

Proficiency Testing Scheme for Water Analysis

Round M109
Metals

Sample Dispatch: 23 January 2012





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This report summarises the results of round M109 (trace metals) within the IFA-Test Proficiency Testing Scheme for water analysis. The samples M109A and M109B were distributed to the participants on Monday, 23 January 2012. Closing date for reporting results to the IFA-Tulln was Friday, 17 February 2012.

24 laboratories participated in this interlaboratory comparison. All participants submitted results.

Samples

The samples consisted of artificial ground water spiked with pure standards. For sample preparation, ultrapure water was spiked with concentrated solutions of salts in order to simulate the ionic composition of natural Austrian ground water. Ultrapure HNO₃ (0.5 % v/v) was added to stabilise the sample at a pH below 2, which meets the standard sampling procedure in the Austrian monitoring program. The following ultrapure salts were added to the samples: CaCO₃, Mg(NO₃)₂, NaCl, KCl, besides ultrapure H₂SO₄ for sulphate. By this, the matrix of the samples consisted of about 30.2 mg/L Ca²⁺; 8.03 mg/L Mg²⁺; 9.73 mg/L Na⁺; 3.94 mg/L K⁺; 31.7 mg/L SO₄²⁻ and 18.6 mg/L Cl⁻ in 0.5 % HNO₃.

Traces of Ag, Al, As, Pb, Cd, Cr, Fe, Cu, Mn, Ni, Hg, U, Se and Zn were added, using certified atomic spectroscopy standards. For most of the compounds added to the samples, the target concentrations were higher than the minimum quantifiable values of the Austrian ground and river water monitoring program. The calculation of the target concentrations of the compounds was based on the mass of standard added to the samples.

Homogeneity, accuracy and stability tests at the IFA-Tulln

Three bottles of the round M109A and M109B were analysed for all investigated parameters prior to shipment to the participants. The results are listed in the results tables and the parameter oriented part of the report ("IFA result").

After four weeks all parameters were determined in two samples of the round M109A and M109B. The results of the measurements are listed in the result tables and the parameter oriented part of the report ("Stability test").

According to our experience the samples remain stable up to 18 months for the parameters Al, As, Pb, Cd, Cr, Cu, Fe, Mn, Ni, U, Se and Zn when stored at 4-6 °C in the dark. For the parameters Hg and Ag a concentration decrease of 2 % to 4 % per month can be expected.

Results

Data evaluation was based on target concentrations that were calculated from the weights of the standards used to produce the samples. Their uncertainty intervals correspond to the expanded uncertainty (coverage factor $k = 2$) as described in the EURACHEM/CITAC Guide "Quantifying Uncertainty in Analytical Measurement" (Second Edition).

Recoveries for individual laboratory results and overall mean values are related to the assigned concentrations. The results were tested for outliers by application of the Hampel outlier test (level of significance 99 %). A minimum number of four results was required for the outlier test. Thus, the results for Ag were not checked for outliers.

Standard deviations and coefficients of variation (CVs) were only calculated when at least three results were available. The recoveries of the target concentrations, calculated from outlier-corrected data mean values ranged between 95.6 % (Pb in sample M109B) and 114.8 % (Se in sample M109A).

The between laboratory CVs covered the range between 2.5 % (U in sample M109A) and 19.9 % (Se in sample M109A).

All confidence intervals of the outlier-corrected laboratory mean values encompass the corresponding target values with their uncertainties. Thus, statistically, no difference could be detected between theoretical target concentrations and outlier corrected laboratory means.

z-scores

The most common approach is to form the z-score given by

$$z = \frac{x_i - \bar{x}}{\sigma}$$

z	z-score
x_i	result of laboratory
\bar{x}	target value or mean value („consensus value“)
σ	standard deviation

Thus, the z-score is the ratio of the estimated bias (difference between result and target value) and a standard deviation. The z-score criteria were determined from relative standard deviations from all interlaboratory comparisons that were organised by the IFA-Tulln in the period from 2001 to 2011. They represent long-term performance data of all former participating laboratories. The z-scores are listed together with the recoveries in the tables of the parameter oriented part.

Additionally, each laboratory obtained for every sample a single sheet that summarises the z-scores of the laboratory in graphical and tabular form.

The following table lists the z-score criteria as relative standard deviation and their limits of applicability. Z-scores were only calculated, if the target values were higher than these limits.

Thus, no z-scores were calculated for Ag in sample M109A.

Parameter	z-Score-criteria (%)	Lower limit [$\mu\text{g/L}$]
Aluminium	12	10
Arsenic	11	0.5
Cadmium	8.0	0.15
Chromium	7.7	1
Copper	8.5	1.5
Iron	9.5	20
Lead	8.4	1
Manganese	7.3	5
Mercury	11	0.2
Nickel	8.6	1.5
Selenium	14	0.5
Silver	17	0.05
Uranium	6.3	1
Zinc	10	3

Normally, a classification based on z-scores is made this way:

z-Score	Classification
<2	satisfactory
$2 < z < 3$	questionable
>3	unsatisfactory

Please note that this evaluation is made on the background of the average performance of all participants of the IFA-Test-Systems proficiency testing scheme during the period from 2001 to 2011.

Illustration of results

An explanation to the illustration of the results is given on the following page. Graphical and tabular illustration of results can be divided into a parameter oriented and a laboratory oriented part.

In the **parameter oriented part** the reported results and corresponding uncertainties are illustrated together with recoveries of the target values and the z-scores for each parameter and all laboratories. This information is presented in graphical and tabular form. Results, which were identified as outliers by the Hampel test are marked with an asterisk in the column "out". These values were not considered for the calculation of statistical parameters (mean values, standard deviations and confidence intervals). Moreover, the parameter oriented part contains the uncertainties of the target value. The uncertainty intervals correspond to the expanded uncertainty (coverage factor $k=2$) as described in the EURACHEM / CITAC Guide "Quantifying Uncertainty in Analytical Measurement" (Second Edition). The uncertainty interval of the reference concentration is illustrated in the graphs as a grey band around the 100 % recovery line.

The **laboratory oriented part** contains the measurement results and reported uncertainties of each individual laboratory for all parameters together with the achieved recoveries in graphical and tabular form. This part of the report also lists tables with the results originally reported by the laboratories.

Results, for which no recoveries could be calculated, are illustrated by one of the following symbols: **FN** (false negative), **FP** (false positive) or • - symbol.

- "FN": a result is considered false negative when the "< result" reported is lower than the corresponding target value
- "FP": False positive results can be obtained for compounds not added to the samples: a result is termed FP if it is higher than the corresponding limit of quantification of the analytical procedure employed at the IFA-Tulln.
- "•": All other results for which no recoveries can be calculated are illustrated by this symbol

Tulln, 20 February 2012

Sample C10B
Parameter Dichloromethane

Target value ± U (k=2) 10,4 µg/l ± 0,5 µg/l **Obtained from mass weighed out, U = uncertainty**

IFA result ± U (k=2) 10,2 µg/l ± 1,0 µg/l **Determined at IFA prior to shipment of samples**

Stability test ± U (k=2) 10,2 µg/l ± 1,0 µg/l **Determined at IFA 5 weeks after sample dispatch**

Lab code	Result	Out	+/-	Unit	Recovery	z-Score
A	11,0		1,28	µg/l	106 %	0,30
B	9,0		1,8	µg/l	87 %	-0,71
C	10		2	µg/l	96 %	-0,20
D				µg/l		
E	13,7		0,40	µg/l	132 %	1,67
F	6,8		0,7	µg/l	65 %	-1,82
G	< 20			µg/l		
H				µg/l		
I	11,0			µg/l	106%	0,30
J	24,1	*	1,51	µg/l	232 %	6,93
K	10,09		1,22	µg/l	97 %	-0,16
L	2,76	*		µg/l	27 %	-3,87
M	6,38		1,87	µg/l	61 %	-2,03
N	< 5		0,5	µg/l	FN	
O	15,6	*	4	µg/l	150 %	2,63
P	10,3		1,0	µg/l	99 %	-0,05
Q	10		1,14	µg/l	96 %	-0,20
R	8,88		0,46	µg/l	85 %	-0,77
S				µg/l		
T	9,03		0,08	µg/l	87 %	-0,69
U	22,5	*	0,5	µg/l	216 %	6,12
V	10,33		0,25	µg/l	99 %	-0,04

Recovery of target value in percent

z-Score of the laboratory

An asterisk indicates a result detected as outlier by Hampel test

Interval expected to encompass target value as stated by participant

	All results	Outliers excl.	Unit
Mean +/- CI (99%)	11,3 ± 3,8	9,7 ± 1,6	µg/l
Recov. +/- CI (99%)	108,3 ± 36,3	93,6 ± 15,1	%
SD between labs	5,3	1,9	µg/l
RSD between labs	47,3	19,1	%
n for calculation	17	13	

Between laboratory standard deviation

Overall laboratory mean and recovery with corresponding confidence intervals (p=99%)

Number of data used for calculation of statistic parameters

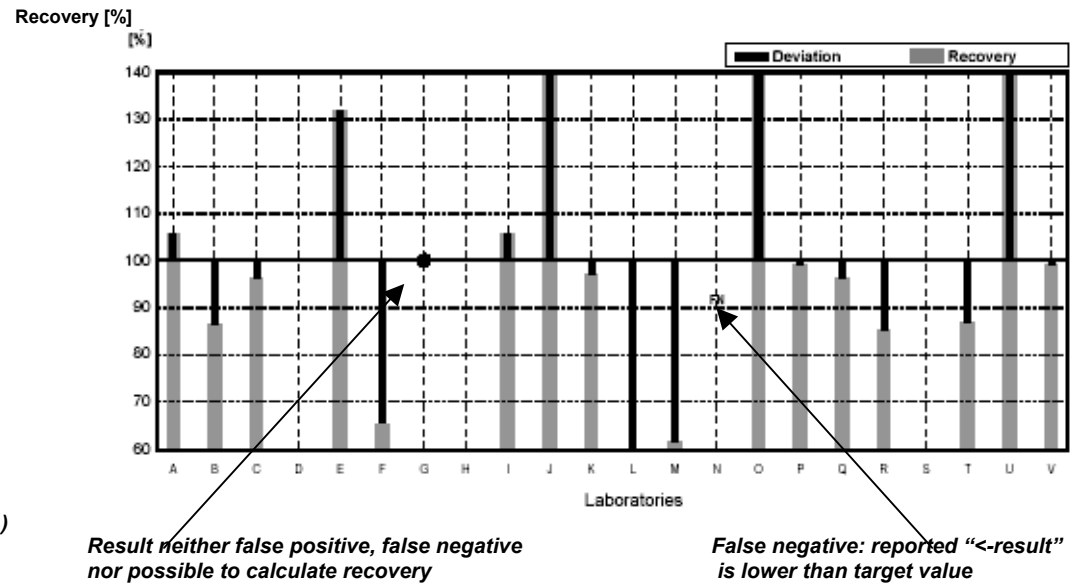
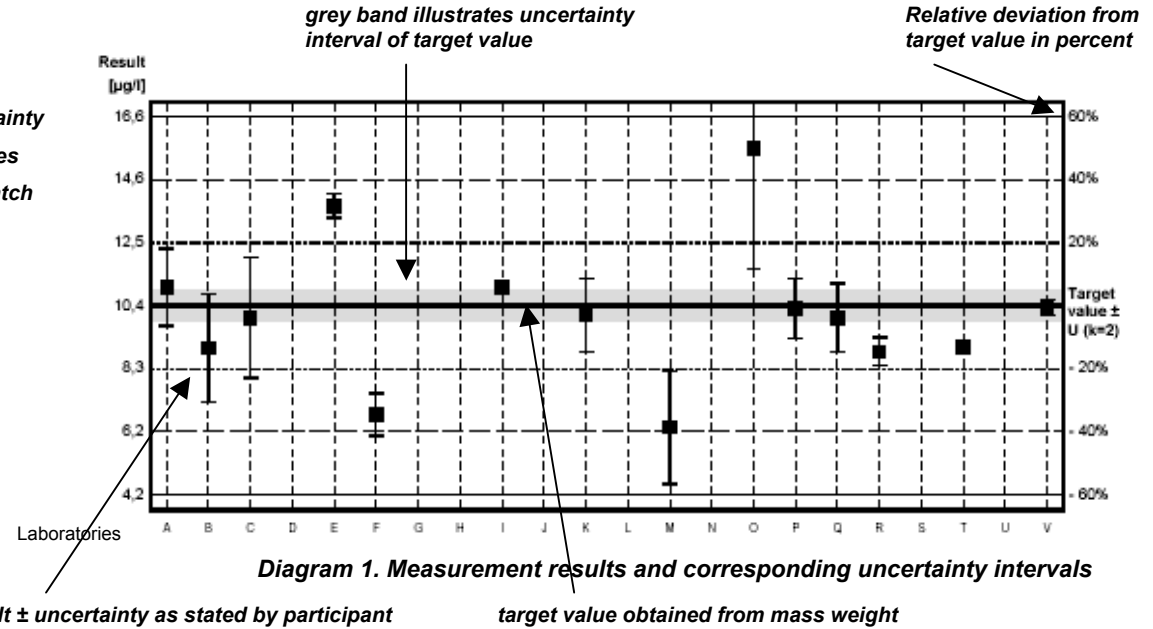


Diagram 2. Recoveries and deviations from target values

EXPLANATION

Illustration of Results Tables and Parameter Oriented Part

Round M109
Metals

Sample Dispatch: 23 January 2012



Results Sample M109A

	Aluminium	Arsenic	Lead	Cadmium	Chromium	Iron	Copper
Target value	45.1	1.19	8.39	0.308	6.46	71.9	6.16
IFA result	45.1	1.19	8.29	0.307	6.35	70.5	5.96
Stability test	44.6	1.17	8.09	0.317	6.21	70.7	5.86
A	50.7		10.1	0.46	7.55	64.3	6.33
B	29					70	
C						76	
D							
E	47.51	1.3	8.13	0.3	6.63	71.6	6.41
F	46.50	1.38	8.04	0.289	6.48	71.1	6.46
G	37.0	1.2	8.5	0.31	6.5	69.8	6.2
H		1.3	7.8	0.3	6.5		4.0
I	47.4	1.4	8.3	[0.5]	6.4	66.8	6.9
J	21	<NWG	9	<NWG	9	65	7
K	45	<2	8.6	<1	6.6	74	6.4
L						72.8	
M	46.4	1.49	7.66	0.354	6.40	69.0	5.28
N	46.4	1.45	11.3	0.49	7.42	72.4	7.0
O	46	1.3	7.8	0.32	6.8	75	5.8
P	43.9	1.25	7.99	0.308	6.53	72.6	5.88
Q	43.35	1.21	7.75	0.29	6.54	72.52	6.15
R	43.38	1.06	7.66	0.287	5.72	66.7	5.29
S	44.4	1.2	8.1	0.3	6.7	69.9	6.3
T	43.36	1.23	8.00	0.303	6.24	69.29	5.83
U		1.06	7.98	0.31	7.17		11.71
V	44.2	1.16	8.14	0.31	6.35	72.2	6.02
W	23.3						
X	41.5	1.19	7.92	0.301	5.86	65.0	5.56

All data in µg/L

Uncertainties Sample M109A

	Aluminium ±	Arsenic ±	Lead ±	Cadmium ±	Chromium ±	Iron ±	Copper ±
Target value	0.4	0.02	0.10	0.006	0.05	0.4	0.13
IFA result	4.5	0.14	0.75	0.021	0.95	5.6	0.48
Stability test	4.5	0.14	0.73	0.022	0.93	5.7	0.47
A	7.5		1.8	0.08	1.1	3.3	1.0
B	9.0					28.7	
C						5	
D							
E	4.751	0.156	0.6504	0.024	0.7956	18.616	0.5128
F	6.98	0.28	1.61	0.058	0.97	7.11	0.97
G	1.9	0.06	0.4	0.02	0.3	3.5	0.3
H		0.4	3	0.1	4.1		1.2
I							
J	3		2		2	5	2
K							
L						10.0	
M	4.6	0.15	0.77	0.04	0.64	6.9	0.53
N	3.0	0.3	1.5	0.2	1.0	3.0	1.0
O	5	0.2	0.8	0.12	0.7	7	0.6
P	1.20	0.07	0.07	0.027	0.19	1.72	0.23
Q	1.30	0.07	0.23	0.04	0.20	2.18	0.18
R	15.24	0.1	0.56	0.068	0.44	23.2	0.76
S	0.1						
T	6.50	0.18	1.20	0.045	0.94	10.39	0.87
U		0.1	0.6	0.02	1.0		1.6
V	7.5	0.15	1.22	0.03	0.95	18.0	0.78
W	1.30						
X	10.1	0.11	1.01	0.040	0.87	17.2	0.63

All data in µg/L

Results Sample M109A

	Manganese	Nickel	Mercury	Selenium	Silver	Uranium	Zinc
Target value	16.0	4.14	1.33	1.43	0.047	2.53	22.4
IFA result	15.9	3.97	1.40	1.42	0.047	2.59	23.2
Stability test	15.7	3.93	1.39	1.48	0.048	2.63	23.0
A	17.0	4.06					21.8
B	<20						
C	20						
D			1.292				
E	17.02	4.42	1.3		<0.5		23.71
F	15.85	4.13	1.29				22.61
G	15.6	4.2	1.1	1.6	<0.1		22.3
H	15.2	3.9		1.5	0.03		7.8
I	16.4	4.1	1.2	2.0			27.4
J	16	4		<NWG	<NWG	<NWG	20
K	17	4.2	1.38	1.7	<2		24
L	16.1						
M	15.8	4.01	0.955	1.81	<1	2.44	20.9
N	16.2	4.9	1.47	2.3	<1.0		26.6
O	16	4.9	1.3	<2.0	<0.20	2.5	24
P	15.3	3.94	1.60				22.3
Q	15.33	4.22	1.52				22.36
R	15.21	4.027	1.16	1.17	<0.2	2.4	19.33
S	16.4	4.3	1.25	1.5	<3	2.5	21.9
T	<20	3.86	1.40				20.94
U		4.16		<5	<0.5	2.58	
V	15.3	4.02	1.39	1.44		2.18	27.10
W							
X	15.4	4.25	1.45	1.40	0.032	2.48	21.8

All data in µg/L

Uncertainties Sample M109A

	Manganese ±	Nickel ±	Mercury ±	Selenium ±	Silver ±	Uranium ±	Zinc ±
Target value	0.2	0.04	0.01	0.03	0.002	0.03	0.2
IFA result	1.3	0.48	0.08	0.14	0.005	0.26	2.3
Stability test	1.3	0.47	0.08	0.15	0.005	0.26	2.3
A	1.7	0.7					1.8
B	<6						
C	5						
D			0.02				
E	1.702	0.442	0.156				2.371
F	1.59	0.62	0.26				2.26
G	0.8	0.2	0.06	0.08			1.1
H	5.5	0.9		1.2	0.006		3.2
I							
J	2	2					2
K							
L	2.0						
M	1.6	0.40	0.10	0.18		0.24	2.1
N	1.5	0.5	0.2	0.3			2.5
O	2	0.5	0.2			0.3	4
P	0.27	0.16	0.020				0.47
Q	0.46	0.25	0.23				0.67
R	1.12	0.332	0.07	0.16		0.15	2.56
S							
T		0.58	0.21				3.14
U		0.3				0.3	
V	3.2	0.48	0.56	0.20		0.44	3.8
W							
X	2.5	0.64	0.26	0.18	0.004	0.50	3.07

All data in µg/L

Results Sample M109B

	Aluminium	Arsenic	Lead	Cadmium	Chromium	Iron	Copper
Target value	27.9	3.40	5.12	1.75	4.44	40.1	9.17
IFA result	27.4	3.37	5.05	1.75	4.34	39.9	8.91
Stability test	27.7	3.35	4.91	1.81	4.23	39.2	8.92
A	32.2		6.44	1.76	5.30	47.0	9.40
B	<20					40	
C						52	
D							
E	29.48	3.6	5.01	1.71	4.81	37	9.53
F	29.47	3.44	5.05	1.73	4.48	38.7	9.27
G	22.7	3.3	5.1	1.71	4.5	38.1	8.9
H		3.6	4.6	1.8	4.5		6.0
I	29.9	3.8	5.2	1.7	4.4	36.7	9.7
J	12	1	1	1	7	37	9
K	28	2.9	5.2	1.8	4.5	41	9.4
L						40.1	
M	28.1	3.61	4.63	1.63	4.39	37.7	8.00
N	25.5	2.2	7.5	2.1	5.1	40.0	10.1
O	28	3.7	4.8	1.8	4.6	43	8.9
P	26.6	3.58	4.95	1.71	4.71	43.5	8.85
Q	27.46	3.24	4.55	1.73	4.45	39.23	9.09
R	26.4	3.1	4.69	1.59	3.84	36.77	7.69
S	26.5	3.6	5.0	1.8	4.6	38	9.4
T	26.56	3.43	4.83	1.71	4.30	38.64	8.45
U		3.30	4.84	1.71	4.39		11.98
V	27.3	3.43	5.00	1.71	4.34	41.3	8.90
W	15.8						
X	26.4	3.39	4.90	1.69	4.02	36.4	8.53

All data in µg/L

Uncertainties Sample M109B

	Aluminium ±	Arsenic ±	Lead ±	Cadmium ±	Chromium ±	Iron ±	Copper ±
Target value	0.2	0.04	0.09	0.02	0.06	0.3	0.21
IFA result	2.7	0.40	0.45	0.12	0.65	3.2	0.71
Stability test	2.8	0.40	0.44	0.13	0.63	3.1	0.71
A	4.8		1.2	0.3	0.8	2.4	1.5
B	<6.2					16.4	
C						5	
D							
E	2.948	0.432	0.4008	0.1368	0.5772	9.62	0.7624
F	4.42	0.69	1.01	0.35	0.67	3.87	1.39
G	1.1	0.2	0.3	0.09	0.23	1.9	0.5
H		1.0	1.8	0.6	3.0		1.9
I							
J	2	1	1	1	2	3	2
K							
L						10.0	
M	2.8	0.36	0.46	0.16	0.44	3.8	0.80
N	3.0	0.3	1.0	0.3	0.7	3.0	1.0
O	3	0.5	0.5	0.2	0.5	4	0.9
P	1.27	0.05	0.05	0.020	0.14	1.83	0.19
Q	0.83	0.19	0.14	0.26	0.13	1.18	0.27
R	9.5	0.24	0.35	0.11	0.3	13.01	1.05
S							
T	3.98	0.51	0.72	0.26	0.64	5.79	1.27
U		0.3	0.4	0.1	0.7		1.7
V	4.6	0.45	0.75	0.19	0.65	10.3	1.16
W	0.44						
X	6.43	0.30	0.62	0.22	0.60	9.61	0.97

All data in µg/L

Results Sample M109B

	Manganese	Nickel	Mercury	Selenium	Silver	Uranium	Zinc
Target value	32.0	8.37	1.67	2.63	0.116	1.92	13.1
IFA result	31.8	8.09	1.71	2.63	0.112	1.98	13.5
Stability test	31.3	7.95	1.74	2.81	0.114	2.02	13.8
A	36.1	6.84					14.9
B	30						
C	34						
D			1.588				
E	33.66	8.87	1.6		<0.5		14.33
F	31.89	8.36	1.64				13.13
G	33.7	8.3	1.4	2.2	<0.1		13.0
H	30.5	7.4		2.9	0.1		4.9
I	33.4	8.1	1.4	3.3			16.4
J	32	9		13	<NWG	<NWG	11
K	34	8.5	1.71	2.8	<2		14
L	33.0						
M	32.2	8.16	1.19	2.55	<1	1.81	12.3
N	32.3	9.2	1.83	2.9	<1.0		15.9
O	33	8.3	1.6	3.3	<0.20	2.0	14
P	30.5	8.32	1.97				12.3
Q	31.57	7.86	1.80				12.33
R	30.48	8.03	1.42	2.26	<0.2	1.81	11.3
S	32.8	8.6	1.51	2.7	<3	1.9	12.9
T	30.35	7.71	1.77				<20
U		7.89		<5	<0.5	1.90	
V	31.1	8.14	1.70	2.62		1.65	23.8
W							
X	30.6	8.28	1.82	2.64	0.091	1.84	13.4

All data in µg/L

Uncertainties Sample M109B

	Manganese ±	Nickel ±	Mercury ±	Selenium ±	Silver ±	Uranium ±	Zinc ±
Target value	0.3	0.10	0.02	0.03	0.004	0.02	0.1
IFA result	2.5	0.97	0.10	0.26	0.011	0.20	1.4
Stability test	2.5	0.95	0.10	0.28	0.011	0.20	1.4
A	3.6	1.2					1.2
B	9						
C	5						
D			0.01				
E	3.366	0.887	0.192				1.433
F	3.19	1.25	0.33				1.31
G	1.7	0.1	0.7	0.1			1.4
H	11	1.8		2.3	0.02		2.0
I							
J	2	2		2			2
K							
L	4.0						
M	3.2	0.82	0.12	0.26		0.18	1.2
N	2.0	1.0	0.2	0.3			2.0
O	3	0.8	0.2	0.5		0.3	3
P	0.26	0.14	0.030				0.55
Q	0.95	0.47	0.27				0.37
R	2.23	0.62	0.07	0.21		0.12	1.5
S							
T	4.55	1.16	0.27				
U		0.6				0.2	
V	6.5	0.98	0.68	0.37		0.33	3.3
W							
X	4.9	1.24	0.33	0.34	0.012	0.37	1.9

All data in µg/L

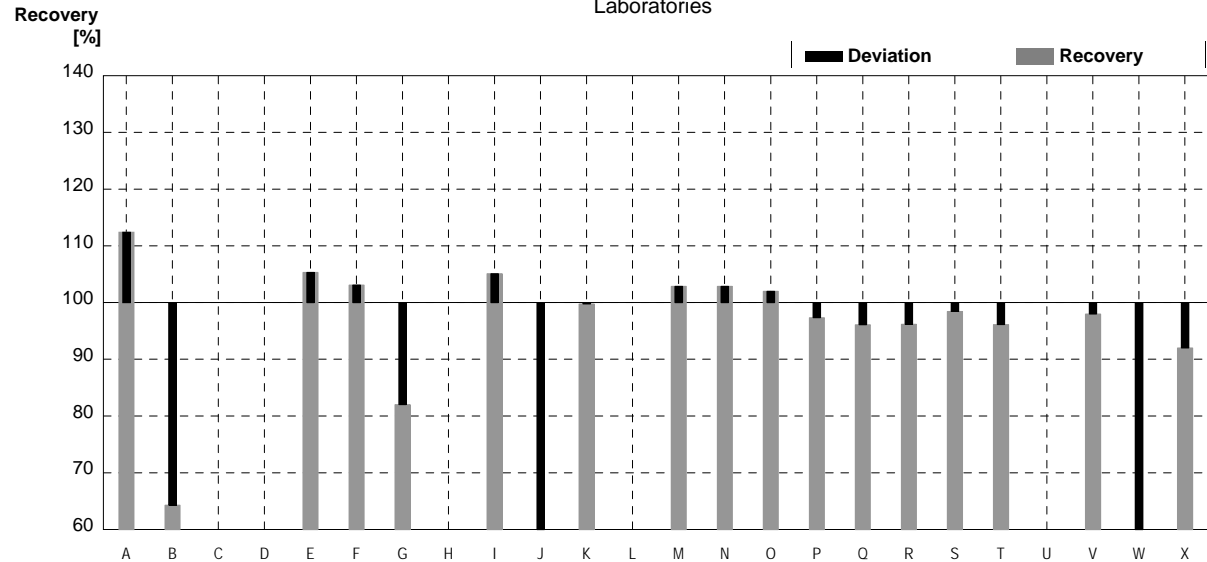
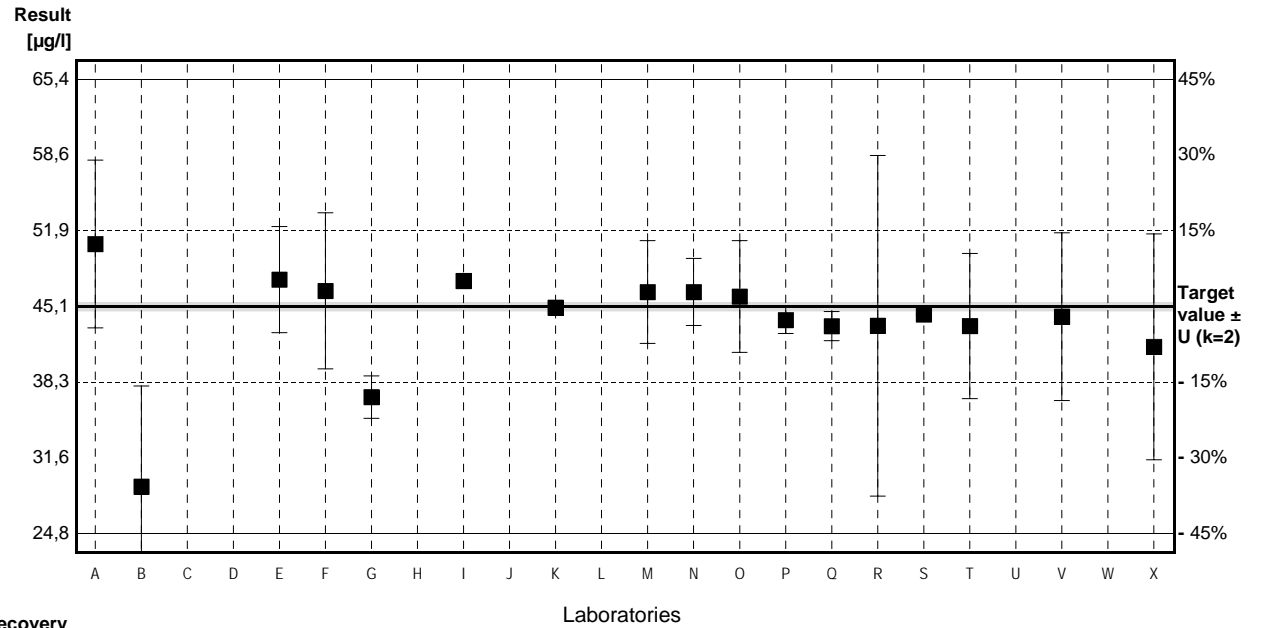
Sample M109A

Parameter Aluminium

Target value $\pm U$ (k=2) 45,1 $\mu\text{g/l}$ \pm 0,4 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 45,1 $\mu\text{g/l}$ \pm 4,5 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 44,6 $\mu\text{g/l}$ \pm 4,5 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	50,7	7,5	$\mu\text{g/l}$	112%	1,03
B	29 *	9,0	$\mu\text{g/l}$	64%	-2,97
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	47,51	4,751	$\mu\text{g/l}$	105%	0,45
F	46,50	6,98	$\mu\text{g/l}$	103%	0,26
G	37,0	1,9	$\mu\text{g/l}$	82%	-1,50
H			$\mu\text{g/l}$		
I	47,4		$\mu\text{g/l}$	105%	0,42
J	21 *	3	$\mu\text{g/l}$	47%	-4,45
K	45		$\mu\text{g/l}$	100%	-0,02
L			$\mu\text{g/l}$		
M	46,4	4,6	$\mu\text{g/l}$	103%	0,24
N	46,4	3,0	$\mu\text{g/l}$	103%	0,24
O	46	5	$\mu\text{g/l}$	102%	0,17
P	43,9	1,20	$\mu\text{g/l}$	97%	-0,22
Q	43,35	1,30	$\mu\text{g/l}$	96%	-0,32
R	43,38	15,24	$\mu\text{g/l}$	96%	-0,32
S	44,4	0,1	$\mu\text{g/l}$	98%	-0,13
T	43,36	6,50	$\mu\text{g/l}$	96%	-0,32
U			$\mu\text{g/l}$		
V	44,2	7,5	$\mu\text{g/l}$	98%	-0,17
W	23,3 *	1,30	$\mu\text{g/l}$	52%	-4,03
X	41,5	10,1	$\mu\text{g/l}$	92%	-0,67

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	41,6 \pm 5,4	44,8 \pm 2,2	$\mu\text{g/l}$
Recov. \pm CI(99%)	92,2 \pm 12,1	99,4 \pm 5,0	%
SD between labs	8,2	3,0	$\mu\text{g/l}$
RSD between labs	19,8	6,8	%
n for calculation	19	16	



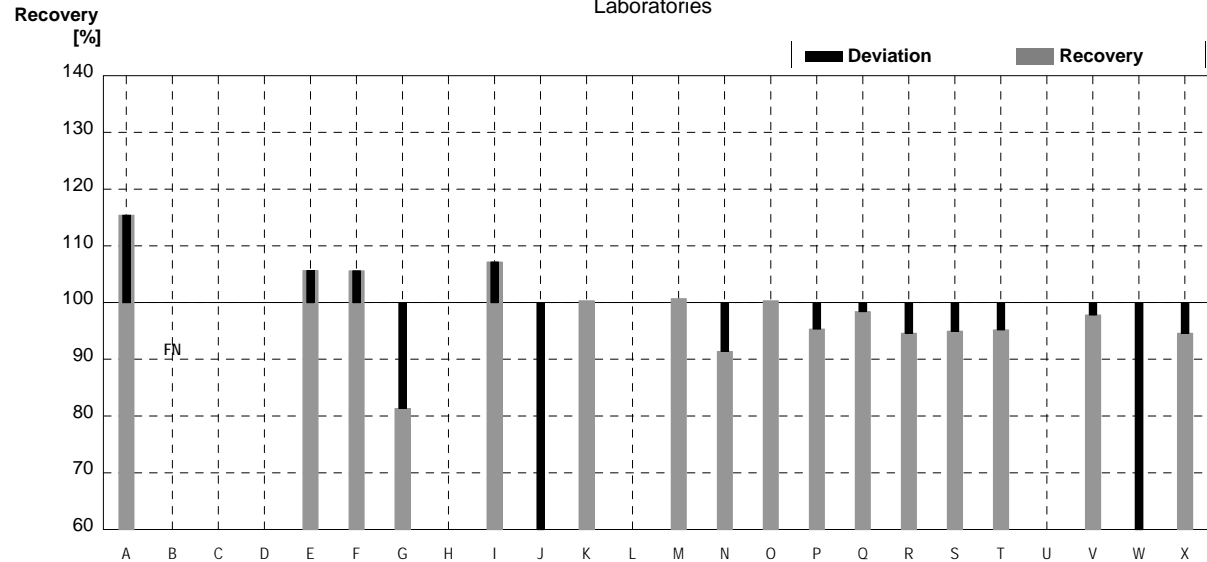
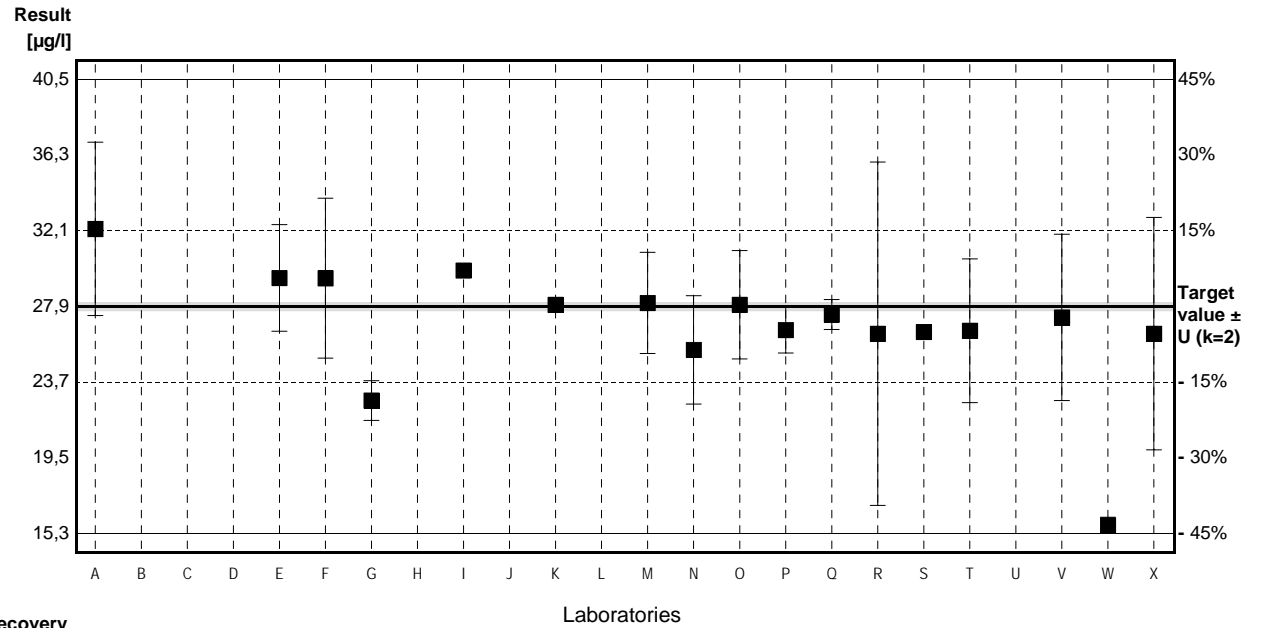
Sample M109B

Parameter Aluminium

Target value $\pm U$ (k=2) 27,9 $\mu\text{g/l}$ \pm 0,2 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 27,4 $\mu\text{g/l}$ \pm 2,7 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 27,7 $\mu\text{g/l}$ \pm 2,8 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score	
A	32,2	*	4,8	$\mu\text{g/l}$	115%	1,28
B	<20		<6,2	$\mu\text{g/l}$	FN	
C				$\mu\text{g/l}$		
D				$\mu\text{g/l}$		
E	29,48		2,948	$\mu\text{g/l}$	106%	0,47
F	29,47		4,42	$\mu\text{g/l}$	106%	0,47
G	22,7		1,1	$\mu\text{g/l}$	81%	-1,55
H				$\mu\text{g/l}$		
I	29,9			$\mu\text{g/l}$	107%	0,60
J	12	*	2	$\mu\text{g/l}$	43%	-4,75
K	28			$\mu\text{g/l}$	100%	0,03
L				$\mu\text{g/l}$		
M	28,1		2,8	$\mu\text{g/l}$	101%	0,06
N	25,5		3,0	$\mu\text{g/l}$	91%	-0,72
O	28		3	$\mu\text{g/l}$	100%	0,03
P	26,6		1,27	$\mu\text{g/l}$	95%	-0,39
Q	27,46		0,83	$\mu\text{g/l}$	98%	-0,13
R	26,4		9,5	$\mu\text{g/l}$	95%	-0,45
S	26,5			$\mu\text{g/l}$	95%	-0,42
T	26,56		3,98	$\mu\text{g/l}$	95%	-0,40
U				$\mu\text{g/l}$		
V	27,3		4,6	$\mu\text{g/l}$	98%	-0,18
W	15,8	*	0,44	$\mu\text{g/l}$	57%	-3,61
X	26,4		6,43	$\mu\text{g/l}$	95%	-0,45

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	26,0 \pm 3,3	27,2 \pm 1,4	$\mu\text{g/l}$
Recov. \pm CI(99%)	93,3 \pm 12,0	97,6 \pm 5,0	%
SD between labs	4,9	1,8	$\mu\text{g/l}$
RSD between labs	18,8	6,6	%
n for calculation	18	15	

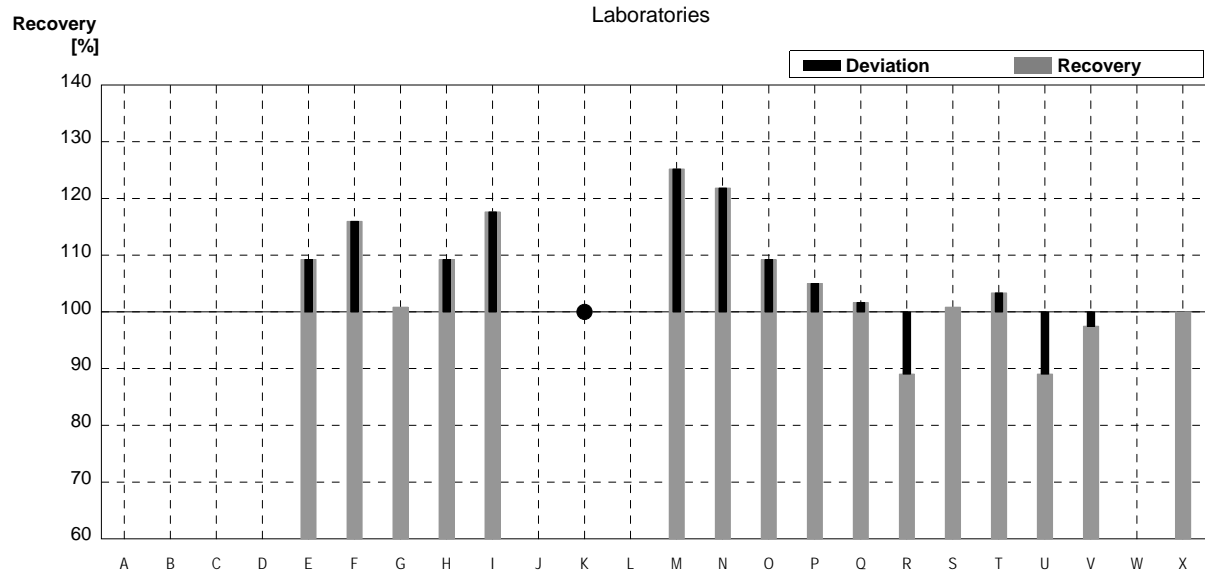
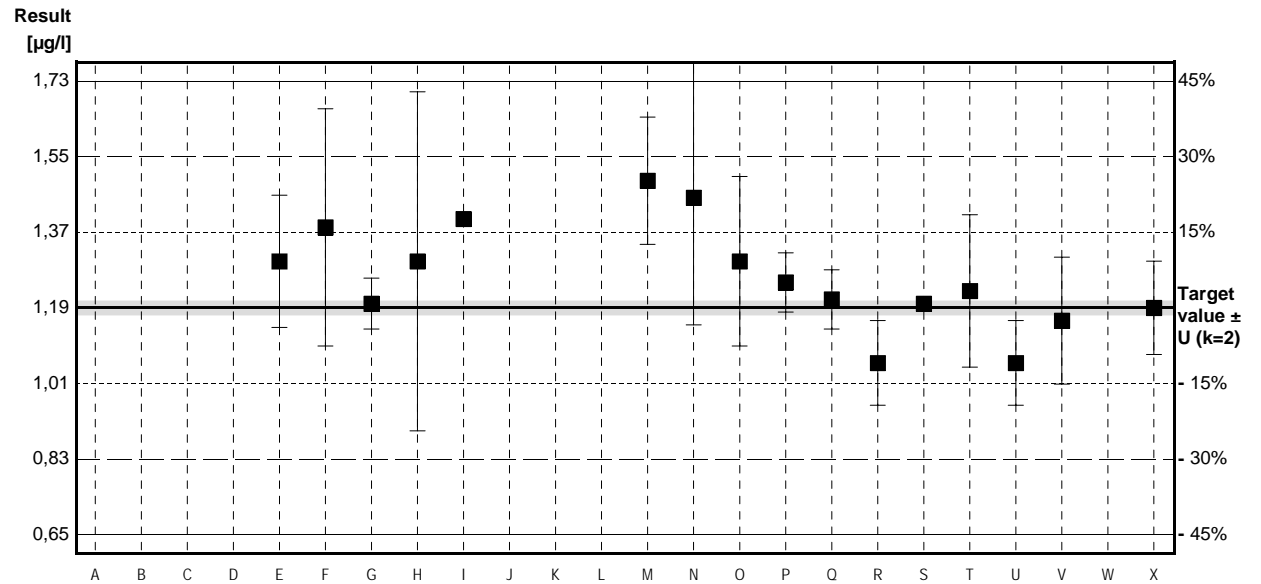


Sample M109A
Parameter Arsenic

Target value $\pm U$ (k=2) 1,19 $\mu\text{g/l}$ \pm 0,02 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,19 $\mu\text{g/l}$ \pm 0,14 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 1,17 $\mu\text{g/l}$ \pm 0,14 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	1,3	0,156	$\mu\text{g/l}$	109%	0,84
F	1,38	0,28	$\mu\text{g/l}$	116%	1,45
G	1,2	0,06	$\mu\text{g/l}$	101%	0,08
H	1,3	0,4	$\mu\text{g/l}$	109%	0,84
I	1,4		$\mu\text{g/l}$	118%	1,60
J	<NWG		$\mu\text{g/l}$		
K	<2		$\mu\text{g/l}$	•	
L			$\mu\text{g/l}$		
M	1,49	0,15	$\mu\text{g/l}$	125%	2,29
N	1,45	0,3	$\mu\text{g/l}$	122%	1,99
O	1,3	0,2	$\mu\text{g/l}$	109%	0,84
P	1,25	0,07	$\mu\text{g/l}$	105%	0,46
Q	1,21	0,07	$\mu\text{g/l}$	102%	0,15
R	1,06	0,1	$\mu\text{g/l}$	89%	-0,99
S	1,2		$\mu\text{g/l}$	101%	0,08
T	1,23	0,18	$\mu\text{g/l}$	103%	0,31
U	1,06	0,1	$\mu\text{g/l}$	89%	-0,99
V	1,16	0,15	$\mu\text{g/l}$	97%	-0,23
W			$\mu\text{g/l}$		
X	1,19	0,11	$\mu\text{g/l}$	100%	0,00

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,26 \pm 0,09	1,26 \pm 0,09	$\mu\text{g/l}$
Recov. \pm CI(99%)	106,0 \pm 7,7	106,0 \pm 7,7	%
SD between labs	0,12	0,12	$\mu\text{g/l}$
RSD between labs	9,9	9,9	%
n for calculation	16	16	



Sample M109B

Parameter Arsenic

Target value $\pm U$ (k=2) 3,40 $\mu\text{g/l}$ \pm 0,04 $\mu\text{g/l}$

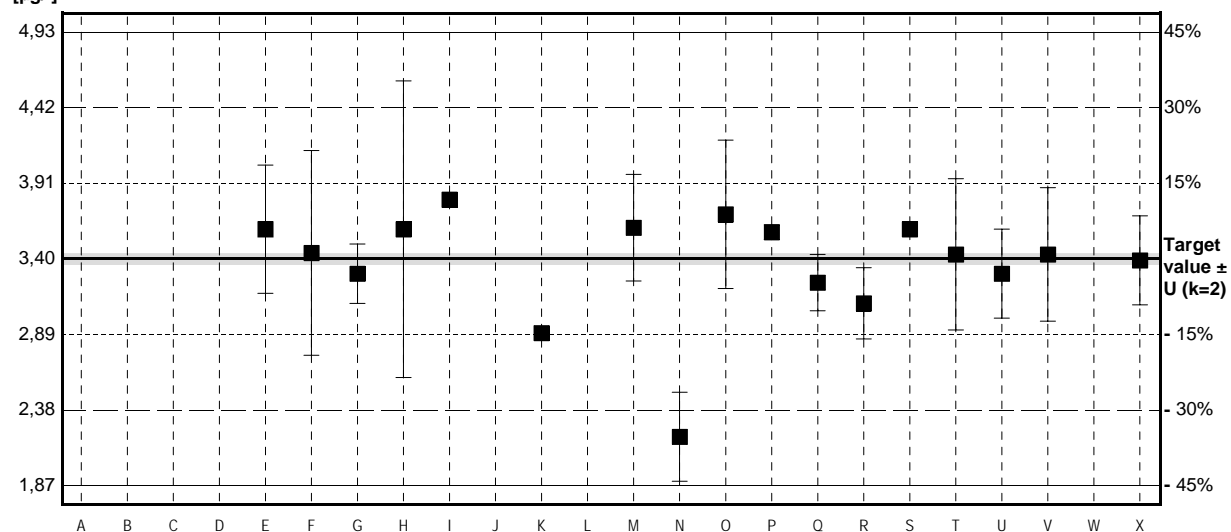
IFA result $\pm U$ (k=2) 3,37 $\mu\text{g/l}$ \pm 0,40 $\mu\text{g/l}$

Stability test $\pm U$ (k=2) 3,35 $\mu\text{g/l}$ \pm 0,40 $\mu\text{g/l}$

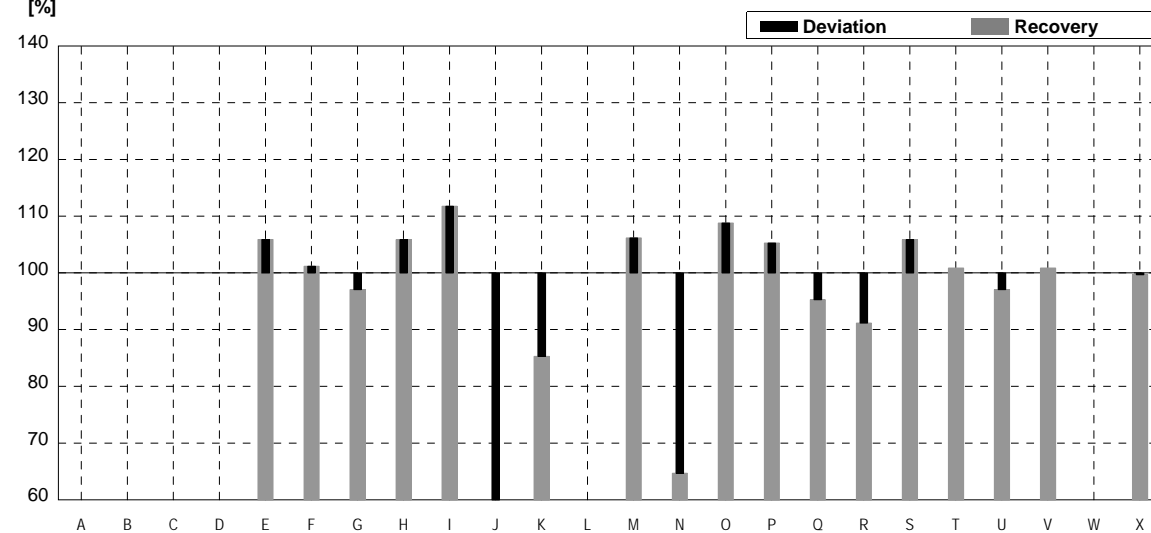
Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	3,6	0,432	$\mu\text{g/l}$	106%	0,53
F	3,44	0,69	$\mu\text{g/l}$	101%	0,11
G	3,3	0,2	$\mu\text{g/l}$	97%	-0,27
H	3,6	1,0	$\mu\text{g/l}$	106%	0,53
I	3,8		$\mu\text{g/l}$	112%	1,07
J	1 *	1	$\mu\text{g/l}$	29%	-6,42
K	2,9		$\mu\text{g/l}$	85%	-1,34
L			$\mu\text{g/l}$		
M	3,61	0,36	$\mu\text{g/l}$	106%	0,56
N	2,2 *	0,3	$\mu\text{g/l}$	65%	-3,21
O	3,7	0,5	$\mu\text{g/l}$	109%	0,80
P	3,58	0,05	$\mu\text{g/l}$	105%	0,48
Q	3,24	0,19	$\mu\text{g/l}$	95%	-0,43
R	3,1	0,24	$\mu\text{g/l}$	91%	-0,80
S	3,6		$\mu\text{g/l}$	106%	0,53
T	3,43	0,51	$\mu\text{g/l}$	101%	0,08
U	3,30	0,3	$\mu\text{g/l}$	97%	-0,27
V	3,43	0,45	$\mu\text{g/l}$	101%	0,08
W			$\mu\text{g/l}$		
X	3,39	0,30	$\mu\text{g/l}$	100%	-0,03

