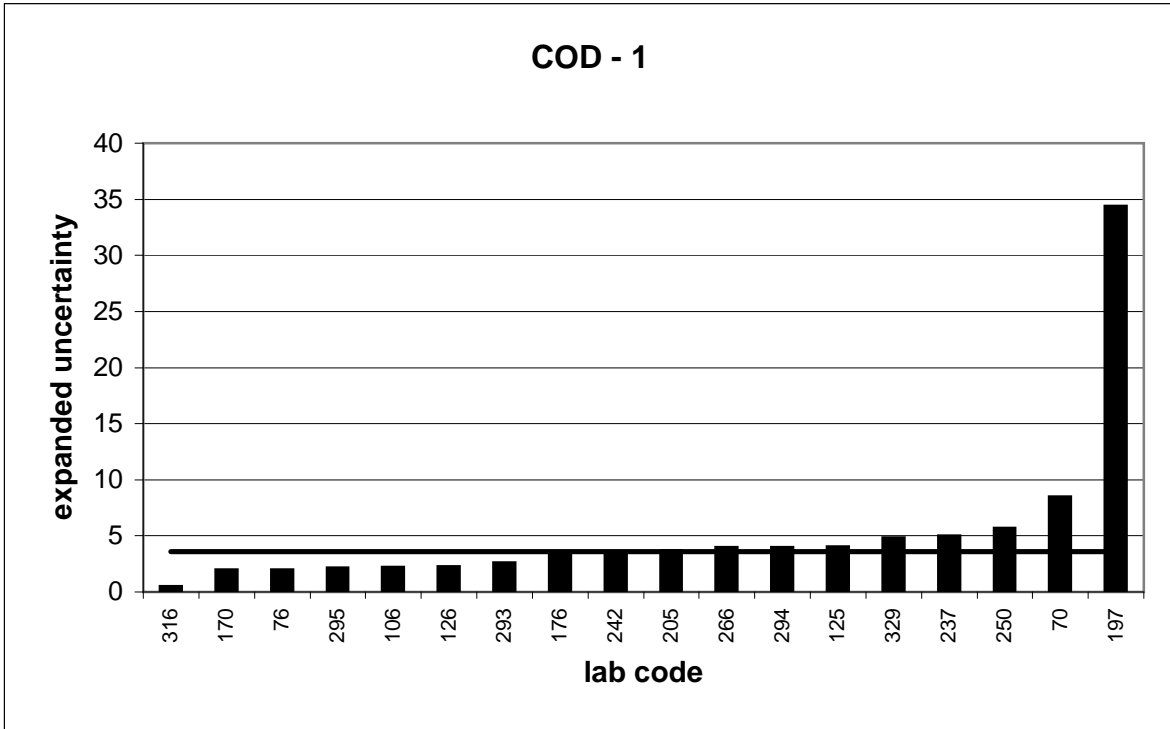
PT 3/11		COD - 1			
assigned value [mg/l]*		42,01 ± 1,1			
upper tolerance limit [mg/l]		49,53			
lower tolerance limit [mg/l]		35,09			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	42,5			0,1	+
6	34,2			-2,3	-
9	41,6			-0,1	+
23	43			0,3	+
29	44			0,5	+
40	32,8			-2,7	-
42	42			0,0	+
58	42			0,0	+
70	42,5	8,5	0,1	0,1	+
72	40,6			-0,4	+
76	42,7	2,02	0,6	0,2	+
94	45			0,8	+
102	41,5			-0,1	+
106	30	2,2	-9,8	-3,5	-
116	35,7			-1,8	+
121	43,7			0,5	+
124	36,7			-1,5	+
125	44	4,03	1,0	0,5	+
126	52,5	2,3	8,2	2,8	-
151	45,1			0,8	+
152	44,8			0,7	+
157	43,5			0,4	+
170	44,8	2	2,5	0,7	+
176	38,8	3,3	-1,8	-0,9	+
195	38,8			-0,9	+
197	37,8	34,4	-0,2	-1,2	+
205	41	3,7	-0,5	-0,3	+
209	42,8			0,2	+
218	46			1,1	+
222	33			-2,6	-
231	40,4			-0,5	+
235	41,8			-0,1	+
237	36	5	-2,3	-1,7	+
239	47			1,3	+
242	43,8	3,3	1,0	0,5	+
249	52,5			2,8	-
250	40	5,72	-0,7	-0,6	+
251	42,4			0,1	+
266	40	4	-1,0	-0,6	+
293	39,8	2,6	-1,6	-0,6	+
294	42,5	4	0,2	0,1	+
295	44	2,19	1,6	0,5	+
307	44			0,5	+
316	45	0,5	5,0	0,8	+
317	41,5			-0,1	+
323	49,4			2,0	+

* 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%

PT 3/11		COD - 1			
assigned value [mg/l]*		42,01		± 1,1	
upper tolerance limit [mg/l]		49,53			
lower tolerance limit [mg/l]		35,09			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
329	39	4,84	-1,2	-0,9	+
334	45			0,8	+
343	43,8			0,5	+

* 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%



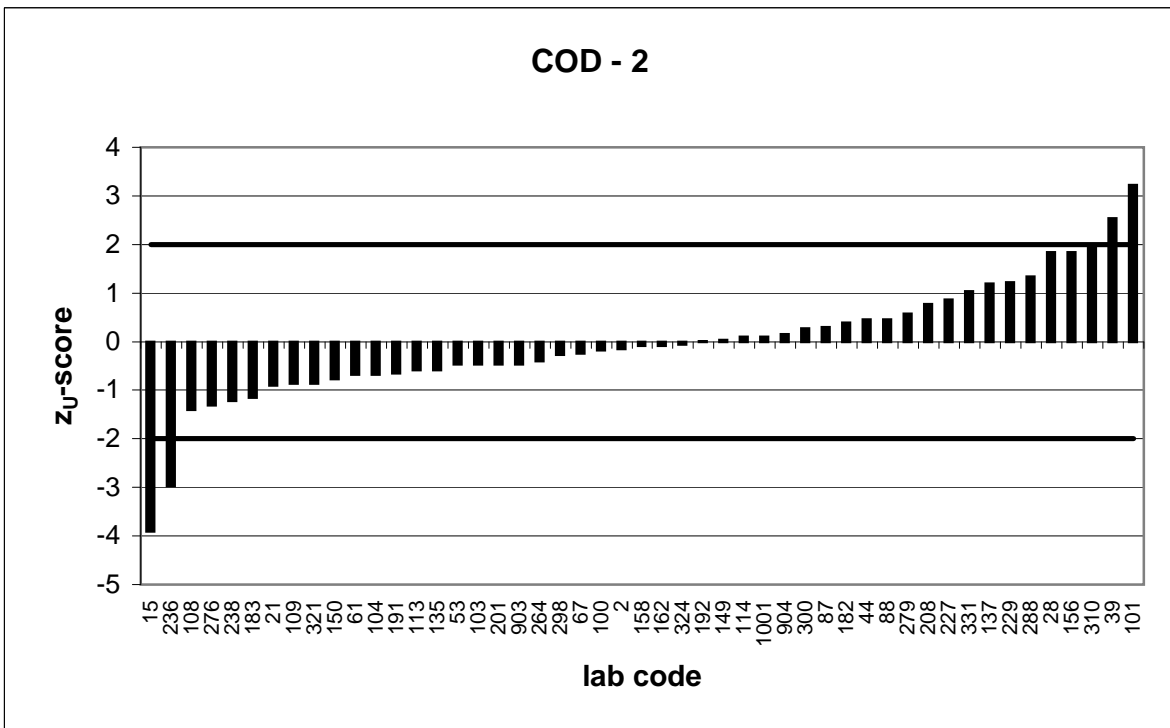
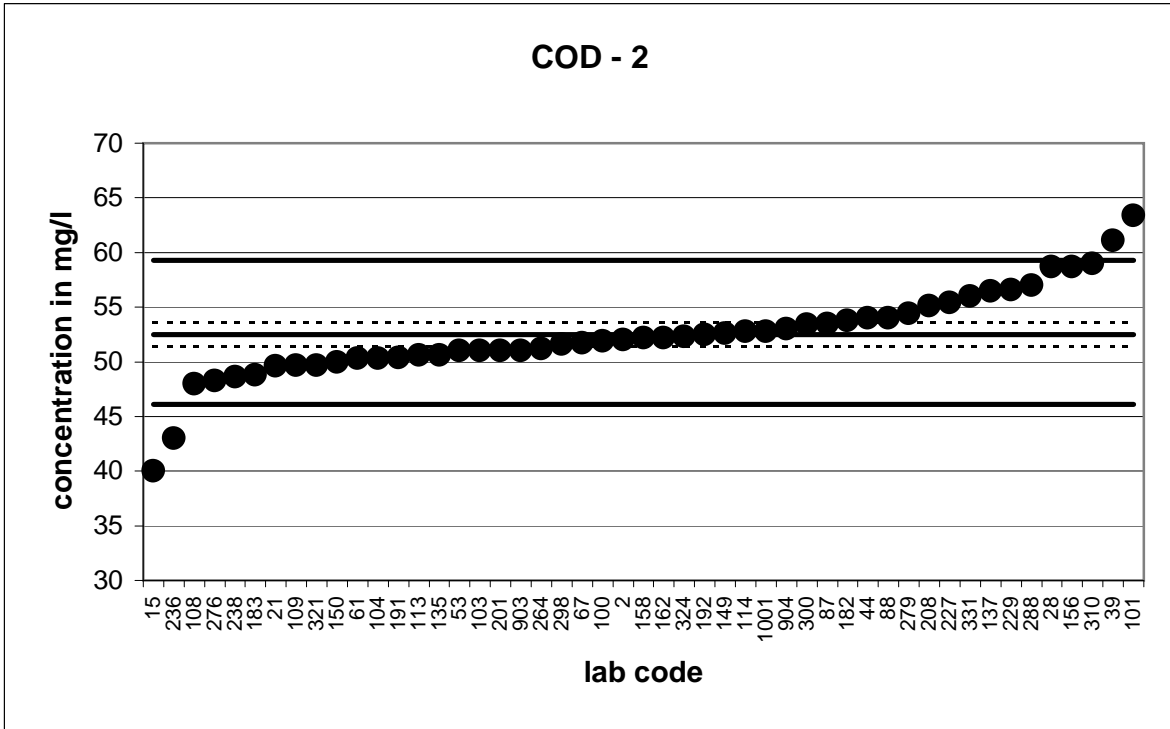


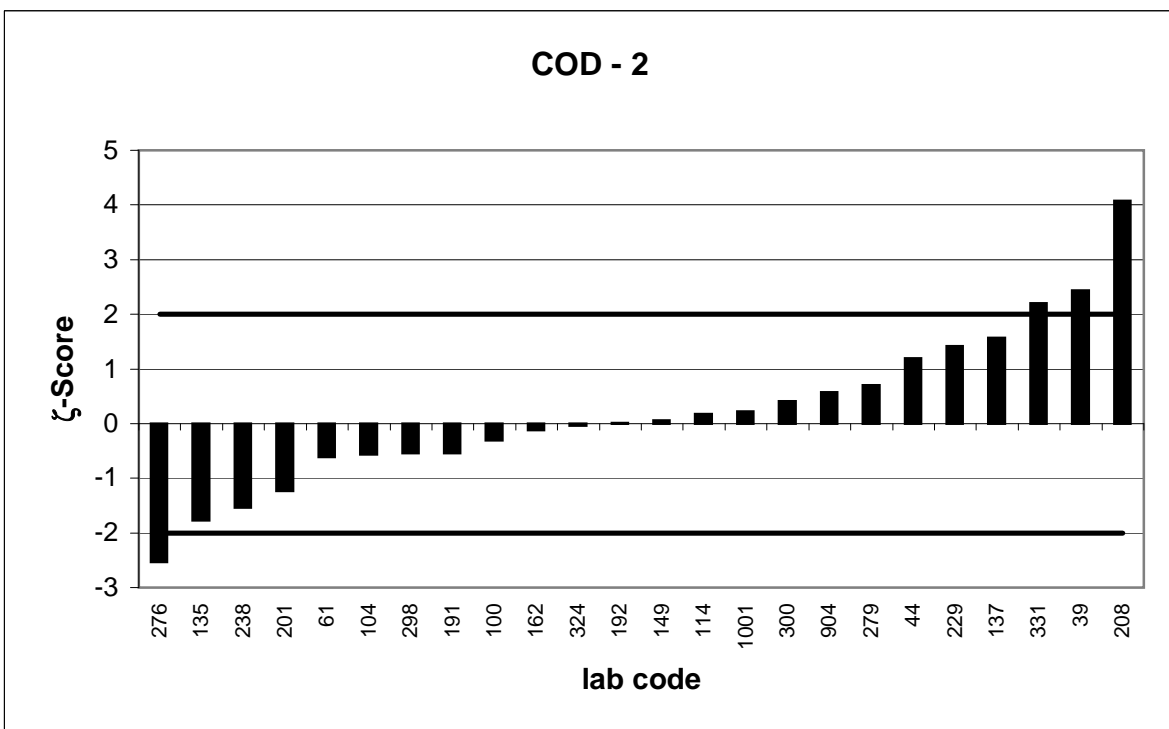
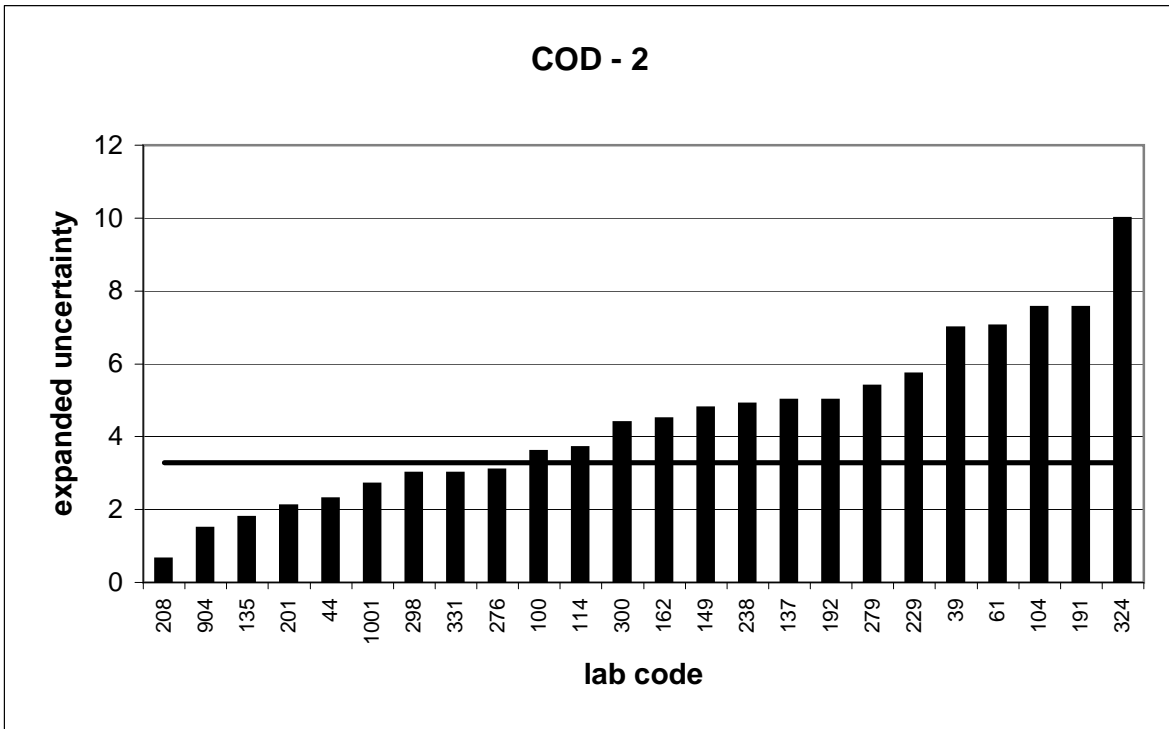
PT 3/11		COD - 2			
assigned value [mg/l]*		52,47 ± 1,12			
upper tolerance limit [mg/l]		59,25			
lower tolerance limit [mg/l]		46,09			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
2	52			-0,1	+
15	40			-3,9	-
21	49,6			-0,9	+
28	58,7			1,8	+
39	61,1	7	2,4	2,5	-
44	54	2,3	1,2	0,5	+
53	51			-0,5	+
61	50,3	7,04	-0,6	-0,7	+
67	51,7			-0,2	+
87	53,5			0,3	+
88	54			0,5	+
100	51,9	3,6	-0,3	-0,2	+
101	63,4			3,2	-
103	51			-0,5	+
104	50,3	7,55	-0,6	-0,7	+
108	48			-1,4	+
109	49,7			-0,9	+
113	50,6			-0,6	+
114	52,8	3,7	0,2	0,1	+
135	50,6	1,8	-1,8	-0,6	+
137	56,5	5	1,6	1,2	+
149	52,6	4,8	0,1	0,0	+
150	50			-0,8	+
156	58,7			1,8	+
158	52,2			-0,1	+
162	52,2	4,5	-0,1	-0,1	+
182	53,8			0,4	+
183	48,8			-1,2	+
191	50,4	7,56	-0,5	-0,6	+
192	52,5	5,01	0,0	0,0	+
201	51	2,1	-1,2	-0,5	+
208	55,1	0,65	4,1	0,8	+
227	55,4			0,9	+
229	56,6	5,73	1,4	1,2	+
236	43			-3,0	-
238	48,6	4,9	-1,5	-1,2	+
264	51,2			-0,4	+
276	48,3	3,1	-2,5	-1,3	+
279	54,4	5,4	0,7	0,6	+
288	57			1,3	+
298	51,6	3	-0,5	-0,3	+
300	53,4	4,4	0,4	0,3	+
310	59			1,9	+
321	49,7			-0,9	+
324	52,3	10	0,0	-0,1	+
331	56	3	2,2	1,0	+

* 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%

PT 3/11		COD - 2			
assigned value [mg/l]*		52,47 ± 1,12			
upper tolerance limit [mg/l]		59,25			
lower tolerance limit [mg/l]		46,09			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
903	51			-0,5	+
904	53	1,5	0,6	0,2	+
1001	52,8	2,7	0,2	0,1	+

* 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%



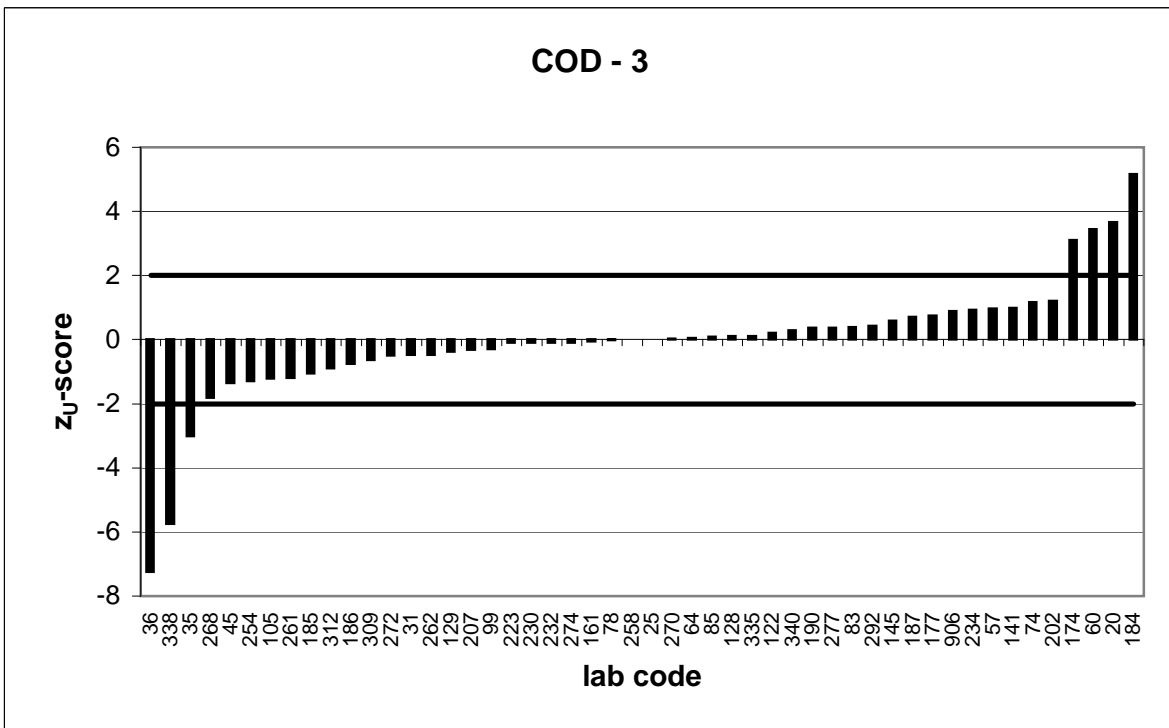
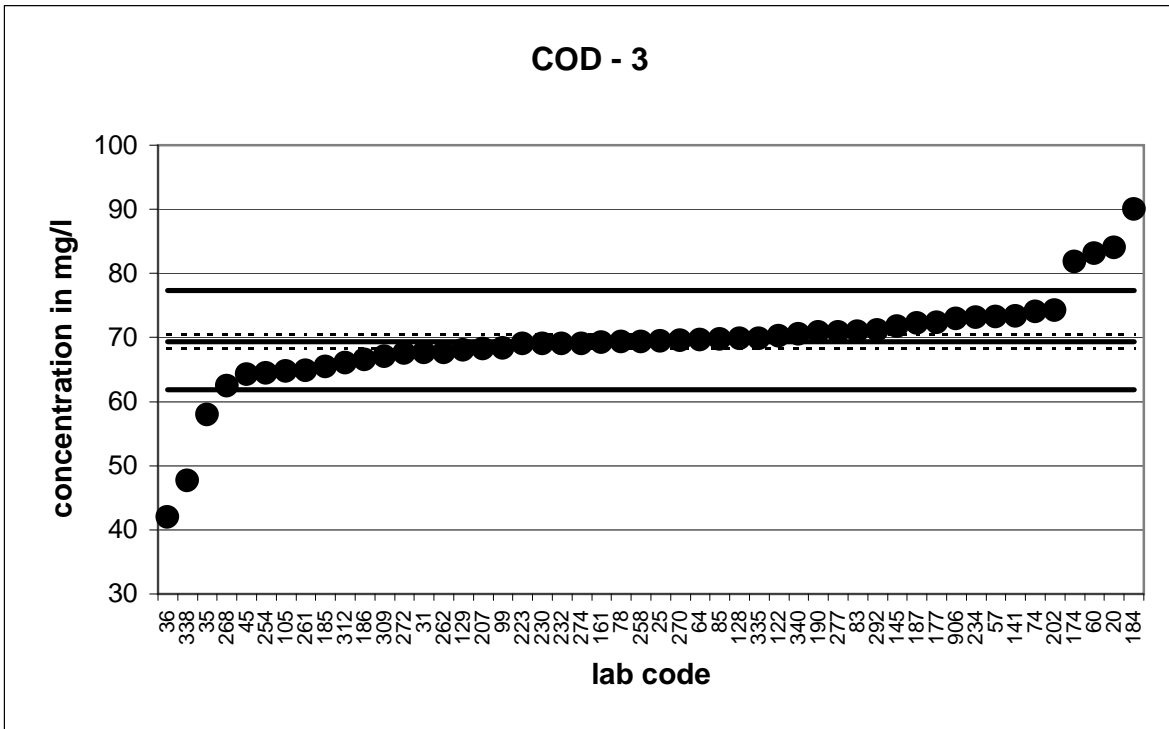


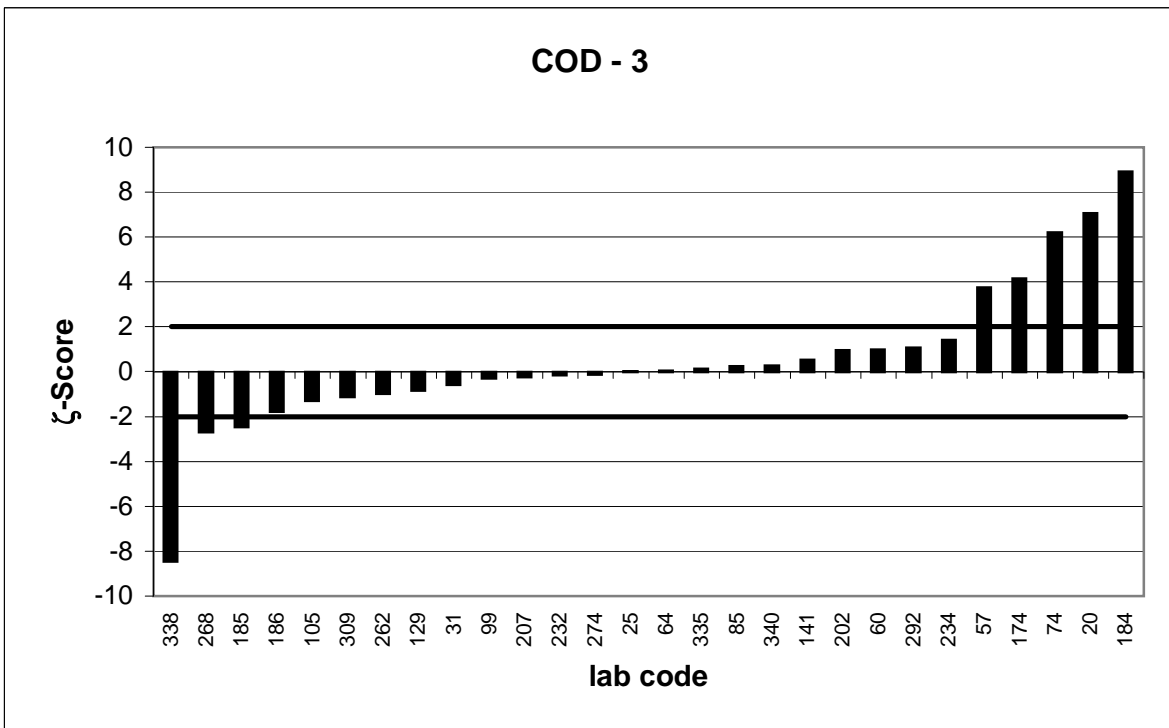
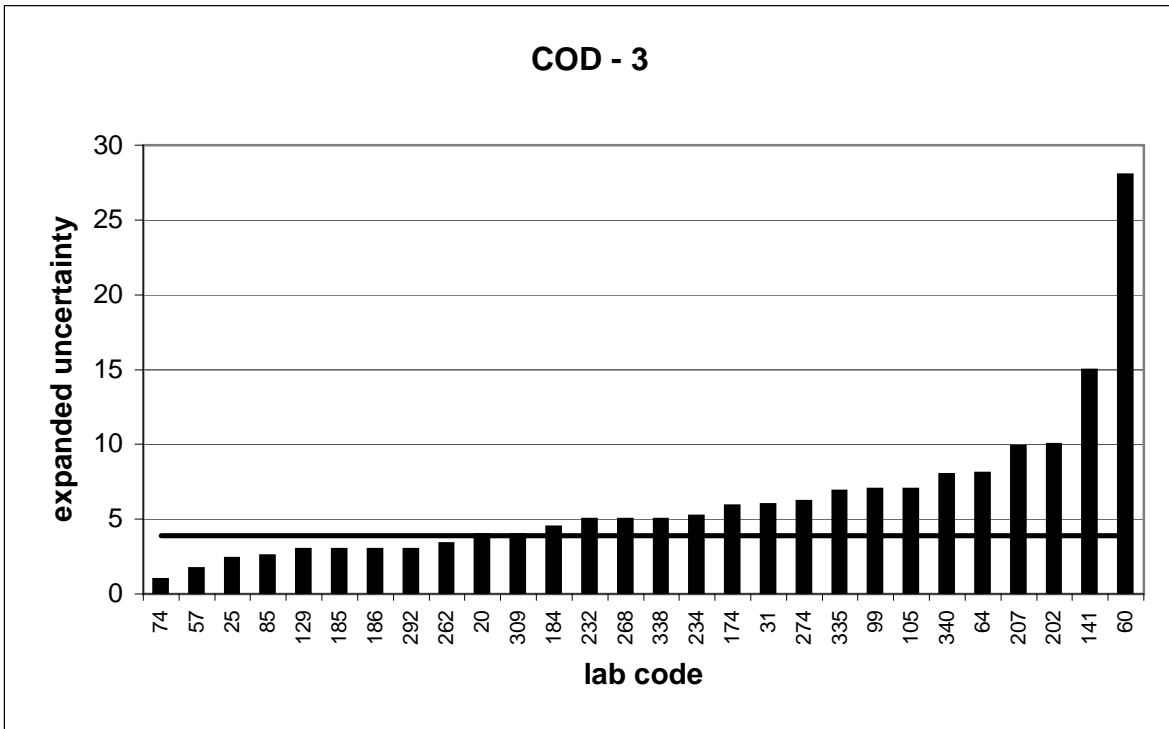
PT 3/11		COD - 3			
assigned value [mg/l]*		69,37 ± 1,11			
upper tolerance limit [mg/l]		77,36			
lower tolerance limit [mg/l]		61,81			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
20	84	4	7,0	3,7	-
25	69,4	2,4	0,0	0,0	+
31	67,6	6	-0,6	-0,5	+
35	58			-3,0	-
36	42			-7,2	-
45	64,3			-1,3	+
57	73,2	1,72	3,7	1,0	+
60	83,13	28,03	1,0	3,4	-
64	69,6	8,1	0,1	0,1	+
74	74	1	6,2	1,2	+
78	69,3			0,0	+
83	70,93			0,4	+
85	69,7	2,57	0,2	0,1	+
99	68,3	7	-0,3	-0,3	+
105	64,8	7	-1,3	-1,2	+
122	70,2			0,2	+
128	69,8			0,1	+
129	68	3	-0,9	-0,4	+
141	73,3	15	0,5	1,0	+
145	71,7			0,6	+
161	69,2			0,0	+
174	81,8	5,9	4,1	3,1	-
177	72,38			0,8	+
184	90	4,5	8,9	5,2	-
185	65,4	3	-2,5	-1,1	+
186	66,5	3	-1,8	-0,8	+
187	72,2			0,7	+
190	70,8			0,4	+
202	74,2	10	1,0	1,2	+
207	68,2	9,9	-0,2	-0,3	+
223	69			-0,1	+
230	69			-0,1	+
232	69	5	-0,1	-0,1	+
234	73,1	5,2	1,4	0,9	+
254	64,5			-1,3	+
258	69,37			0,0	+
261	64,9			-1,2	+
262	67,6	3,38	-1,0	-0,5	+
268	62,5	5	-2,7	-1,8	+
270	69,5			0,0	+
272	67,5			-0,5	+
274	69	6,2	-0,1	-0,1	+
277	70,8			0,4	+
292	71,1	3	1,1	0,4	+
309	67	4	-1,1	-0,6	+
312	66			-0,9	+

* 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%

PT 3/11		COD - 3			
assigned value [mg/l]*		69,37 ± 1,11			
upper tolerance limit [mg/l]		77,36			
lower tolerance limit [mg/l]		61,81			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
335	69,8	6,9	0,1	0,1	+
338	47,7	5	-8,5	-5,7	-
340	70,5	8	0,3	0,3	+
906	72,9			0,9	+

* 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%



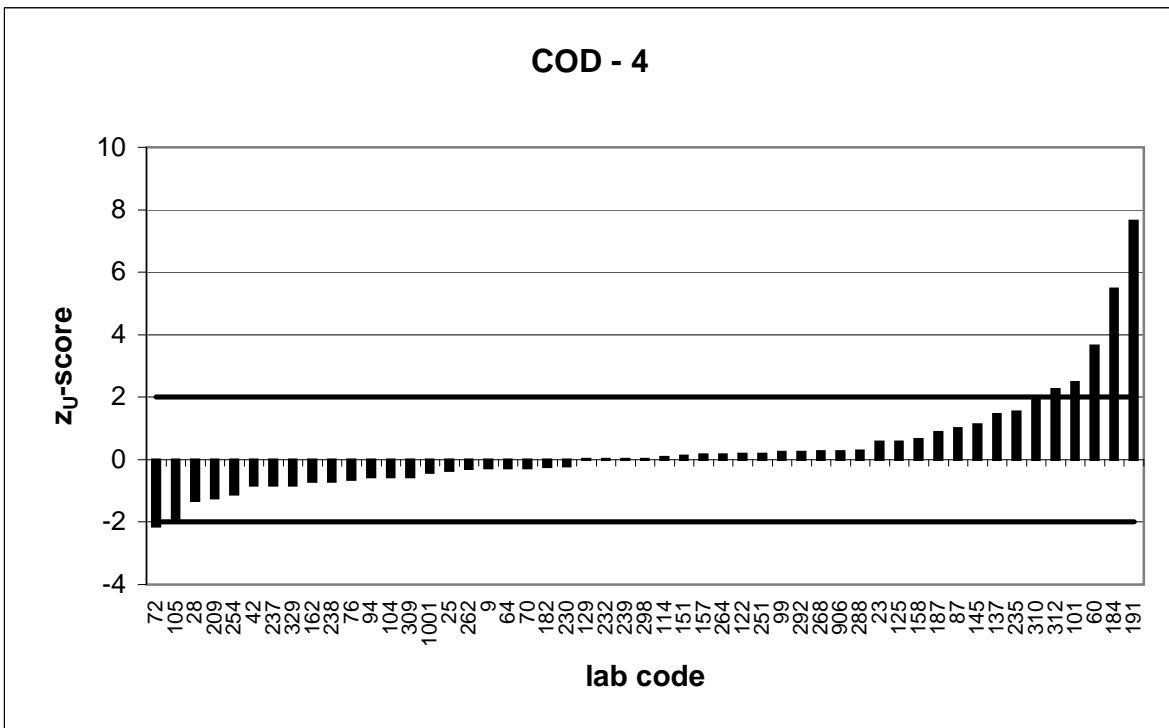
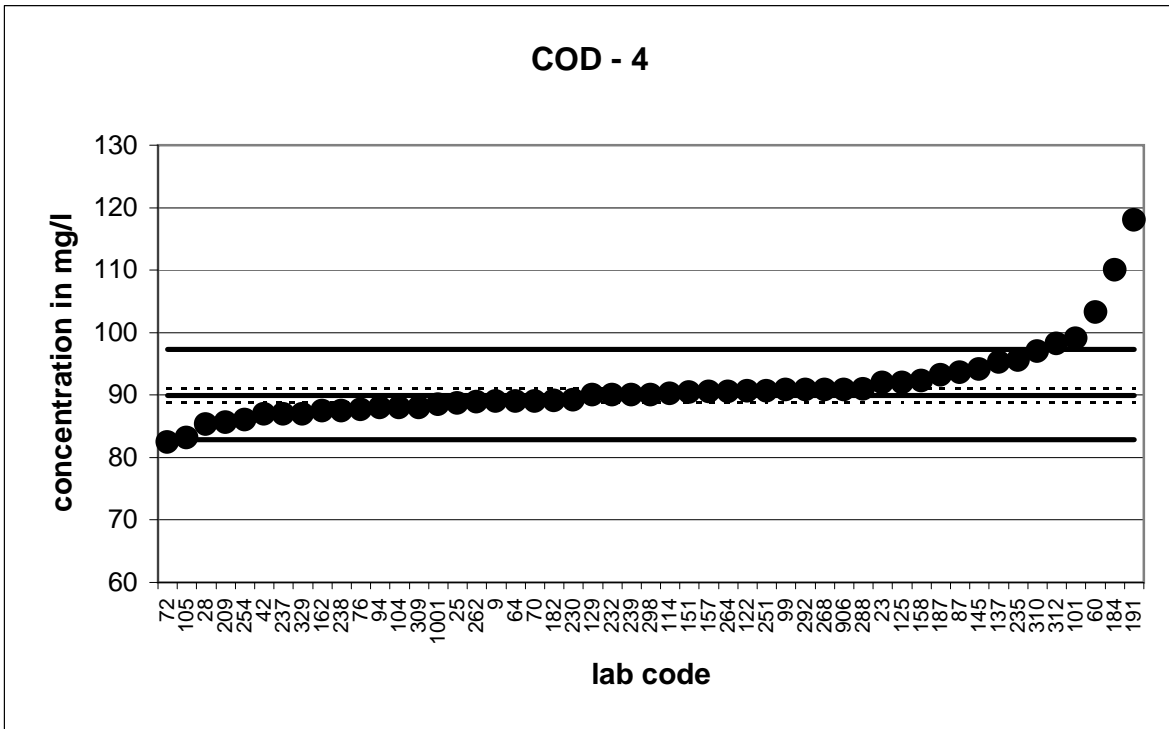


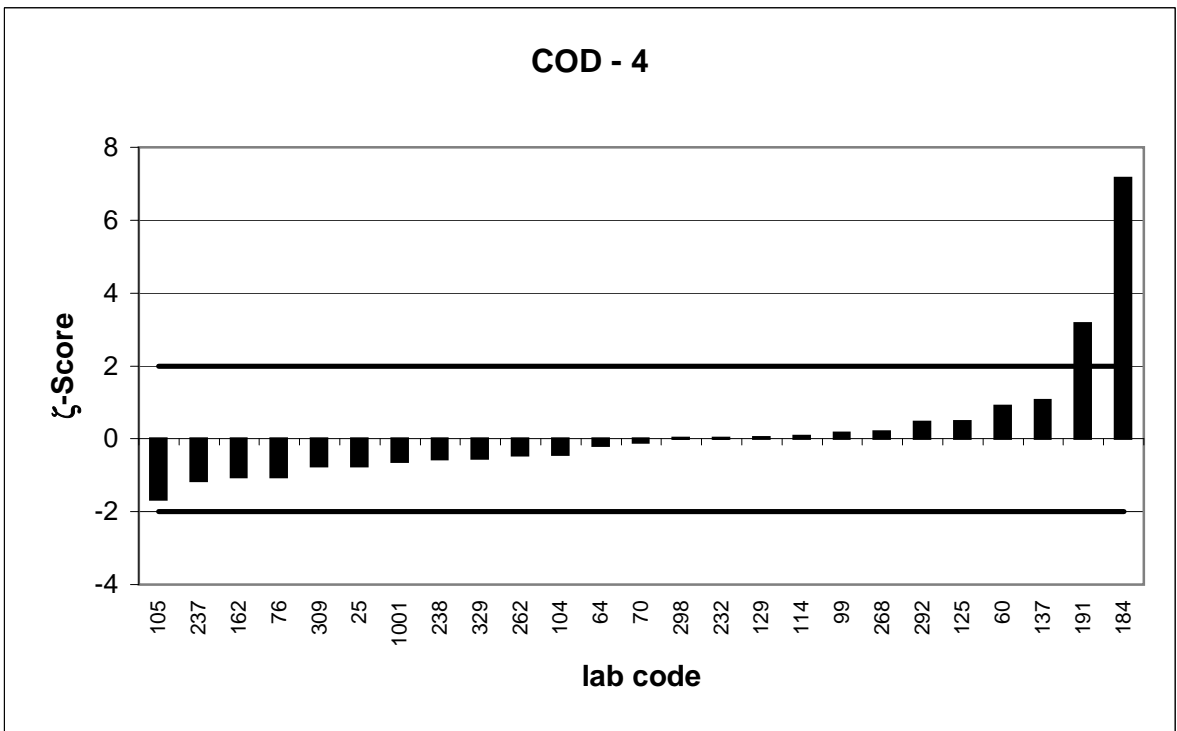
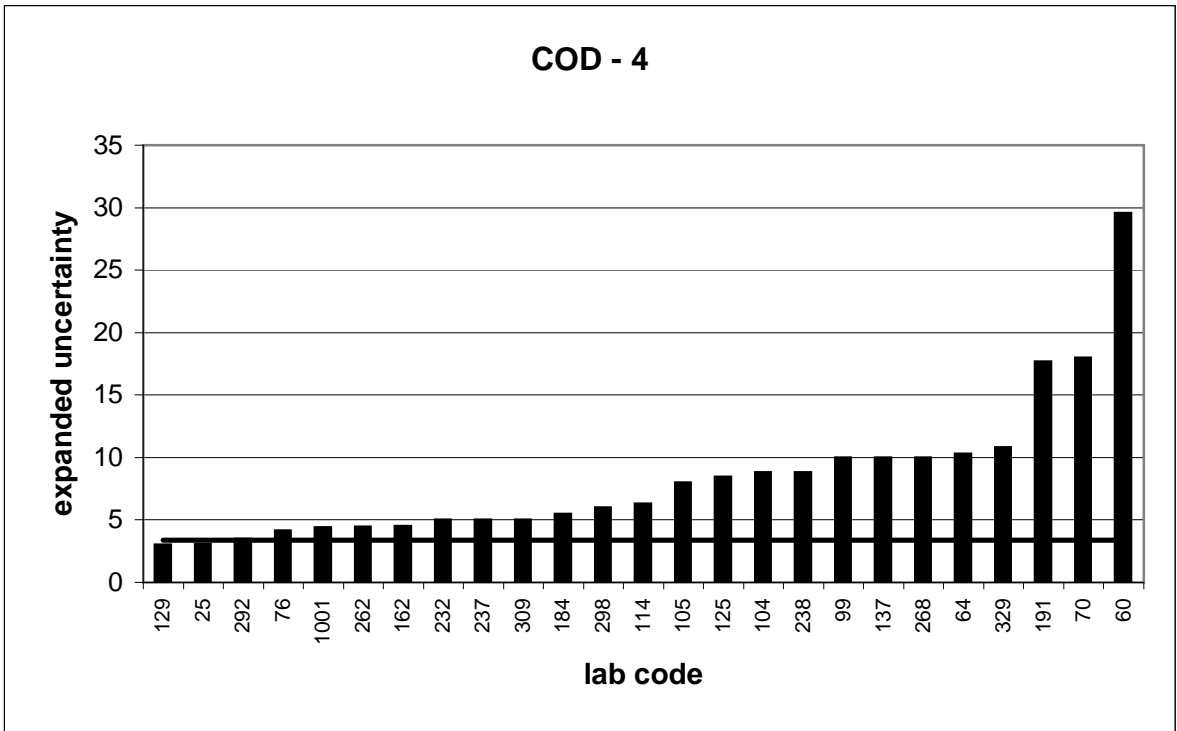
PT 3/11		COD - 4			
assigned value [mg/l]*		89,94 ± 1,11			
upper tolerance limit [mg/l]		97,28			
lower tolerance limit [mg/l]		82,88			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	89			-0,3	+
23	92			0,6	+
25	88,7	3,1	-0,8	-0,4	+
28	85,3			-1,3	+
42	87			-0,8	+
60	103,3	29,57	0,9	3,6	-
64	89	10,3	-0,2	-0,3	+
70	89	18	-0,1	-0,3	+
72	82,4			-2,1	-
76	87,7	4,14	-1,0	-0,6	+
87	93,6			1,0	+
94	88			-0,5	+
99	90,8	10	0,2	0,2	+
101	99			2,5	-
104	88	8,8	-0,4	-0,5	+
105	83,2	8	-1,7	-1,9	+
114	90,2	6,3	0,1	0,1	+
122	90,6			0,2	+
125	92	8,43	0,5	0,6	+
129	90	3	0,0	0,0	+
137	95,3	10	1,1	1,5	+
145	94,1			1,1	+
151	90,4			0,1	+
157	90,5			0,2	+
158	92,3			0,6	+
162	87,5	4,5	-1,1	-0,7	+
182	89,1			-0,2	+
184	110	5,5	7,2	5,5	-
187	93,2			0,9	+
191	118	17,7	3,2	7,6	-
209	85,6			-1,2	+
230	89,2			-0,2	+
232	90	5	0,0	0,0	+
235	95,6			1,5	+
237	87	5	-1,1	-0,8	+
238	87,5	8,8	-0,5	-0,7	+
239	90			0,0	+
251	90,6			0,2	+
254	86			-1,1	+
262	88,9	4,45	-0,5	-0,3	+
264	90,5			0,2	+
268	90,9	10	0,2	0,3	+
288	91			0,3	+
292	90,8	3,5	0,5	0,2	+
298	90	6	0,0	0,0	+
309	88	5	-0,8	-0,5	+

* 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%

PT 3/11		COD - 4			
assigned value [mg/l]*		89,94 ± 1,11			
upper tolerance limit [mg/l]		97,28			
lower tolerance limit [mg/l]		82,88			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
310	97			1,9	+
312	98,2			2,2	-
329	87	10,8	-0,5	-0,8	+
906	90,9			0,3	+
1001	88,5	4,4	-0,6	-0,4	+

* 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%



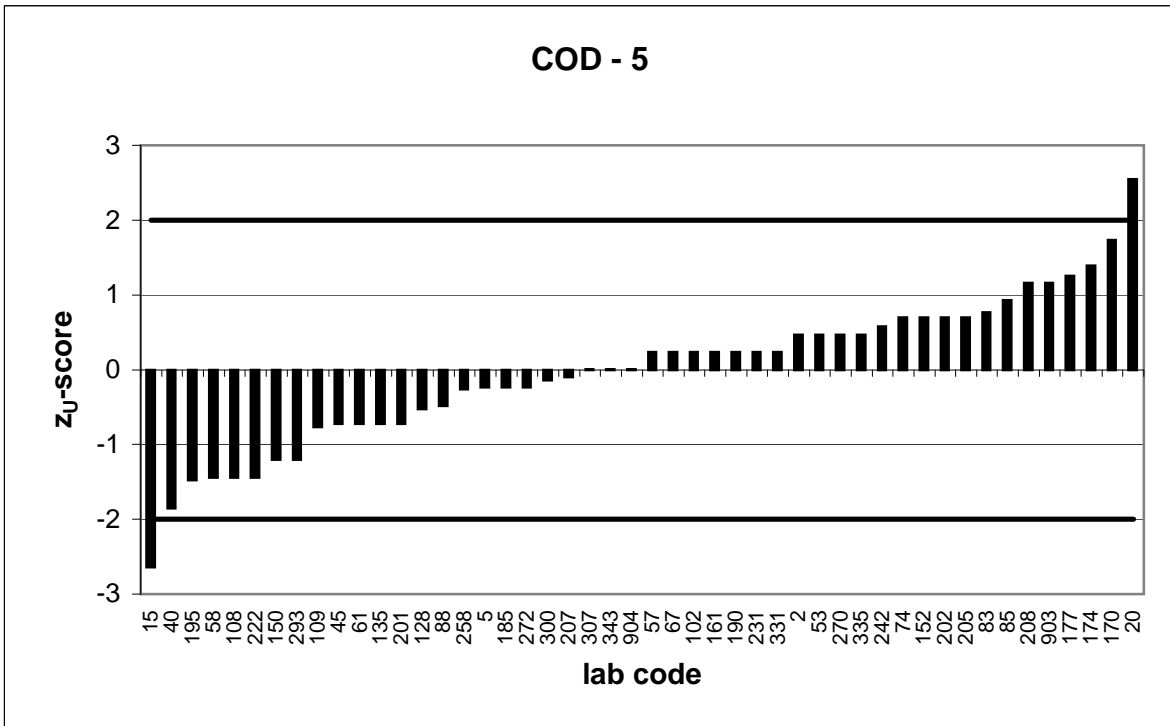
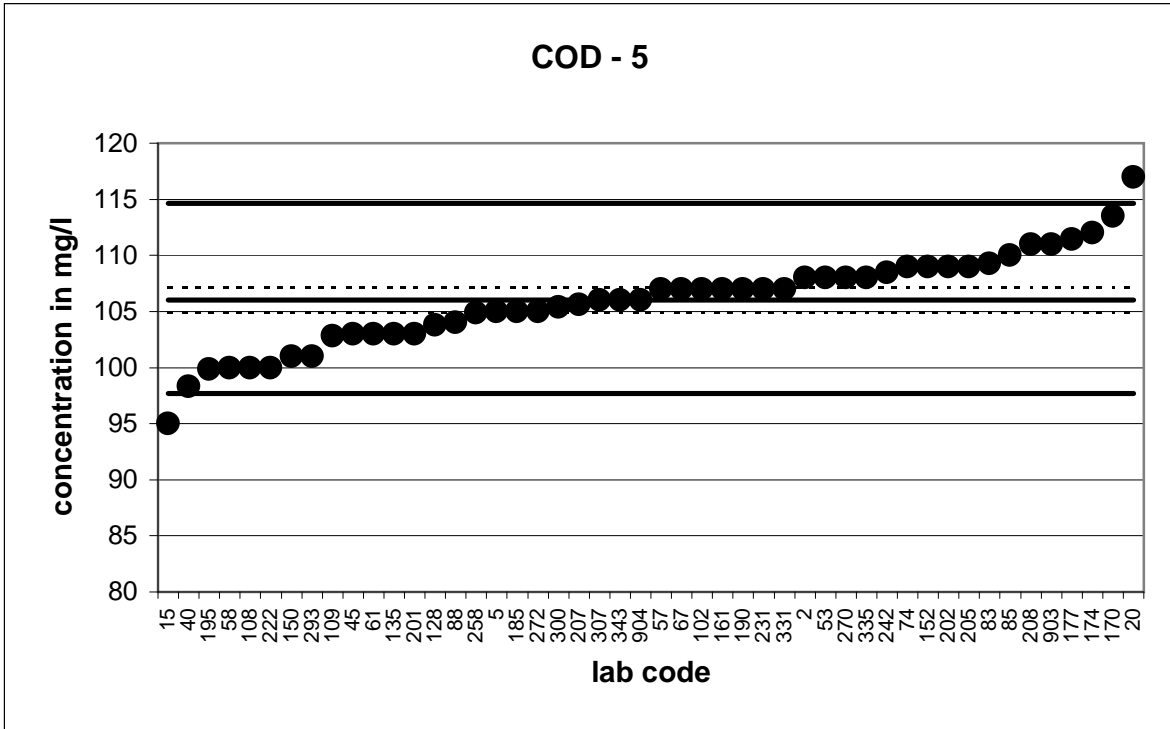


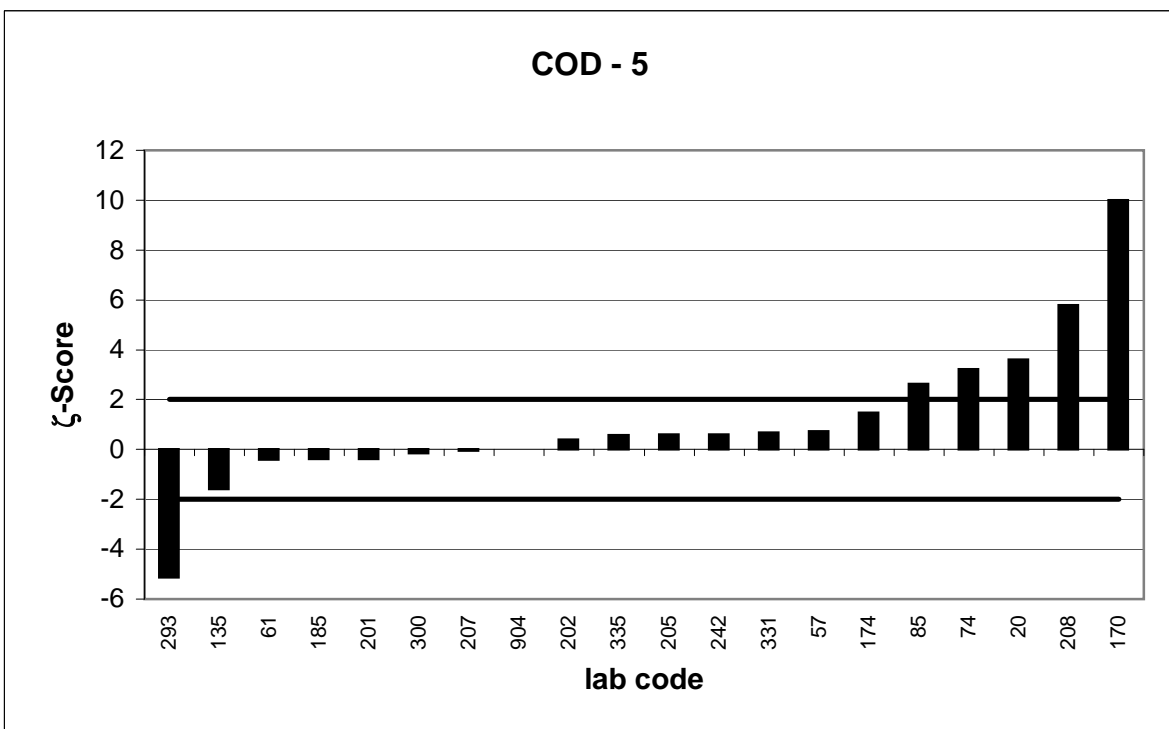
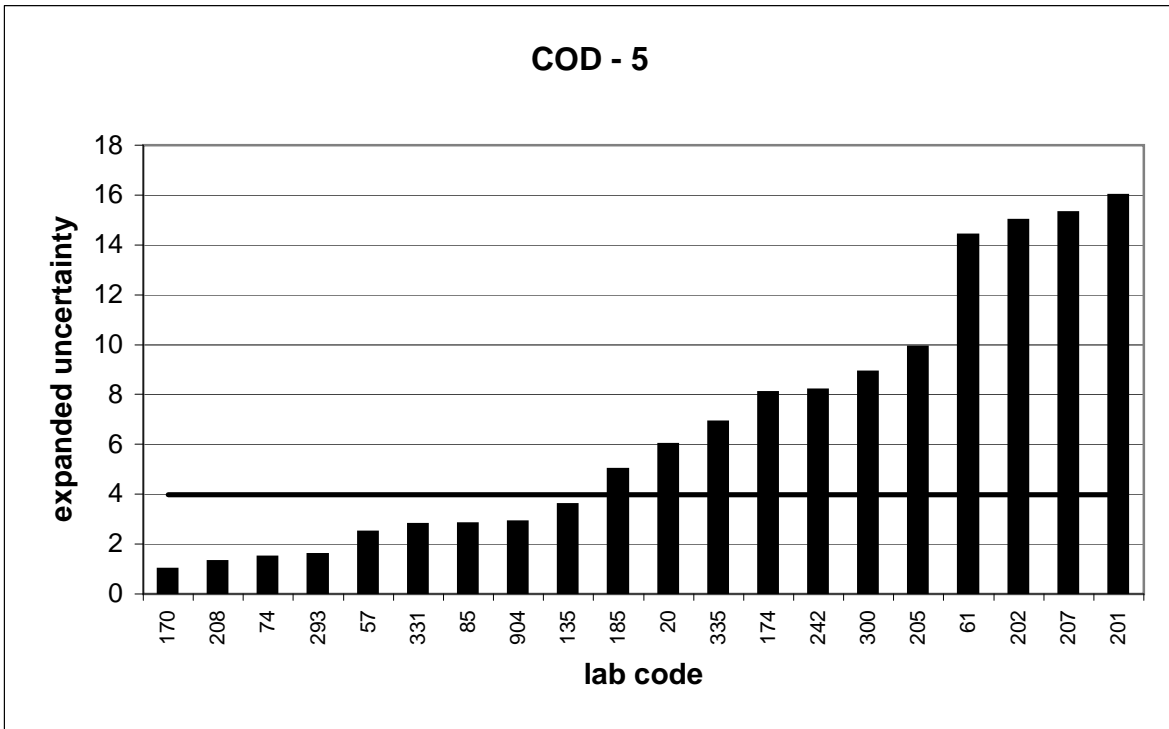
PT 3/11		COD - 5			
assigned value [mg/l]*		106 ± 1,1			
upper tolerance limit [mg/l]		114,7			
lower tolerance limit [mg/l]		97,68			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
2	108			0,5	+
5	105			-0,2	+
15	95			-2,6	-
20	117	6	3,6	2,5	-
40	98,3			-1,9	+
45	103			-0,7	+
53	108			0,5	+
57	107	2,48	0,7	0,2	+
58	100			-1,4	+
61	103	14,4	-0,4	-0,7	+
67	107			0,2	+
74	109	1,5	3,2	0,7	+
83	109,3			0,8	+
85	110	2,82	2,6	0,9	+
88	104			-0,5	+
102	107			0,2	+
108	100			-1,4	+
109	102,8			-0,8	+
128	103,8			-0,5	+
135	103	3,6	-1,6	-0,7	+
150	101			-1,2	+
152	109			0,7	+
161	107			0,2	+
170	113,5	1	10,0	1,7	+
174	112	8,1	1,5	1,4	+
177	111,42			1,3	+
185	105	5	-0,4	-0,2	+
190	107			0,2	+
195	99,85			-1,5	+
201	103	16	-0,4	-0,7	+
202	109	15	0,4	0,7	+
205	109	9,9	0,6	0,7	+
207	105,6	15,3	-0,1	-0,1	+
208	111	1,32	5,8	1,2	+
222	100			-1,4	+
231	107			0,2	+
242	108,5	8,2	0,6	0,6	+
258	104,9			-0,3	+
270	108			0,5	+
272	105			-0,2	+
293	101	1,6	-5,1	-1,2	+
300	105,4	8,9	-0,1	-0,1	+
307	106			0,0	+
331	107	2,8	0,7	0,2	+
335	108	6,9	0,6	0,5	+
343	106			0,0	+