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	3,23 \pm 0,46	3,44 \pm 0,17	$\mu\text{g/l}$
Recov. \pm CI(99%)	95,1 \pm 13,4	101,1 \pm 5,0	%
SD between labs	0,67	0,23	$\mu\text{g/l}$
RSD between labs	20,6	6,8	%
n for calculation	18	16	

Result
[$\mu\text{g/l}$]



Recovery
[%]



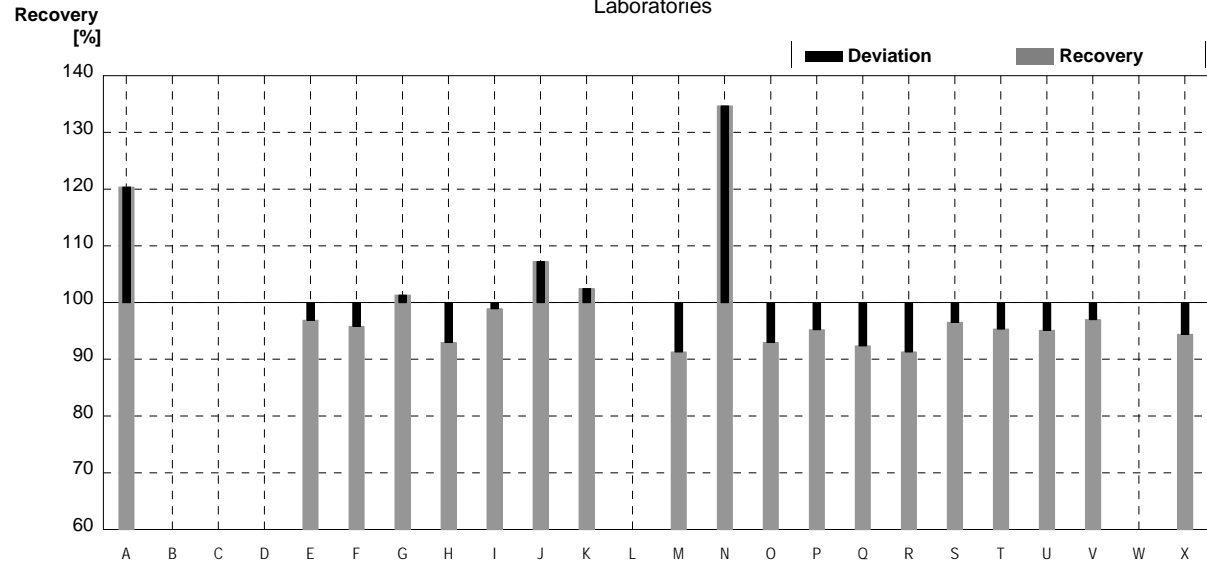
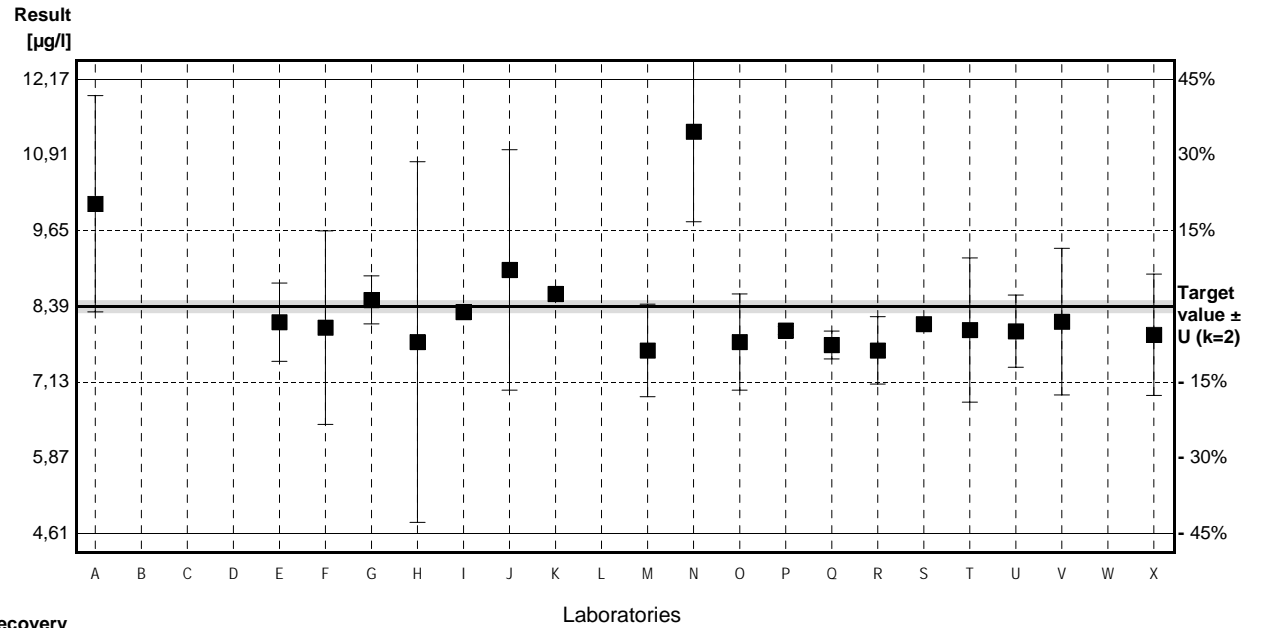
Sample M109A

Parameter Lead

Target value $\pm U$ (k=2) 8,39 $\mu\text{g/l}$ \pm 0,10 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 8,29 $\mu\text{g/l}$ \pm 0,75 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 8,09 $\mu\text{g/l}$ \pm 0,73 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score	
A	10,1	*	1,8	$\mu\text{g/l}$	120%	2,43
B				$\mu\text{g/l}$		
C				$\mu\text{g/l}$		
D				$\mu\text{g/l}$		
E	8,13	0,6504	$\mu\text{g/l}$	97%	-0,37	
F	8,04	1,61	$\mu\text{g/l}$	96%	-0,50	
G	8,5	0,4	$\mu\text{g/l}$	101%	0,16	
H	7,8	3	$\mu\text{g/l}$	93%	-0,84	
I	8,3		$\mu\text{g/l}$	99%	-0,13	
J	9	2	$\mu\text{g/l}$	107%	0,87	
K	8,6		$\mu\text{g/l}$	103%	0,30	
L			$\mu\text{g/l}$			
M	7,66	0,77	$\mu\text{g/l}$	91%	-1,04	
N	11,3	*	1,5	$\mu\text{g/l}$	135%	4,13
O	7,8	0,8	$\mu\text{g/l}$	93%	-0,84	
P	7,99	0,07	$\mu\text{g/l}$	95%	-0,57	
Q	7,75	0,23	$\mu\text{g/l}$	92%	-0,91	
R	7,66	0,56	$\mu\text{g/l}$	91%	-1,04	
S	8,1		$\mu\text{g/l}$	97%	-0,41	
T	8,00	1,20	$\mu\text{g/l}$	95%	-0,55	
U	7,98	0,6	$\mu\text{g/l}$	95%	-0,58	
V	8,14	1,22	$\mu\text{g/l}$	97%	-0,35	
W			$\mu\text{g/l}$			
X	7,92	1,01	$\mu\text{g/l}$	94%	-0,67	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	8,36 \pm 0,60	8,08 \pm 0,25	$\mu\text{g/l}$
Recov. \pm CI(99%)	99,6 \pm 7,2	96,3 \pm 3,0	%
SD between labs	0,91	0,36	$\mu\text{g/l}$
RSD between labs	10,9	4,4	%
n for calculation	19	17	



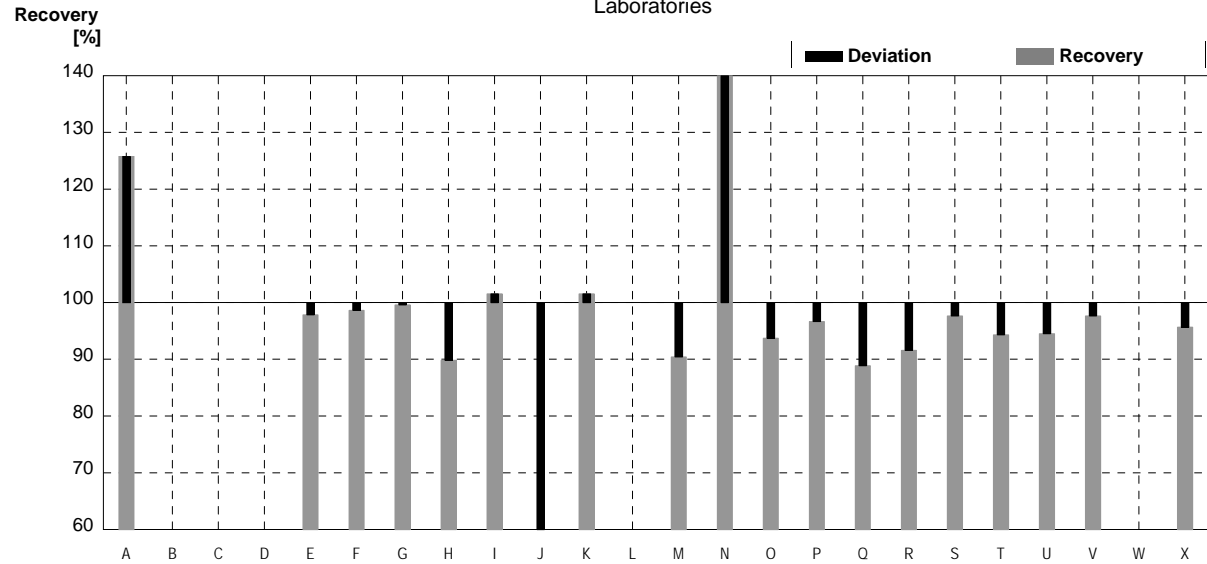
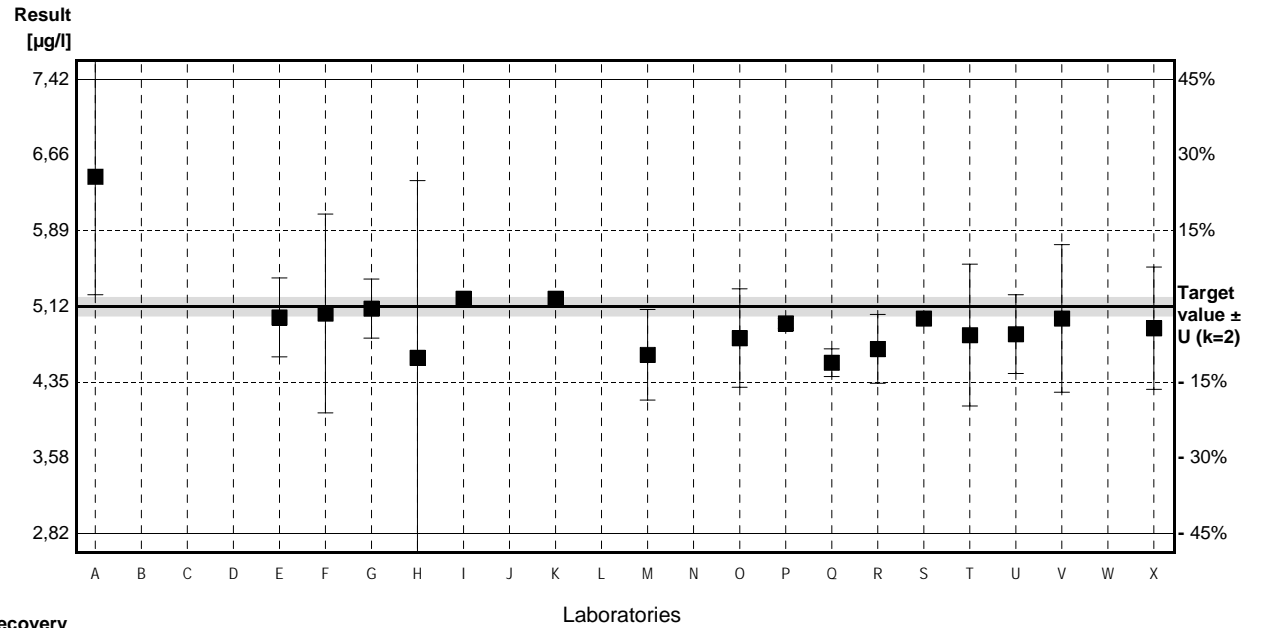
Sample M109B

Parameter Lead

Target value ± U (k=2) 5,12 µg/l ± 0,09 µg/l
 IFA result ± U (k=2) 5,05 µg/l ± 0,45 µg/l
 Stability test ± U (k=2) 4,91 µg/l ± 0,44 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score	
A	6,44	*	1,2	µg/l	126%	3,07
B				µg/l		
C				µg/l		
D				µg/l		
E	5,01	0,4008	µg/l	98%	-0,26	
F	5,05	1,01	µg/l	99%	-0,16	
G	5,1	0,3	µg/l	100%	-0,05	
H	4,6	1,8	µg/l	90%	-1,21	
I	5,2		µg/l	102%	0,19	
J	1	*	1	µg/l	20%	-9,58
K	5,2		µg/l	102%	0,19	
L			µg/l			
M	4,63	0,46	µg/l	90%	-1,14	
N	7,5	*	1,0	µg/l	146%	5,53
O	4,8	0,5	µg/l	94%	-0,74	
P	4,95	0,05	µg/l	97%	-0,40	
Q	4,55	0,14	µg/l	89%	-1,33	
R	4,69	0,35	µg/l	92%	-1,00	
S	5,0		µg/l	98%	-0,28	
T	4,83	0,72	µg/l	94%	-0,67	
U	4,84	0,4	µg/l	95%	-0,65	
V	5,00	0,75	µg/l	98%	-0,28	
W			µg/l			
X	4,90	0,62	µg/l	96%	-0,51	

	All results	Outliers excl.	Unit
Mean ± CI(99%)	4,91 ± 0,78	4,90 ± 0,15	µg/l
Recov. ± CI(99%)	95,9 ± 15,2	95,6 ± 2,9	%
SD between labs	1,18	0,20	µg/l
RSD between labs	24,0	4,2	%
n for calculation	19	16	



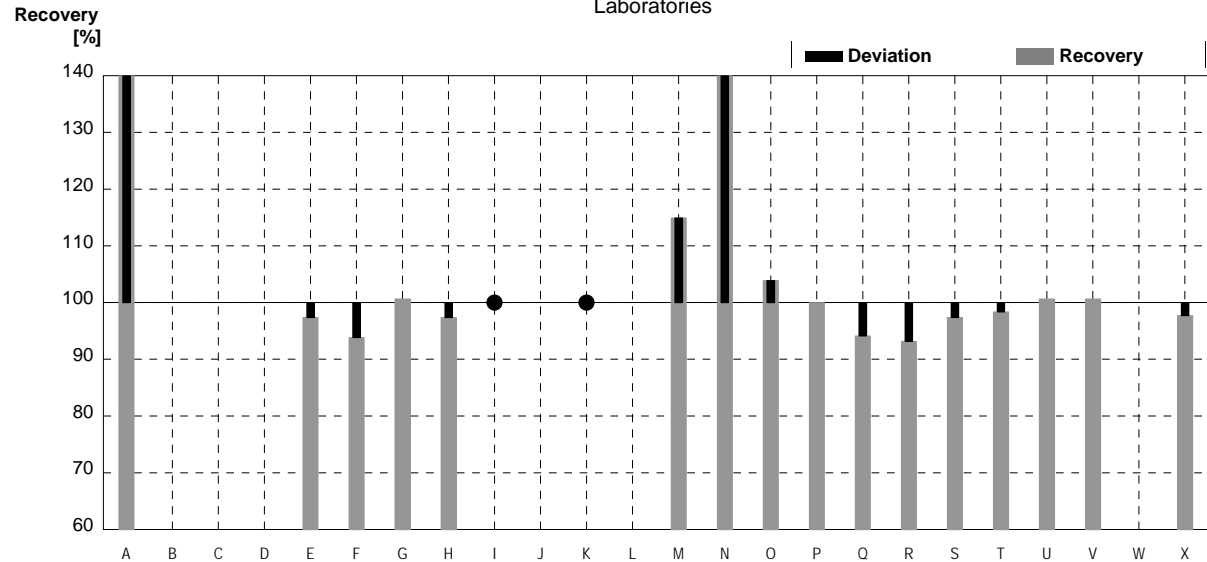
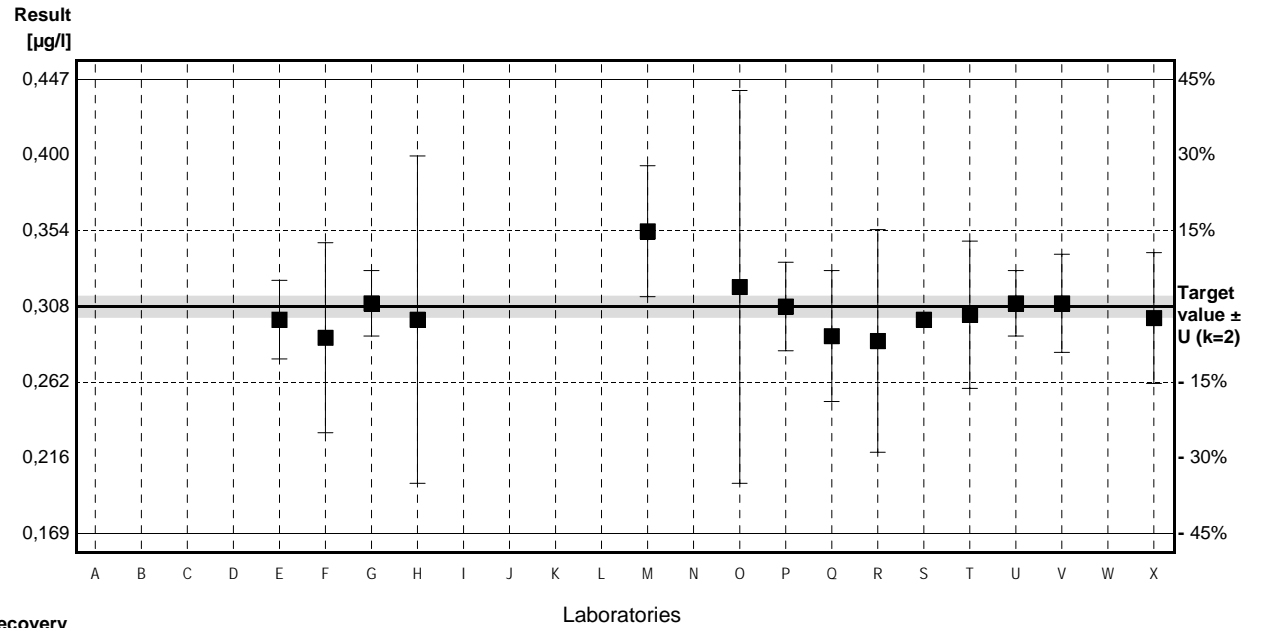
Sample M109A

Parameter Cadmium

Target value $\pm U$ (k=2) 0,308 $\mu\text{g/l}$ \pm 0,006 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 0,307 $\mu\text{g/l}$ \pm 0,021 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 0,317 $\mu\text{g/l}$ \pm 0,022 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	0,46 *	0,08	$\mu\text{g/l}$	149%	6,17
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	0,3	0,024	$\mu\text{g/l}$	97%	-0,32
F	0,289	0,058	$\mu\text{g/l}$	94%	-0,77
G	0,31	0,02	$\mu\text{g/l}$	101%	0,08
H	0,3	0,1	$\mu\text{g/l}$	97%	-0,32
I	[0,5]		$\mu\text{g/l}$	•	
J	<NWG		$\mu\text{g/l}$		
K	<1		$\mu\text{g/l}$	•	
L			$\mu\text{g/l}$		
M	0,354 *	0,04	$\mu\text{g/l}$	115%	1,87
N	0,49 *	0,2	$\mu\text{g/l}$	159%	7,39
O	0,32	0,12	$\mu\text{g/l}$	104%	0,49
P	0,308	0,027	$\mu\text{g/l}$	100%	0,00
Q	0,29	0,04	$\mu\text{g/l}$	94%	-0,73
R	0,287	0,068	$\mu\text{g/l}$	93%	-0,85
S	0,3		$\mu\text{g/l}$	97%	-0,32
T	0,303	0,045	$\mu\text{g/l}$	98%	-0,20
U	0,31	0,02	$\mu\text{g/l}$	101%	0,08
V	0,31	0,03	$\mu\text{g/l}$	101%	0,08
W			$\mu\text{g/l}$		
X	0,301	0,040	$\mu\text{g/l}$	98%	-0,28

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	0,327 \pm 0,044	0,302 \pm 0,008	$\mu\text{g/l}$
Recov. \pm CI(99%)	106,2 \pm 14,4	98,1 \pm 2,6	%
SD between labs	0,060	0,010	$\mu\text{g/l}$
RSD between labs	18,4	3,2	%
n for calculation	16	13	

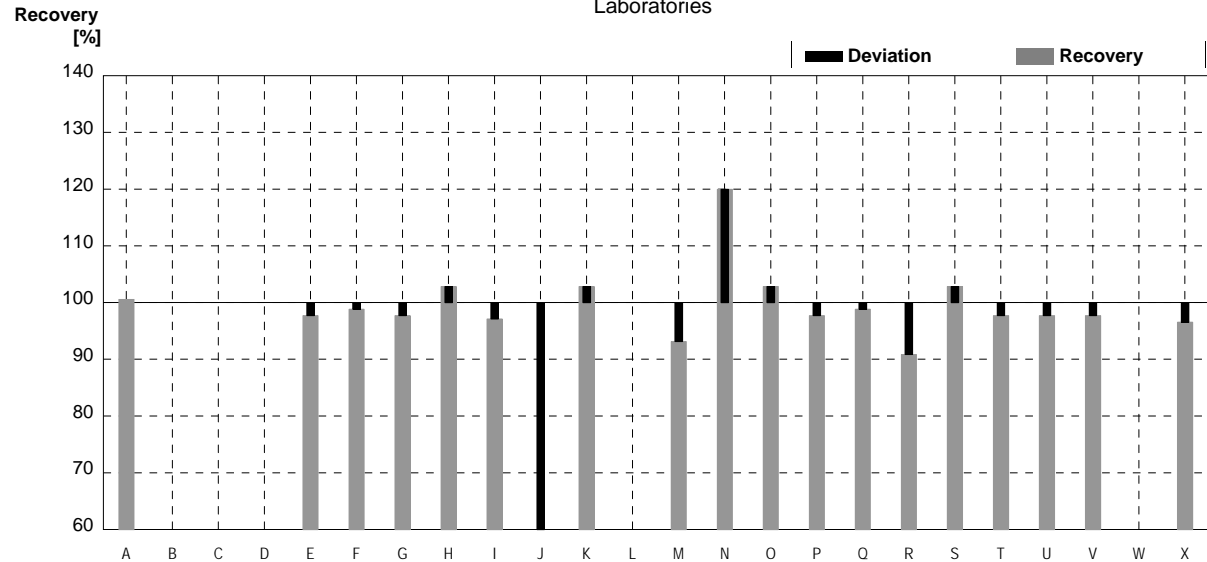
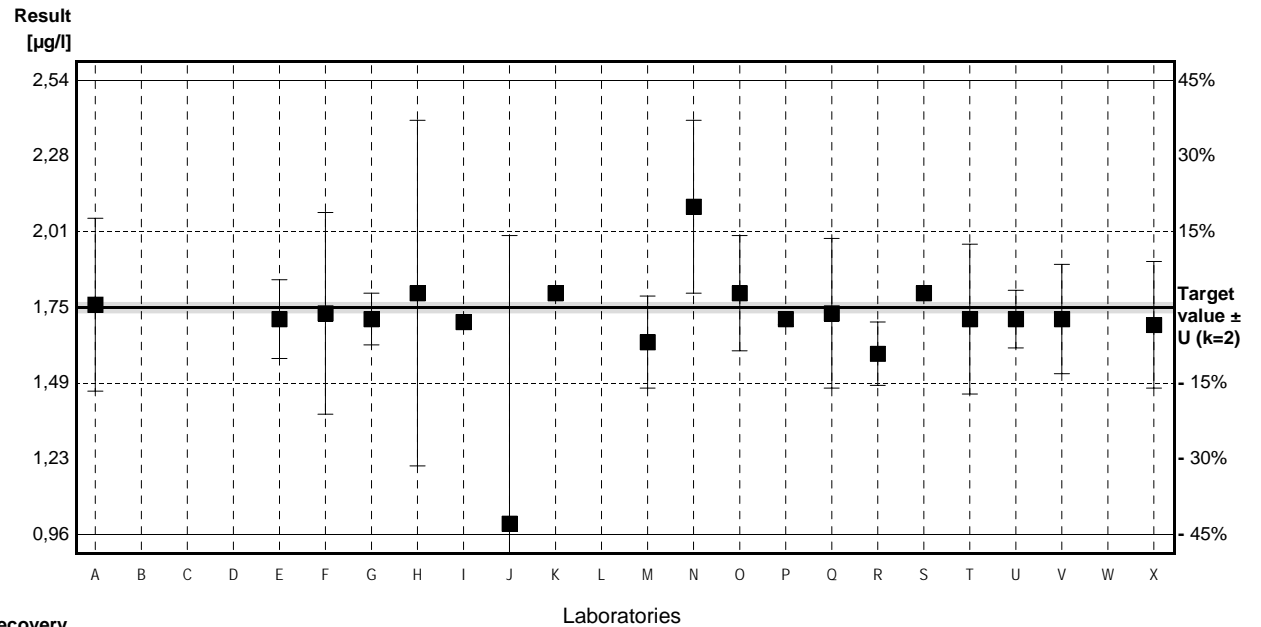


Sample M109B
Parameter Cadmium

Target value $\pm U$ (k=2) 1,75 $\mu\text{g/l}$ \pm 0,02 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,75 $\mu\text{g/l}$ \pm 0,12 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 1,81 $\mu\text{g/l}$ \pm 0,13 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	1,76	0,3	$\mu\text{g/l}$	101%	0,07
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	1,71	0,1368	$\mu\text{g/l}$	98%	-0,29
F	1,73	0,35	$\mu\text{g/l}$	99%	-0,14
G	1,71	0,09	$\mu\text{g/l}$	98%	-0,29
H	1,8	0,6	$\mu\text{g/l}$	103%	0,36
I	1,7		$\mu\text{g/l}$	97%	-0,36
J	1 *	1	$\mu\text{g/l}$	57%	-5,36
K	1,8		$\mu\text{g/l}$	103%	0,36
L			$\mu\text{g/l}$		
M	1,63	0,16	$\mu\text{g/l}$	93%	-0,86
N	2,1 *	0,3	$\mu\text{g/l}$	120%	2,50
O	1,8	0,2	$\mu\text{g/l}$	103%	0,36
P	1,71	0,020	$\mu\text{g/l}$	98%	-0,29
Q	1,73	0,26	$\mu\text{g/l}$	99%	-0,14
R	1,59 *	0,11	$\mu\text{g/l}$	91%	-1,14
S	1,8		$\mu\text{g/l}$	103%	0,36
T	1,71	0,26	$\mu\text{g/l}$	98%	-0,29
U	1,71	0,1	$\mu\text{g/l}$	98%	-0,29
V	1,71	0,19	$\mu\text{g/l}$	98%	-0,29
W			$\mu\text{g/l}$		
X	1,69	0,22	$\mu\text{g/l}$	97%	-0,43

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,70 \pm 0,13	1,73 \pm 0,04	$\mu\text{g/l}$
Recov. \pm CI(99%)	97,4 \pm 7,5	98,9 \pm 2,0	%
SD between labs	0,20	0,05	$\mu\text{g/l}$
RSD between labs	11,7	2,8	%
n for calculation	19	16	

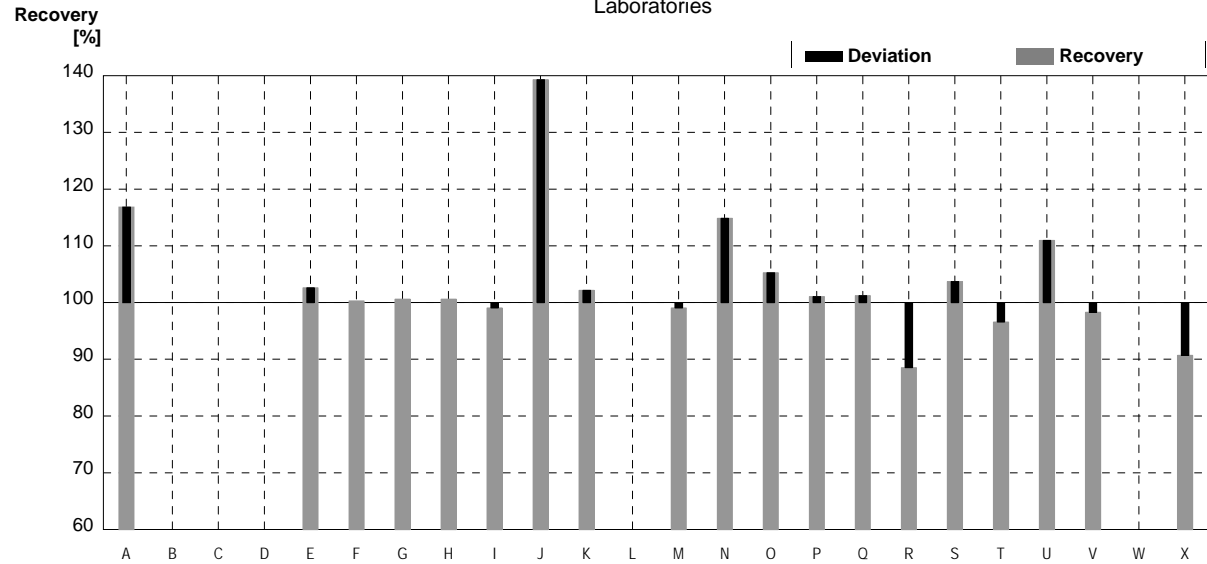
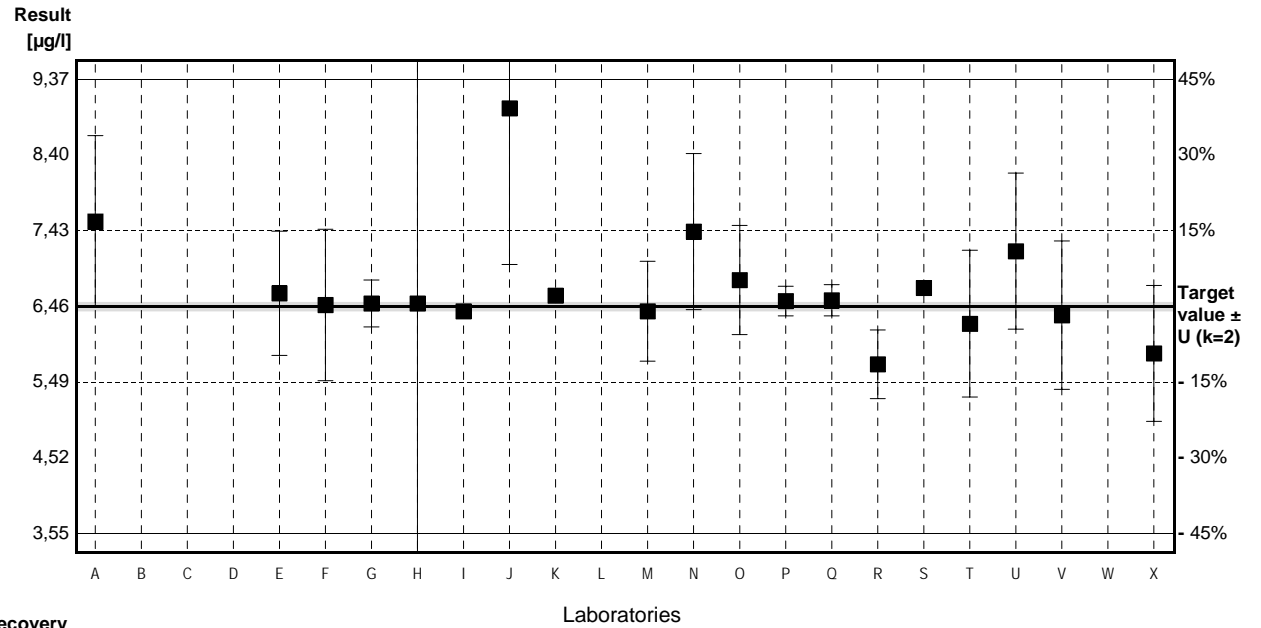


Sample M109A
Parameter Chromium

Target value $\pm U$ (k=2) 6,46 $\mu\text{g/l}$ \pm 0,05 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 6,35 $\mu\text{g/l}$ \pm 0,95 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 6,21 $\mu\text{g/l}$ \pm 0,93 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score	
A	7,55	*	1,1	$\mu\text{g/l}$	117%	2,19
B				$\mu\text{g/l}$		
C				$\mu\text{g/l}$		
D				$\mu\text{g/l}$		
E	6,63	0,7956	$\mu\text{g/l}$	103%	0,34	
F	6,48	0,97	$\mu\text{g/l}$	100%	0,04	
G	6,5	0,3	$\mu\text{g/l}$	101%	0,08	
H	6,5	4,1	$\mu\text{g/l}$	101%	0,08	
I	6,4		$\mu\text{g/l}$	99%	-0,12	
J	9	*	2	$\mu\text{g/l}$	139%	5,11
K	6,6		$\mu\text{g/l}$	102%	0,28	
L			$\mu\text{g/l}$			
M	6,40	0,64	$\mu\text{g/l}$	99%	-0,12	
N	7,42	*	1,0	$\mu\text{g/l}$	115%	1,93
O	6,8	0,7	$\mu\text{g/l}$	105%	0,68	
P	6,53	0,19	$\mu\text{g/l}$	101%	0,14	
Q	6,54	0,20	$\mu\text{g/l}$	101%	0,16	
R	5,72	*	0,44	$\mu\text{g/l}$	89%	-1,49
S	6,7		$\mu\text{g/l}$	104%	0,48	
T	6,24	0,94	$\mu\text{g/l}$	97%	-0,44	
U	7,17	1,0	$\mu\text{g/l}$	111%	1,43	
V	6,35	0,95	$\mu\text{g/l}$	98%	-0,22	
W			$\mu\text{g/l}$			
X	5,86	0,87	$\mu\text{g/l}$	91%	-1,21	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	6,70 \pm 0,47	6,51 \pm 0,22	$\mu\text{g/l}$
Recov. \pm CI(99%)	103,8 \pm 7,3	100,8 \pm 3,4	%
SD between labs	0,71	0,28	$\mu\text{g/l}$
RSD between labs	10,6	4,4	%
n for calculation	19	15	

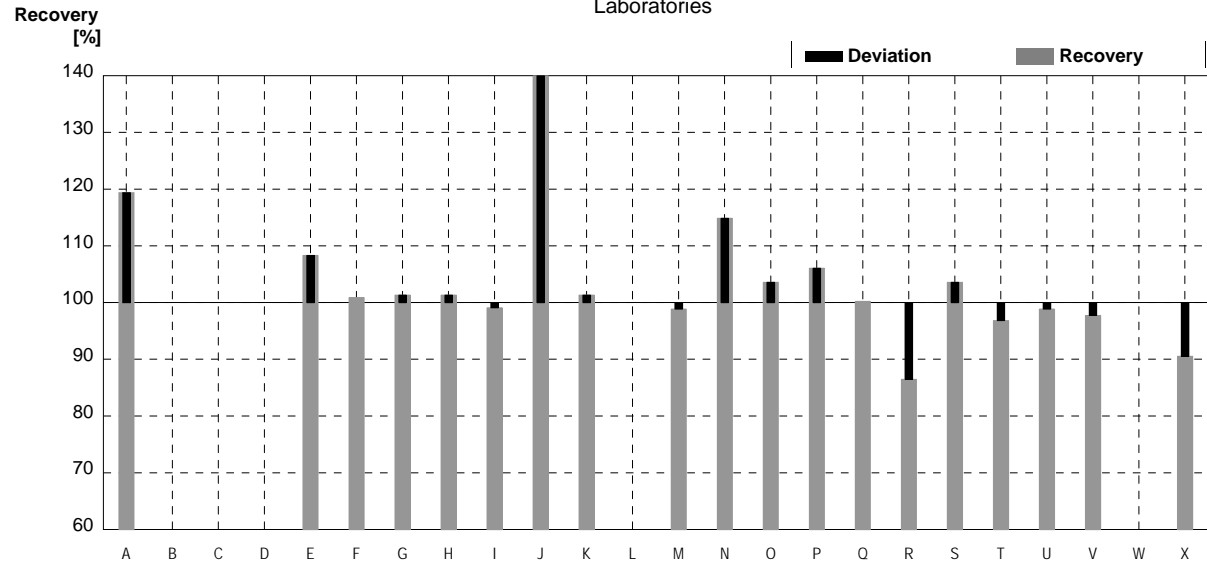
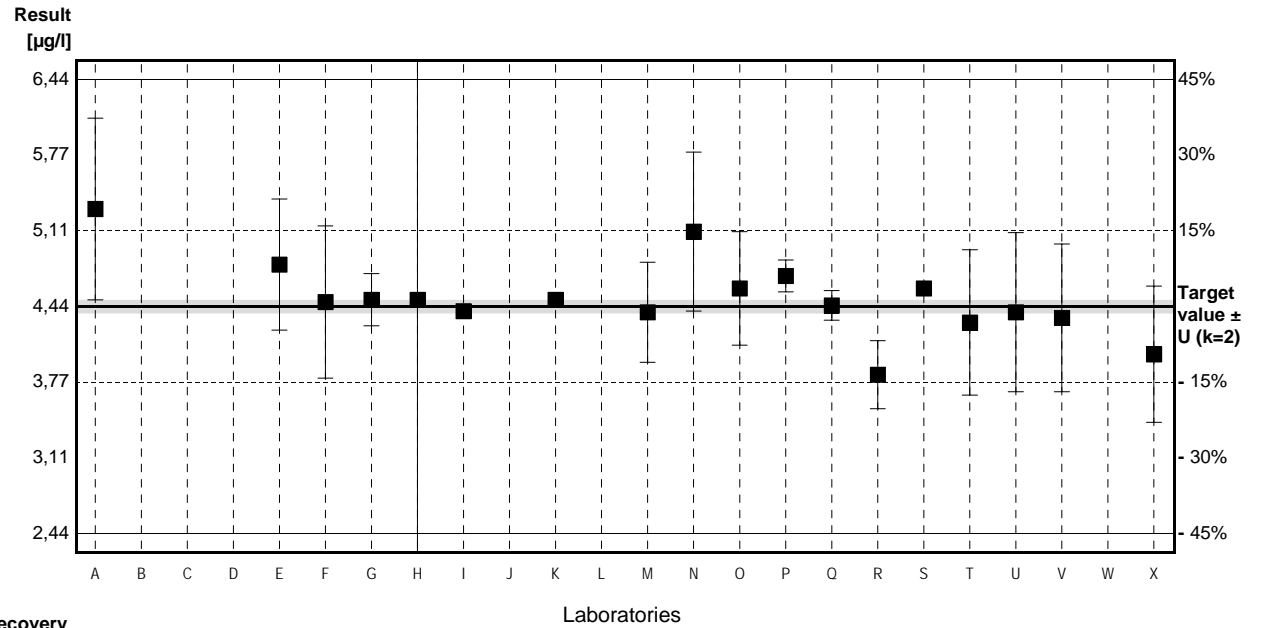


Sample M109B
Parameter Chromium

Target value $\pm U$ (k=2) 4,44 $\mu\text{g/l}$ \pm 0,06 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 4,34 $\mu\text{g/l}$ \pm 0,65 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 4,23 $\mu\text{g/l}$ \pm 0,63 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score	
A	5,30	*	0,8	$\mu\text{g/l}$	119%	2,52
B				$\mu\text{g/l}$		
C				$\mu\text{g/l}$		
D				$\mu\text{g/l}$		
E	4,81	0,5772	$\mu\text{g/l}$	108%	1,08	
F	4,48	0,67	$\mu\text{g/l}$	101%	0,12	
G	4,5	0,23	$\mu\text{g/l}$	101%	0,18	
H	4,5	3,0	$\mu\text{g/l}$	101%	0,18	
I	4,4		$\mu\text{g/l}$	99%	-0,12	
J	7	*	2	$\mu\text{g/l}$	158%	7,49
K	4,5		$\mu\text{g/l}$	101%	0,18	
L			$\mu\text{g/l}$			
M	4,39	0,44	$\mu\text{g/l}$	99%	-0,15	
N	5,1	*	0,7	$\mu\text{g/l}$	115%	1,93
O	4,6	0,5	$\mu\text{g/l}$	104%	0,47	
P	4,71	0,14	$\mu\text{g/l}$	106%	0,79	
Q	4,45	0,13	$\mu\text{g/l}$	100%	0,03	
R	3,84	*	0,3	$\mu\text{g/l}$	86%	-1,76
S	4,6		$\mu\text{g/l}$	104%	0,47	
T	4,30	0,64	$\mu\text{g/l}$	97%	-0,41	
U	4,39	0,7	$\mu\text{g/l}$	99%	-0,15	
V	4,34	0,65	$\mu\text{g/l}$	98%	-0,29	
W			$\mu\text{g/l}$			
X	4,02	0,60	$\mu\text{g/l}$	91%	-1,23	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	4,64 \pm 0,43	4,47 \pm 0,14	$\mu\text{g/l}$
Recov. \pm CI(99%)	104,6 \pm 9,8	100,6 \pm 3,2	%
SD between labs	0,66	0,18	$\mu\text{g/l}$
RSD between labs	14,2	4,1	%
n for calculation	19	15	



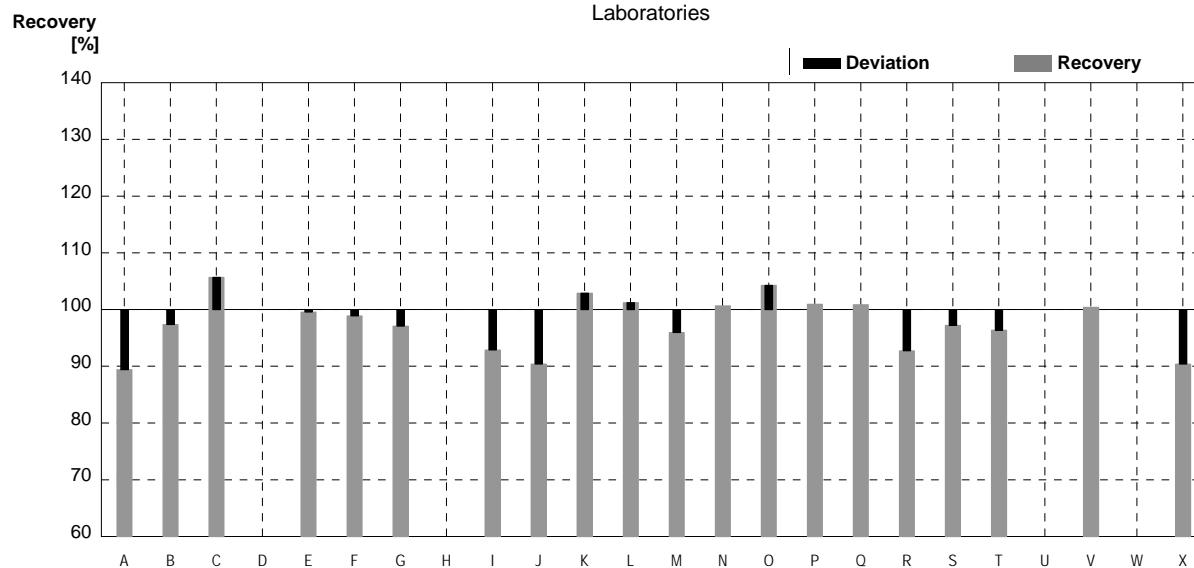
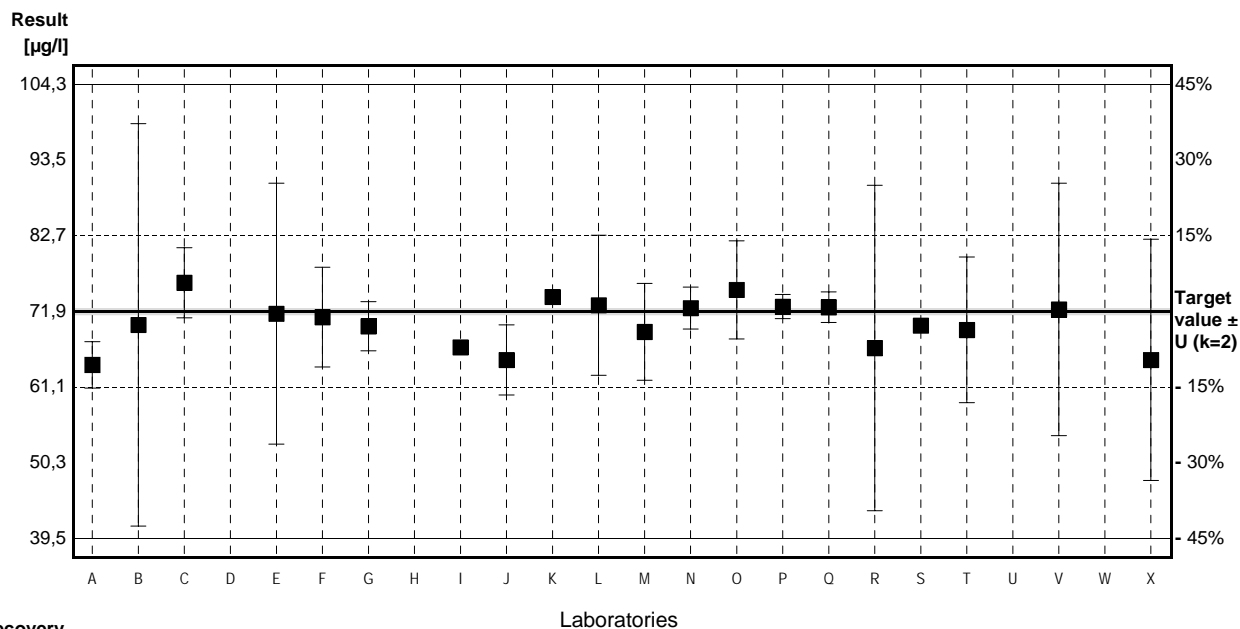
Sample M109A

Parameter Iron

Target value $\pm U$ (k=2) 71,9 $\mu\text{g/l}$ \pm 0,4 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 70,5 $\mu\text{g/l}$ \pm 5,6 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 70,7 $\mu\text{g/l}$ \pm 5,7 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	64,3	3,3	$\mu\text{g/l}$	89%	-1,11
B	70	28,7	$\mu\text{g/l}$	97%	-0,28
C	76	5	$\mu\text{g/l}$	106%	0,60
D			$\mu\text{g/l}$		
E	71,6	18,616	$\mu\text{g/l}$	100%	-0,04
F	71,1	7,11	$\mu\text{g/l}$	99%	-0,12
G	69,8	3,5	$\mu\text{g/l}$	97%	-0,31
H			$\mu\text{g/l}$		
I	66,8		$\mu\text{g/l}$	93%	-0,75
J	65	5	$\mu\text{g/l}$	90%	-1,01
K	74		$\mu\text{g/l}$	103%	0,31
L	72,8	10,0	$\mu\text{g/l}$	101%	0,13
M	69,0	6,9	$\mu\text{g/l}$	96%	-0,42
N	72,4	3,0	$\mu\text{g/l}$	101%	0,07
O	75	7	$\mu\text{g/l}$	104%	0,45
P	72,6	1,72	$\mu\text{g/l}$	101%	0,10
Q	72,52	2,18	$\mu\text{g/l}$	101%	0,09
R	66,7	23,2	$\mu\text{g/l}$	93%	-0,76
S	69,9		$\mu\text{g/l}$	97%	-0,29
T	69,29	10,39	$\mu\text{g/l}$	96%	-0,38
U			$\mu\text{g/l}$		
V	72,2	18,0	$\mu\text{g/l}$	100%	0,04
W			$\mu\text{g/l}$		
X	65,0	17,2	$\mu\text{g/l}$	90%	-1,01

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	70,3 \pm 2,2	70,3 \pm 2,2	$\mu\text{g/l}$
Recov. \pm CI(99%)	97,8 \pm 3,0	97,8 \pm 3,0	%
SD between labs	3,4	3,4	$\mu\text{g/l}$
RSD between labs	4,8	4,8	%
n for calculation	20	20	



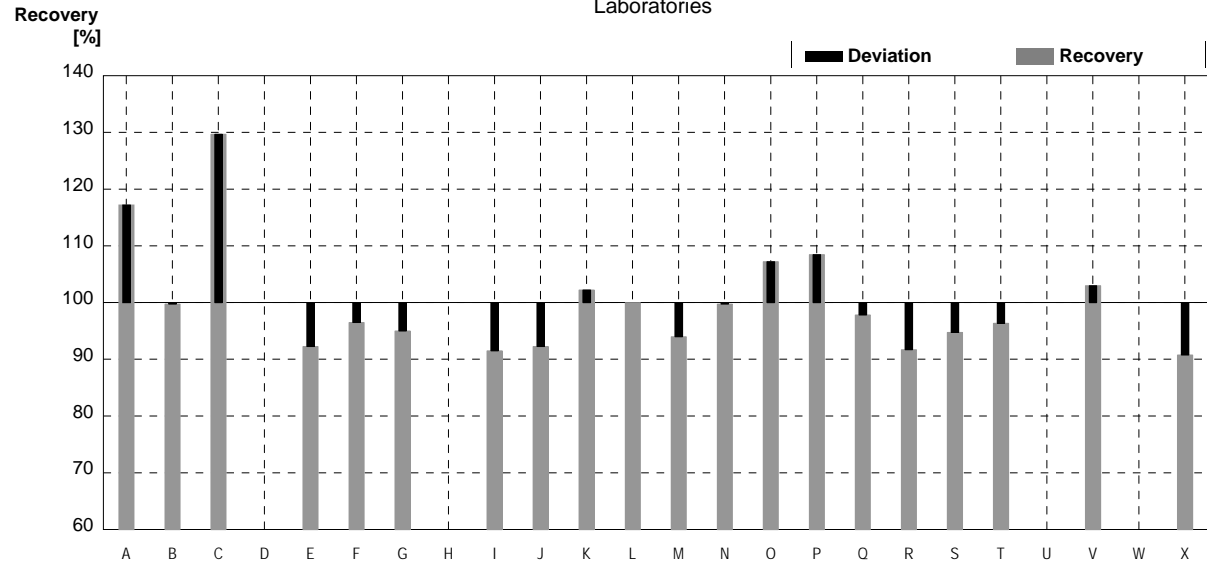
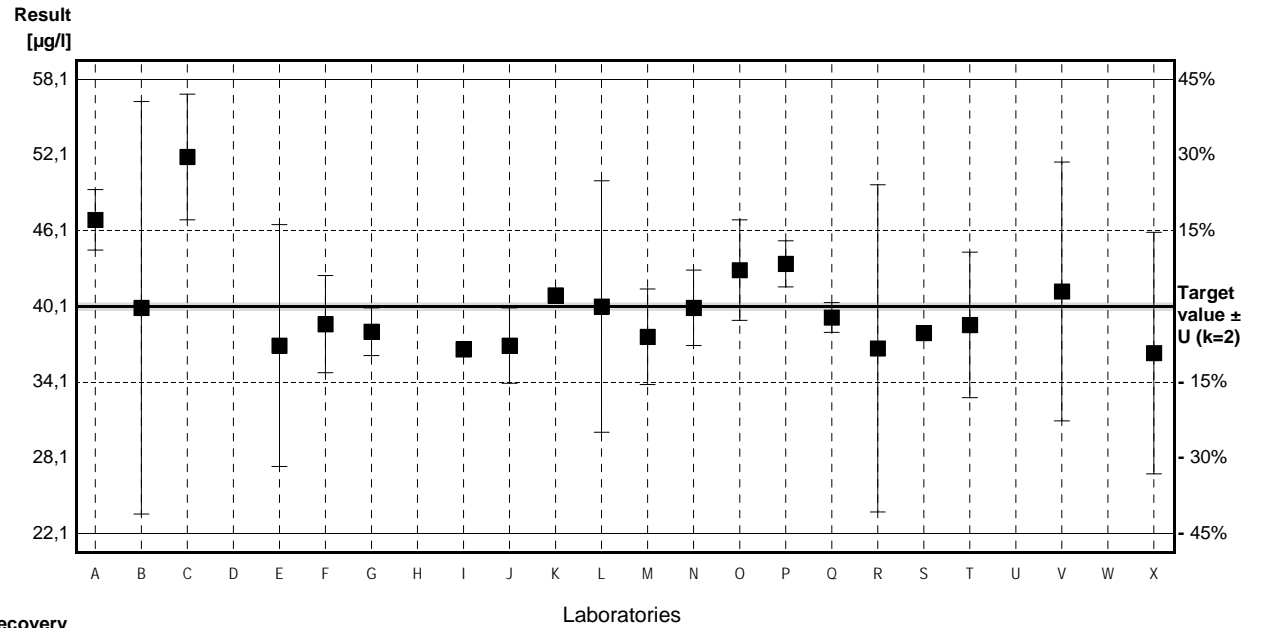
Sample M109B

Parameter Iron

Target value $\pm U$ (k=2) 40,1 $\mu\text{g/l}$ \pm 0,3 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 39,9 $\mu\text{g/l}$ \pm 3,2 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 39,2 $\mu\text{g/l}$ \pm 3,1 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	47,0	2,4	$\mu\text{g/l}$	117%	1,81
B	40	16,4	$\mu\text{g/l}$	100%	-0,03
C	52 *	5	$\mu\text{g/l}$	130%	3,12
D			$\mu\text{g/l}$		
E	37	9,62	$\mu\text{g/l}$	92%	-0,81
F	38,7	3,87	$\mu\text{g/l}$	97%	-0,37
G	38,1	1,9	$\mu\text{g/l}$	95%	-0,53
H			$\mu\text{g/l}$		
I	36,7		$\mu\text{g/l}$	92%	-0,89
J	37	3	$\mu\text{g/l}$	92%	-0,81
K	41		$\mu\text{g/l}$	102%	0,24
L	40,1	10,0	$\mu\text{g/l}$	100%	0,00
M	37,7	3,8	$\mu\text{g/l}$	94%	-0,63
N	40,0	3,0	$\mu\text{g/l}$	100%	-0,03
O	43	4	$\mu\text{g/l}$	107%	0,76
P	43,5	1,83	$\mu\text{g/l}$	108%	0,89
Q	39,23	1,18	$\mu\text{g/l}$	98%	-0,23
R	36,77	13,01	$\mu\text{g/l}$	92%	-0,87
S	38		$\mu\text{g/l}$	95%	-0,55
T	38,64	5,79	$\mu\text{g/l}$	96%	-0,38
U			$\mu\text{g/l}$		
V	41,3	10,3	$\mu\text{g/l}$	103%	0,32
W			$\mu\text{g/l}$		
X	36,4	9,61	$\mu\text{g/l}$	91%	-0,97

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	40,1 \pm 2,5	39,5 \pm 1,8	$\mu\text{g/l}$
Recov. \pm CI(99%)	100,0 \pm 6,2	98,5 \pm 4,5	%
SD between labs	3,9	2,8	$\mu\text{g/l}$
RSD between labs	9,7	7,0	%
n for calculation	20	19	

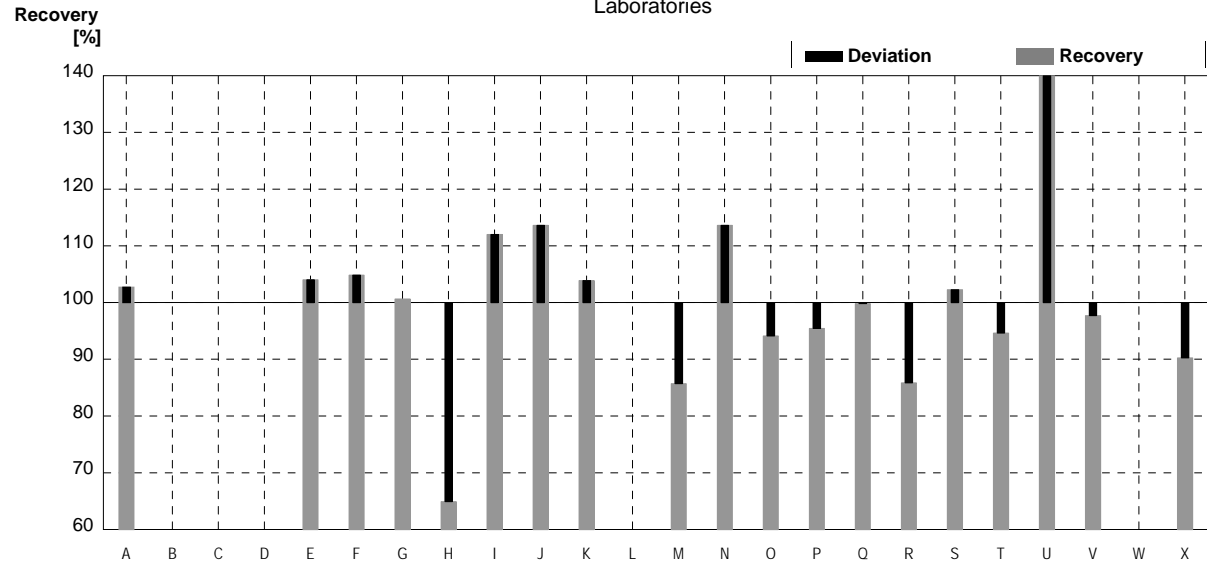
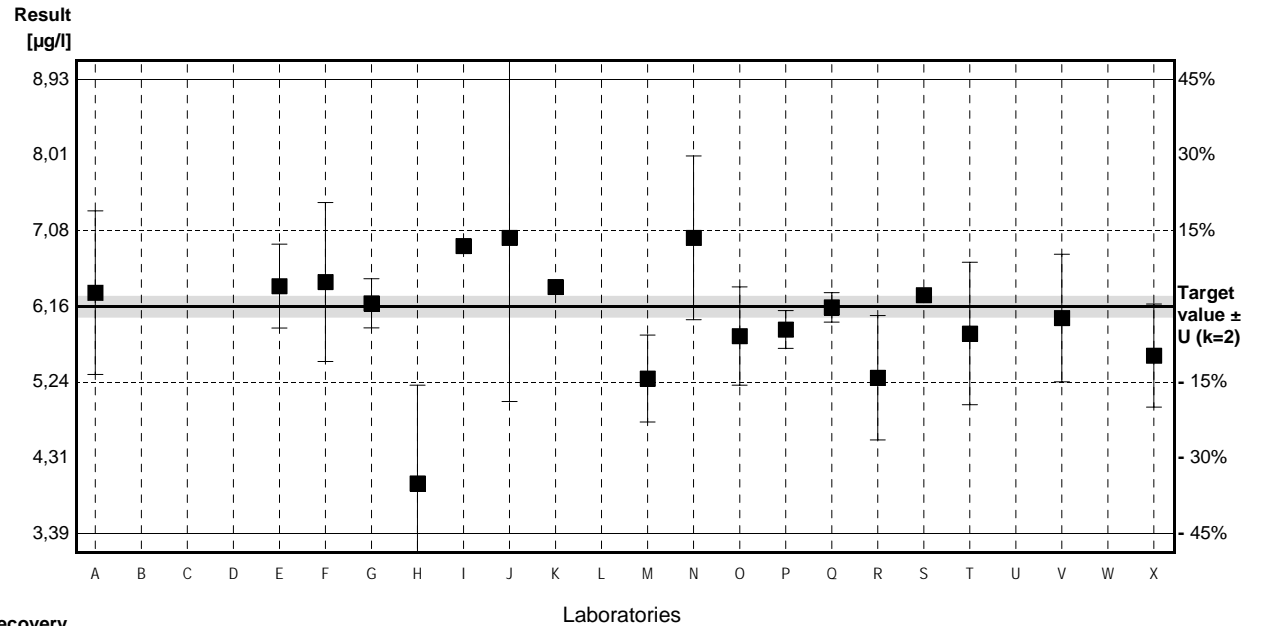


Sample M109A Parameter Copper

Target value $\pm U$ (k=2) 6,16 $\mu\text{g/l}$ \pm 0,13 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 5,96 $\mu\text{g/l}$ \pm 0,48 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 5,86 $\mu\text{g/l}$ \pm 0,47 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	6,33	1,0	$\mu\text{g/l}$	103%	0,32
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	6,41	0,5128	$\mu\text{g/l}$	104%	0,48
F	6,46	0,97	$\mu\text{g/l}$	105%	0,57
G	6,2	0,3	$\mu\text{g/l}$	101%	0,08
H	4,0 *	1,2	$\mu\text{g/l}$	65%	-4,13
I	6,9		$\mu\text{g/l}$	112%	1,41
J	7	2	$\mu\text{g/l}$	114%	1,60
K	6,4		$\mu\text{g/l}$	104%	0,46
L			$\mu\text{g/l}$		
M	5,28	0,53	$\mu\text{g/l}$	86%	-1,68
N	7,0	1,0	$\mu\text{g/l}$	114%	1,60
O	5,8	0,6	$\mu\text{g/l}$	94%	-0,69
P	5,88	0,23	$\mu\text{g/l}$	95%	-0,53
Q	6,15	0,18	$\mu\text{g/l}$	100%	-0,02
R	5,29	0,76	$\mu\text{g/l}$	86%	-1,66
S	6,3		$\mu\text{g/l}$	102%	0,27
T	5,83	0,87	$\mu\text{g/l}$	95%	-0,63
U	11,71 *	1,6	$\mu\text{g/l}$	190%	10,60
V	6,02	0,78	$\mu\text{g/l}$	98%	-0,27
W			$\mu\text{g/l}$		
X	5,56	0,63	$\mu\text{g/l}$	90%	-1,15

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	6,34 \pm 0,98	6,17 \pm 0,37	$\mu\text{g/l}$
Recov. \pm CI(99%)	103,0 \pm 15,8	100,1 \pm 6,1	%
SD between labs	1,48	0,53	$\mu\text{g/l}$
RSD between labs	23,3	8,6	%
n for calculation	19	17	

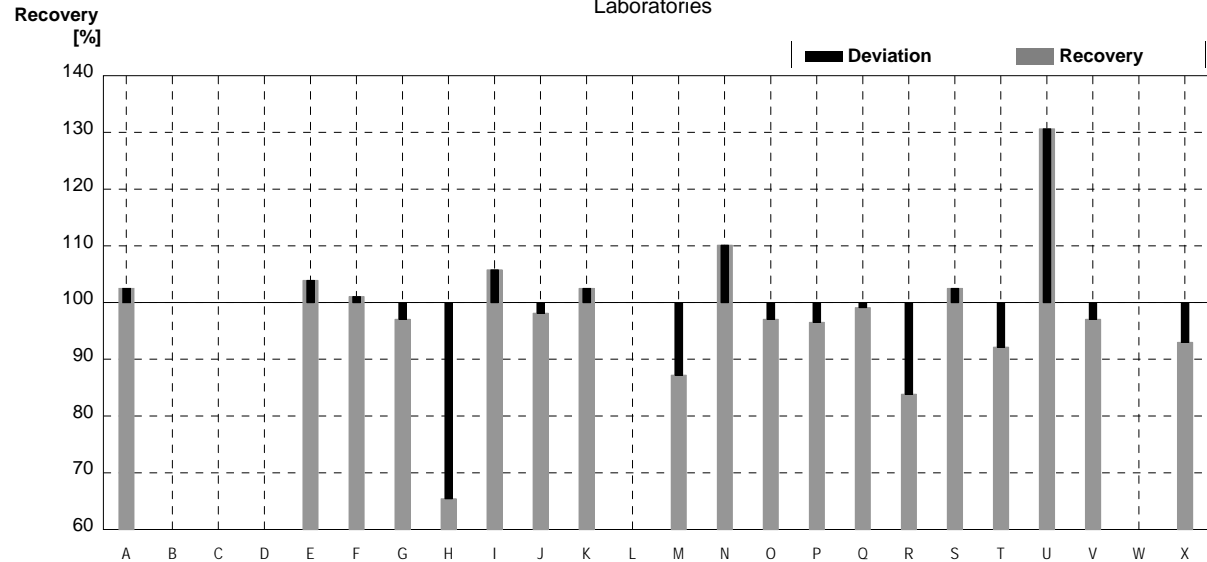
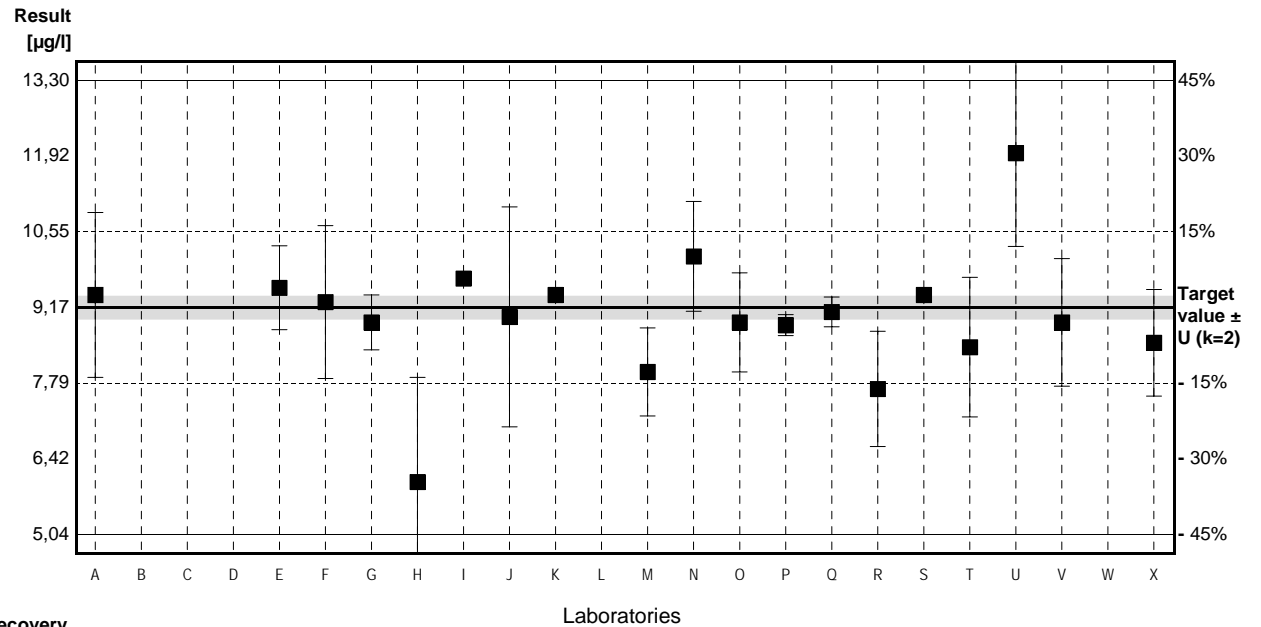


Sample M109B
Parameter Copper

Target value $\pm U$ (k=2) 9,17 $\mu\text{g/l}$ \pm 0,21 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 8,91 $\mu\text{g/l}$ \pm 0,71 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 8,92 $\mu\text{g/l}$ \pm 0,71 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	9,40	1,5	$\mu\text{g/l}$	103%	0,30
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	9,53	0,7624	$\mu\text{g/l}$	104%	0,46
F	9,27	1,39	$\mu\text{g/l}$	101%	0,13
G	8,9	0,5	$\mu\text{g/l}$	97%	-0,35
H	6,0 *	1,9	$\mu\text{g/l}$	65%	-4,07
I	9,7		$\mu\text{g/l}$	106%	0,68
J	9	2	$\mu\text{g/l}$	98%	-0,22
K	9,4		$\mu\text{g/l}$	103%	0,30
L			$\mu\text{g/l}$		
M	8,00	0,80	$\mu\text{g/l}$	87%	-1,50
N	10,1	1,0	$\mu\text{g/l}$	110%	1,19
O	8,9	0,9	$\mu\text{g/l}$	97%	-0,35
P	8,85	0,19	$\mu\text{g/l}$	97%	-0,41
Q	9,09	0,27	$\mu\text{g/l}$	99%	-0,10
R	7,69	1,05	$\mu\text{g/l}$	84%	-1,90
S	9,4		$\mu\text{g/l}$	103%	0,30
T	8,45	1,27	$\mu\text{g/l}$	92%	-0,92
U	11,98 *	1,7	$\mu\text{g/l}$	131%	3,61
V	8,90	1,16	$\mu\text{g/l}$	97%	-0,35
W			$\mu\text{g/l}$		
X	8,53	0,97	$\mu\text{g/l}$	93%	-0,82

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	9,00 \pm 0,76	9,01 \pm 0,43	$\mu\text{g/l}$
Recov. \pm CI(99%)	98,2 \pm 8,3	98,2 \pm 4,7	%
SD between labs	1,15	0,60	$\mu\text{g/l}$
RSD between labs	12,7	6,7	%
n for calculation	19	17	



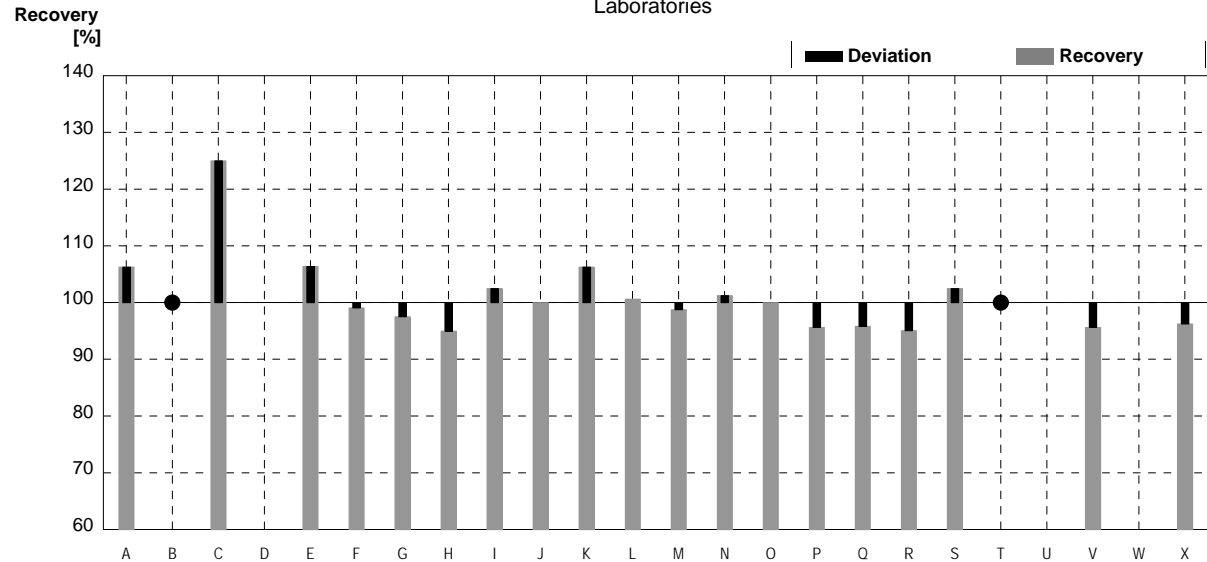
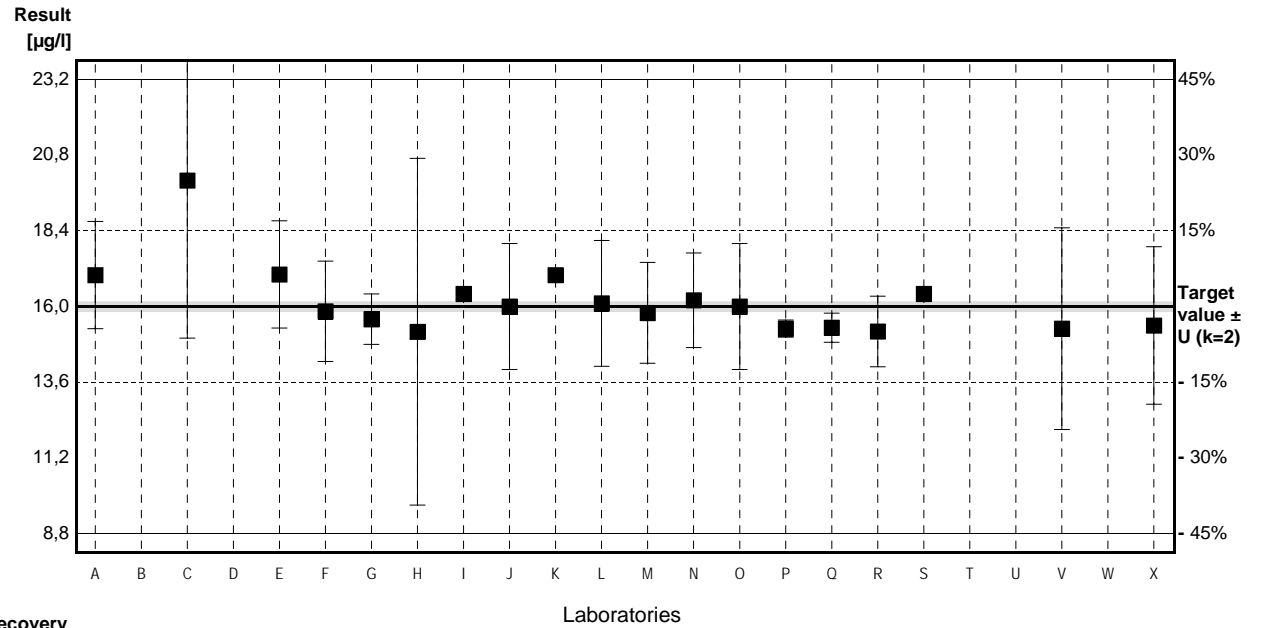
Sample M109A

Parameter Manganese

Target value $\pm U$ (k=2) 16,0 $\mu\text{g/l}$ \pm 0,2 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 15,9 $\mu\text{g/l}$ \pm 1,3 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 15,7 $\mu\text{g/l}$ \pm 1,3 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	17,0	1,7	$\mu\text{g/l}$	106%	0,86
B	<20	<6	$\mu\text{g/l}$	•	
C	20 *	5	$\mu\text{g/l}$	125%	3,42
D			$\mu\text{g/l}$		
E	17,02	1,702	$\mu\text{g/l}$	106%	0,87
F	15,85	1,59	$\mu\text{g/l}$	99%	-0,13
G	15,6	0,8	$\mu\text{g/l}$	98%	-0,34
H	15,2	5,5	$\mu\text{g/l}$	95%	-0,68
I	16,4		$\mu\text{g/l}$	103%	0,34
J	16	2	$\mu\text{g/l}$	100%	0,00
K	17		$\mu\text{g/l}$	106%	0,86
L	16,1	2,0	$\mu\text{g/l}$	101%	0,09
M	15,8	1,6	$\mu\text{g/l}$	99%	-0,17
N	16,2	1,5	$\mu\text{g/l}$	101%	0,17
O	16	2	$\mu\text{g/l}$	100%	0,00
P	15,3	0,27	$\mu\text{g/l}$	96%	-0,60
Q	15,33	0,46	$\mu\text{g/l}$	96%	-0,57
R	15,21	1,12	$\mu\text{g/l}$	95%	-0,68
S	16,4		$\mu\text{g/l}$	103%	0,34
T	<20		$\mu\text{g/l}$	•	
U			$\mu\text{g/l}$		
V	15,3	3,2	$\mu\text{g/l}$	96%	-0,60
W			$\mu\text{g/l}$		
X	15,4	2,5	$\mu\text{g/l}$	96%	-0,51

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	16,2 \pm 0,7	16,0 \pm 0,4	$\mu\text{g/l}$
Recov. \pm CI(99%)	101,0 \pm 4,6	99,7 \pm 2,7	%
SD between labs	1,1	0,6	$\mu\text{g/l}$
RSD between labs	6,9	3,9	%
n for calculation	19	18	



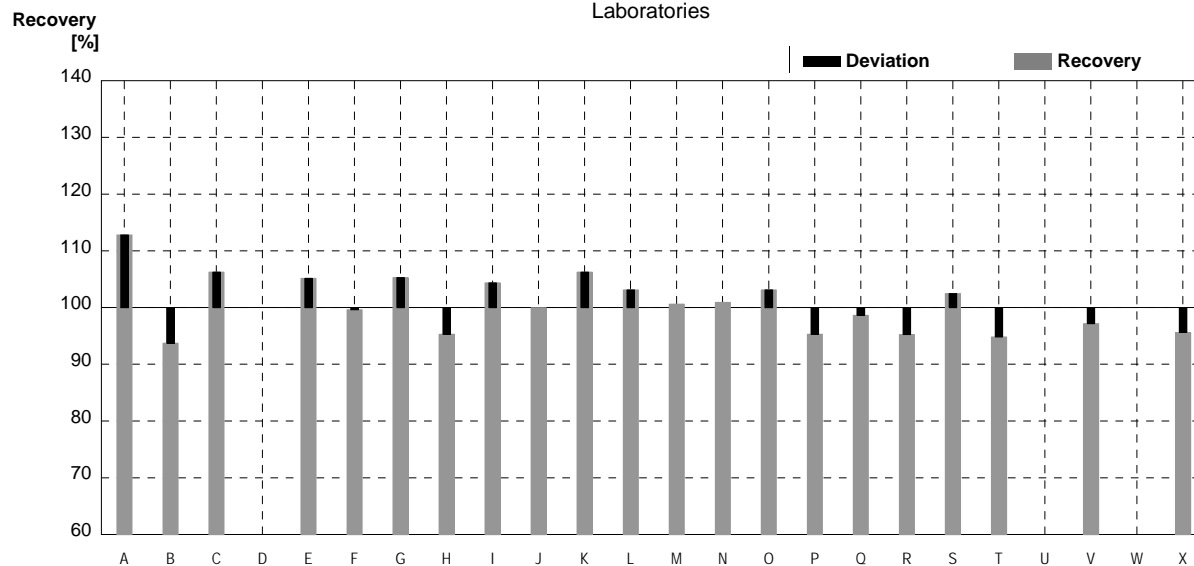
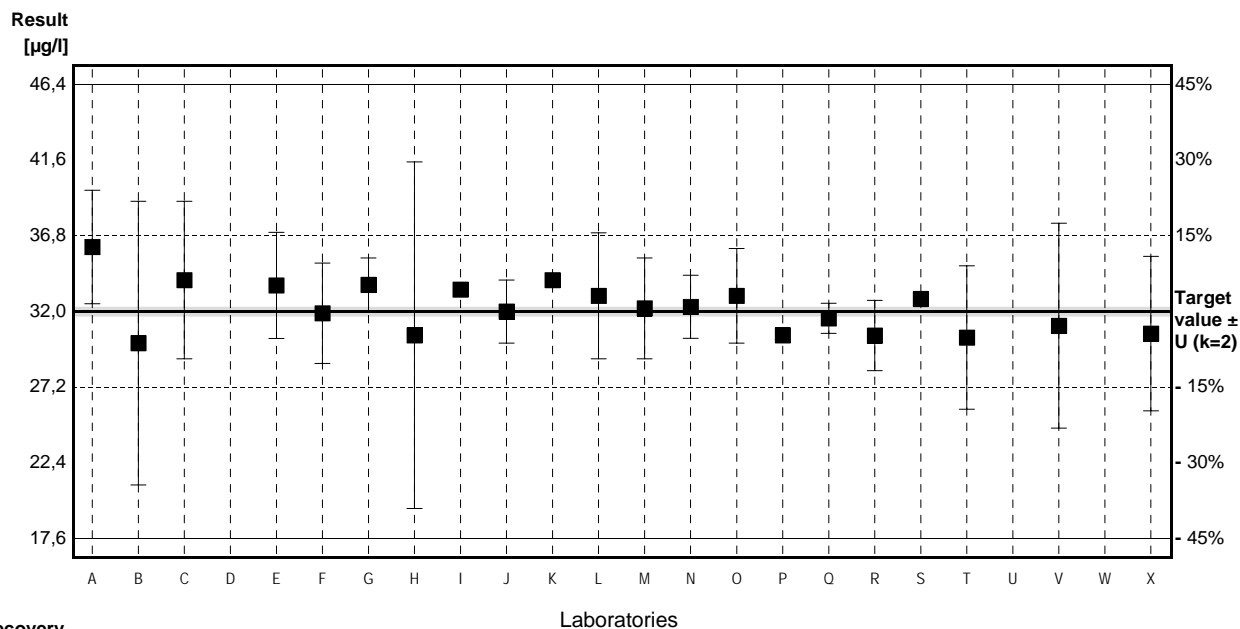
Sample M109B

Parameter Manganese

Target value $\pm U$ (k=2) 32,0 $\mu\text{g/l}$ \pm 0,3 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 31,8 $\mu\text{g/l}$ \pm 2,5 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 31,3 $\mu\text{g/l}$ \pm 2,5 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	36,1	3,6	$\mu\text{g/l}$	113%	1,76
B	30	9	$\mu\text{g/l}$	94%	-0,86
C	34	5	$\mu\text{g/l}$	106%	0,86
D			$\mu\text{g/l}$		
E	33,66	3,366	$\mu\text{g/l}$	105%	0,71
F	31,89	3,19	$\mu\text{g/l}$	100%	-0,05
G	33,7	1,7	$\mu\text{g/l}$	105%	0,73
H	30,5	11	$\mu\text{g/l}$	95%	-0,64
I	33,4		$\mu\text{g/l}$	104%	0,60
J	32	2	$\mu\text{g/l}$	100%	0,00
K	34		$\mu\text{g/l}$	106%	0,86
L	33,0	4,0	$\mu\text{g/l}$	103%	0,43
M	32,2	3,2	$\mu\text{g/l}$	101%	0,09
N	32,3	2,0	$\mu\text{g/l}$	101%	0,13
O	33	3	$\mu\text{g/l}$	103%	0,43
P	30,5	0,26	$\mu\text{g/l}$	95%	-0,64
Q	31,57	0,95	$\mu\text{g/l}$	99%	-0,18
R	30,48	2,23	$\mu\text{g/l}$	95%	-0,65
S	32,8		$\mu\text{g/l}$	103%	0,34
T	30,35	4,55	$\mu\text{g/l}$	95%	-0,71
U			$\mu\text{g/l}$		
V	31,1	6,5	$\mu\text{g/l}$	97%	-0,39
W			$\mu\text{g/l}$		
X	30,6	4,9	$\mu\text{g/l}$	96%	-0,60

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	32,2 \pm 1,0	32,2 \pm 1,0	$\mu\text{g/l}$
Recov. \pm CI(99%)	100,8 \pm 3,1	100,8 \pm 3,1	%
SD between labs	1,6	1,6	$\mu\text{g/l}$
RSD between labs	4,9	4,9	%
n for calculation	21	21	



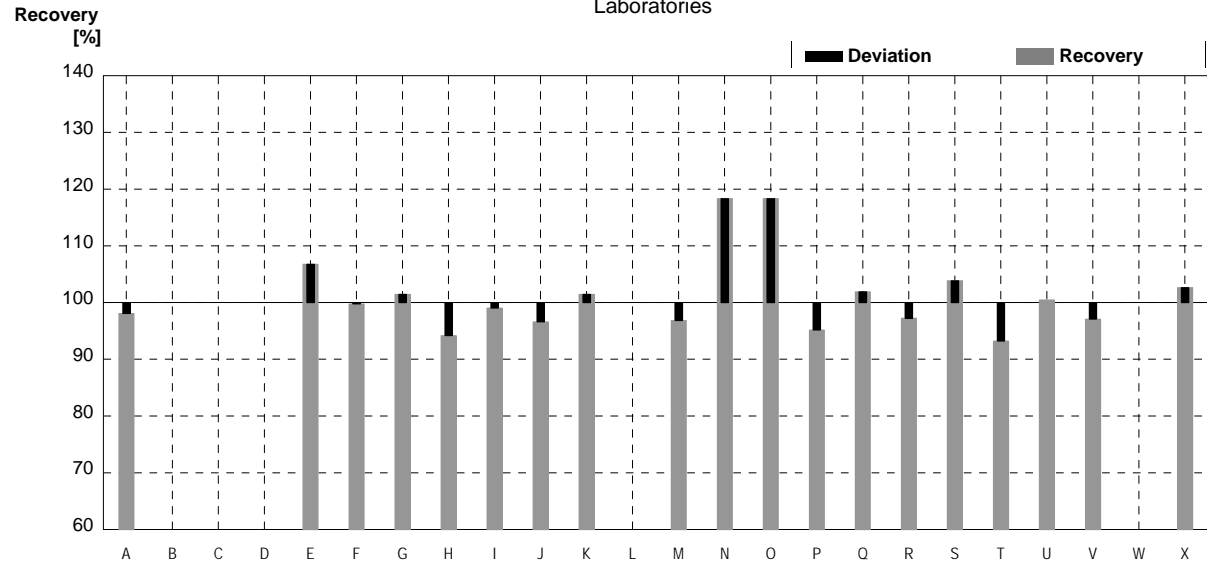
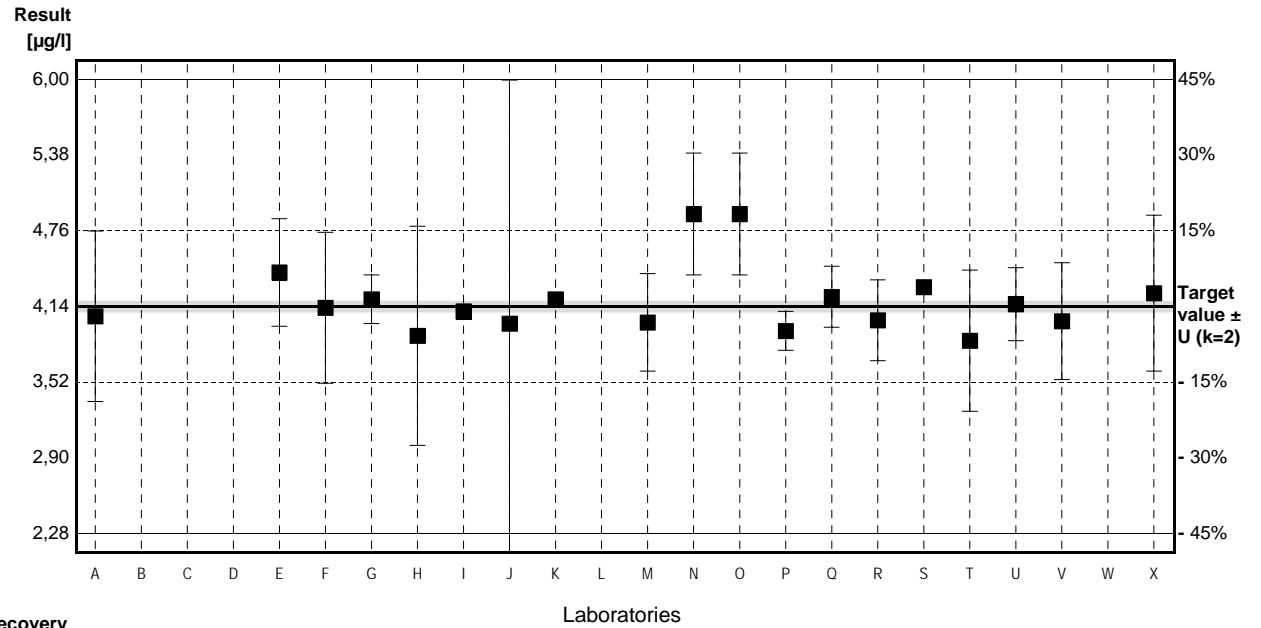
Sample M109A

Parameter Nickel

Target value $\pm U$ (k=2) 4,14 $\mu\text{g/l}$ \pm 0,04 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 3,97 $\mu\text{g/l}$ \pm 0,48 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 3,93 $\mu\text{g/l}$ \pm 0,47 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	4,06	0,7	$\mu\text{g/l}$	98%	-0,22
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	4,42	0,442	$\mu\text{g/l}$	107%	0,79
F	4,13	0,62	$\mu\text{g/l}$	100%	-0,03
G	4,2	0,2	$\mu\text{g/l}$	101%	0,17
H	3,9	0,9	$\mu\text{g/l}$	94%	-0,67
I	4,1		$\mu\text{g/l}$	99%	-0,11
J	4	2	$\mu\text{g/l}$	97%	-0,39
K	4,2		$\mu\text{g/l}$	101%	0,17
L			$\mu\text{g/l}$		
M	4,01	0,40	$\mu\text{g/l}$	97%	-0,37
N	4,9 *	0,5	$\mu\text{g/l}$	118%	2,13
O	4,9 *	0,5	$\mu\text{g/l}$	118%	2,13
P	3,94	0,16	$\mu\text{g/l}$	95%	-0,56
Q	4,22	0,25	$\mu\text{g/l}$	102%	0,22
R	4,027	0,332	$\mu\text{g/l}$	97%	-0,32
S	4,3		$\mu\text{g/l}$	104%	0,45
T	3,86	0,58	$\mu\text{g/l}$	93%	-0,79
U	4,16	0,3	$\mu\text{g/l}$	100%	0,06
V	4,02	0,48	$\mu\text{g/l}$	97%	-0,34
W			$\mu\text{g/l}$		
X	4,25	0,64	$\mu\text{g/l}$	103%	0,31

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	4,19 \pm 0,19	4,11 \pm 0,11	$\mu\text{g/l}$
Recov. \pm CI(99%)	101,2 \pm 4,6	99,2 \pm 2,6	%
SD between labs	0,29	0,15	$\mu\text{g/l}$
RSD between labs	6,9	3,6	%
n for calculation	19	17	



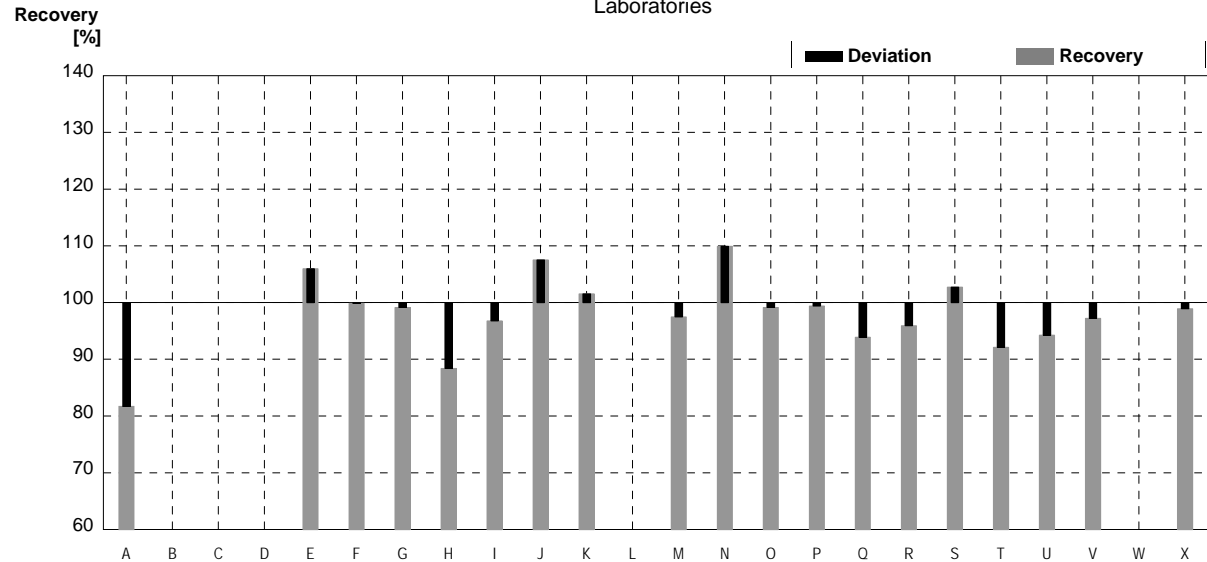
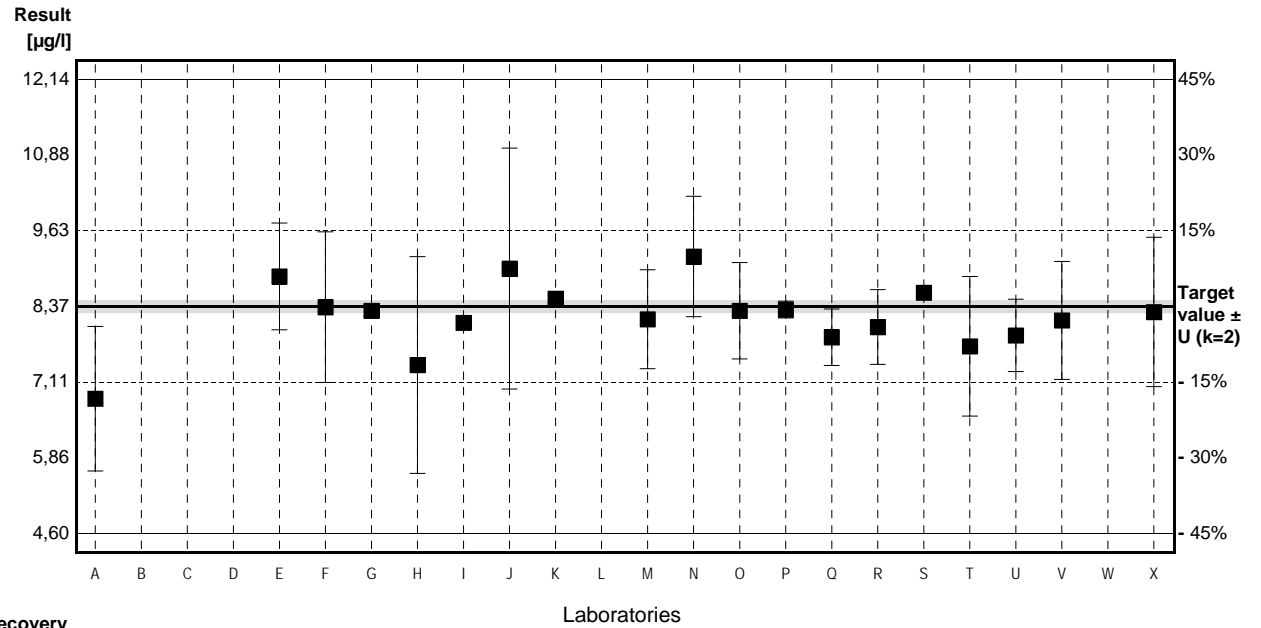
Sample M109B

Parameter Nickel

Target value ± U (k=2) 8,37 µg/l ± 0,10 µg/l
 IFA result ± U (k=2) 8,09 µg/l ± 0,97 µg/l
 Stability test ± U (k=2) 7,95 µg/l ± 0,95 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	6,84	*	µg/l	82%	-2,13
B			µg/l		
C			µg/l		
D			µg/l		
E	8,87	0,887	µg/l	106%	0,69
F	8,36	1,25	µg/l	100%	-0,01
G	8,3	0,1	µg/l	99%	-0,10
H	7,4	1,8	µg/l	88%	-1,35
I	8,1		µg/l	97%	-0,38
J	9	2	µg/l	108%	0,88
K	8,5		µg/l	102%	0,18
L			µg/l		
M	8,16	0,82	µg/l	97%	-0,29
N	9,2	1,0	µg/l	110%	1,15
O	8,3	0,8	µg/l	99%	-0,10
P	8,32	0,14	µg/l	99%	-0,07
Q	7,86	0,47	µg/l	94%	-0,71
R	8,03	0,62	µg/l	96%	-0,47
S	8,6		µg/l	103%	0,32
T	7,71	1,16	µg/l	92%	-0,92
U	7,89	0,6	µg/l	94%	-0,67
V	8,14	0,98	µg/l	97%	-0,32
W			µg/l		
X	8,28	1,24	µg/l	99%	-0,13

	All results	Outliers excl.	Unit
Mean ± CI(99%)	8,20 ± 0,36	8,28 ± 0,31	µg/l
Recov. ± CI(99%)	98,0 ± 4,3	98,9 ± 3,7	%
SD between labs	0,55	0,45	µg/l
RSD between labs	6,7	5,4	%
n for calculation	19	18	

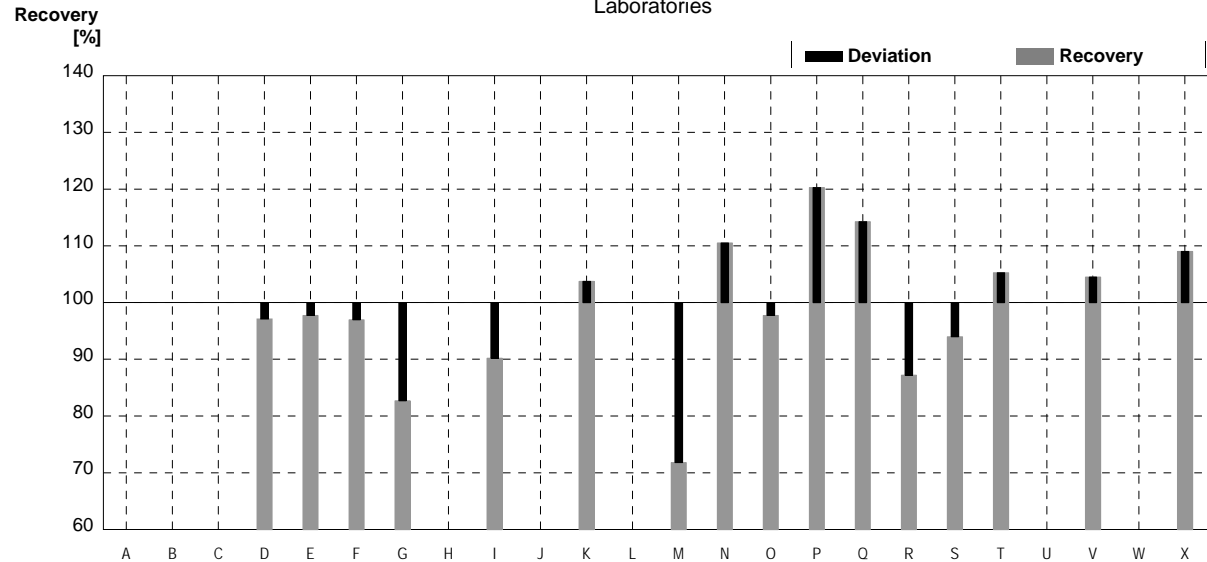
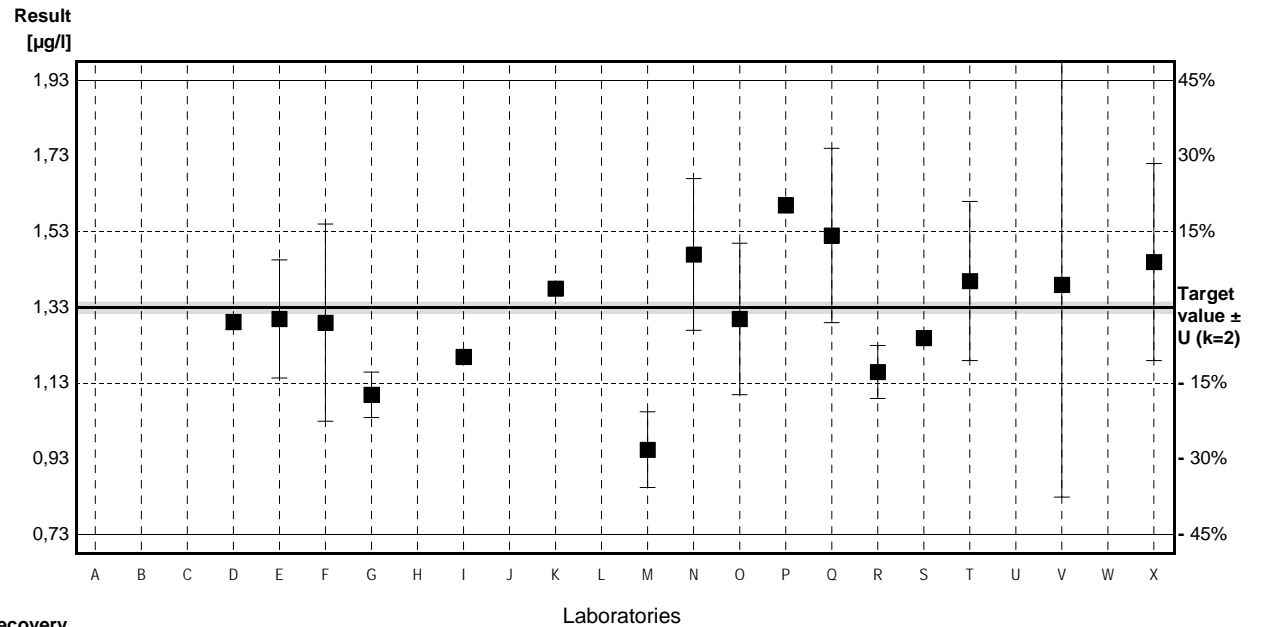


Sample M109A
Parameter Mercury

Target value $\pm U$ (k=2) 1,33 $\mu\text{g/l}$ \pm 0,01 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,40 $\mu\text{g/l}$ \pm 0,08 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 1,39 $\mu\text{g/l}$ \pm 0,08 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D	1,292	0,02	$\mu\text{g/l}$	97%	-0,26
E	1,3	0,156	$\mu\text{g/l}$	98%	-0,21
F	1,29	0,26	$\mu\text{g/l}$	97%	-0,27
G	1,1	0,06	$\mu\text{g/l}$	83%	-1,57
H			$\mu\text{g/l}$		
I	1,2		$\mu\text{g/l}$	90%	-0,89
J			$\mu\text{g/l}$		
K	1,38		$\mu\text{g/l}$	104%	0,34
L			$\mu\text{g/l}$		
M	0,955	0,10	$\mu\text{g/l}$	72%	-2,56
N	1,47	0,2	$\mu\text{g/l}$	111%	0,96
O	1,3	0,2	$\mu\text{g/l}$	98%	-0,21
P	1,60	0,020	$\mu\text{g/l}$	120%	1,85
Q	1,52	0,23	$\mu\text{g/l}$	114%	1,30
R	1,16	0,07	$\mu\text{g/l}$	87%	-1,16
S	1,25		$\mu\text{g/l}$	94%	-0,55
T	1,40	0,21	$\mu\text{g/l}$	105%	0,48
U			$\mu\text{g/l}$		
V	1,39	0,56	$\mu\text{g/l}$	105%	0,41
W			$\mu\text{g/l}$		
X	1,45	0,26	$\mu\text{g/l}$	109%	0,82