* 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%

PT 3/11		COD - 5			
assigned value [mg/l]*		106 ± 1,1			
upper tolerance limit [mg/l]		114,7			
lower tolerance limit [mg/l]		97,68			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
903	111			1,2	+
904	106	2,9	0,0	0,0	+

* 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%



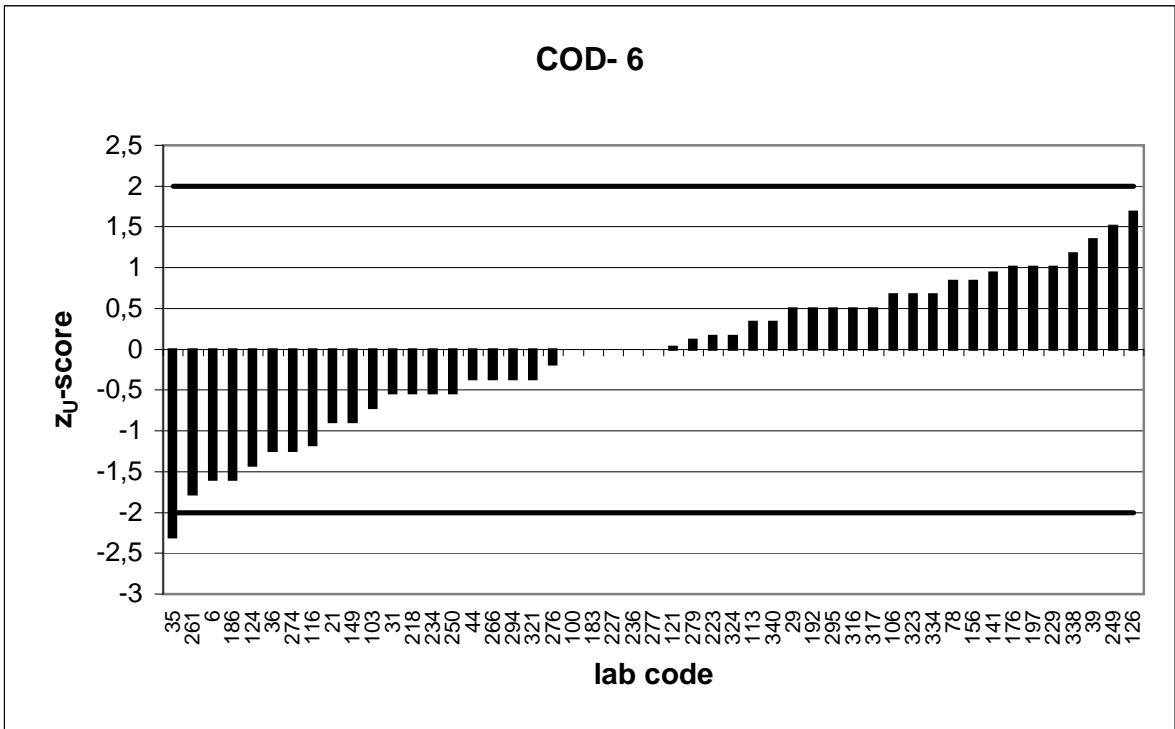
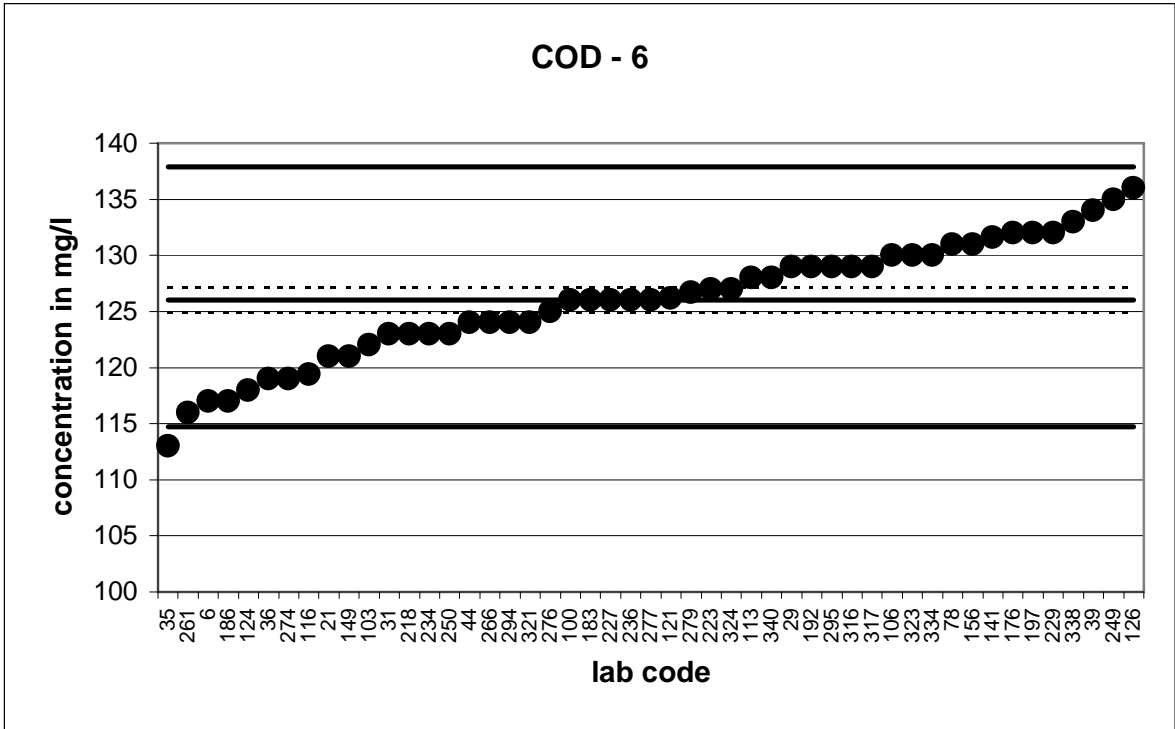


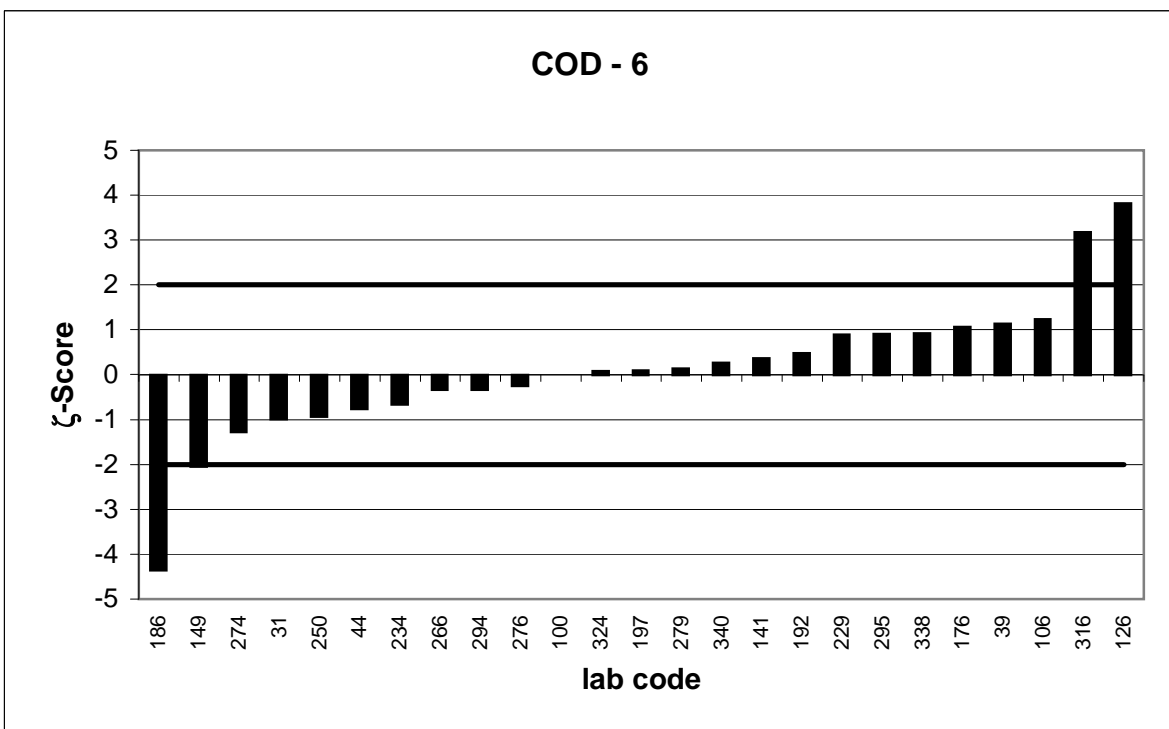
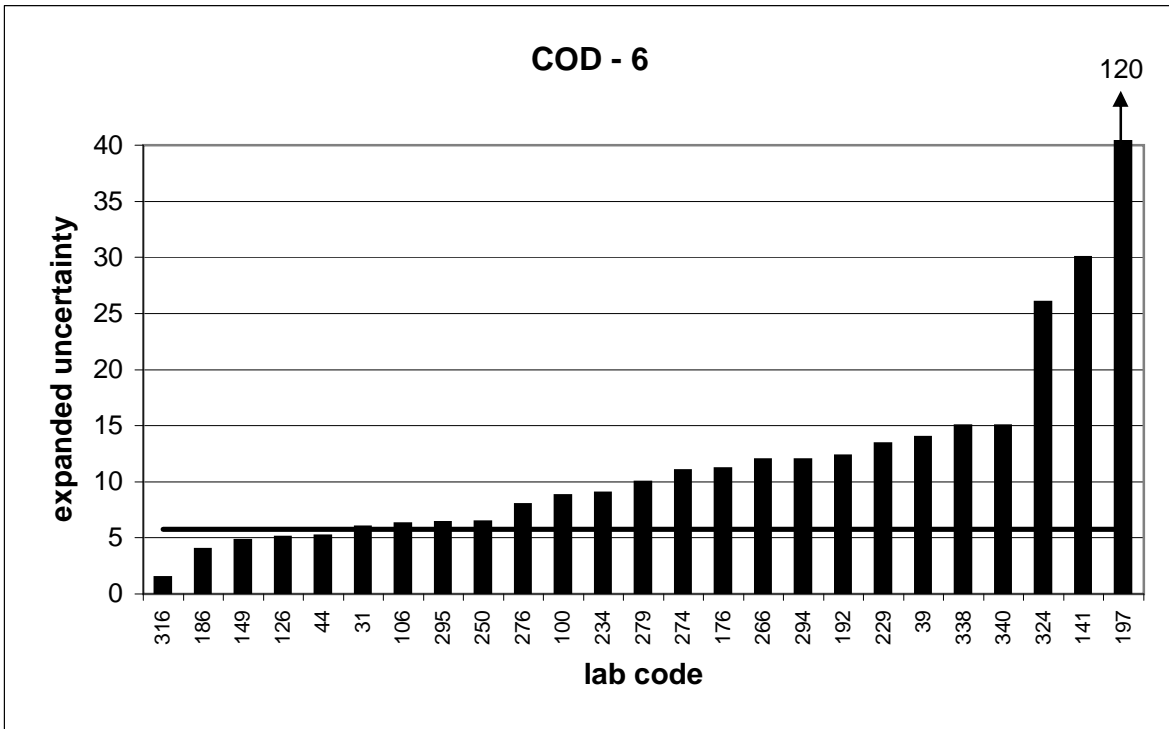
PT 3/11		COD - 6			
assigned value [mg/l]*		126 ± 1,1			
upper tolerance limit [mg/l]		137,9			
lower tolerance limit [mg/l]		114,7			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	117			-1,6	+
21	121			-0,9	+
29	129			0,5	+
31	123	6	-1,0	-0,5	+
35	113			-2,3	-
36	119			-1,2	+
39	134	14	1,1	1,3	+
44	124	5,2	-0,8	-0,4	+
78	131			0,8	+
100	126	8,8	0,0	0,0	+
103	122			-0,7	+
106	130	6,3	1,2	0,7	+
113	128			0,3	+
116	119,4			-1,2	+
121	126,2			0,0	+
124	118			-1,4	+
126	136	5,1	3,8	1,7	+
141	131,6	30	0,4	0,9	+
149	121	4,8	-2,0	-0,9	+
156	131			0,8	+
176	132	11,2	1,1	1,0	+
183	126			0,0	+
186	117	4	-4,4	-1,6	+
192	129	12,3	0,5	0,5	+
197	132	120	0,1	1,0	+
218	123			-0,5	+
223	127			0,2	+
227	126			0,0	+
229	132	13,4	0,9	1,0	+
234	123	9	-0,7	-0,5	+
236	126			0,0	+
249	135			1,5	+
250	123	6,43	-0,9	-0,5	+
261	116			-1,8	+
266	124	12	-0,3	-0,4	+
274	119	11	-1,3	-1,2	+
276	125	8	-0,3	-0,2	+
277	126			0,0	+
279	126,7	10	0,1	0,1	+
294	124	12	-0,3	-0,4	+
295	129	6,41	0,9	0,5	+
316	129	1,5	3,2	0,5	+
317	129			0,5	+
321	124			-0,4	+
323	130			0,7	+
324	127	26	0,1	0,2	+

* 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%

PT 3/11		COD - 6			
assigned value [mg/l]*		126 ± 1,1			
upper tolerance limit [mg/l]		137,9			
lower tolerance limit [mg/l]		114,7			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
334	130			0,7	+
338	133	15	0,9	1,2	+
340	128	15	0,3	0,3	+

* 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%



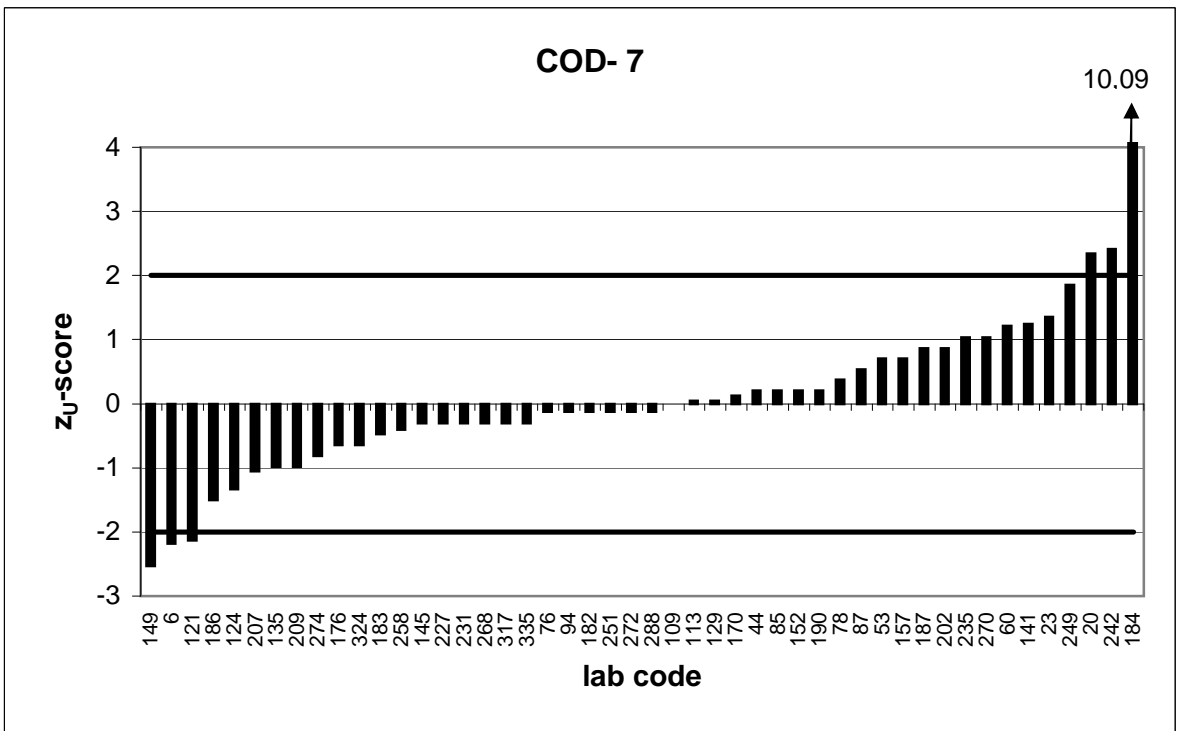
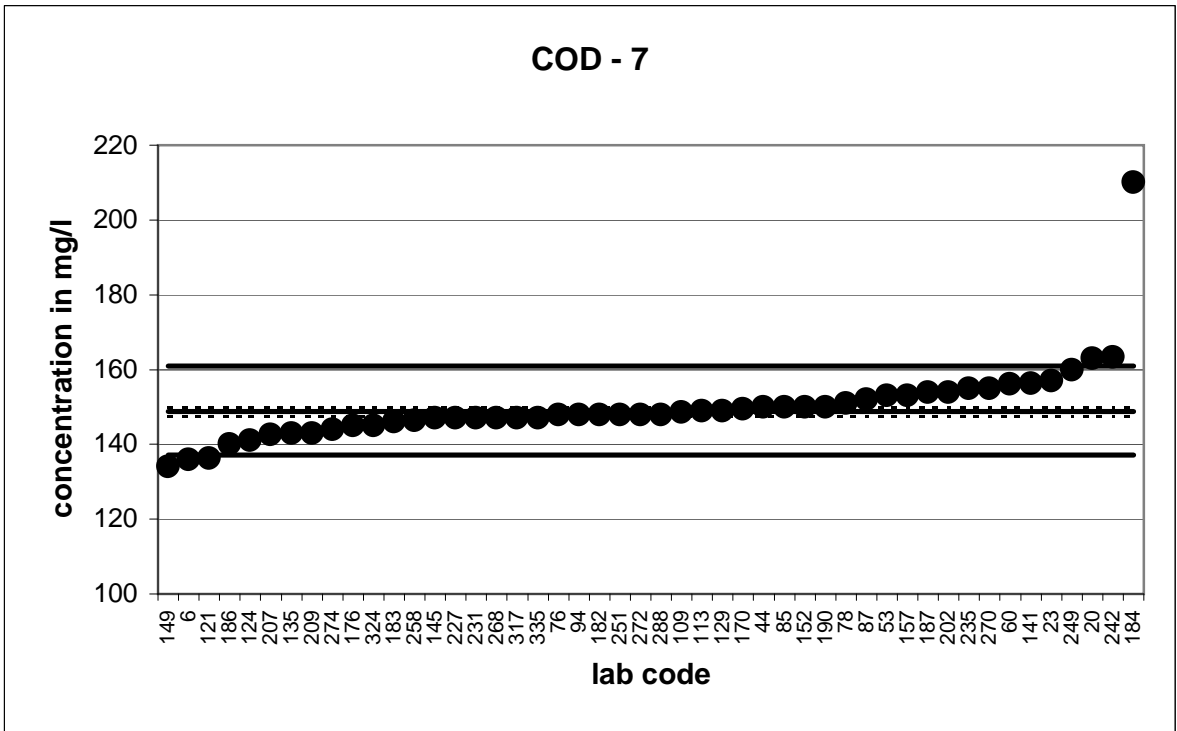


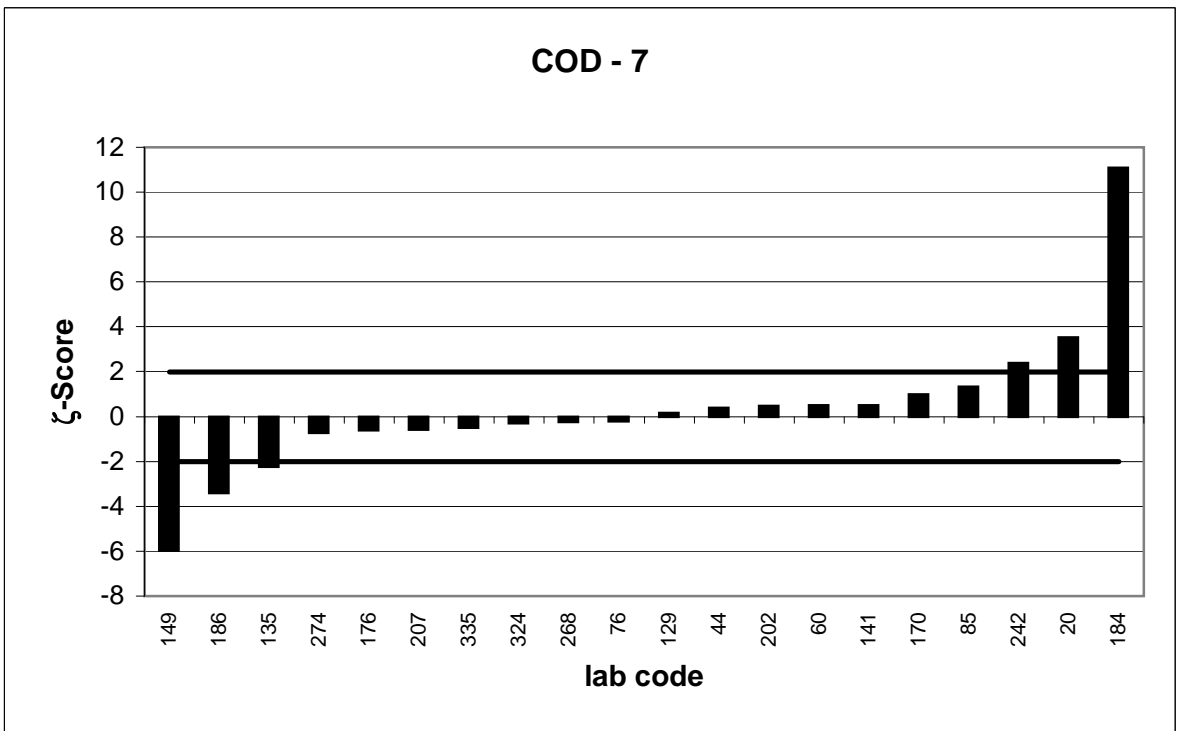
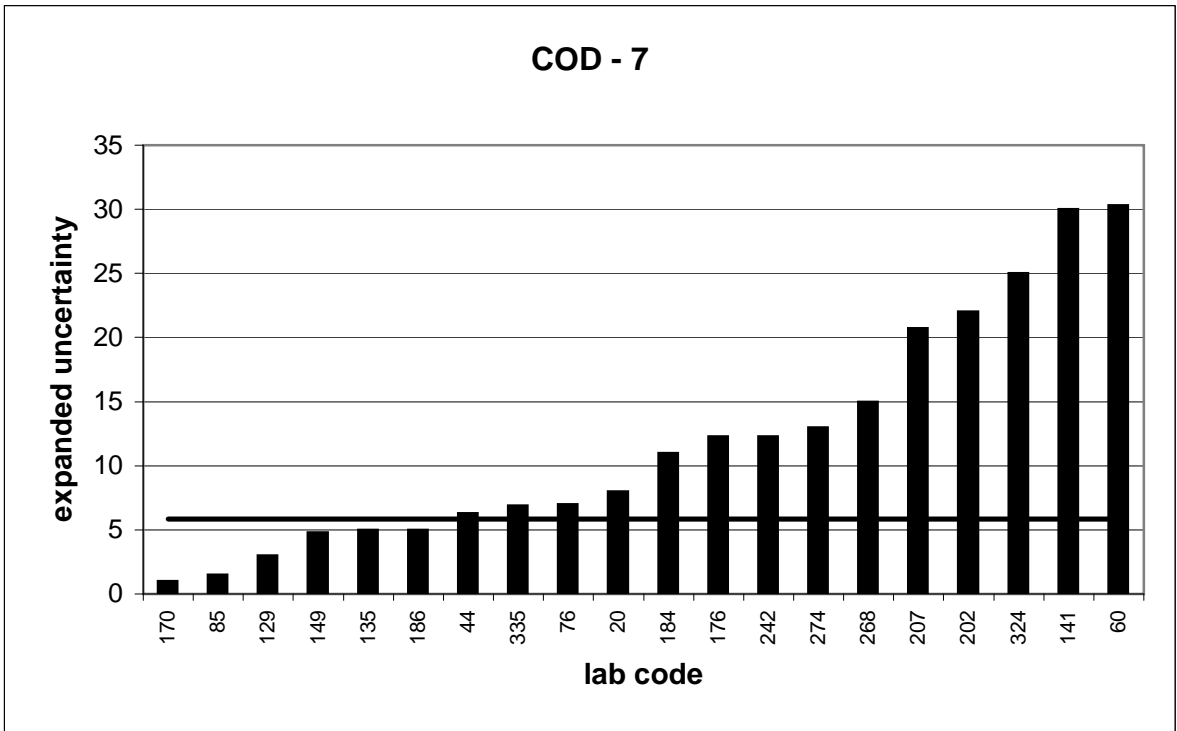
PT 3/11		COD - 7			
assigned value [mg/l]*		148,7 ± 1,1			
upper tolerance limit [mg/l]		160,9			
lower tolerance limit [mg/l]		137,1			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	136			-2,2	-
20	163	8	3,5	2,3	-
23	157			1,4	+
44	150	6,3	0,4	0,2	+
53	153			0,7	+
60	156,15	30,3	0,5	1,2	+
76	148	6,99	-0,2	-0,1	+
78	151			0,4	+
85	150	1,49	1,3	0,2	+
87	152			0,5	+
94	148			-0,1	+
109	148,7			0,0	+
113	149			0,0	+
121	136,3			-2,1	-
124	141			-1,3	+
129	149	3	0,2	0,0	+
135	143	5	-2,2	-1,0	+
141	156,3	30	0,5	1,2	+
145	147			-0,3	+
149	134	4,8	-6,0	-2,5	-
152	150			0,2	+
157	153			0,7	+
170	149,5	1	1,0	0,1	+
176	145	12,3	-0,6	-0,6	+
182	148			-0,1	+
183	146			-0,5	+
184	210	11	11,1	10,1	-
186	140	5	-3,4	-1,5	+
187	154			0,9	+
190	150			0,2	+
202	154	22	0,5	0,9	+
207	142,6	20,7	-0,6	-1,1	+
209	143			-1,0	+
227	147			-0,3	+
231	147			-0,3	+
235	155			1,0	+
242	163,4	12,3	2,4	2,4	-
249	160			1,9	+
251	148			-0,1	+
258	146,4			-0,4	+
268	147	15	-0,2	-0,3	+
270	155			1,0	+
272	148			-0,1	+
274	144	13	-0,7	-0,8	+
288	148			-0,1	+
317	147			-0,3	+

* 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%

PT 3/11		COD - 7			
assigned value [mg/l]*		148,7 ± 1,1			
upper tolerance limit [mg/l]		160,9			
lower tolerance limit [mg/l]		137,1			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
324	145	25	-0,3	-0,6	+
335	147	6,9	-0,5	-0,3	+

* 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%



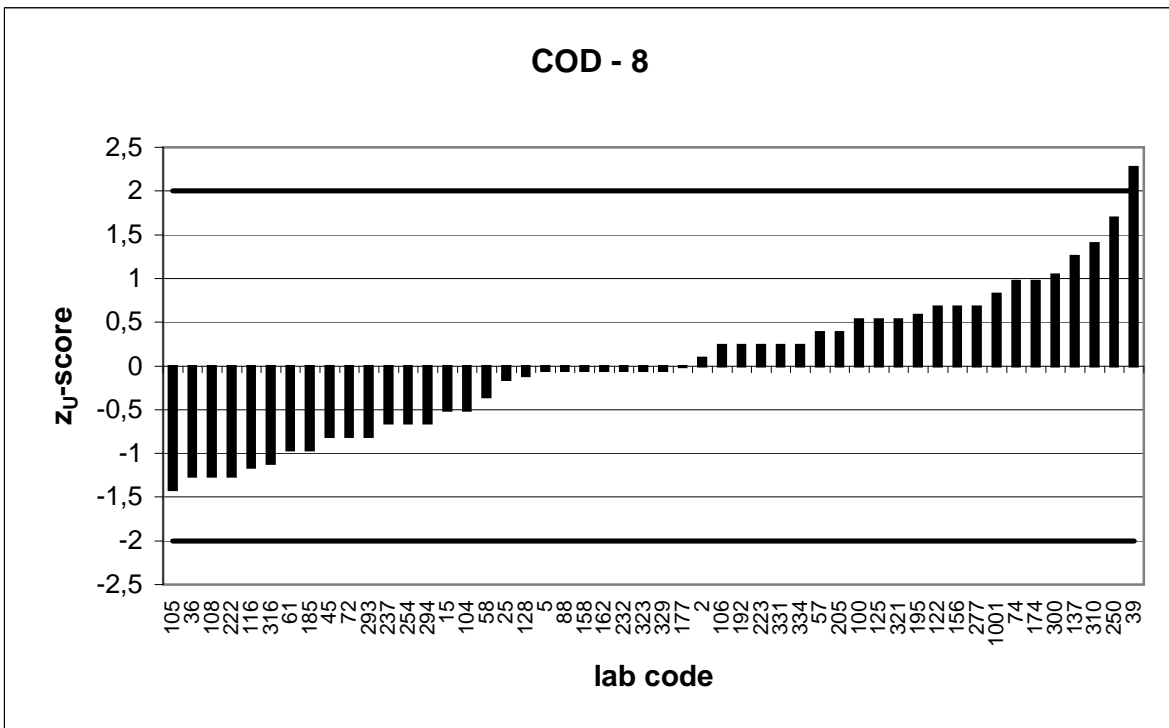
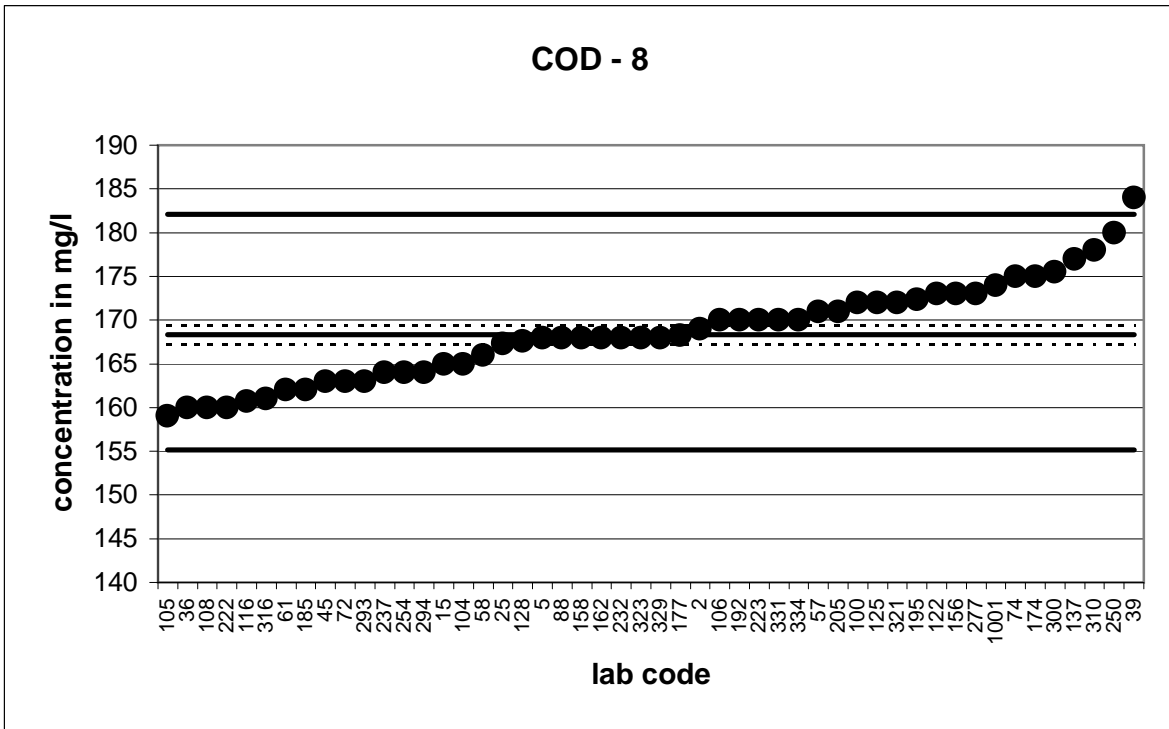


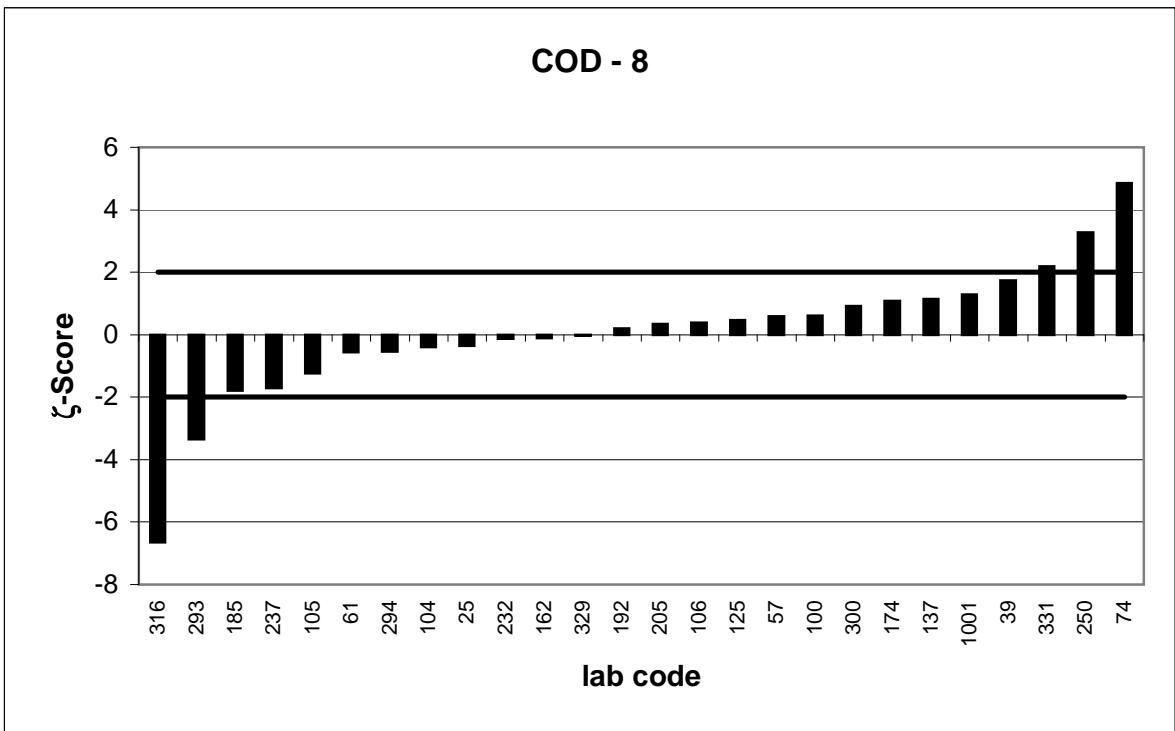
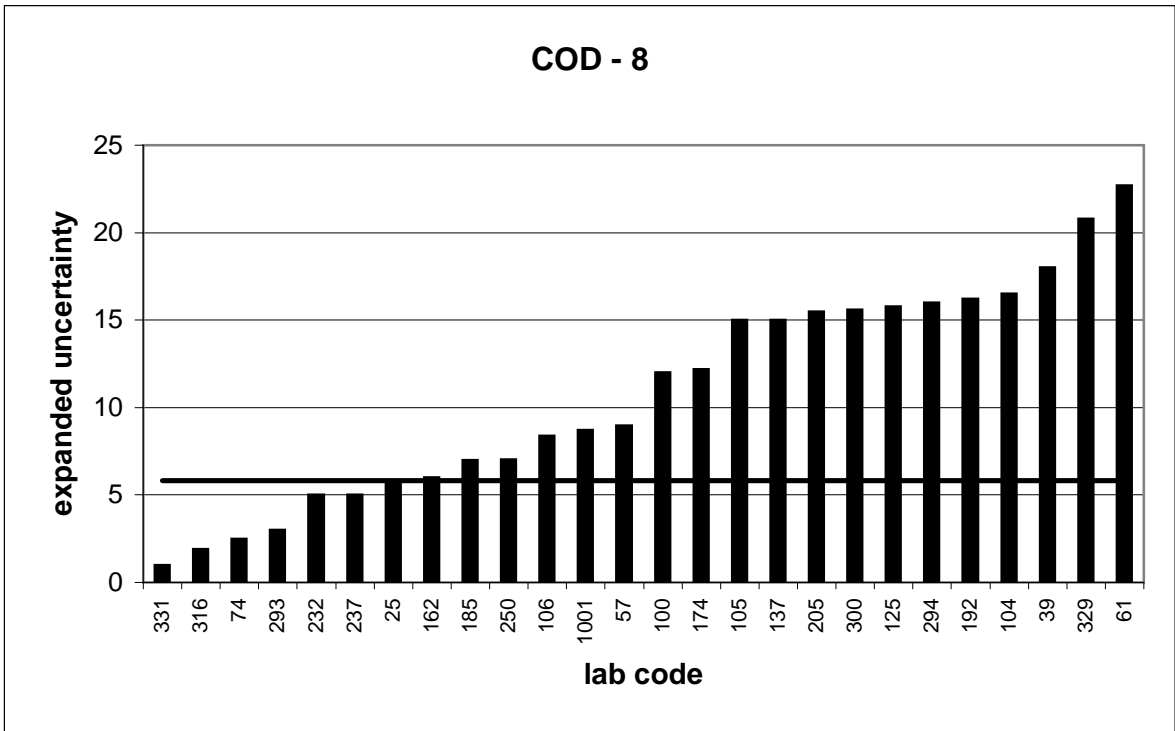
PT 3/11		COD - 8			
assigned value [mg/l]*		168,4 ± 1,1			
upper tolerance limit [mg/l]		182,1			
lower tolerance limit [mg/l]		155,1			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
2	169			0,1	+
5	168			-0,1	+
15	165			-0,5	+
25	167,3	5,8	-0,4	-0,2	+
36	160			-1,3	+
39	184	18	1,7	2,3	-
45	163			-0,8	+
57	171	8,96	0,6	0,4	+
58	166			-0,4	+
61	162	22,7	-0,6	-1,0	+
72	163			-0,8	+
74	175	2,5	4,8	1,0	+
88	168			-0,1	+
100	172	12	0,6	0,5	+
104	165	16,5	-0,4	-0,5	+
105	159	15	-1,2	-1,4	+
106	170	8,4	0,4	0,2	+
108	160			-1,3	+
116	160,7			-1,2	+
122	173			0,7	+
125	172	15,76	0,5	0,5	+
128	167,6			-0,1	+
137	177	15	1,1	1,3	+
156	173			0,7	+
158	168			-0,1	+
162	168	6	-0,1	-0,1	+
174	175	12,2	1,1	1,0	+
177	168,28			0,0	+
185	162	7	-1,8	-1,0	+
192	170	16,2	0,2	0,2	+
195	172,35			0,6	+
205	171	15,5	0,3	0,4	+
222	160			-1,3	+
223	170			0,2	+
232	168	5	-0,1	-0,1	+
237	164	5	-1,7	-0,7	+
250	180	7,02	3,3	1,7	+
254	164			-0,7	+
277	173			0,7	+
293	163	3	-3,3	-0,8	+
294	164	16	-0,5	-0,7	+
300	175,5	15,6	0,9	1,0	+
310	178			1,4	+
316	161	1,9	-6,6	-1,1	+
321	172			0,5	+
323	168			-0,1	+

* 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%

PT 3/11		COD - 8			
assigned value [mg/l]*		168,4 ± 1,1			
upper tolerance limit [mg/l]		182,1			
lower tolerance limit [mg/l]		155,1			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
329	168	20,8	0,0	-0,1	+
331	170	1	2,2	0,2	+
334	170			0,2	+
1001	174	8,7	1,3	0,8	+

* 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%



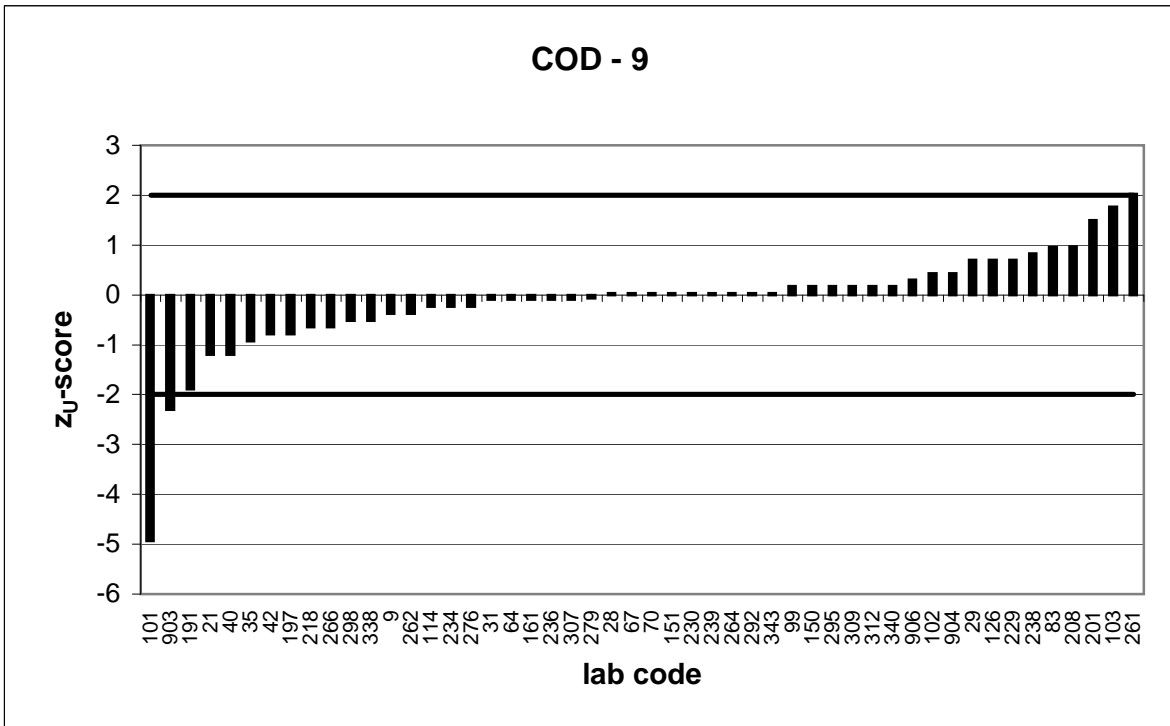
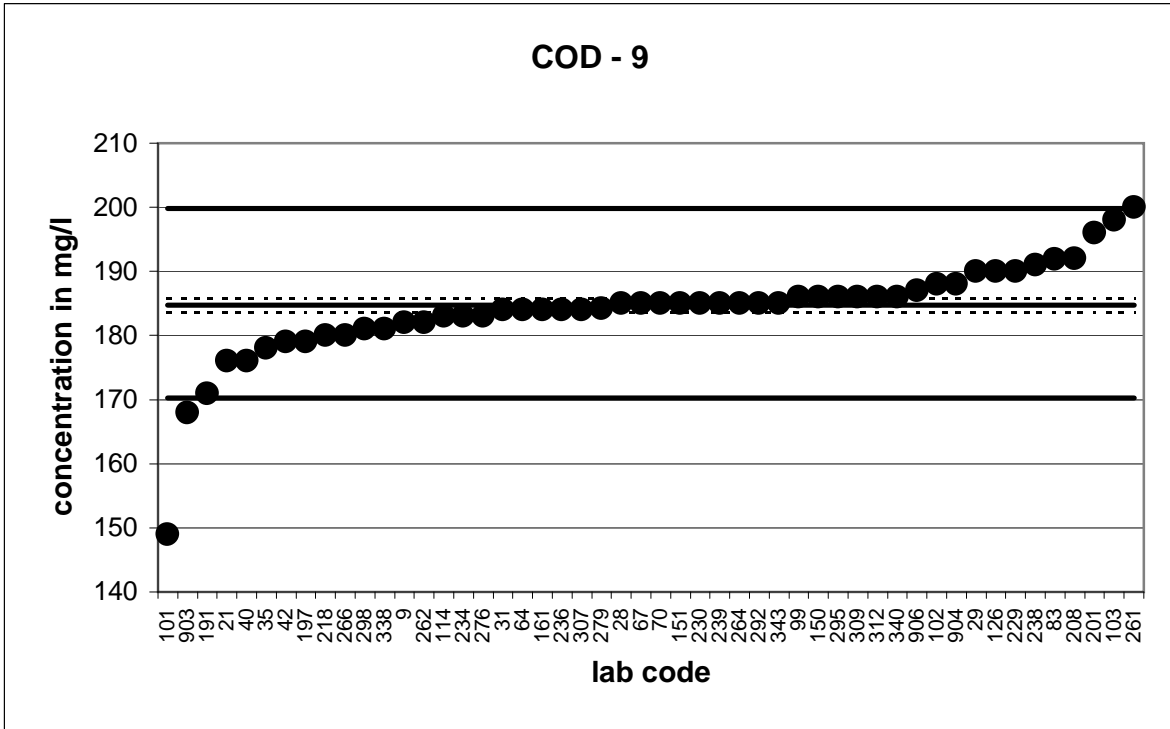


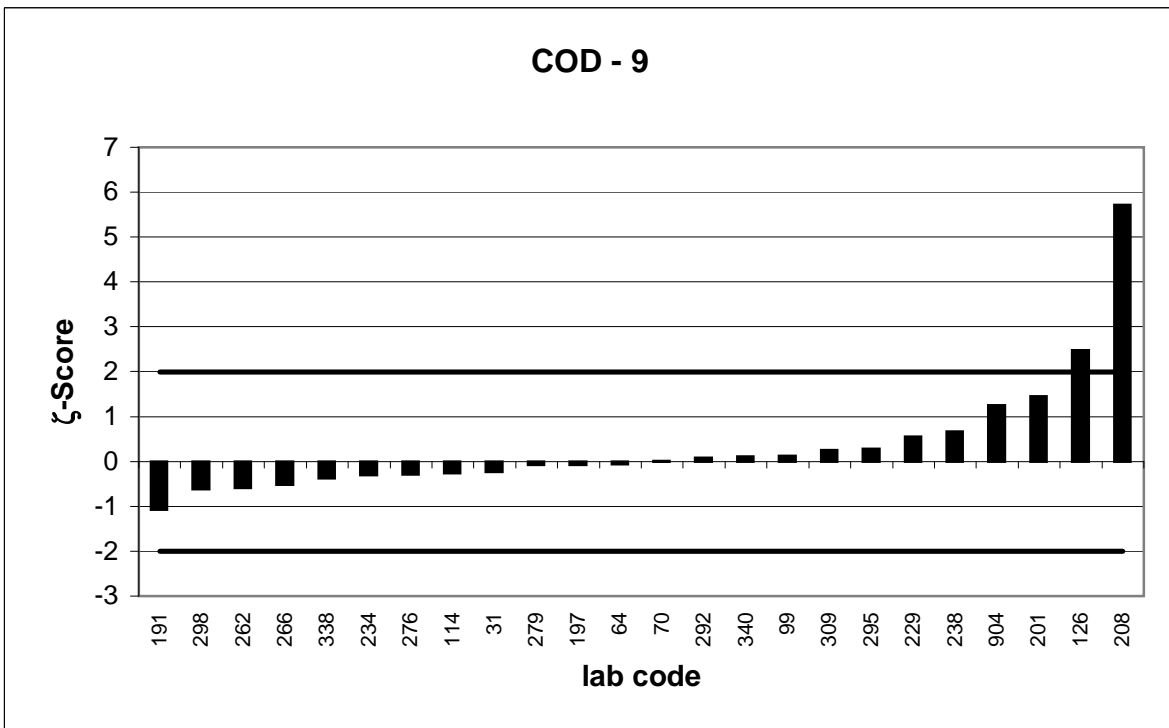
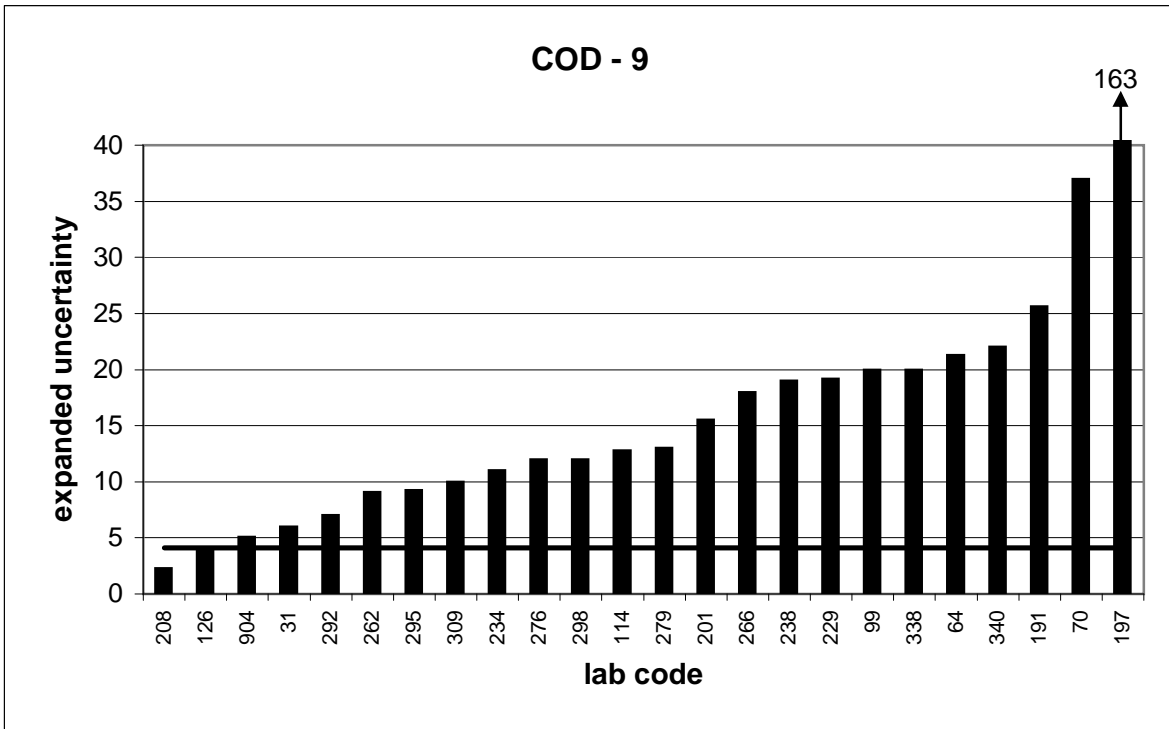
PT 3/11		COD - 9			
assigned value [mg/l]*		184,7 ± 1,1			
upper tolerance limit [mg/l]		199,8			
lower tolerance limit [mg/l]		170,2			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	182			-0,4	+
21	176			-1,2	+
28	185			0,0	+
29	190			0,7	+
31	184	6	-0,2	-0,1	+
35	178			-0,9	+
40	176			-1,2	+
42	179			-0,8	+
64	184	21,3	-0,1	-0,1	+
67	185			0,0	+
70	185	37	0,0	0,0	+
83	191,9			1,0	+
99	186	20	0,1	0,2	+
101	149			-4,9	-
102	188			0,4	+
103	198			1,8	+
114	183	12,8	-0,3	-0,2	+
126	190	4,1	2,5	0,7	+
150	186			0,2	+
151	185			0,0	+
161	184			-0,1	+
191	171	25,6	-1,1	-1,9	+
197	179	163	-0,1	-0,8	+
201	196	15,5	1,5	1,5	+
208	192	2,28	5,7	1,0	+
218	180			-0,7	+
229	190	19,2	0,5	0,7	+
230	185			0,0	+
234	183	11	-0,3	-0,2	+
236	184			-0,1	+
238	191	19	0,7	0,8	+
239	185			0,0	+
261	200			2,0	+
262	182	9,1	-0,6	-0,4	+
264	185			0,0	+
266	180	18	-0,5	-0,7	+
276	183	12	-0,3	-0,2	+
279	184,2	13	-0,1	-0,1	+
292	185	7	0,1	0,0	+
295	186	9,24	0,3	0,2	+
298	181	12	-0,6	-0,5	+
307	184			-0,1	+
309	186	10	0,3	0,2	+
312	186			0,2	+
338	181	20	-0,4	-0,5	+
340	186	22	0,1	0,2	+

* 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%

PT 3/11		COD - 9			
assigned value [mg/l]*		184,7 ± 1,1			
upper tolerance limit [mg/l]		199,8			
lower tolerance limit [mg/l]		170,2			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
343	185			0,0	+
903	168			-2,3	-
904	188	5,1	1,3	0,4	+
906	187			0,3	+

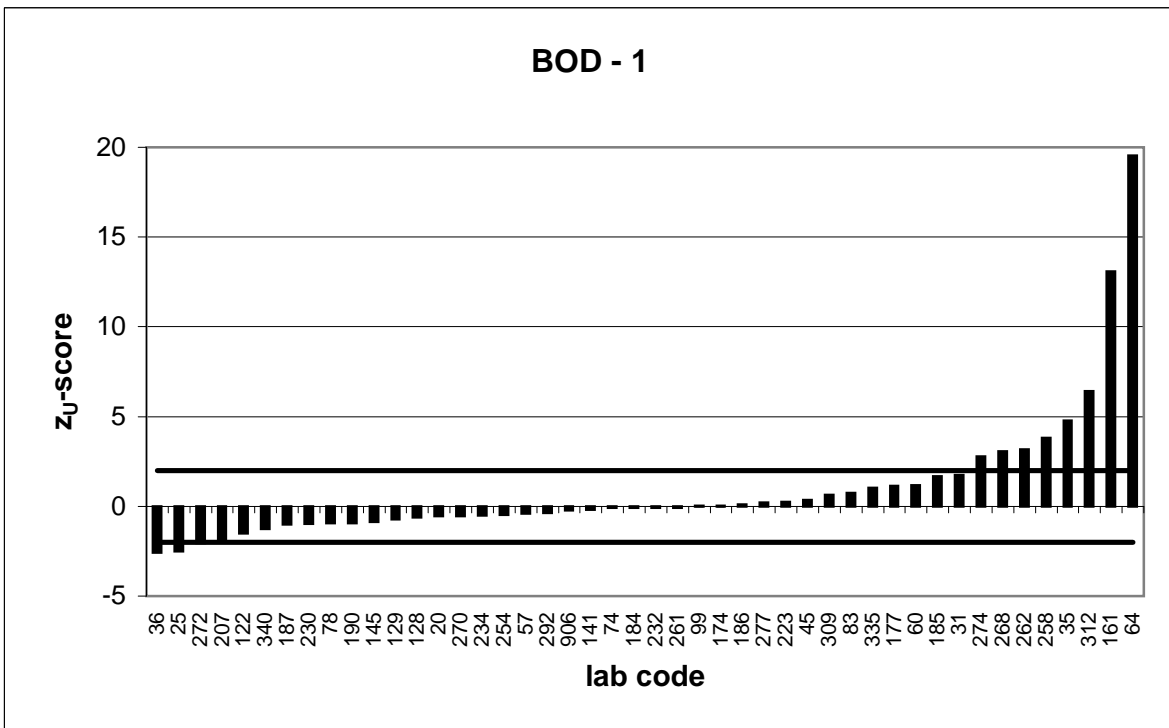
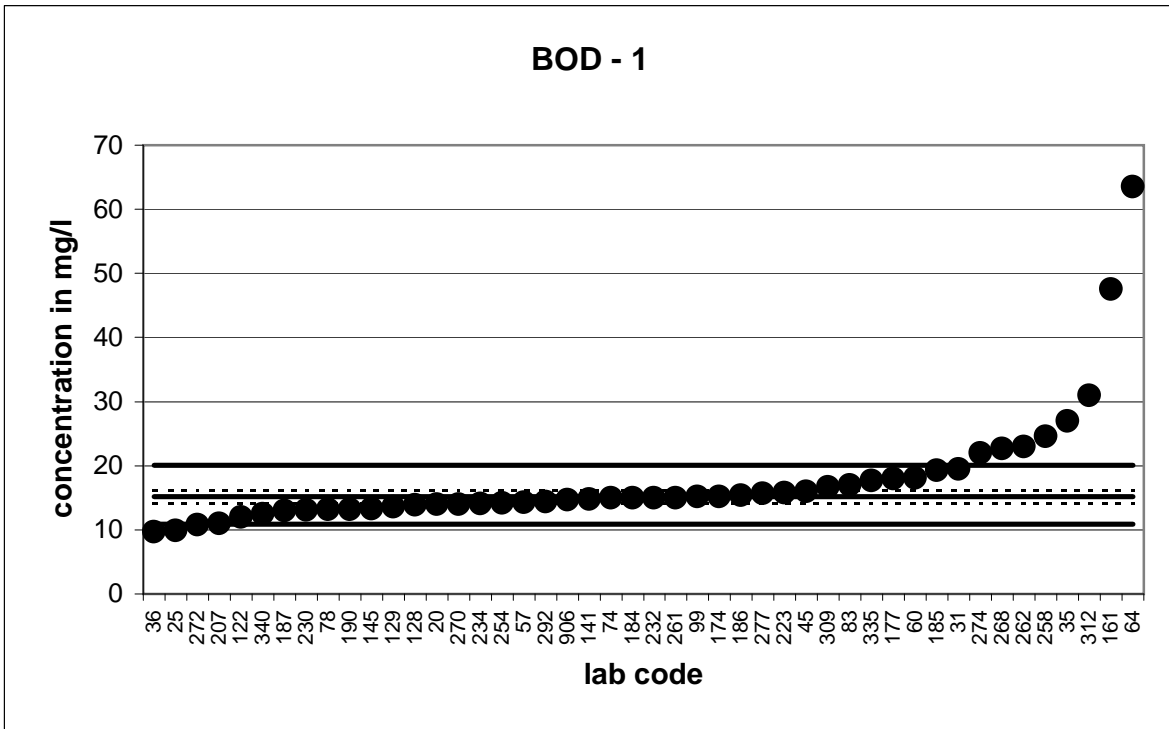
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

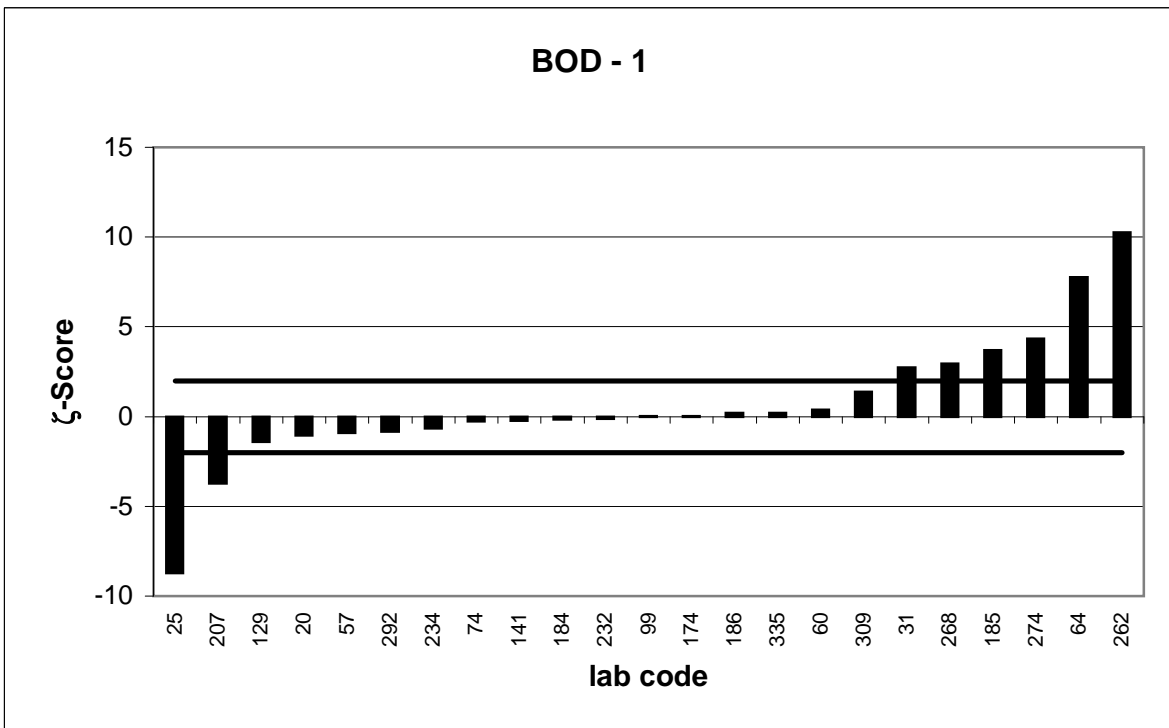
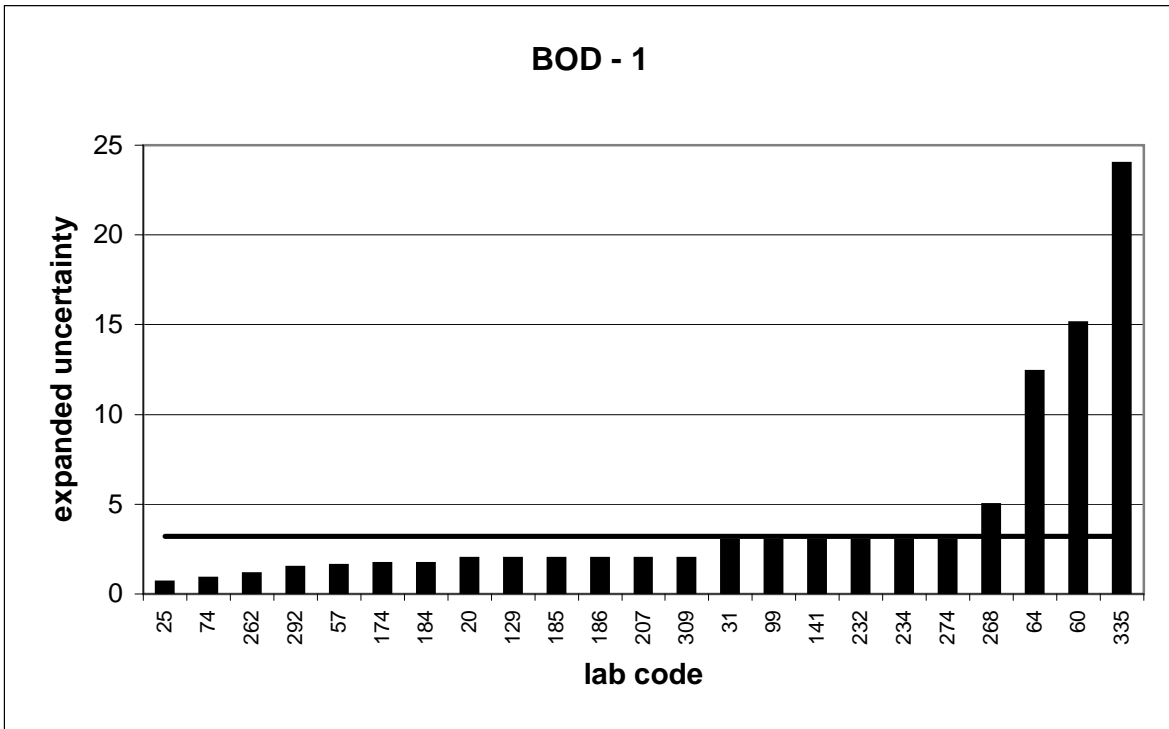




PT 3/11		BOD - 1			
assigned value [mg/l]*		15,17 ± 1,01			
upper tolerance limit [mg/l]		20,11			
lower tolerance limit [mg/l]		10,91			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
20	14	2	-1,0	-0,5	+
25	9,86	0,69	-8,7	-2,5	-
31	19,5	3	2,7	1,8	+
35	27			4,8	-
36	9,67			-2,6	-
45	16			0,3	+
57	14,3	1,59	-0,9	-0,4	+
60	18,1	15,12	0,4	1,2	+
64	63,5	12,4	7,8	19,6	-
74	15	0,9	-0,2	-0,1	+
78	13,2			-0,9	+
83	17			0,7	+
99	15,2	3	0,0	0,0	+
122	12			-1,5	+
128	13,85			-0,6	+
129	13,6	2	-1,4	-0,7	+
141	14,8	3	-0,2	-0,2	+
145	13,3			-0,9	+
161	47,5			13,1	-
174	15,2	1,7	0,0	0,0	+
177	18			1,1	+
184	15	1,7	-0,2	-0,1	+
185	19,3	2	3,7	1,7	+
186	15,4	2	0,2	0,1	+
187	13			-1,0	+
190	13,2			-0,9	+
207	11	2	-3,7	-2,0	+
223	15,8			0,3	+
230	13,1			-1,0	+
232	15	3	-0,1	-0,1	+
234	14,1	3	-0,7	-0,5	+
254	14,2			-0,5	+
258	24,6			3,8	-
261	15			-0,1	+
262	23	1,15	10,3	3,2	-
268	22,7	5	3,0	3,0	-
270	14			-0,5	+
272	10,8			-2,1	-
274	22	3	4,3	2,8	-
277	15,7			0,2	+
292	14,4	1,5	-0,8	-0,4	+
309	16,7	2	1,4	0,6	+
312	31			6,4	-
335	17,7	24	0,2	1,0	+
340	12,5			-1,3	+
906	14,7			-0,2	+

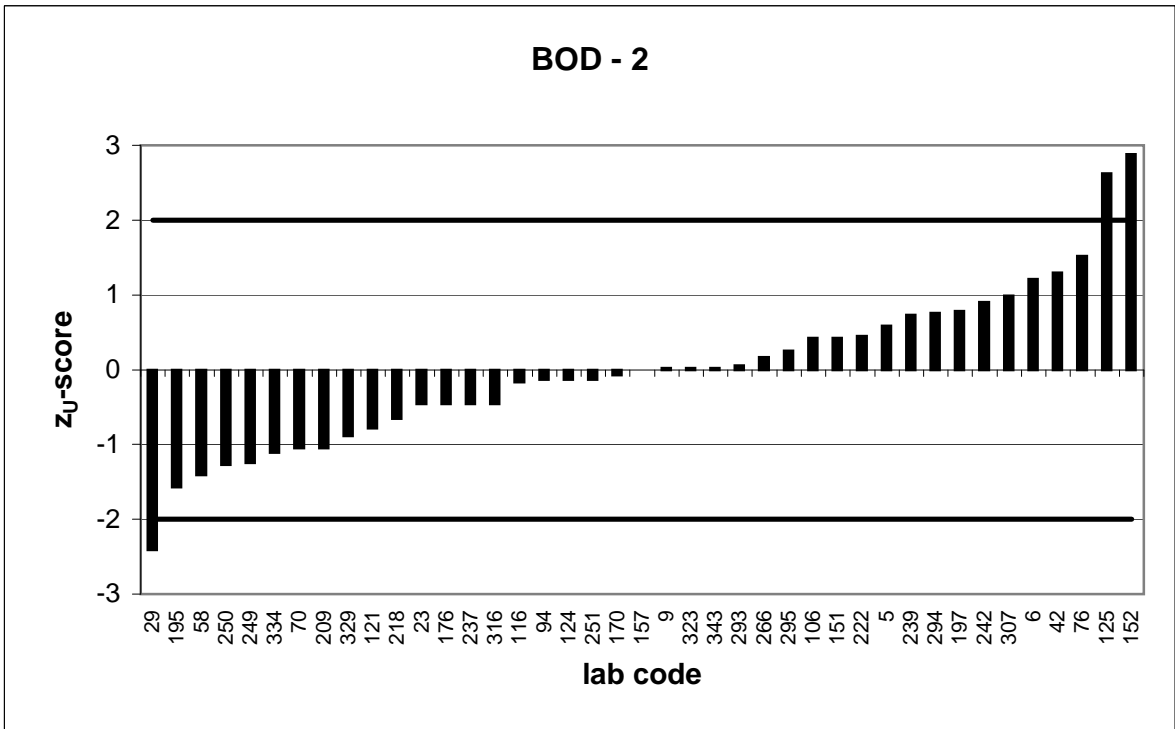
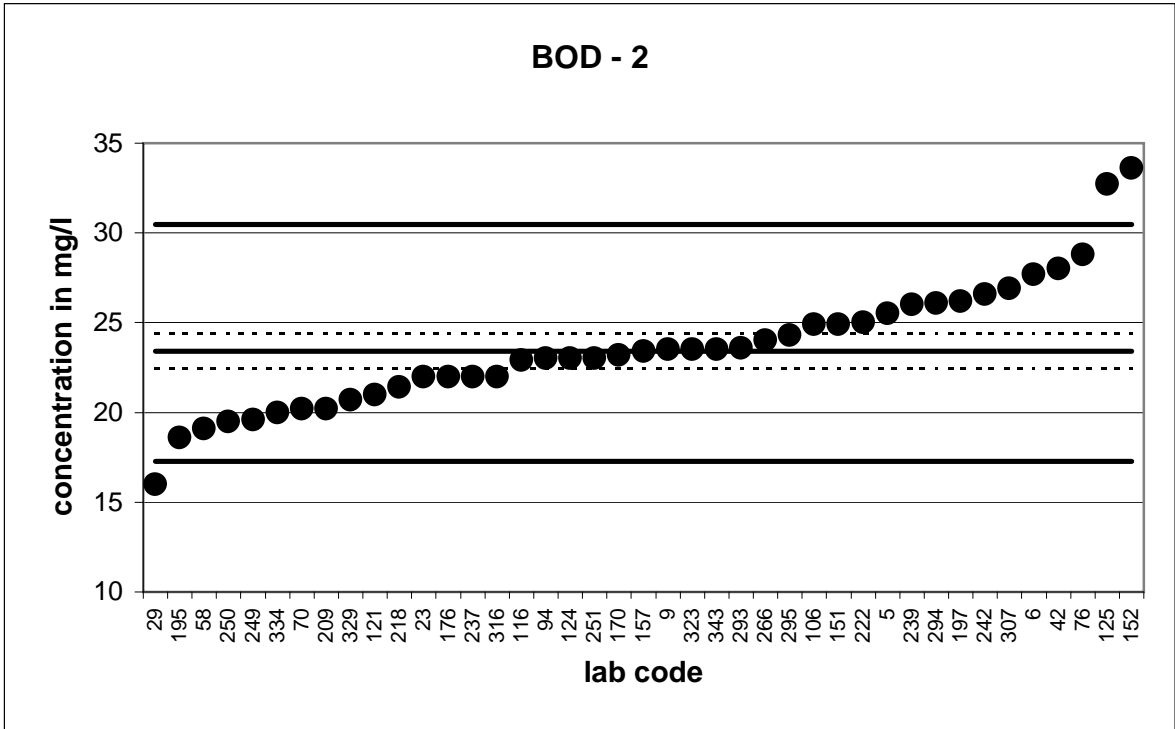
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

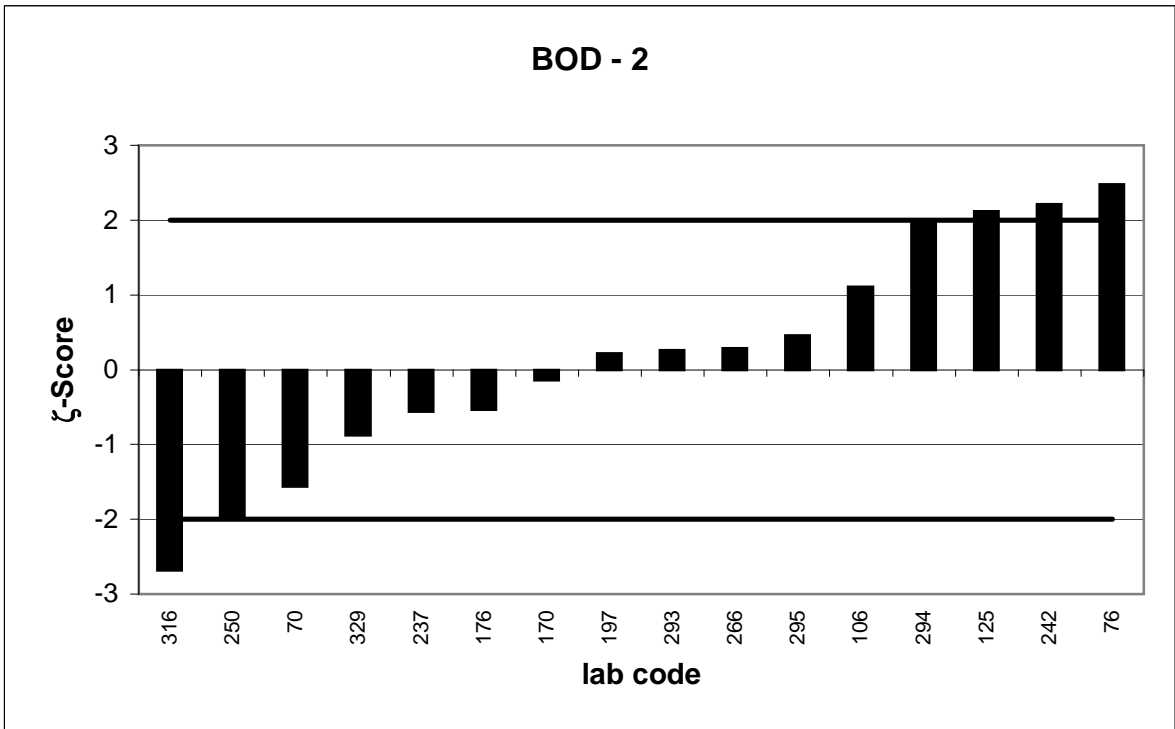
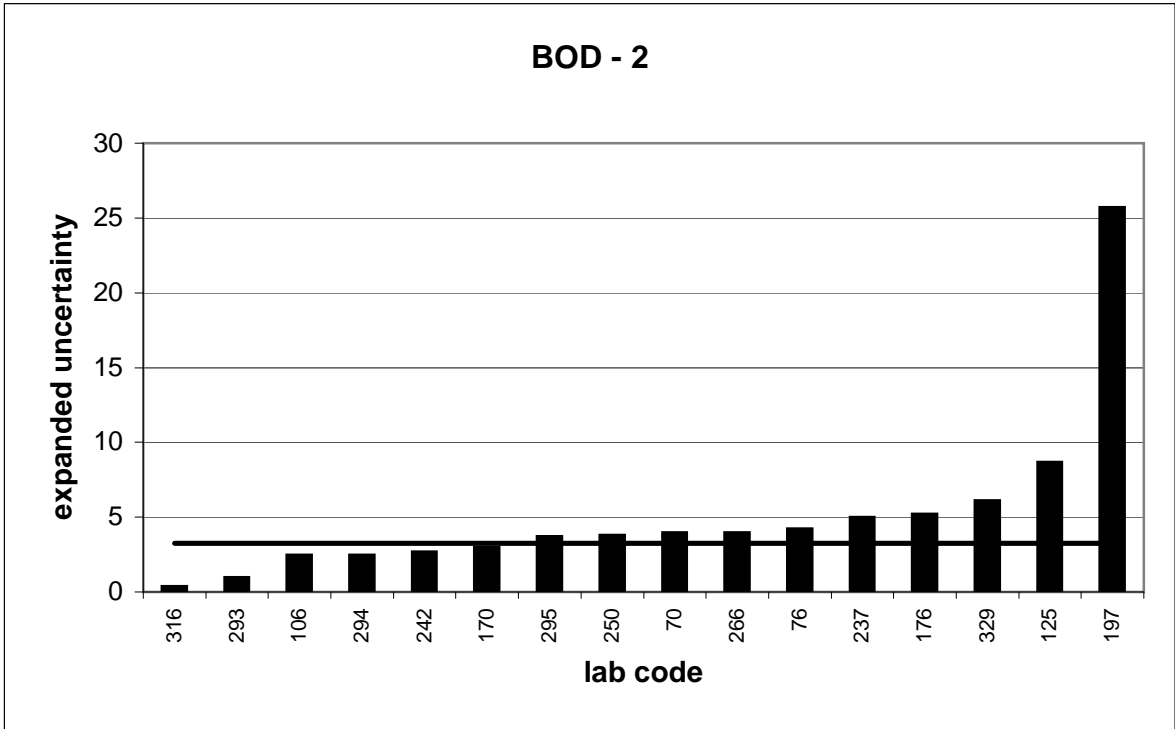




PT 3/11		BOD - 2			
assigned value [mg/l]*		23,42 ± 0,98			
upper tolerance limit [mg/l]		30,49			
lower tolerance limit [mg/l]		17,27			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	25,5			0,6	+
6	27,7			1,2	+
9	23,5			0,0	+
23	22			-0,5	+
29	16			-2,4	-
42	28			1,3	+
58	19,1			-1,4	+
70	20,2	4	-1,6	-1,0	+
76	28,8	4,24	2,5	1,5	+
94	23			-0,1	+
106	24,9	2,5	1,1	0,4	+
116	22,9			-0,2	+
121	21			-0,8	+
124	23			-0,1	+
125	32,7	8,7	2,1	2,6	-
151	24,9			0,4	+
152	33,6			2,9	-
157	23,4			0,0	+
170	23,2	3	-0,1	-0,1	+
176	22	5,2	-0,5	-0,5	+
195	18,6			-1,6	+
197	26,2	25,7	0,2	0,8	+
209	20,2			-1,0	+
218	21,4			-0,7	+
222	25			0,4	+
237	22	5	-0,6	-0,5	+
239	26			0,7	+
242	26,6	2,7	2,2	0,9	+
249	19,6			-1,2	+
250	19,5	3,8	-2,0	-1,3	+
251	23			-0,1	+
266	24	4	0,3	0,2	+
293	23,6	1	0,3	0,1	+
294	26,1	2,5	2,0	0,8	+
295	24,3	3,73	0,5	0,2	+
307	26,9			1,0	+
316	22	0,4	-2,7	-0,5	+
323	23,5			0,0	+
329	20,7	6,11	-0,9	-0,9	+
334	20			-1,1	+
343	23,5			0,0	+

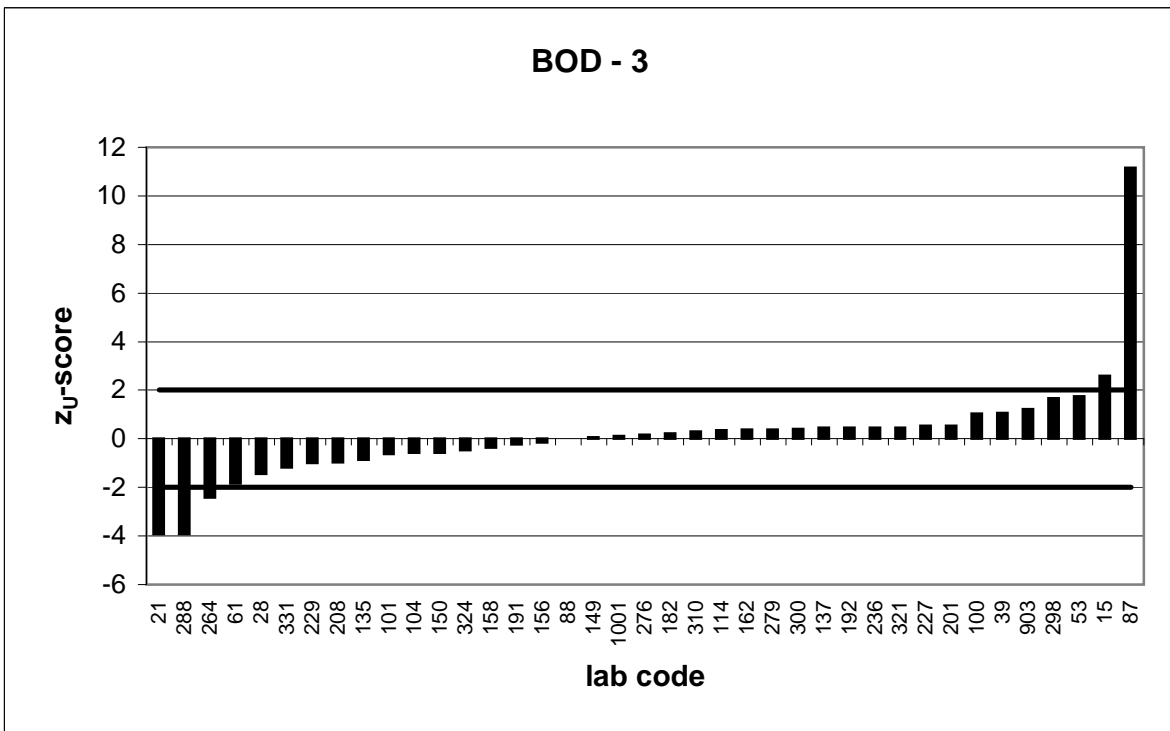
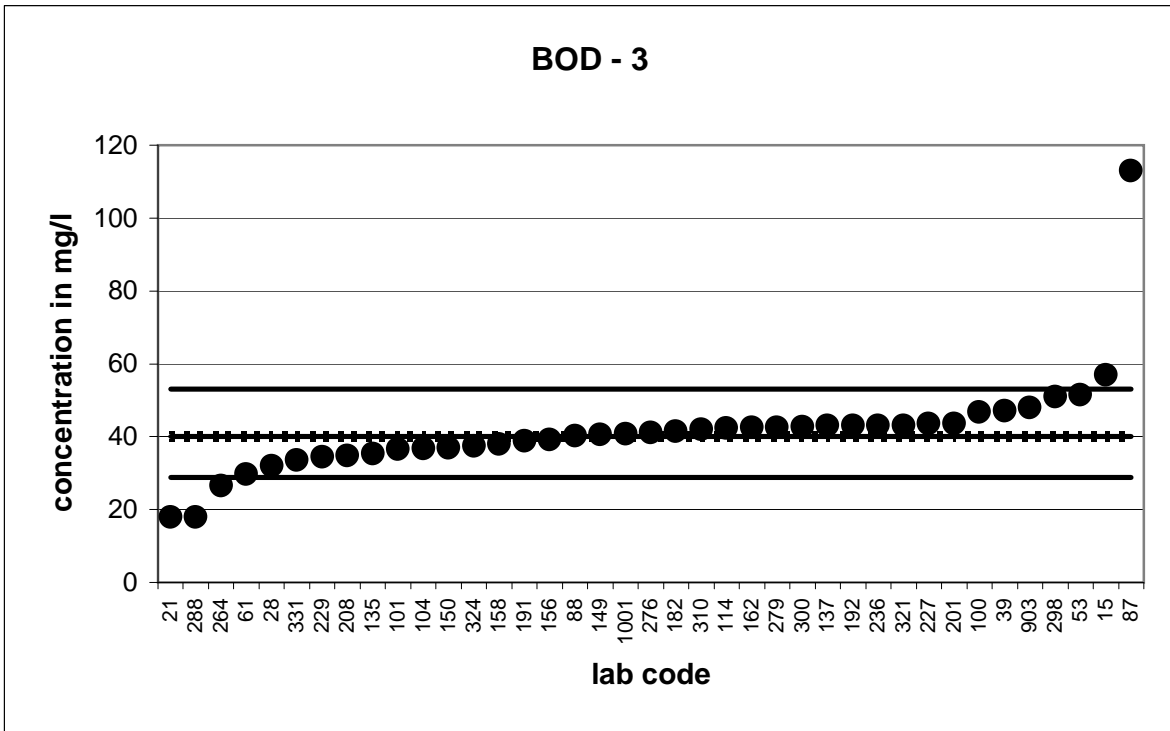
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

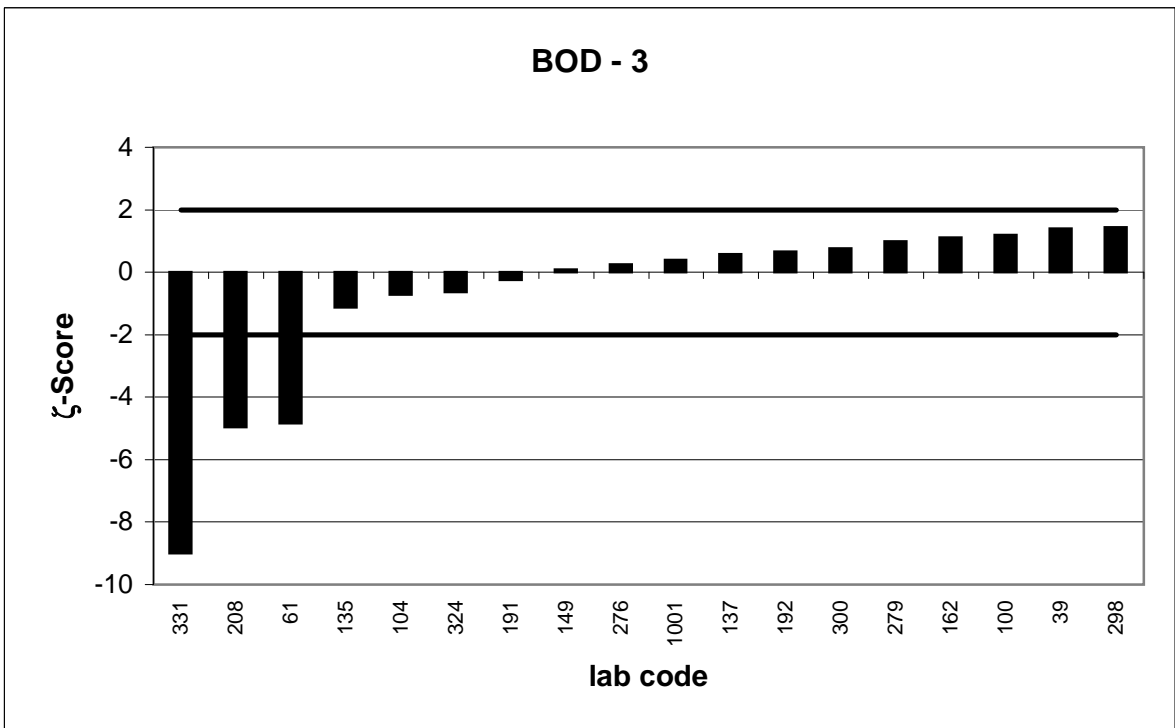
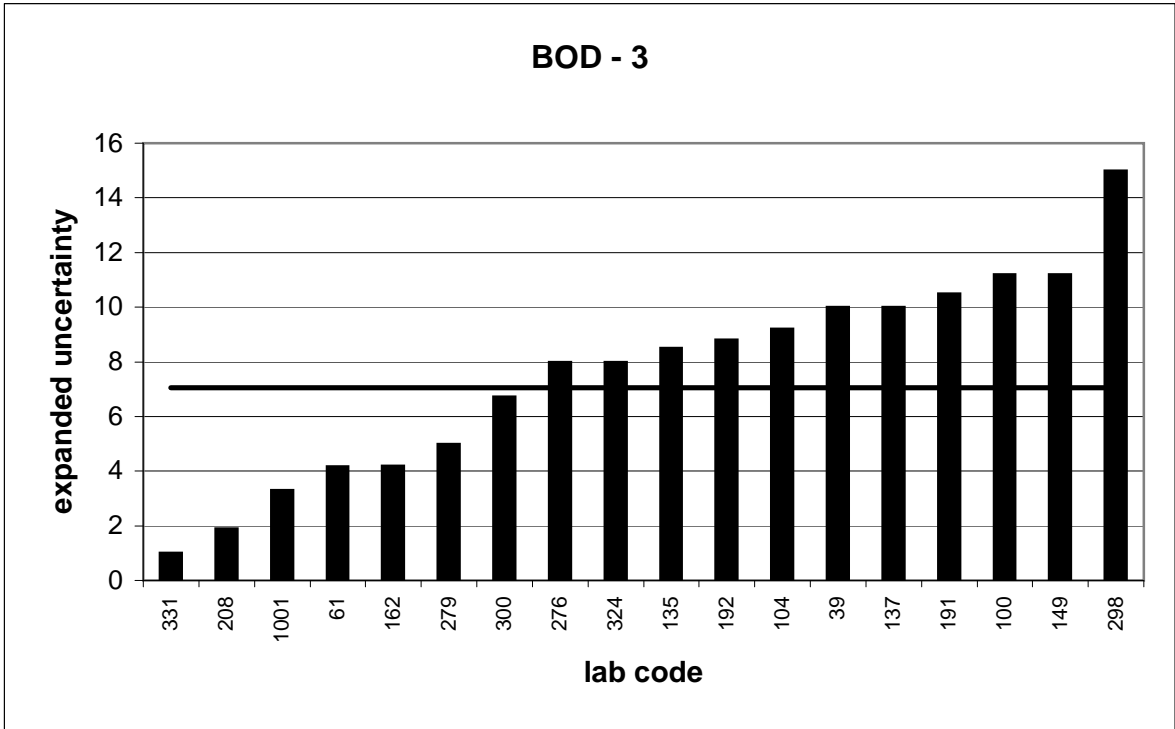




PT 3/11		BOD - 3			
assigned value [mg/l]*		40,08 ± 1,07			
upper tolerance limit [mg/l]		53,14			
lower tolerance limit [mg/l]		28,82			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
15	57			2,6	-
21	18			-3,9	-
28	31,9			-1,5	+
39	47,1	10	1,4	1,1	+
53	51,5			1,7	+
61	29,7	4,16	-4,8	-1,8	+
87	113			11,2	-
88	40,2			0,0	+
100	46,8	11,2	1,2	1,0	+
101	36,6			-0,6	+
104	36,8	9,2	-0,7	-0,6	+
114	42,3			0,3	+
135	35,3	8,5	-1,1	-0,8	+
137	43	10	0,6	0,4	+
149	40,5	11,2	0,1	0,1	+
150	36,9			-0,6	+
156	39,2			-0,2	+
158	38			-0,4	+
162	42,5	4,2	1,1	0,4	+
182	41,5			0,2	+
191	38,8	10,5	-0,2	-0,2	+
192	43	8,8	0,7	0,4	+
201	43,6			0,5	+
208	34,7	1,89	-5,0	-1,0	+
227	43,5			0,5	+
229	34,5			-1,0	+
236	43			0,4	+
264	26,5			-2,4	-
276	41,1	8	0,3	0,2	+
279	42,6	5	1,0	0,4	+
288	18			-3,9	-
298	50,9	15	1,4	1,7	+
300	42,7	6,73	0,8	0,4	+
310	42			0,3	+
321	43			0,4	+
324	37,5	8	-0,6	-0,5	+
331	33,5	1	-9,0	-1,2	+
903	48			1,2	+
1001	40,77	3,3	0,4	0,1	+

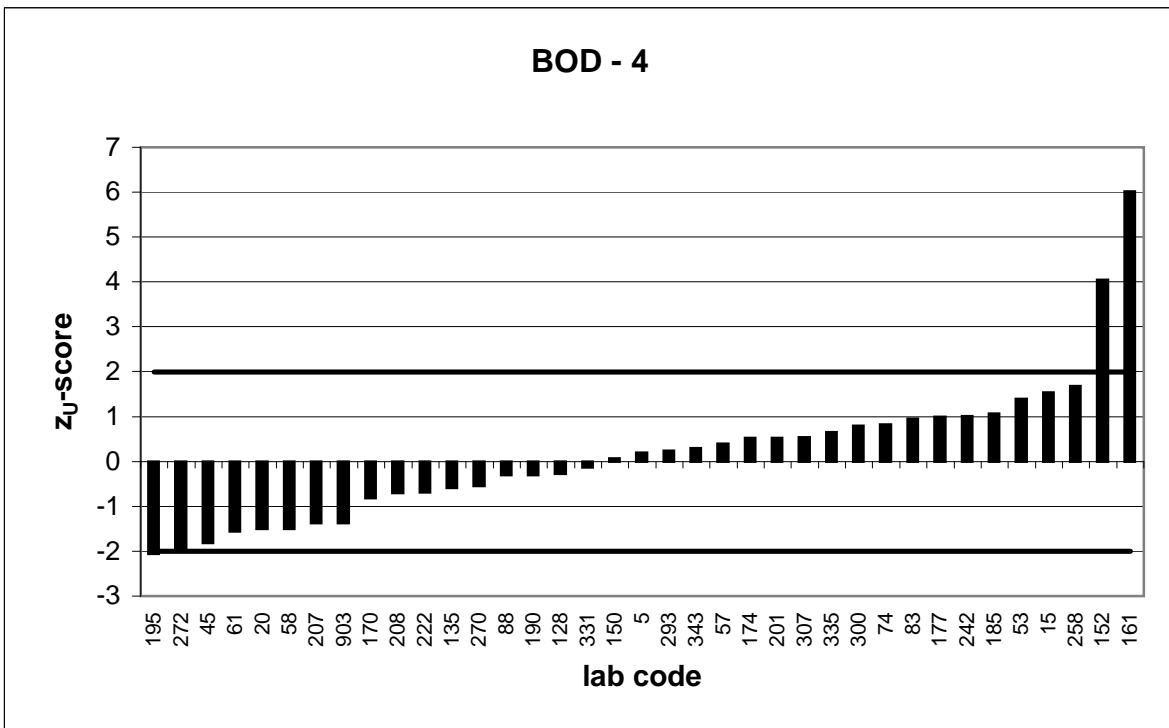
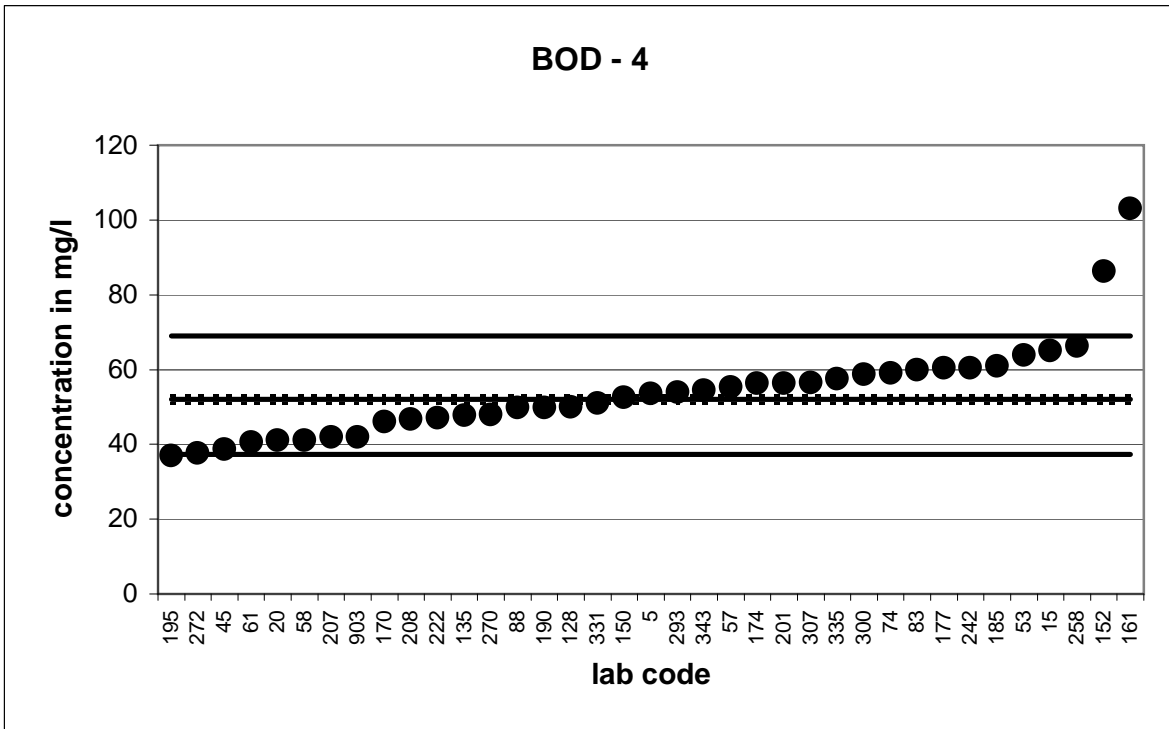
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

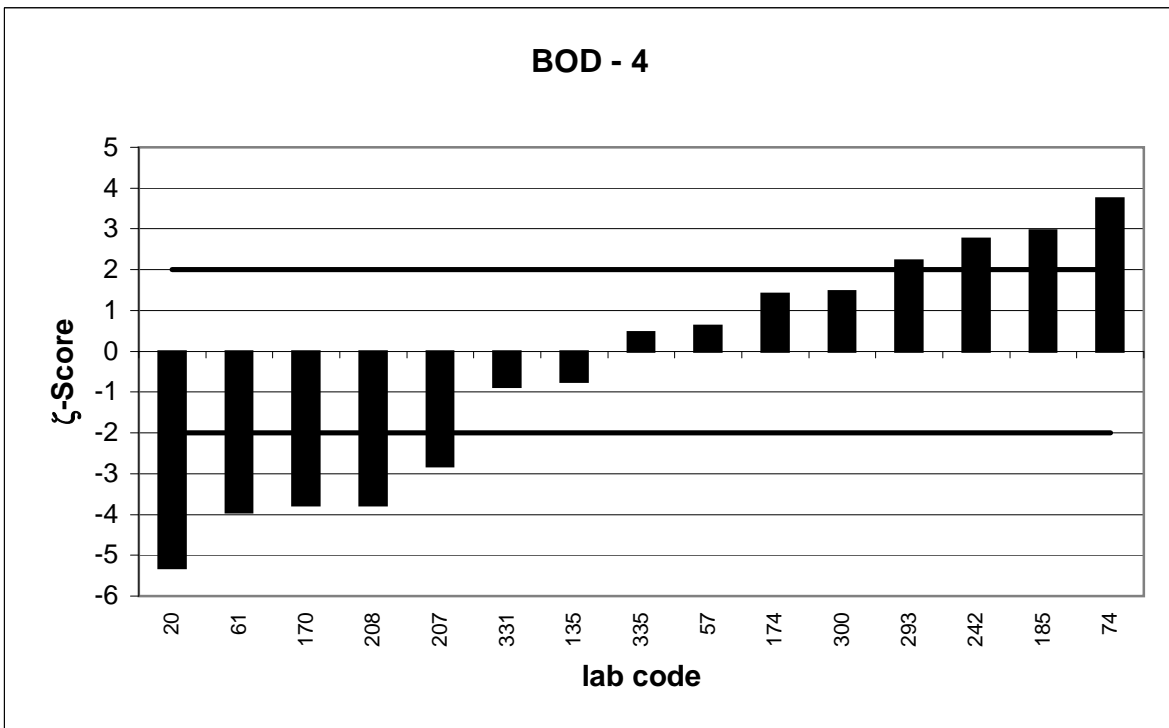
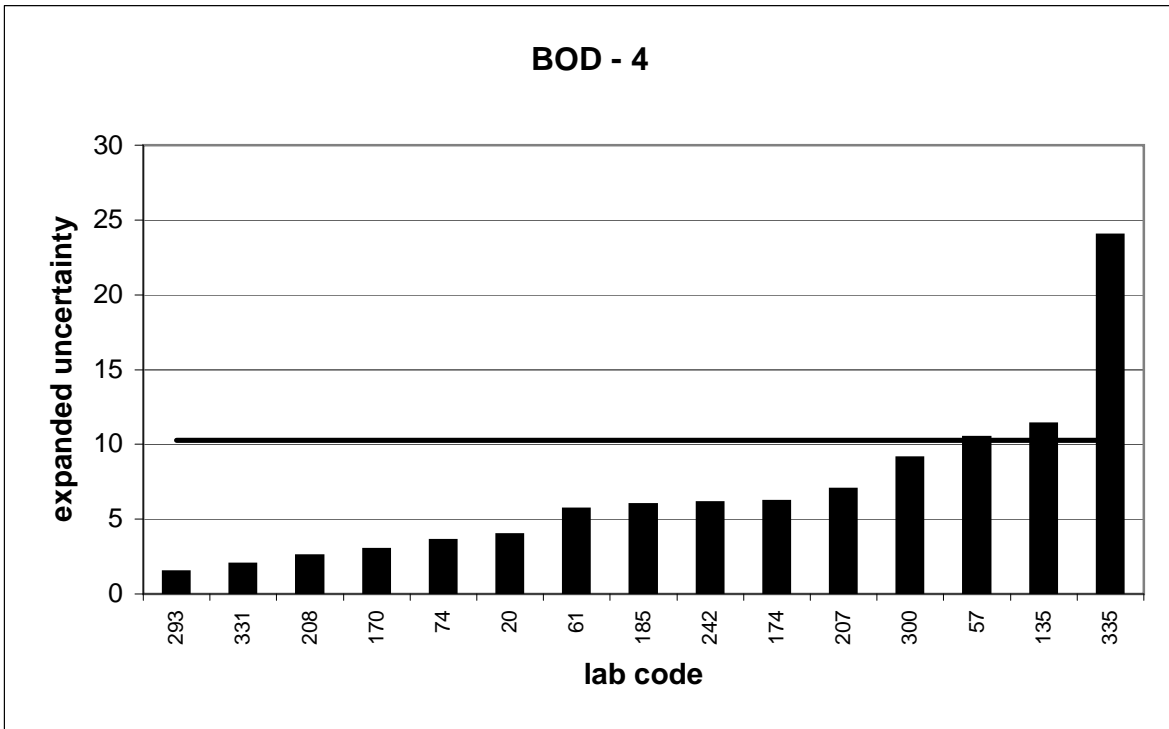




PT 3/11		BOD - 4			
assigned value [mg/l]*		51,98 ± 1,03			
upper tolerance limit [mg/l]		68,92			
lower tolerance limit [mg/l]		37,39			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	53,6			0,2	+
15	65			1,5	+
20	41	4	-5,3	-1,5	+
45	38,7			-1,8	+
53	63,8			1,4	+
57	55,3	10,5	0,6	0,4	+
58	41			-1,5	+
61	40,6	5,68	-3,9	-1,6	+
74	59	3,6	3,8	0,8	+
83	60			0,9	+
88	49,8			-0,3	+
128	50			-0,3	+
135	47,7	11,4	-0,7	-0,6	+
150	52,6			0,1	+
152	86,3			4,1	-
161	103			6,0	-
170	46	3	-3,8	-0,8	+
174	56,4	6,2	1,4	0,5	+
177	60,41			1,0	+
185	61	6	3,0	1,1	+
190	49,8			-0,3	+
195	36,92			-2,1	-
201	56,4			0,5	+
207	42	7	-2,8	-1,4	+
208	46,8	2,55	-3,8	-0,7	+
222	47			-0,7	+
242	60,5	6,1	2,8	1,0	+
258	66,2			1,7	+
270	48			-0,5	+
272	37,6			-2,0	+
293	54	1,5	2,2	0,2	+
300	58,7	9,13	1,5	0,8	+
307	56,5			0,5	+
331	51	2	-0,9	-0,1	+
335	57,5	24	0,5	0,7	+
343	54,5			0,3	+
903	42			-1,4	+

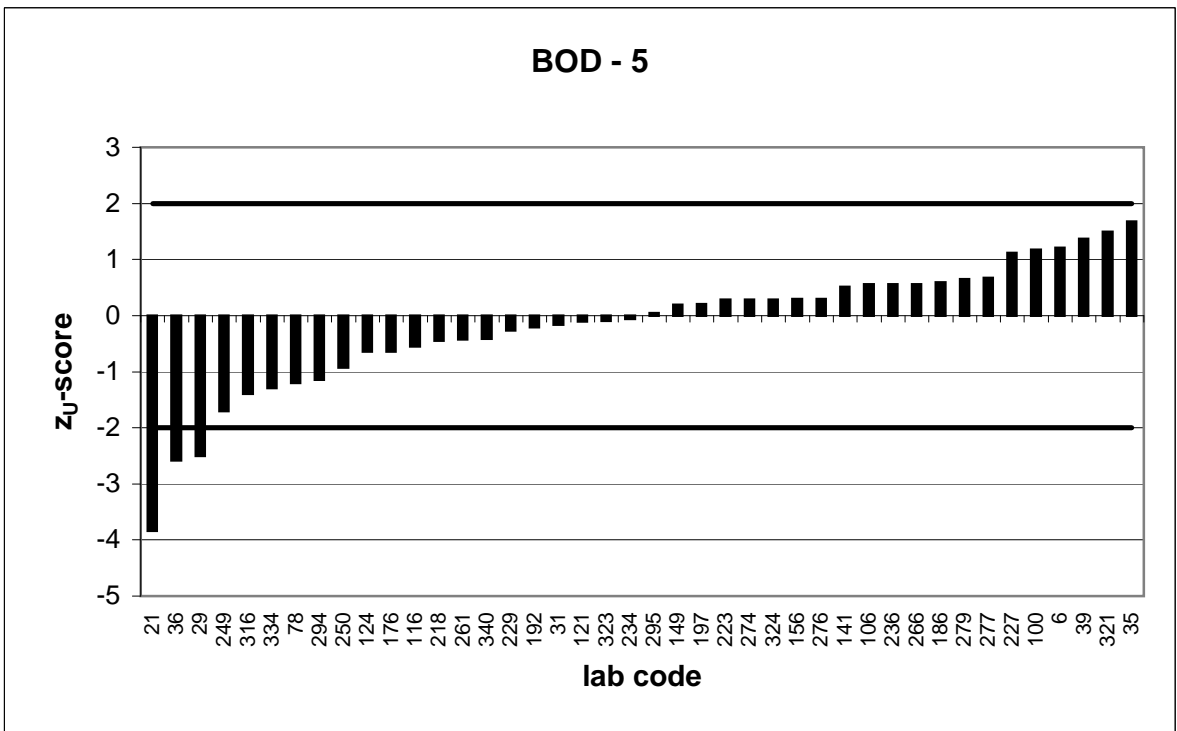
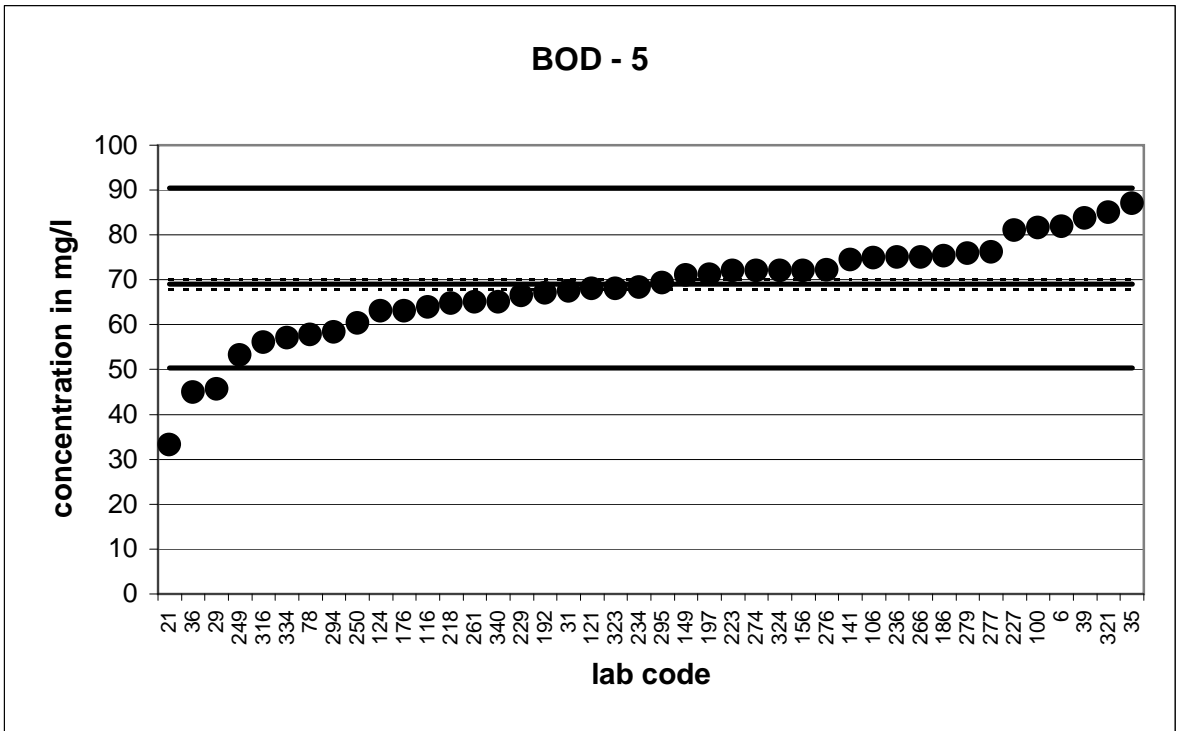
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