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,32 \pm 0,12	1,32 \pm 0,12	$\mu\text{g/l}$
Recov. \pm CI(99%)	99,0 \pm 9,1	99,0 \pm 9,1	%
SD between labs	0,16	0,16	$\mu\text{g/l}$
RSD between labs	12,4	12,4	%
n for calculation	16	16	



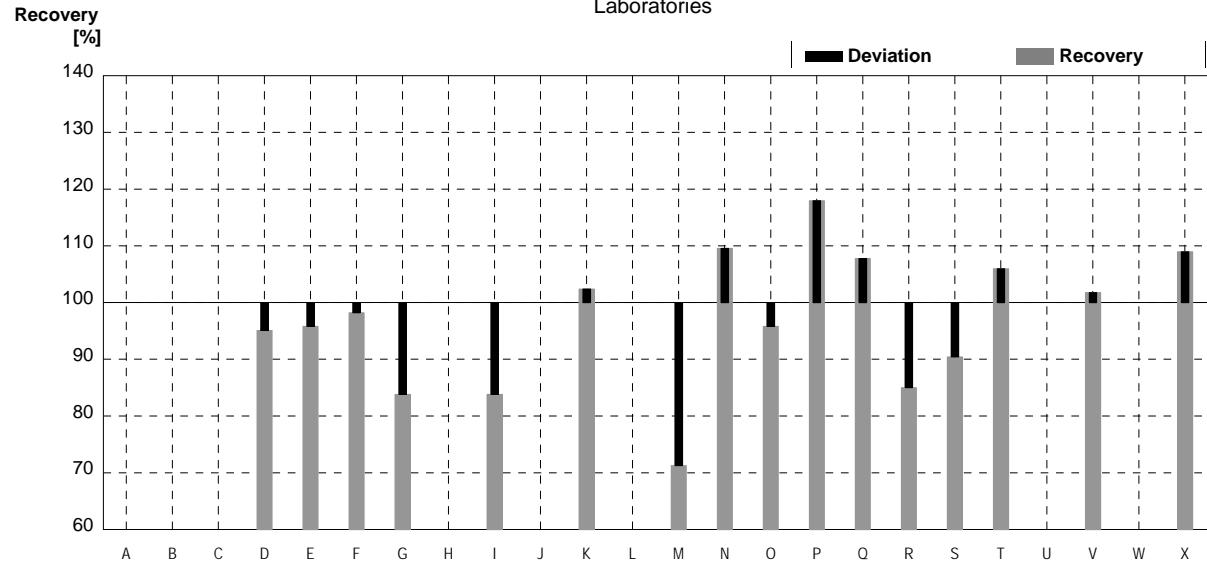
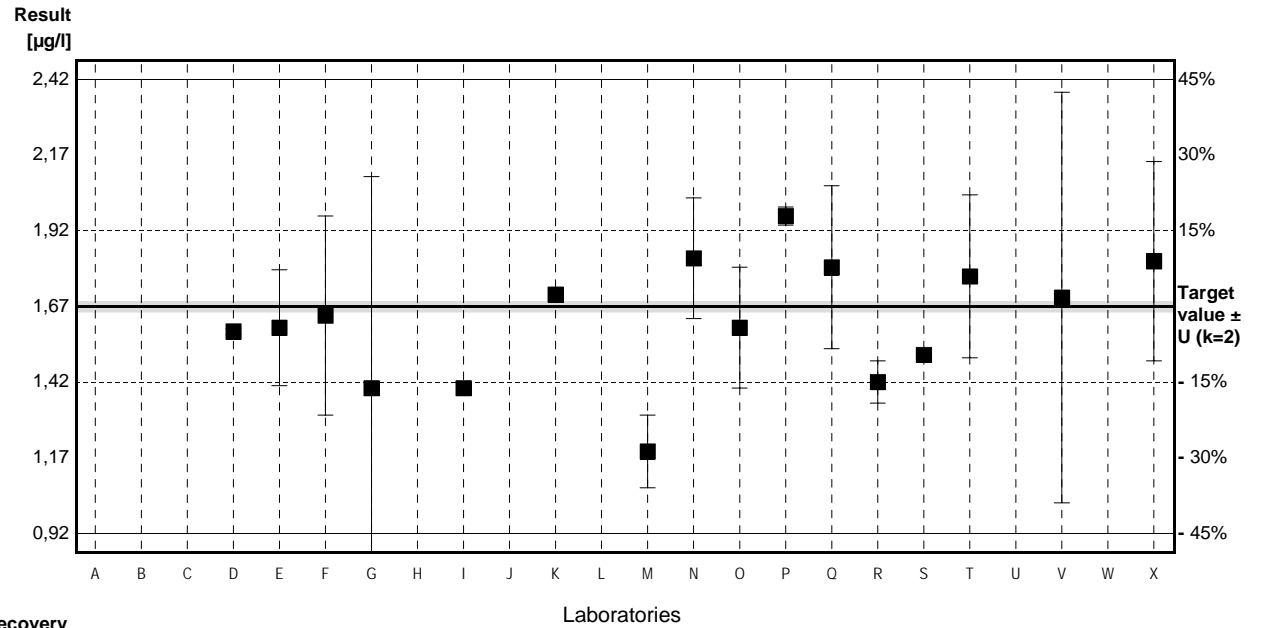
Sample M109B

Parameter Mercury

Target value $\pm U$ (k=2) 1,67 $\mu\text{g/l}$ \pm 0,02 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,71 $\mu\text{g/l}$ \pm 0,10 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 1,74 $\mu\text{g/l}$ \pm 0,10 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D	1,588	0,01	$\mu\text{g/l}$	95%	-0,45
E	1,6	0,192	$\mu\text{g/l}$	96%	-0,38
F	1,64	0,33	$\mu\text{g/l}$	98%	-0,16
G	1,4	0,7	$\mu\text{g/l}$	84%	-1,47
H			$\mu\text{g/l}$		
I	1,4		$\mu\text{g/l}$	84%	-1,47
J			$\mu\text{g/l}$		
K	1,71		$\mu\text{g/l}$	102%	0,22
L			$\mu\text{g/l}$		
M	1,19	0,12	$\mu\text{g/l}$	71%	-2,61
N	1,83	0,2	$\mu\text{g/l}$	110%	0,87
O	1,6	0,2	$\mu\text{g/l}$	96%	-0,38
P	1,97	0,030	$\mu\text{g/l}$	118%	1,63
Q	1,80	0,27	$\mu\text{g/l}$	108%	0,71
R	1,42	0,07	$\mu\text{g/l}$	85%	-1,36
S	1,51		$\mu\text{g/l}$	90%	-0,87
T	1,77	0,27	$\mu\text{g/l}$	106%	0,54
U			$\mu\text{g/l}$		
V	1,70	0,68	$\mu\text{g/l}$	102%	0,16
W			$\mu\text{g/l}$		
X	1,82	0,33	$\mu\text{g/l}$	109%	0,82

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,62 \pm 0,15	1,62 \pm 0,15	$\mu\text{g/l}$
Recov. \pm CI(99%)	97,1 \pm 8,9	97,1 \pm 8,9	%
SD between labs	0,20	0,20	$\mu\text{g/l}$
RSD between labs	12,5	12,5	%
n for calculation	16	16	

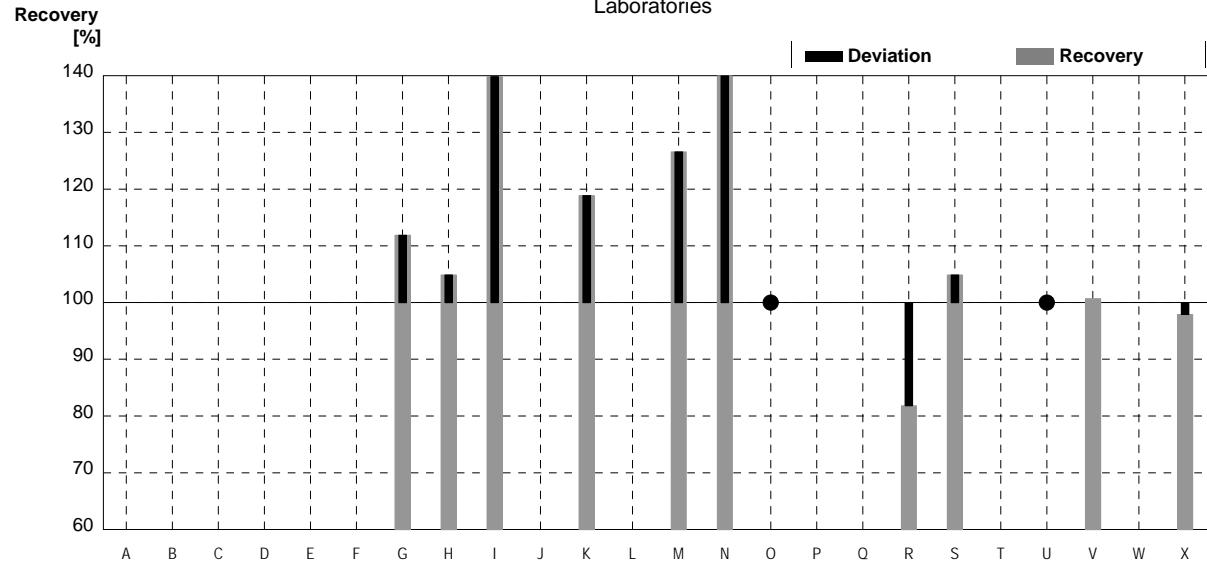
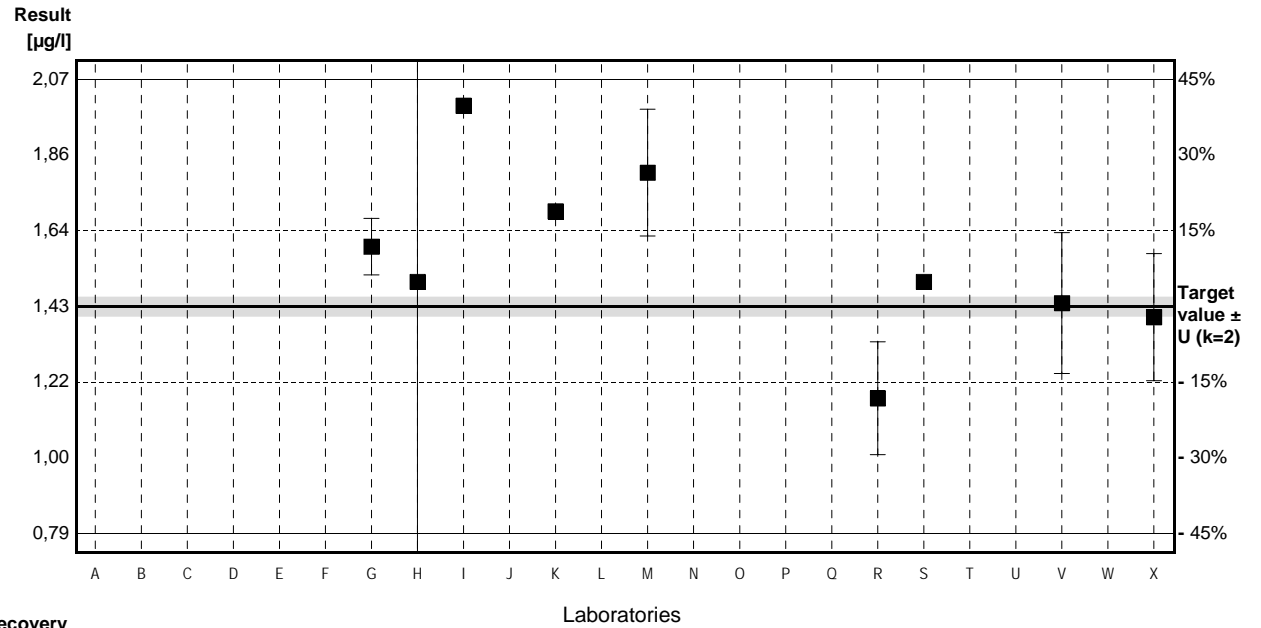


Sample M109A
Parameter Selenium

Target value $\pm U$ (k=2) 1,43 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,42 $\mu\text{g/l}$ \pm 0,14 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 1,48 $\mu\text{g/l}$ \pm 0,15 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E			$\mu\text{g/l}$		
F			$\mu\text{g/l}$		
G	1,6	0,08	$\mu\text{g/l}$	112%	0,85
H	1,5	1,2	$\mu\text{g/l}$	105%	0,35
I	2,0		$\mu\text{g/l}$	140%	2,85
J	<NWG		$\mu\text{g/l}$		
K	1,7		$\mu\text{g/l}$	119%	1,35
L			$\mu\text{g/l}$		
M	1,81	0,18	$\mu\text{g/l}$	127%	1,90
N	2,3	0,3	$\mu\text{g/l}$	161%	4,35
O	<2,0		$\mu\text{g/l}$	•	
P			$\mu\text{g/l}$		
Q			$\mu\text{g/l}$		
R	1,17	0,16	$\mu\text{g/l}$	82%	-1,30
S	1,5		$\mu\text{g/l}$	105%	0,35
T			$\mu\text{g/l}$		
U	<5		$\mu\text{g/l}$	•	
V	1,44	0,20	$\mu\text{g/l}$	101%	0,05
W			$\mu\text{g/l}$		
X	1,40	0,18	$\mu\text{g/l}$	98%	-0,15

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,64 \pm 0,34	1,64 \pm 0,34	$\mu\text{g/l}$
Recov. \pm CI(99%)	114,8 \pm 23,7	114,8 \pm 23,7	%
SD between labs	0,33	0,33	$\mu\text{g/l}$
RSD between labs	19,9	19,9	%
n for calculation	10	10	

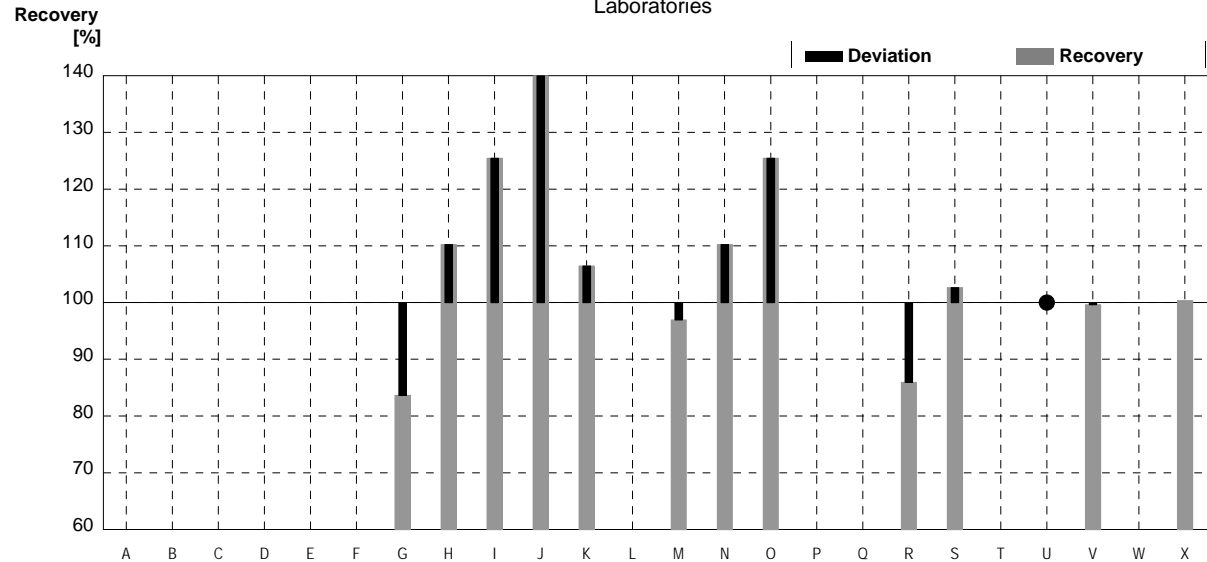
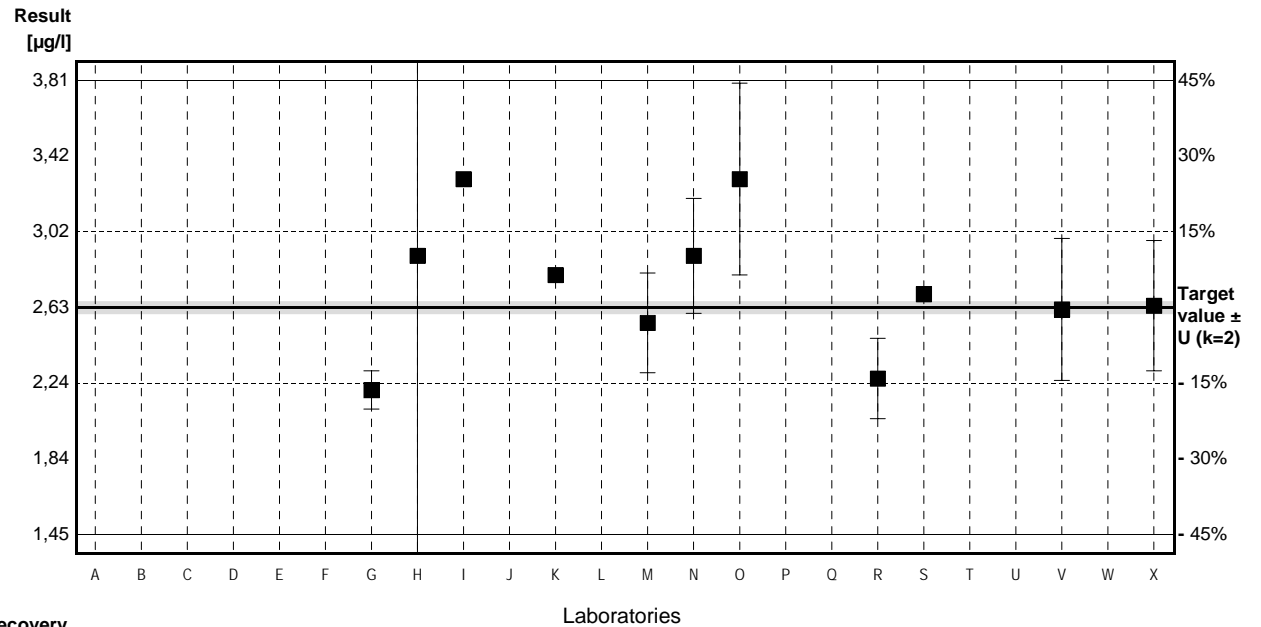


Sample M109B
Parameter Selenium

Target value $\pm U$ (k=2) 2,63 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 2,63 $\mu\text{g/l}$ \pm 0,26 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 2,81 $\mu\text{g/l}$ \pm 0,28 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E			$\mu\text{g/l}$		
F			$\mu\text{g/l}$		
G	2,2	0,1	$\mu\text{g/l}$	84%	-1,17
H	2,9	2,3	$\mu\text{g/l}$	110%	0,73
I	3,3		$\mu\text{g/l}$	125%	1,82
J	13 *	2	$\mu\text{g/l}$	494%	28,16
K	2,8		$\mu\text{g/l}$	106%	0,46
L			$\mu\text{g/l}$		
M	2,55	0,26	$\mu\text{g/l}$	97%	-0,22
N	2,9	0,3	$\mu\text{g/l}$	110%	0,73
O	3,3	0,5	$\mu\text{g/l}$	125%	1,82
P			$\mu\text{g/l}$		
Q			$\mu\text{g/l}$		
R	2,26	0,21	$\mu\text{g/l}$	86%	-1,00
S	2,7		$\mu\text{g/l}$	103%	0,19
T			$\mu\text{g/l}$		
U	<5		$\mu\text{g/l}$	•	
V	2,62	0,37	$\mu\text{g/l}$	100%	-0,03
W			$\mu\text{g/l}$		
X	2,64	0,34	$\mu\text{g/l}$	100%	0,03

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	3,60 \pm 2,68	2,74 \pm 0,34	$\mu\text{g/l}$
Recov. \pm CI(99%)	136,8 \pm 101,7	104,3 \pm 12,9	%
SD between labs	2,98	0,36	$\mu\text{g/l}$
RSD between labs	82,8	13,0	%
n for calculation	12	11	



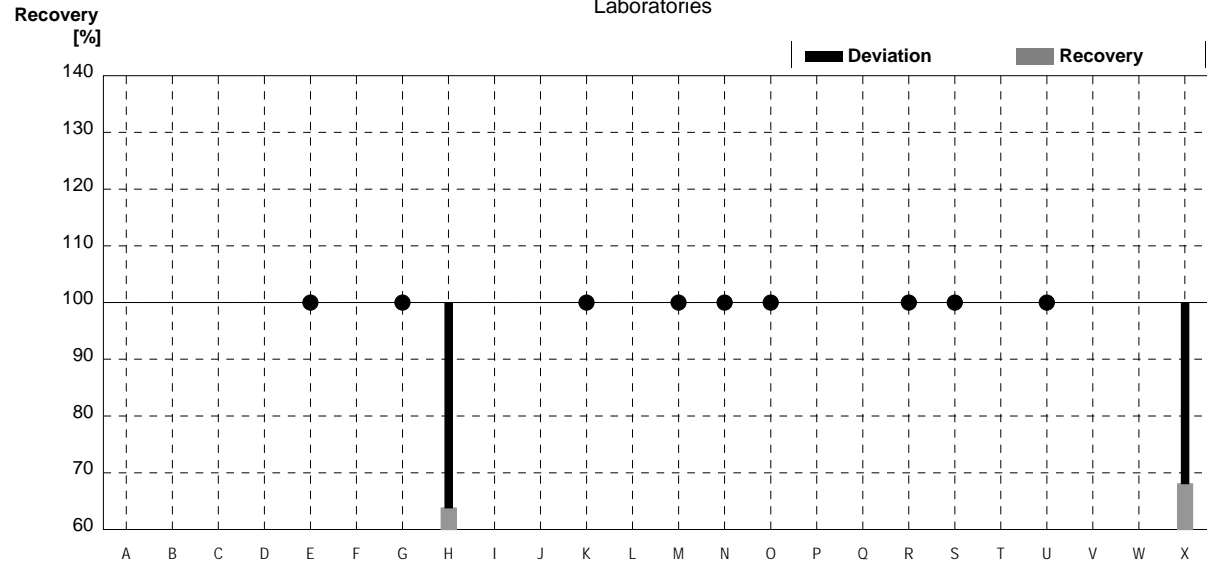
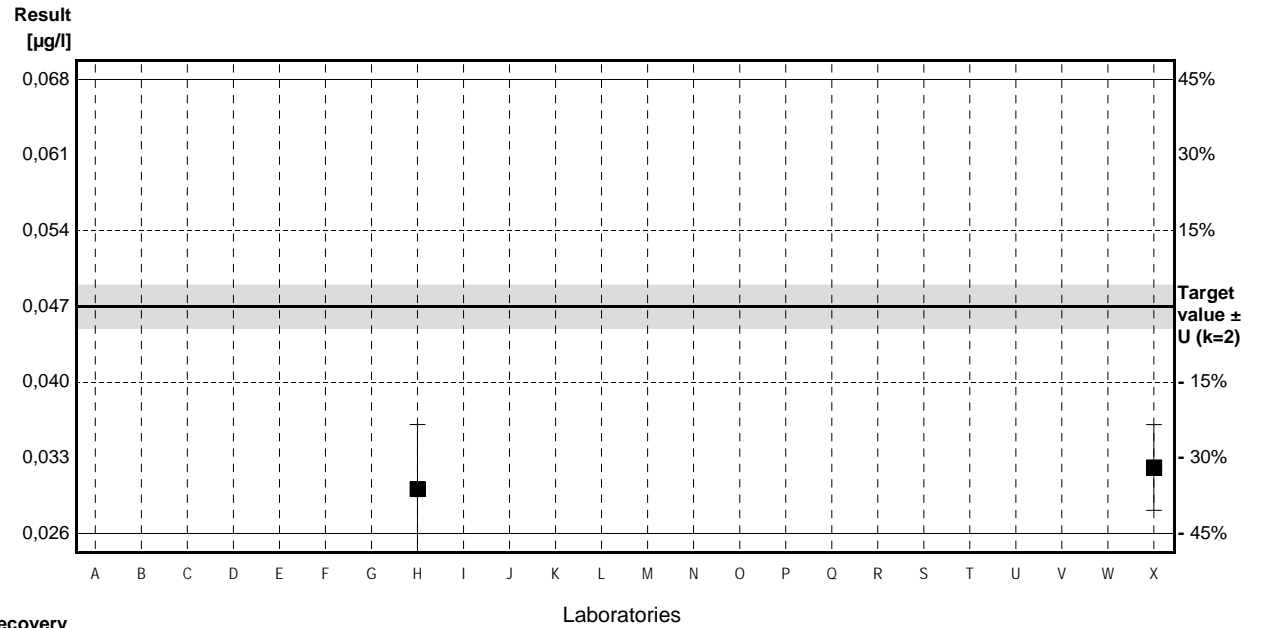
Sample M109A

Parameter Silver

Target value $\pm U$ (k=2) 0,047 $\mu\text{g/l}$ \pm 0,002 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 0,047 $\mu\text{g/l}$ \pm 0,005 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 0,048 $\mu\text{g/l}$ \pm 0,005 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	<0,5		$\mu\text{g/l}$	•	
F			$\mu\text{g/l}$		
G	<0,1		$\mu\text{g/l}$	•	
H	0,03	0,006	$\mu\text{g/l}$	64%	
I			$\mu\text{g/l}$		
J	<NWG		$\mu\text{g/l}$		
K	<2		$\mu\text{g/l}$	•	
L			$\mu\text{g/l}$		
M	<1		$\mu\text{g/l}$	•	
N	<1,0		$\mu\text{g/l}$	•	
O	<0,20		$\mu\text{g/l}$	•	
P			$\mu\text{g/l}$		
Q			$\mu\text{g/l}$		
R	<0,2		$\mu\text{g/l}$	•	
S	<3		$\mu\text{g/l}$	•	
T			$\mu\text{g/l}$		
U	<0,5		$\mu\text{g/l}$	•	
V			$\mu\text{g/l}$		
W			$\mu\text{g/l}$		
X	0,032	0,004	$\mu\text{g/l}$	68%	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)			$\mu\text{g/l}$
Recov. \pm CI(99%)			%
SD between labs			$\mu\text{g/l}$
RSD between labs			%
n for calculation			



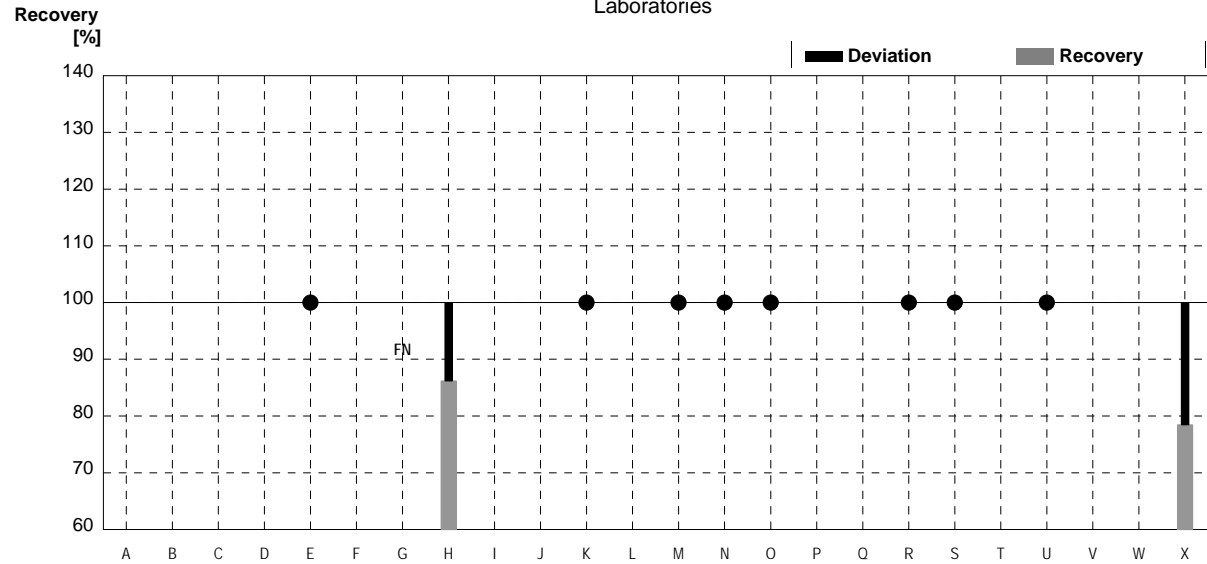
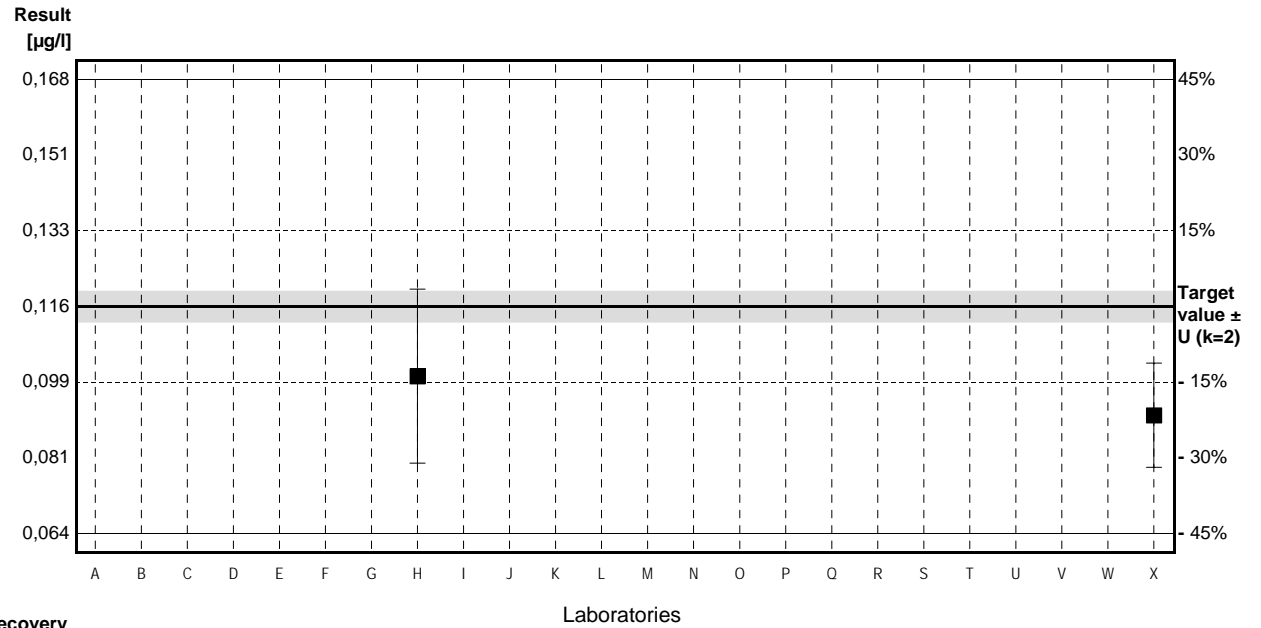
Sample M109B

Parameter Silver

Target value $\pm U$ (k=2) 0,116 $\mu\text{g/l}$ \pm 0,004 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 0,112 $\mu\text{g/l}$ \pm 0,011 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 0,114 $\mu\text{g/l}$ \pm 0,011 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	<0,5		$\mu\text{g/l}$	•	
F			$\mu\text{g/l}$		
G	<0,1		$\mu\text{g/l}$	FN	
H	0,1	0,02	$\mu\text{g/l}$	86%	-0,81
I			$\mu\text{g/l}$		
J	<NWG		$\mu\text{g/l}$		
K	<2		$\mu\text{g/l}$	•	
L			$\mu\text{g/l}$		
M	<1		$\mu\text{g/l}$	•	
N	<1,0		$\mu\text{g/l}$	•	
O	<0,20		$\mu\text{g/l}$	•	
P			$\mu\text{g/l}$		
Q			$\mu\text{g/l}$		
R	<0,2		$\mu\text{g/l}$	•	
S	<3		$\mu\text{g/l}$	•	
T			$\mu\text{g/l}$		
U	<0,5		$\mu\text{g/l}$	•	
V			$\mu\text{g/l}$		
W			$\mu\text{g/l}$		
X	0,091	0,012	$\mu\text{g/l}$	78%	-1,27

	All results	Outliers excl.	Unit
Mean \pm CI(99%)			$\mu\text{g/l}$
Recov. \pm CI(99%)			%
SD between labs			$\mu\text{g/l}$
RSD between labs			%
n for calculation			

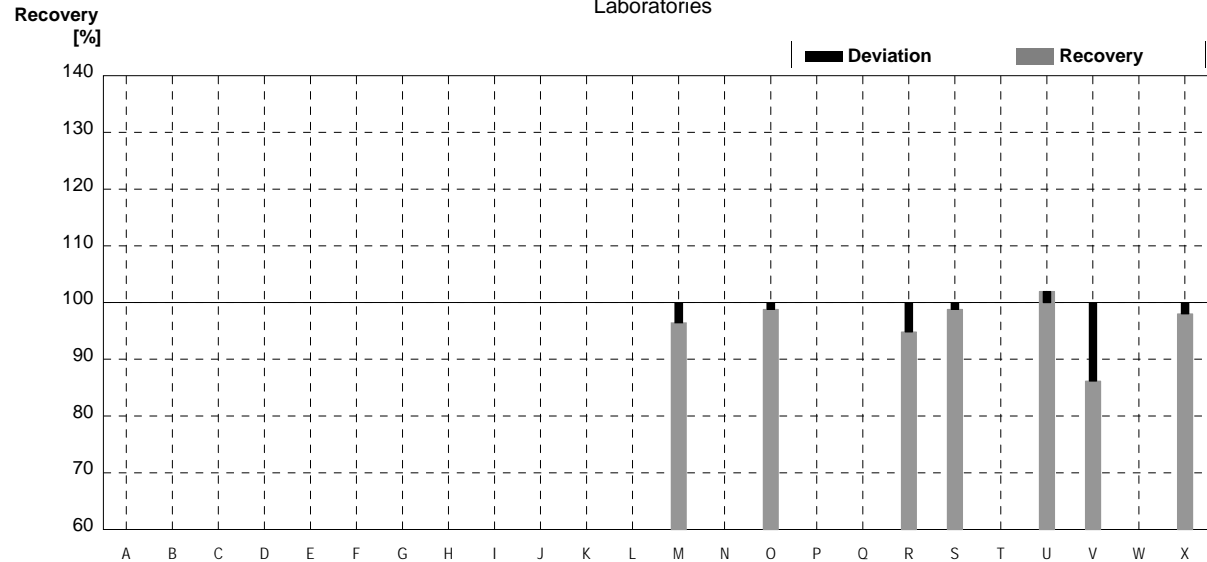
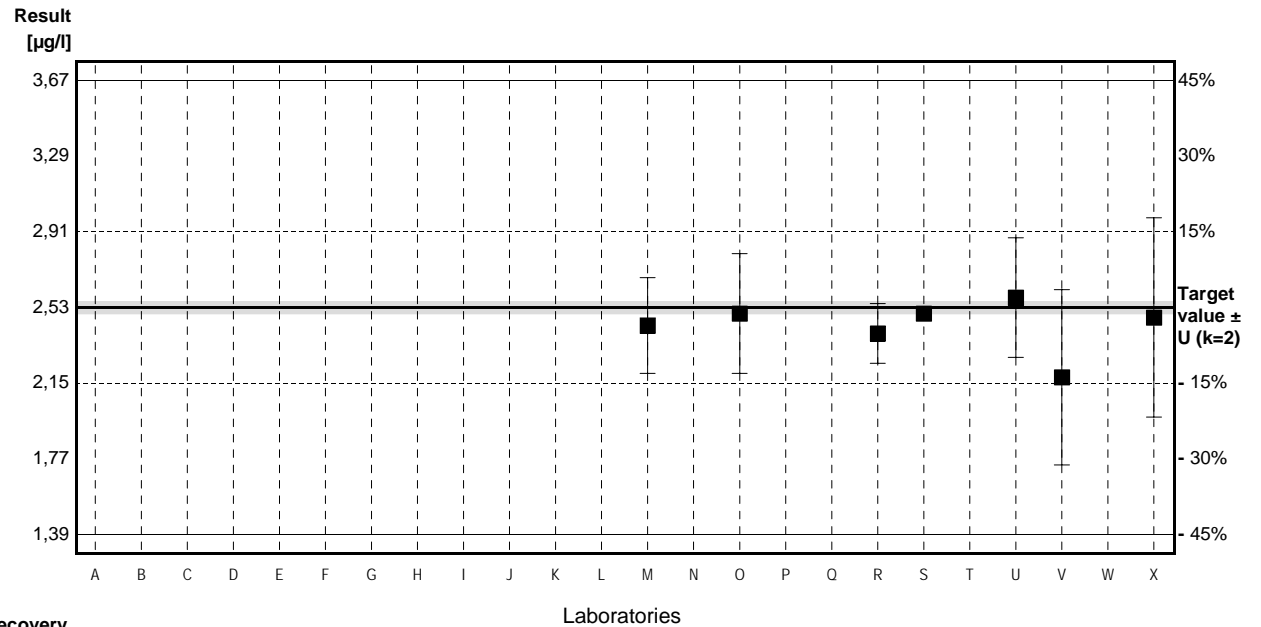


Sample M109A
Parameter Uranium

Target value $\pm U$ (k=2) 2,53 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 2,59 $\mu\text{g/l}$ \pm 0,26 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 2,63 $\mu\text{g/l}$ \pm 0,26 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E			$\mu\text{g/l}$		
F			$\mu\text{g/l}$		
G			$\mu\text{g/l}$		
H			$\mu\text{g/l}$		
I			$\mu\text{g/l}$		
J	<NWG		$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L			$\mu\text{g/l}$		
M	2,44	0,24	$\mu\text{g/l}$	96%	-0,56
N			$\mu\text{g/l}$		
O	2,5	0,3	$\mu\text{g/l}$	99%	-0,19
P			$\mu\text{g/l}$		
Q			$\mu\text{g/l}$		
R	2,4	0,15	$\mu\text{g/l}$	95%	-0,82
S	2,5		$\mu\text{g/l}$	99%	-0,19
T			$\mu\text{g/l}$		
U	2,58	0,3	$\mu\text{g/l}$	102%	0,31
V	2,18 *	0,44	$\mu\text{g/l}$	86%	-2,20
W			$\mu\text{g/l}$		
X	2,48	0,50	$\mu\text{g/l}$	98%	-0,31

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	2,44 \pm 0,18	2,48 \pm 0,10	$\mu\text{g/l}$
Recov. \pm CI(99%)	96,4 \pm 7,1	98,2 \pm 4,0	%
SD between labs	0,13	0,06	$\mu\text{g/l}$
RSD between labs	5,2	2,5	%
n for calculation	7	6	

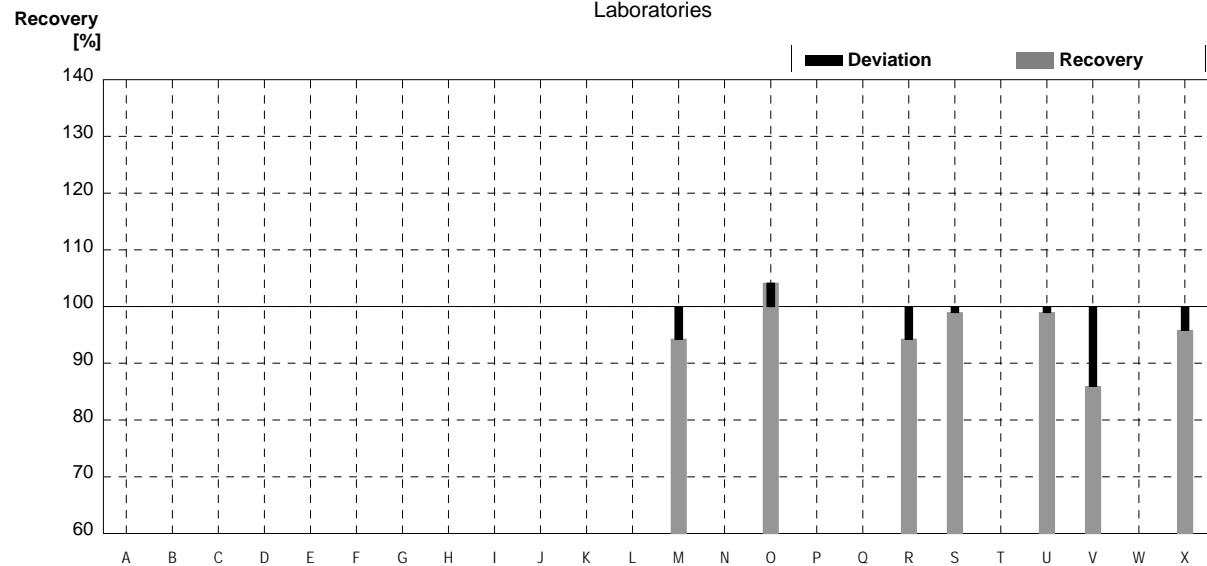
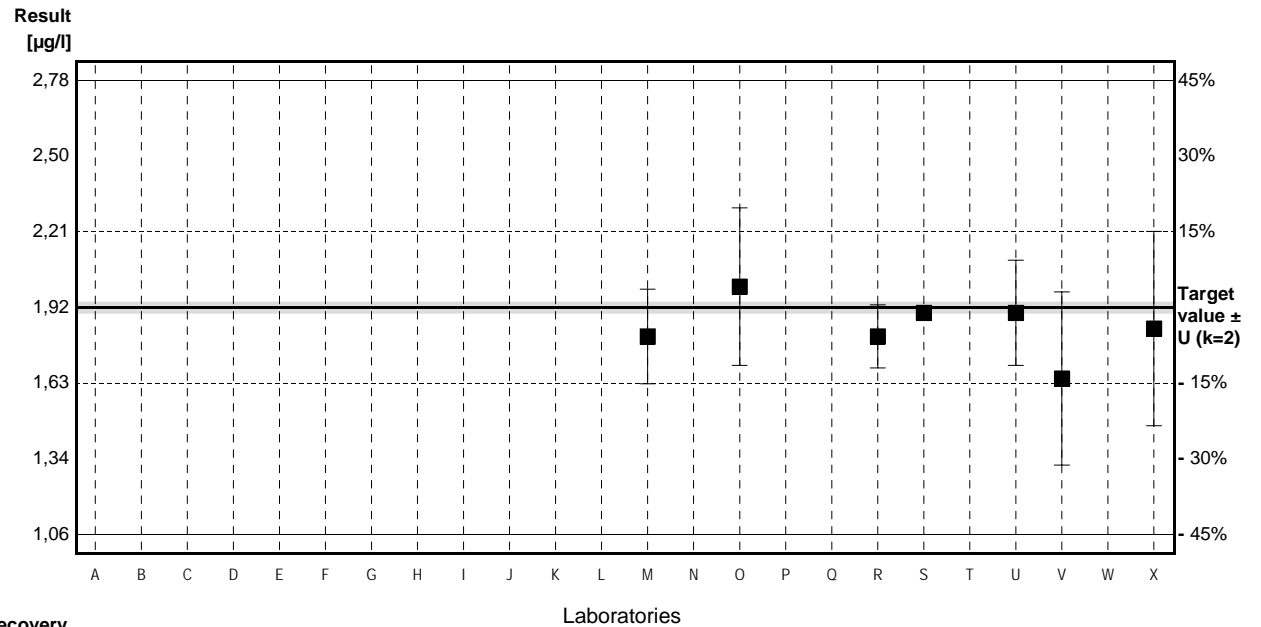


Sample M109B
Parameter Uranium

Target value $\pm U$ (k=2) 1,92 $\mu\text{g/l}$ \pm 0,02 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,98 $\mu\text{g/l}$ \pm 0,20 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 2,02 $\mu\text{g/l}$ \pm 0,20 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A			$\mu\text{g/l}$		
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E			$\mu\text{g/l}$		
F			$\mu\text{g/l}$		
G			$\mu\text{g/l}$		
H			$\mu\text{g/l}$		
I			$\mu\text{g/l}$		
J	<NWG		$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L			$\mu\text{g/l}$		
M	1,81	0,18	$\mu\text{g/l}$	94%	-0,91
N			$\mu\text{g/l}$		
O	2,0	0,3	$\mu\text{g/l}$	104%	0,66
P			$\mu\text{g/l}$		
Q			$\mu\text{g/l}$		
R	1,81	0,12	$\mu\text{g/l}$	94%	-0,91
S	1,9		$\mu\text{g/l}$	99%	-0,17
T			$\mu\text{g/l}$		
U	1,90	0,2	$\mu\text{g/l}$	99%	-0,17
V	1,65	0,33	$\mu\text{g/l}$	86%	-2,23
W			$\mu\text{g/l}$		
X	1,84	0,37	$\mu\text{g/l}$	96%	-0,66

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	1,84 \pm 0,15	1,84 \pm 0,15	$\mu\text{g/l}$
Recov. \pm CI(99%)	96,1 \pm 7,9	96,1 \pm 7,9	%
SD between labs	0,11	0,11	$\mu\text{g/l}$
RSD between labs	5,9	5,9	%
n for calculation	7	7	



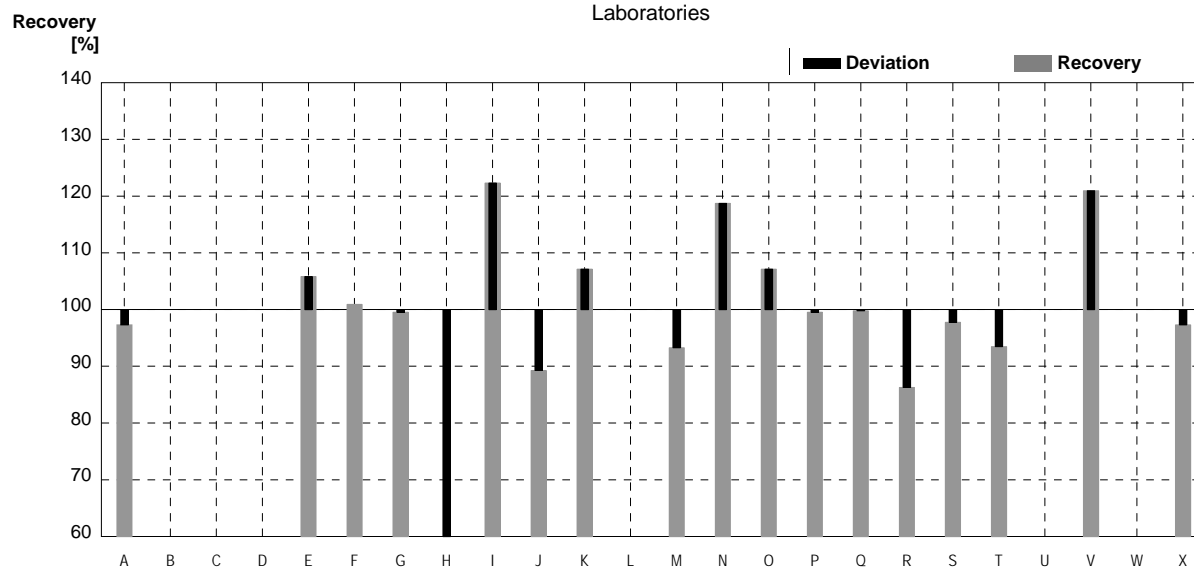
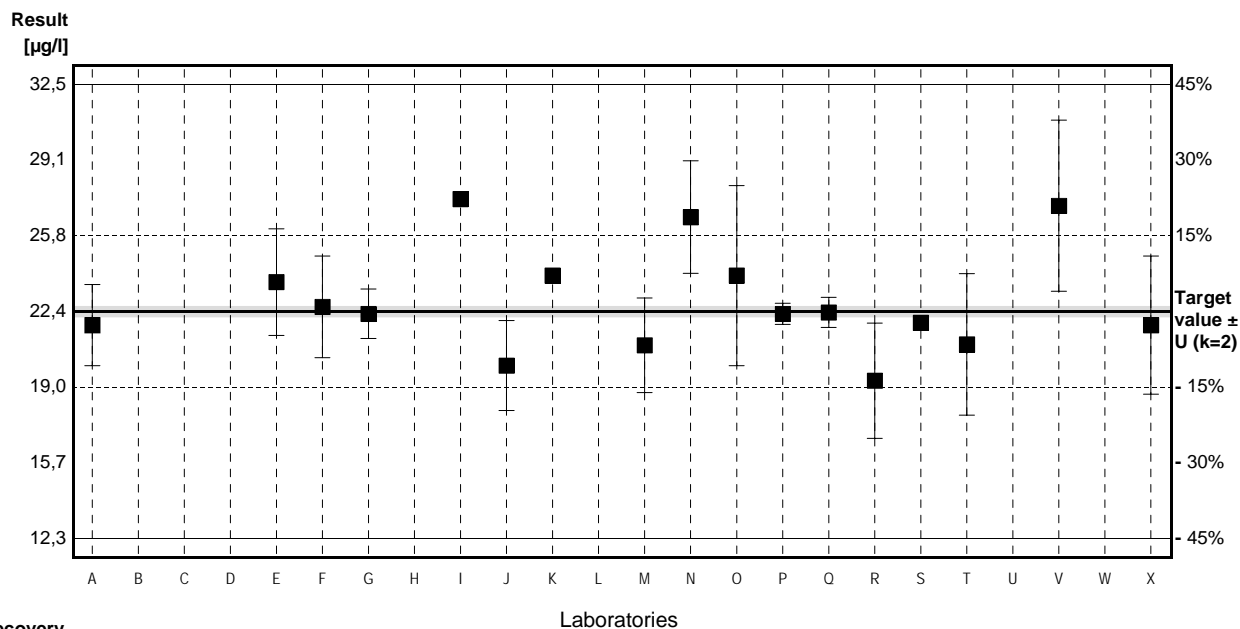
Sample M109A

Parameter Zinc

Target value $\pm U$ (k=2) 22,4 $\mu\text{g/l}$ \pm 0,2 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 23,2 $\mu\text{g/l}$ \pm 2,3 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 23,0 $\mu\text{g/l}$ \pm 2,3 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	21,8	1,8	$\mu\text{g/l}$	97%	-0,27
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	23,71	2,371	$\mu\text{g/l}$	106%	0,58
F	22,61	2,26	$\mu\text{g/l}$	101%	0,09
G	22,3	1,1	$\mu\text{g/l}$	100%	-0,04
H	7,8 *	3,2	$\mu\text{g/l}$	35%	-6,52
I	27,4		$\mu\text{g/l}$	122%	2,23
J	20	2	$\mu\text{g/l}$	89%	-1,07
K	24		$\mu\text{g/l}$	107%	0,71
L			$\mu\text{g/l}$		
M	20,9	2,1	$\mu\text{g/l}$	93%	-0,67
N	26,6	2,5	$\mu\text{g/l}$	119%	1,88
O	24	4	$\mu\text{g/l}$	107%	0,71
P	22,3	0,47	$\mu\text{g/l}$	100%	-0,04
Q	22,36	0,67	$\mu\text{g/l}$	100%	-0,02
R	19,33	2,56	$\mu\text{g/l}$	86%	-1,37
S	21,9		$\mu\text{g/l}$	98%	-0,22
T	20,94	3,14	$\mu\text{g/l}$	93%	-0,65
U			$\mu\text{g/l}$		
V	27,10	3,8	$\mu\text{g/l}$	121%	2,10
W			$\mu\text{g/l}$		
X	21,8	3,07	$\mu\text{g/l}$	97%	-0,27