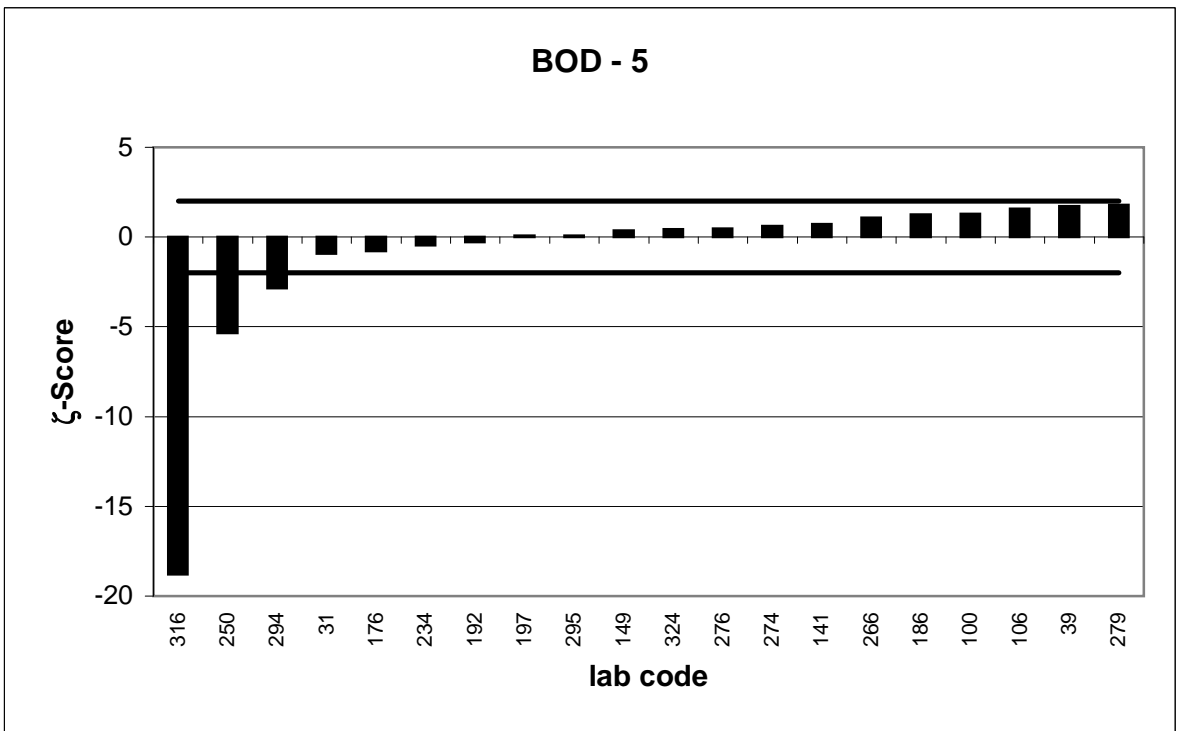
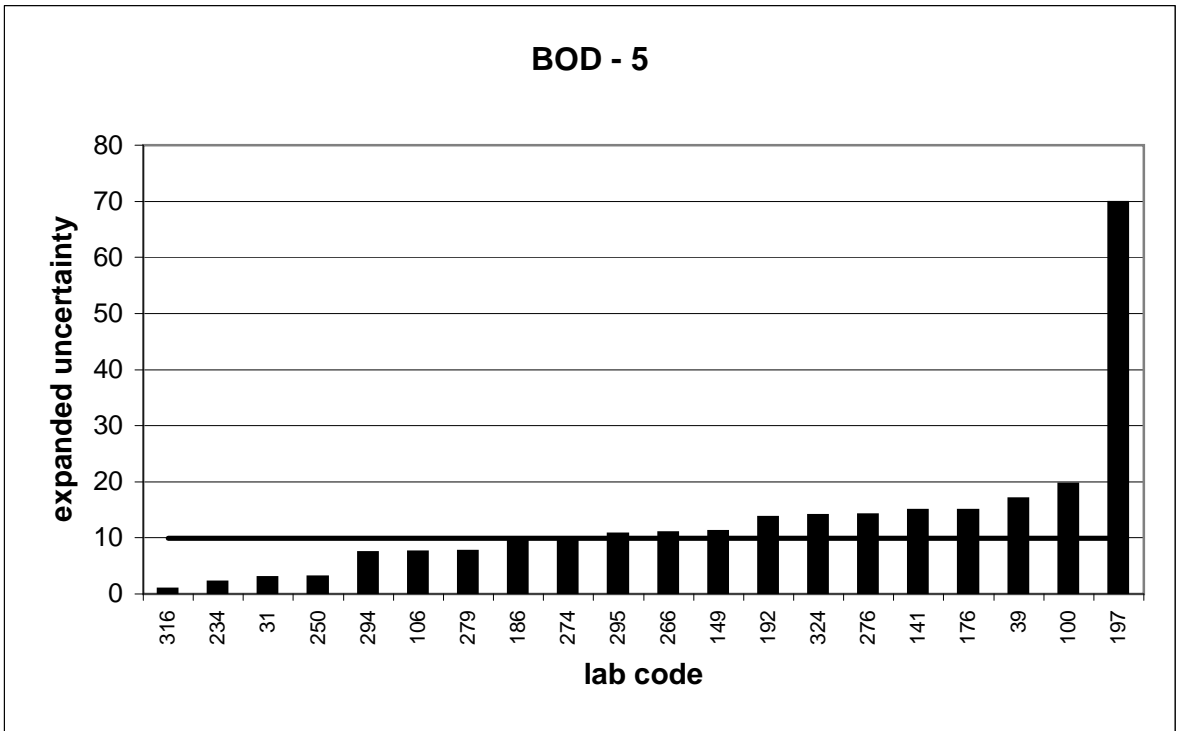




PT 3/11		BOD - 5			
assigned value [mg/l]*		68,98 ± 1,05			
upper tolerance limit [mg/l]		90,43			
lower tolerance limit [mg/l]		50,38			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	81,9			1,2	+
21	33,3			-3,8	-
29	45,7			-2,5	-
31	67,5	3	-0,9	-0,2	+
35	87			1,7	+
36	45			-2,6	-
39	83,7	17	1,7	1,4	+
78	57,8			-1,2	+
100	81,6	19,6	1,3	1,2	+
106	74,9	7,5	1,6	0,6	+
116	63,9			-0,5	+
121	68			-0,1	+
124	63			-0,6	+
141	74,5	15	0,7	0,5	+
149	71,1	11,2	0,4	0,2	+
156	72,1			0,3	+
176	63	15	-0,8	-0,6	+
186	75,3	10	1,3	0,6	+
192	67	13,7	-0,3	-0,2	+
197	71,2	69,8	0,1	0,2	+
218	64,8			-0,4	+
223	72			0,3	+
227	81			1,1	+
229	66,5			-0,3	+
234	68,4	2,2	-0,5	-0,1	+
236	75			0,6	+
249	53,2			-1,7	+
250	60,4	3,03	-5,3	-0,9	+
261	65			-0,4	+
266	75	11	1,1	0,6	+
274	72	10	0,6	0,3	+
276	72,2	14,1	0,5	0,3	+
277	76,2			0,7	+
279	75,9	7,6	1,8	0,6	+
294	58,4	7,4	-2,8	-1,1	+
295	69,4	10,7	0,1	0,0	+
316	56	0,9	-18,8	-1,4	+
321	85			1,5	+
323	68,1			-0,1	+
324	72	14	0,4	0,3	+
334	57			-1,3	+
340	65,1			-0,4	+

* 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%



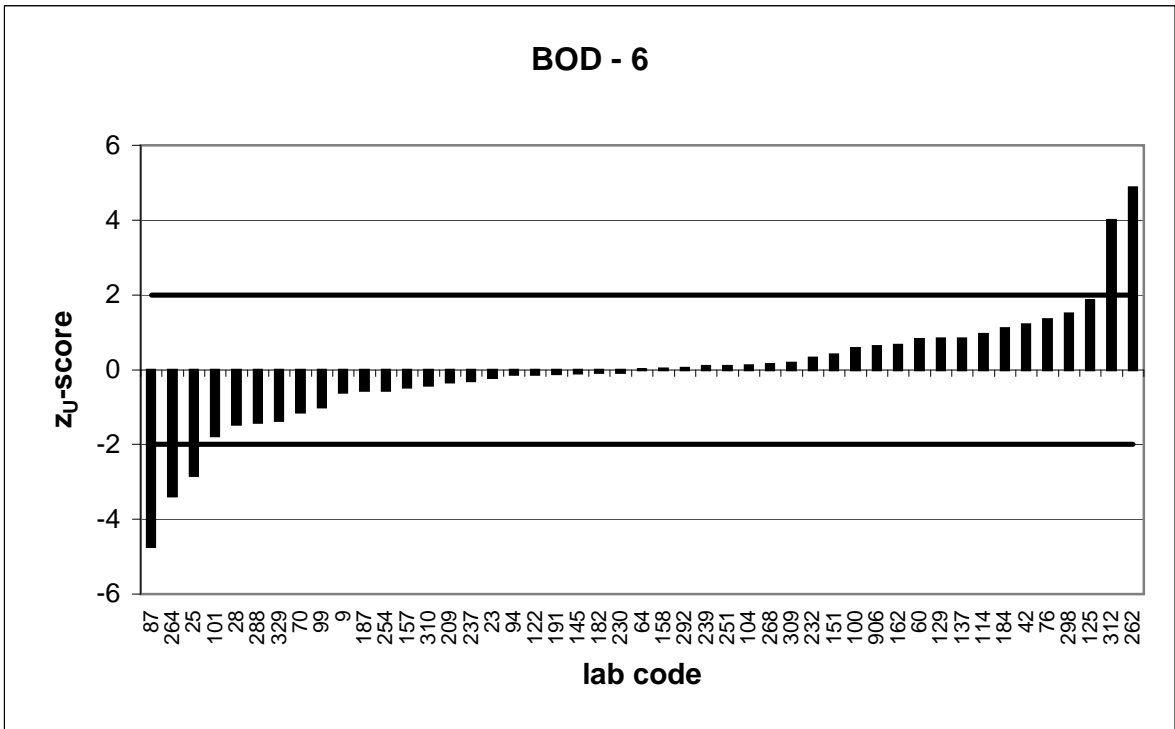
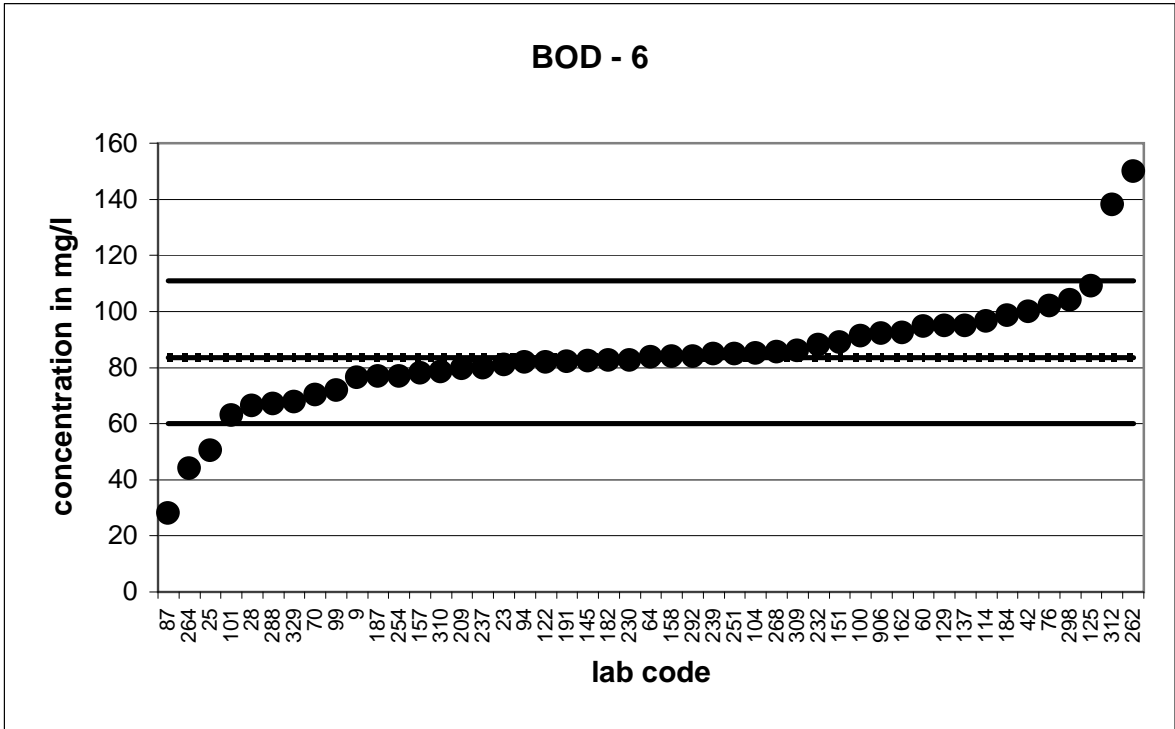


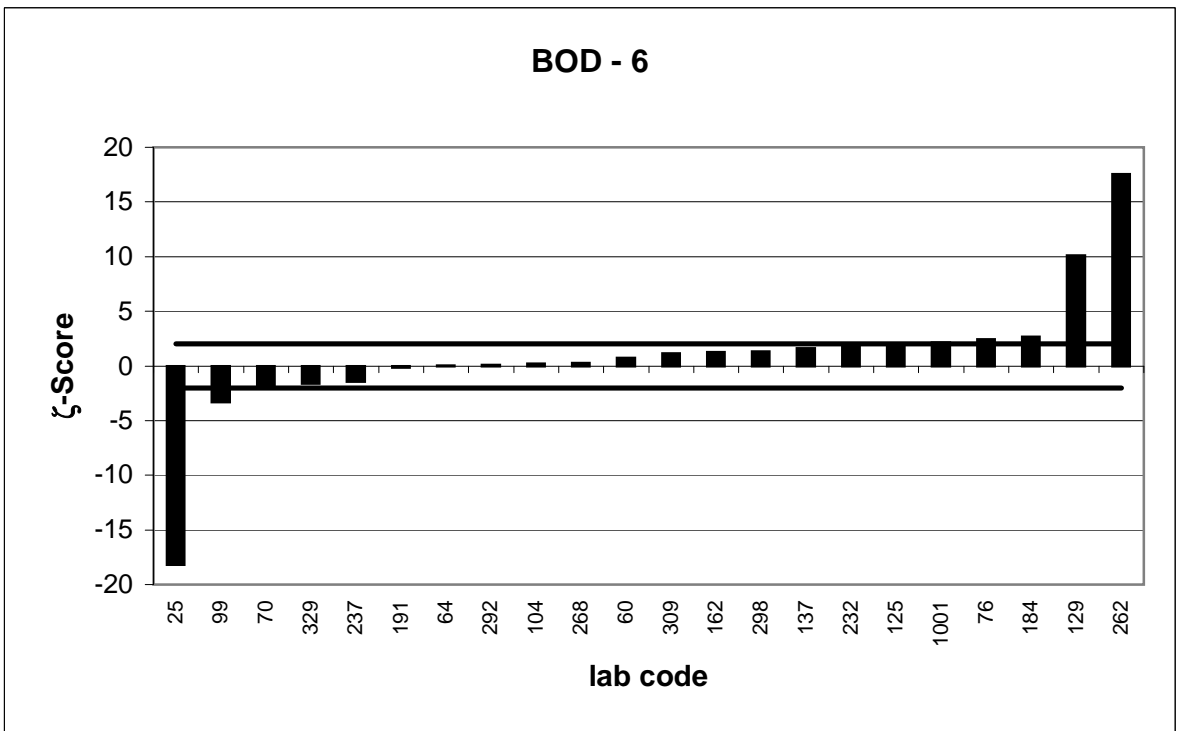
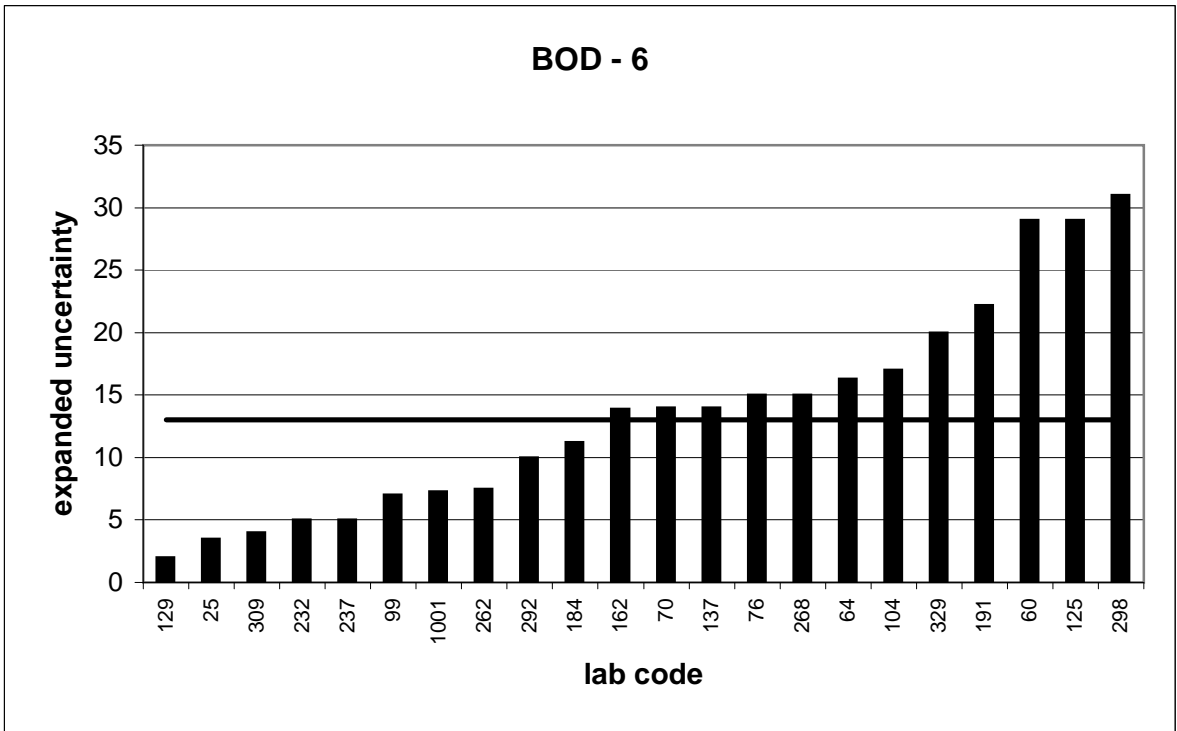
PT 3/11		BOD - 6			
assigned value [mg/l]*		83,61 ± 1,04			
upper tolerance limit [mg/l]		110,9			
lower tolerance limit [mg/l]		60,13			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	76,4			-0,6	+
23	81			-0,2	+
25	50,4	3,5	-18,2	-2,8	-
28	66,4			-1,5	+
42	100			1,2	+
60	94,63	29	0,8	0,8	+
64	83,7	16,3	0,0	0,0	+
70	70,2	14	-1,9	-1,1	+
76	102	15	2,4	1,3	+
87	28			-4,7	-
94	82			-0,1	+
99	71,9	7	-3,3	-1,0	+
101	62,9			-1,8	+
104	85,2	17	0,2	0,1	+
114	96,5			0,9	+
122	82			-0,1	+
125	109	29	1,8	1,9	+
129	95	2	10,1	0,8	+
137	95	14	1,6	0,8	+
145	82,5			-0,1	+
151	89			0,4	+
157	78			-0,5	+
158	84			0,0	+
162	92,5	13,9	1,3	0,7	+
182	82,7			-0,1	+
184	98,6	11,2	2,7	1,1	+
187	77			-0,6	+
191	82,2	22,2	-0,1	-0,1	+
209	79,7			-0,3	+
230	82,7			-0,1	+
232	88	5	1,7	0,3	+
237	80	5	-1,4	-0,3	+
239	85			0,1	+
251	85			0,1	+
254	77			-0,6	+
262	150	7,5	17,5	4,9	-
264	44			-3,4	-
268	85,6	15	0,3	0,1	+
288	67			-1,4	+
292	84,1	10	0,1	0,0	+
298	104	31	1,3	1,5	+
309	86	4	1,2	0,2	+
310	78,6			-0,4	+
312	138			4,0	-
329	67,7	20	-1,6	-1,4	+
906	92,1			0,6	+

* 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%

PT 3/11		BOD - 6			
assigned value [mg/l]*		83,61		± 1,04	
upper tolerance limit [mg/l]		110,9			
lower tolerance limit [mg/l]		60,13			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
1001	91,4	7,3	2,1	0,6	+

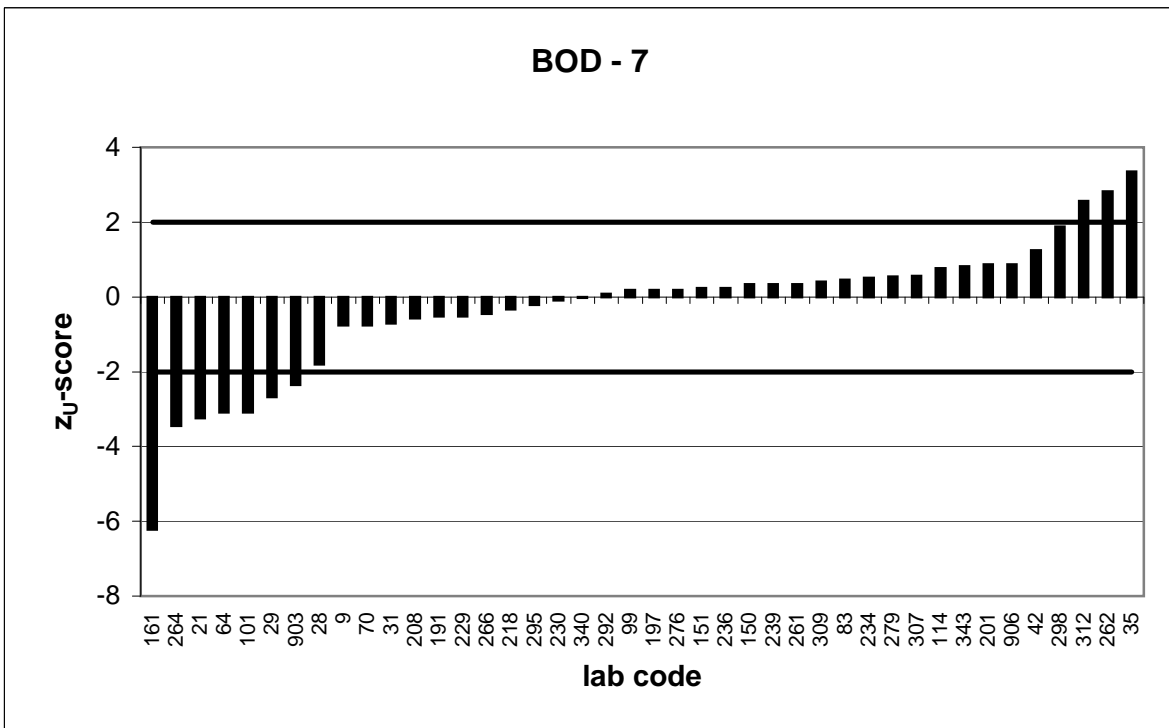
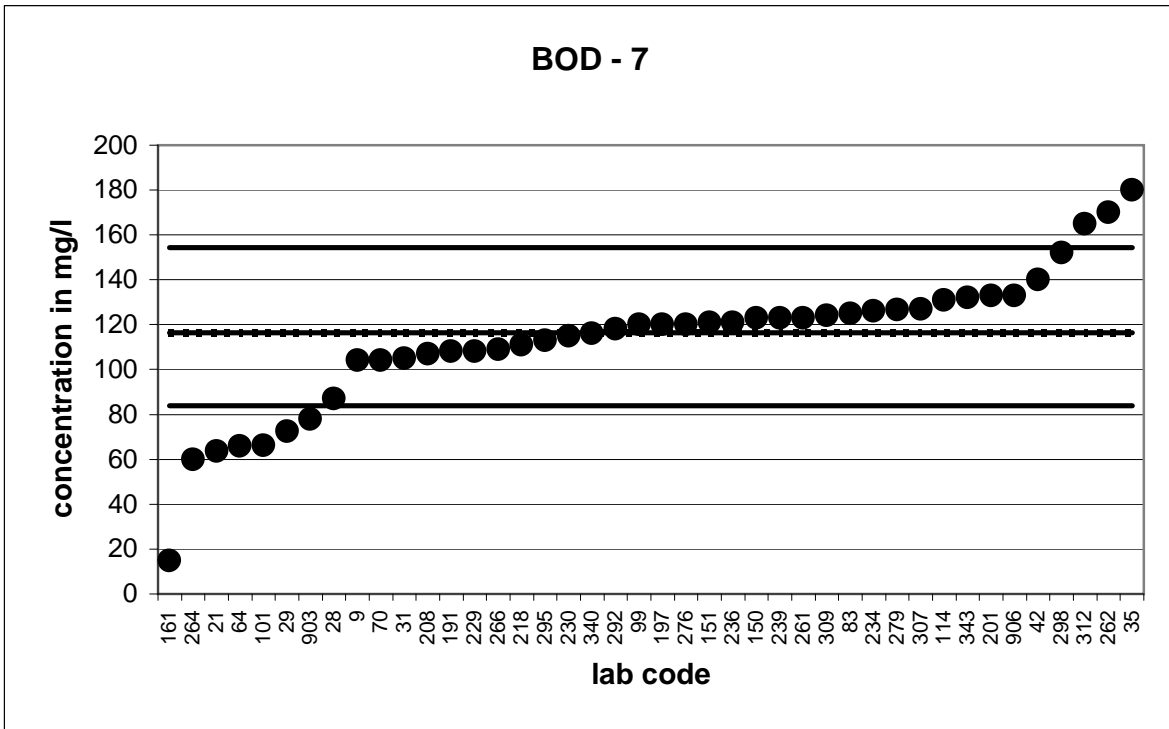
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

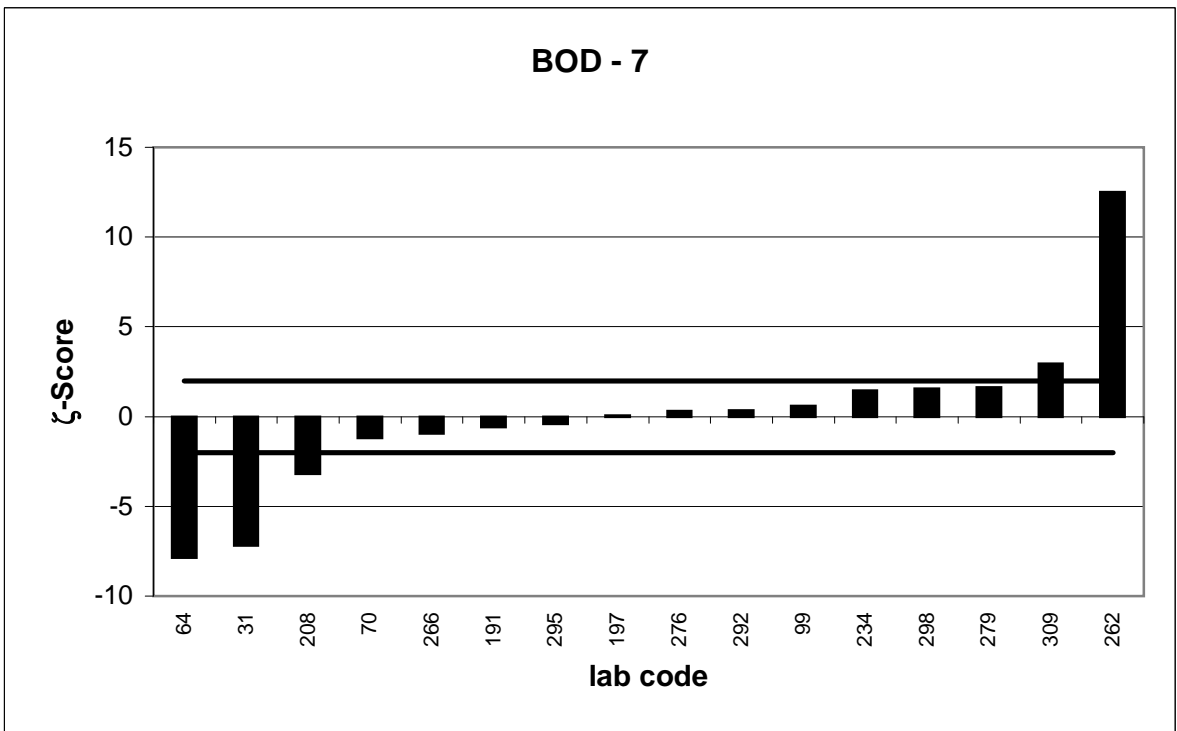
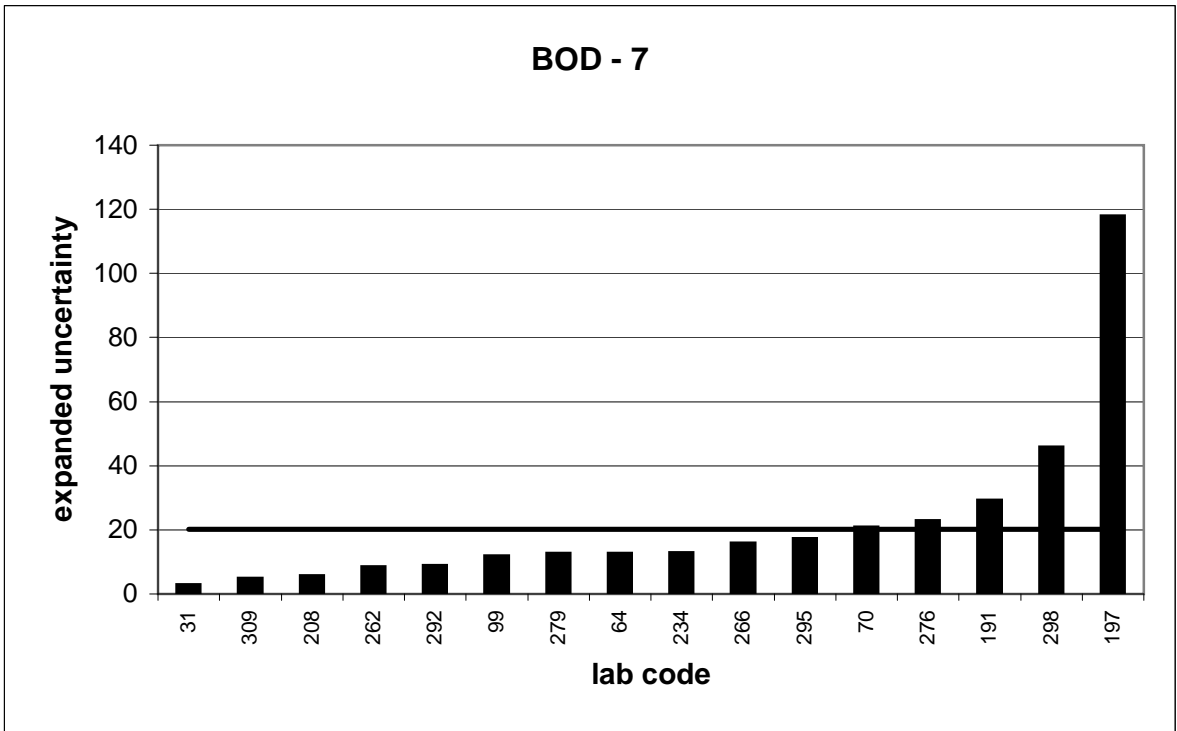




PT 3/11		BOD - 7			
assigned value [mg/l]*		116,5 ± 1,1			
upper tolerance limit [mg/l]		154,4			
lower tolerance limit [mg/l]		83,77			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	104			-0,8	+
21	63,6			-3,2	-
28	87,1			-1,8	+
29	72,6			-2,7	-
31	105	3	-7,2	-0,7	+
35	180			3,3	-
42	140			1,2	+
64	65,9	12,8	-7,9	-3,1	-
70	104	21	-1,2	-0,8	+
83	125			0,4	+
99	120	12	0,6	0,2	+
101	66,1			-3,1	-
114	131			0,8	+
150	123			0,3	+
151	121			0,2	+
161	14,7			-6,2	-
191	108	29,3	-0,6	-0,5	+
197	120	118	0,1	0,2	+
201	133			0,9	+
208	107	5,82	-3,2	-0,6	+
218	111			-0,3	+
229	108			-0,5	+
230	115			-0,1	+
234	126	13	1,5	0,5	+
236	121			0,2	+
239	123			0,3	+
261	123			0,3	+
262	170	8,5	12,5	2,8	-
264	60			-3,5	-
266	109	16	-0,9	-0,5	+
276	120	23	0,3	0,2	+
279	126,8	12,7	1,6	0,5	+
292	118	9	0,3	0,1	+
295	113	17,4	-0,4	-0,2	+
298	152	46	1,5	1,9	+
307	127			0,6	+
309	124	5	2,9	0,4	+
312	165			2,6	-
340	116			0,0	+
343	132			0,8	+
903	78			-2,4	-
906	133			0,9	+

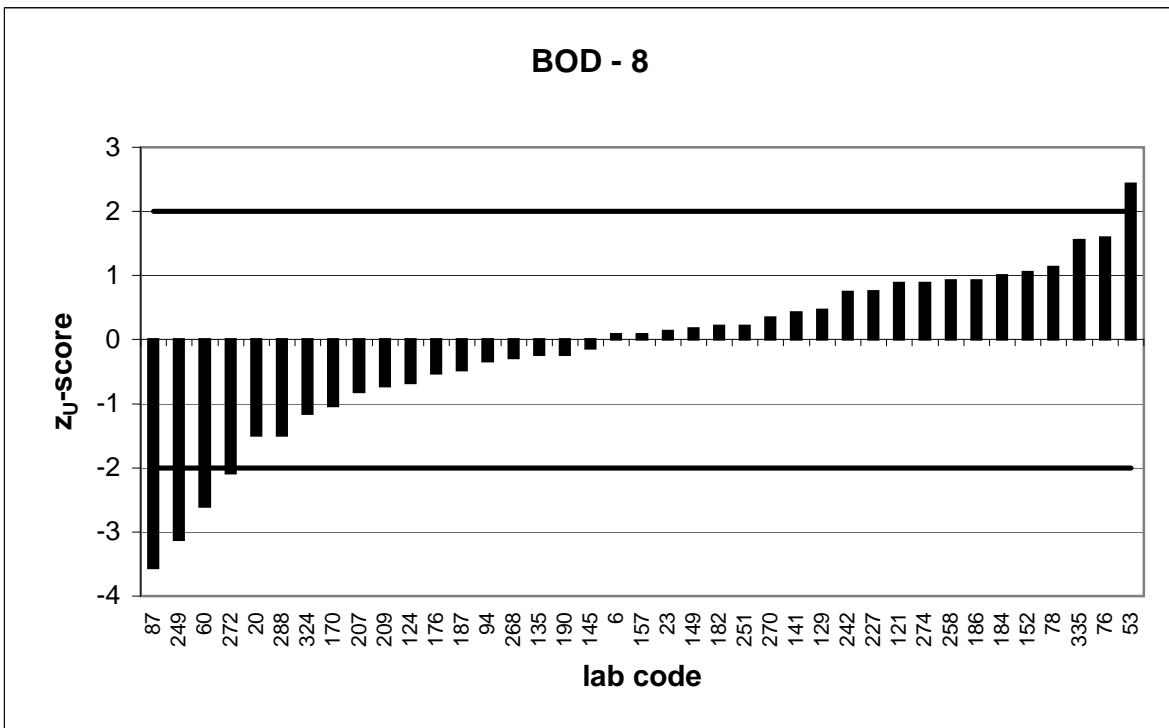
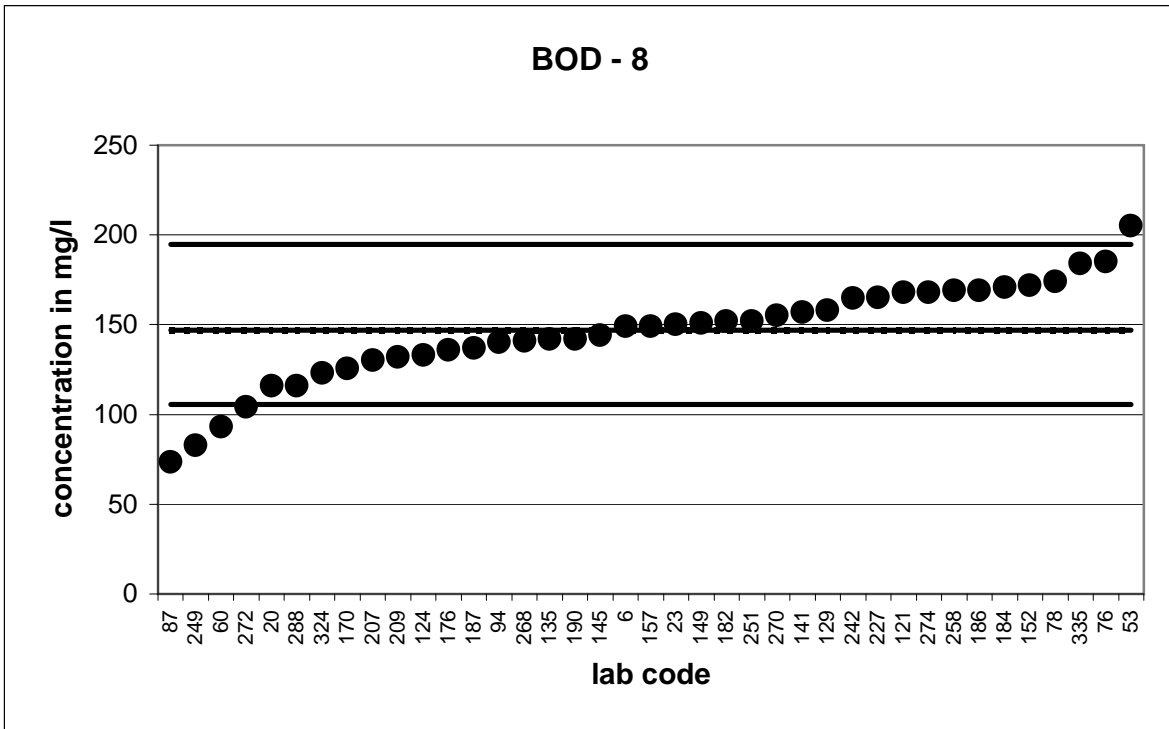
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

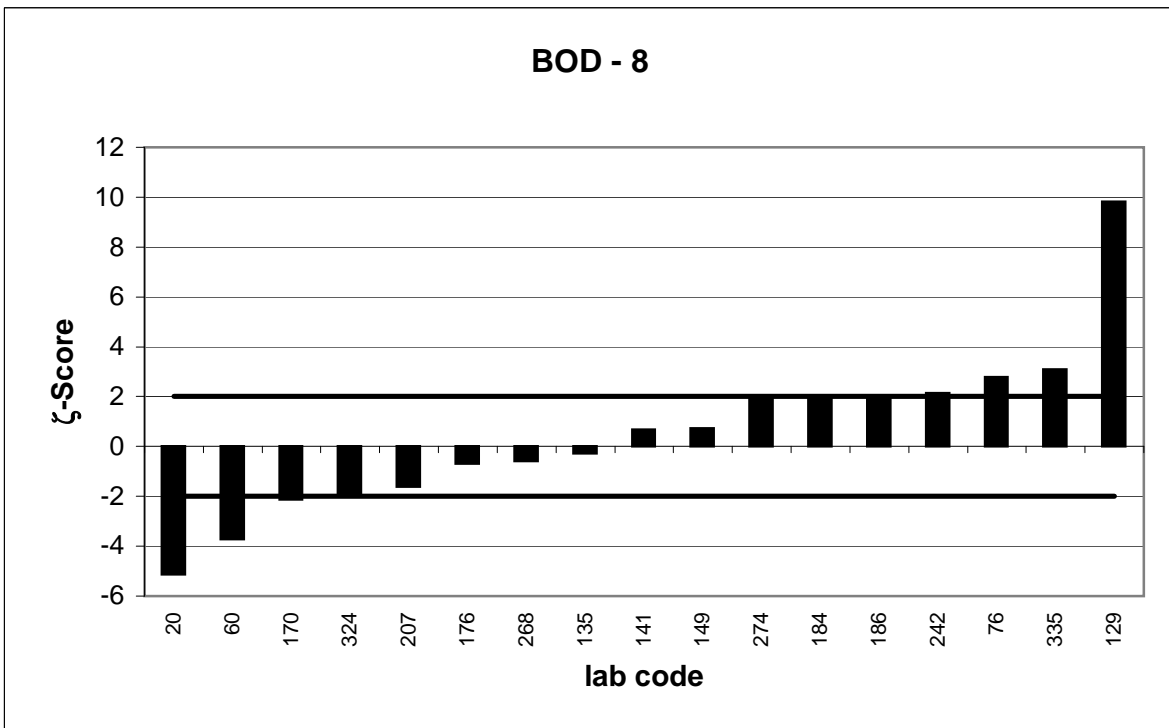
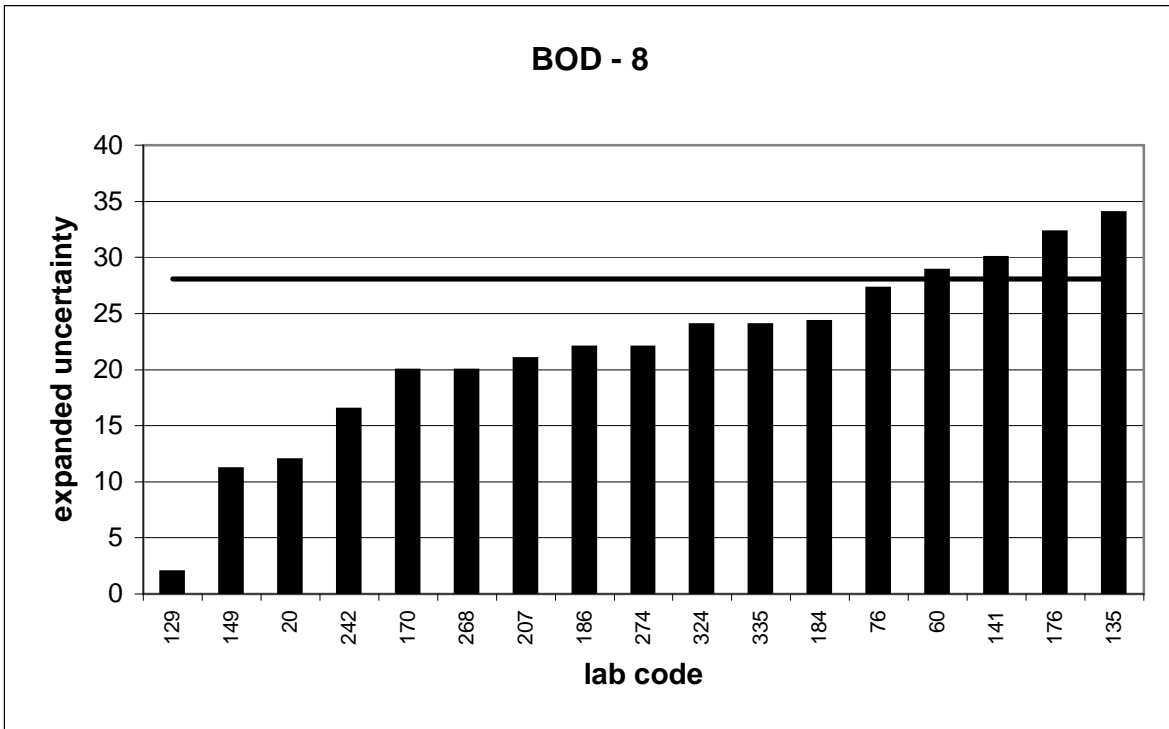




PT 3/11		BOD - 8			
assigned value [mg/l]*		146,9 ± 1,1			
upper tolerance limit [mg/l]		194,8			
lower tolerance limit [mg/l]		105,6			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	149			0,1	+
20	116	12	-5,1	-1,5	+
23	150			0,1	+
53	205			2,4	-
60	93,17	28,89	-3,7	-2,6	-
76	185	27,3	2,8	1,6	+
78	174			1,1	+
87	73,4			-3,6	-
94	140			-0,3	+
121	168			0,9	+
124	133			-0,7	+
129	158	2	9,8	0,5	+
135	142	34	-0,3	-0,2	+
141	157	30	0,7	0,4	+
145	144			-0,1	+
149	151	11,2	0,7	0,2	+
152	172			1,0	+
157	149			0,1	+
170	125,6	20	-2,1	-1,0	+
176	136	32,3	-0,7	-0,5	+
182	152			0,2	+
184	170,9	24,3	2,0	1,0	+
186	169	22	2,0	0,9	+
187	137			-0,5	+
190	142			-0,2	+
207	130	21	-1,6	-0,8	+
209	132			-0,7	+
227	165			0,8	+
242	164,6	16,5	2,1	0,7	+
249	82,6			-3,1	-
251	152			0,2	+
258	168,9			0,9	+
268	141	20	-0,6	-0,3	+
270	155			0,3	+
272	104			-2,1	-
274	168	22	1,9	0,9	+
288	116			-1,5	+
324	123	24	-2,0	-1,2	+
335	184	24	3,1	1,6	+

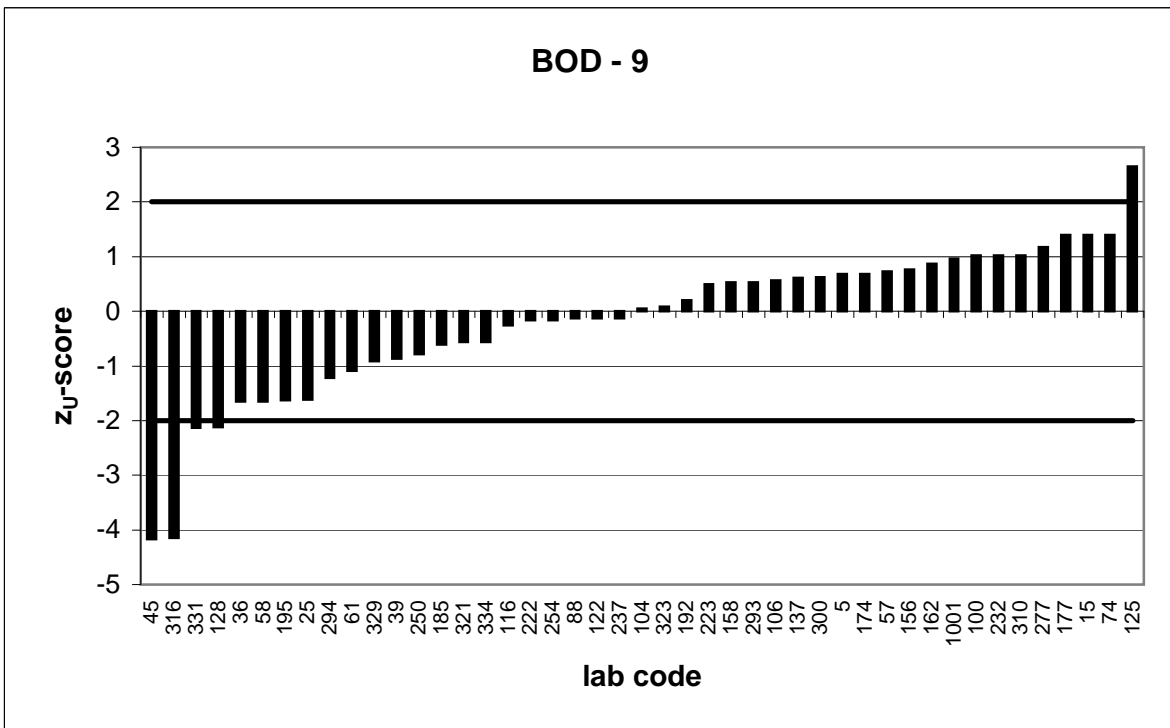
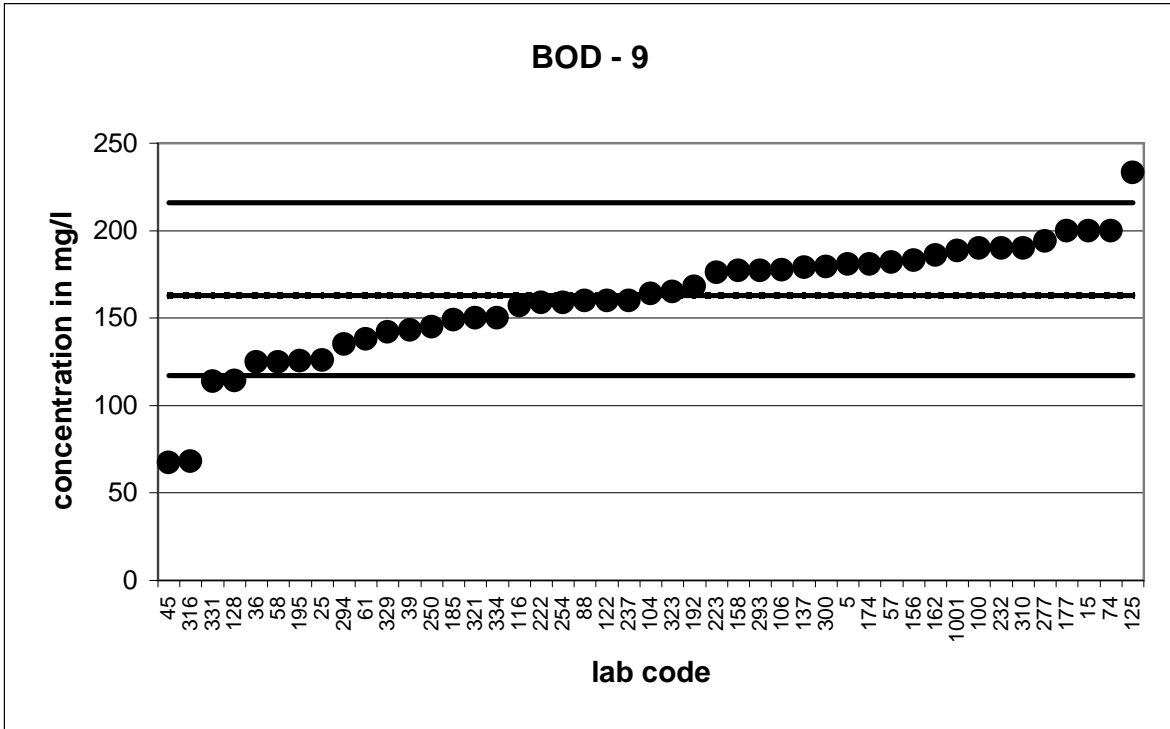
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

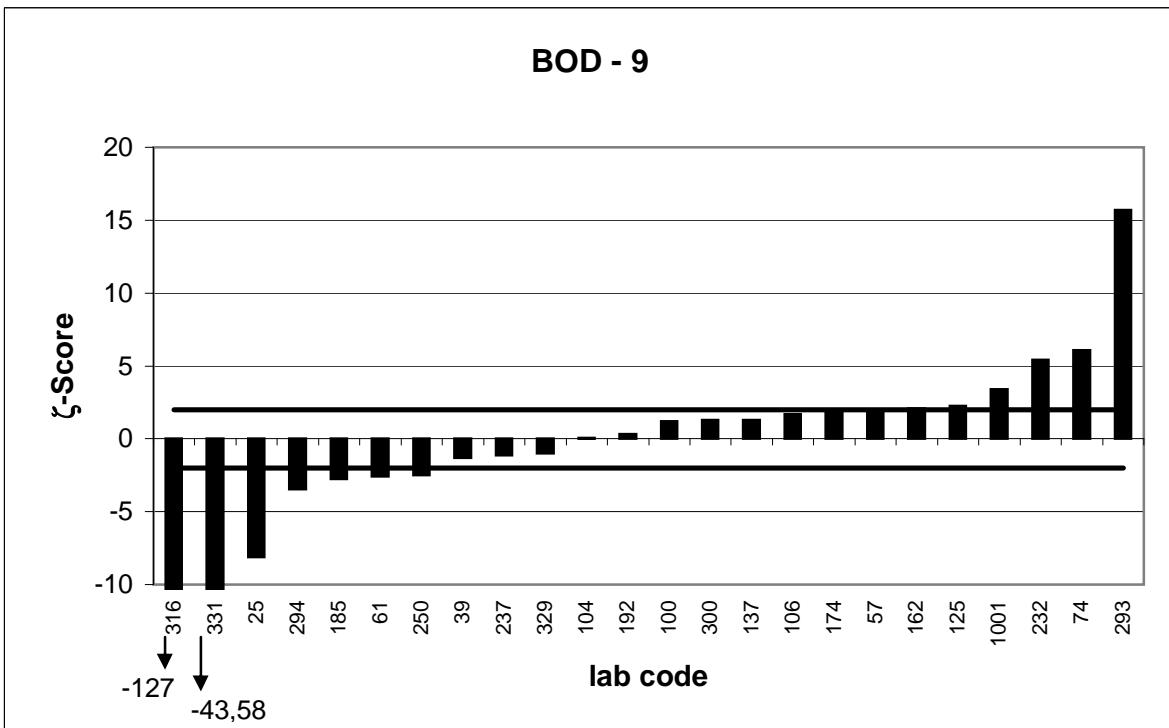
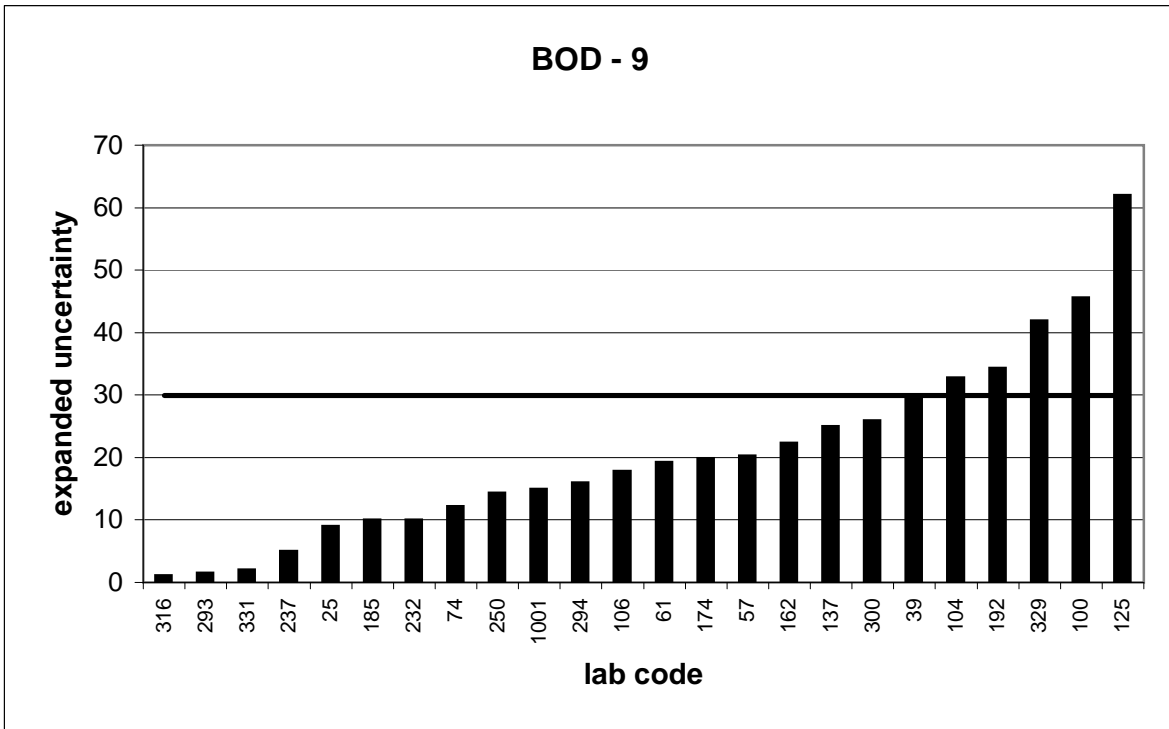




PT 3/11		BOD - 9			
assigned value [mg/l]*		162,8 ± 1			
upper tolerance limit [mg/l]		215,9			
lower tolerance limit [mg/l]		117,1			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	181			0,7	+
15	200			1,4	+
25	126	9	-8,1	-1,6	+
36	125			-1,7	+
39	143	30	-1,3	-0,9	+
45	67,5			-4,2	-
57	182	20,3	1,9	0,7	+
58	125			-1,7	+
61	138	19,3	-2,6	-1,1	+
74	200	12,2	6,1	1,4	+
88	160			-0,1	+
100	190	45,6	1,2	1,0	+
104	164	32,8	0,1	0,0	+
106	177,7	17,8	1,7	0,6	+
116	157			-0,3	+
122	160			-0,1	+
125	233	62	2,3	2,6	-
128	114,3			-2,1	-
137	179	25	1,3	0,6	+
156	183			0,8	+
158	177			0,5	+
162	186	22,3	2,1	0,9	+
174	181	19,9	1,8	0,7	+
177	199,93			1,4	+
185	149	10	-2,7	-0,6	+
192	168	34,3	0,3	0,2	+
195	125,58			-1,6	+
222	159			-0,2	+
223	176			0,5	+
232	190	10	5,4	1,0	+
237	160	5	-1,1	-0,1	+
250	145	14,3	-2,5	-0,8	+
254	159			-0,2	+
277	194			1,2	+
293	177	1,5	15,7	0,5	+
294	135	16	-3,5	-1,2	+
300	179,3	25,9	1,3	0,6	+
310	190			1,0	+
316	68	1,1	-127,0	-4,1	-
321	150			-0,6	+
323	165			0,1	+
329	142	41,9	-1,0	-0,9	+
331	114	2	-43,6	-2,1	-
334	150			-0,6	+
1001	188,5	15	3,4	1,0	+

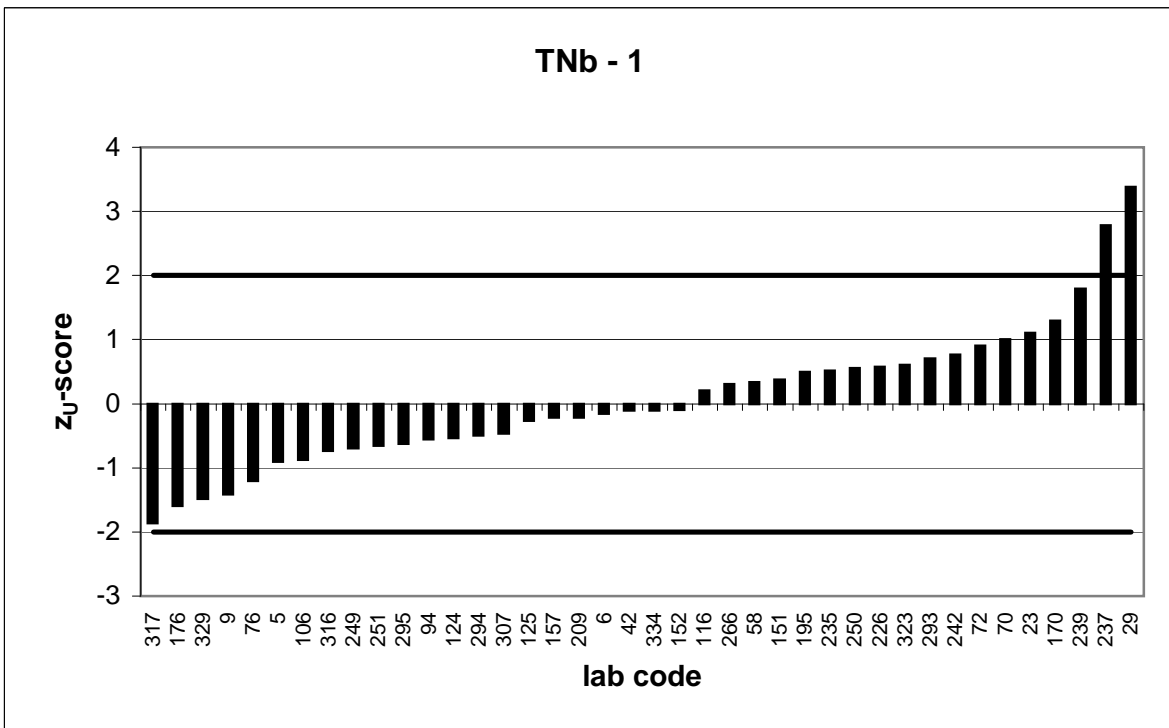
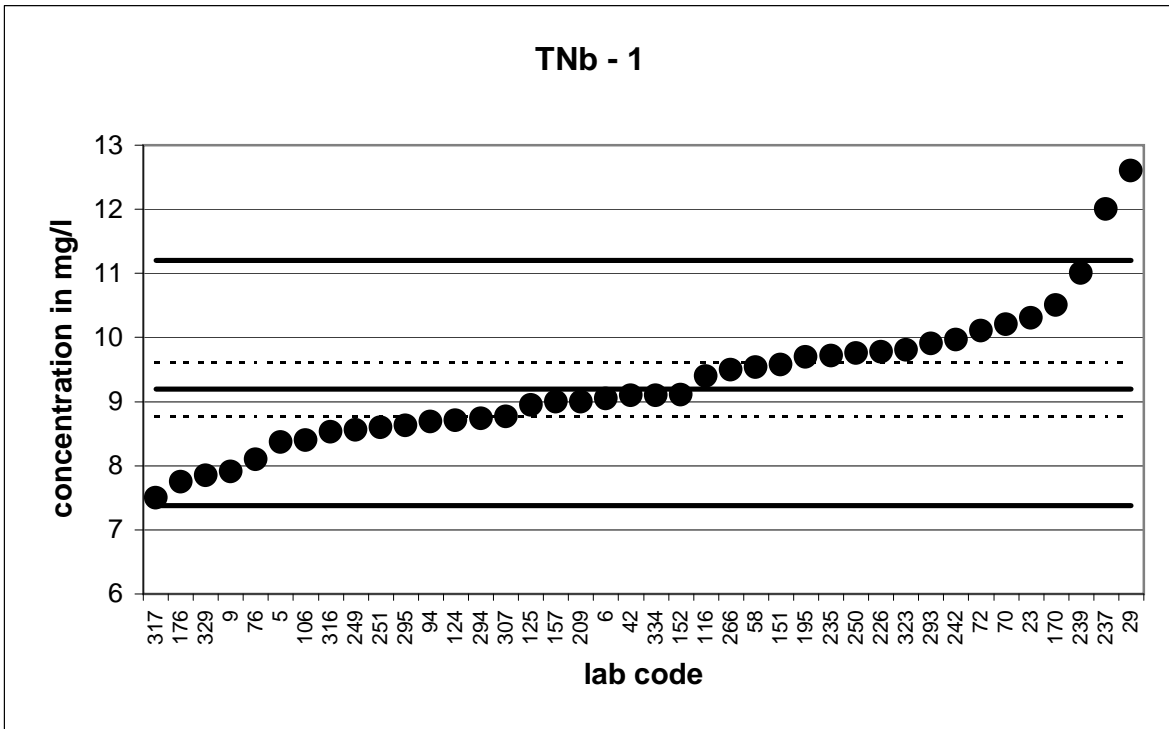
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

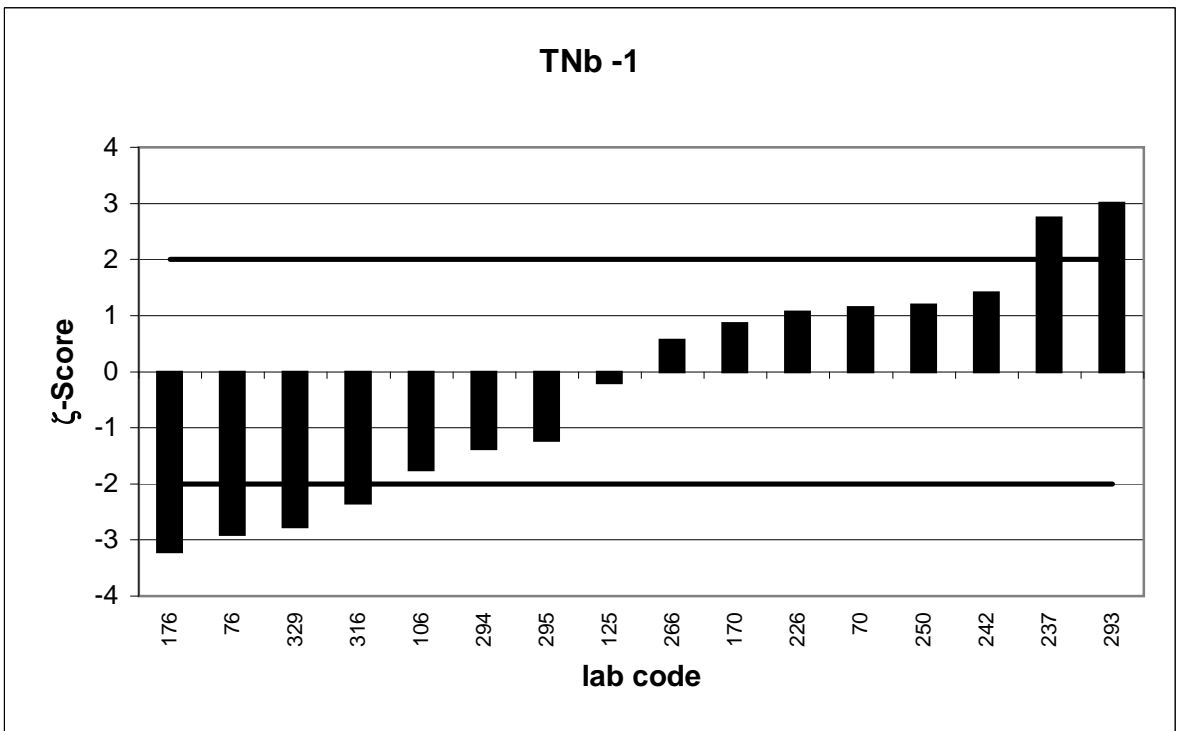
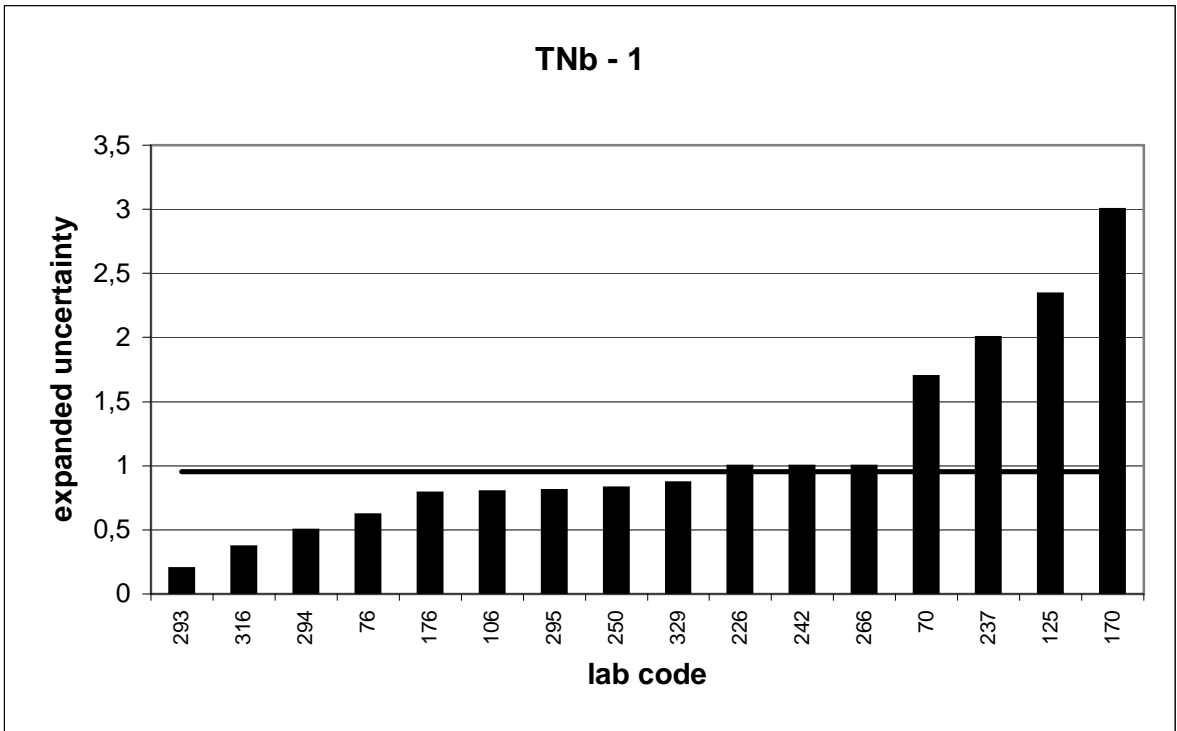




PT 3/11		TNb - 1			
assigned value [mg/l]*		9,192 ± 0,426			
upper tolerance limit [mg/l]		11,21			
lower tolerance limit [mg/l]		7,375			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	8,37			-0,9	+
6	9,05			-0,2	+
9	7,91			-1,4	+
23	10,3			1,1	+
29	12,6			3,4	-
42	9,1			-0,1	+
58	9,53			0,3	+
70	10,2	1,7	1,2	1,0	+
72	10,1			0,9	+
76	8,1	0,62	-2,9	-1,2	+
94	8,69			-0,6	+
106	8,4	0,8	-1,7	-0,9	+
116	9,4			0,2	+
124	8,71			-0,5	+
125	8,95	2,34	-0,2	-0,3	+
151	9,57			0,4	+
152	9,11			-0,1	+
157	9			-0,2	+
170	10,5	3	0,9	1,3	+
176	7,75	0,79	-3,2	-1,6	+
195	9,69			0,5	+
209	9			-0,2	+
226	9,77	1	1,1	0,6	+
235	9,71			0,5	+
237	12	2	2,7	2,8	-
239	11			1,8	+
242	9,96	1	1,4	0,8	+
249	8,56			-0,7	+
250	9,75	0,83	1,2	0,6	+
251	8,6			-0,7	+
266	9,5	1	0,6	0,3	+
293	9,9	0,2	3,0	0,7	+
294	8,74	0,5	-1,4	-0,5	+
295	8,63	0,809	-1,2	-0,6	+
307	8,77			-0,5	+
316	8,53	0,37	-2,3	-0,7	+
317	7,5			-1,9	+
323	9,8			0,6	+
329	7,85	0,871	-2,8	-1,5	+
334	9,1			-0,1	+

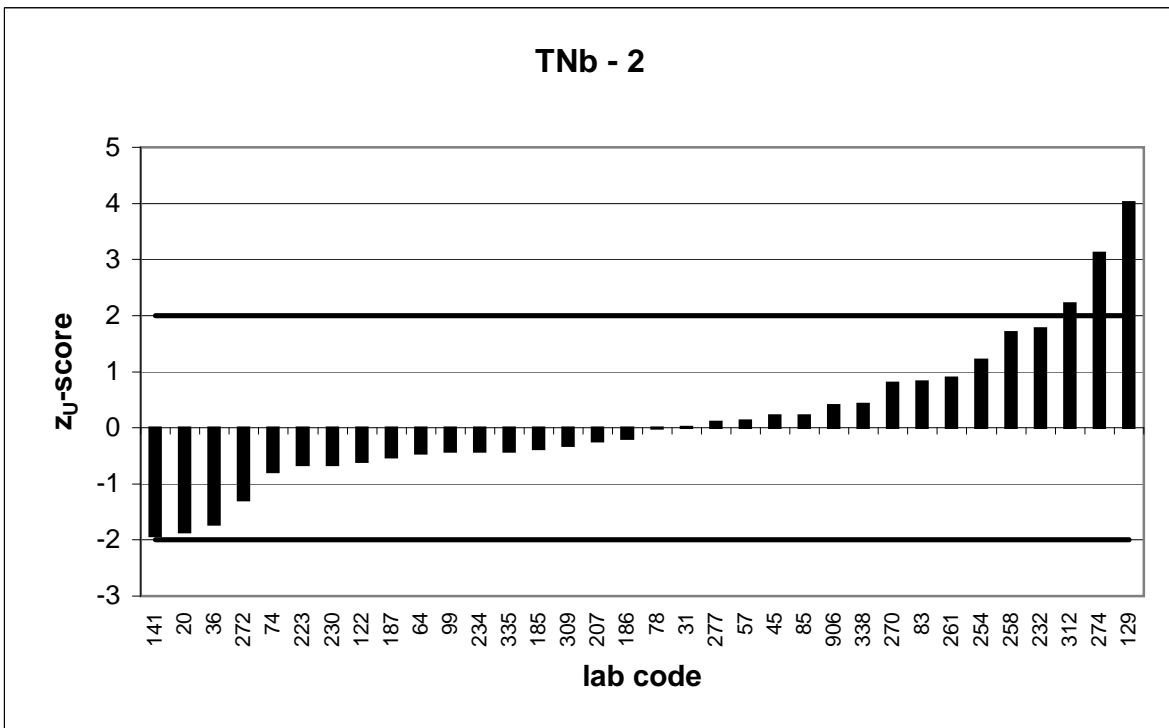
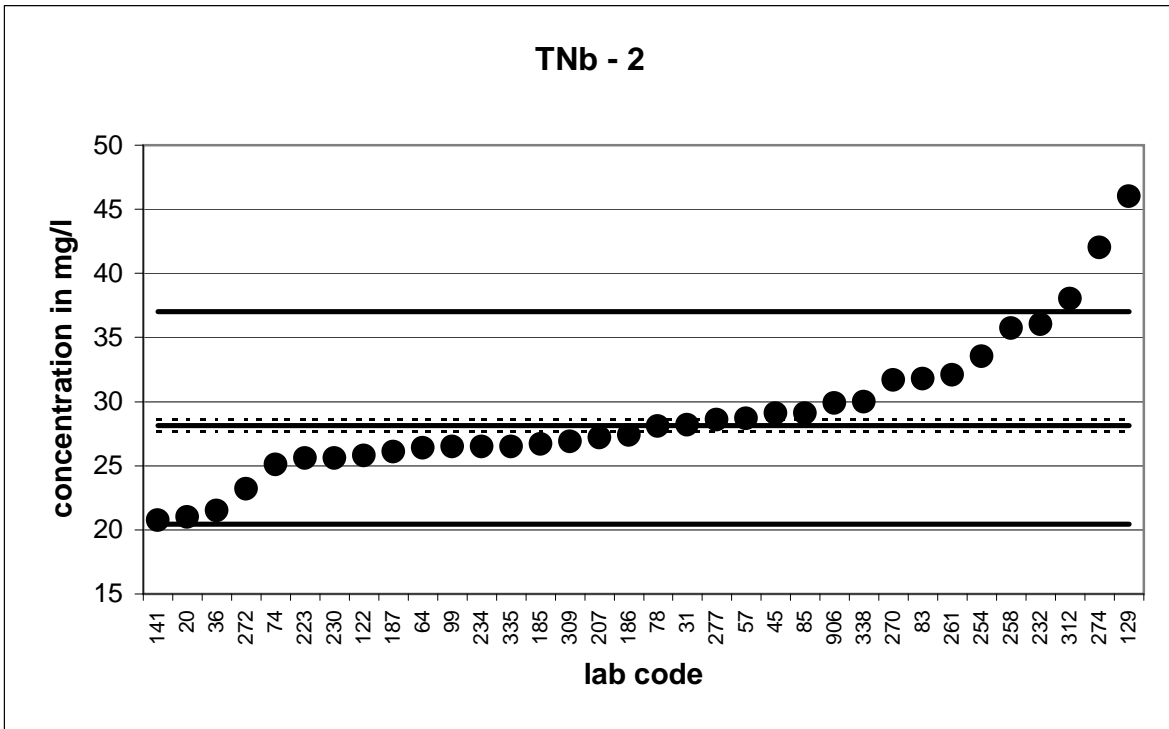
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor $k=2$ corresponding to a confidence level of about 95%

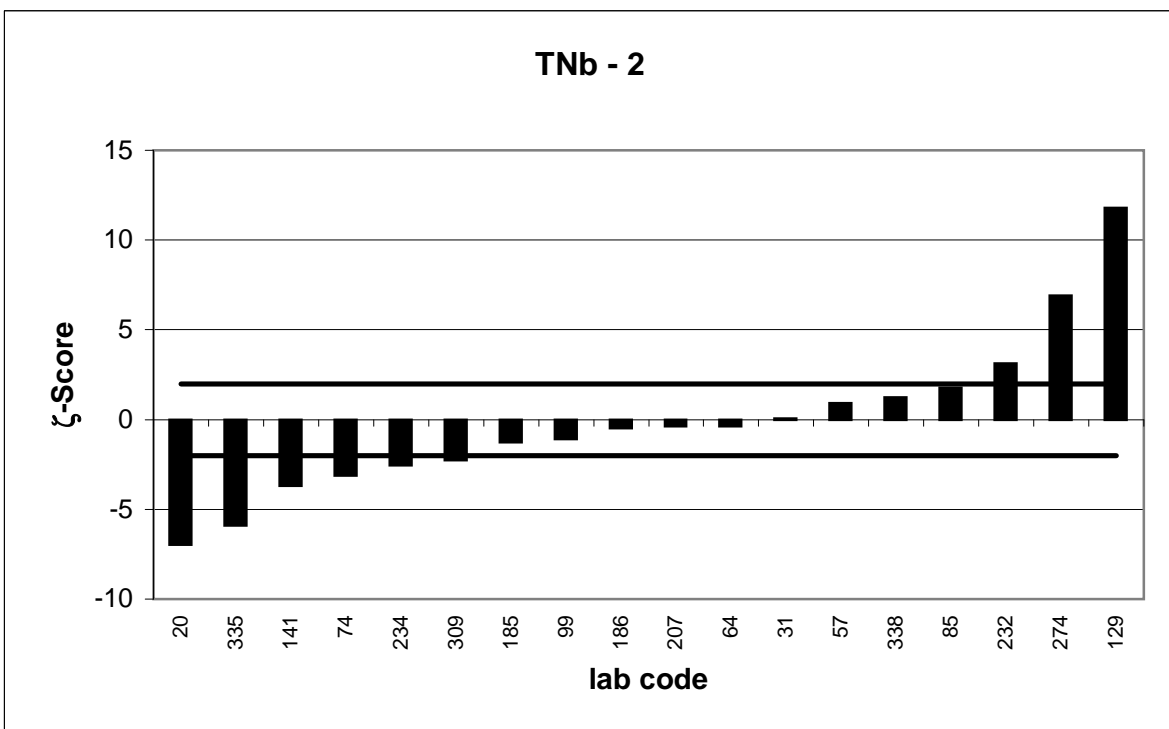
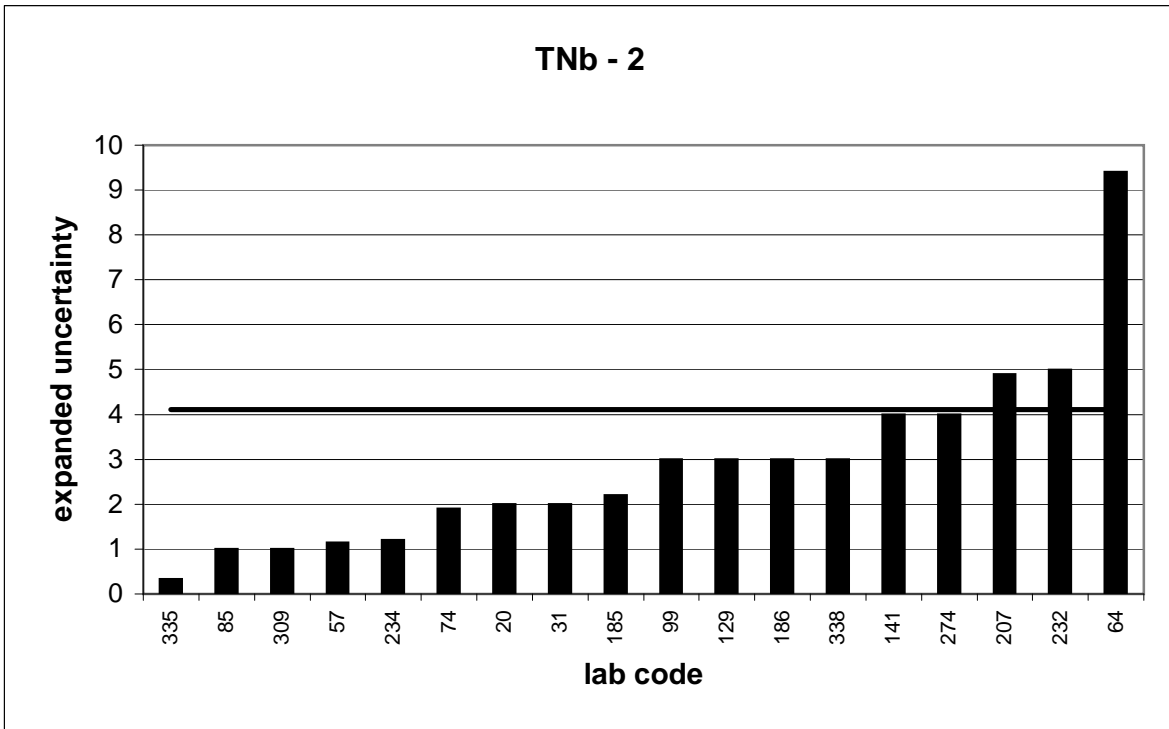




PT 3/11		TNb - 2			
assigned value [mg/l]*		28,13 ± 0,45			
upper tolerance limit [mg/l]		37,03			
lower tolerance limit [mg/l]		20,44			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
20	21	2	-7,0	-1,9	+
31	28,2	2	0,1	0,0	+
36	21,5			-1,7	+
45	29,1			0,2	+
57	28,7	1,14	0,9	0,1	+
64	26,4	9,4	-0,4	-0,5	+
74	25,1	1,9	-3,1	-0,8	+
78	28,1			0,0	+
83	31,8			0,8	+
85	29,1	1	1,8	0,2	+
99	26,5	3	-1,1	-0,4	+
122	25,8			-0,6	+
129	46	3	11,8	4,0	-
141	20,72	4	-3,7	-1,9	+
185	26,7	2,2	-1,3	-0,4	+
186	27,4	3	-0,5	-0,2	+
187	26,1			-0,5	+
207	27,2	4,9	-0,4	-0,2	+
223	25,6			-0,7	+
230	25,6			-0,7	+
232	36	5	3,1	1,8	+
234	26,5	1,2	-2,6	-0,4	+
254	33,5			1,2	+
258	35,7			1,7	+
261	32,1			0,9	+
270	31,7			0,8	+
272	23,2			-1,3	+
274	42	4	6,9	3,1	-
277	28,6			0,1	+
309	26,9	1	-2,3	-0,3	+
312	38			2,2	-
335	26,5	0,33	-5,9	-0,4	+
338	30	3	1,2	0,4	+
906	29,9			0,4	+

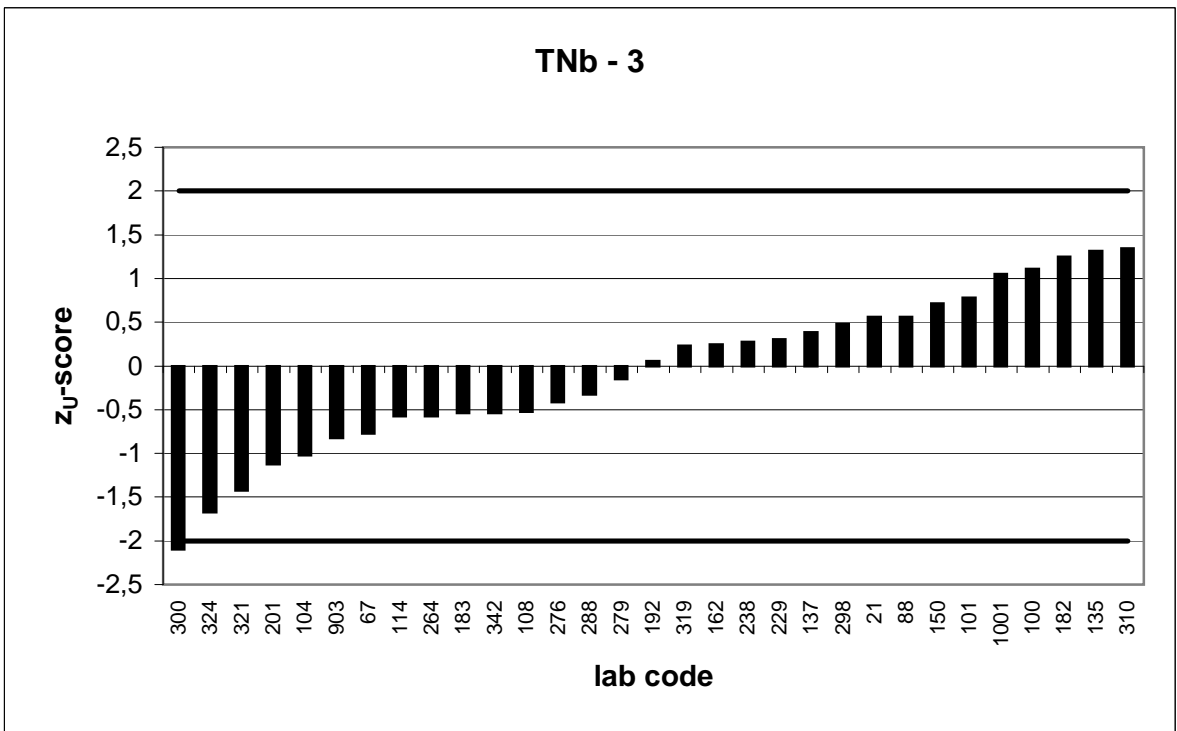
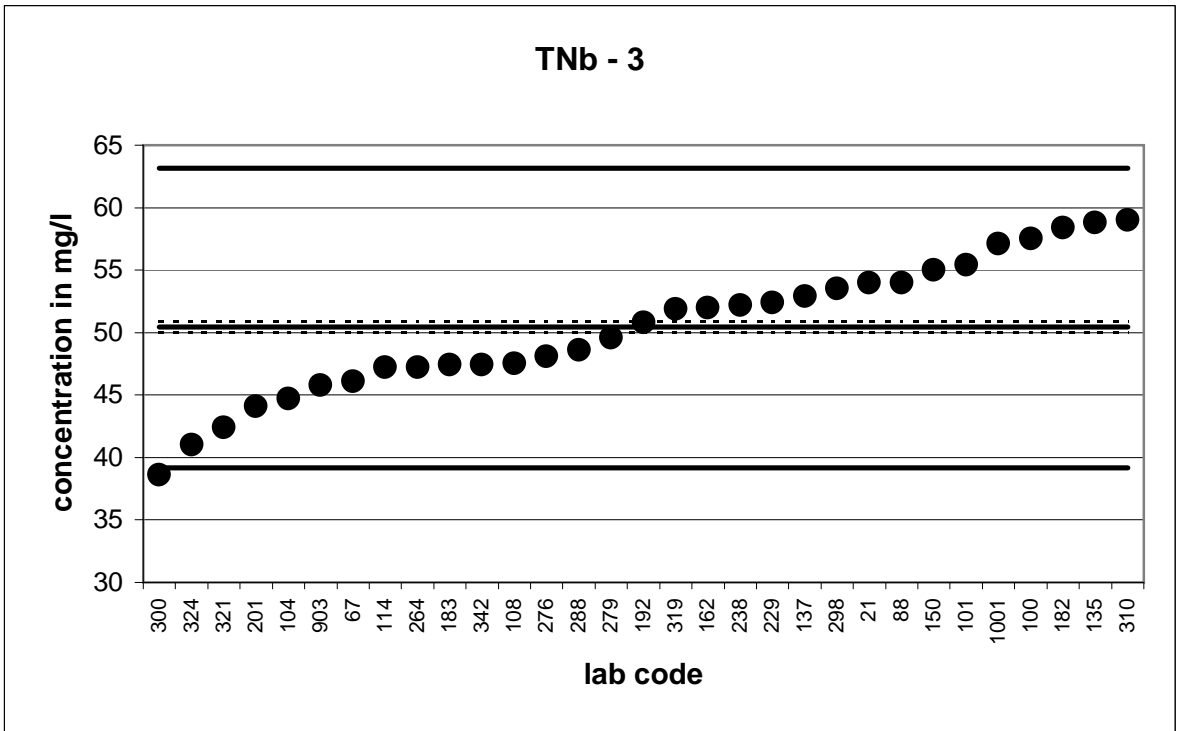
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

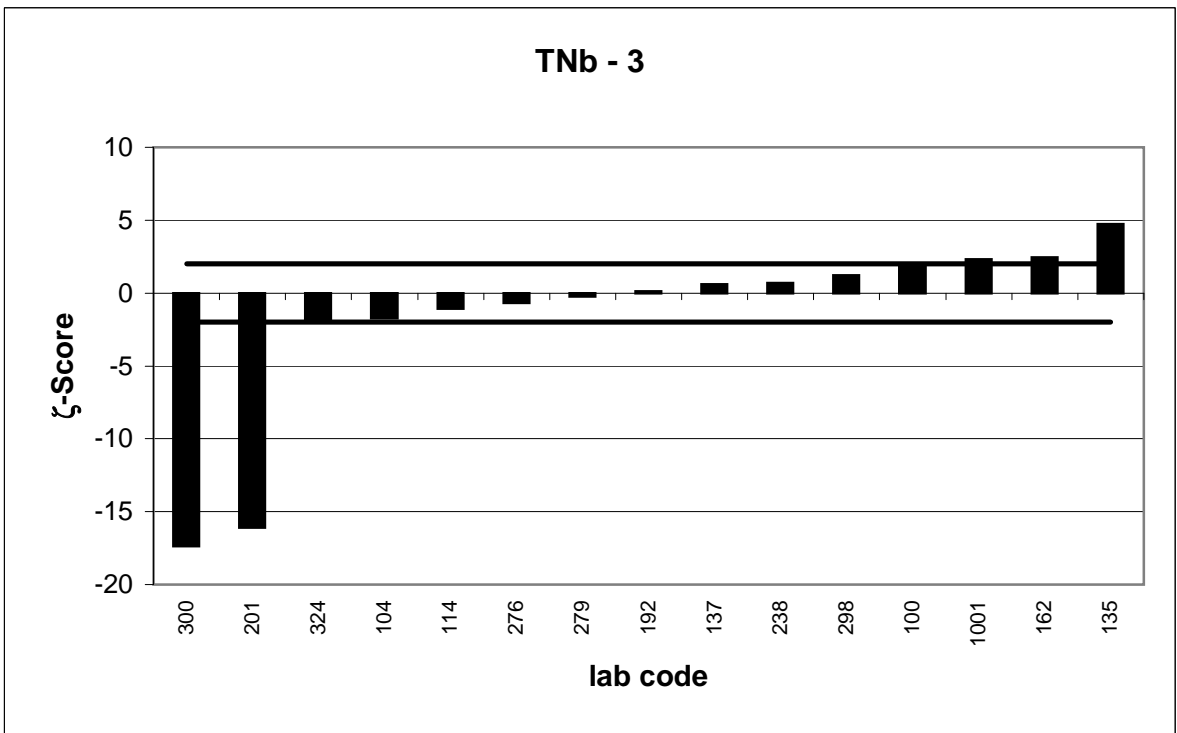
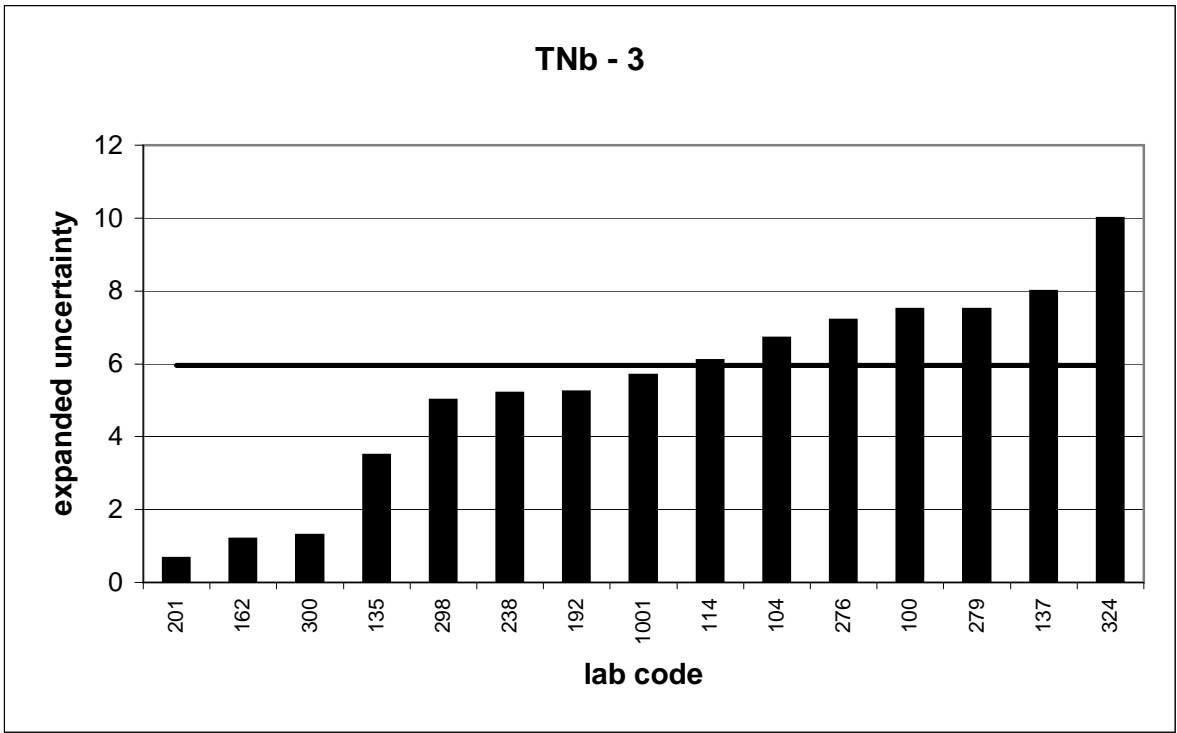




PT 3/11		TNb - 3			
assigned value [mg/l]*		50,45 ± 0,42			
upper tolerance limit [mg/l]		63,15			
lower tolerance limit [mg/l]		39,16			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
21	54			0,6	+
67	46,1			-0,8	+
88	54			0,6	+
100	57,5	7,5	1,9	1,1	+
101	55,4			0,8	+
104	44,7	6,71	-1,7	-1,0	+
108	47,5			-0,5	+
114	47,2	6,1	-1,1	-0,6	+
135	58,8	3,5	4,7	1,3	+
137	52,9	8	0,6	0,4	+
150	55			0,7	+
162	52	1,2	2,4	0,2	+
182	58,4			1,3	+
183	47,4			-0,5	+
192	50,8	5,23	0,1	0,1	+
201	44,1	0,67	-16,1	-1,1	+
229	52,4			0,3	+
238	52,2	5,2	0,7	0,3	+
264	47,2			-0,6	+
276	48,1	7,2	-0,7	-0,4	+
279	49,6	7,5	-0,2	-0,2	+
288	48,6			-0,3	+
298	53,5	5	1,2	0,5	+
300	38,6	1,3	-17,4	-2,1	-
310	59			1,3	+
319	51,9			0,2	+
321	42,4			-1,4	+
324	41	10	-1,9	-1,7	+
342	47,4			-0,5	+
903	45,8			-0,8	+
1001	57,1	5,7	2,3	1,0	+

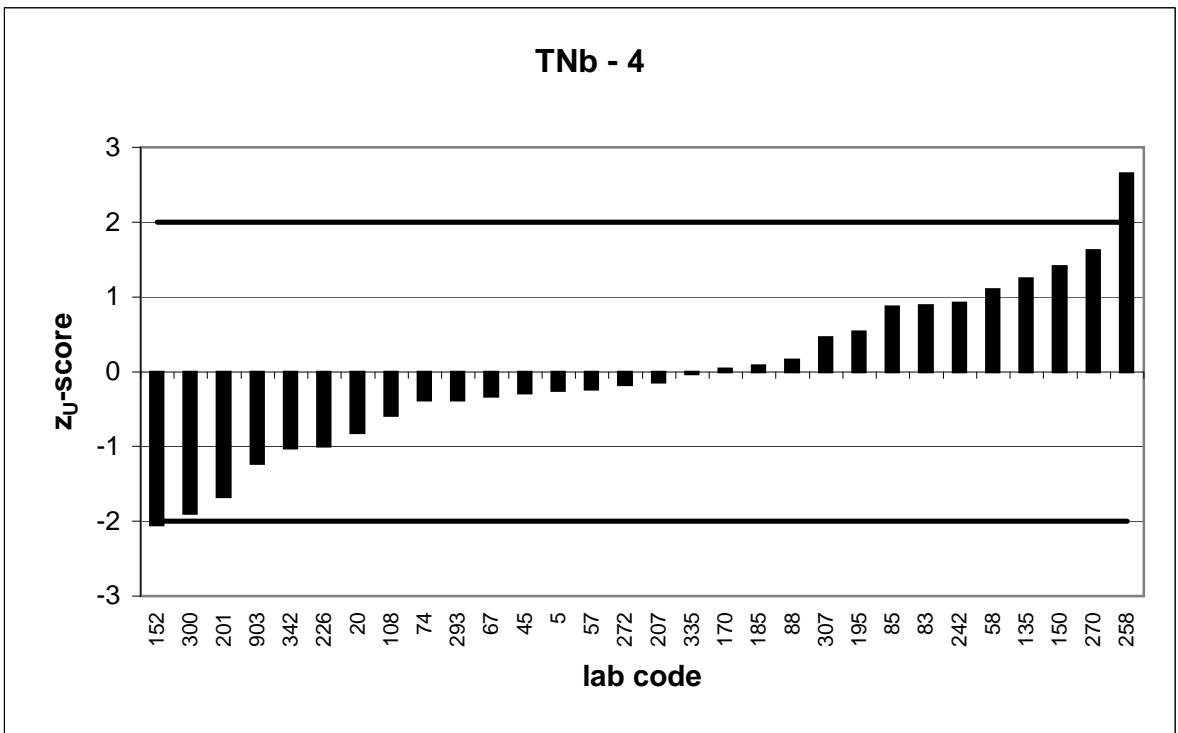
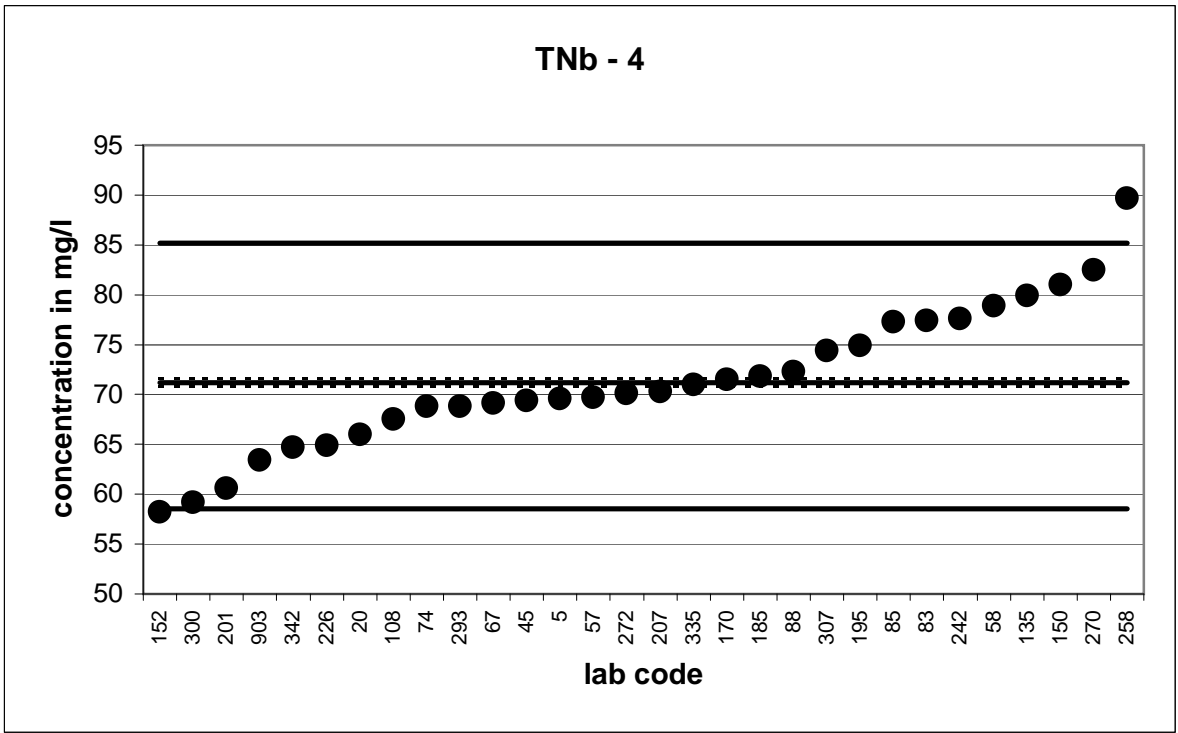
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

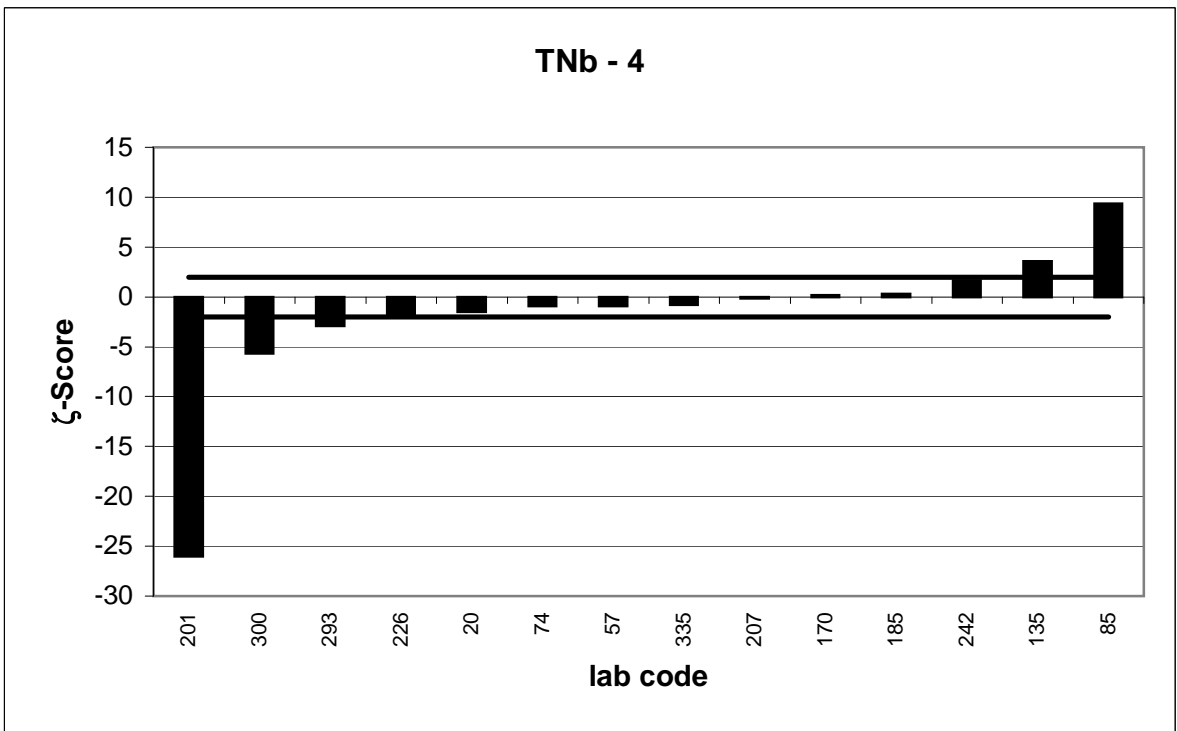
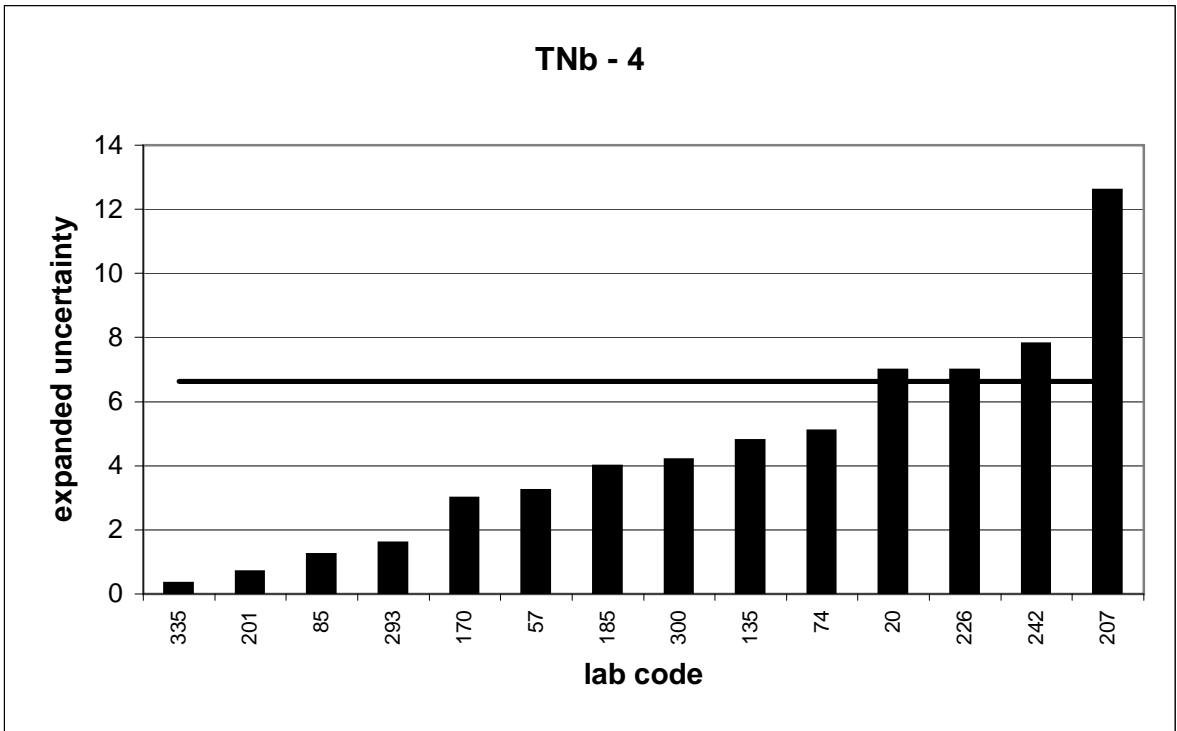




PT 3/11		TNb - 4			
assigned value [mg/l]*		71,22 ± 0,43			
upper tolerance limit [mg/l]		85,16			
lower tolerance limit [mg/l]		58,51			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	69,6			-0,3	+
20	66	7	-1,5	-0,8	+
45	69,4			-0,3	+
57	69,7	3,23	-0,9	-0,2	+
58	78,9			1,1	+
67	69,1			-0,3	+
74	68,8	5,1	-0,9	-0,4	+
83	77,41			0,9	+
85	77,3	1,23	9,3	0,9	+
88	72,3			0,2	+
108	67,5			-0,6	+
135	79,9	4,8	3,6	1,2	+
150	81			1,4	+
152	58,2			-2,0	+
170	71,5	3	0,2	0,0	+
185	71,8	4	0,3	0,1	+
195	74,93			0,5	+
201	60,6	0,69	-26,0	-1,7	+
207	70,3	12,6	-0,1	-0,1	+
226	64,9	7	-1,8	-1,0	+
242	77,6	7,8	1,6	0,9	+
258	89,69			2,7	-
270	82,5			1,6	+
272	70,1			-0,2	+
293	68,8	1,6	-2,9	-0,4	+
300	59,2	4,2	-5,7	-1,9	+
307	74,4			0,5	+
335	71	0,33	-0,8	0,0	+
342	64,7			-1,0	+
903	63,4			-1,2	+