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	22,0 \pm 2,9	22,9 \pm 1,7	$\mu\text{g/l}$
Recov. \pm CI(99%)	98,4 \pm 12,9	102,2 \pm 7,4	%
SD between labs	4,2	2,3	$\mu\text{g/l}$
RSD between labs	19,2	10,3	%
n for calculation	18	17	



Sample M109B

Parameter Zinc

Target value $\pm U$ (k=2) 13,1 $\mu\text{g/l}$ \pm 0,1 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 13,5 $\mu\text{g/l}$ \pm 1,4 $\mu\text{g/l}$
 Stability test $\pm U$ (k=2) 13,8 $\mu\text{g/l}$ \pm 1,4 $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	14,9	1,2	$\mu\text{g/l}$	114%	1,37
B			$\mu\text{g/l}$		
C			$\mu\text{g/l}$		
D			$\mu\text{g/l}$		
E	14,33	1,433	$\mu\text{g/l}$	109%	0,94
F	13,13	1,31	$\mu\text{g/l}$	100%	0,02
G	13,0	1,4	$\mu\text{g/l}$	99%	-0,08
H	4,9 *	2,0	$\mu\text{g/l}$	37%	-6,26
I	16,4		$\mu\text{g/l}$	125%	2,52
J	11	2	$\mu\text{g/l}$	84%	-1,60
K	14		$\mu\text{g/l}$	107%	0,69
L			$\mu\text{g/l}$		
M	12,3	1,2	$\mu\text{g/l}$	94%	-0,61
N	15,9	2,0	$\mu\text{g/l}$	121%	2,14
O	14	3	$\mu\text{g/l}$	107%	0,69
P	12,3	0,55	$\mu\text{g/l}$	94%	-0,61
Q	12,33	0,37	$\mu\text{g/l}$	94%	-0,59
R	11,3	1,5	$\mu\text{g/l}$	86%	-1,37
S	12,9		$\mu\text{g/l}$	98%	-0,15
T	<20		$\mu\text{g/l}$	*	
U			$\mu\text{g/l}$		
V	23,8 *	3,3	$\mu\text{g/l}$	182%	8,17
W			$\mu\text{g/l}$		
X	13,4	1,9	$\mu\text{g/l}$	102%	0,23

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	13,5 \pm 2,6	13,4 \pm 1,2	$\mu\text{g/l}$
Recov. \pm CI(99%)	103,2 \pm 19,7	102,4 \pm 9,1	%
SD between labs	3,7	1,5	$\mu\text{g/l}$
RSD between labs	27,0	11,5	%
n for calculation	17	15	

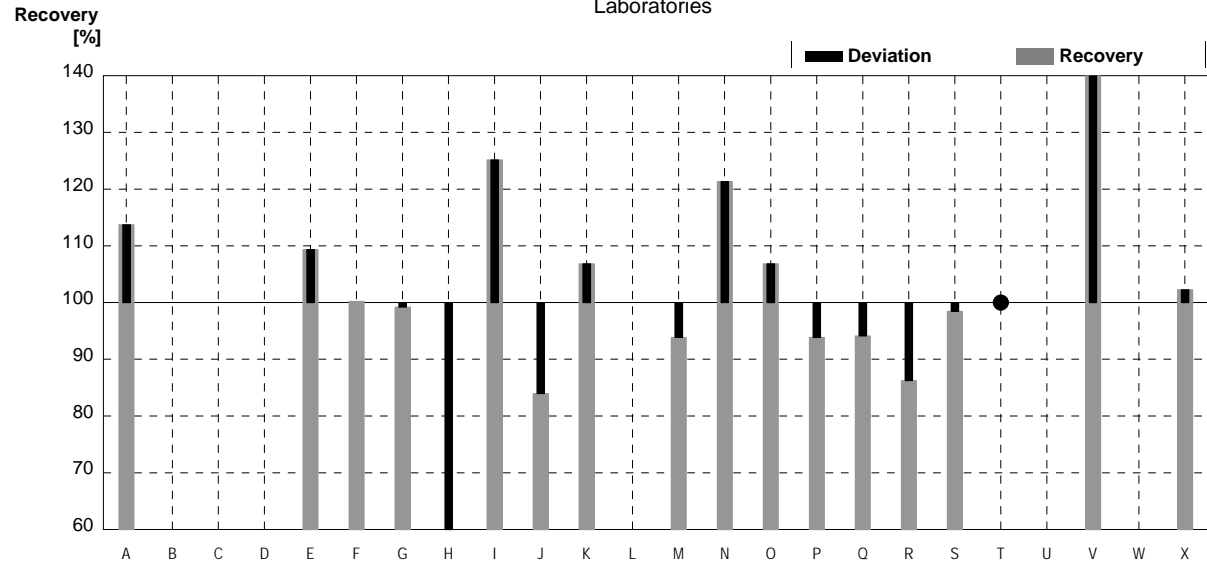
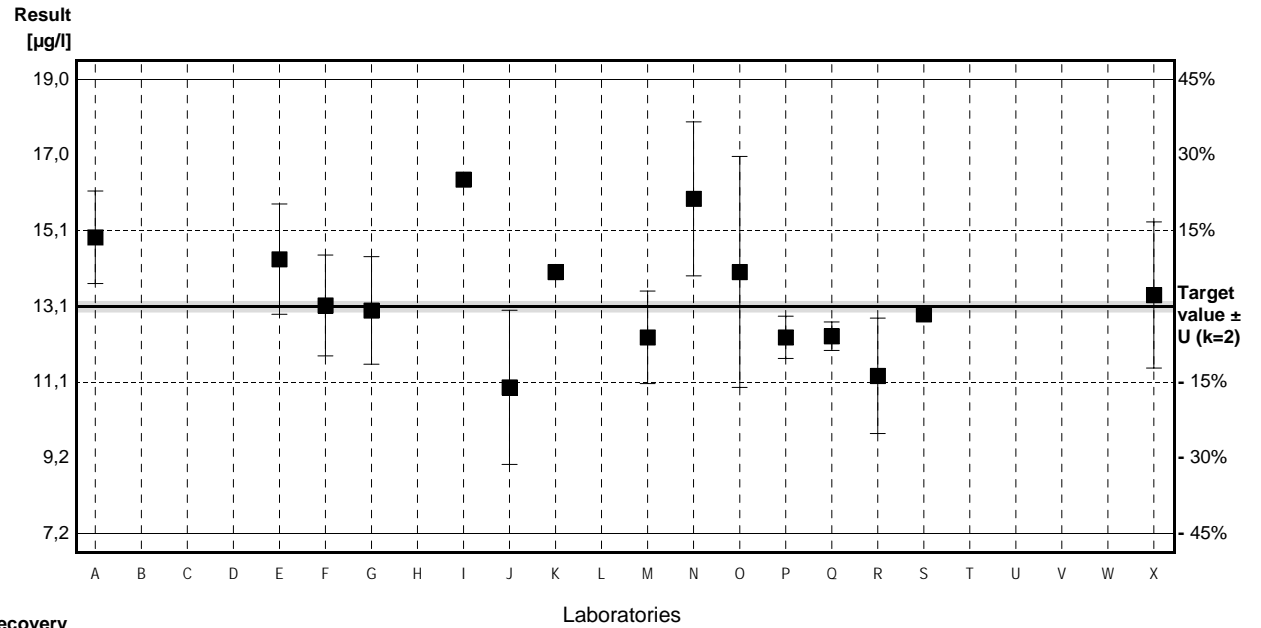


Illustration of Results Laboratory Oriented Part

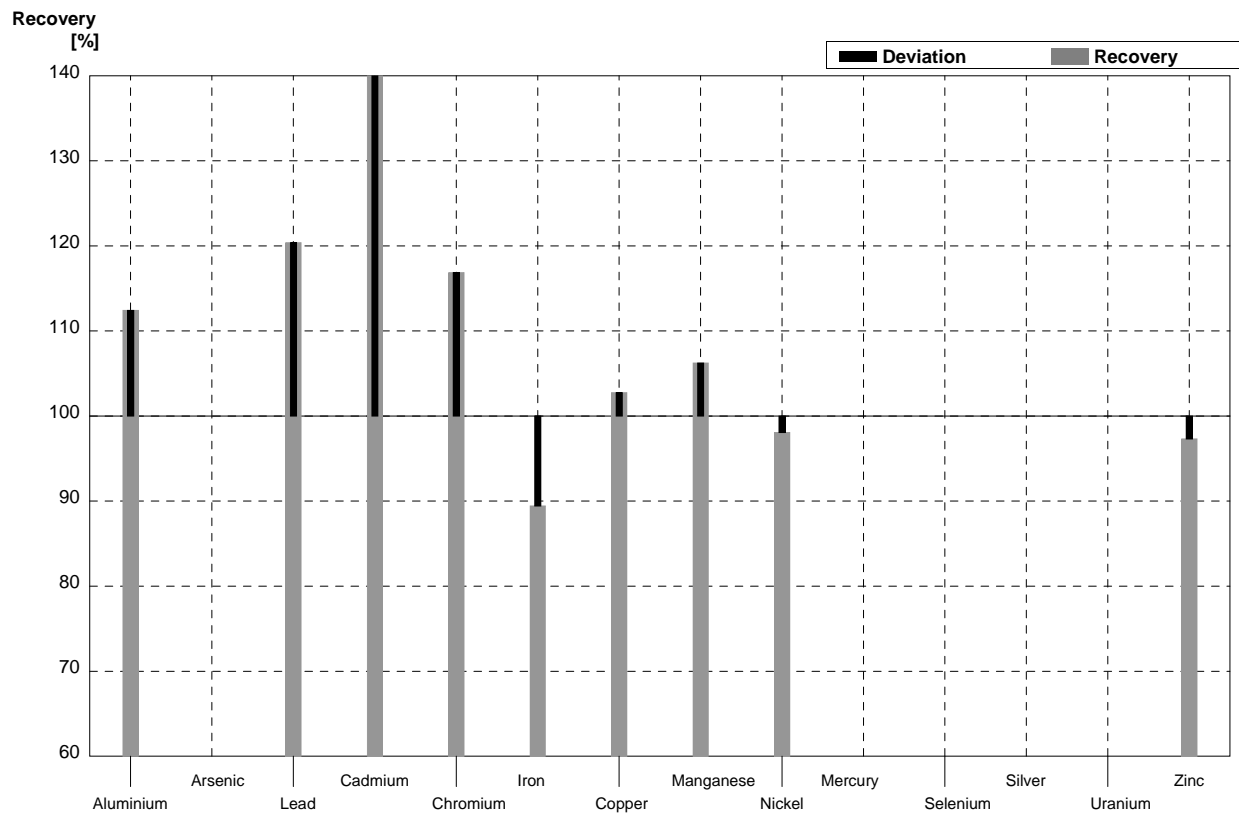
Round M109
Metals

Sample Dispatch: 23 January 2012



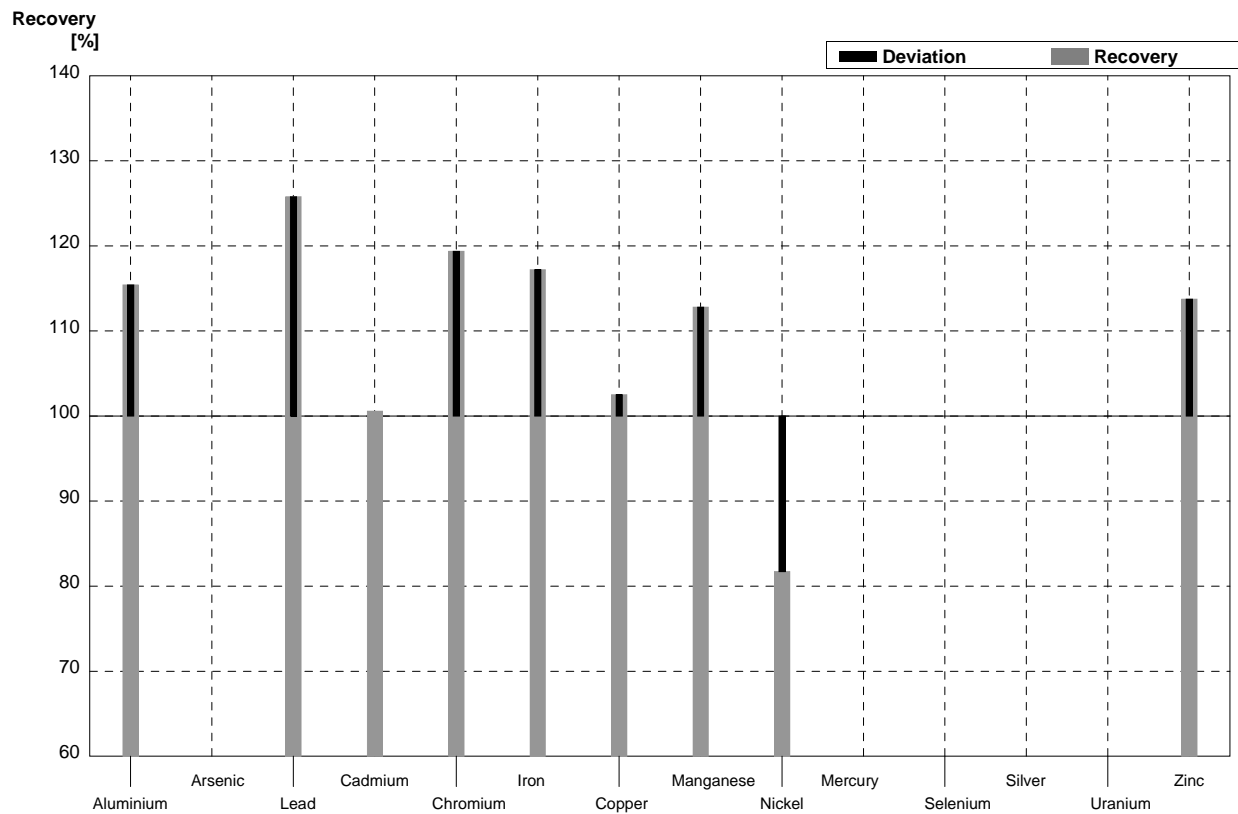
Sample M109A
Laboratory A

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	50,7	7,5	$\mu\text{g/l}$	112%
Arsenic	1,19	0,02			$\mu\text{g/l}$	
Lead	8,39	0,10	10,1	1,8	$\mu\text{g/l}$	120%
Cadmium	0,308	0,006	0,46	0,08	$\mu\text{g/l}$	149%
Chromium	6,46	0,05	7,55	1,1	$\mu\text{g/l}$	117%
Iron	71,9	0,4	64,3	3,3	$\mu\text{g/l}$	89%
Copper	6,16	0,13	6,33	1,0	$\mu\text{g/l}$	103%
Manganese	16,0	0,2	17,0	1,7	$\mu\text{g/l}$	106%
Nickel	4,14	0,04	4,06	0,7	$\mu\text{g/l}$	98%
Mercury	1,33	0,01			$\mu\text{g/l}$	
Selenium	1,43	0,03			$\mu\text{g/l}$	
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2	21,8	1,8	$\mu\text{g/l}$	97%



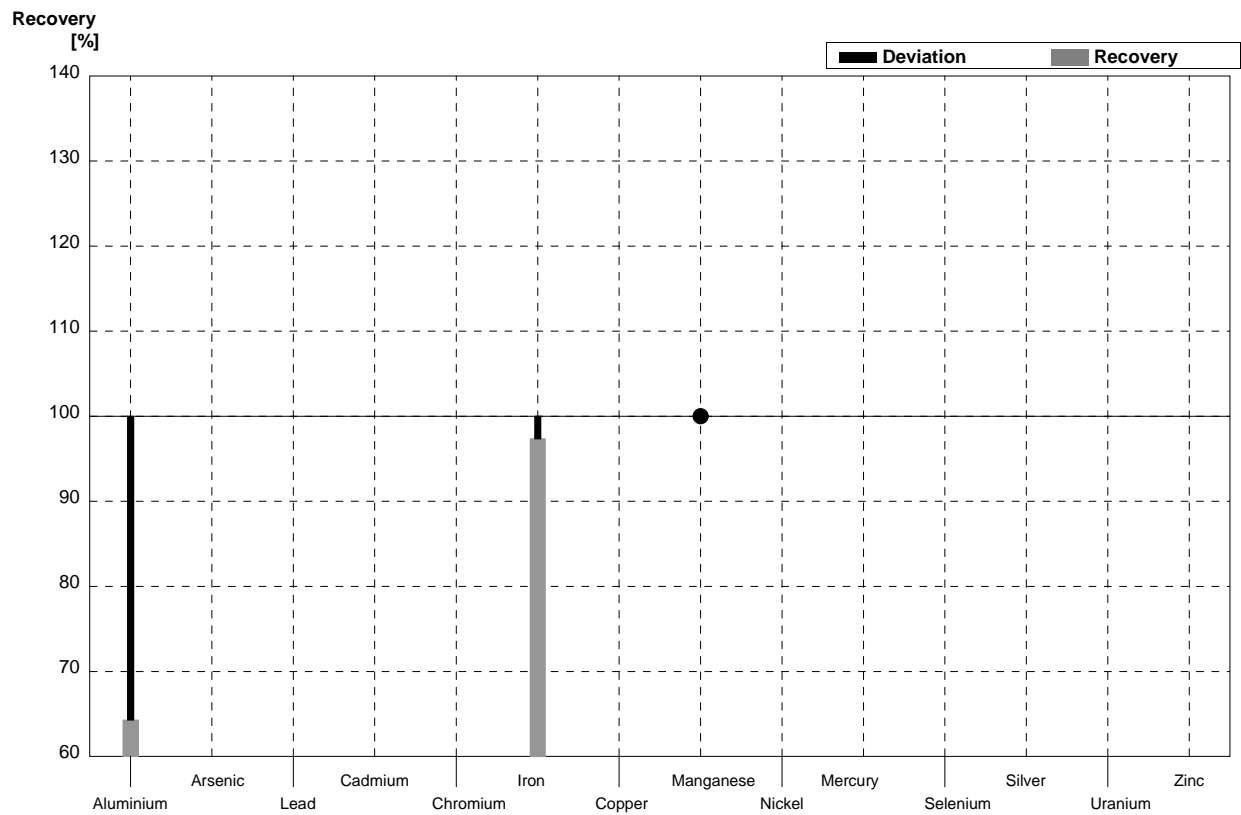
Sample M109B
Laboratory A

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	32,2	4,8	$\mu\text{g/l}$	115%
Arsenic	3,40	0,04			$\mu\text{g/l}$	
Lead	5,12	0,09	6,44	1,2	$\mu\text{g/l}$	126%
Cadmium	1,75	0,02	1,76	0,3	$\mu\text{g/l}$	101%
Chromium	4,44	0,06	5,30	0,8	$\mu\text{g/l}$	119%
Iron	40,1	0,3	47,0	2,4	$\mu\text{g/l}$	117%
Copper	9,17	0,21	9,40	1,5	$\mu\text{g/l}$	103%
Manganese	32,0	0,3	36,1	3,6	$\mu\text{g/l}$	113%
Nickel	8,37	0,10	6,84	1,2	$\mu\text{g/l}$	82%
Mercury	1,67	0,02			$\mu\text{g/l}$	
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	14,9	1,2	$\mu\text{g/l}$	114%



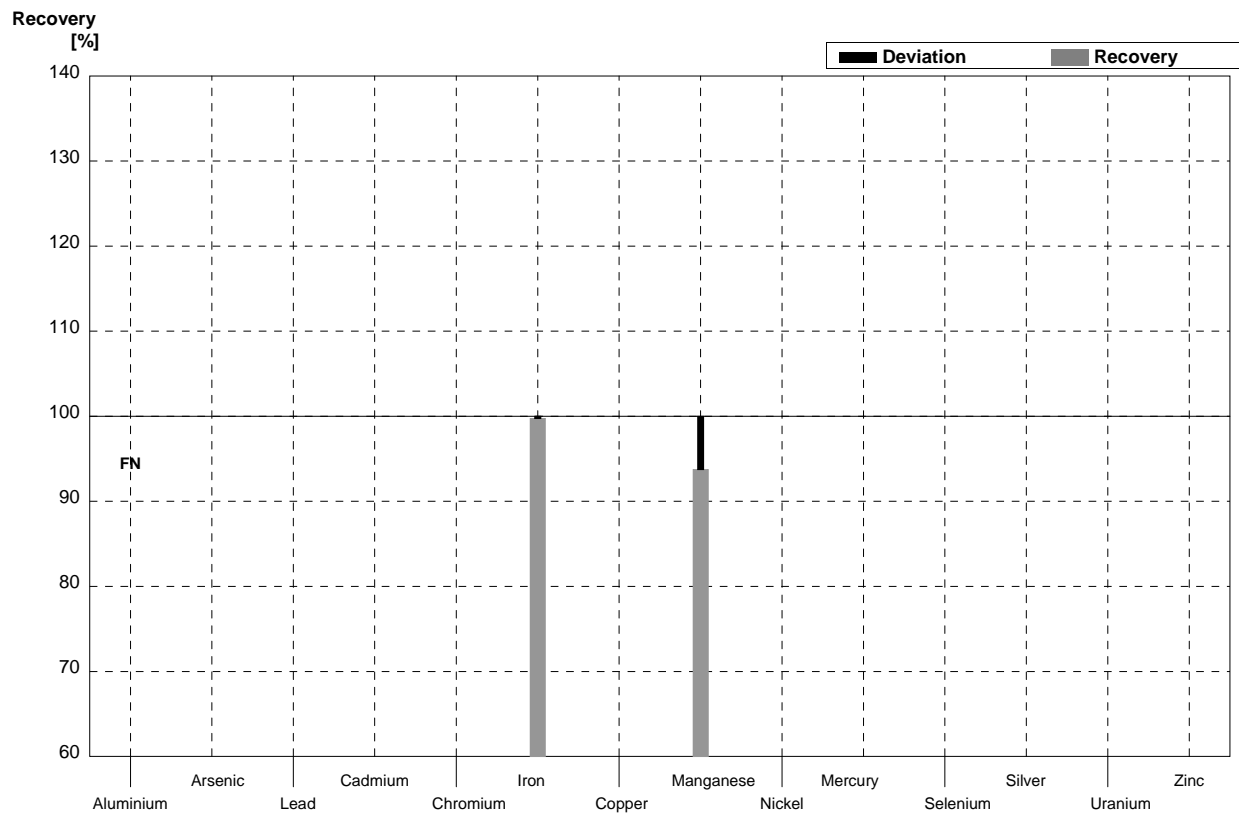
Sample M109A
Laboratory B

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	29	9,0	µg/l	64%
Arsenic	1,19	0,02			µg/l	
Lead	8,39	0,10			µg/l	
Cadmium	0,308	0,006			µg/l	
Chromium	6,46	0,05			µg/l	
Iron	71,9	0,4	70	28,7	µg/l	97%
Copper	6,16	0,13			µg/l	
Manganese	16,0	0,2	<20	<6	µg/l	•
Nickel	4,14	0,04			µg/l	
Mercury	1,33	0,01			µg/l	
Selenium	1,43	0,03			µg/l	
Silver	0,047	0,002			µg/l	
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2			µg/l	



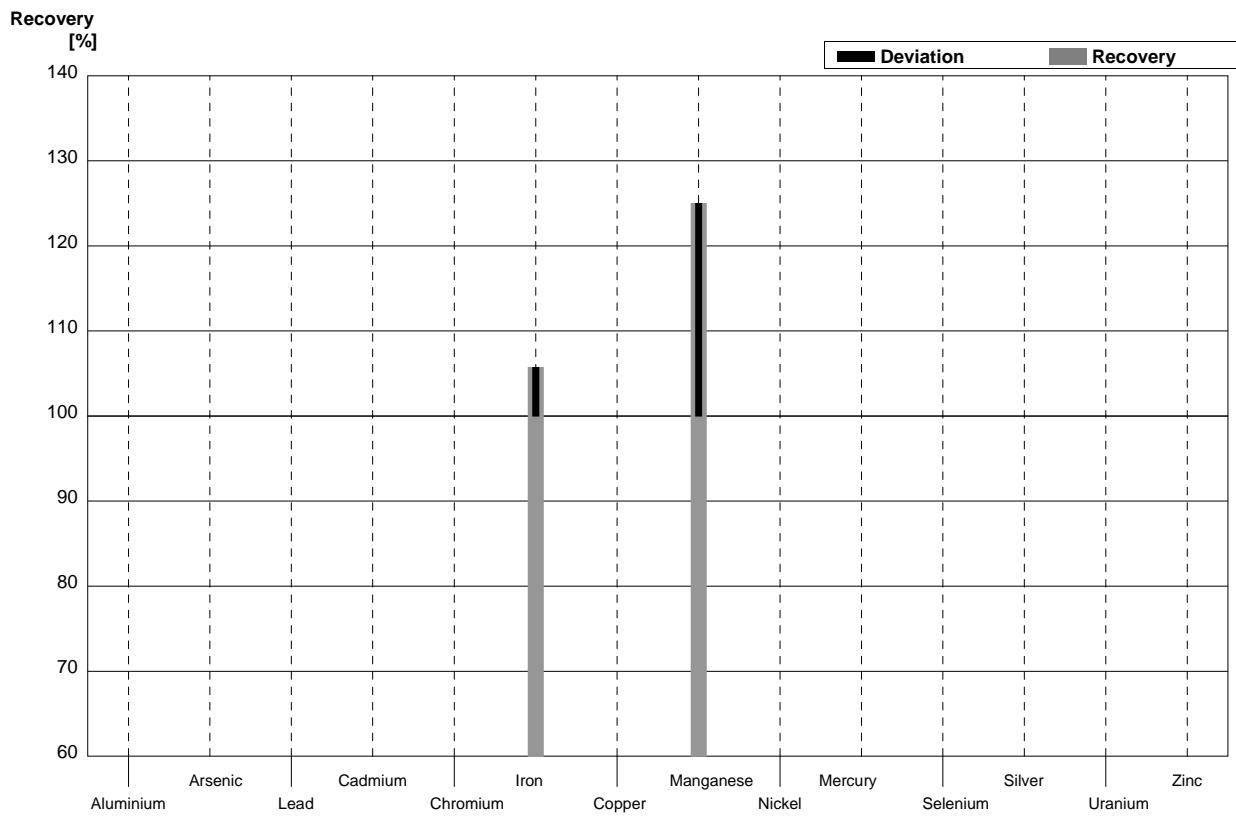
Sample M109B
Laboratory B

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	<20	<6,2	$\mu\text{g/l}$	FN
Arsenic	3,40	0,04			$\mu\text{g/l}$	
Lead	5,12	0,09			$\mu\text{g/l}$	
Cadmium	1,75	0,02			$\mu\text{g/l}$	
Chromium	4,44	0,06			$\mu\text{g/l}$	
Iron	40,1	0,3	40	16,4	$\mu\text{g/l}$	100%
Copper	9,17	0,21			$\mu\text{g/l}$	
Manganese	32,0	0,3	30	9	$\mu\text{g/l}$	94%
Nickel	8,37	0,10			$\mu\text{g/l}$	
Mercury	1,67	0,02			$\mu\text{g/l}$	
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1			$\mu\text{g/l}$	



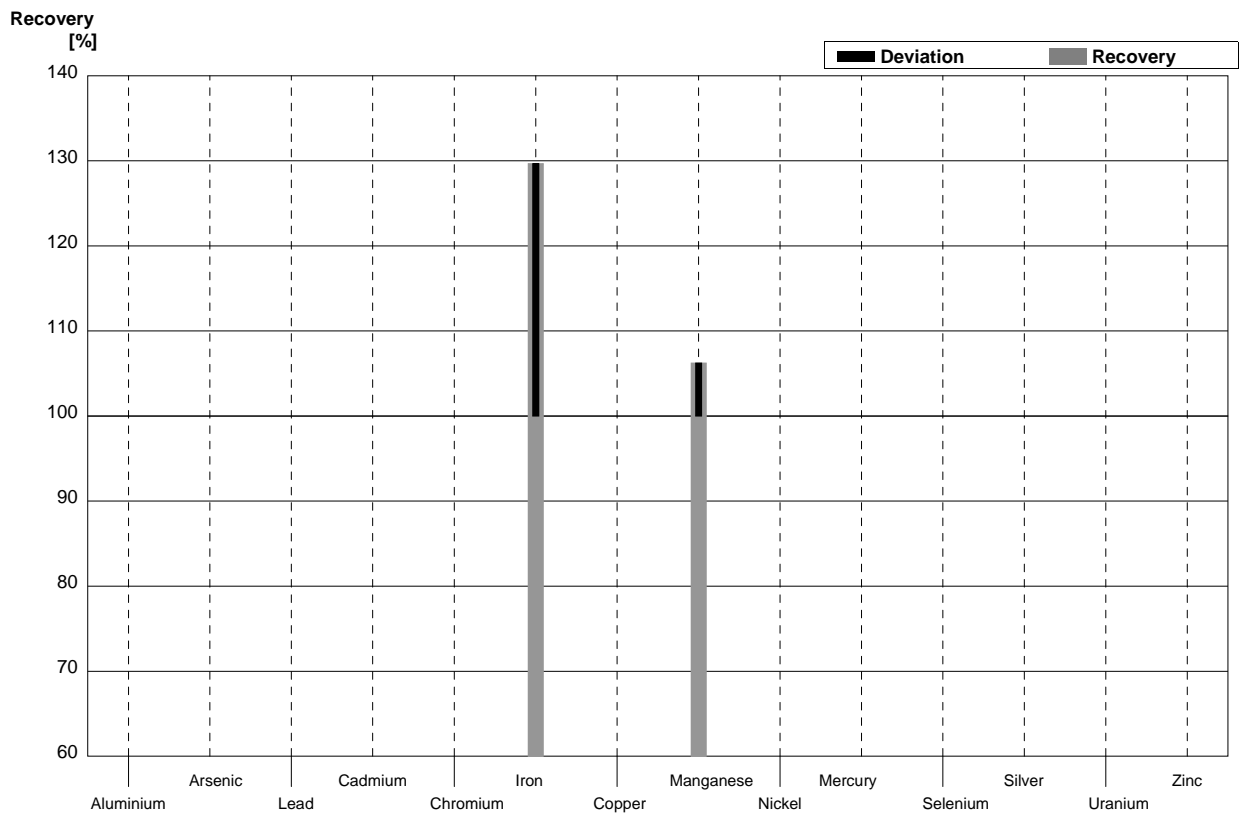
Sample M109A
Laboratory C

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4			$\mu\text{g/l}$	
Arsenic	1,19	0,02			$\mu\text{g/l}$	
Lead	8,39	0,10			$\mu\text{g/l}$	
Cadmium	0,308	0,006			$\mu\text{g/l}$	
Chromium	6,46	0,05			$\mu\text{g/l}$	
Iron	71,9	0,4	76	5	$\mu\text{g/l}$	106%
Copper	6,16	0,13			$\mu\text{g/l}$	
Manganese	16,0	0,2	20	5	$\mu\text{g/l}$	125%
Nickel	4,14	0,04			$\mu\text{g/l}$	
Mercury	1,33	0,01			$\mu\text{g/l}$	
Selenium	1,43	0,03			$\mu\text{g/l}$	
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2			$\mu\text{g/l}$	



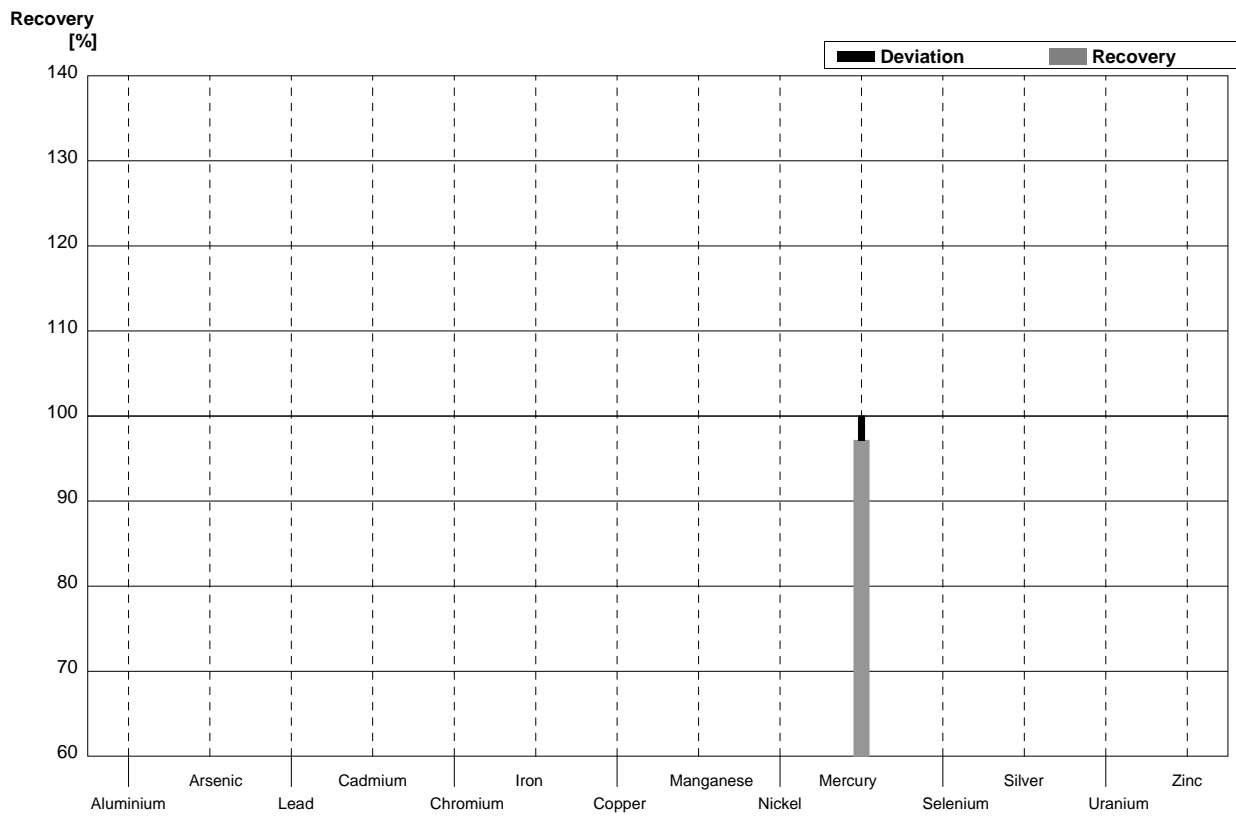
Sample M109B
Laboratory C

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2			$\mu\text{g/l}$	
Arsenic	3,40	0,04			$\mu\text{g/l}$	
Lead	5,12	0,09			$\mu\text{g/l}$	
Cadmium	1,75	0,02			$\mu\text{g/l}$	
Chromium	4,44	0,06			$\mu\text{g/l}$	
Iron	40,1	0,3	52	5	$\mu\text{g/l}$	130%
Copper	9,17	0,21			$\mu\text{g/l}$	
Manganese	32,0	0,3	34	5	$\mu\text{g/l}$	106%
Nickel	8,37	0,10			$\mu\text{g/l}$	
Mercury	1,67	0,02			$\mu\text{g/l}$	
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1			$\mu\text{g/l}$	



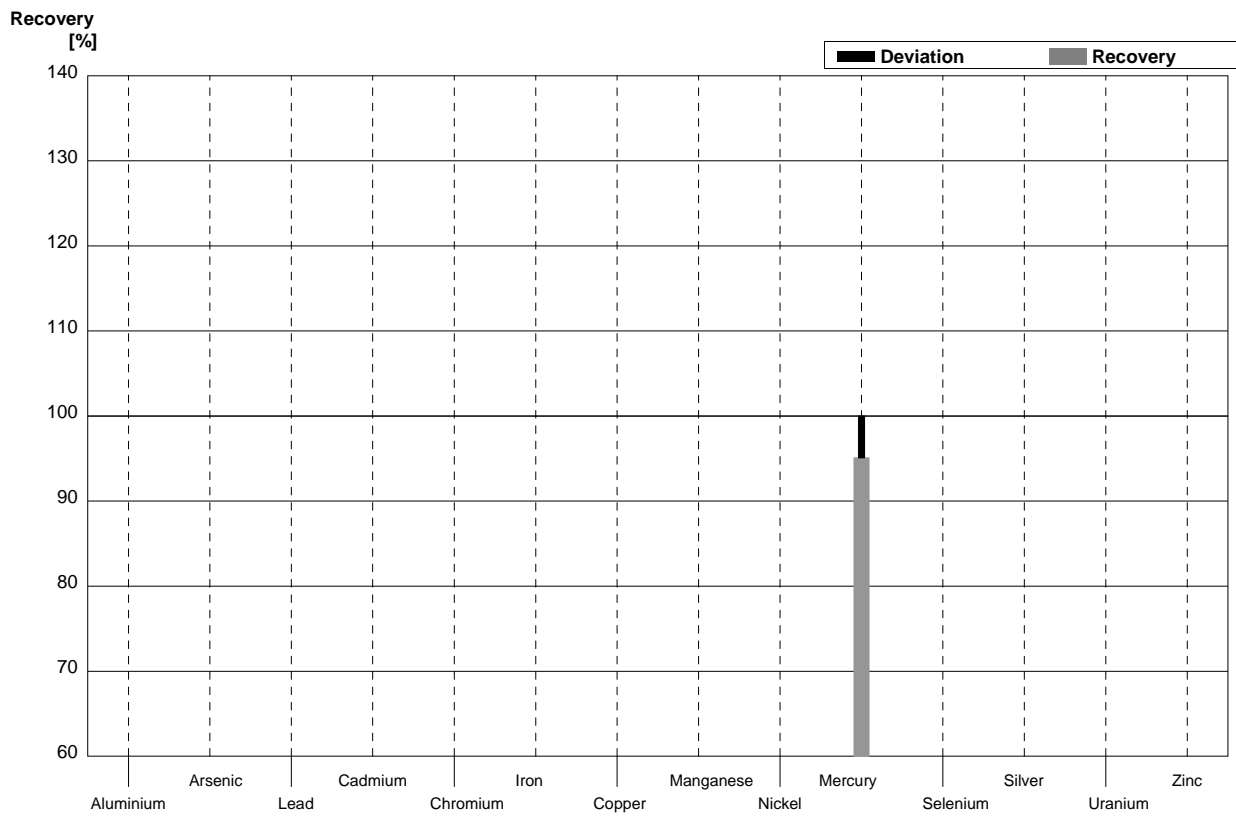
Sample M109A
Laboratory D

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4			$\mu\text{g/l}$	
Arsenic	1,19	0,02			$\mu\text{g/l}$	
Lead	8,39	0,10			$\mu\text{g/l}$	
Cadmium	0,308	0,006			$\mu\text{g/l}$	
Chromium	6,46	0,05			$\mu\text{g/l}$	
Iron	71,9	0,4			$\mu\text{g/l}$	
Copper	6,16	0,13			$\mu\text{g/l}$	
Manganese	16,0	0,2			$\mu\text{g/l}$	
Nickel	4,14	0,04			$\mu\text{g/l}$	
Mercury	1,33	0,01	1,292	0,02	$\mu\text{g/l}$	97%
Selenium	1,43	0,03			$\mu\text{g/l}$	
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2			$\mu\text{g/l}$	



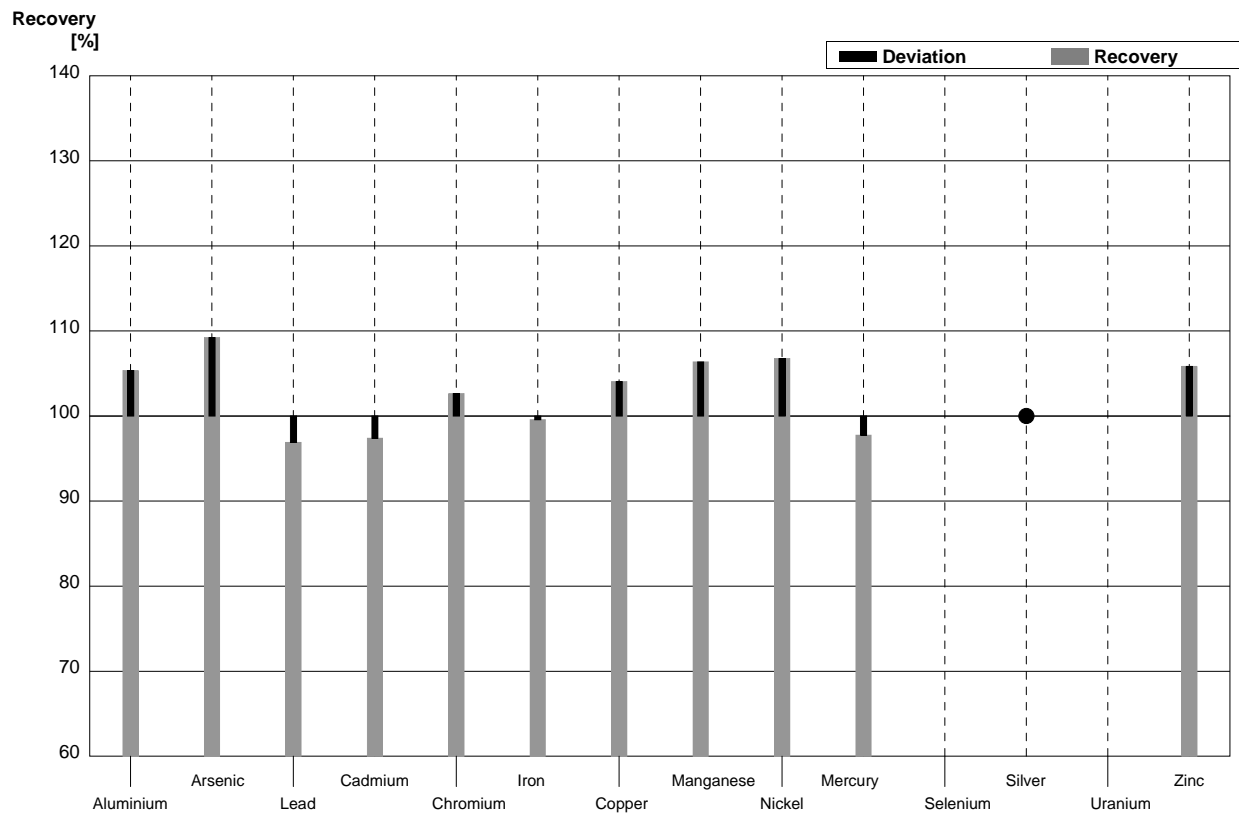
Sample M109B
Laboratory D

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2			$\mu\text{g/l}$	
Arsenic	3,40	0,04			$\mu\text{g/l}$	
Lead	5,12	0,09			$\mu\text{g/l}$	
Cadmium	1,75	0,02			$\mu\text{g/l}$	
Chromium	4,44	0,06			$\mu\text{g/l}$	
Iron	40,1	0,3			$\mu\text{g/l}$	
Copper	9,17	0,21			$\mu\text{g/l}$	
Manganese	32,0	0,3			$\mu\text{g/l}$	
Nickel	8,37	0,10			$\mu\text{g/l}$	
Mercury	1,67	0,02	1,588	0,01	$\mu\text{g/l}$	95%
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1			$\mu\text{g/l}$	



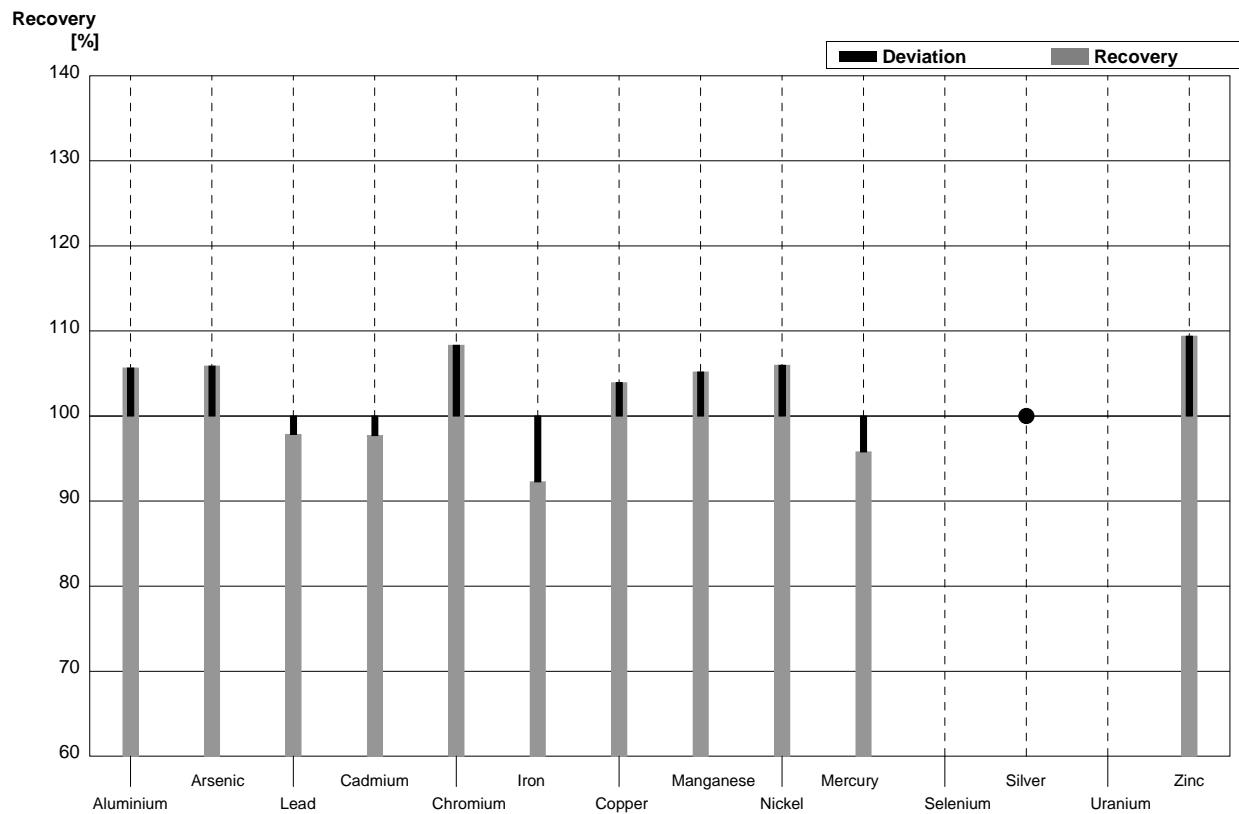
Sample M109A
Laboratory E

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	47,51	4,751	µg/l	105%
Arsenic	1,19	0,02	1,3	0,156	µg/l	109%
Lead	8,39	0,10	8,13	0,6504	µg/l	97%
Cadmium	0,308	0,006	0,3	0,024	µg/l	97%
Chromium	6,46	0,05	6,63	0,7956	µg/l	103%
Iron	71,9	0,4	71,6	18,616	µg/l	100%
Copper	6,16	0,13	6,41	0,5128	µg/l	104%
Manganese	16,0	0,2	17,02	1,702	µg/l	106%
Nickel	4,14	0,04	4,42	0,442	µg/l	107%
Mercury	1,33	0,01	1,3	0,156	µg/l	98%
Selenium	1,43	0,03			µg/l	
Silver	0,047	0,002	<0,5		µg/l	•
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2	23,71	2,371	µg/l	106%



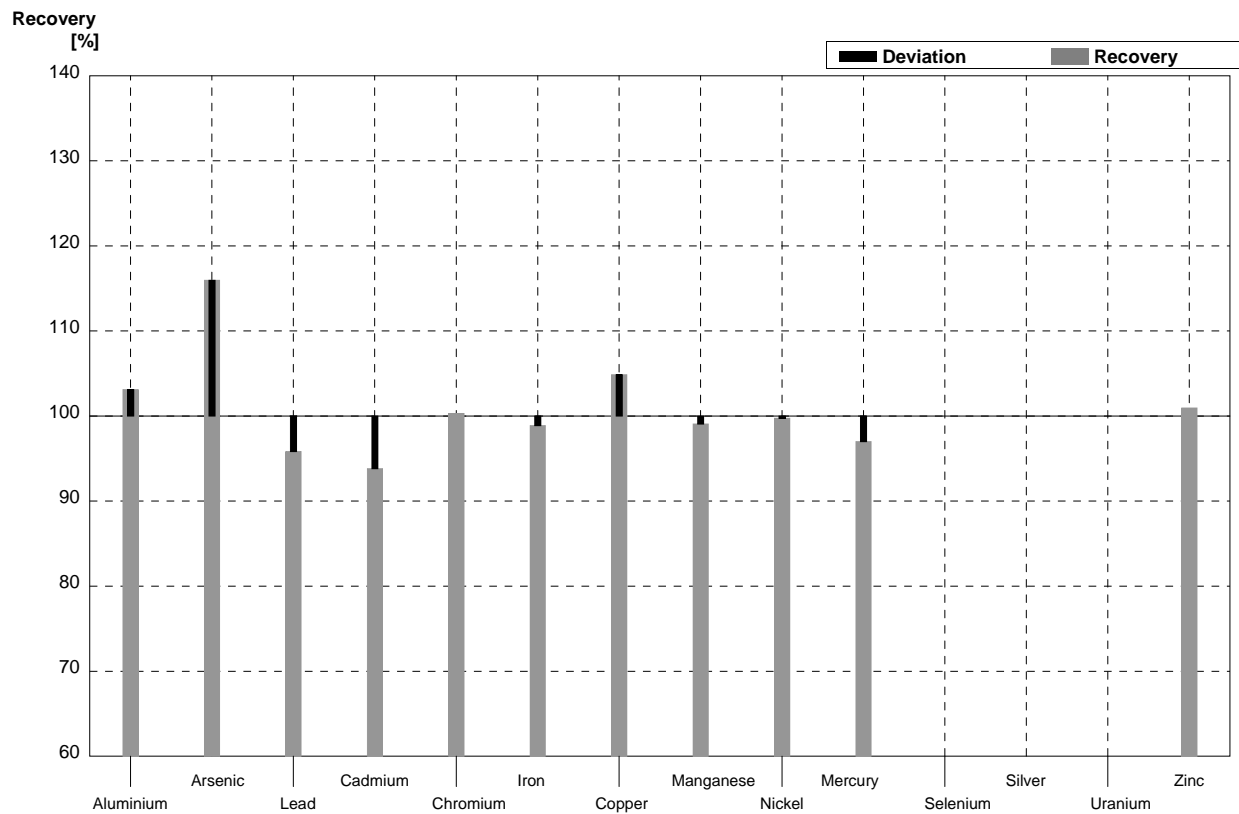
Sample M109B
Laboratory E

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2	29,48	2,948	µg/l	106%
Arsenic	3,40	0,04	3,6	0,432	µg/l	106%
Lead	5,12	0,09	5,01	0,4008	µg/l	98%
Cadmium	1,75	0,02	1,71	0,1368	µg/l	98%
Chromium	4,44	0,06	4,81	0,5772	µg/l	108%
Iron	40,1	0,3	37	9,62	µg/l	92%
Copper	9,17	0,21	9,53	0,7624	µg/l	104%
Manganese	32,0	0,3	33,66	3,366	µg/l	105%
Nickel	8,37	0,10	8,87	0,887	µg/l	106%
Mercury	1,67	0,02	1,6	0,192	µg/l	96%
Selenium	2,63	0,03			µg/l	
Silver	0,116	0,004	<0,5		µg/l	•
Uranium	1,92	0,02			µg/l	
Zinc	13,1	0,1	14,33	1,433	µg/l	109%