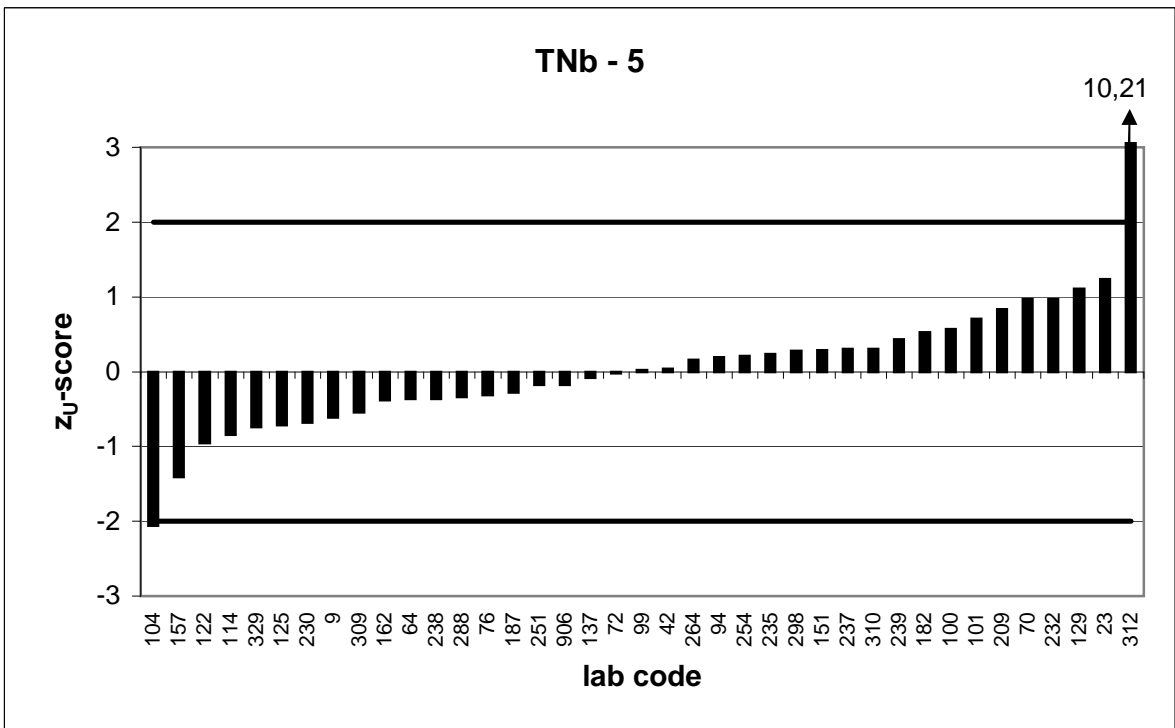
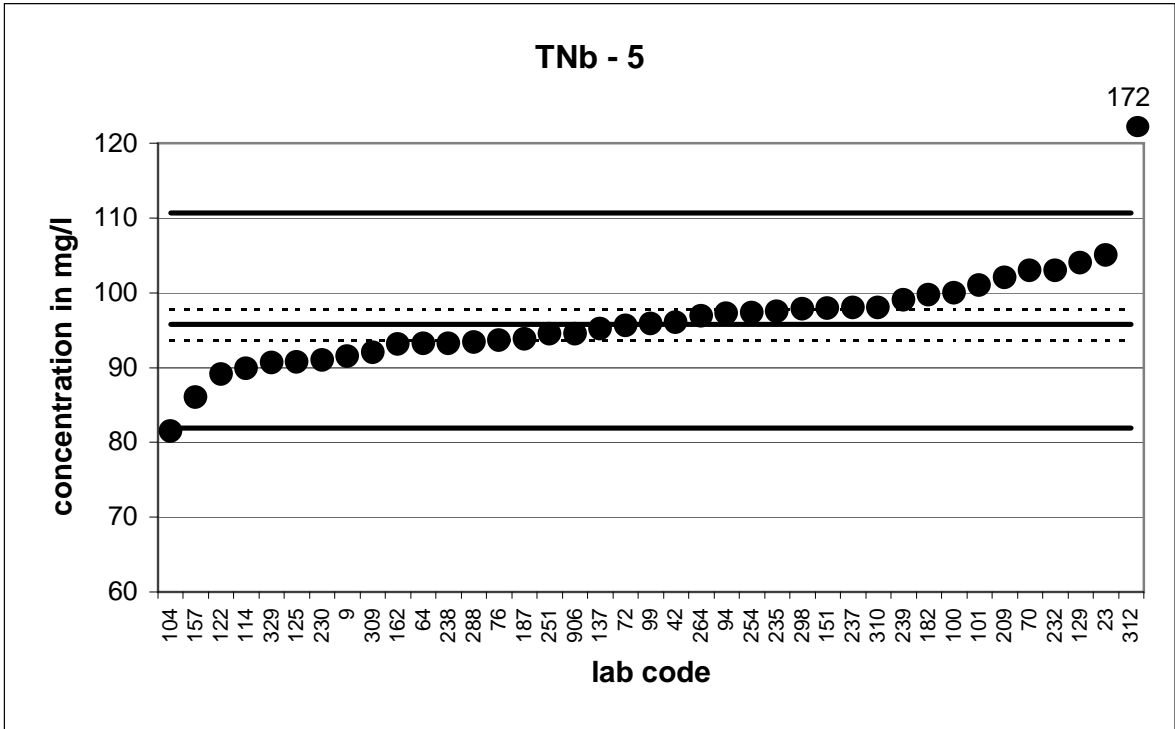
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

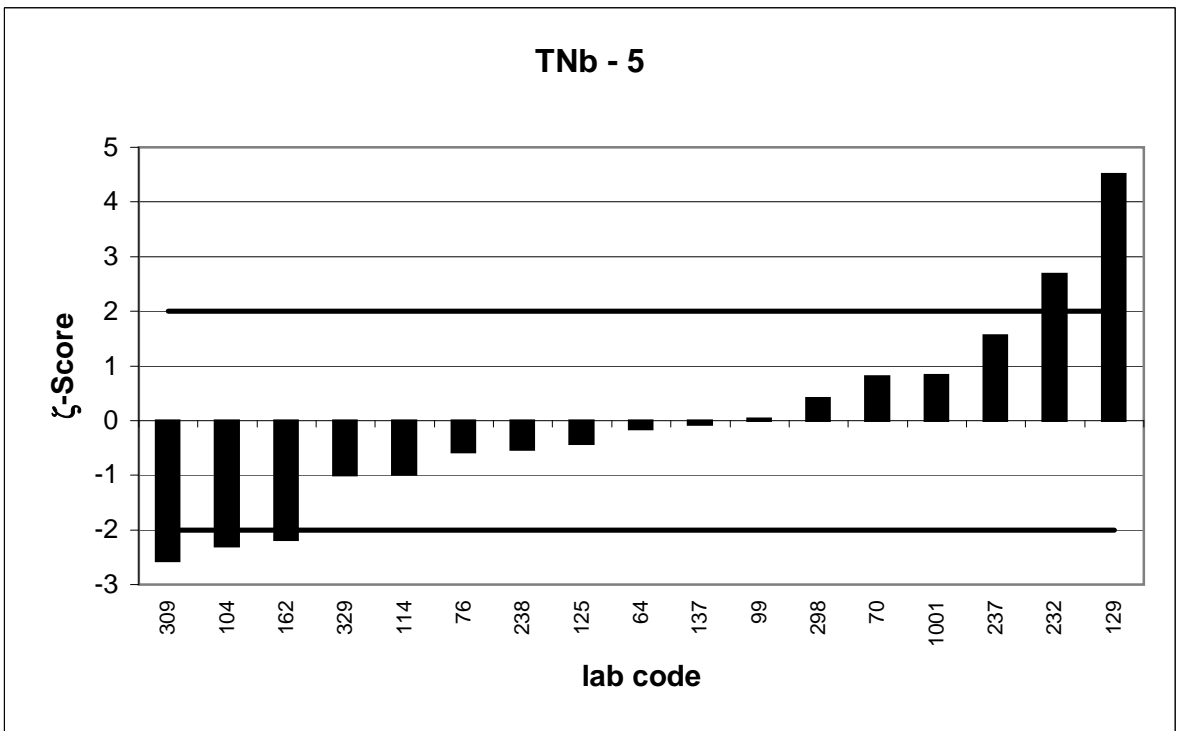
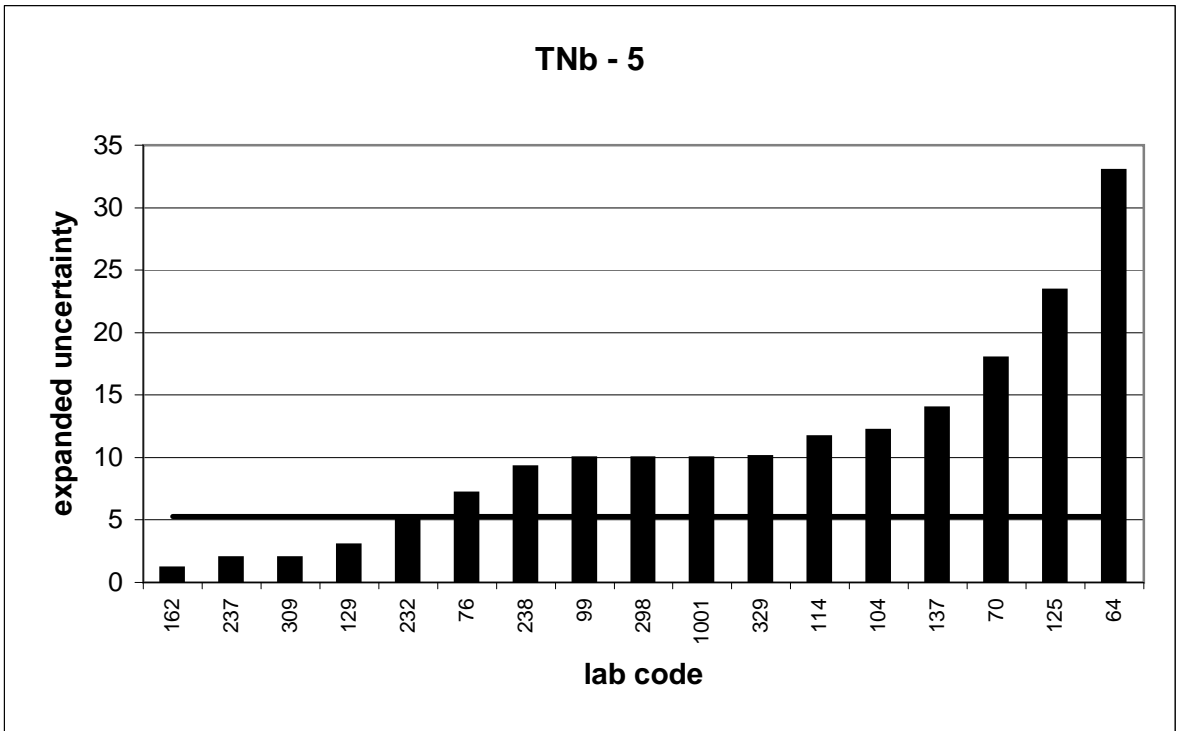




PT 3/11		TNb - 5			
assigned value [mg/l]*		95,74 ± 2,11			
upper tolerance limit [mg/l]		110,7			
lower tolerance limit [mg/l]		81,88			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	91,5			-0,6	+
23	105			1,2	+
42	96			0,0	+
64	93,2	33	-0,2	-0,4	+
70	103	18	0,8	1,0	+
72	95,6			0,0	+
76	93,6	7,18	-0,6	-0,3	+
94	97,2			0,2	+
99	95,9	10	0,0	0,0	+
101	101			0,7	+
104	81,5	12,2	-2,3	-2,1	-
114	89,9	11,7	-1,0	-0,8	+
122	89,1			-1,0	+
125	90,77	23,4	-0,4	-0,7	+
129	104	3	4,5	1,1	+
137	95,2	14	-0,1	-0,1	+
151	97,9			0,3	+
157	86			-1,4	+
162	93,1	1,2	-2,2	-0,4	+
182	99,7			0,5	+
187	93,8			-0,3	+
209	102			0,8	+
230	91			-0,7	+
232	103	5	2,7	1,0	+
235	97,5			0,2	+
237	98	2	1,6	0,3	+
238	93,2	9,3	-0,5	-0,4	+
239	99			0,4	+
251	94,5			-0,2	+
254	97,3			0,2	+
264	96,9			0,2	+
288	93,4			-0,3	+
298	97,8	10	0,4	0,3	+
309	92	2	-2,6	-0,5	+
310	98			0,3	+
312	172			10,2	-
329	90,6	10,1	-1,0	-0,7	+
906	94,5			-0,2	+
1001	99,99	10	0,8	0,6	+

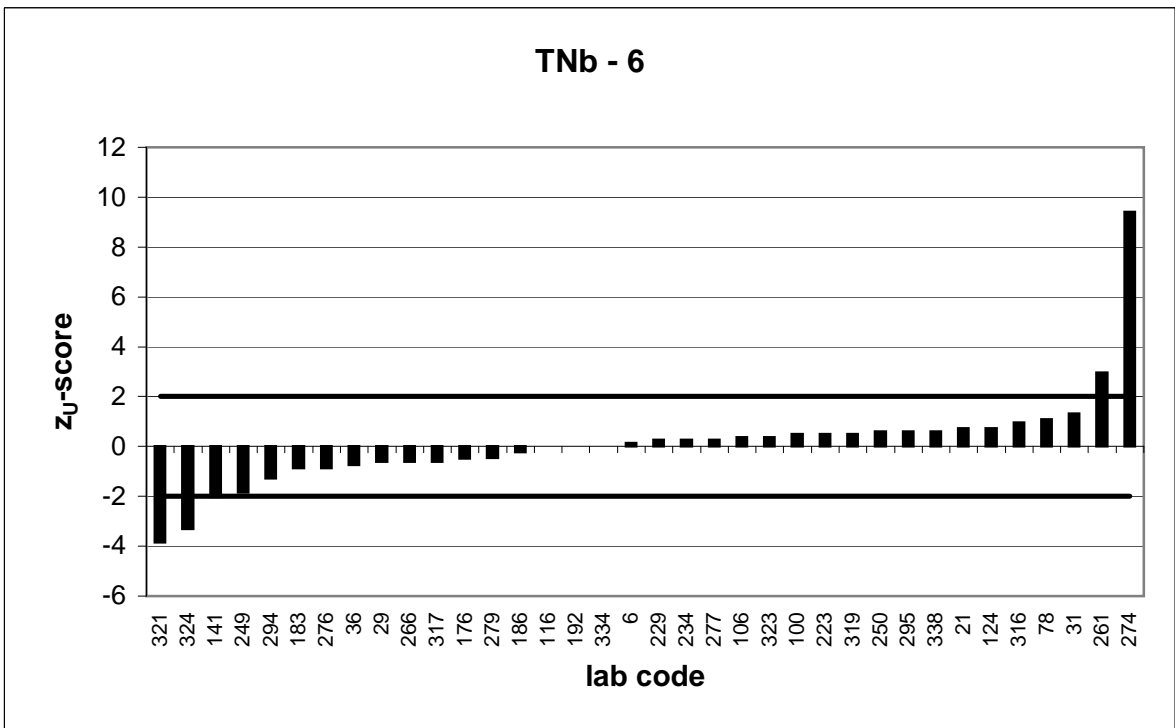
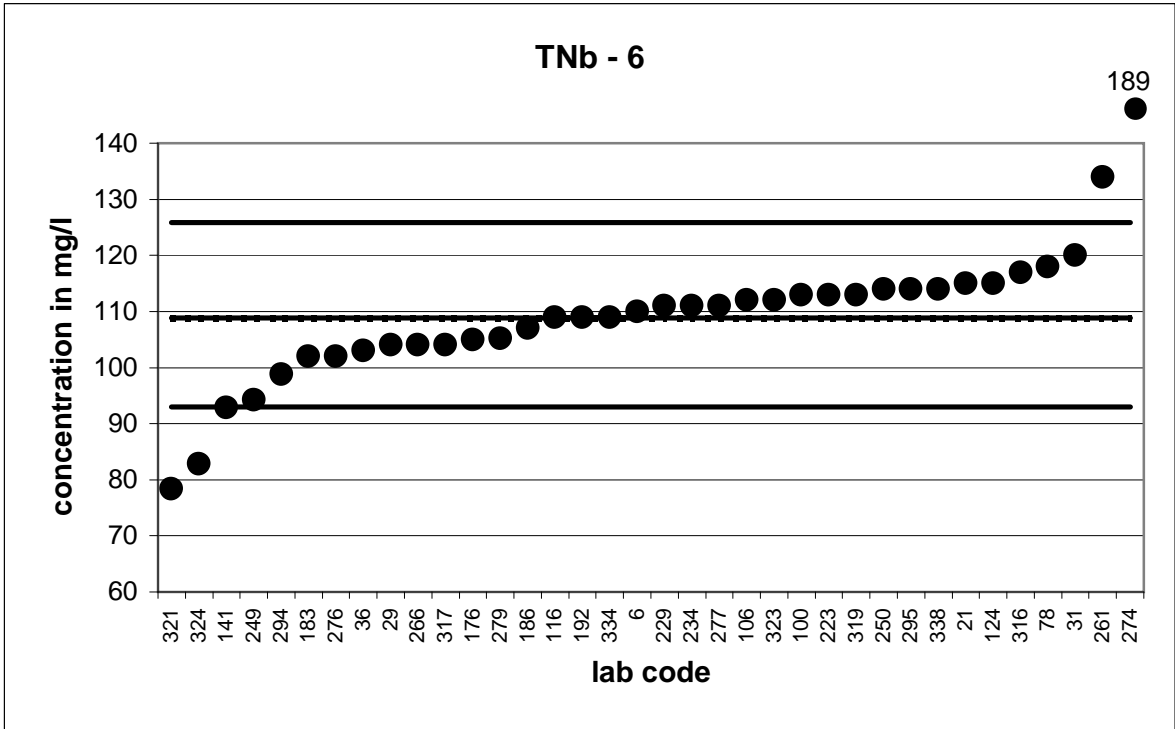
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

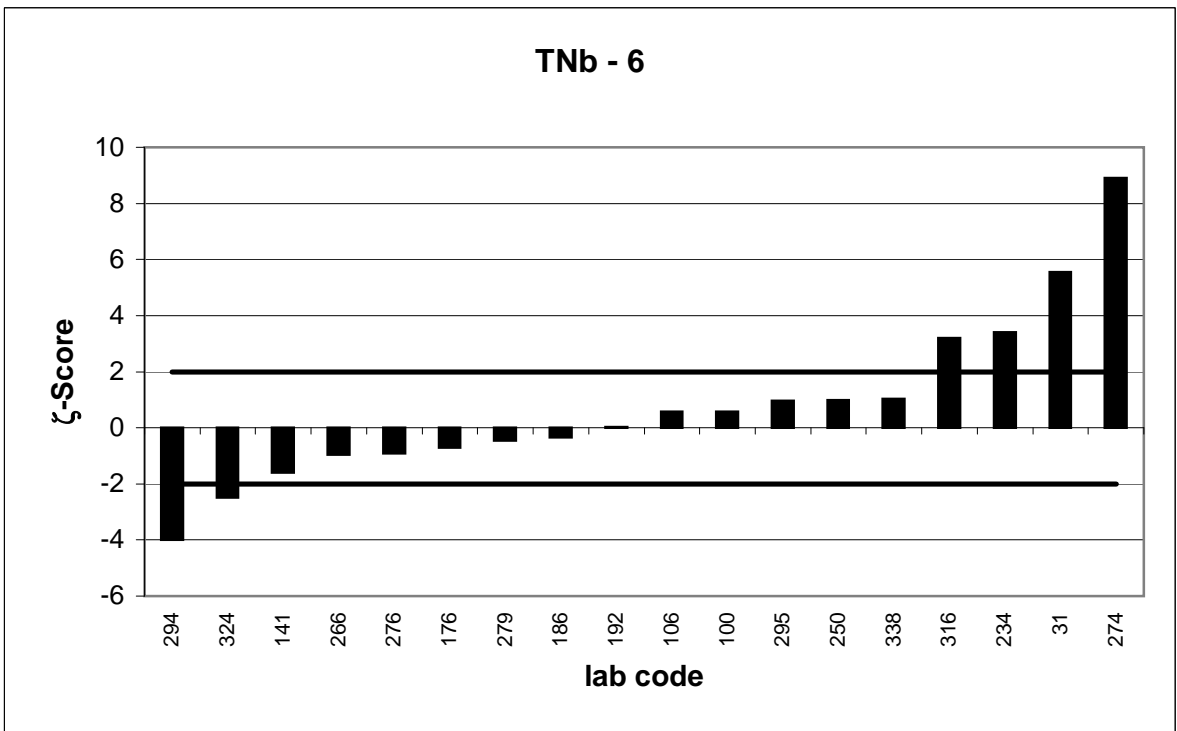
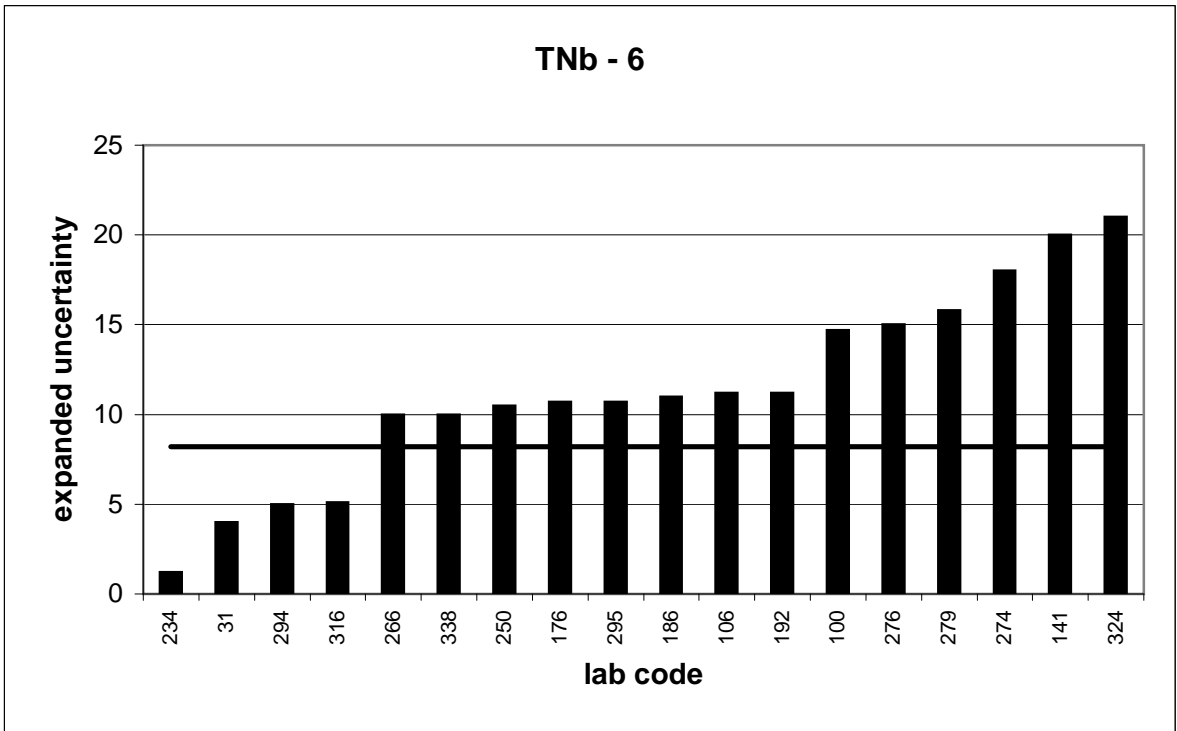




PT 3/11		TNb - 6			
assigned value [mg/l]*		108,8 ± 0,4			
upper tolerance limit [mg/l]		125,9			
lower tolerance limit [mg/l]		93,02			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	110			0,1	+
21	115			0,7	+
29	104			-0,6	+
31	120	4	5,6	1,3	+
36	103			-0,7	+
78	118			1,1	+
100	113	14,7	0,6	0,5	+
106	112	11,2	0,6	0,4	+
116	109			0,0	+
124	115			0,7	+
141	92,88	20	-1,6	-2,0	+
176	105	10,7	-0,7	-0,5	+
183	102			-0,9	+
186	107	11	-0,3	-0,2	+
192	109	11,2	0,0	0,0	+
223	113			0,5	+
229	111			0,3	+
234	111	1,2	3,4	0,3	+
249	94,2			-1,9	+
250	114	10,5	1,0	0,6	+
261	134			3,0	-
266	104	10	-1,0	-0,6	+
274	189	18	8,9	9,4	-
276	102	15	-0,9	-0,9	+
277	111			0,3	+
279	105,2	15,8	-0,5	-0,5	+
294	98,8	5	-4,0	-1,3	+
295	114	10,7	1,0	0,6	+
316	117	5,1	3,2	1,0	+
317	104			-0,6	+
319	113			0,5	+
321	78,4			-3,8	-
323	112			0,4	+
324	82,8	21	-2,5	-3,3	-
334	109			0,0	+
338	114	10	1,0	0,6	+

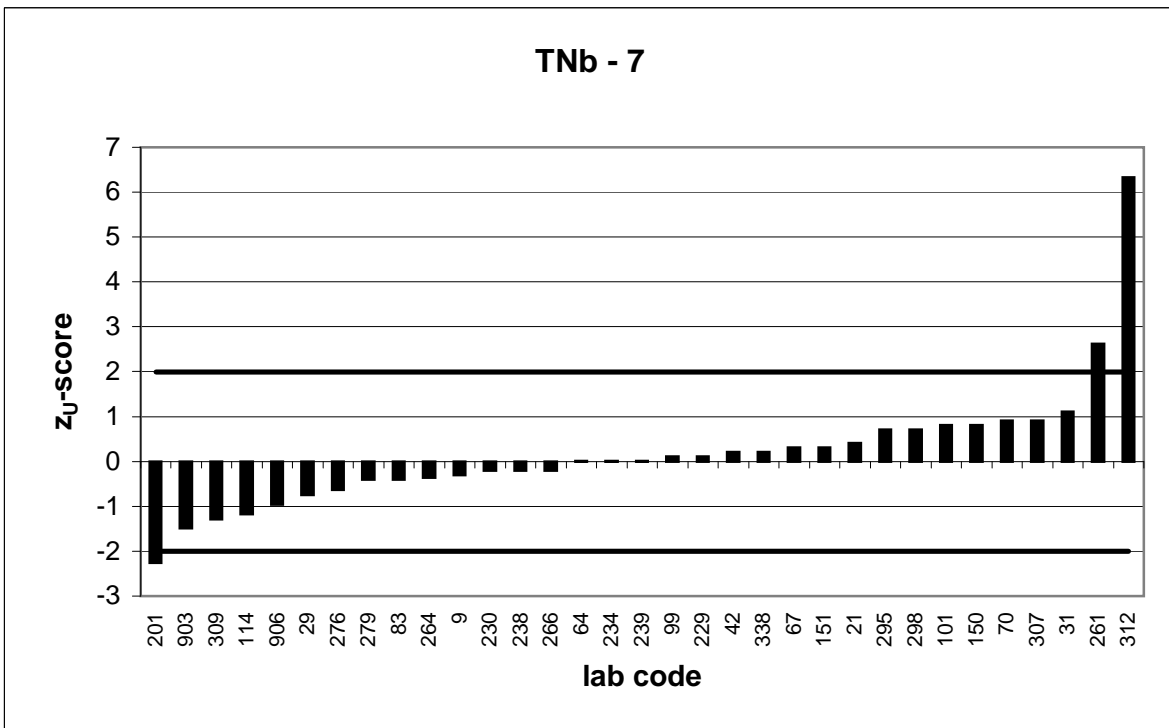
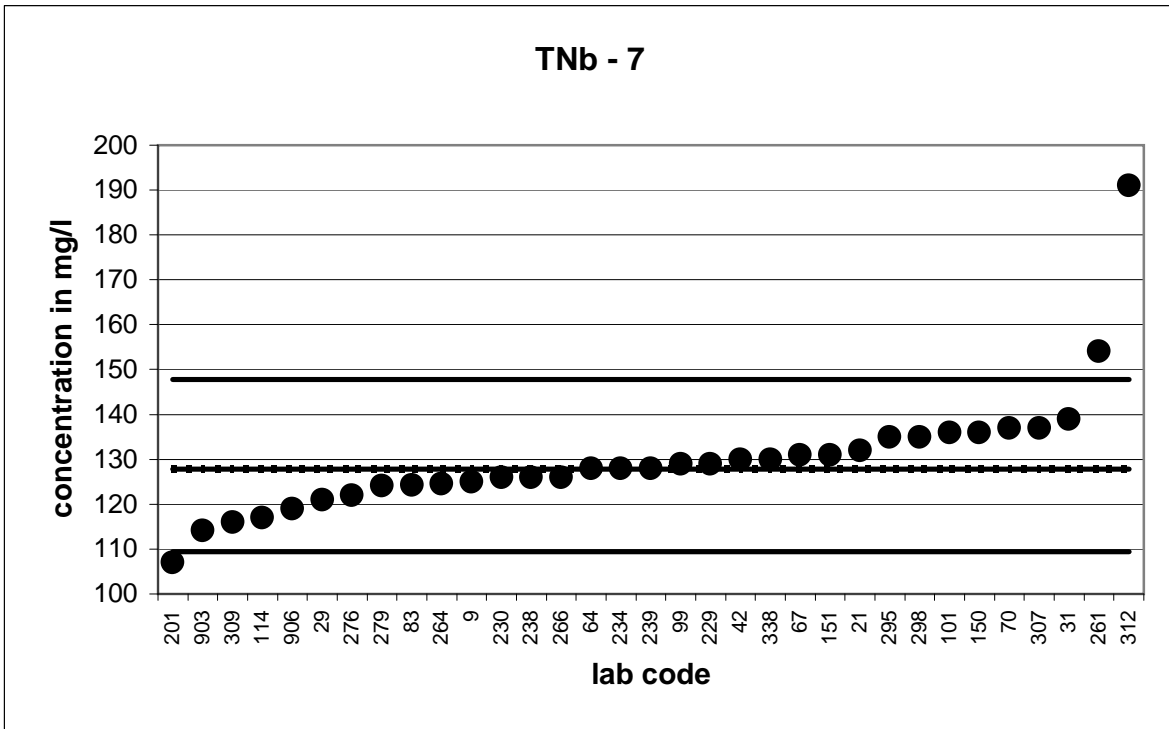
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

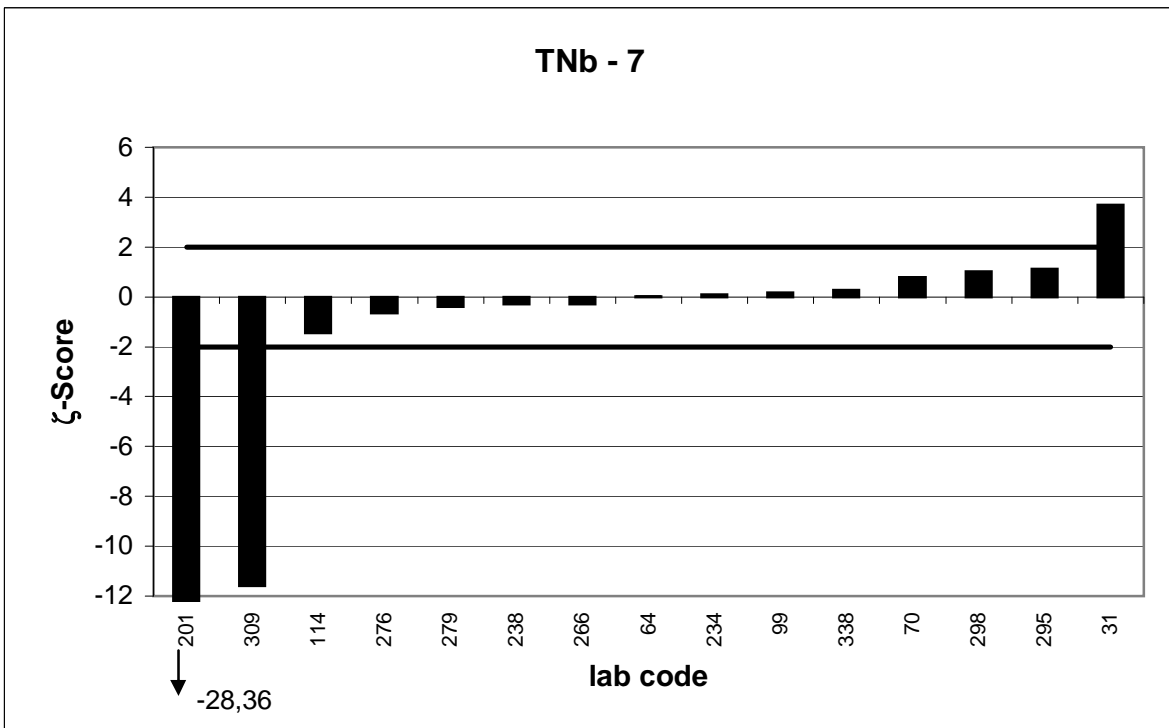
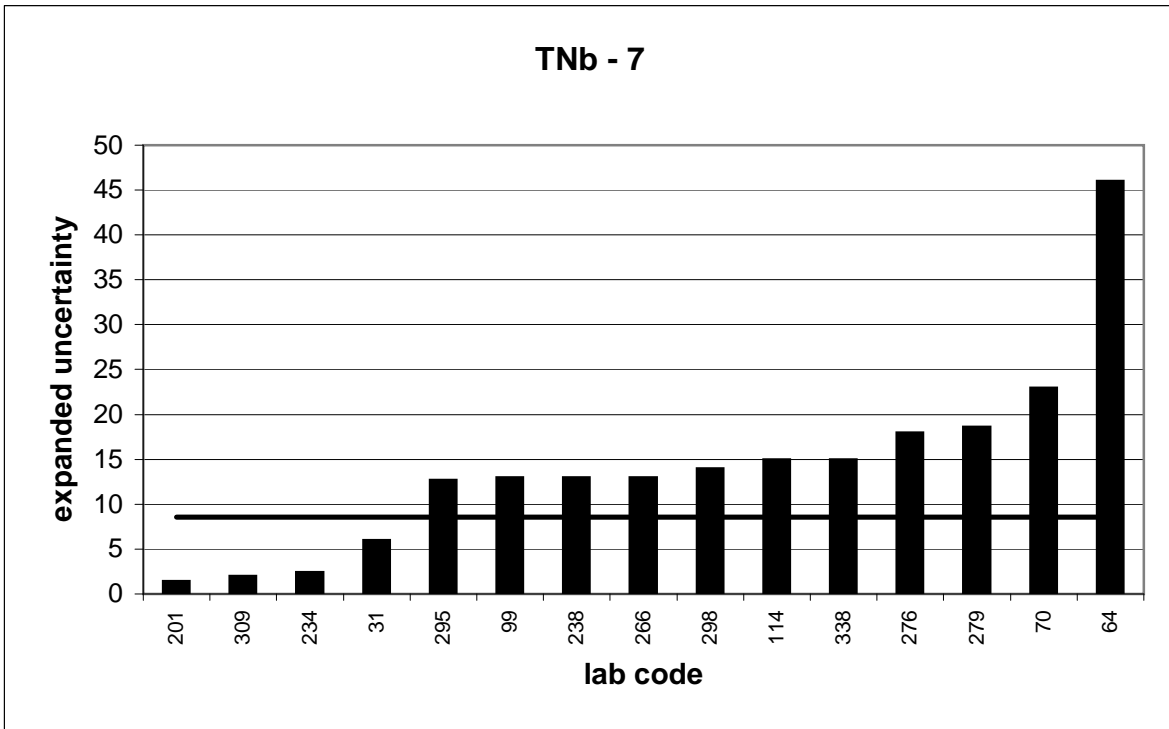




PT 3/11		TNb - 7			
assigned value [mg/l]*		127,9 ± 0,5			
upper tolerance limit [mg/l]		147,8			
lower tolerance limit [mg/l]		109,4			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	125			-0,3	+
21	132			0,4	+
29	121			-0,7	+
31	139	6	3,7	1,1	+
42	130			0,2	+
64	128	46	0,0	0,0	+
67	131			0,3	+
70	137	23	0,8	0,9	+
83	124,2			-0,4	+
99	129	13	0,2	0,1	+
101	136			0,8	+
114	117	15	-1,4	-1,2	+
150	136			0,8	+
151	131			0,3	+
201	107	1,4	-28,4	-2,3	-
229	129			0,1	+
230	126			-0,2	+
234	128	2,4	0,1	0,0	+
238	126	13	-0,3	-0,2	+
239	128			0,0	+
261	154			2,6	-
264	124,5			-0,4	+
266	126	13	-0,3	-0,2	+
276	122	18	-0,7	-0,6	+
279	124,1	18,6	-0,4	-0,4	+
295	135	12,7	1,1	0,7	+
298	135	14	1,0	0,7	+
307	137			0,9	+
309	116	2	-11,6	-1,3	+
312	191			6,3	-
338	130	15	0,3	0,2	+
903	114,1			-1,5	+
906	119			-1,0	+

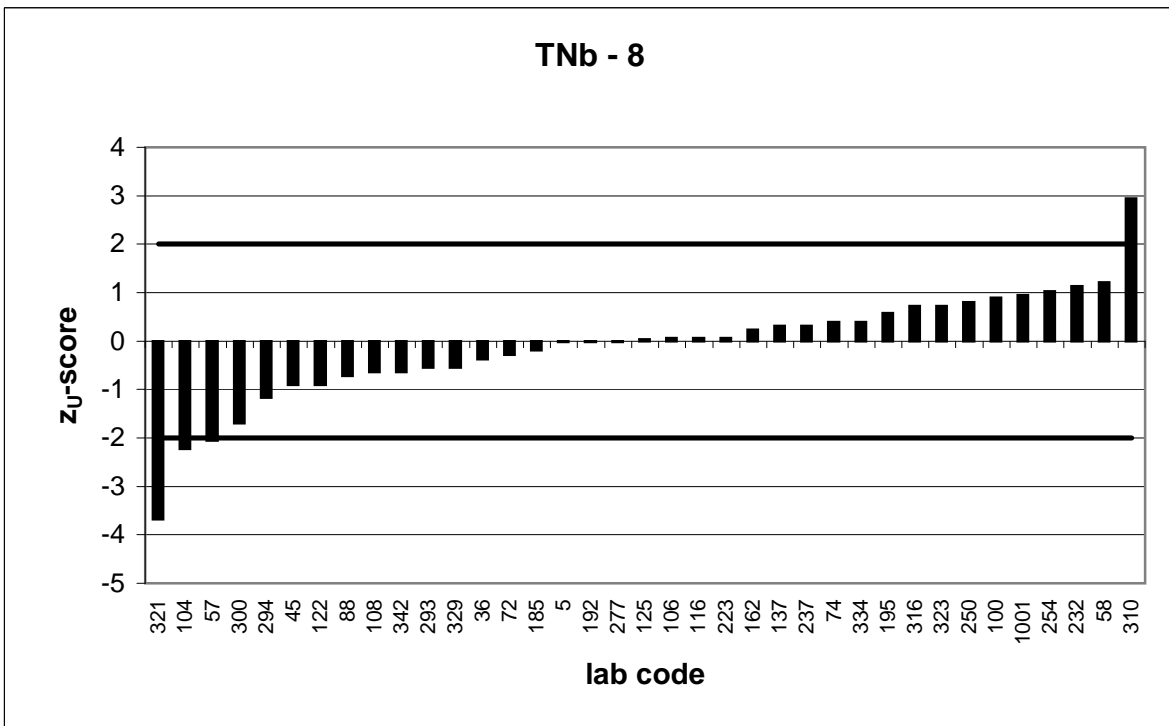
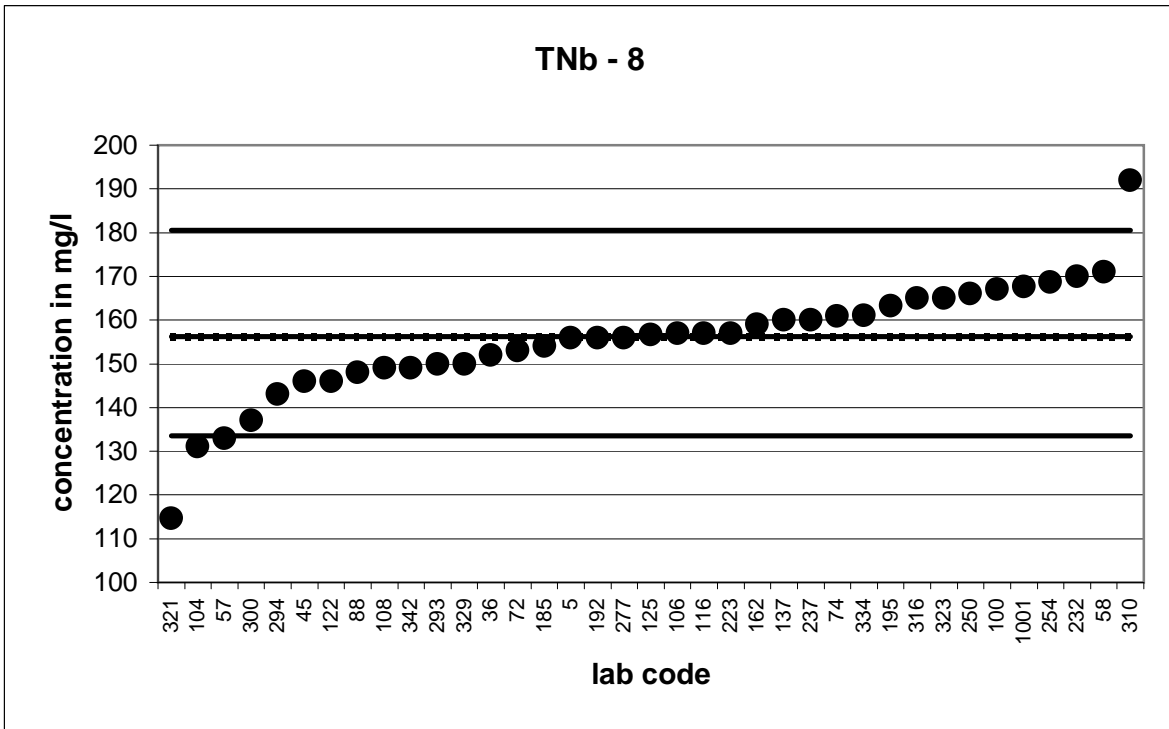
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

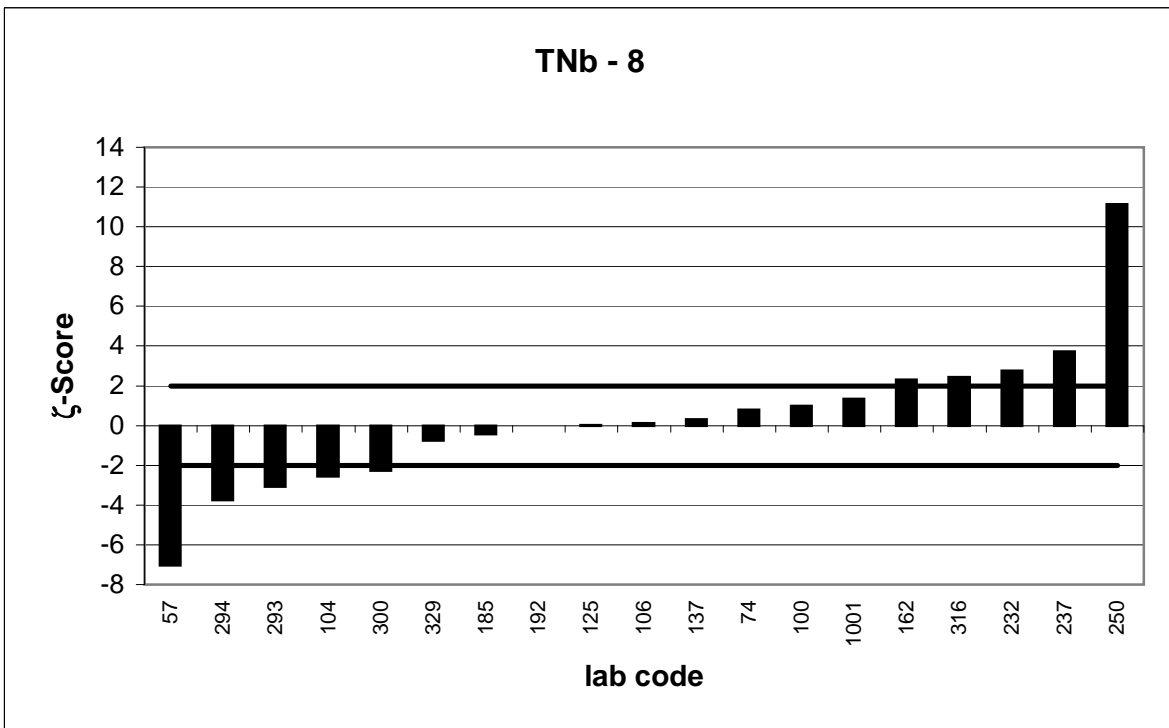
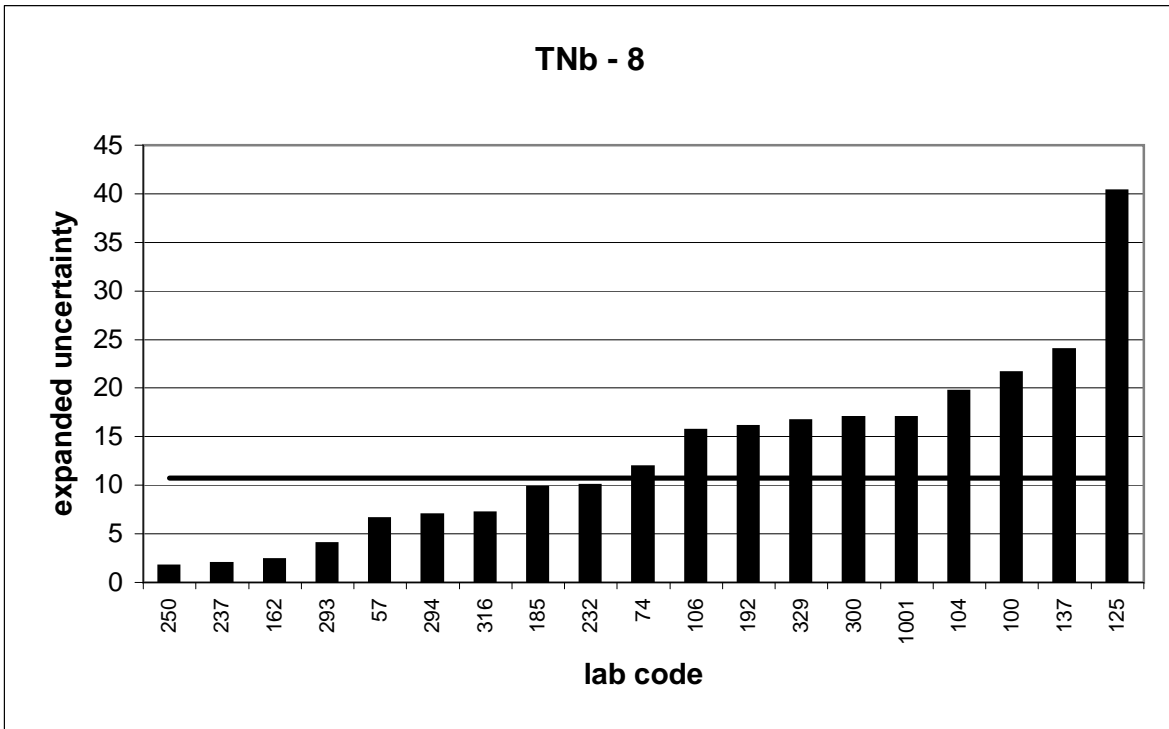




PT 3/11		TNb - 8			
assigned value [mg/l]*		156,2 ± 0,5			
upper tolerance limit [mg/l]		180,5			
lower tolerance limit [mg/l]		133,6			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	156			0,0	+
36	152			-0,4	+
45	146			-0,9	+
57	133	6,57	-7,0	-2,0	+
58	171			1,2	+
72	153			-0,3	+
74	160,9	11,9	0,8	0,4	+
88	148			-0,7	+
100	167	21,6	1,0	0,9	+
104	131	19,7	-2,6	-2,2	-
106	157	15,7	0,1	0,1	+
108	149			-0,6	+
116	157			0,1	+
122	146			-0,9	+
125	156,6	40,3	0,0	0,0	+
137	160	24	0,3	0,3	+
162	159	2,4	2,3	0,2	+
185	154	9,8	-0,4	-0,2	+
192	156	16,1	0,0	0,0	+
195	163,25			0,6	+
223	157			0,1	+
232	170	10	2,8	1,1	+
237	160	2	3,7	0,3	+
250	166	1,7	11,1	0,8	+
254	168,7			1,0	+
277	156			0,0	+
293	150	4	-3,1	-0,5	+
294	143	7	-3,8	-1,2	+
300	137	17	-2,3	-1,7	+
310	192			2,9	-
316	165	7,2	2,4	0,7	+
321	114,6			-3,7	-
323	165			0,7	+
329	150	16,7	-0,7	-0,5	+
334	161			0,4	+
342	149			-0,6	+
1001	167,7	17	1,4	0,9	+

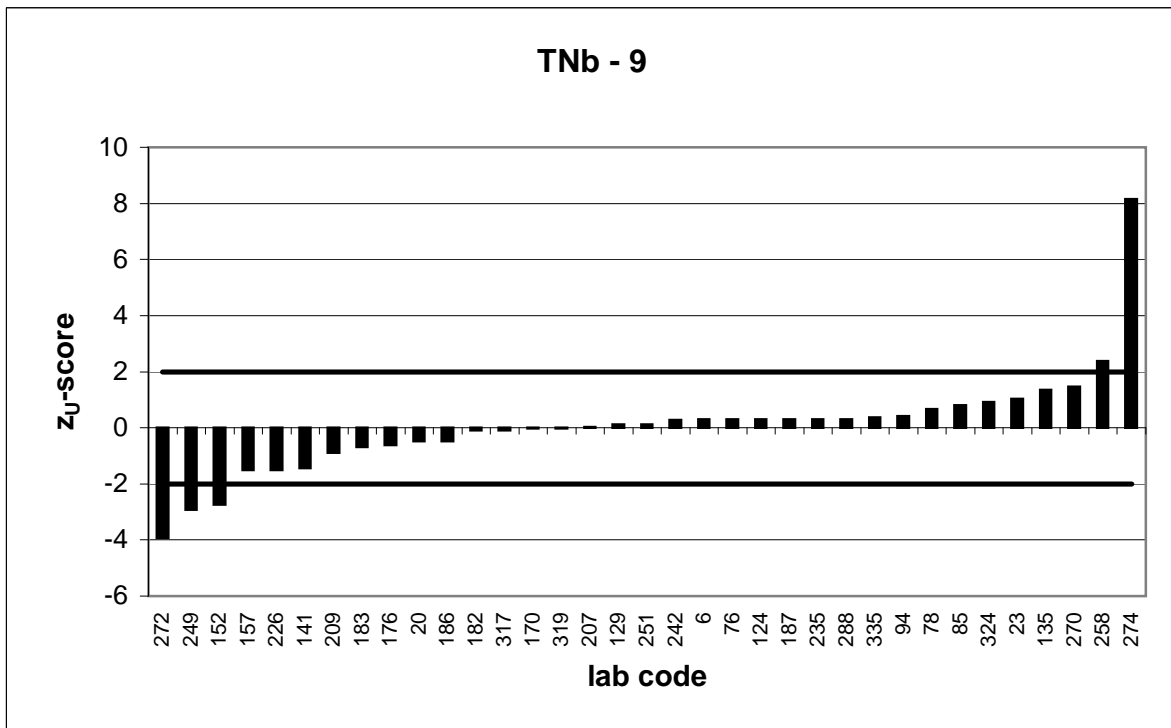
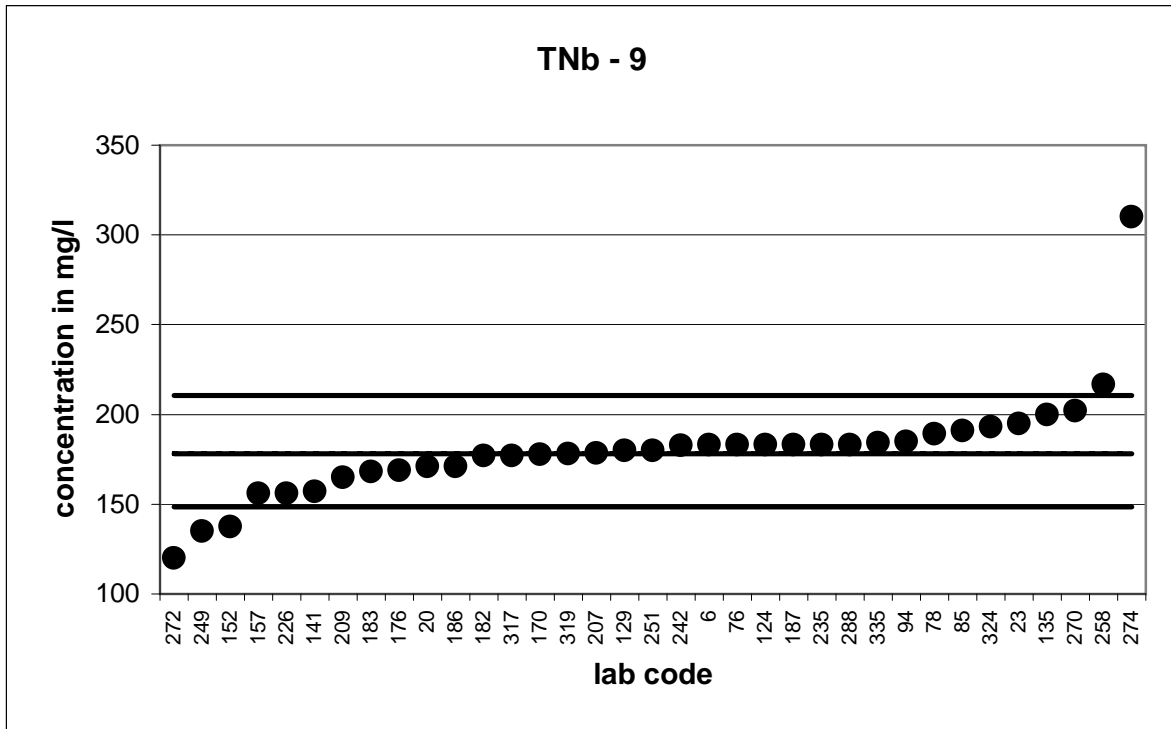
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

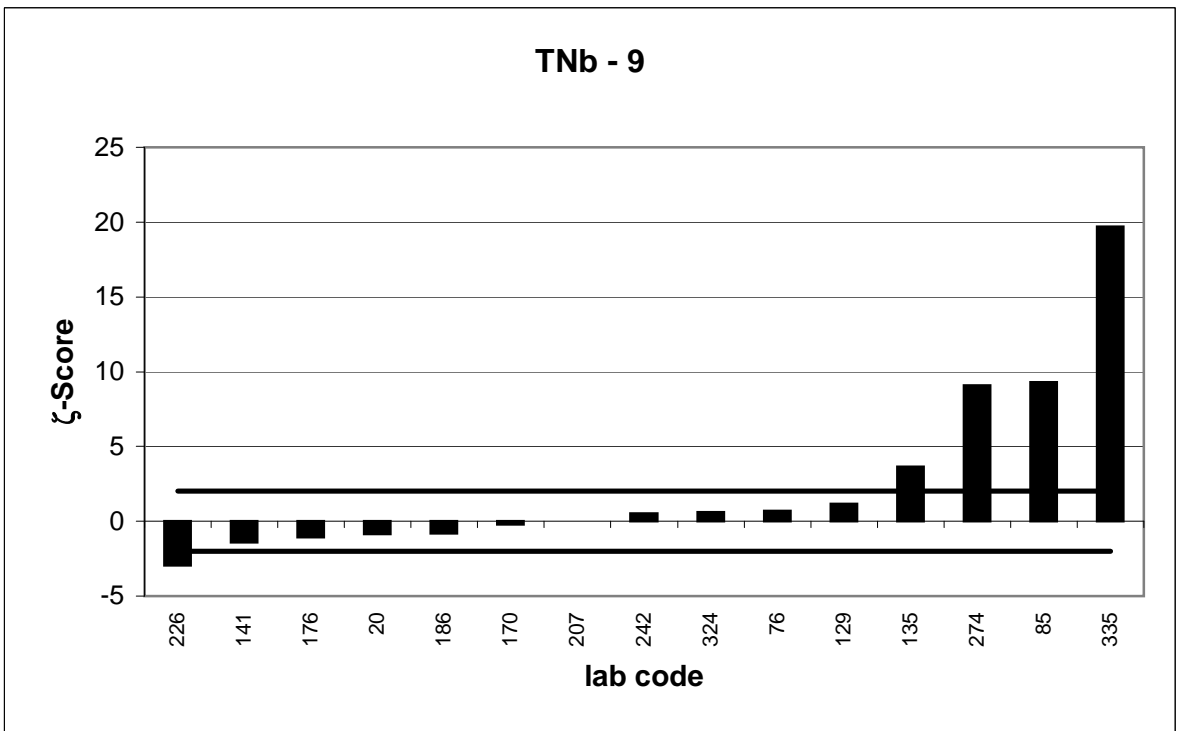
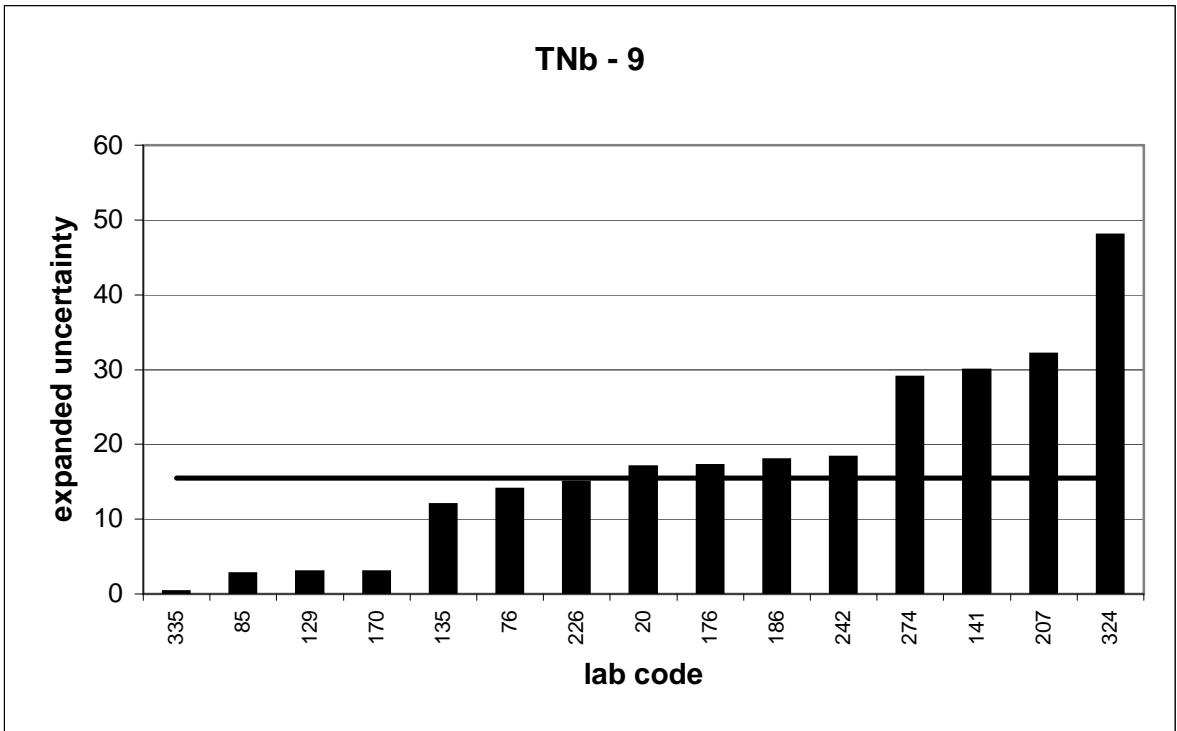