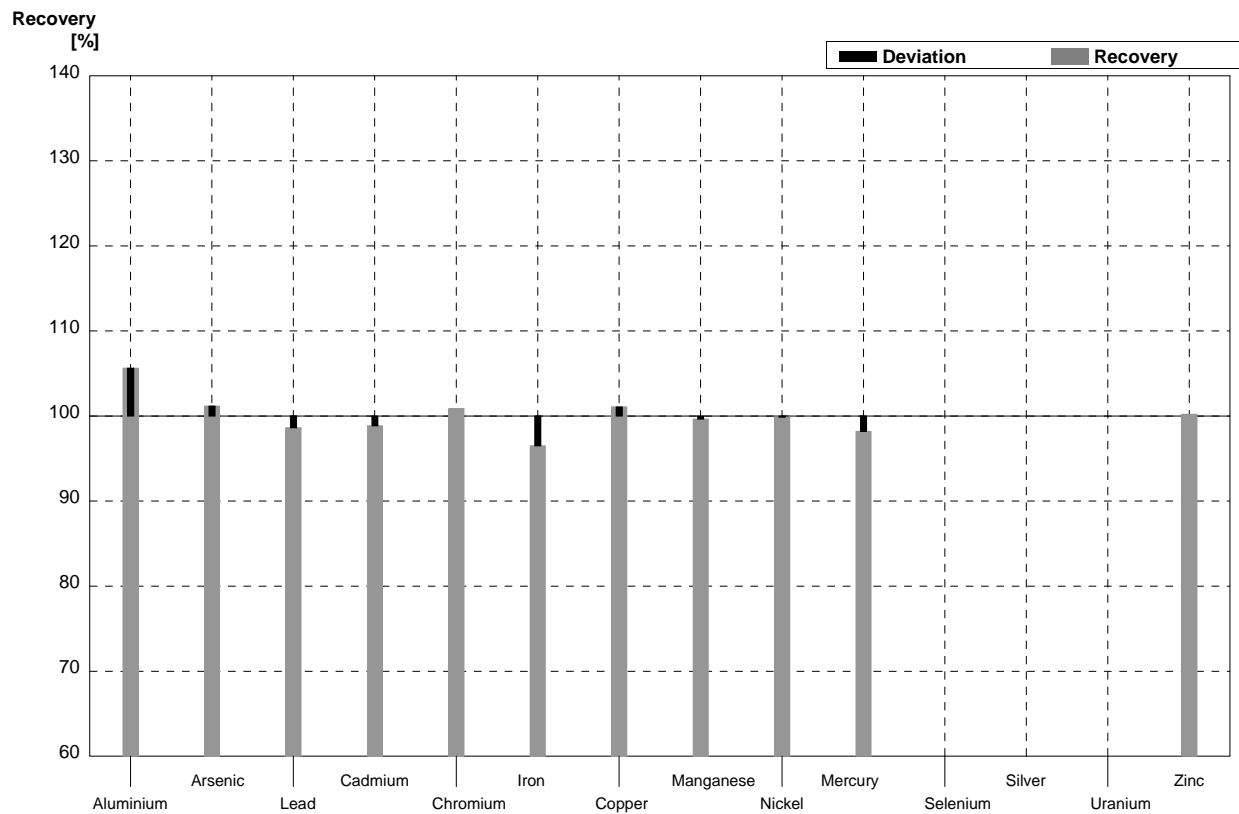
Sample M109A
Laboratory F

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	46,50	6,98	µg/l	103%
Arsenic	1,19	0,02	1,38	0,28	µg/l	116%
Lead	8,39	0,10	8,04	1,61	µg/l	96%
Cadmium	0,308	0,006	0,289	0,058	µg/l	94%
Chromium	6,46	0,05	6,48	0,97	µg/l	100%
Iron	71,9	0,4	71,1	7,11	µg/l	99%
Copper	6,16	0,13	6,46	0,97	µg/l	105%
Manganese	16,0	0,2	15,85	1,59	µg/l	99%
Nickel	4,14	0,04	4,13	0,62	µg/l	100%
Mercury	1,33	0,01	1,29	0,26	µg/l	97%
Selenium	1,43	0,03			µg/l	
Silver	0,047	0,002			µg/l	
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2	22,61	2,26	µg/l	101%



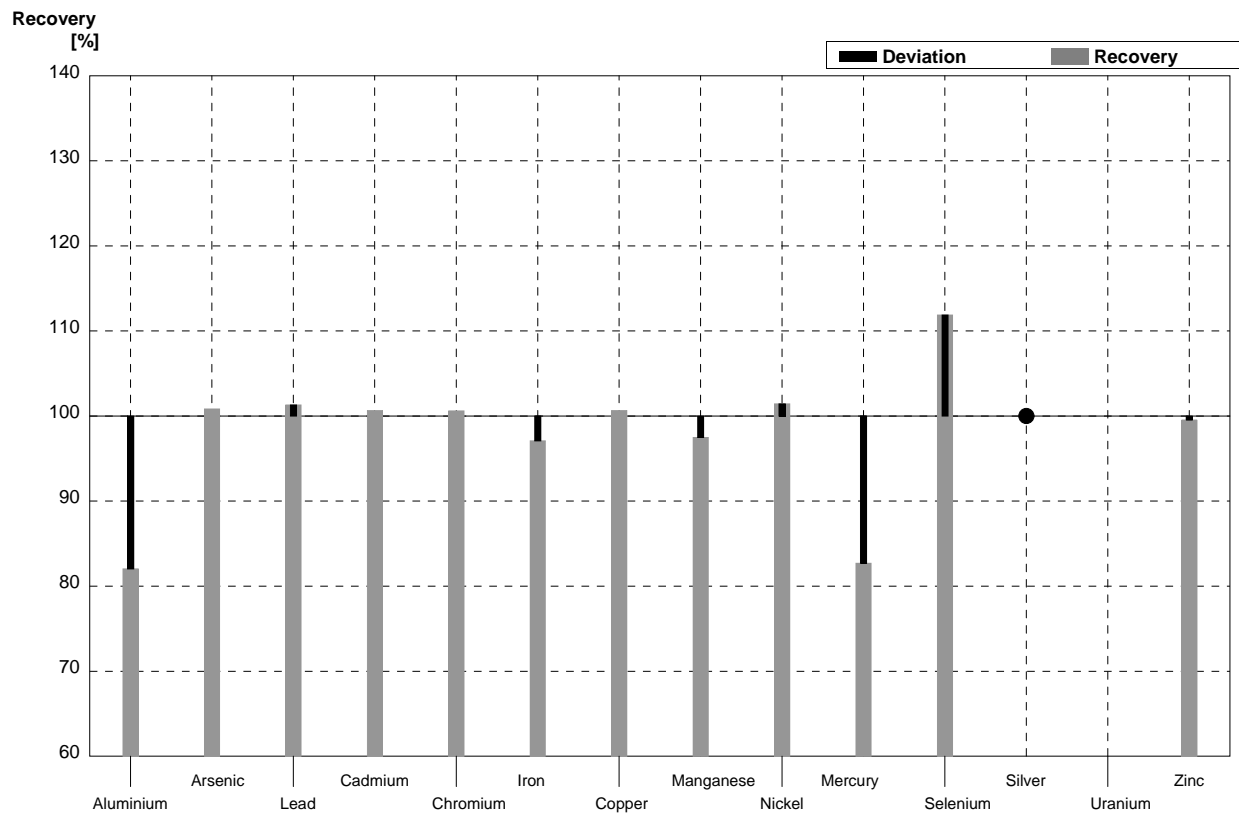
Sample M109B
Laboratory F

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	29,47	4,42	$\mu\text{g/l}$	106%
Arsenic	3,40	0,04	3,44	0,69	$\mu\text{g/l}$	101%
Lead	5,12	0,09	5,05	1,01	$\mu\text{g/l}$	99%
Cadmium	1,75	0,02	1,73	0,35	$\mu\text{g/l}$	99%
Chromium	4,44	0,06	4,48	0,67	$\mu\text{g/l}$	101%
Iron	40,1	0,3	38,7	3,87	$\mu\text{g/l}$	97%
Copper	9,17	0,21	9,27	1,39	$\mu\text{g/l}$	101%
Manganese	32,0	0,3	31,89	3,19	$\mu\text{g/l}$	100%
Nickel	8,37	0,10	8,36	1,25	$\mu\text{g/l}$	100%
Mercury	1,67	0,02	1,64	0,33	$\mu\text{g/l}$	98%
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	13,13	1,31	$\mu\text{g/l}$	100%



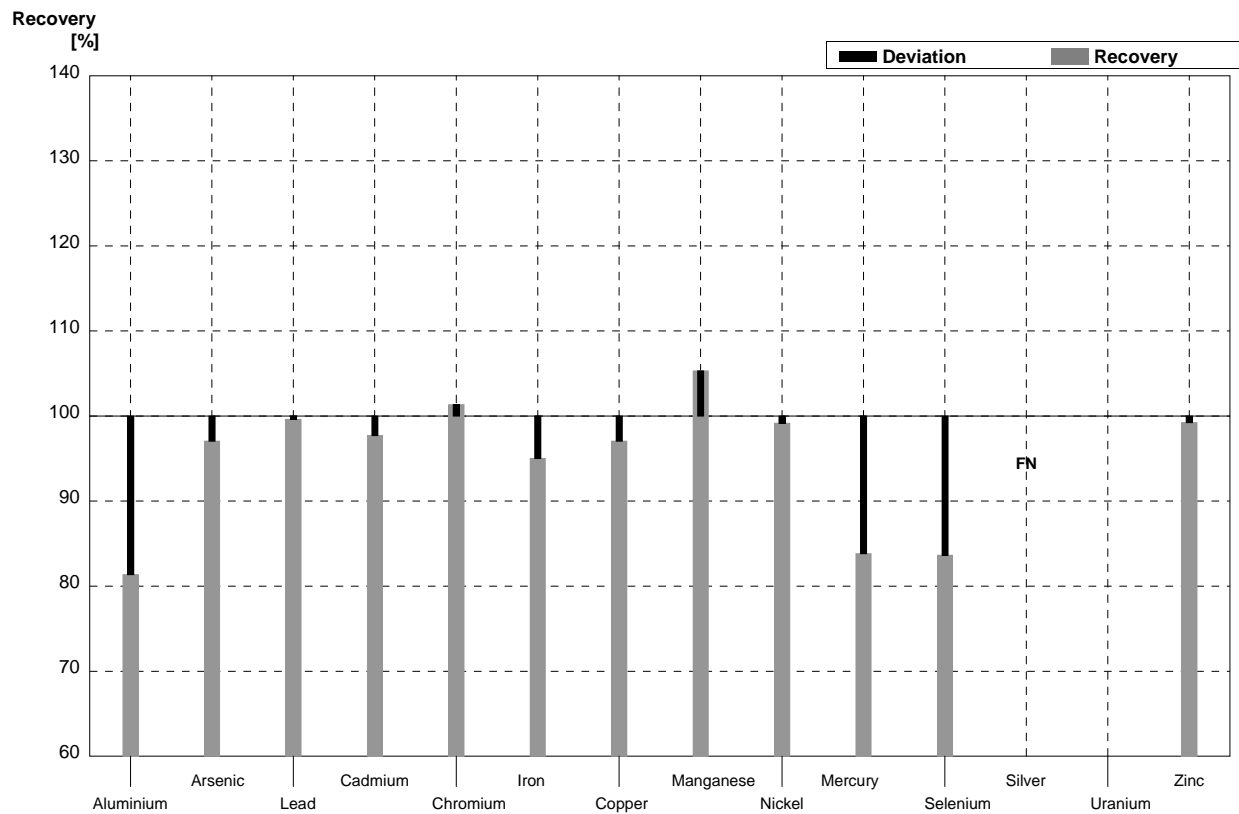
Sample M109A
Laboratory G

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	37,0	1,9	µg/l	82%
Arsenic	1,19	0,02	1,2	0,06	µg/l	101%
Lead	8,39	0,10	8,5	0,4	µg/l	101%
Cadmium	0,308	0,006	0,31	0,02	µg/l	101%
Chromium	6,46	0,05	6,5	0,3	µg/l	101%
Iron	71,9	0,4	69,8	3,5	µg/l	97%
Copper	6,16	0,13	6,2	0,3	µg/l	101%
Manganese	16,0	0,2	15,6	0,8	µg/l	98%
Nickel	4,14	0,04	4,2	0,2	µg/l	101%
Mercury	1,33	0,01	1,1	0,06	µg/l	83%
Selenium	1,43	0,03	1,6	0,08	µg/l	112%
Silver	0,047	0,002	<0,1		µg/l	•
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2	22,3	1,1	µg/l	100%



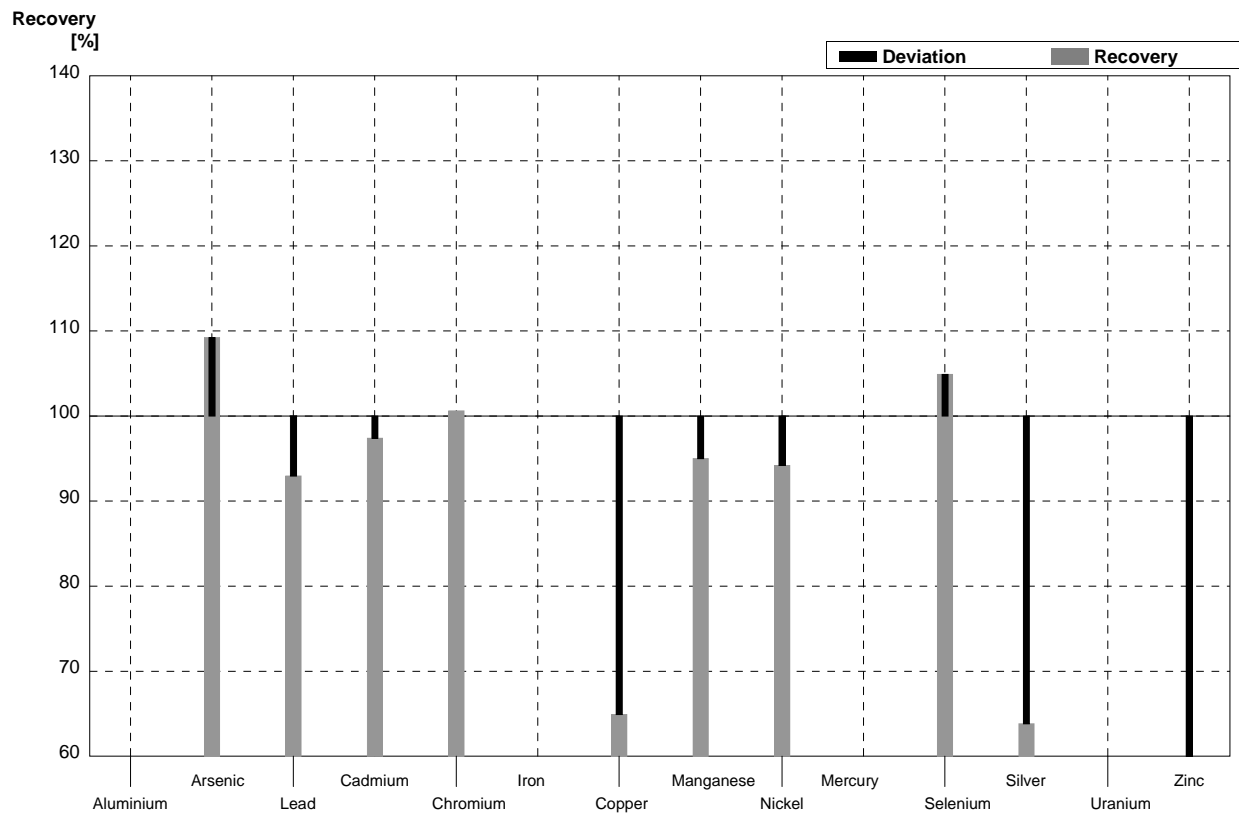
Sample M109B
Laboratory G

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2	22,7	1,1	µg/l	81%
Arsenic	3,40	0,04	3,3	0,2	µg/l	97%
Lead	5,12	0,09	5,1	0,3	µg/l	100%
Cadmium	1,75	0,02	1,71	0,09	µg/l	98%
Chromium	4,44	0,06	4,5	0,23	µg/l	101%
Iron	40,1	0,3	38,1	1,9	µg/l	95%
Copper	9,17	0,21	8,9	0,5	µg/l	97%
Manganese	32,0	0,3	33,7	1,7	µg/l	105%
Nickel	8,37	0,10	8,3	0,1	µg/l	99%
Mercury	1,67	0,02	1,4	0,7	µg/l	84%
Selenium	2,63	0,03	2,2	0,1	µg/l	84%
Silver	0,116	0,004	<0,1		µg/l	FN
Uranium	1,92	0,02			µg/l	
Zinc	13,1	0,1	13,0	1,4	µg/l	99%



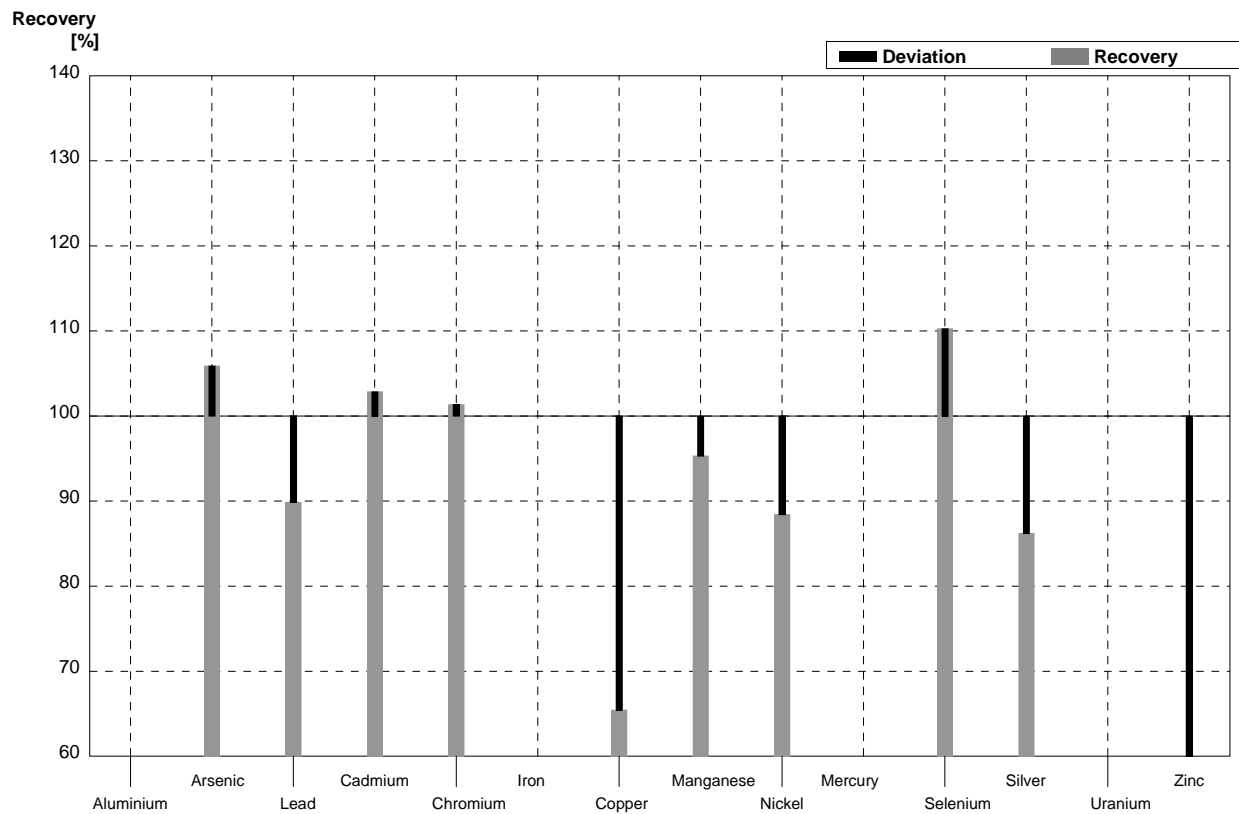
Sample M109A
Laboratory H

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4			$\mu\text{g/l}$	
Arsenic	1,19	0,02	1,3	0,4	$\mu\text{g/l}$	109%
Lead	8,39	0,10	7,8	3	$\mu\text{g/l}$	93%
Cadmium	0,308	0,006	0,3	0,1	$\mu\text{g/l}$	97%
Chromium	6,46	0,05	6,5	4,1	$\mu\text{g/l}$	101%
Iron	71,9	0,4			$\mu\text{g/l}$	
Copper	6,16	0,13	4,0	1,2	$\mu\text{g/l}$	65%
Manganese	16,0	0,2	15,2	5,5	$\mu\text{g/l}$	95%
Nickel	4,14	0,04	3,9	0,9	$\mu\text{g/l}$	94%
Mercury	1,33	0,01			$\mu\text{g/l}$	
Selenium	1,43	0,03	1,5	1,2	$\mu\text{g/l}$	105%
Silver	0,047	0,002	0,03	0,006	$\mu\text{g/l}$	64%
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2	7,8	3,2	$\mu\text{g/l}$	35%



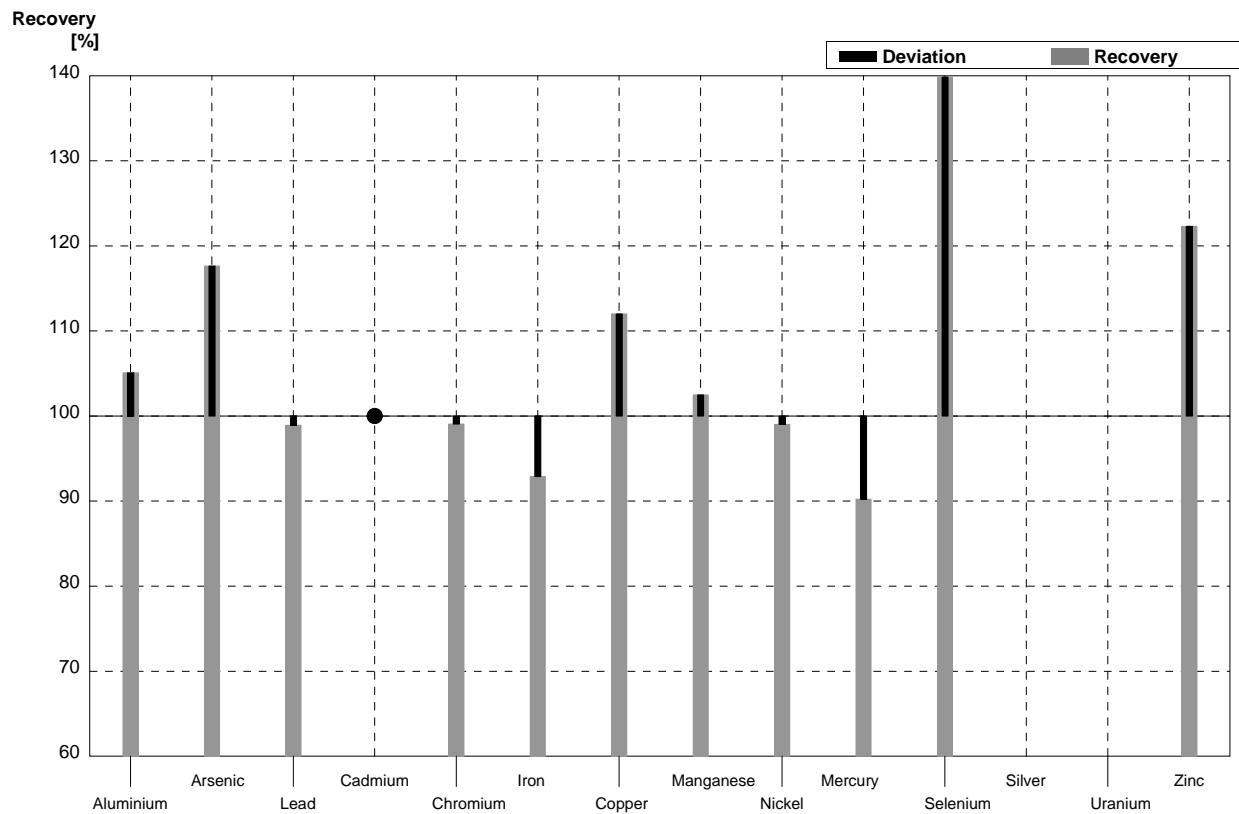
Sample M109B
Laboratory H

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2			$\mu\text{g/l}$	
Arsenic	3,40	0,04	3,6	1,0	$\mu\text{g/l}$	106%
Lead	5,12	0,09	4,6	1,8	$\mu\text{g/l}$	90%
Cadmium	1,75	0,02	1,8	0,6	$\mu\text{g/l}$	103%
Chromium	4,44	0,06	4,5	3,0	$\mu\text{g/l}$	101%
Iron	40,1	0,3			$\mu\text{g/l}$	
Copper	9,17	0,21	6,0	1,9	$\mu\text{g/l}$	65%
Manganese	32,0	0,3	30,5	11	$\mu\text{g/l}$	95%
Nickel	8,37	0,10	7,4	1,8	$\mu\text{g/l}$	88%
Mercury	1,67	0,02			$\mu\text{g/l}$	
Selenium	2,63	0,03	2,9	2,3	$\mu\text{g/l}$	110%
Silver	0,116	0,004	0,1	0,02	$\mu\text{g/l}$	86%
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	4,9	2,0	$\mu\text{g/l}$	37%



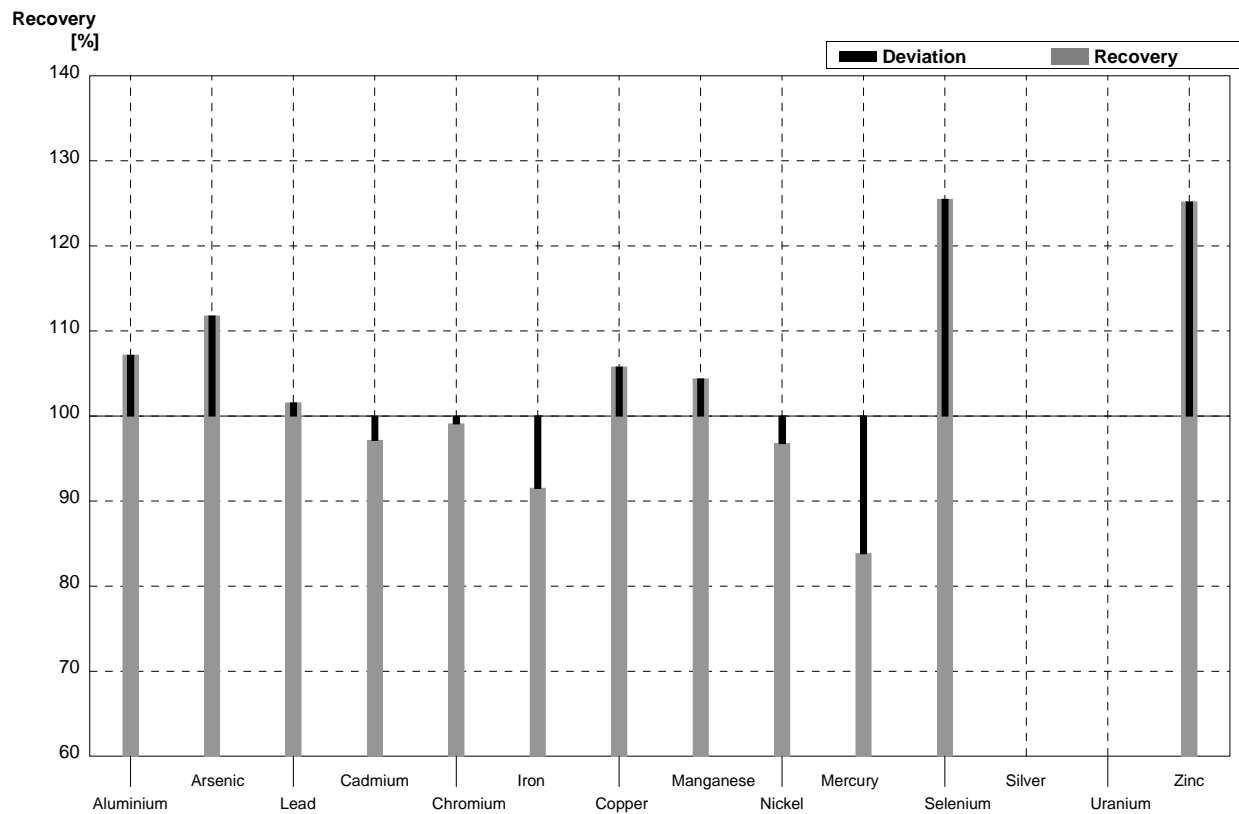
Sample M109A
Laboratory I

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	47,4		$\mu\text{g/l}$	105%
Arsenic	1,19	0,02	1,4		$\mu\text{g/l}$	118%
Lead	8,39	0,10	8,3		$\mu\text{g/l}$	99%
Cadmium	0,308	0,006	[0,5]		$\mu\text{g/l}$	•
Chromium	6,46	0,05	6,4		$\mu\text{g/l}$	99%
Iron	71,9	0,4	66,8		$\mu\text{g/l}$	93%
Copper	6,16	0,13	6,9		$\mu\text{g/l}$	112%
Manganese	16,0	0,2	16,4		$\mu\text{g/l}$	103%
Nickel	4,14	0,04	4,1		$\mu\text{g/l}$	99%
Mercury	1,33	0,01	1,2		$\mu\text{g/l}$	90%
Selenium	1,43	0,03	2,0		$\mu\text{g/l}$	140%
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2	27,4		$\mu\text{g/l}$	122%



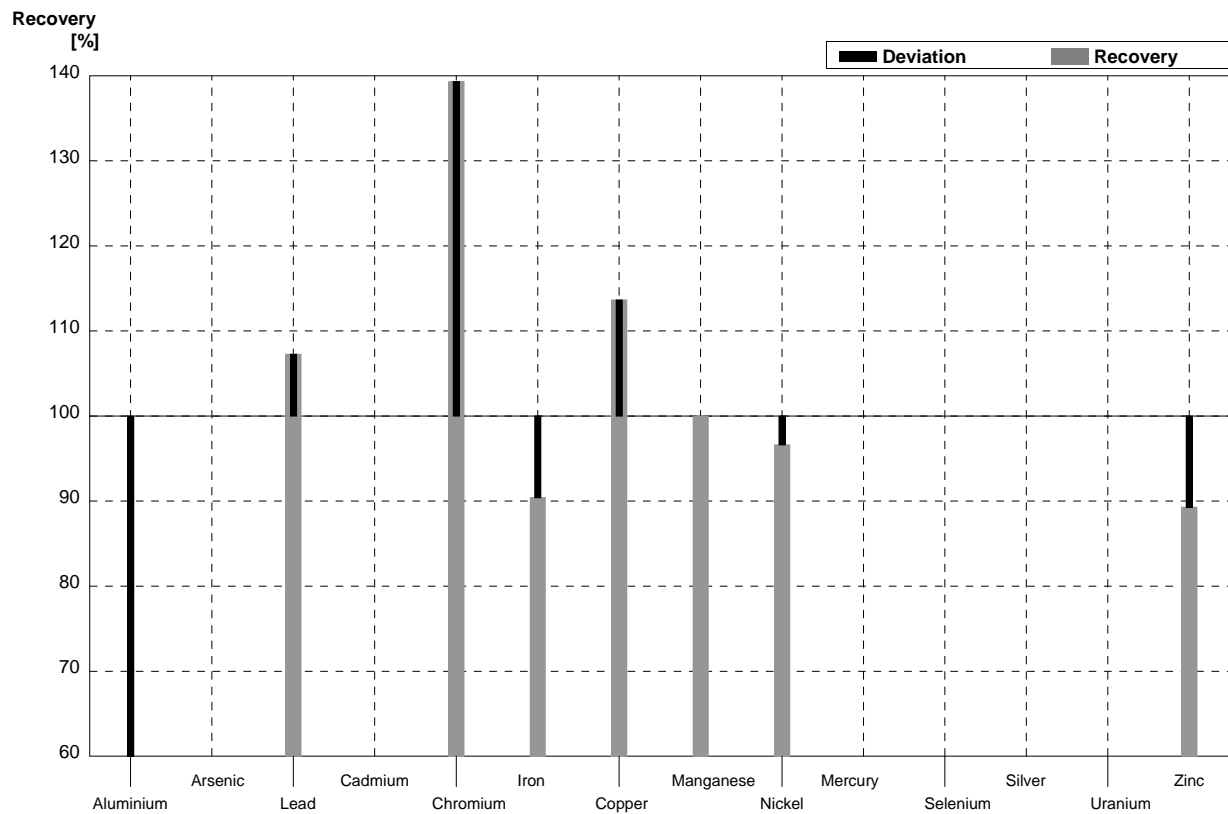
Sample M109B
Laboratory I

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	29,9		$\mu\text{g/l}$	107%
Arsenic	3,40	0,04	3,8		$\mu\text{g/l}$	112%
Lead	5,12	0,09	5,2		$\mu\text{g/l}$	102%
Cadmium	1,75	0,02	1,7		$\mu\text{g/l}$	97%
Chromium	4,44	0,06	4,4		$\mu\text{g/l}$	99%
Iron	40,1	0,3	36,7		$\mu\text{g/l}$	92%
Copper	9,17	0,21	9,7		$\mu\text{g/l}$	106%
Manganese	32,0	0,3	33,4		$\mu\text{g/l}$	104%
Nickel	8,37	0,10	8,1		$\mu\text{g/l}$	97%
Mercury	1,67	0,02	1,4		$\mu\text{g/l}$	84%
Selenium	2,63	0,03	3,3		$\mu\text{g/l}$	125%
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	16,4		$\mu\text{g/l}$	125%



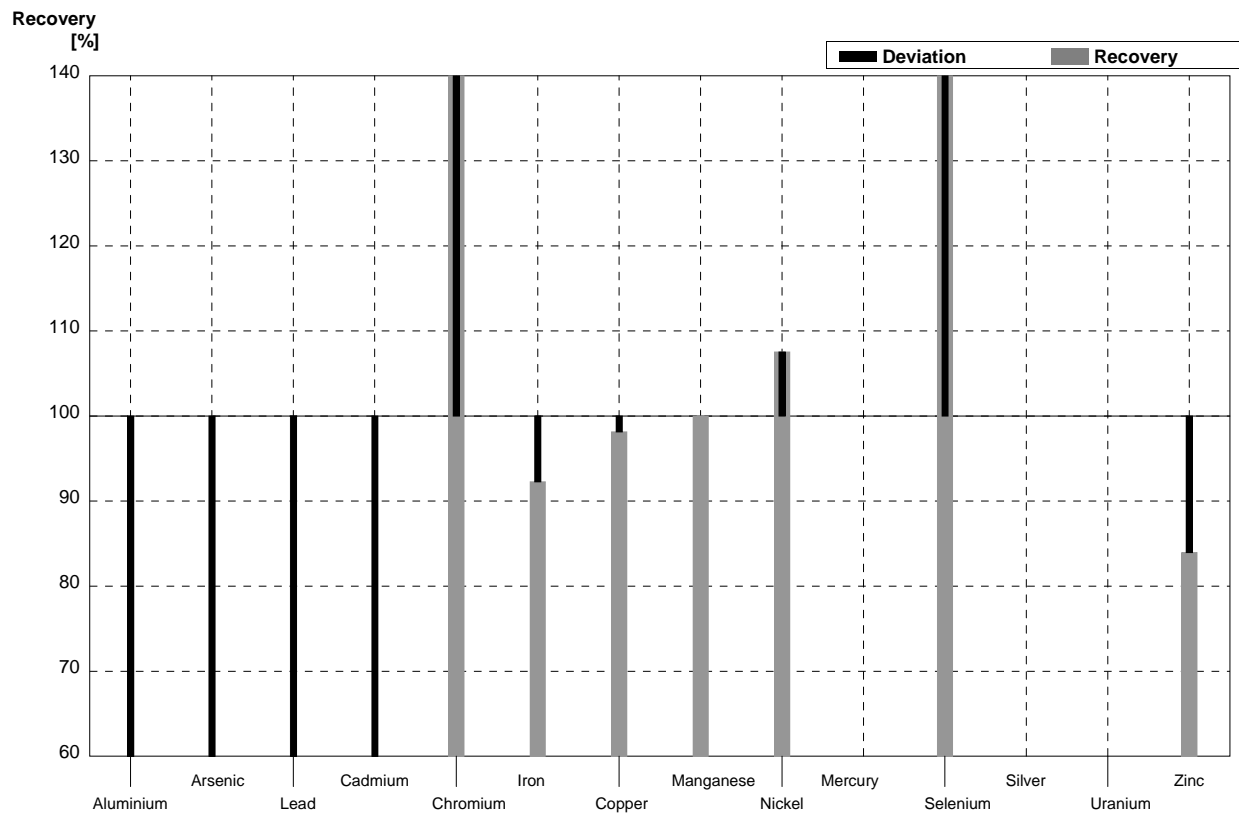
Sample M109A
Laboratory J

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	21	3	µg/l	47%
Arsenic	1,19	0,02	<NWG		µg/l	
Lead	8,39	0,10	9	2	µg/l	107%
Cadmium	0,308	0,006	<NWG		µg/l	
Chromium	6,46	0,05	9	2	µg/l	139%
Iron	71,9	0,4	65	5	µg/l	90%
Copper	6,16	0,13	7	2	µg/l	114%
Manganese	16,0	0,2	16	2	µg/l	100%
Nickel	4,14	0,04	4	2	µg/l	97%
Mercury	1,33	0,01			µg/l	
Selenium	1,43	0,03	<NWG		µg/l	
Silver	0,047	0,002	<NWG		µg/l	
Uranium	2,53	0,03	<NWG		µg/l	
Zinc	22,4	0,2	20	2	µg/l	89%



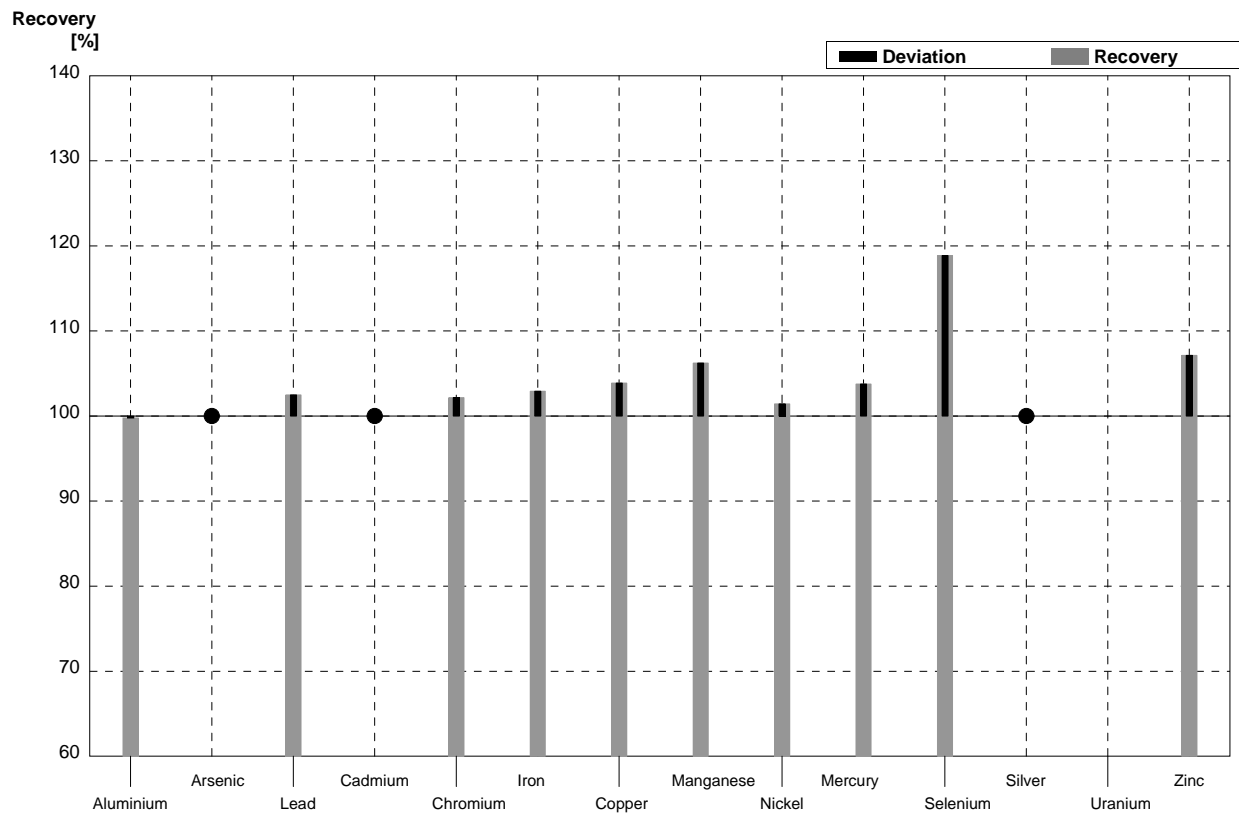
Sample M109B
Laboratory J

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2	12	2	µg/l	43%
Arsenic	3,40	0,04	1	1	µg/l	29%
Lead	5,12	0,09	1	1	µg/l	20%
Cadmium	1,75	0,02	1	1	µg/l	57%
Chromium	4,44	0,06	7	2	µg/l	158%
Iron	40,1	0,3	37	3	µg/l	92%
Copper	9,17	0,21	9	2	µg/l	98%
Manganese	32,0	0,3	32	2	µg/l	100%
Nickel	8,37	0,10	9	2	µg/l	108%
Mercury	1,67	0,02			µg/l	
Selenium	2,63	0,03	13	2	µg/l	494%
Silver	0,116	0,004	<NWG		µg/l	
Uranium	1,92	0,02	<NWG		µg/l	
Zinc	13,1	0,1	11	2	µg/l	84%



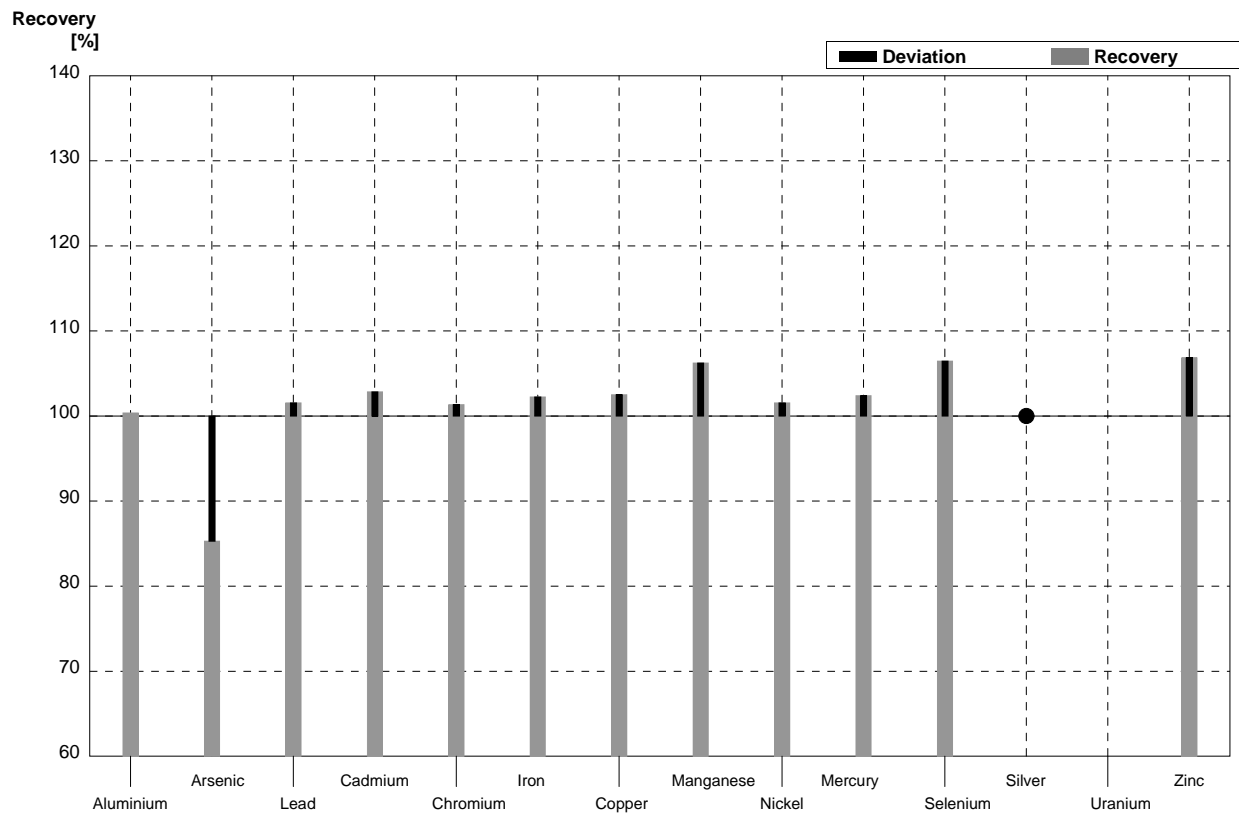
Sample M109A
Laboratory K

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	45		$\mu\text{g/l}$	100%
Arsenic	1,19	0,02	<2		$\mu\text{g/l}$	•
Lead	8,39	0,10	8,6		$\mu\text{g/l}$	103%
Cadmium	0,308	0,006	<1		$\mu\text{g/l}$	•
Chromium	6,46	0,05	6,6		$\mu\text{g/l}$	102%
Iron	71,9	0,4	74		$\mu\text{g/l}$	103%
Copper	6,16	0,13	6,4		$\mu\text{g/l}$	104%
Manganese	16,0	0,2	17		$\mu\text{g/l}$	106%
Nickel	4,14	0,04	4,2		$\mu\text{g/l}$	101%
Mercury	1,33	0,01	1,38		$\mu\text{g/l}$	104%
Selenium	1,43	0,03	1,7		$\mu\text{g/l}$	119%
Silver	0,047	0,002	<2		$\mu\text{g/l}$	•
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2	24		$\mu\text{g/l}$	107%



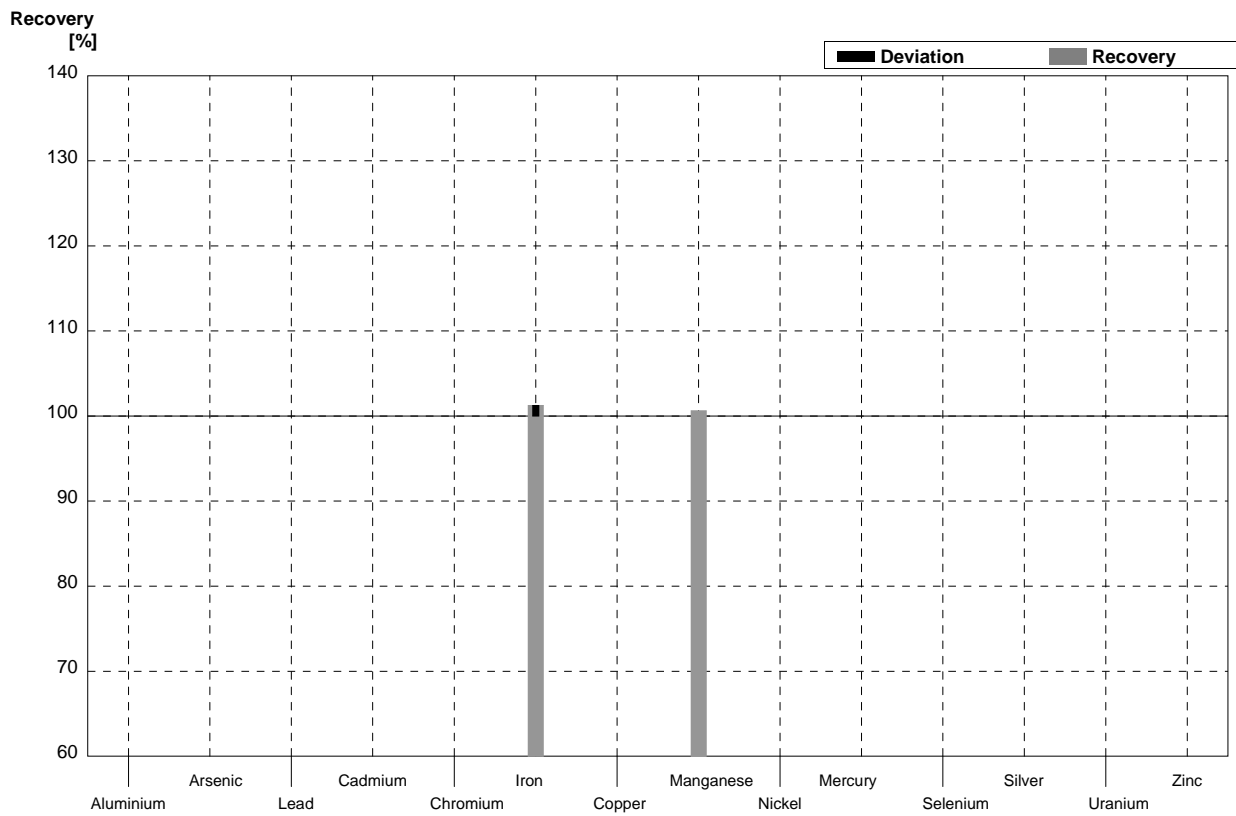
Sample M109B
Laboratory K

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2	28		µg/l	100%
Arsenic	3,40	0,04	2,9		µg/l	85%
Lead	5,12	0,09	5,2		µg/l	102%
Cadmium	1,75	0,02	1,8		µg/l	103%
Chromium	4,44	0,06	4,5		µg/l	101%
Iron	40,1	0,3	41		µg/l	102%
Copper	9,17	0,21	9,4		µg/l	103%
Manganese	32,0	0,3	34		µg/l	106%
Nickel	8,37	0,10	8,5		µg/l	102%
Mercury	1,67	0,02	1,71		µg/l	102%
Selenium	2,63	0,03	2,8		µg/l	106%
Silver	0,116	0,004	<2		µg/l	•
Uranium	1,92	0,02			µg/l	
Zinc	13,1	0,1	14		µg/l	107%