PT 3/11		TNb - 9			
assigned value [mg/l]*		178,2 ± 0,5			
upper tolerance limit [mg/l]		210,6			
lower tolerance limit [mg/l]		148,5			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	183			0,3	+
20	171	17	-0,8	-0,5	+
23	195			1,0	+
76	183	14	0,7	0,3	+
78	189			0,7	+
85	191	2,71	9,3	0,8	+
94	185			0,4	+
124	183			0,3	+
129	180	3	1,2	0,1	+
135	200	12	3,6	1,3	+
141	156,95	30	-1,4	-1,4	+
152	137,6			-2,7	-
157	156			-1,5	+
170	177,9	3	-0,2	0,0	+
176	169	17,2	-1,1	-0,6	+
182	177			-0,1	+
183	168			-0,7	+
186	171	18	-0,8	-0,5	+
187	183			0,3	+
207	178,6	32,1	0,0	0,0	+
209	165			-0,9	+
226	156	15	-3,0	-1,5	+
235	183			0,3	+
242	182,8	18,3	0,5	0,3	+
249	135			-2,9	-
251	180			0,1	+
258	216,6			2,4	-
270	202			1,5	+
272	120			-3,9	-
274	310	29	9,1	8,1	-
288	183			0,3	+
317	177			-0,1	+
319	178			0,0	+
324	193	48	0,6	0,9	+
335	184	0,33	19,7	0,4	+

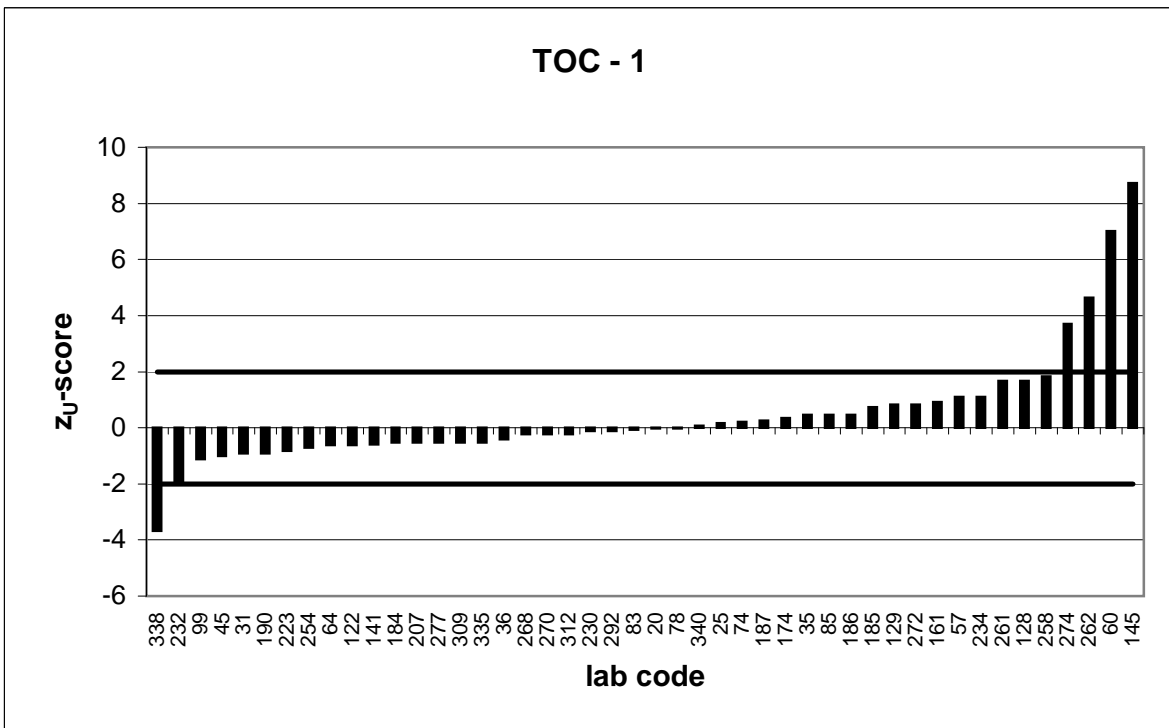
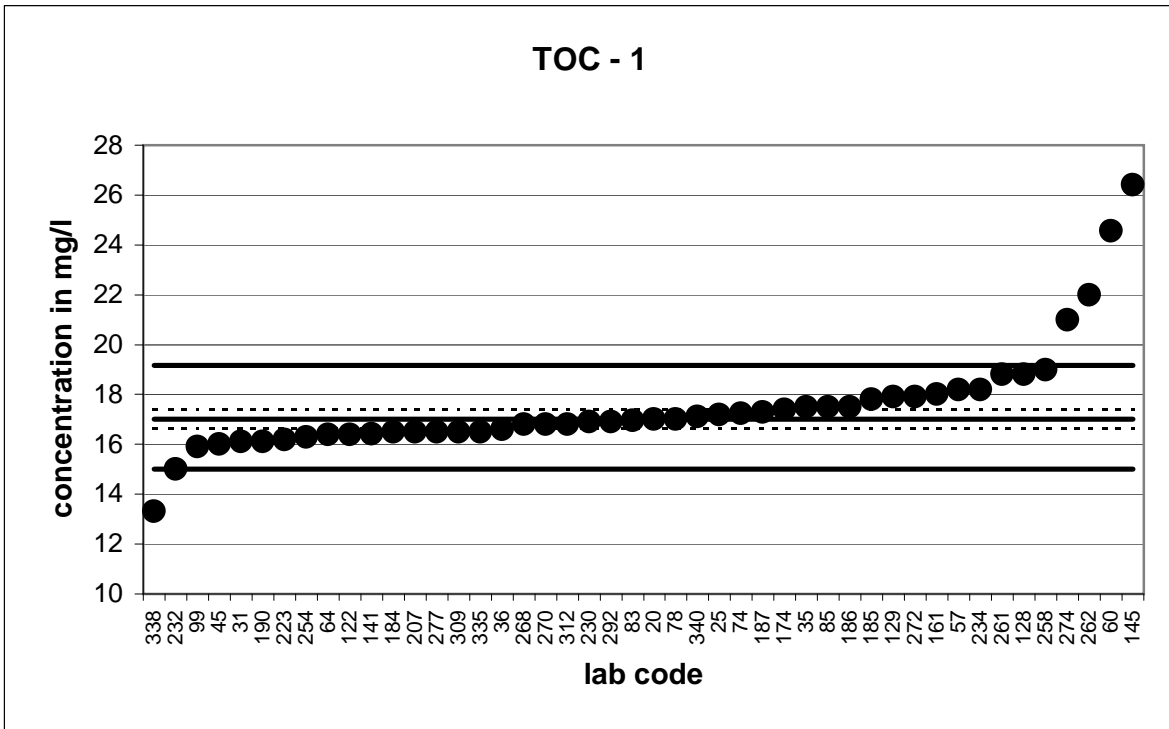
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

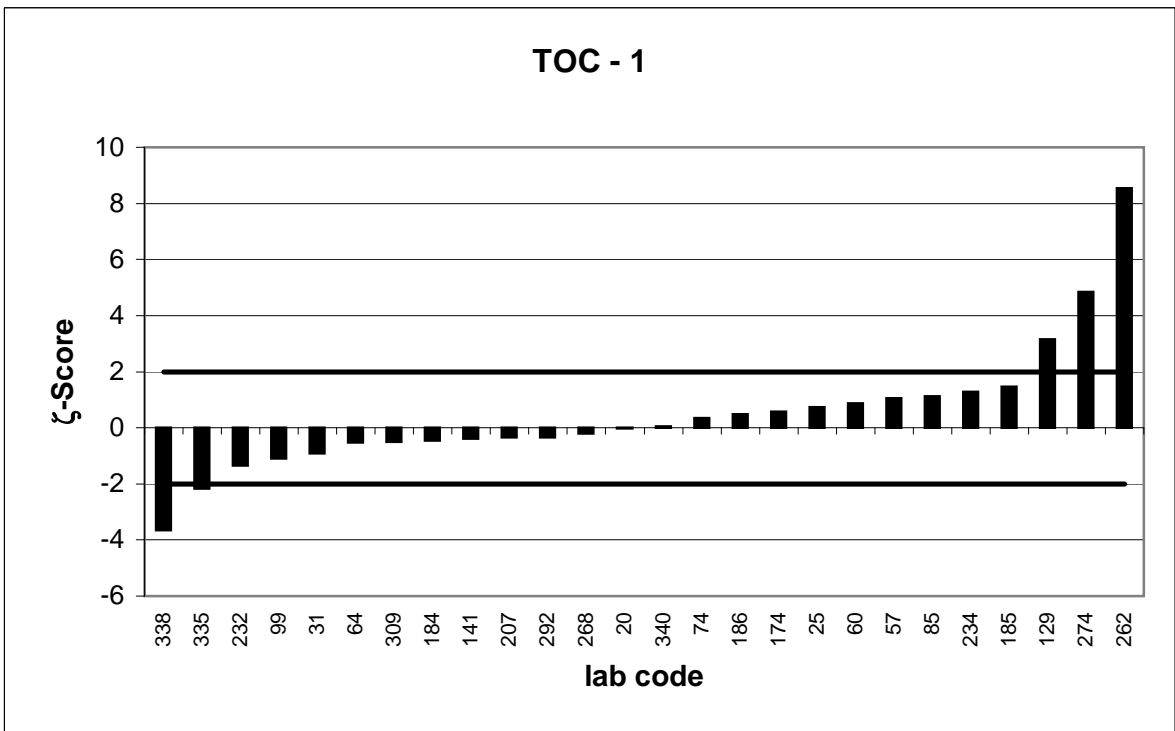
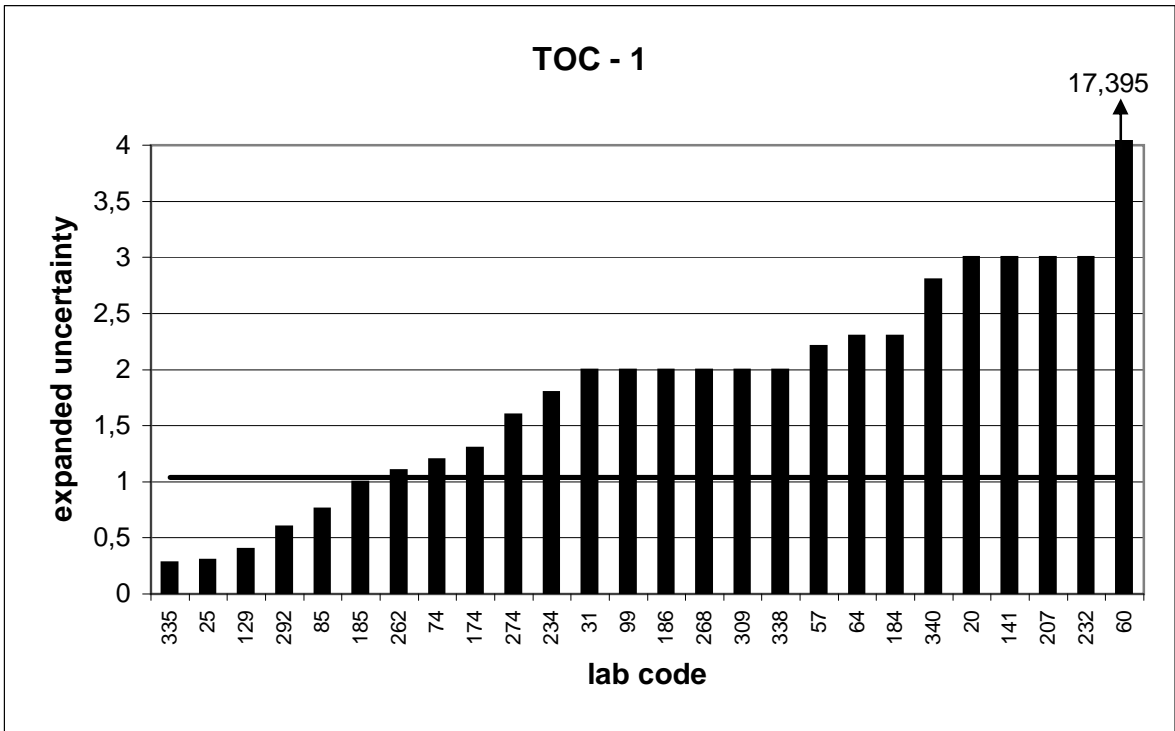




PT 3/11		TOC - 1			
assigned value [mg/l]*		17,02 ± 0,39			
upper tolerance limit [mg/l]		19,17			
lower tolerance limit [mg/l]		15			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
20	17	3	0,0	0,0	+
25	17,2	0,3	0,7	0,2	+
31	16,1	2	-0,9	-0,9	+
35	17,5			0,4	+
36	16,6			-0,4	+
45	16			-1,0	+
57	18,2	2,21	1,1	1,1	+
60	24,565	17,4	0,9	7,0	-
64	16,4	2,3	-0,5	-0,6	+
74	17,23	1,2	0,3	0,2	+
78	17			0,0	+
83	16,95			-0,1	+
85	17,5	0,76	1,1	0,4	+
99	15,9	2	-1,1	-1,1	+
122	16,4			-0,6	+
128	18,82			1,7	+
129	17,9	0,4	3,2	0,8	+
141	16,42	3	-0,4	-0,6	+
145	26,4			8,7	-
161	18			0,9	+
174	17,4	1,3	0,6	0,4	+
184	16,5	2,3	-0,4	-0,5	+
185	17,8	1	1,5	0,7	+
186	17,5	2	0,5	0,4	+
187	17,3			0,3	+
190	16,1			-0,9	+
207	16,5	3	-0,3	-0,5	+
223	16,2			-0,8	+
230	16,9			-0,1	+
232	15	3	-1,3	-2,0	+
234	18,2	1,8	1,3	1,1	+
254	16,3			-0,7	+
258	18,98			1,8	+
261	18,8			1,7	+
262	22	1,1	8,5	4,6	-
268	16,8	2	-0,2	-0,2	+
270	16,8			-0,2	+
272	17,9			0,8	+
274	21	1,6	4,8	3,7	-
277	16,5			-0,5	+
292	16,9	0,6	-0,3	-0,1	+
309	16,5	2	-0,5	-0,5	+
312	16,8			-0,2	+
335	16,5	0,28	-2,2	-0,5	+
338	13,3	2	-3,6	-3,7	-
340	17,1	2,8	0,1	0,1	+

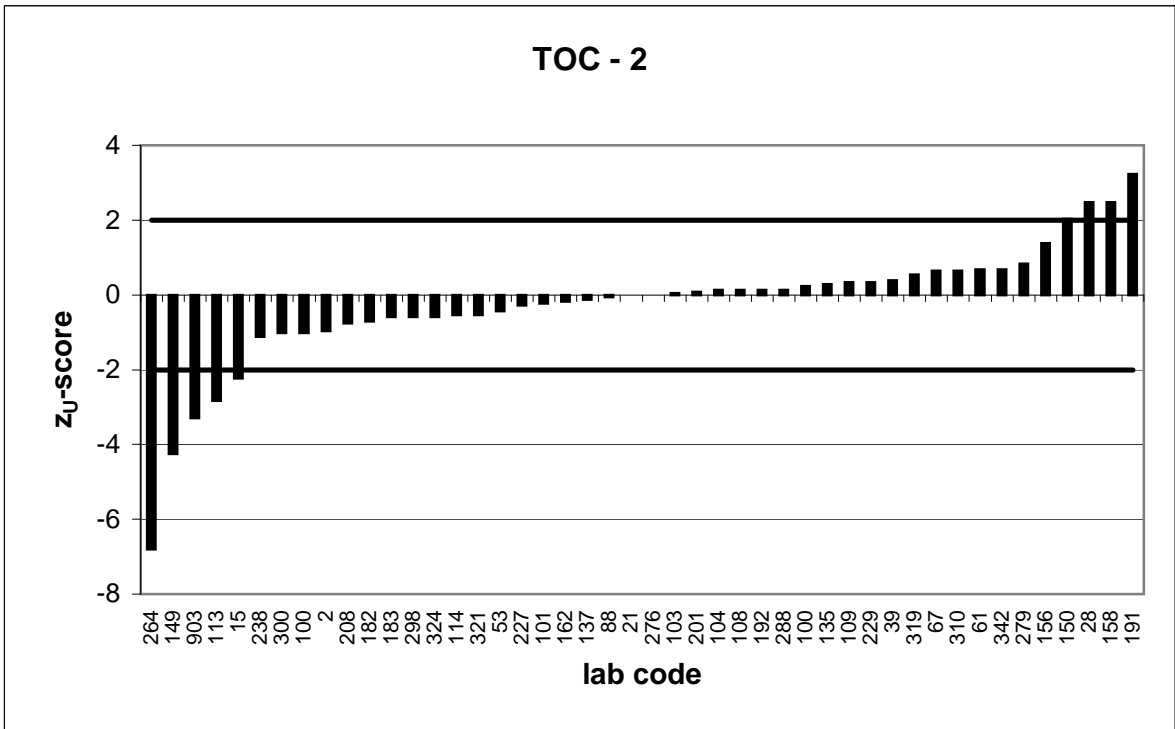
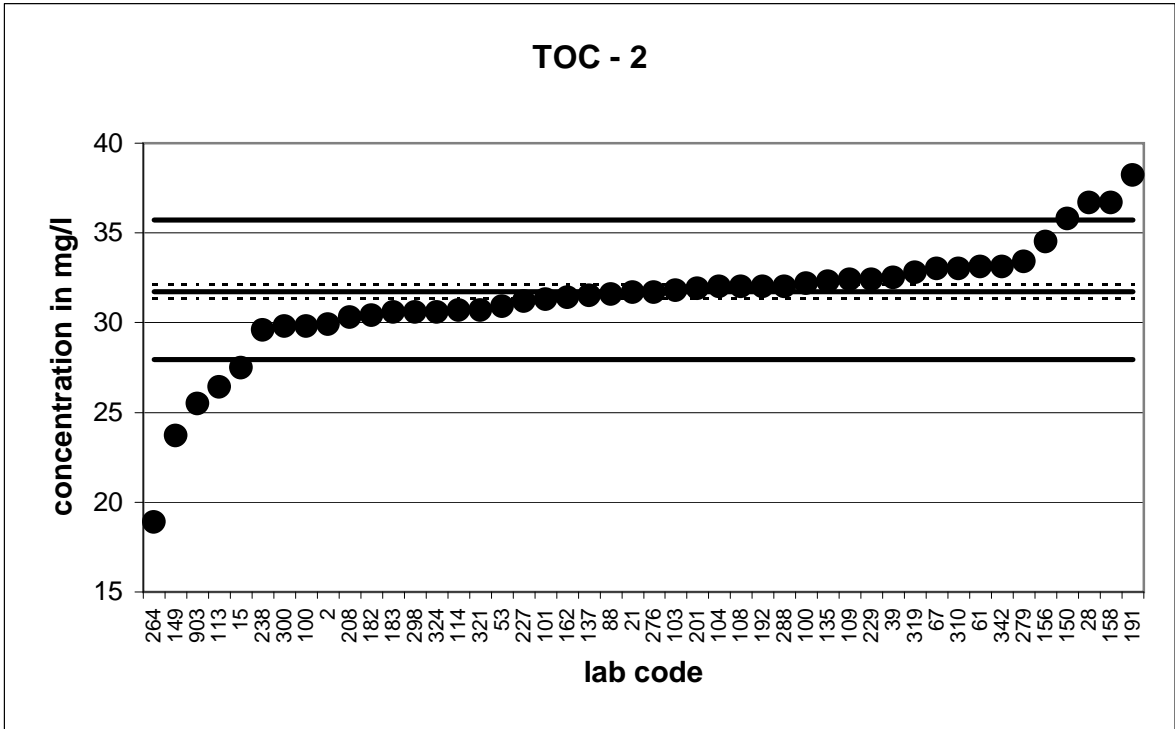
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

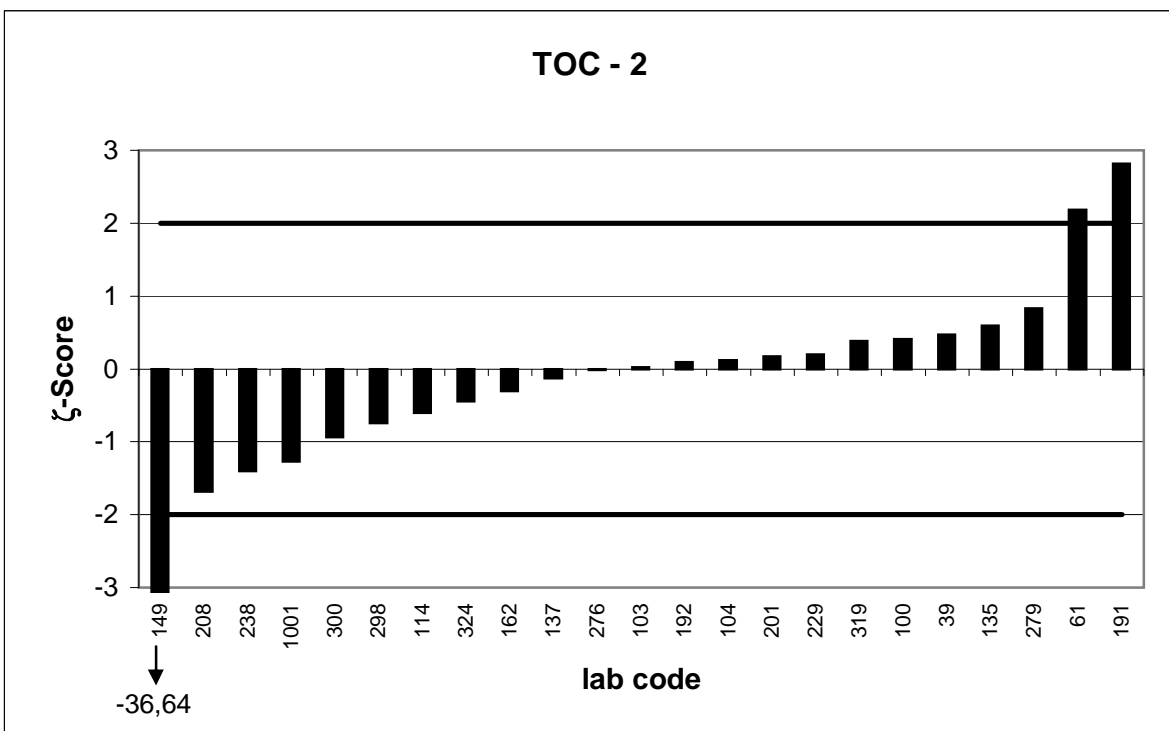
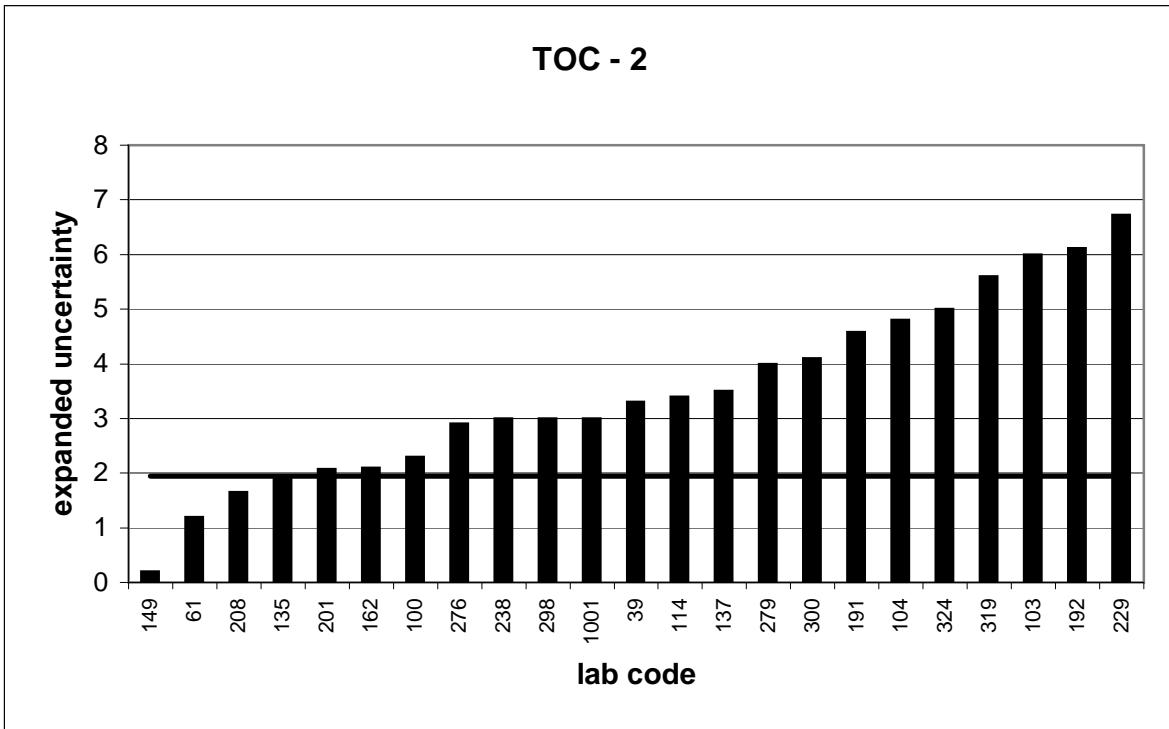




PT 3/11		TOC - 2			
assigned value [mg/l]*		31,72 ± 0,39			
upper tolerance limit [mg/l]		35,73			
lower tolerance limit [mg/l]		27,95			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
2	29,9			-1,0	+
15	27,5			-2,2	-
21	31,7			0,0	+
28	36,7			2,5	-
39	32,5	3,3	0,5	0,4	+
53	30,9			-0,4	+
61	33,1	1,2	2,2	0,7	+
67	33			0,6	+
88	31,6			-0,1	+
100	32,2	2,3	0,4	0,2	+
101	31,3			-0,2	+
103	31,8	6	0,0	0,0	+
104	32	4,8	0,1	0,1	+
108	32			0,1	+
109	32,4			0,3	+
113	26,4			-2,8	-
114	30,7	3,4	-0,6	-0,5	+
135	32,3	1,9	0,6	0,3	+
137	31,5	3,5	-0,1	-0,1	+
149	23,7	0,2	-36,6	-4,3	-
150	35,8			2,0	+
156	34,5			1,4	+
158	36,7			2,5	-
162	31,4	2,1	-0,3	-0,2	+
182	30,4			-0,7	+
183	30,6			-0,6	+
191	38,2	4,58	2,8	3,2	-
192	32	6,12	0,1	0,1	+
201	31,9	2,07	0,2	0,1	+
208	30,3	1,65	-1,7	-0,8	+
227	31,2			-0,3	+
229	32,4	6,72	0,2	0,3	+
238	29,6	3	-1,4	-1,1	+
264	18,9			-6,8	-
276	31,7	2,9	0,0	0,0	+
279	33,4	4	0,8	0,8	+
288	32			0,1	+
298	30,6	3	-0,7	-0,6	+
300	29,8	4,1	-0,9	-1,0	+
310	33			0,6	+
319	32,8	5,6	0,4	0,5	+
321	30,7			-0,5	+
324	30,6	5	-0,4	-0,6	+
342	33,1			0,7	+
903	25,5			-3,3	-
1001	29,8	3	-1,3	-1,0	+

* 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%



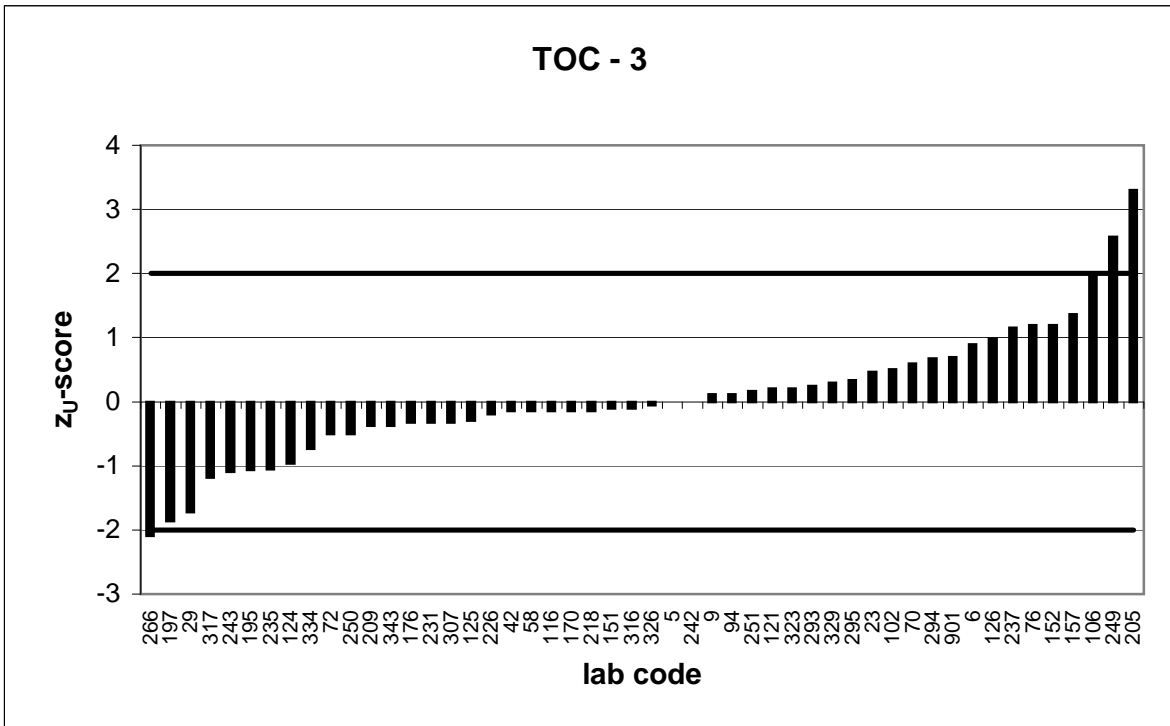
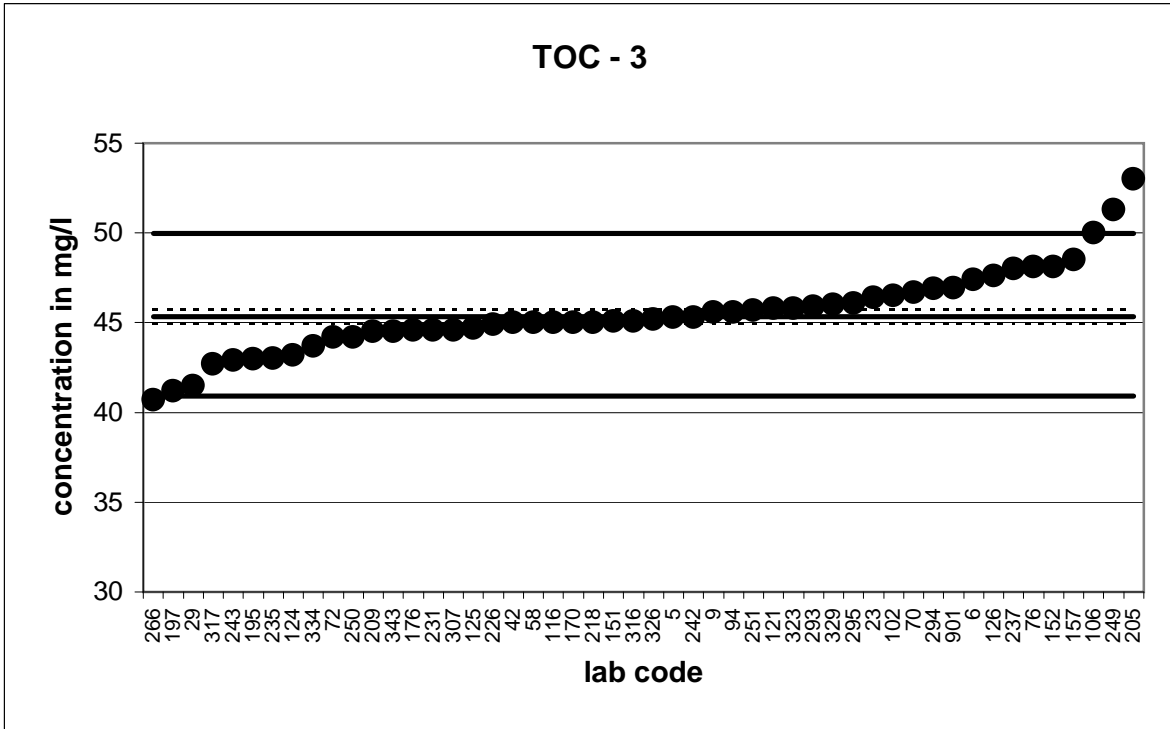


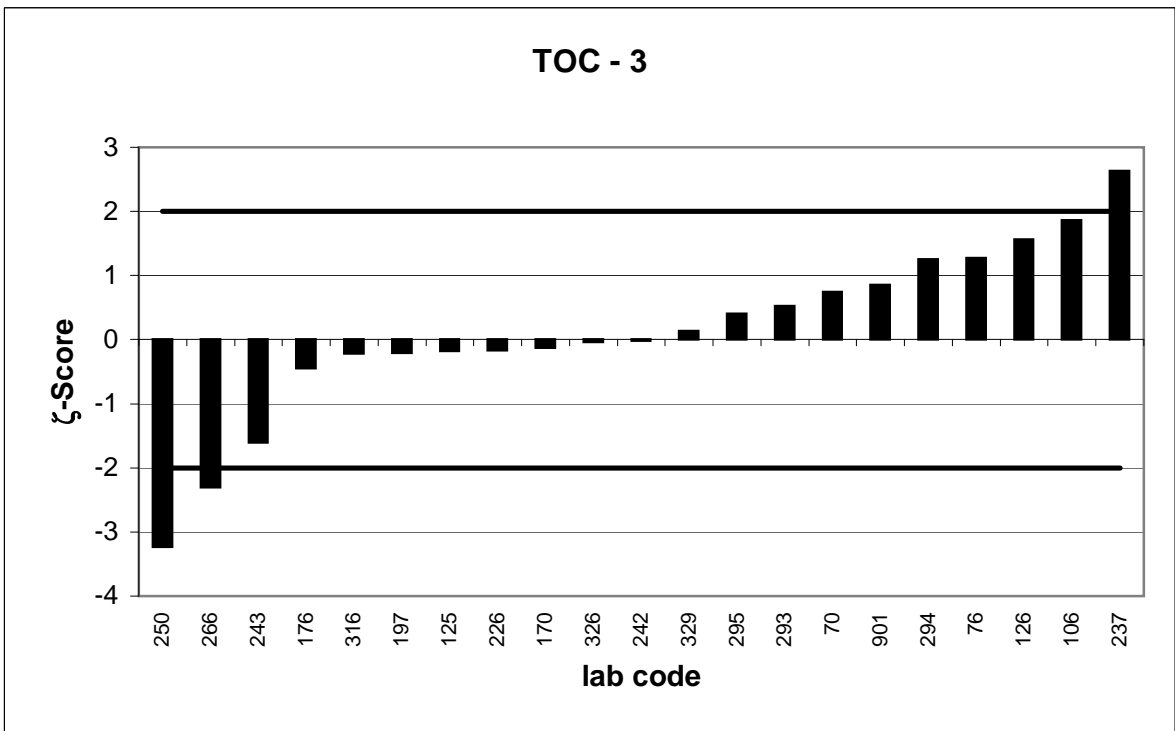
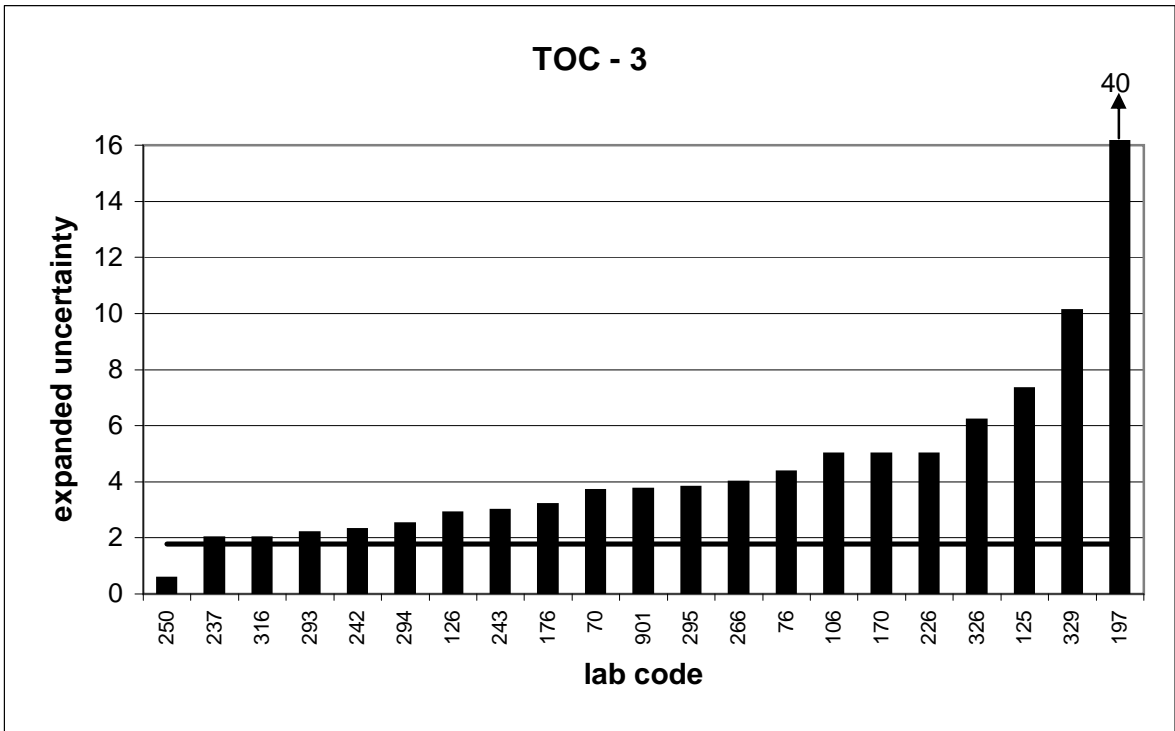
PT 3/11		TOC - 3			
assigned value [mg/l]*		45,32 ± 0,39			
upper tolerance limit [mg/l]		49,97			
lower tolerance limit [mg/l]		40,9			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
5	45,3			0,0	+
6	47,4			0,9	+
9	45,6			0,1	+
23	46,4			0,5	+
29	41,5			-1,7	+
42	45			-0,1	+
58	45			-0,1	+
70	46,7	3,7	0,7	0,6	+
72	44,2			-0,5	+
76	48,1	4,35	1,3	1,2	+
94	45,6			0,1	+
102	46,5			0,5	+
106	50	5	1,9	2,0	+
116	45			-0,1	+
121	45,8			0,2	+
124	43,2			-1,0	+
125	44,68	7,32	-0,2	-0,3	+
126	47,6	2,9	1,6	1,0	+
151	45,1			-0,1	+
152	48,1			1,2	+
157	48,5			1,4	+
170	45	5	-0,1	-0,1	+
176	44,6	3,2	-0,4	-0,3	+
195	42,98			-1,1	+
197	41,2	40	-0,2	-1,9	+
205	53			3,3	-
209	44,5			-0,4	+
218	45			-0,1	+
226	44,9	5	-0,2	-0,2	+
231	44,6			-0,3	+
235	43			-1,0	+
237	48	2	2,6	1,2	+
242	45,3	2,3	0,0	0,0	+
243	42,9	3	-1,6	-1,1	+
249	51,3			2,6	-
250	44,2	0,57	-3,2	-0,5	+
251	45,7			0,2	+
266	40,7	4	-2,3	-2,1	-
293	45,9	2,2	0,5	0,2	+
294	46,9	2,5	1,2	0,7	+
295	46,1	3,81	0,4	0,3	+
307	44,6			-0,3	+
316	45,1	2	-0,2	-0,1	+
317	42,7			-1,2	+
323	45,8			0,2	+
326	45,2	6,2	0,0	-0,1	+

* 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%

PT 3/11		TOC - 3			
assigned value [mg/l]*		45,32 ± 0,39			
upper tolerance limit [mg/l]		49,97			
lower tolerance limit [mg/l]		40,9			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
329	46	10,1	0,1	0,3	+
334	43,7			-0,7	+
343	44,5			-0,4	+
901	46,93	3,75	0,9	0,7	+

* 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%



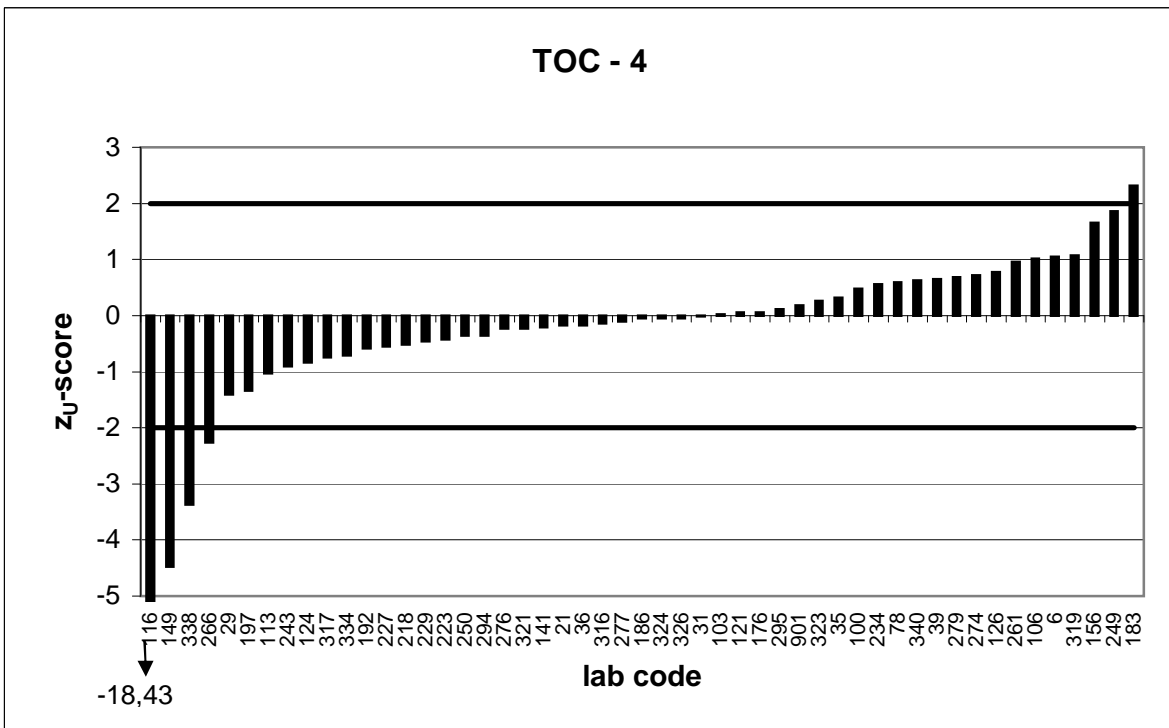
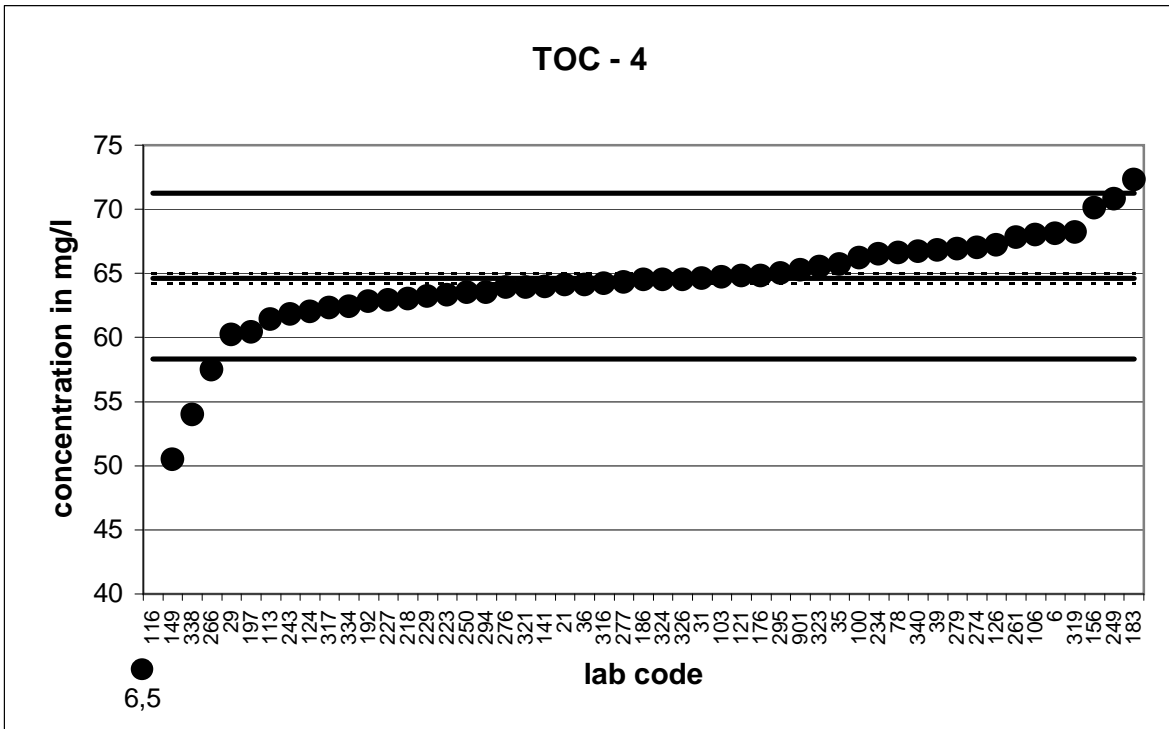


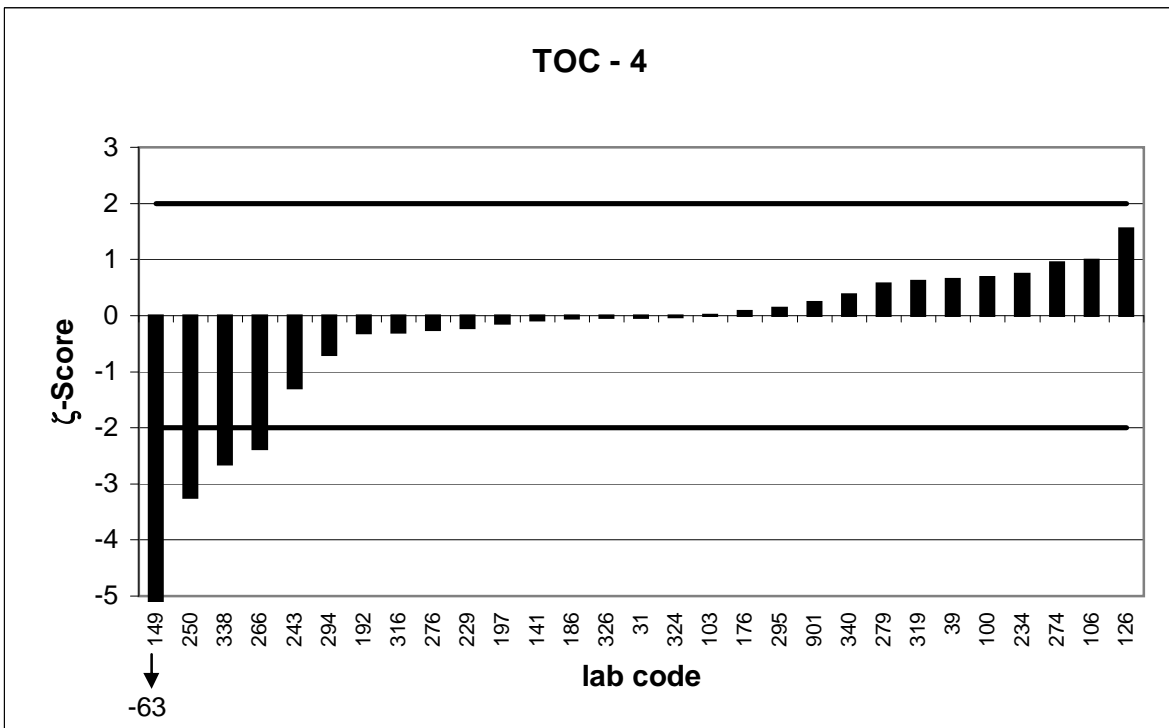
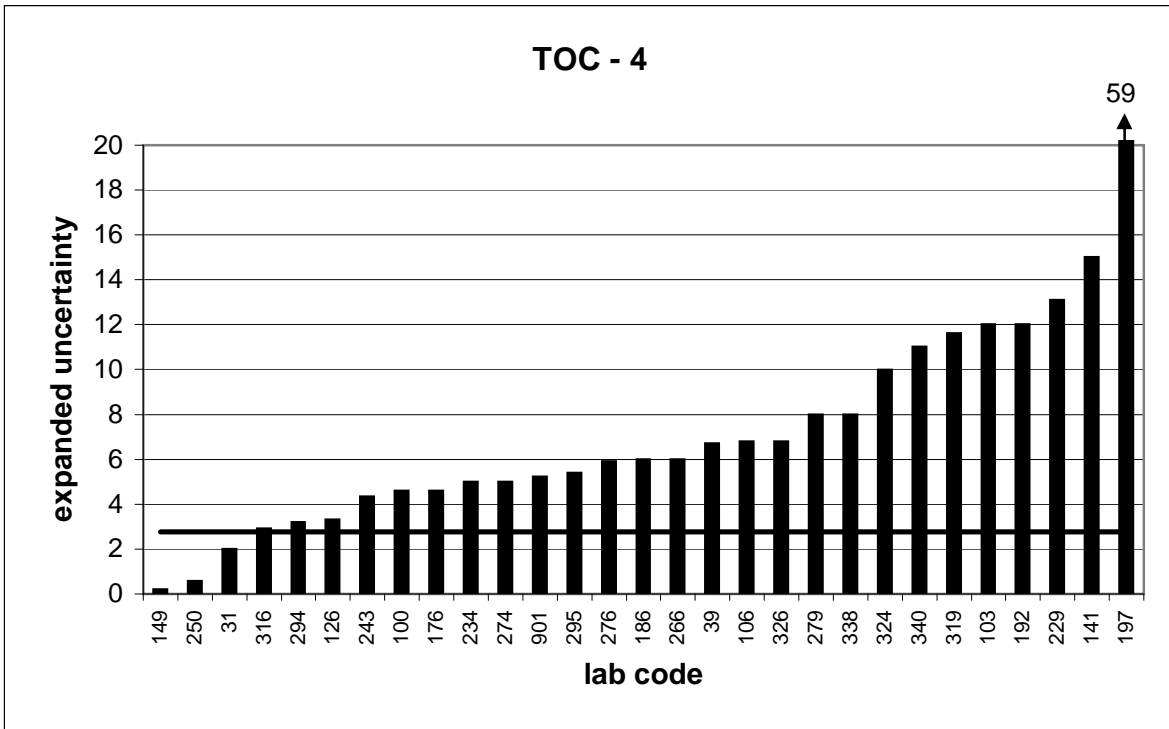
PT 3/11		TOC - 4			
assigned value [mg/l]*		64,63 ± 0,4			
upper tolerance limit [mg/l]		71,26			
lower tolerance limit [mg/l]		58,32			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	68,1			1,0	+
21	64,1			-0,2	+
29	60,2			-1,4	+
31	64,6	2	0,0	0,0	+
35	65,7			0,3	+
36	64,1			-0,2	+
39	66,8	6,7	0,6	0,7	+
78	66,6			0,6	+
100	66,2	4,6	0,7	0,5	+
103	64,7	12	0,0	0,0	+
106	68	6,8	1,0	1,0	+
113	61,4			-1,0	+
116	6,5			-18,4	-
121	64,8			0,1	+
124	62			-0,8	+
126	67,2	3,3	1,5	0,8	+
141	63,99	15	-0,1	-0,2	+
149	50,5	0,2	-63,0	-4,5	-
156	70,1			1,6	+
176	64,8	4,6	0,1	0,1	+
183	72,3			2,3	-
186	64,5	6	0,0	0,0	+
192	62,8	12	-0,3	-0,6	+
197	60,4	59	-0,1	-1,3	+
218	63			-0,5	+
223	63,3			-0,4	+
227	62,9			-0,5	+
229	63,2	13,1	-0,2	-0,5	+
234	66,5	5	0,7	0,6	+
243	61,8	4,35	-1,3	-0,9	+
249	70,8			1,9	+
250	63,5	0,57	-3,2	-0,4	+
261	67,8			1,0	+
266	57,5	6	-2,4	-2,3	-
274	67	5	0,9	0,7	+
276	63,9	5,9	-0,2	-0,2	+
277	64,3			-0,1	+
279	66,9	8	0,6	0,7	+
294	63,5	3,2	-0,7	-0,4	+
295	65	5,38	0,1	0,1	+
316	64,2	2,9	-0,3	-0,1	+
317	62,3			-0,7	+
319	68,2	11,6	0,6	1,1	+
321	63,9			-0,2	+
323	65,5			0,3	+
324	64,5	10	0,0	0,0	+

* 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%

PT 3/11		TOC - 4			
assigned value [mg/l]*		64,63 ± 0,4			
upper tolerance limit [mg/l]		71,26			
lower tolerance limit [mg/l]		58,32			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
326	64,5	6,8	0,0	0,0	+
334	62,4			-0,7	+
338	54	8	-2,7	-3,4	-
340	66,7	11	0,4	0,6	+
901	65,25	5,22	0,2	0,2	+

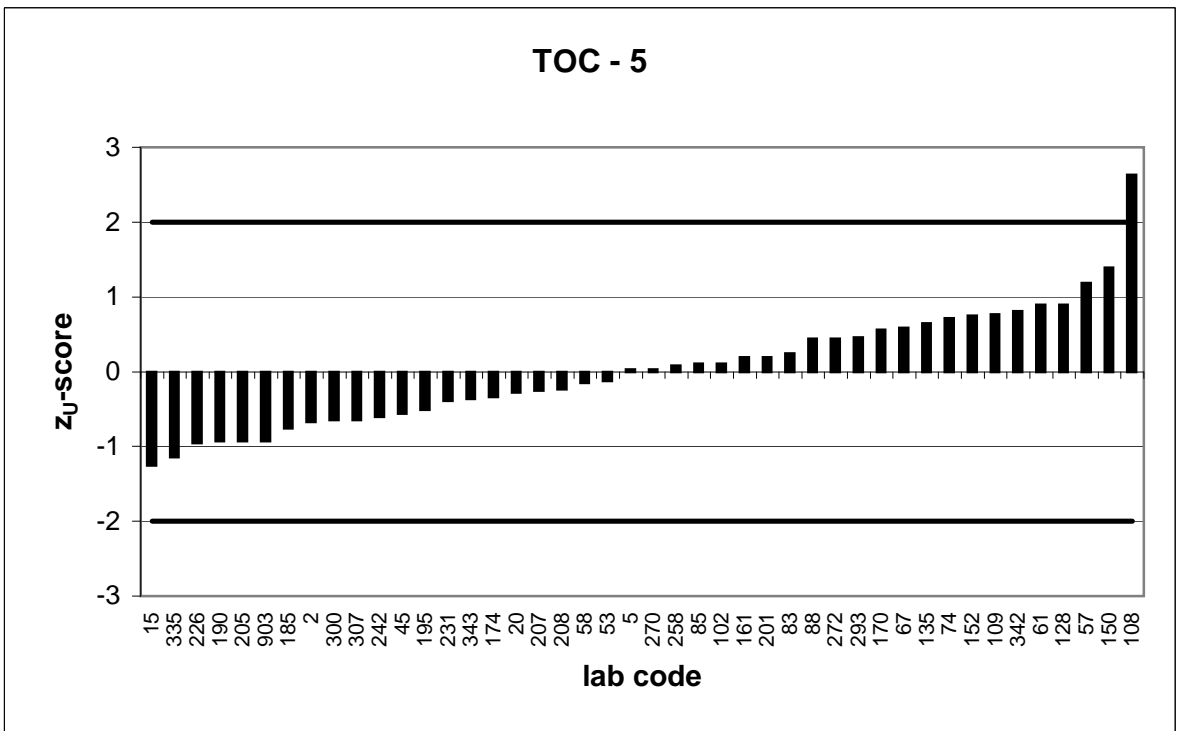
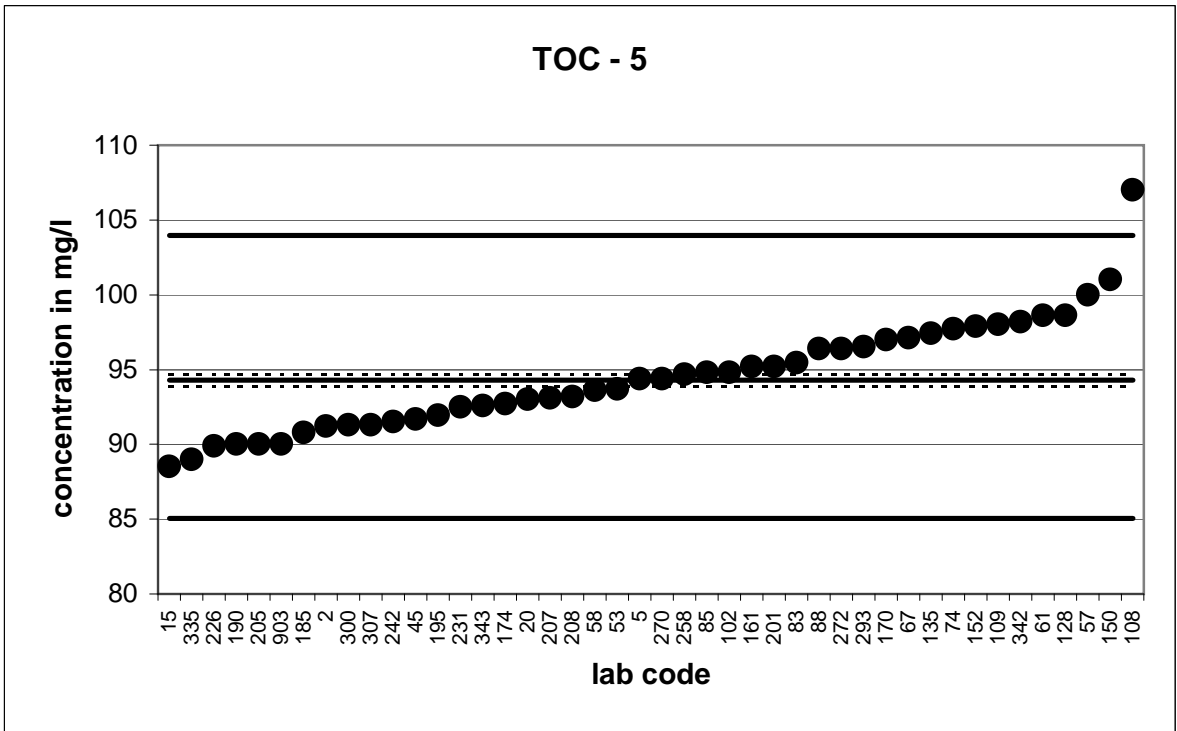
* The stated uncertainty of the assigned value is the expanded uncertainty with a coverage factor k=2 corresponding to a confidence level of about 95%

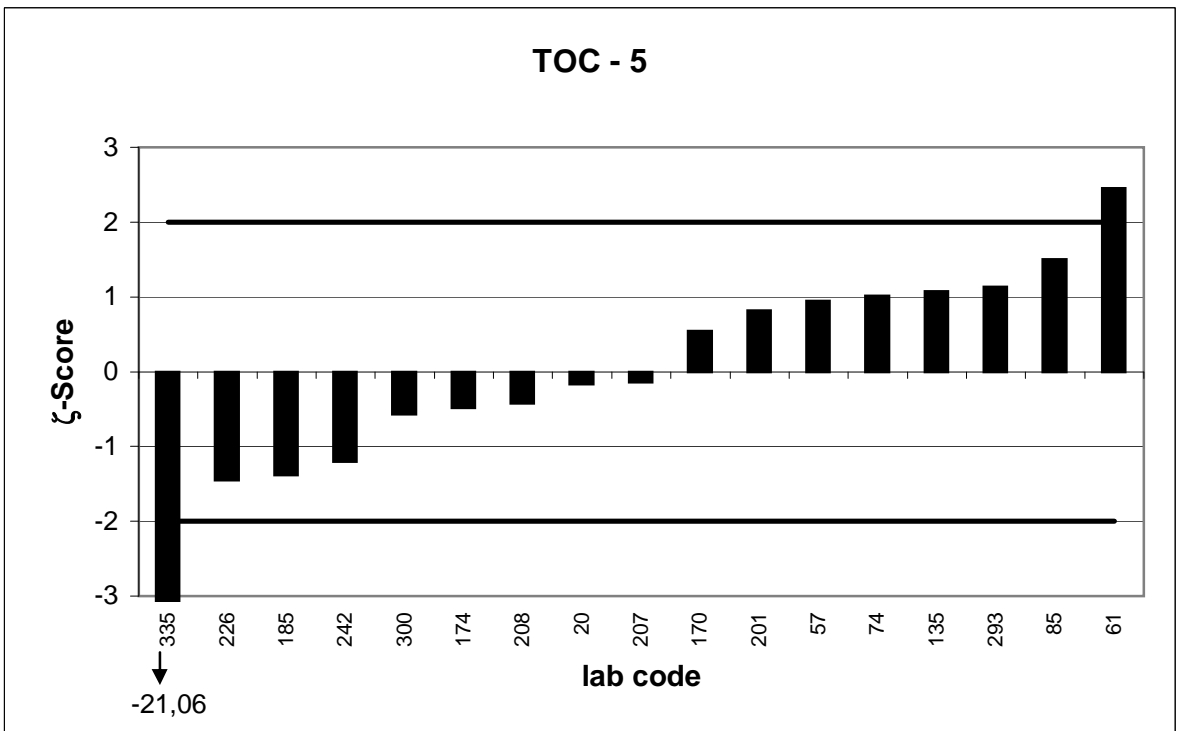
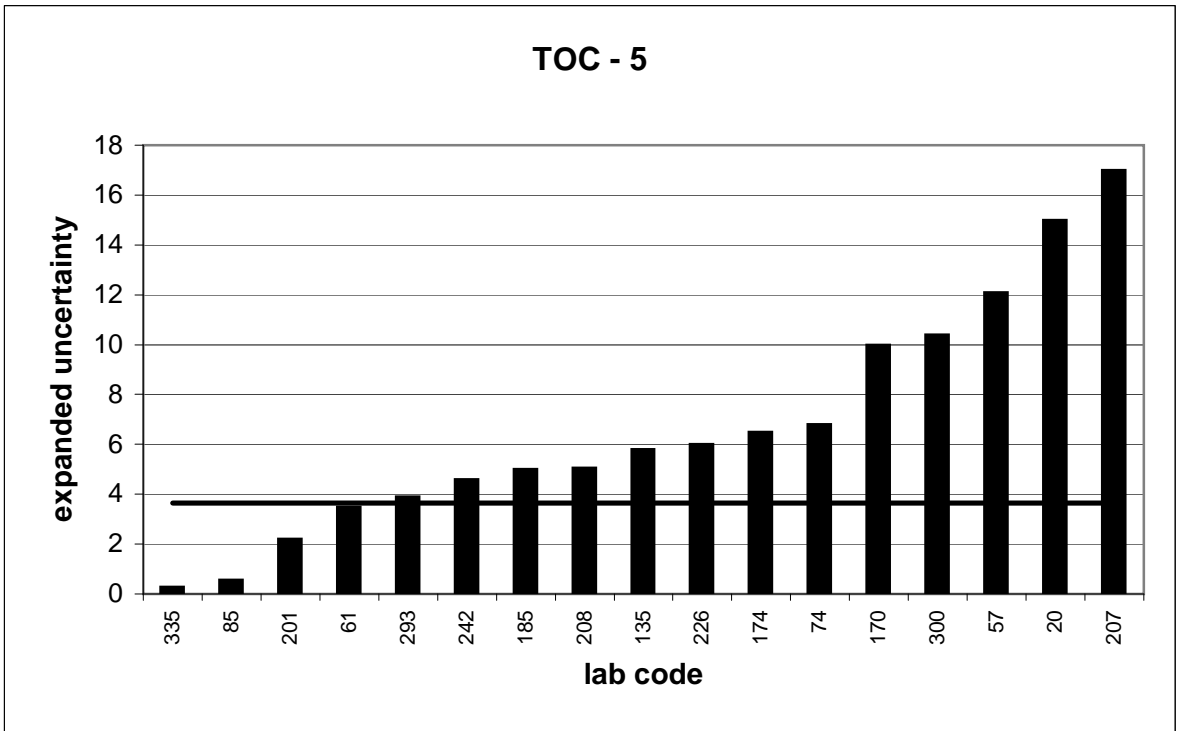




PT 3/11		TOC - 5			
assigned value [mg/l]*		94,27 ± 0,42			
upper tolerance limit [mg/l]		103,9			
lower tolerance limit [mg/l]		85,07			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
2	91,2			-0,7	+
5	94,4			0,0	+
15	88,5			-1,3	+
20	93	15	-0,2	-0,3	+
45	91,7			-0,6	+
53	93,7			-0,1	+
57	100	12,1	0,9	1,2	+
58	93,6			-0,1	+
61	98,6	3,5	2,5	0,9	+
67	97,1			0,6	+
74	97,72	6,8	1,0	0,7	+
83	95,45			0,2	+
85	94,8	0,56	1,5	0,1	+
88	96,4			0,4	+
102	94,8			0,1	+
108	107			2,6	-
109	98			0,8	+
128	98,61			0,9	+
135	97,4	5,8	1,1	0,6	+
150	101			1,4	+
152	97,9			0,7	+
161	95,2			0,2	+
170	97	10	0,5	0,6	+
174	92,7	6,5	-0,5	-0,3	+
185	90,8	5	-1,4	-0,8	+
190	90			-0,9	+
195	91,93			-0,5	+
201	95,2	2,22	0,8	0,2	+
205	90			-0,9	+
207	93,1	17	-0,1	-0,3	+
208	93,2	5,07	-0,4	-0,2	+
226	89,9	6	-1,5	-1,0	+
231	92,5			-0,4	+
242	91,5	4,6	-1,2	-0,6	+
258	94,68			0,1	+
270	94,4			0,0	+
272	96,4			0,4	+
293	96,5	3,9	1,1	0,5	+
300	91,3	10,4	-0,6	-0,6	+
307	91,3			-0,6	+
335	89	0,28	-21,1	-1,1	+
342	98,2			0,8	+
343	92,6			-0,4	+
903	90			-0,9	+

* 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%



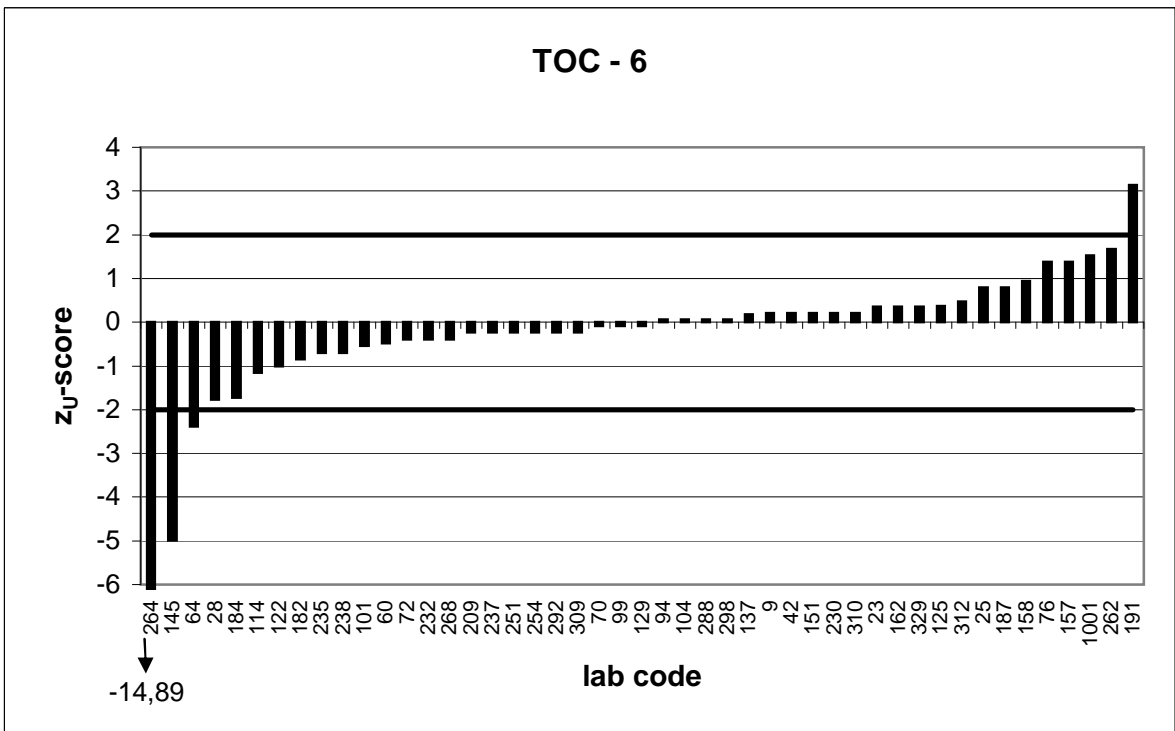
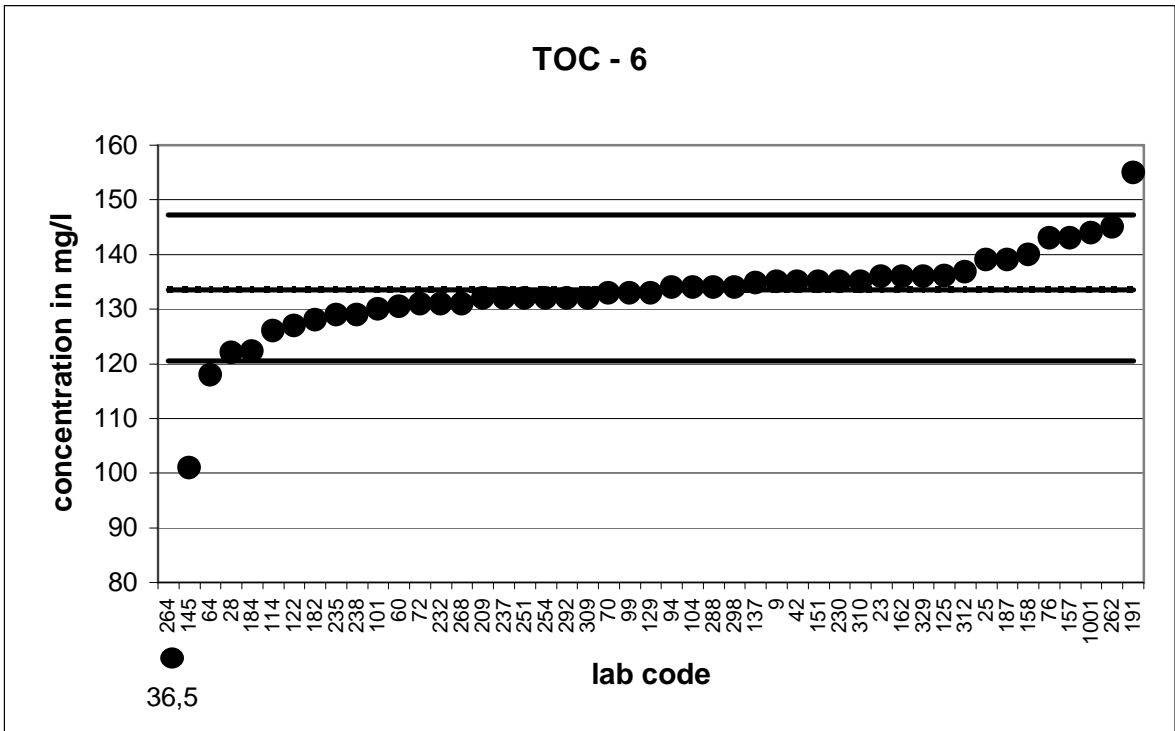


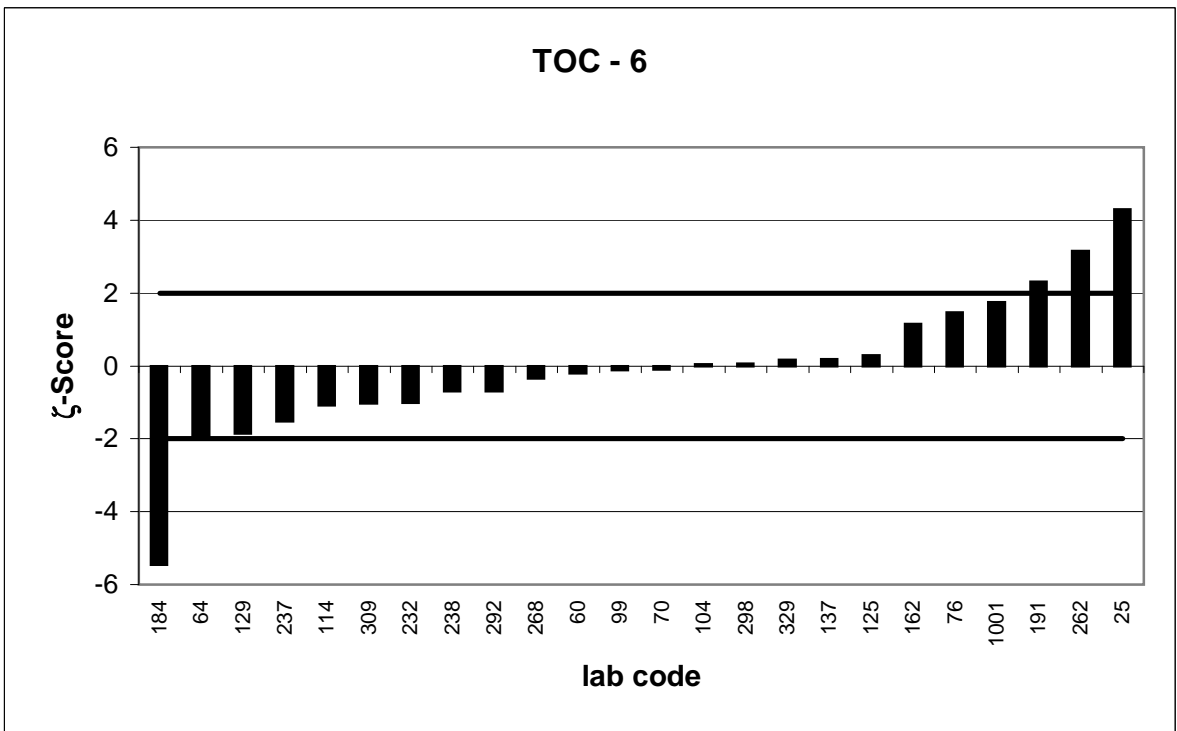
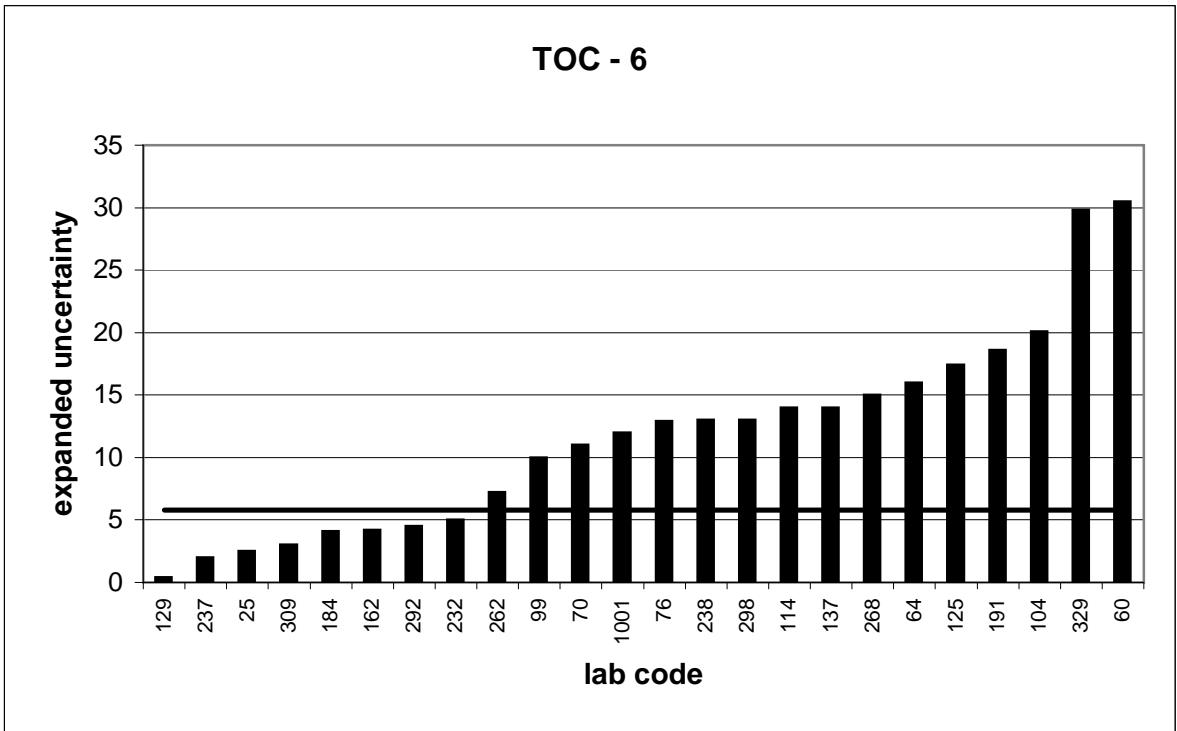
PT 3/11		TOC - 6			
assigned value [mg/l]*		133,6 ± 0,4			
upper tolerance limit [mg/l]		147,3			
lower tolerance limit [mg/l]		120,5			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	135			0,2	+
23	136			0,4	+
25	139	2,5	4,3	0,8	+
28	122			-1,8	+
42	135			0,2	+
60	130,45	30,51	-0,2	-0,5	+
64	118	16	-1,9	-2,4	-
70	133	11	-0,1	-0,1	+
72	131			-0,4	+
76	143	12,9	1,5	1,4	+
94	134			0,1	+
99	133	10	-0,1	-0,1	+
101	130			-0,5	+
104	134	20,1	0,0	0,1	+
114	126	14	-1,1	-1,2	+
122	127			-1,0	+
125	136,1	17,4	0,3	0,4	+
129	133	0,4	-1,9	-0,1	+
137	134,8	14	0,2	0,2	+
145	101			-5,0	-
151	135			0,2	+
157	143			1,4	+
158	140			0,9	+
162	136	4,2	1,2	0,4	+
182	128			-0,9	+
184	122,3	4,1	-5,5	-1,7	+
187	139			0,8	+
191	155	18,6	2,3	3,1	-
209	132			-0,2	+
230	135			0,2	+
232	131	5	-1,0	-0,4	+
235	129			-0,7	+
237	132	2	-1,5	-0,2	+
238	129	13	-0,7	-0,7	+
251	132			-0,2	+
254	132			-0,2	+
262	145	7,25	3,2	1,7	+
264	36,5			-14,9	-
268	131	15	-0,3	-0,4	+
288	134			0,1	+
292	132	4,5	-0,7	-0,2	+
298	134	13	0,1	0,1	+
309	132	3	-1,0	-0,2	+
310	135			0,2	+
312	136,8			0,5	+
329	136	29,8	0,2	0,4	+

* 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%

PT 3/11		TOC - 6			
assigned value [mg/l]*		133,6 ± 0,4			
upper tolerance limit [mg/l]		147,3			
lower tolerance limit [mg/l]		120,5			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
1001	144	12	1,7	1,5	+

* 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%



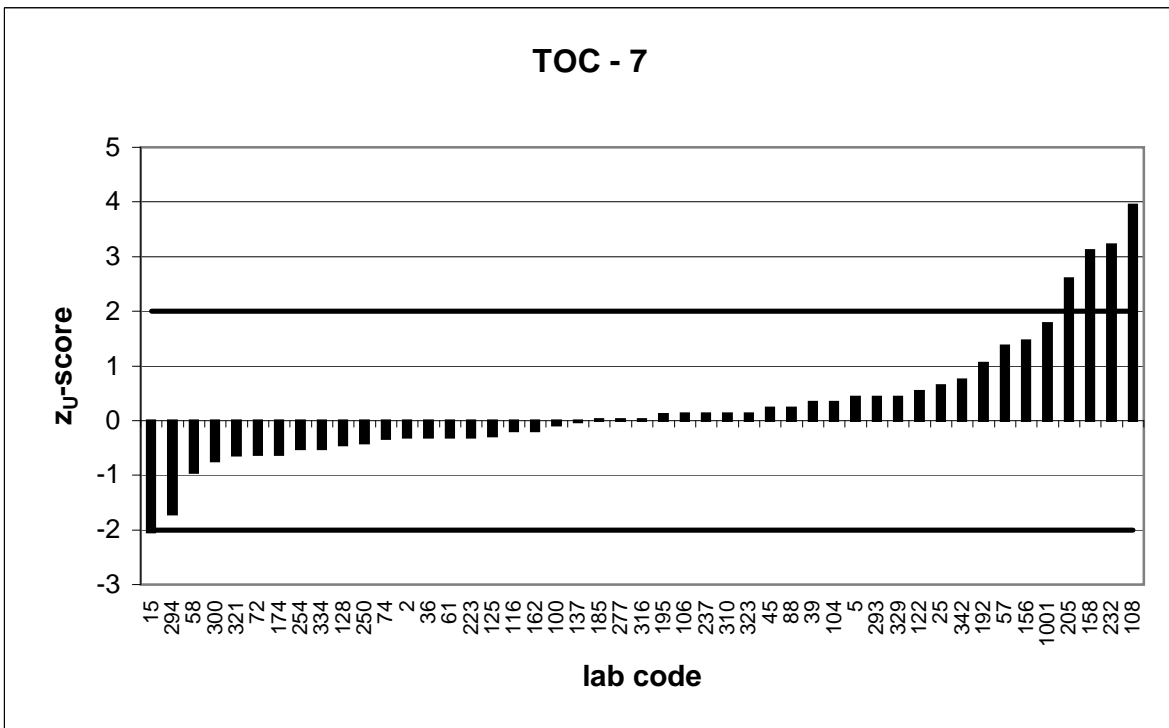
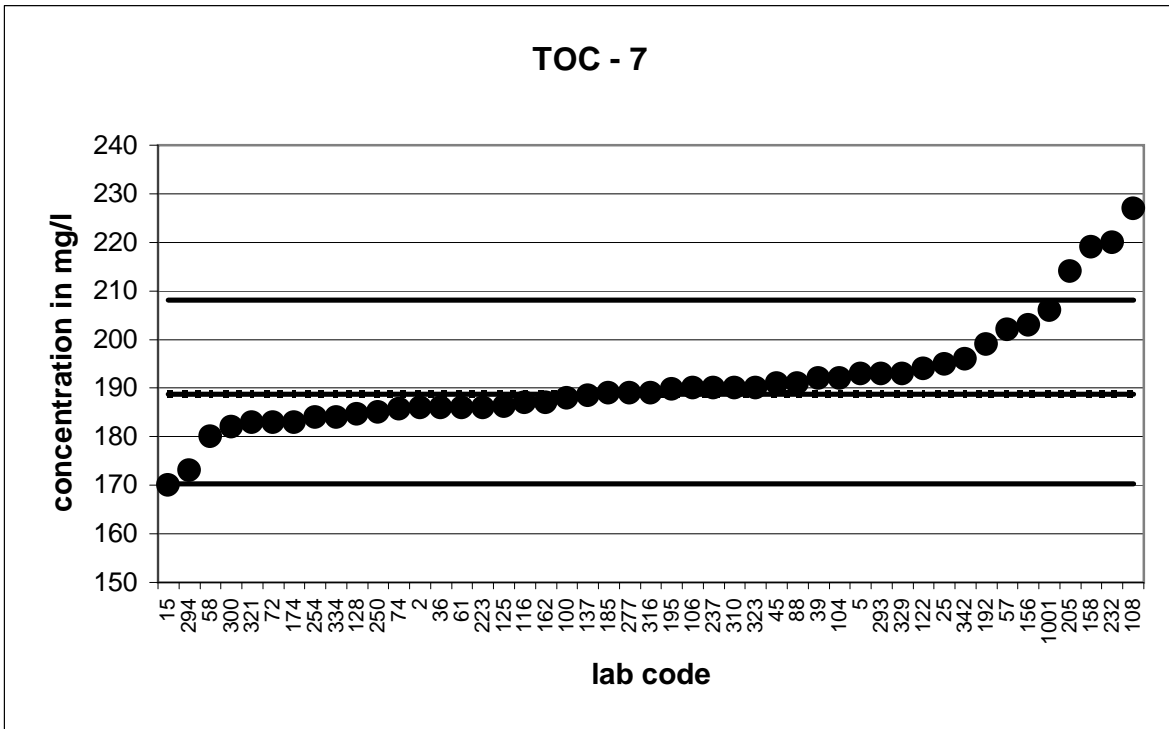


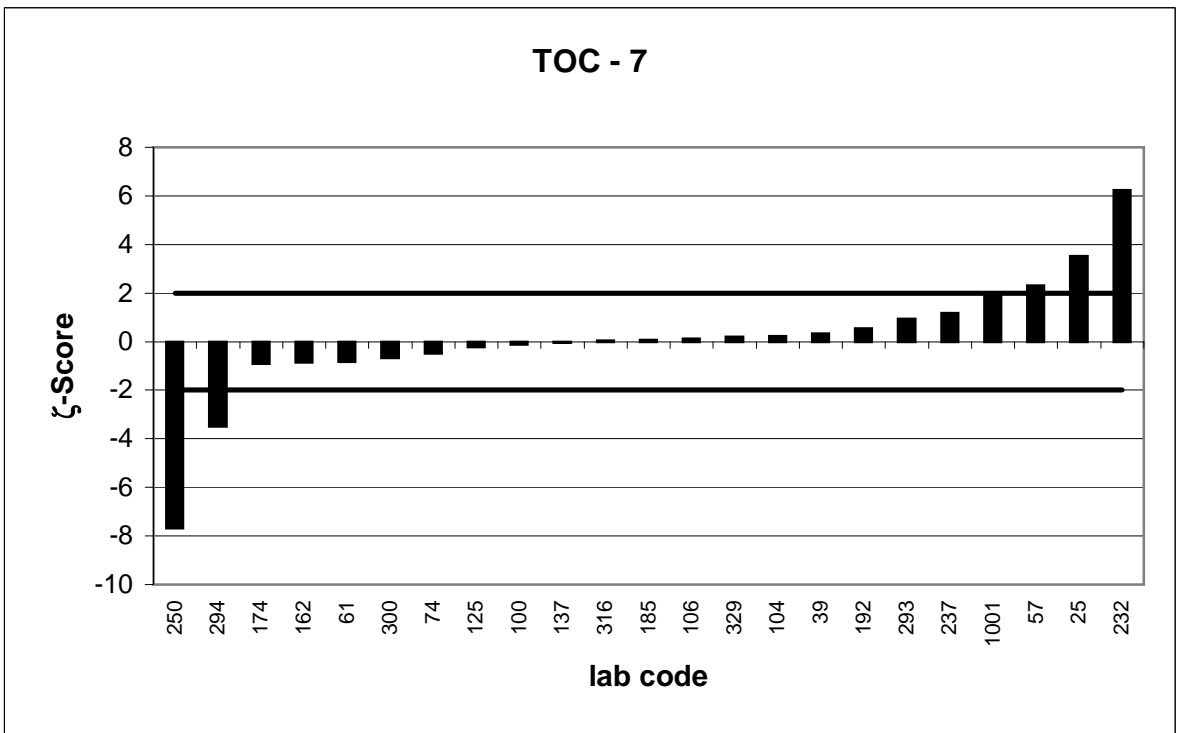
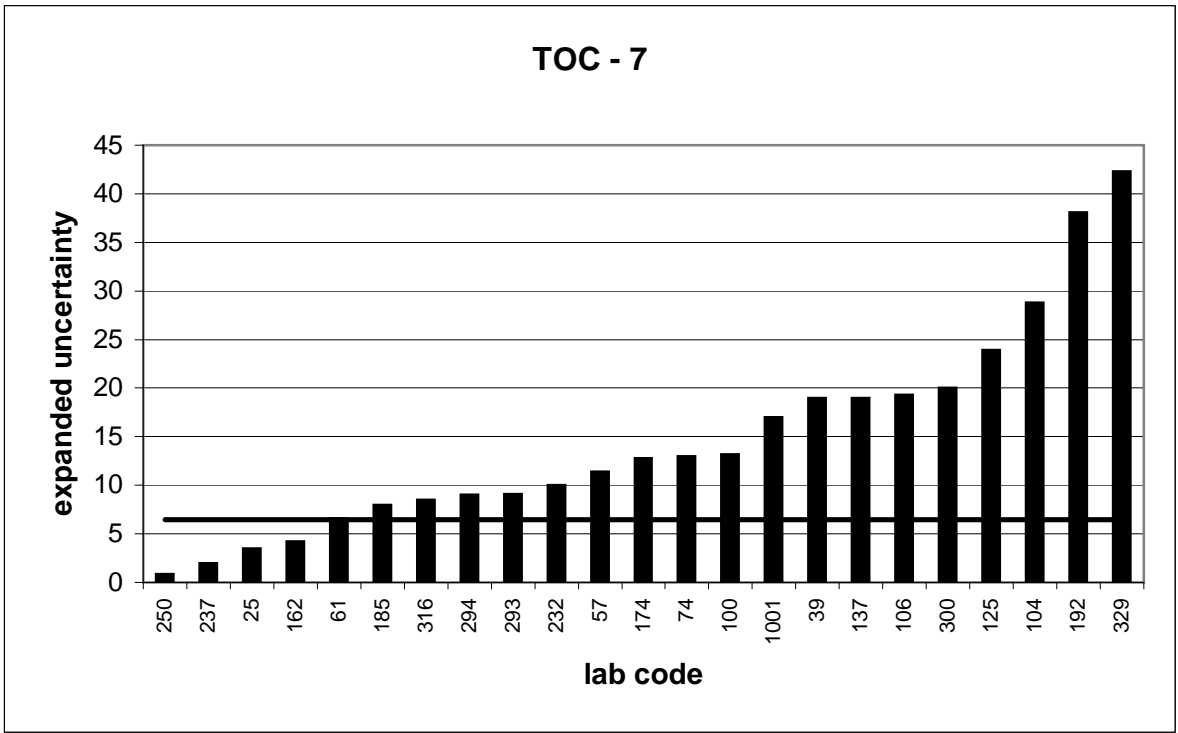
PT 3/11		TOC - 7			
assigned value [mg/l]*		188,8 ± 0,5			
upper tolerance limit [mg/l]		208,2			
lower tolerance limit [mg/l]		170,4			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
2	186			-0,3	+
5	193			0,4	+
15	170			-2,0	+
25	195	3,5	3,5	0,6	+
36	186			-0,3	+
39	192	19	0,3	0,3	+
45	191			0,2	+
57	202	11,4	2,3	1,4	+
58	180			-1,0	+
61	186	6,6	-0,8	-0,3	+
72	183			-0,6	+
74	185,7	13	-0,5	-0,3	+
88	191			0,2	+
100	188	13,2	-0,1	-0,1	+
104	192	28,8	0,2	0,3	+
106	190	19,3	0,1	0,1	+
108	227			3,9	-
116	187			-0,2	+
122	194			0,5	+
125	186,2	23,9	-0,2	-0,3	+
128	184,7			-0,4	+
137	188,5	19	0,0	0,0	+
156	203			1,5	+
158	219			3,1	-
162	187	4,2	-0,8	-0,2	+
174	183	12,8	-0,9	-0,6	+
185	189	8	0,1	0,0	+
192	199	38,1	0,5	1,1	+
195	189,86			0,1	+
205	214			2,6	-
223	186			-0,3	+
232	220	10	6,2	3,2	-
237	190	2	1,2	0,1	+
250	185	0,85	-7,7	-0,4	+
254	184			-0,5	+
277	189			0,0	+
293	193	9,1	0,9	0,4	+
294	173	9	-3,5	-1,7	+
300	182	20	-0,7	-0,7	+
310	190			0,1	+
316	189	8,5	0,1	0,0	+
321	182,9			-0,6	+
323	190			0,1	+
329	193	42,3	0,2	0,4	+
334	184			-0,5	+
342	196			0,7	+

* 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%

PT 3/11		TOC - 7			
assigned value [mg/l]*		188,8 ± 0,5			
upper tolerance limit [mg/l]		208,2			
lower tolerance limit [mg/l]		170,4			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
1001	206	17	2,0	1,8	+

* 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%



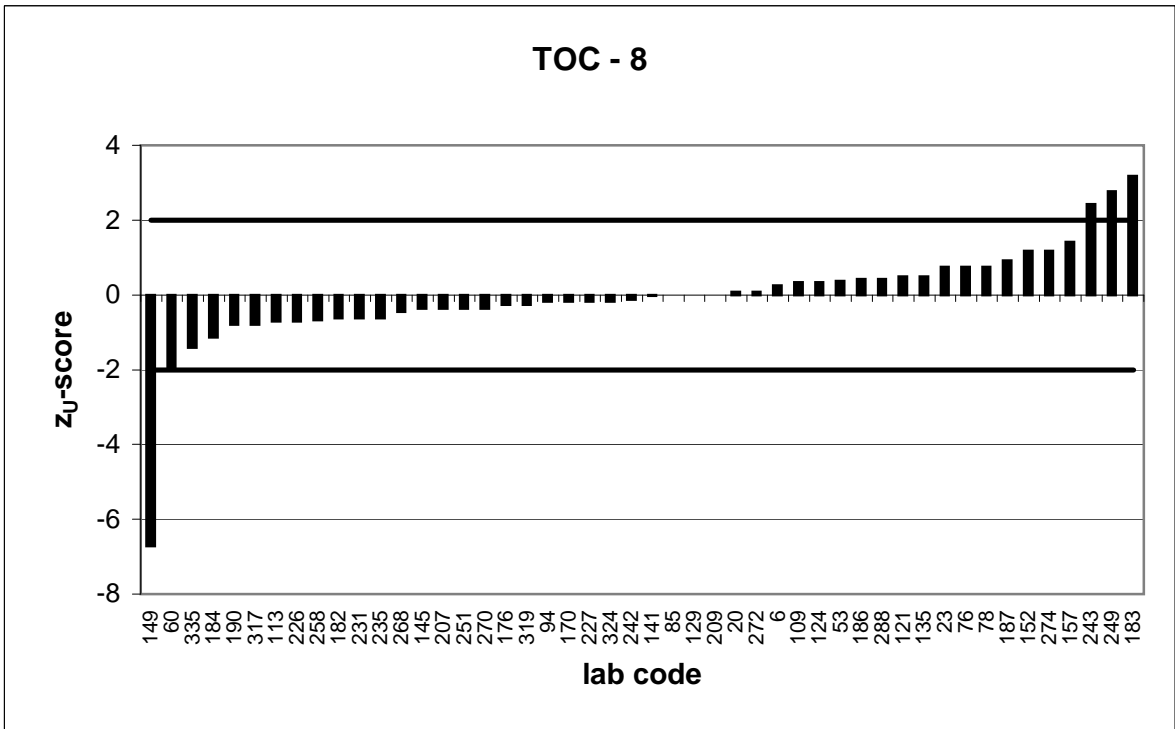
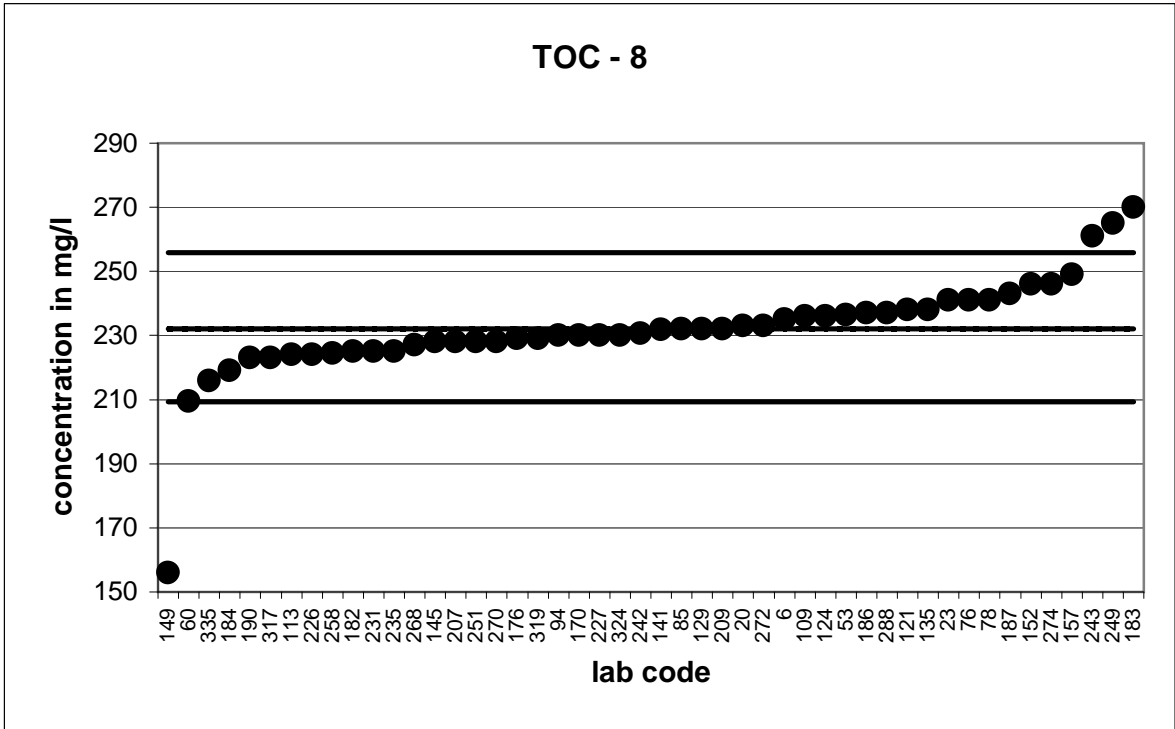


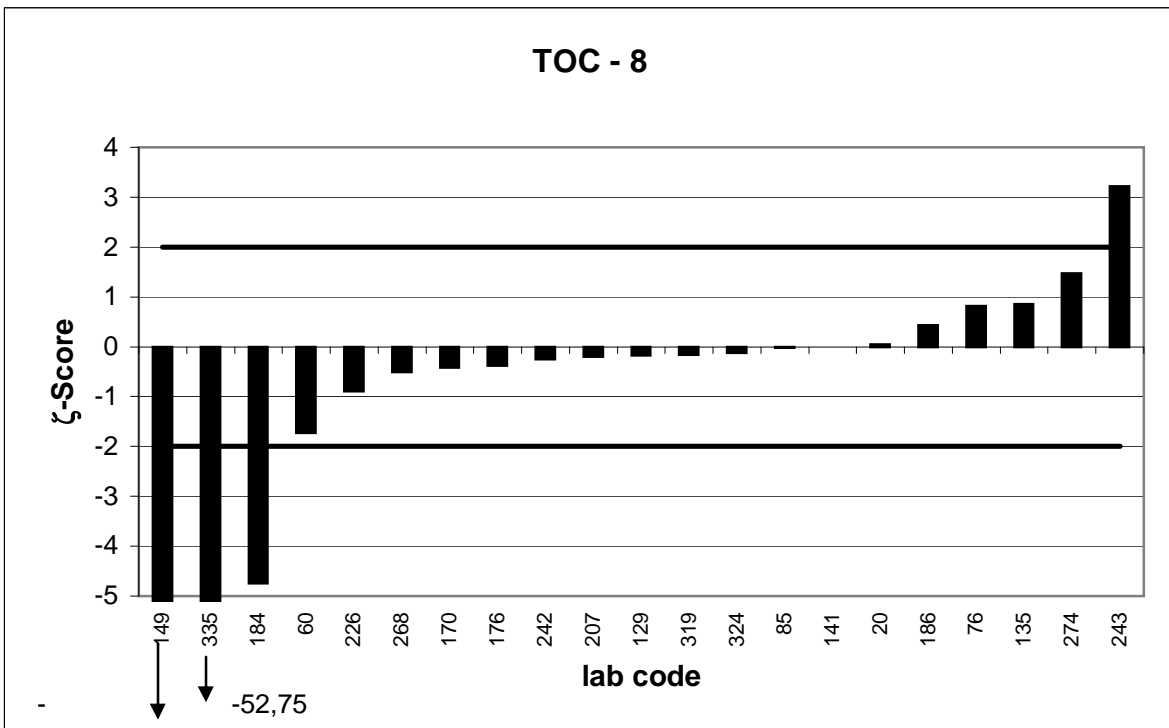
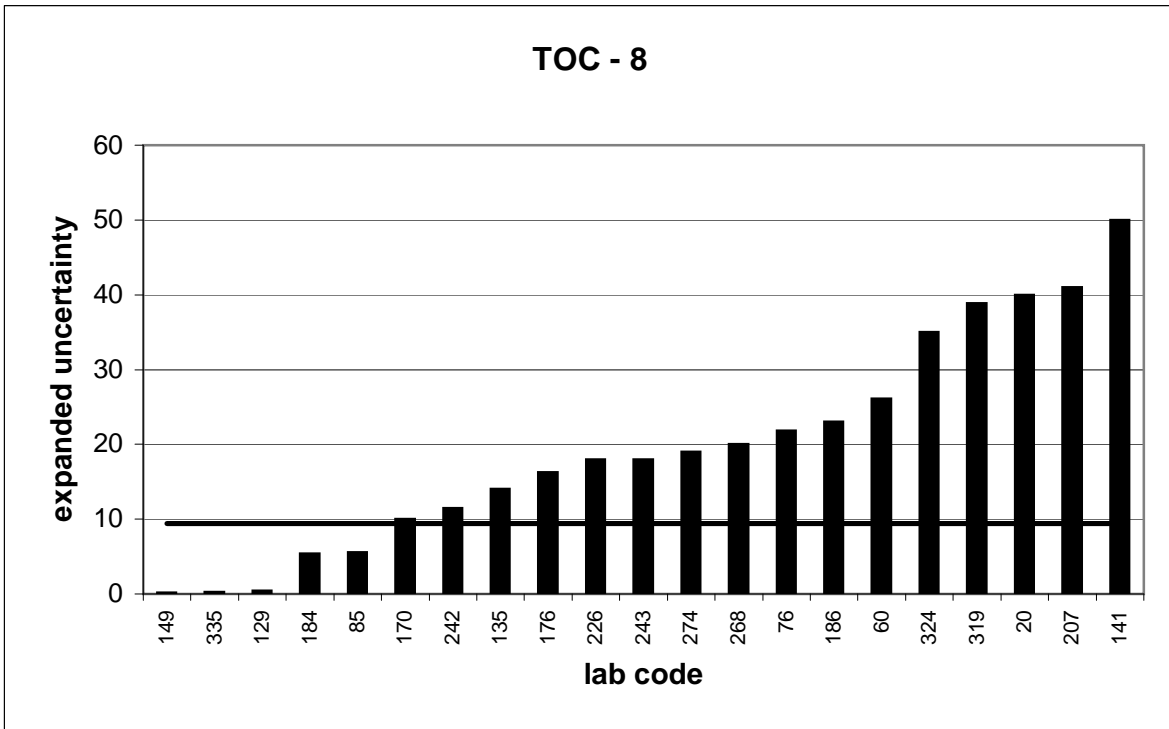
PT 3/11		TOC - 8			
assigned value [mg/l]*		232,1 ± 0,5			
upper tolerance limit [mg/l]		255,9			
lower tolerance limit [mg/l]		209,4			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
6	235			0,2	+
20	233	40	0,0	0,1	+
23	241			0,8	+
53	236,5			0,4	+
60	209,54	26,12	-1,7	-2,0	+
76	241	21,8	0,8	0,8	+
78	241			0,8	+
85	232	5,56	0,0	0,0	+
94	230			-0,2	+
109	236			0,3	+
113	224			-0,7	+
121	238			0,5	+
124	236			0,3	+
129	232	0,4	-0,2	0,0	+
135	238	14	0,8	0,5	+
141	231,85	50	0,0	0,0	+
145	228			-0,4	+
149	156	0,2	-263,9	-6,7	-
152	246			1,2	+
157	249			1,4	+
170	230	10	-0,4	-0,2	+
176	229	16,3	-0,4	-0,3	+
182	225			-0,6	+
183	270			3,2	-
184	219,2	5,4	-4,7	-1,1	+
186	237	23	0,4	0,4	+
187	243			0,9	+
190	223			-0,8	+
207	228	41	-0,2	-0,4	+
209	232			0,0	+
226	224	18	-0,9	-0,7	+
227	230			-0,2	+
231	225			-0,6	+
235	225			-0,6	+
242	230,6	11,5	-0,3	-0,1	+
243	261	18	3,2	2,4	-
249	265			2,8	-
251	228			-0,4	+
258	224,5			-0,7	+
268	227	20	-0,5	-0,4	+
270	228			-0,4	+
272	233			0,1	+
274	246	19	1,5	1,2	+
288	237			0,4	+
317	223			-0,8	+
319	229	38,9	-0,2	-0,3	+

* 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%

PT 3/11		TOC - 8			
assigned value [mg/l]*		232,1 ± 0,5			
upper tolerance limit [mg/l]		255,9			
lower tolerance limit [mg/l]		209,4			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
324	230	35	-0,1	-0,2	+
335	216	0,28	-52,8	-1,4	+

* 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%





PT 3/11		TOC - 9			
assigned value [mg/l]*		282,6 ± 0,6			
upper tolerance limit [mg/l]		311,6			
lower tolerance limit [mg/l]		255			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
9	286			0,2	+
21	285			0,2	+
28	269			-1,0	+
29	284			0,1	+
31	286	6	1,1	0,2	+
35	101			-13,2	-
42	283			0,0	+
64	274	38	-0,5	-0,6	+
67	285			0,2	+
70	286	23	0,3	0,2	+
83	281,4			-0,1	+
99	284	20	0,1	0,1	+
101	275			-0,6	+
102	283			0,0	+
103	288	60	0,2	0,4	+
114	282	31	0,0	0,0	+
126	284	1,8	1,4	0,1	+
150	327			3,1	-
151	284			0,1	+
161	291			0,6	+
191	332	39,8	2,5	3,4	-
197	283	274	0,0	0,0	+
201	270	4	-6,2	-0,9	+
208	291	15,8	1,1	0,6	+
218	280			-0,2	+
229	281	58,3	-0,1	-0,1	+
230	294			0,8	+
234	280	10,6	-0,5	-0,2	+
238	275	28	-0,5	-0,6	+
261	286			0,2	+
262	293	14,7	1,4	0,7	+
264	66,7			-15,7	-
266	250	25	-2,6	-2,4	-
276	284	26	0,1	0,1	+
279	290,6	29	0,5	0,5	+
292	281	6	-0,5	-0,1	+
295	291	24,1	0,7	0,6	+
298	265	27	-1,3	-1,3	+
307	278			-0,3	+
309	275	5	-3,0	-0,6	+
312	297,2			1,0	+
326	276	29	-0,5	-0,5	+
338	225	35	-3,3	-4,2	-
340	288	48	0,2	0,4	+
343	283			0,0	+
901	297,2	23,8	1,2	1,0	+

* 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%

PT 3/11		TOC - 9			
assigned value [mg/l]*		282,6 ± 0,6			
upper tolerance limit [mg/l]		311,6			
lower tolerance limit [mg/l]		255			
lab code	result [mg/l]	±	ζ-score	z _U -score	assessm.
903	255			-2,0	+

* 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%