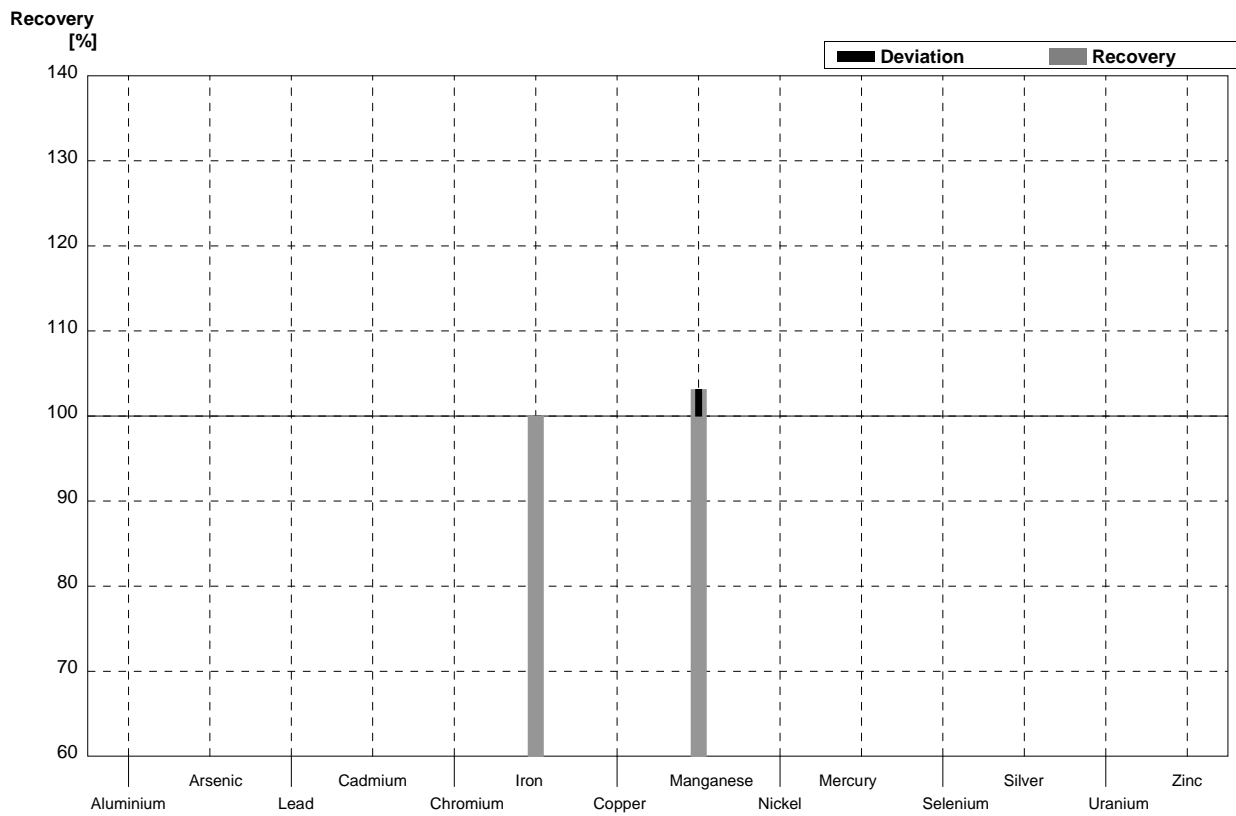
Sample M109A
Laboratory L

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4			$\mu\text{g/l}$	
Arsenic	1,19	0,02			$\mu\text{g/l}$	
Lead	8,39	0,10			$\mu\text{g/l}$	
Cadmium	0,308	0,006			$\mu\text{g/l}$	
Chromium	6,46	0,05			$\mu\text{g/l}$	
Iron	71,9	0,4	72,8	10,0	$\mu\text{g/l}$	101%
Copper	6,16	0,13			$\mu\text{g/l}$	
Manganese	16,0	0,2	16,1	2,0	$\mu\text{g/l}$	101%
Nickel	4,14	0,04			$\mu\text{g/l}$	
Mercury	1,33	0,01			$\mu\text{g/l}$	
Selenium	1,43	0,03			$\mu\text{g/l}$	
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2			$\mu\text{g/l}$	



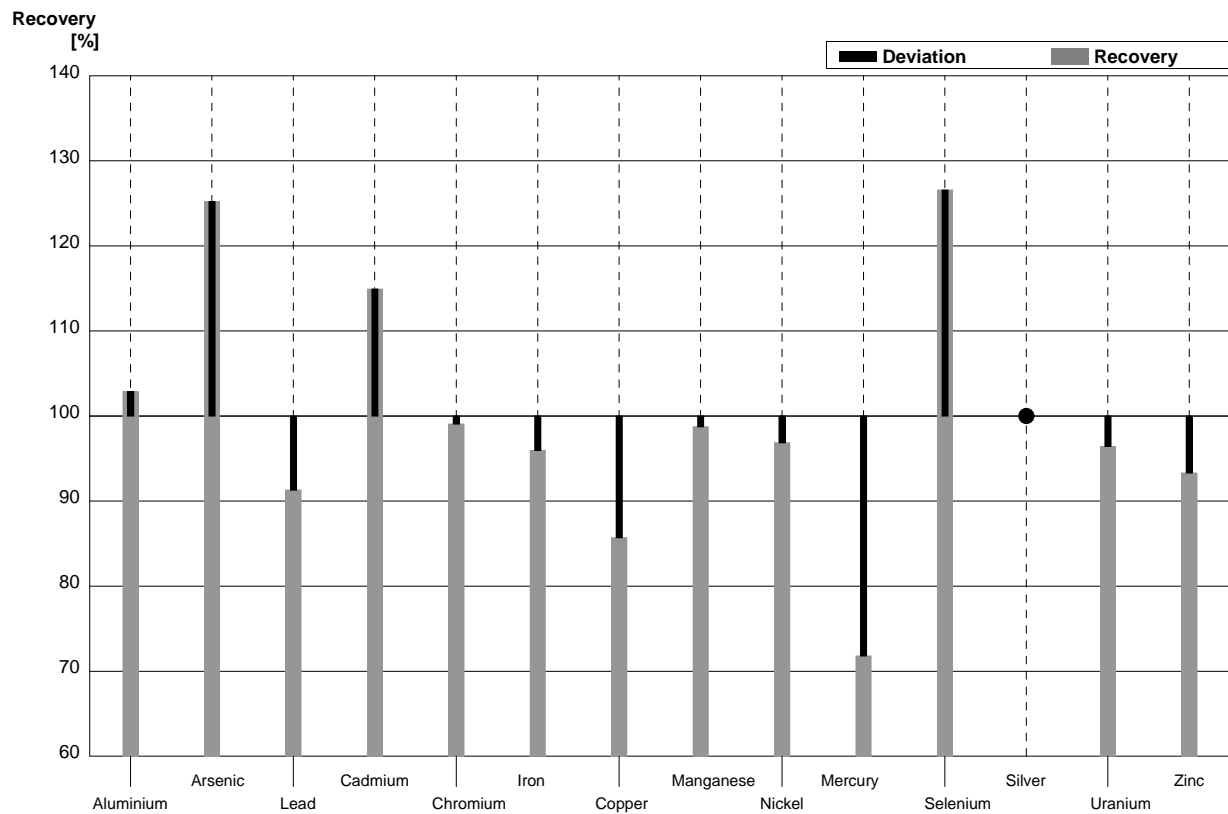
Sample M109B
Laboratory L

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2			$\mu\text{g/l}$	
Arsenic	3,40	0,04			$\mu\text{g/l}$	
Lead	5,12	0,09			$\mu\text{g/l}$	
Cadmium	1,75	0,02			$\mu\text{g/l}$	
Chromium	4,44	0,06			$\mu\text{g/l}$	
Iron	40,1	0,3	40,1	10,0	$\mu\text{g/l}$	100%
Copper	9,17	0,21			$\mu\text{g/l}$	
Manganese	32,0	0,3	33,0	4,0	$\mu\text{g/l}$	103%
Nickel	8,37	0,10			$\mu\text{g/l}$	
Mercury	1,67	0,02			$\mu\text{g/l}$	
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1			$\mu\text{g/l}$	



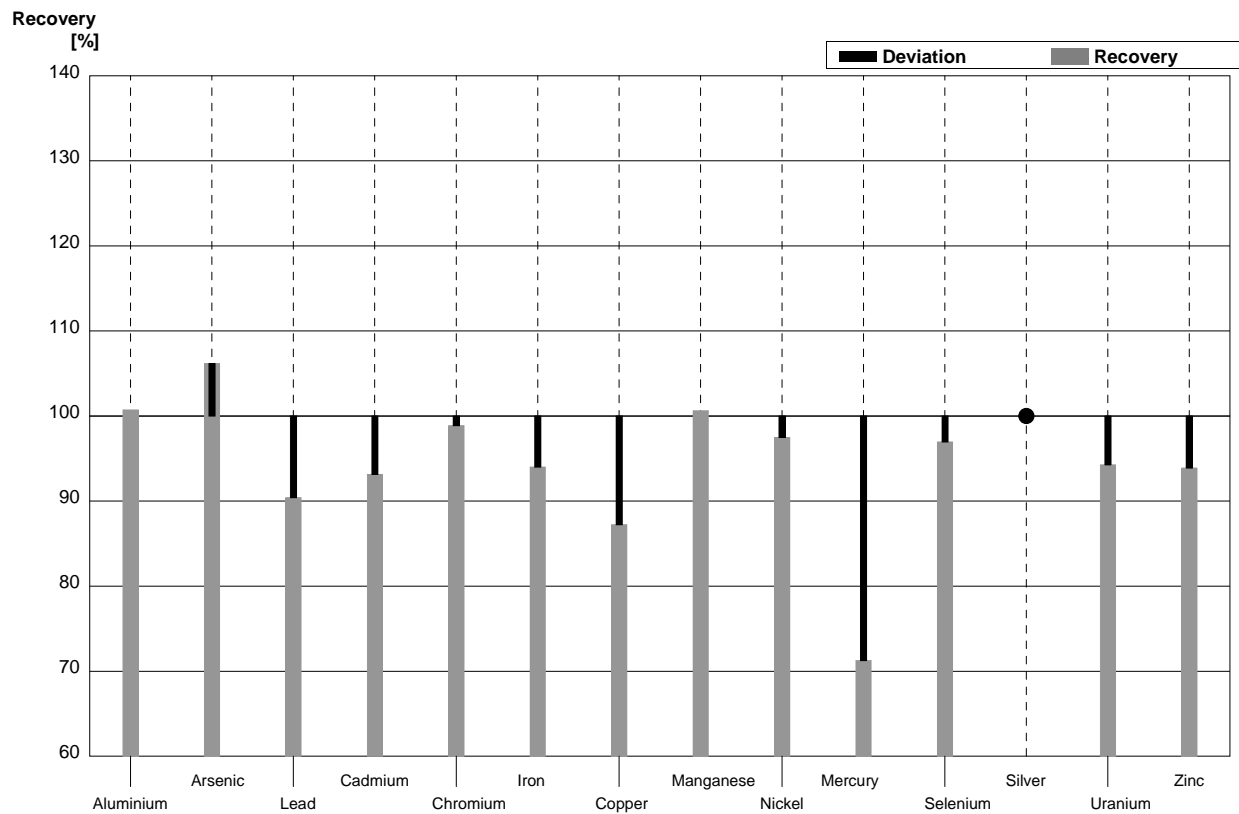
Sample M109A
Laboratory M

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	46,4	4,6	µg/l	103%
Arsenic	1,19	0,02	1,49	0,15	µg/l	125%
Lead	8,39	0,10	7,66	0,77	µg/l	91%
Cadmium	0,308	0,006	0,354	0,04	µg/l	115%
Chromium	6,46	0,05	6,40	0,64	µg/l	99%
Iron	71,9	0,4	69,0	6,9	µg/l	96%
Copper	6,16	0,13	5,28	0,53	µg/l	86%
Manganese	16,0	0,2	15,8	1,6	µg/l	99%
Nickel	4,14	0,04	4,01	0,40	µg/l	97%
Mercury	1,33	0,01	0,955	0,10	µg/l	72%
Selenium	1,43	0,03	1,81	0,18	µg/l	127%
Silver	0,047	0,002	<1		µg/l	•
Uranium	2,53	0,03	2,44	0,24	µg/l	96%
Zinc	22,4	0,2	20,9	2,1	µg/l	93%



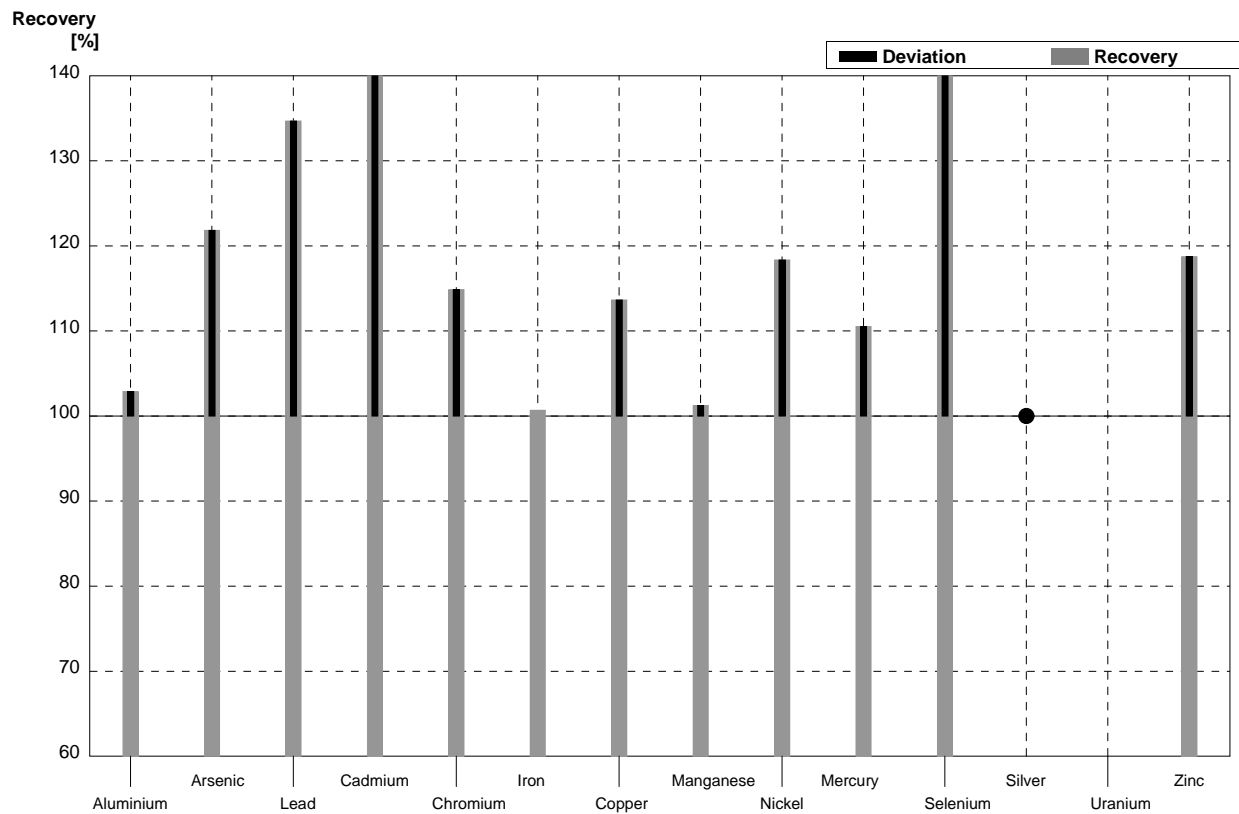
Sample M109B
Laboratory M

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	28,1	2,8	$\mu\text{g/l}$	101%
Arsenic	3,40	0,04	3,61	0,36	$\mu\text{g/l}$	106%
Lead	5,12	0,09	4,63	0,46	$\mu\text{g/l}$	90%
Cadmium	1,75	0,02	1,63	0,16	$\mu\text{g/l}$	93%
Chromium	4,44	0,06	4,39	0,44	$\mu\text{g/l}$	99%
Iron	40,1	0,3	37,7	3,8	$\mu\text{g/l}$	94%
Copper	9,17	0,21	8,00	0,80	$\mu\text{g/l}$	87%
Manganese	32,0	0,3	32,2	3,2	$\mu\text{g/l}$	101%
Nickel	8,37	0,10	8,16	0,82	$\mu\text{g/l}$	97%
Mercury	1,67	0,02	1,19	0,12	$\mu\text{g/l}$	71%
Selenium	2,63	0,03	2,55	0,26	$\mu\text{g/l}$	97%
Silver	0,116	0,004	<1		$\mu\text{g/l}$	•
Uranium	1,92	0,02	1,81	0,18	$\mu\text{g/l}$	94%
Zinc	13,1	0,1	12,3	1,2	$\mu\text{g/l}$	94%



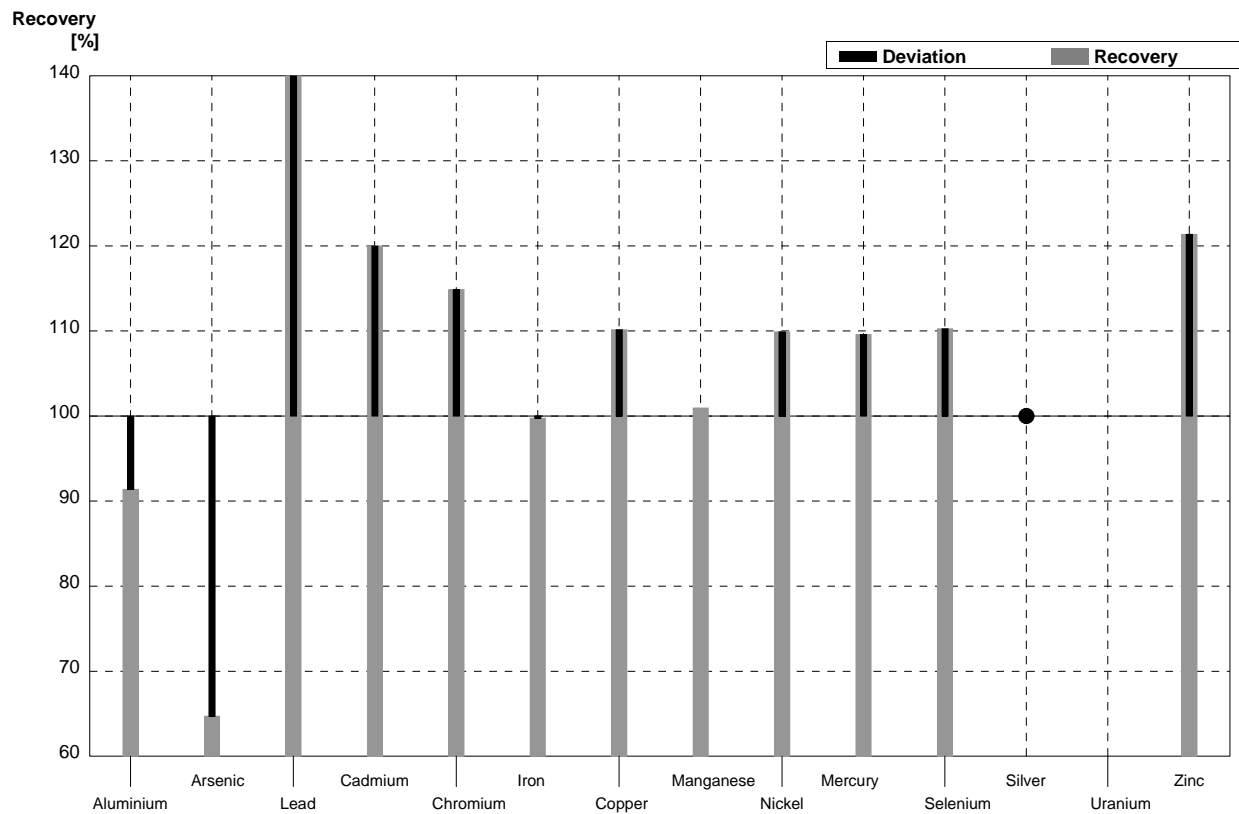
Sample M109A
Laboratory N

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	46,4	3,0	µg/l	103%
Arsenic	1,19	0,02	1,45	0,3	µg/l	122%
Lead	8,39	0,10	11,3	1,5	µg/l	135%
Cadmium	0,308	0,006	0,49	0,2	µg/l	159%
Chromium	6,46	0,05	7,42	1,0	µg/l	115%
Iron	71,9	0,4	72,4	3,0	µg/l	101%
Copper	6,16	0,13	7,0	1,0	µg/l	114%
Manganese	16,0	0,2	16,2	1,5	µg/l	101%
Nickel	4,14	0,04	4,9	0,5	µg/l	118%
Mercury	1,33	0,01	1,47	0,2	µg/l	111%
Selenium	1,43	0,03	2,3	0,3	µg/l	161%
Silver	0,047	0,002	<1,0		µg/l	•
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2	26,6	2,5	µg/l	119%



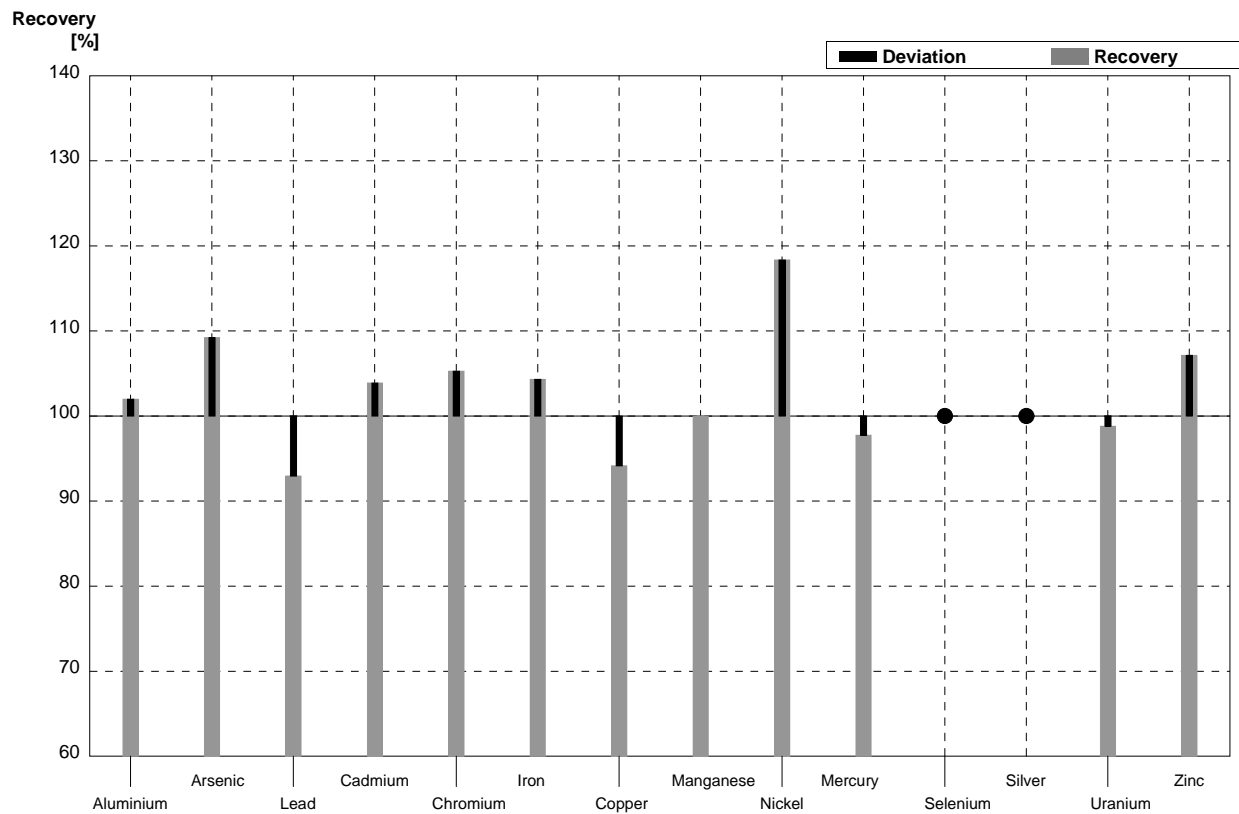
Sample M109B
Laboratory N

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	25,5	3,0	$\mu\text{g/l}$	91%
Arsenic	3,40	0,04	2,2	0,3	$\mu\text{g/l}$	65%
Lead	5,12	0,09	7,5	1,0	$\mu\text{g/l}$	146%
Cadmium	1,75	0,02	2,1	0,3	$\mu\text{g/l}$	120%
Chromium	4,44	0,06	5,1	0,7	$\mu\text{g/l}$	115%
Iron	40,1	0,3	40,0	3,0	$\mu\text{g/l}$	100%
Copper	9,17	0,21	10,1	1,0	$\mu\text{g/l}$	110%
Manganese	32,0	0,3	32,3	2,0	$\mu\text{g/l}$	101%
Nickel	8,37	0,10	9,2	1,0	$\mu\text{g/l}$	110%
Mercury	1,67	0,02	1,83	0,2	$\mu\text{g/l}$	110%
Selenium	2,63	0,03	2,9	0,3	$\mu\text{g/l}$	110%
Silver	0,116	0,004	<1,0		$\mu\text{g/l}$	•
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	15,9	2,0	$\mu\text{g/l}$	121%



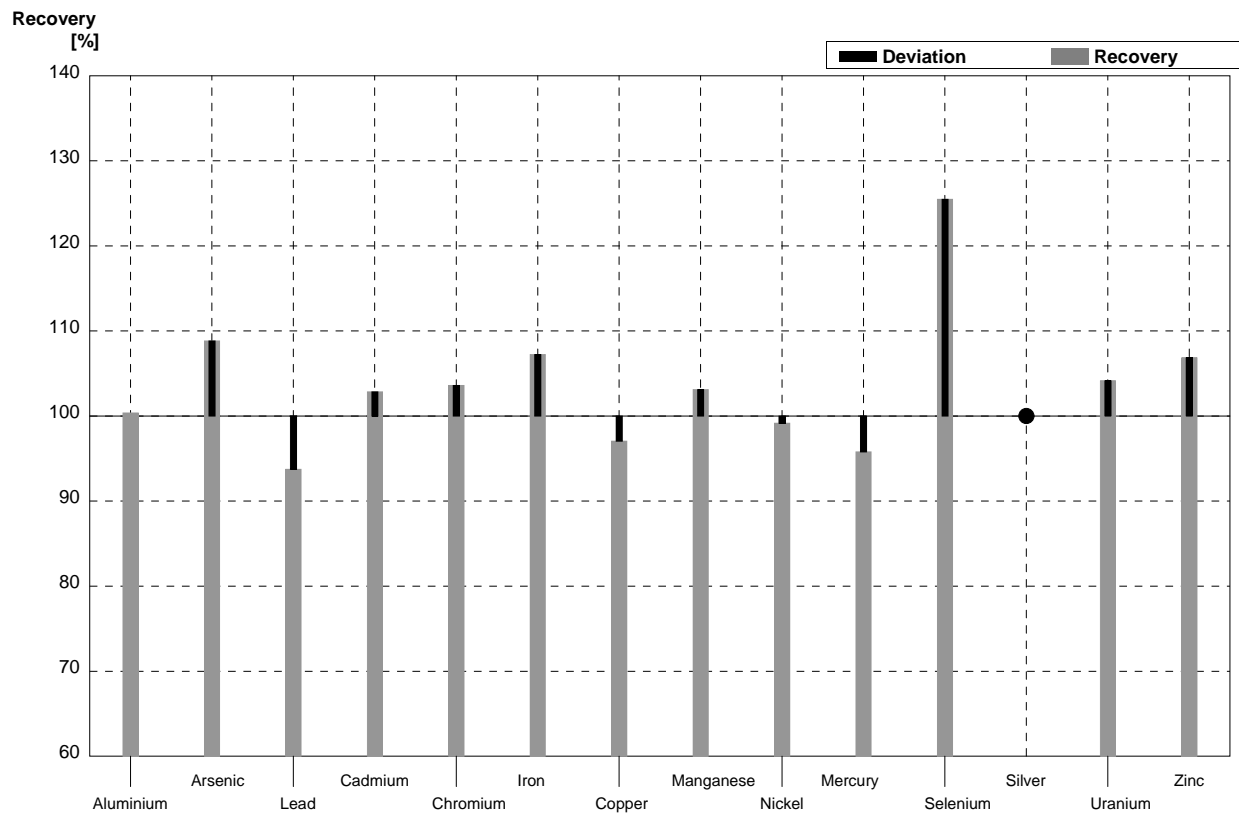
Sample M109A
Laboratory O

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	46	5	µg/l	102%
Arsenic	1,19	0,02	1,3	0,2	µg/l	109%
Lead	8,39	0,10	7,8	0,8	µg/l	93%
Cadmium	0,308	0,006	0,32	0,12	µg/l	104%
Chromium	6,46	0,05	6,8	0,7	µg/l	105%
Iron	71,9	0,4	75	7	µg/l	104%
Copper	6,16	0,13	5,8	0,6	µg/l	94%
Manganese	16,0	0,2	16	2	µg/l	100%
Nickel	4,14	0,04	4,9	0,5	µg/l	118%
Mercury	1,33	0,01	1,3	0,2	µg/l	98%
Selenium	1,43	0,03	<2,0		µg/l	•
Silver	0,047	0,002	<0,20		µg/l	•
Uranium	2,53	0,03	2,5	0,3	µg/l	99%
Zinc	22,4	0,2	24	4	µg/l	107%



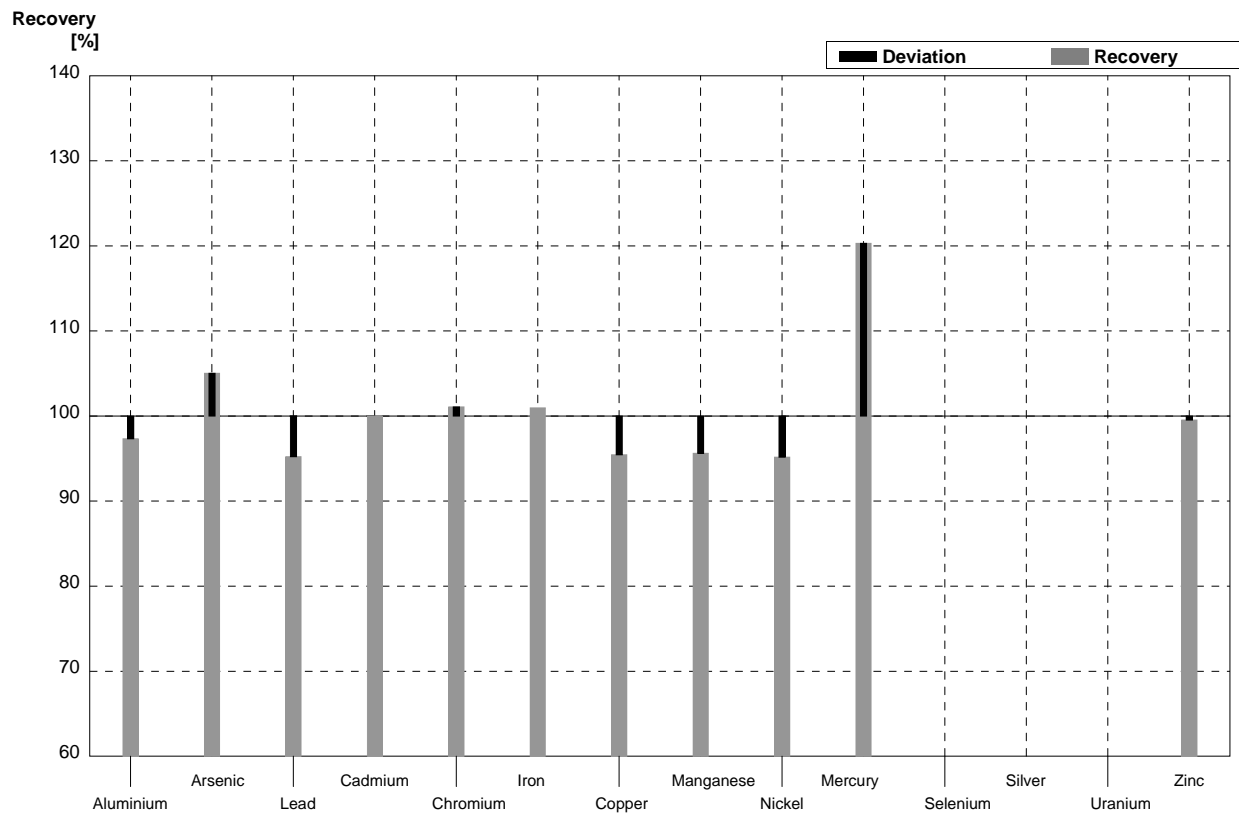
Sample M109B
Laboratory O

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2	28	3	µg/l	100%
Arsenic	3,40	0,04	3,7	0,5	µg/l	109%
Lead	5,12	0,09	4,8	0,5	µg/l	94%
Cadmium	1,75	0,02	1,8	0,2	µg/l	103%
Chromium	4,44	0,06	4,6	0,5	µg/l	104%
Iron	40,1	0,3	43	4	µg/l	107%
Copper	9,17	0,21	8,9	0,9	µg/l	97%
Manganese	32,0	0,3	33	3	µg/l	103%
Nickel	8,37	0,10	8,3	0,8	µg/l	99%
Mercury	1,67	0,02	1,6	0,2	µg/l	96%
Selenium	2,63	0,03	3,3	0,5	µg/l	125%
Silver	0,116	0,004	<0,20		µg/l	•
Uranium	1,92	0,02	2,0	0,3	µg/l	104%
Zinc	13,1	0,1	14	3	µg/l	107%



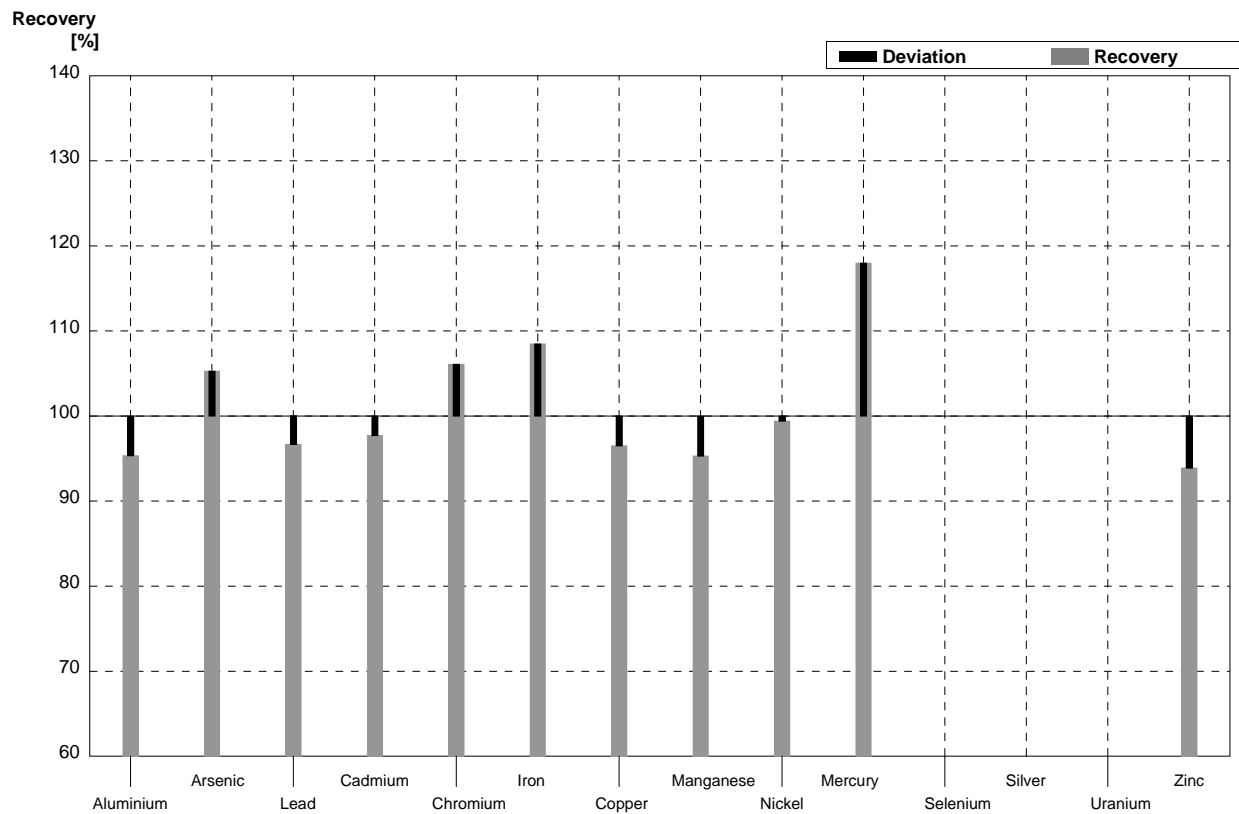
Sample M109A
Laboratory P

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	43,9	1,20	$\mu\text{g/l}$	97%
Arsenic	1,19	0,02	1,25	0,07	$\mu\text{g/l}$	105%
Lead	8,39	0,10	7,99	0,07	$\mu\text{g/l}$	95%
Cadmium	0,308	0,006	0,308	0,027	$\mu\text{g/l}$	100%
Chromium	6,46	0,05	6,53	0,19	$\mu\text{g/l}$	101%
Iron	71,9	0,4	72,6	1,72	$\mu\text{g/l}$	101%
Copper	6,16	0,13	5,88	0,23	$\mu\text{g/l}$	95%
Manganese	16,0	0,2	15,3	0,27	$\mu\text{g/l}$	96%
Nickel	4,14	0,04	3,94	0,16	$\mu\text{g/l}$	95%
Mercury	1,33	0,01	1,60	0,020	$\mu\text{g/l}$	120%
Selenium	1,43	0,03			$\mu\text{g/l}$	
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2	22,3	0,47	$\mu\text{g/l}$	100%



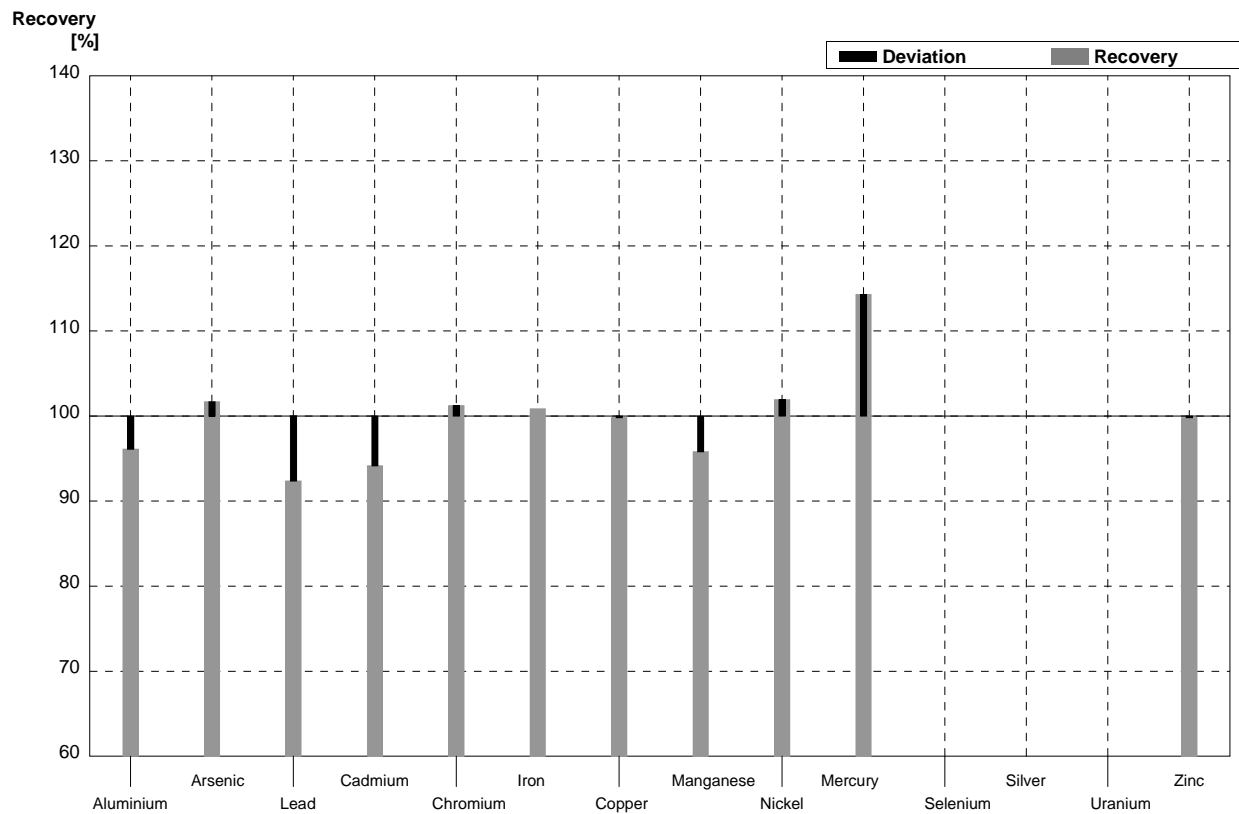
Sample M109B
Laboratory P

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	26,6	1,27	$\mu\text{g/l}$	95%
Arsenic	3,40	0,04	3,58	0,05	$\mu\text{g/l}$	105%
Lead	5,12	0,09	4,95	0,05	$\mu\text{g/l}$	97%
Cadmium	1,75	0,02	1,71	0,020	$\mu\text{g/l}$	98%
Chromium	4,44	0,06	4,71	0,14	$\mu\text{g/l}$	106%
Iron	40,1	0,3	43,5	1,83	$\mu\text{g/l}$	108%
Copper	9,17	0,21	8,85	0,19	$\mu\text{g/l}$	97%
Manganese	32,0	0,3	30,5	0,26	$\mu\text{g/l}$	95%
Nickel	8,37	0,10	8,32	0,14	$\mu\text{g/l}$	99%
Mercury	1,67	0,02	1,97	0,030	$\mu\text{g/l}$	118%
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	12,3	0,55	$\mu\text{g/l}$	94%



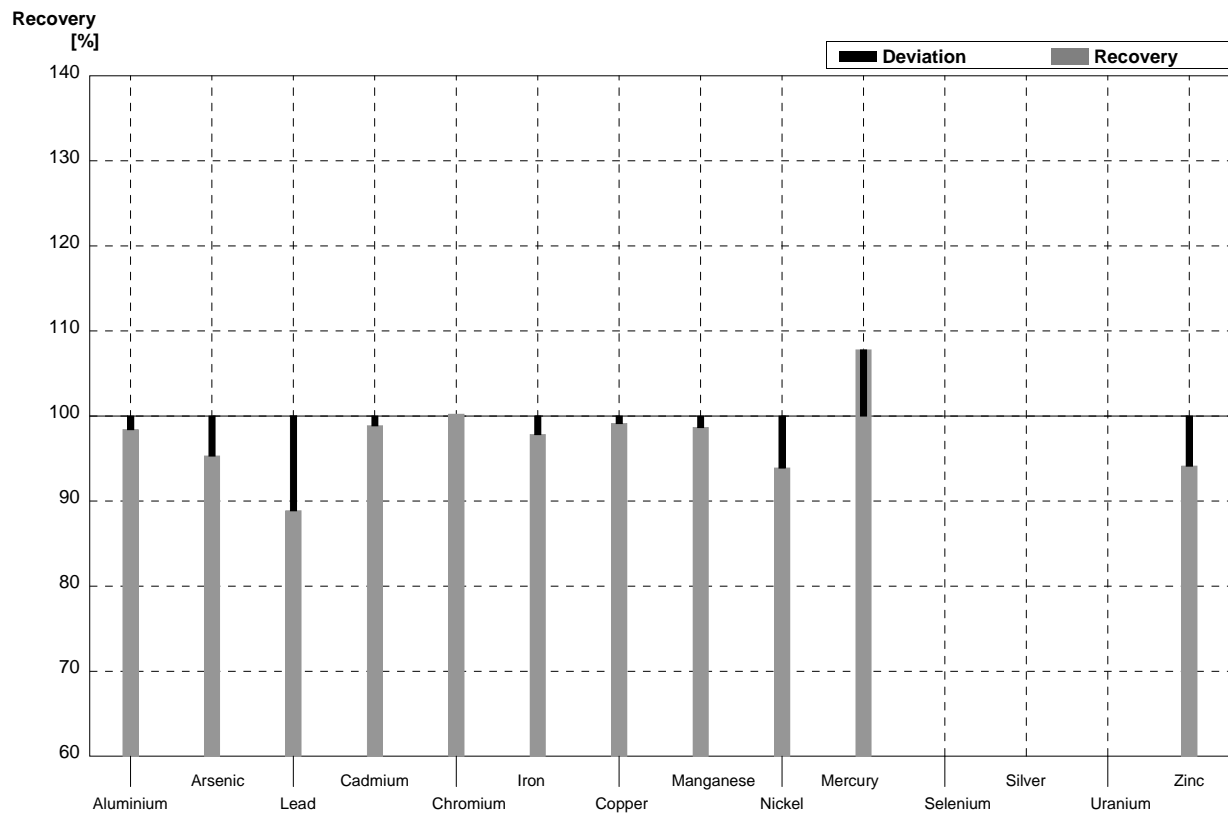
Sample M109A
Laboratory Q

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	43,35	1,30	µg/l	96%
Arsenic	1,19	0,02	1,21	0,07	µg/l	102%
Lead	8,39	0,10	7,75	0,23	µg/l	92%
Cadmium	0,308	0,006	0,29	0,04	µg/l	94%
Chromium	6,46	0,05	6,54	0,20	µg/l	101%
Iron	71,9	0,4	72,52	2,18	µg/l	101%
Copper	6,16	0,13	6,15	0,18	µg/l	100%
Manganese	16,0	0,2	15,33	0,46	µg/l	96%
Nickel	4,14	0,04	4,22	0,25	µg/l	102%
Mercury	1,33	0,01	1,52	0,23	µg/l	114%
Selenium	1,43	0,03			µg/l	
Silver	0,047	0,002			µg/l	
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2	22,36	0,67	µg/l	100%



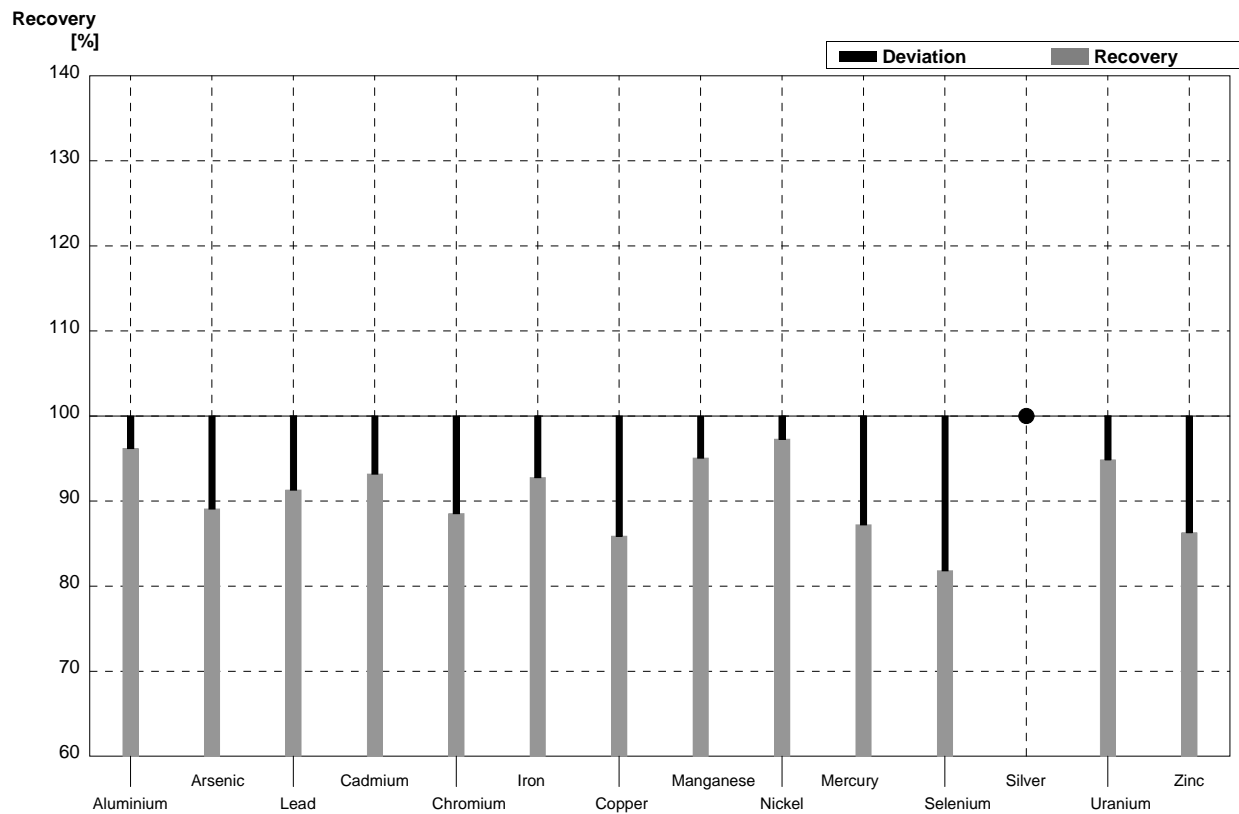
Sample M109B
Laboratory Q

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	27,46	0,83	$\mu\text{g/l}$	98%
Arsenic	3,40	0,04	3,24	0,19	$\mu\text{g/l}$	95%
Lead	5,12	0,09	4,55	0,14	$\mu\text{g/l}$	89%
Cadmium	1,75	0,02	1,73	0,26	$\mu\text{g/l}$	99%
Chromium	4,44	0,06	4,45	0,13	$\mu\text{g/l}$	100%
Iron	40,1	0,3	39,23	1,18	$\mu\text{g/l}$	98%
Copper	9,17	0,21	9,09	0,27	$\mu\text{g/l}$	99%
Manganese	32,0	0,3	31,57	0,95	$\mu\text{g/l}$	99%
Nickel	8,37	0,10	7,86	0,47	$\mu\text{g/l}$	94%
Mercury	1,67	0,02	1,80	0,27	$\mu\text{g/l}$	108%
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1	12,33	0,37	$\mu\text{g/l}$	94%



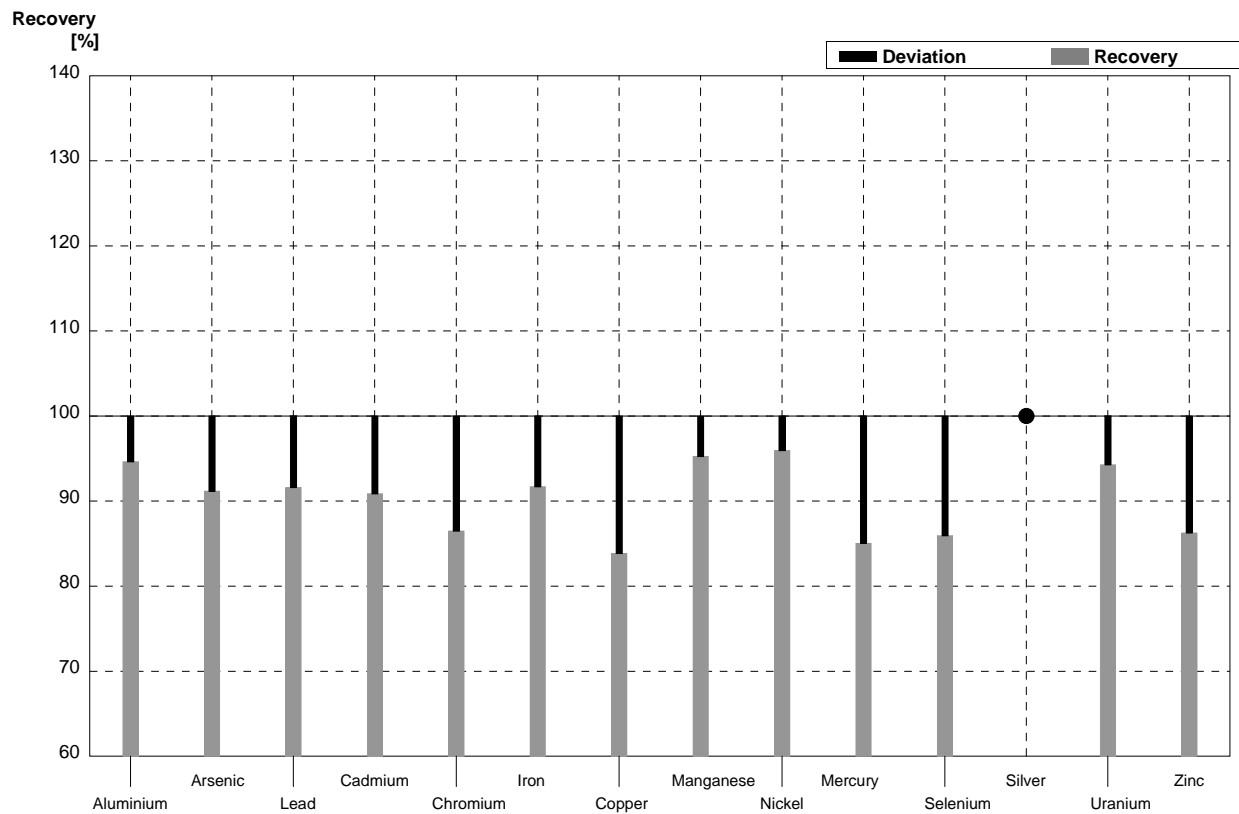
Sample M109A
Laboratory R

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	43,38	15,24	$\mu\text{g/l}$	96%
Arsenic	1,19	0,02	1,06	0,1	$\mu\text{g/l}$	89%
Lead	8,39	0,10	7,66	0,56	$\mu\text{g/l}$	91%
Cadmium	0,308	0,006	0,287	0,068	$\mu\text{g/l}$	93%
Chromium	6,46	0,05	5,72	0,44	$\mu\text{g/l}$	89%
Iron	71,9	0,4	66,7	23,2	$\mu\text{g/l}$	93%
Copper	6,16	0,13	5,29	0,76	$\mu\text{g/l}$	86%
Manganese	16,0	0,2	15,21	1,12	$\mu\text{g/l}$	95%
Nickel	4,14	0,04	4,027	0,332	$\mu\text{g/l}$	97%
Mercury	1,33	0,01	1,16	0,07	$\mu\text{g/l}$	87%
Selenium	1,43	0,03	1,17	0,16	$\mu\text{g/l}$	82%
Silver	0,047	0,002	<0,2		$\mu\text{g/l}$	•
Uranium	2,53	0,03	2,4	0,15	$\mu\text{g/l}$	95%
Zinc	22,4	0,2	19,33	2,56	$\mu\text{g/l}$	86%



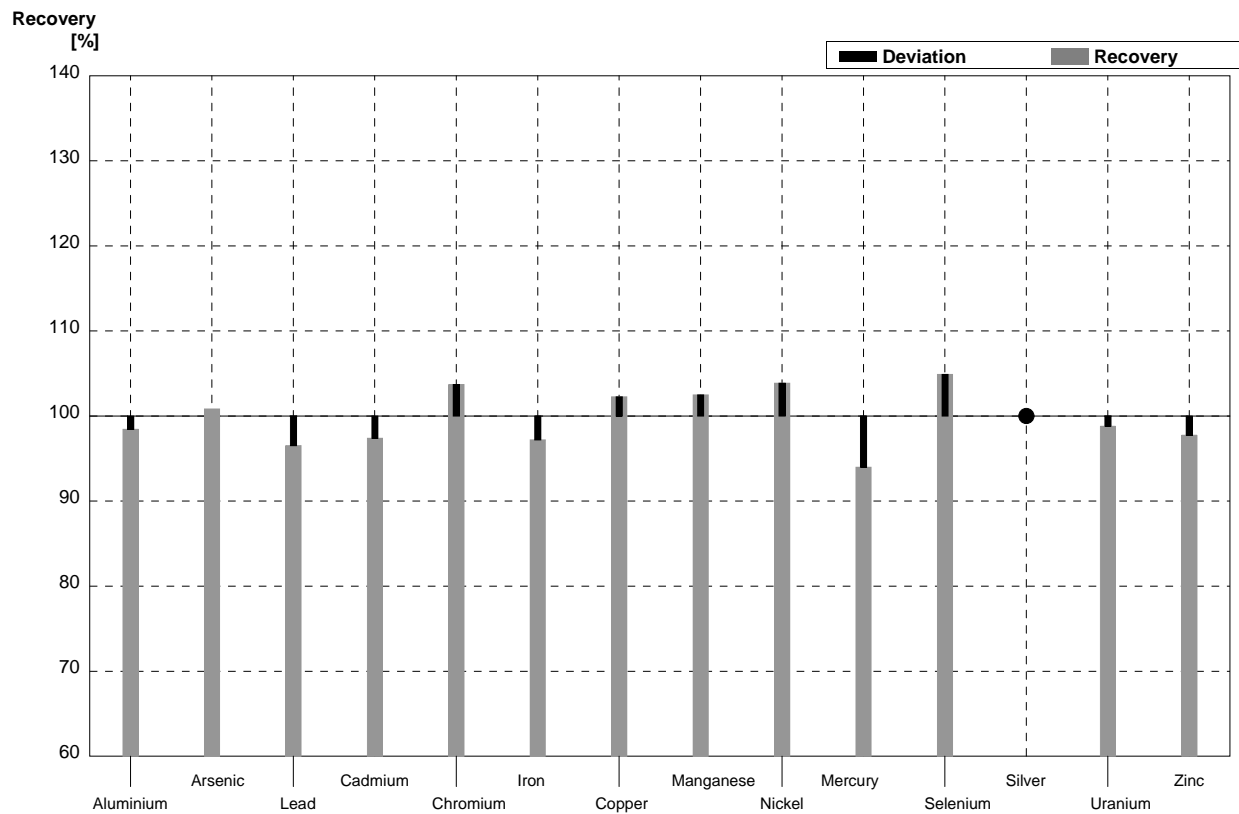
Sample M109B
Laboratory R

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	26,4	9,5	$\mu\text{g/l}$	95%
Arsenic	3,40	0,04	3,1	0,24	$\mu\text{g/l}$	91%
Lead	5,12	0,09	4,69	0,35	$\mu\text{g/l}$	92%
Cadmium	1,75	0,02	1,59	0,11	$\mu\text{g/l}$	91%
Chromium	4,44	0,06	3,84	0,3	$\mu\text{g/l}$	86%
Iron	40,1	0,3	36,77	13,01	$\mu\text{g/l}$	92%
Copper	9,17	0,21	7,69	1,05	$\mu\text{g/l}$	84%
Manganese	32,0	0,3	30,48	2,23	$\mu\text{g/l}$	95%
Nickel	8,37	0,10	8,03	0,62	$\mu\text{g/l}$	96%
Mercury	1,67	0,02	1,42	0,07	$\mu\text{g/l}$	85%
Selenium	2,63	0,03	2,26	0,21	$\mu\text{g/l}$	86%
Silver	0,116	0,004	<0,2		$\mu\text{g/l}$	•
Uranium	1,92	0,02	1,81	0,12	$\mu\text{g/l}$	94%
Zinc	13,1	0,1	11,3	1,5	$\mu\text{g/l}$	86%



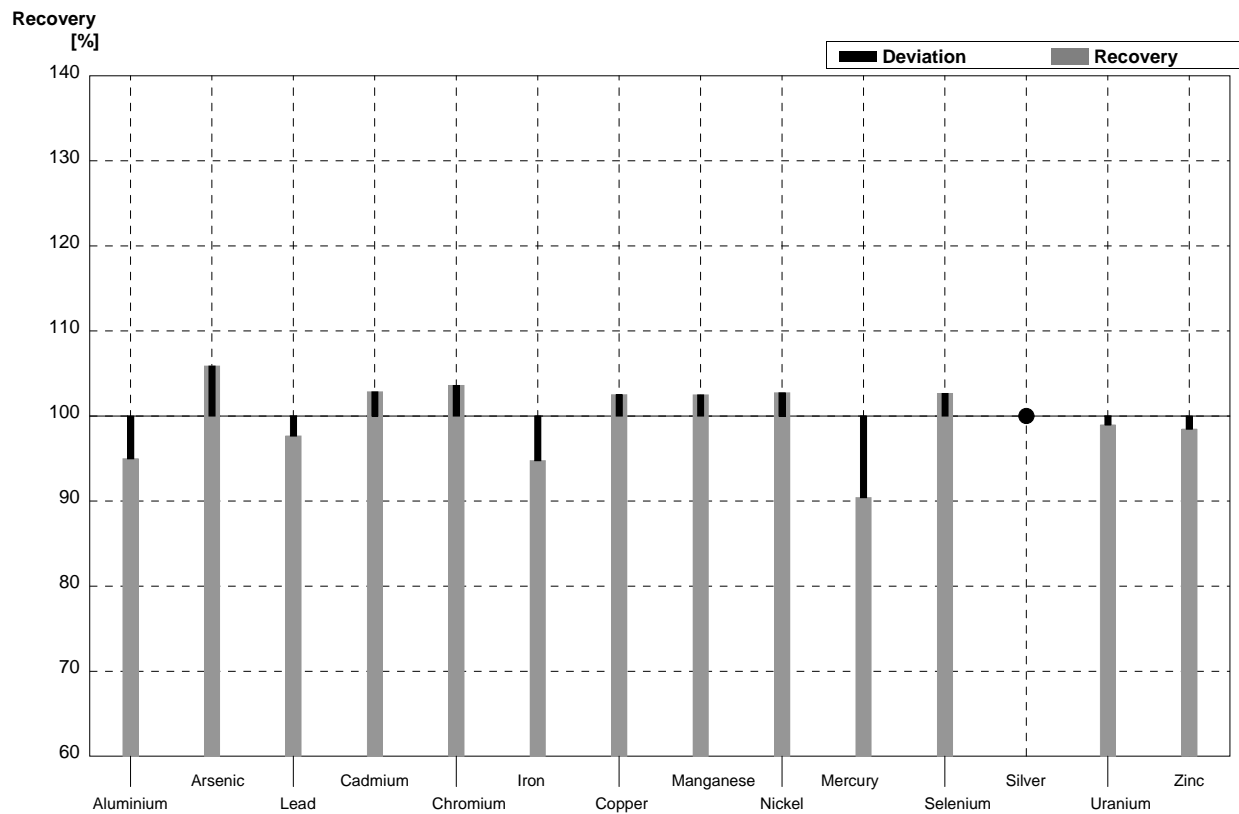
Sample M109A
Laboratory S

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	44,4	0,1	µg/l	98%
Arsenic	1,19	0,02	1,2		µg/l	101%
Lead	8,39	0,10	8,1		µg/l	97%
Cadmium	0,308	0,006	0,3		µg/l	97%
Chromium	6,46	0,05	6,7		µg/l	104%
Iron	71,9	0,4	69,9		µg/l	97%
Copper	6,16	0,13	6,3		µg/l	102%
Manganese	16,0	0,2	16,4		µg/l	103%
Nickel	4,14	0,04	4,3		µg/l	104%
Mercury	1,33	0,01	1,25		µg/l	94%
Selenium	1,43	0,03	1,5		µg/l	105%
Silver	0,047	0,002	<3		µg/l	•
Uranium	2,53	0,03	2,5		µg/l	99%
Zinc	22,4	0,2	21,9		µg/l	98%



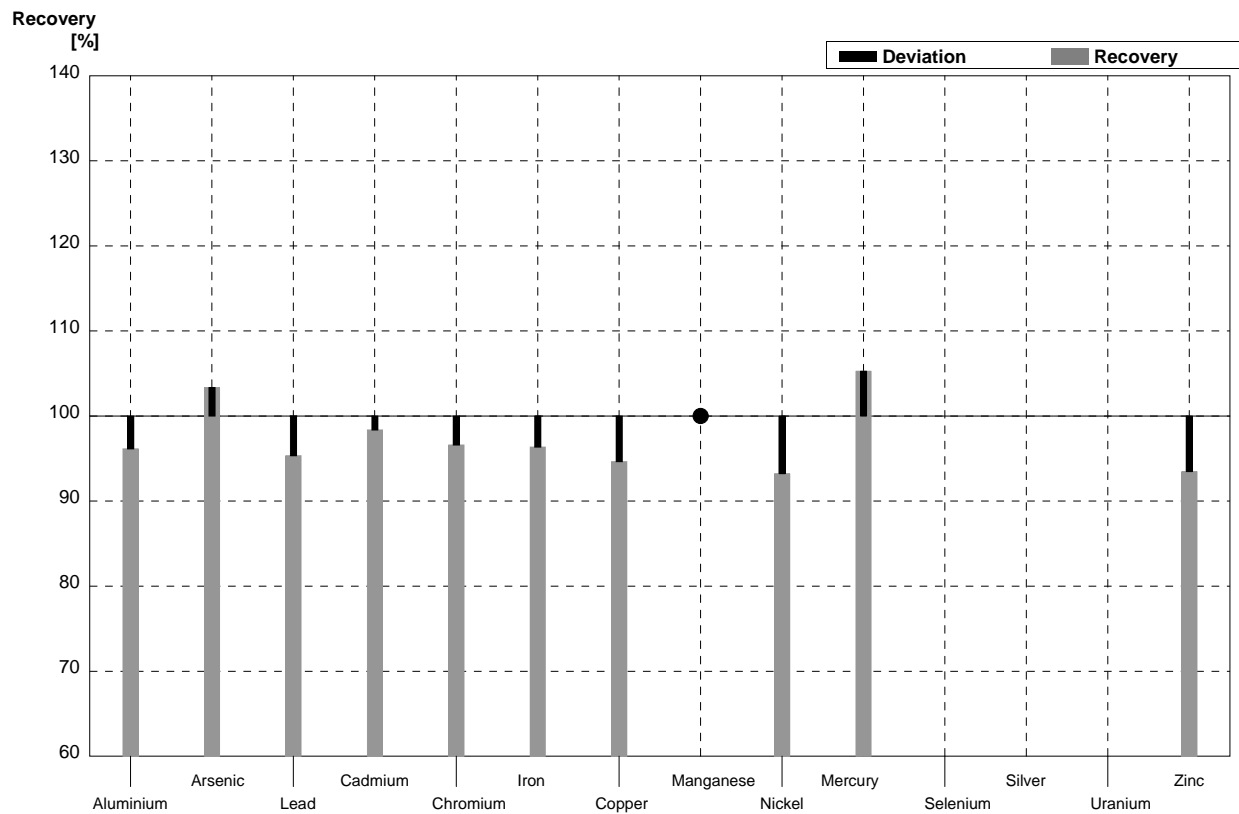
Sample M109B
Laboratory S

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	26,5		$\mu\text{g/l}$	95%
Arsenic	3,40	0,04	3,6		$\mu\text{g/l}$	106%
Lead	5,12	0,09	5,0		$\mu\text{g/l}$	98%
Cadmium	1,75	0,02	1,8		$\mu\text{g/l}$	103%
Chromium	4,44	0,06	4,6		$\mu\text{g/l}$	104%
Iron	40,1	0,3	38		$\mu\text{g/l}$	95%
Copper	9,17	0,21	9,4		$\mu\text{g/l}$	103%
Manganese	32,0	0,3	32,8		$\mu\text{g/l}$	103%
Nickel	8,37	0,10	8,6		$\mu\text{g/l}$	103%
Mercury	1,67	0,02	1,51		$\mu\text{g/l}$	90%
Selenium	2,63	0,03	2,7		$\mu\text{g/l}$	103%
Silver	0,116	0,004	<3		$\mu\text{g/l}$	•
Uranium	1,92	0,02	1,9		$\mu\text{g/l}$	99%
Zinc	13,1	0,1	12,9		$\mu\text{g/l}$	98%



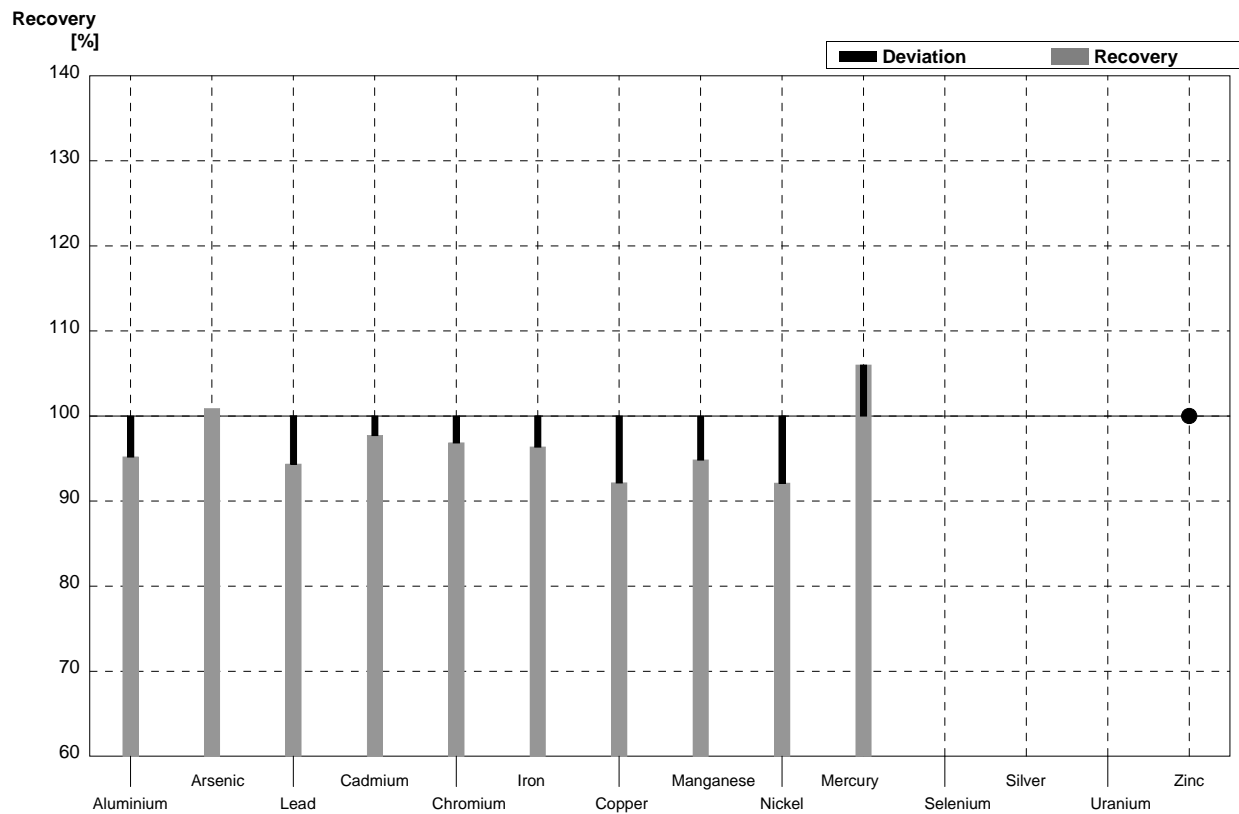
Sample M109A
Laboratory T

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	43,36	6,50	$\mu\text{g/l}$	96%
Arsenic	1,19	0,02	1,23	0,18	$\mu\text{g/l}$	103%
Lead	8,39	0,10	8,00	1,20	$\mu\text{g/l}$	95%
Cadmium	0,308	0,006	0,303	0,045	$\mu\text{g/l}$	98%
Chromium	6,46	0,05	6,24	0,94	$\mu\text{g/l}$	97%
Iron	71,9	0,4	69,29	10,39	$\mu\text{g/l}$	96%
Copper	6,16	0,13	5,83	0,87	$\mu\text{g/l}$	95%
Manganese	16,0	0,2	<20		$\mu\text{g/l}$	•
Nickel	4,14	0,04	3,86	0,58	$\mu\text{g/l}$	93%
Mercury	1,33	0,01	1,40	0,21	$\mu\text{g/l}$	105%
Selenium	1,43	0,03			$\mu\text{g/l}$	
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03			$\mu\text{g/l}$	
Zinc	22,4	0,2	20,94	3,14	$\mu\text{g/l}$	93%



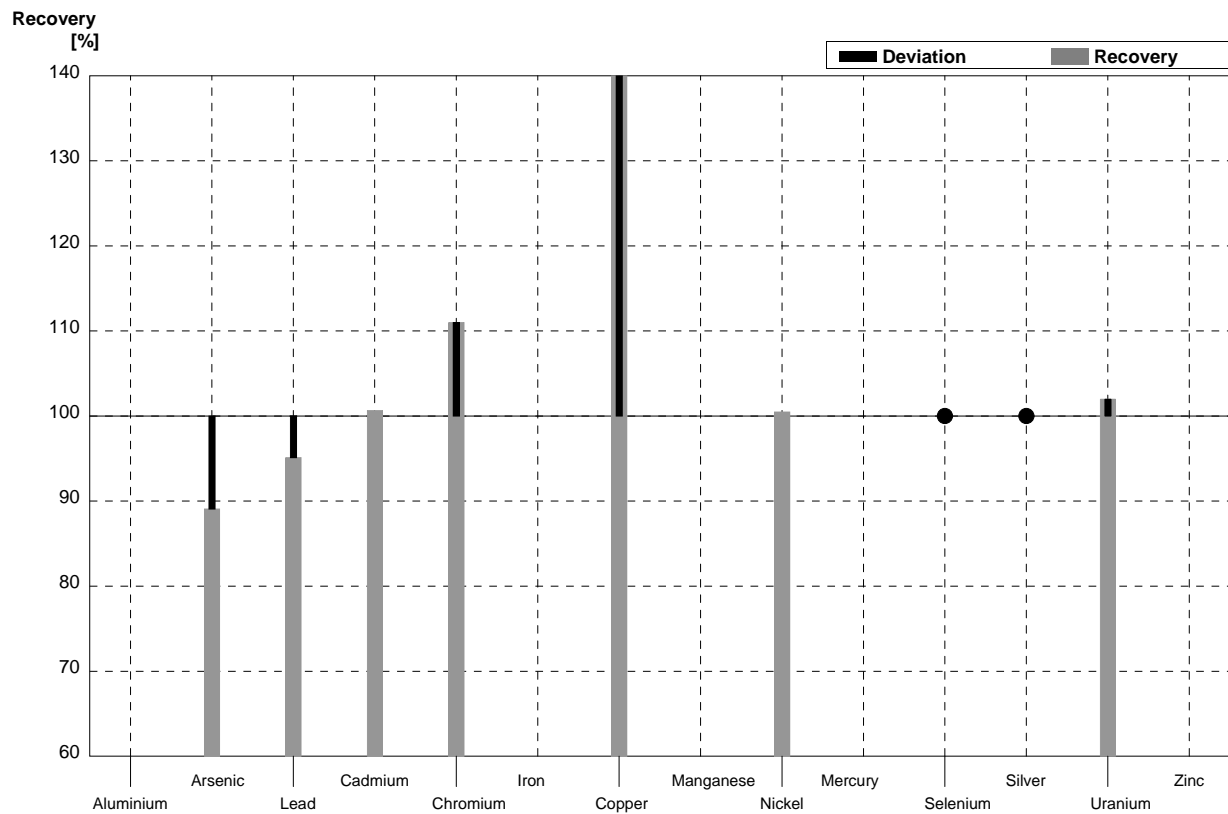
Sample M109B
Laboratory T

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2	26,56	3,98	µg/l	95%
Arsenic	3,40	0,04	3,43	0,51	µg/l	101%
Lead	5,12	0,09	4,83	0,72	µg/l	94%
Cadmium	1,75	0,02	1,71	0,26	µg/l	98%
Chromium	4,44	0,06	4,30	0,64	µg/l	97%
Iron	40,1	0,3	38,64	5,79	µg/l	96%
Copper	9,17	0,21	8,45	1,27	µg/l	92%
Manganese	32,0	0,3	30,35	4,55	µg/l	95%
Nickel	8,37	0,10	7,71	1,16	µg/l	92%
Mercury	1,67	0,02	1,77	0,27	µg/l	106%
Selenium	2,63	0,03			µg/l	
Silver	0,116	0,004			µg/l	
Uranium	1,92	0,02			µg/l	
Zinc	13,1	0,1	<20		µg/l	•



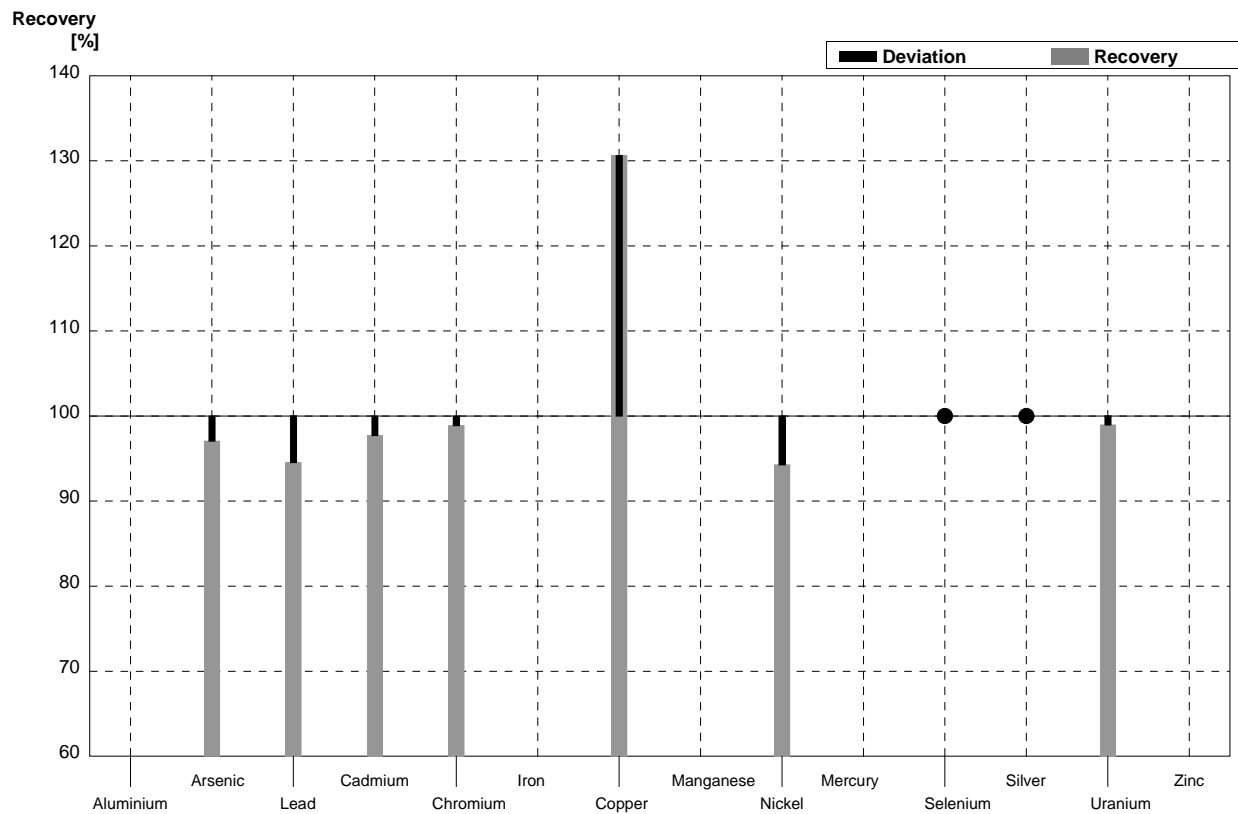
Sample M109A
Laboratory U

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4			µg/l	
Arsenic	1,19	0,02	1,06	0,1	µg/l	89%
Lead	8,39	0,10	7,98	0,6	µg/l	95%
Cadmium	0,308	0,006	0,31	0,02	µg/l	101%
Chromium	6,46	0,05	7,17	1,0	µg/l	111%
Iron	71,9	0,4			µg/l	
Copper	6,16	0,13	11,71	1,6	µg/l	190%
Manganese	16,0	0,2			µg/l	
Nickel	4,14	0,04	4,16	0,3	µg/l	100%
Mercury	1,33	0,01			µg/l	
Selenium	1,43	0,03	<5		µg/l	•
Silver	0,047	0,002	<0,5		µg/l	•
Uranium	2,53	0,03	2,58	0,3	µg/l	102%
Zinc	22,4	0,2			µg/l	



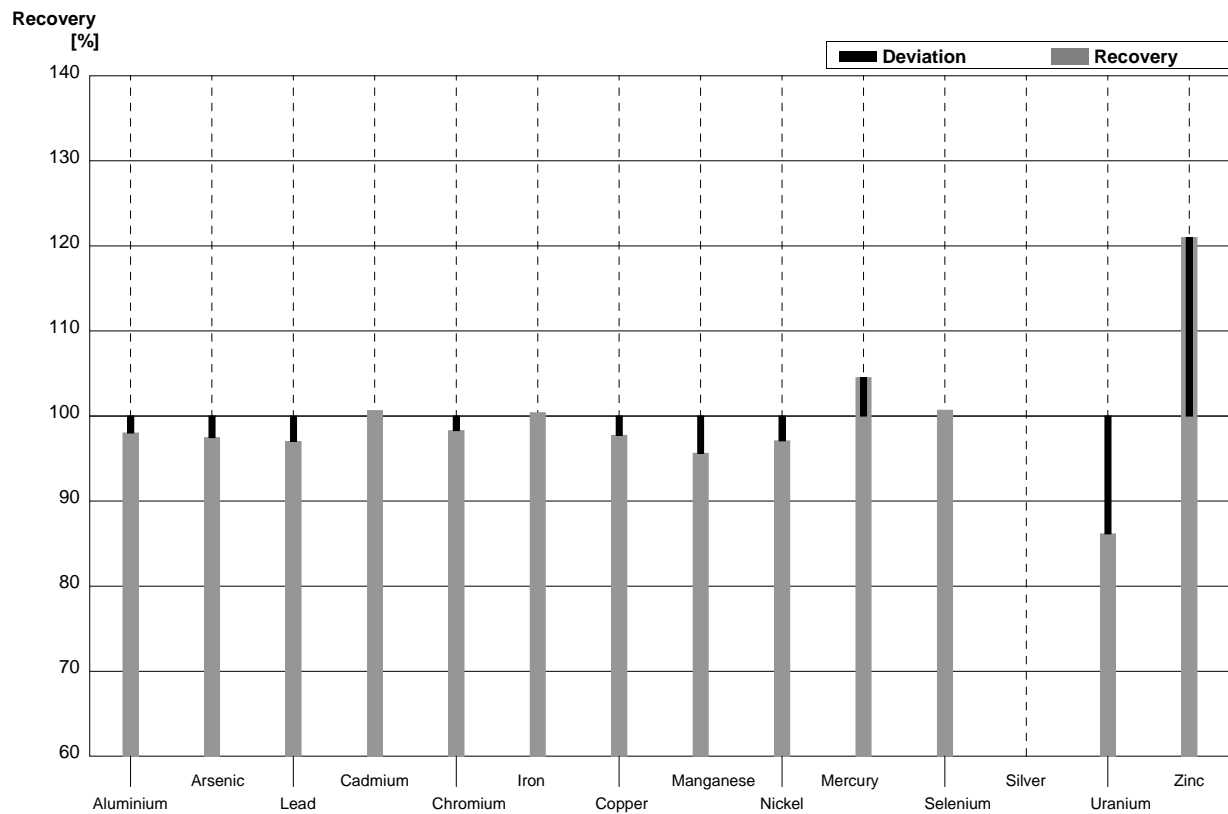
Sample M109B
Laboratory U

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	27,9	0,2			µg/l	
Arsenic	3,40	0,04	3,30	0,3	µg/l	97%
Lead	5,12	0,09	4,84	0,4	µg/l	95%
Cadmium	1,75	0,02	1,71	0,1	µg/l	98%
Chromium	4,44	0,06	4,39	0,7	µg/l	99%
Iron	40,1	0,3			µg/l	
Copper	9,17	0,21	11,98	1,7	µg/l	131%
Manganese	32,0	0,3			µg/l	
Nickel	8,37	0,10	7,89	0,6	µg/l	94%
Mercury	1,67	0,02			µg/l	
Selenium	2,63	0,03	<5		µg/l	•
Silver	0,116	0,004	<0,5		µg/l	•
Uranium	1,92	0,02	1,90	0,2	µg/l	99%
Zinc	13,1	0,1			µg/l	



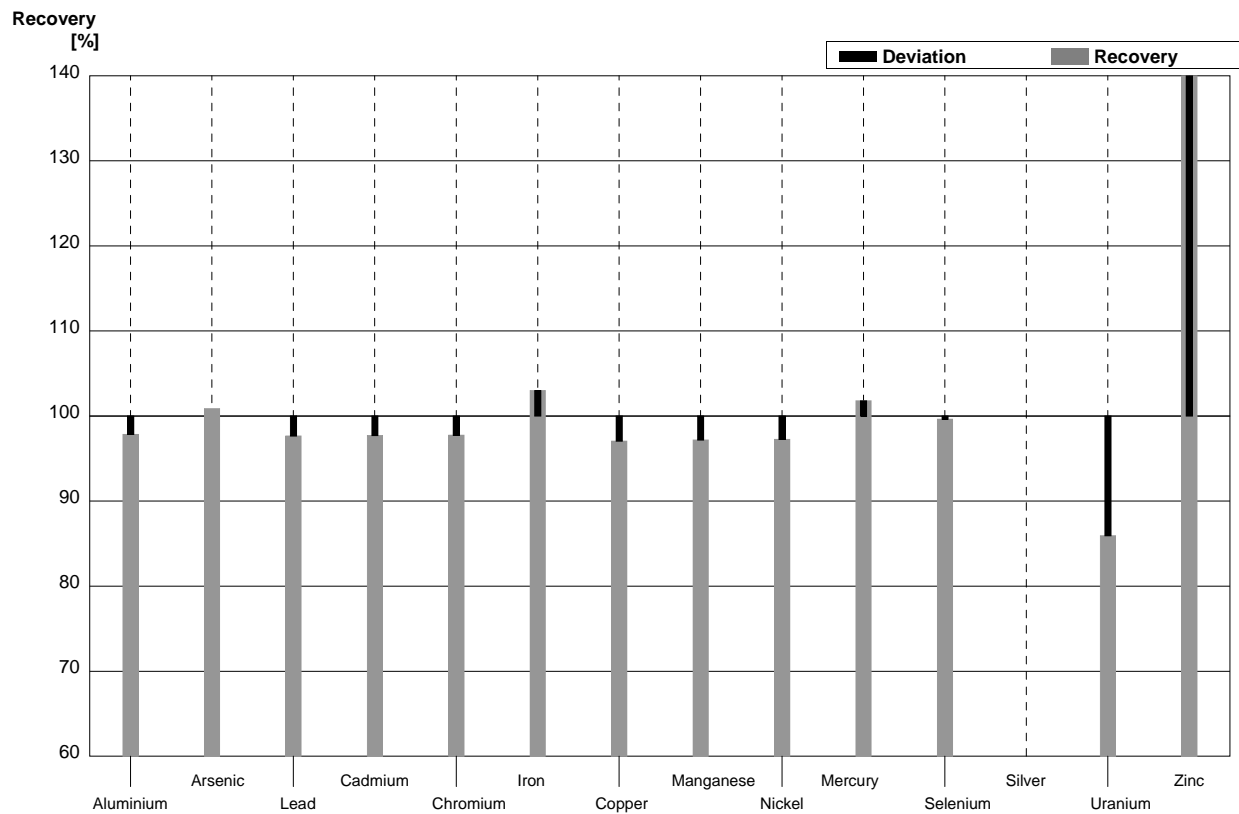
Sample M109A
Laboratory V

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	44,2	7,5	$\mu\text{g/l}$	98%
Arsenic	1,19	0,02	1,16	0,15	$\mu\text{g/l}$	97%
Lead	8,39	0,10	8,14	1,22	$\mu\text{g/l}$	97%
Cadmium	0,308	0,006	0,31	0,03	$\mu\text{g/l}$	101%
Chromium	6,46	0,05	6,35	0,95	$\mu\text{g/l}$	98%
Iron	71,9	0,4	72,2	18,0	$\mu\text{g/l}$	100%
Copper	6,16	0,13	6,02	0,78	$\mu\text{g/l}$	98%
Manganese	16,0	0,2	15,3	3,2	$\mu\text{g/l}$	96%
Nickel	4,14	0,04	4,02	0,48	$\mu\text{g/l}$	97%
Mercury	1,33	0,01	1,39	0,56	$\mu\text{g/l}$	105%
Selenium	1,43	0,03	1,44	0,20	$\mu\text{g/l}$	101%
Silver	0,047	0,002			$\mu\text{g/l}$	
Uranium	2,53	0,03	2,18	0,44	$\mu\text{g/l}$	86%
Zinc	22,4	0,2	27,10	3,8	$\mu\text{g/l}$	121%



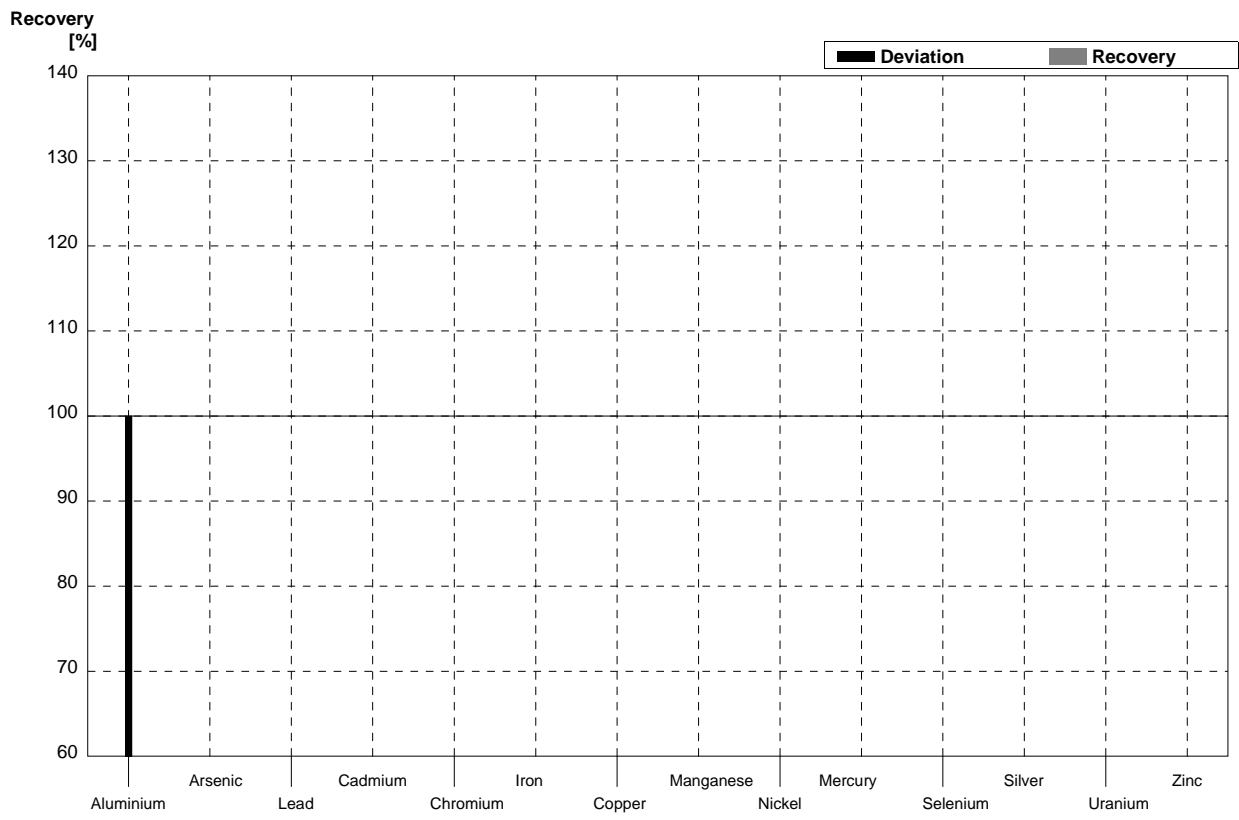
Sample M109B
Laboratory V

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	27,3	4,6	$\mu\text{g/l}$	98%
Arsenic	3,40	0,04	3,43	0,45	$\mu\text{g/l}$	101%
Lead	5,12	0,09	5,00	0,75	$\mu\text{g/l}$	98%
Cadmium	1,75	0,02	1,71	0,19	$\mu\text{g/l}$	98%
Chromium	4,44	0,06	4,34	0,65	$\mu\text{g/l}$	98%
Iron	40,1	0,3	41,3	10,3	$\mu\text{g/l}$	103%
Copper	9,17	0,21	8,90	1,16	$\mu\text{g/l}$	97%
Manganese	32,0	0,3	31,1	6,5	$\mu\text{g/l}$	97%
Nickel	8,37	0,10	8,14	0,98	$\mu\text{g/l}$	97%
Mercury	1,67	0,02	1,70	0,68	$\mu\text{g/l}$	102%
Selenium	2,63	0,03	2,62	0,37	$\mu\text{g/l}$	100%
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02	1,65	0,33	$\mu\text{g/l}$	86%
Zinc	13,1	0,1	23,8	3,3	$\mu\text{g/l}$	182%



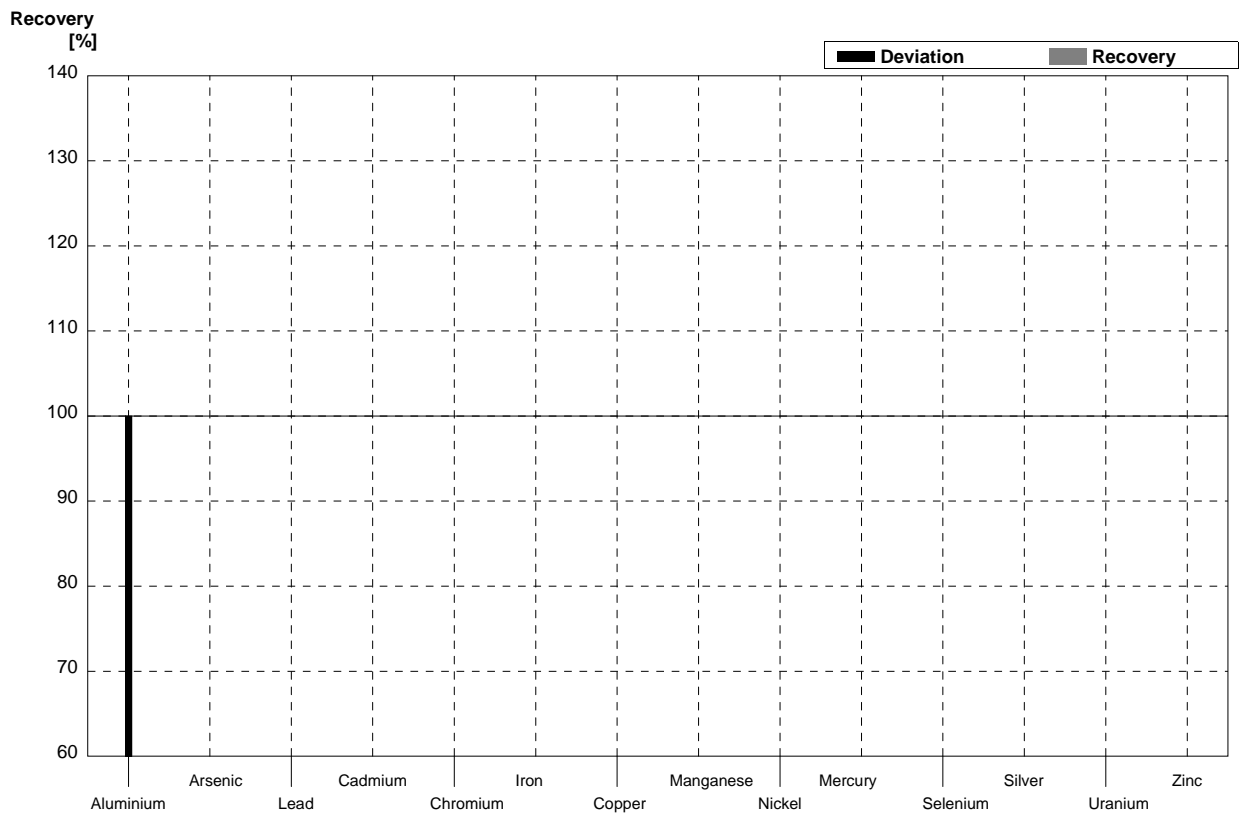
Sample M109A
Laboratory W

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	45,1	0,4	23,3	1,30	µg/l	52%
Arsenic	1,19	0,02			µg/l	
Lead	8,39	0,10			µg/l	
Cadmium	0,308	0,006			µg/l	
Chromium	6,46	0,05			µg/l	
Iron	71,9	0,4			µg/l	
Copper	6,16	0,13			µg/l	
Manganese	16,0	0,2			µg/l	
Nickel	4,14	0,04			µg/l	
Mercury	1,33	0,01			µg/l	
Selenium	1,43	0,03			µg/l	
Silver	0,047	0,002			µg/l	
Uranium	2,53	0,03			µg/l	
Zinc	22,4	0,2			µg/l	



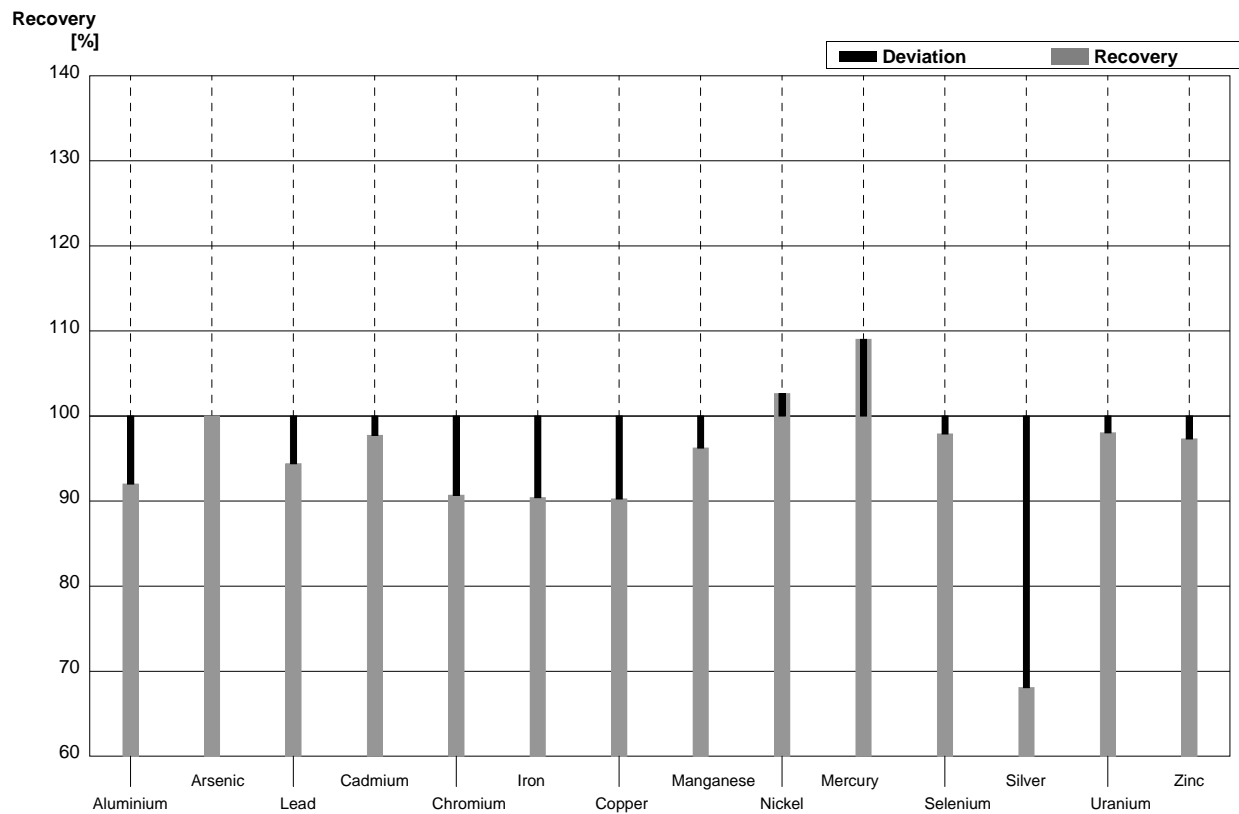
Sample M109B
Laboratory W

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	15,8	0,44	$\mu\text{g/l}$	57%
Arsenic	3,40	0,04			$\mu\text{g/l}$	
Lead	5,12	0,09			$\mu\text{g/l}$	
Cadmium	1,75	0,02			$\mu\text{g/l}$	
Chromium	4,44	0,06			$\mu\text{g/l}$	
Iron	40,1	0,3			$\mu\text{g/l}$	
Copper	9,17	0,21			$\mu\text{g/l}$	
Manganese	32,0	0,3			$\mu\text{g/l}$	
Nickel	8,37	0,10			$\mu\text{g/l}$	
Mercury	1,67	0,02			$\mu\text{g/l}$	
Selenium	2,63	0,03			$\mu\text{g/l}$	
Silver	0,116	0,004			$\mu\text{g/l}$	
Uranium	1,92	0,02			$\mu\text{g/l}$	
Zinc	13,1	0,1			$\mu\text{g/l}$	



Sample M109A
Laboratory X

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	45,1	0,4	41,5	10,1	$\mu\text{g/l}$	92%
Arsenic	1,19	0,02	1,19	0,11	$\mu\text{g/l}$	100%
Lead	8,39	0,10	7,92	1,01	$\mu\text{g/l}$	94%
Cadmium	0,308	0,006	0,301	0,040	$\mu\text{g/l}$	98%
Chromium	6,46	0,05	5,86	0,87	$\mu\text{g/l}$	91%
Iron	71,9	0,4	65,0	17,2	$\mu\text{g/l}$	90%
Copper	6,16	0,13	5,56	0,63	$\mu\text{g/l}$	90%
Manganese	16,0	0,2	15,4	2,5	$\mu\text{g/l}$	96%
Nickel	4,14	0,04	4,25	0,64	$\mu\text{g/l}$	103%
Mercury	1,33	0,01	1,45	0,26	$\mu\text{g/l}$	109%
Selenium	1,43	0,03	1,40	0,18	$\mu\text{g/l}$	98%
Silver	0,047	0,002	0,032	0,004	$\mu\text{g/l}$	68%
Uranium	2,53	0,03	2,48	0,50	$\mu\text{g/l}$	98%
Zinc	22,4	0,2	21,8	3,07	$\mu\text{g/l}$	97%



Sample M109B
Laboratory X

Parameter	Target value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	27,9	0,2	26,4	6,43	$\mu\text{g/l}$	95%
Arsenic	3,40	0,04	3,39	0,30	$\mu\text{g/l}$	100%
Lead	5,12	0,09	4,90	0,62	$\mu\text{g/l}$	96%
Cadmium	1,75	0,02	1,69	0,22	$\mu\text{g/l}$	97%
Chromium	4,44	0,06	4,02	0,60	$\mu\text{g/l}$	91%
Iron	40,1	0,3	36,4	9,61	$\mu\text{g/l}$	91%
Copper	9,17	0,21	8,53	0,97	$\mu\text{g/l}$	93%
Manganese	32,0	0,3	30,6	4,9	$\mu\text{g/l}$	96%
Nickel	8,37	0,10	8,28	1,24	$\mu\text{g/l}$	99%
Mercury	1,67	0,02	1,82	0,33	$\mu\text{g/l}$	109%
Selenium	2,63	0,03	2,64	0,34	$\mu\text{g/l}$	100%
Silver	0,116	0,004	0,091	0,012	$\mu\text{g/l}$	78%
Uranium	1,92	0,02	1,84	0,37	$\mu\text{g/l}$	96%
Zinc	13,1	0,1	13,4	1,9	$\mu\text{g/l}$	102%

