

IFA-Proficiency Testing Scheme zur Wasseranalytik / for Water Analysis

Endbericht / Final Report
Eignungsprüfungsrunde / Proficiency testing round
M171

Metalle / Metals

Probenversand /Sample dispatch: 18.03.2024

Durchführung gemäß Verfahren / In accordance with the procedure: AVKPS.02 idgF



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Allgemeine Informationen

Diese Zusammenfassung beschreibt die 171. Runde der regelmäßigen Eignungsprüfungen zur Parametergruppe „Metalle“. Die Prüfgegenstände M171A und M171B wurden am 18. März 2024 an 28 Teilnehmer versendet. Jedes Labor erhielt zwei Prüfgegenstände zu je 250 ml, abgefüllt in LDPE-Flaschen.

Einsendeschluss für die Ergebnisse war am 19. April 2024. Von allen Teilnehmern wurden Ergebnisse übermittelt.

Zur Anonymisierung wurde jedem Labor per Zufallsgenerator ein Buchstabencode zugeteilt.

Zusammensetzung des Prüfgegenstands

Die Prüfgegenstände M171A und M171B enthielten Al, As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, U und Zn in einer den natürlichen Bedingungen angepassten Matrix, welche durch Zugabe von hochreinen Salzen (CaCO_3 , $\text{Mg}(\text{NO}_3)_2$, NaCl und KCl), H_2SO_4 , HCl und eines Sr-Standards eingestellt wurde: ca. 46 mg/l Ca, 19,5 mg/l Mg, 9 mg/l Na, 1,2 mg/l K, 19,4 mg/l SO_4^{2-} , 15,5 mg/l Cl⁻, 427 (284) mg/l Sr in M171A (M171B). Die Prüfgegenstände wurden mit hochreiner HNO_3 (0,5 % v/v) bei pH < 2 stabilisiert.

Homogenitäts-, Richtigkeits- und Stabilitätsuntersuchung

Die Prüfgegenstände wurden vor dem Versand am IFA auf Homogenität und Richtigkeit untersucht. Die Ergebnisse der Kontrollanalytik finden sich auf den Rohdatenblättern sowie auf den Auswertungen zu jedem Parameter.

Die Stabilitätsuntersuchungen zu den restlichen Parametern werden zusammen mit der Kontrollanalytik zur folgenden Runde (M172) durchgeführt.

Nach unseren Erfahrungen bleiben die Konzentrationen Al, As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Se, U und Zn bei Lagerung bei 4-6 °C im Dunkeln bis 18 Monate stabil. Bei Hg ist eine Konzentrationsabnahme von 2 % bis 4 % pro Monat zu erwarten.

Zugewiesene Werte

Die zugewiesenen Werte ergaben sich aus den Wägewerten der zur Herstellung der Prüfgegenstände verwendeten Standards. Sie lagen bei Al, As, Cd, Cr, Fe, Hg, Cu, Mn, Ni, Pb, Se und Zn in mindestens einem Prüfgegenstand über den Mindestbestimmungsgrenzen der österreichischen Gewässerzustandsüberwachungsverordnung (GZÜV - BGBl. II. 479/2006).

Die Unsicherheiten der zugewiesenen Werte (erweiterte Unsicherheiten, $k = 2$, $\alpha = 0,05$) wurden nach den Vorgaben des EURACHEM / CITAC Guides „Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)“ ermittelt.

Auswertung

Mit den bei uns eingegangenen Messwerten wurde ein Ausreißertest nach Hampel durchgeführt. Die von diesem Test als auffällig eingestuft Werte sind in den Tabellen der parameterorientierten Auswertung mit einem Stern gekennzeichnet.

Die aus den ausreißerbereinigten Daten berechneten, auf die zugewiesenen Werte bezogenen mittleren Wiederfindungen lagen zwischen 89,6 % (Quecksilber in M171B) und 106,1 % (Arsen in M171B). Die aus den ausreißerbereinigten Daten berechneten Standardabweichungen bewegten sich im Bereich von 1,6 % (Uran in M171A) bis 13,2 % (Kupfer in M171B).

Zu den Mittelwerten und mittleren Wiederfindungen wurden auch die Vertrauensbereiche ($P = 99\%$) angegeben. Diese Vertrauensbereiche der Labormittelwerte enthielten in allen Fällen mit Ausnahme von Blei ($94,6\% \pm 3,3\%$), Kupfer ($92,8\% \pm 2,4\%$) und Quecksilber ($90,3\% \pm 5,3\%$) in M171A bzw. Arsen ($106,1\% \pm 2,4\%$) und Quecksilber ($89,6\% \pm 5,9\%$) in M171B die entsprechenden zugewiesenen Werte mit ihren Unsicherheiten.

z-Score-Auswertung

Ein z-Score ist die auf eine Standardabweichung bezogene Abweichung eines Messwertes vom zugewiesenen Wert. Er wird mittels folgender Formel berechnet:

$$z = \frac{x_i - X}{\sigma_{pt}}$$

z	z-Score
x_i	Messwert eines Labors
X	zugewiesener Wert oder ausreißerbereinigter Mittelwert („Konsenswert“)
σ_{pt}	Standardabweichung für die Eignungsbewertung

Es handelt sich also um das Verhältnis der Abweichung des Messwertes eines Labors vom zugewiesenen Wert zu einer vorgegebenen Standardabweichung.

Die Standardabweichungen für die Eignungsbewertung wurden aus den Ergebnissen der im Zeitraum 2013 - 2023 vom IFA-Tulln veranstalteten Eignungsprüfung berechnet.

Diese Vorgehensweise wurde deshalb gewählt, weil, unserer Erfahrung nach, die Standardabweichungen der ausreißerbereinigten Messwerte zwischen den einzelnen Eignungsprüfungen variieren. Die Ermittlung der Standardabweichung über die Eignungsprüfungsrunden aus mehreren Jahren bietet jedoch eine gut abgesicherte Basis auf einer breiten Datengrundlage und ist somit meistens besser geeignet, als das bei der direkt aus der Eignungsprüfung berechneten Standardabweichung der Fall wäre. (siehe EN ISO/IEC 17043:2010, B.3.1.3)

Der Vorteil der sich für alle Teilnehmer daraus ergibt ist, dass dadurch bei unseren Eignungsprüfungen schon vor der Teilnahme vorhersehbar ist, welche z-Scores man mit den eigenen, aus Routineverfahren bekannten, Messabweichungen erwarten kann.

Rechenbeispiel:

Ein Labor bestimmte für den Parameter Aluminium einen Messwert von 73,7 µg/l (Wiederfindung von 101,94 %). Der zugewiesene Wert für Aluminium lag bei 72,3 µg/l (100 %).

In der nachfolgenden Tabelle (und in der Tabelle des Jahresprogrammes www.ifatest.at) ist die relative Standardabweichung für die Eignungsbewertung beim Parameter Aluminium mit 7,8 % angegeben. Bezogen auf den zugewiesenen Wert 72,3 µg/l Al entsprechen 7,8 % 5,6 µg/l.

$$z = \frac{x_i - X}{\sigma_{pt}} = \frac{73,7 \mu\text{g/l} - 72,3 \mu\text{g/l}}{5,6 \mu\text{g/l}} \approx 0,25 \quad \text{oder} \quad \frac{101,94 \% - 100 \%}{7,8 \%} \approx 0,25$$

z	z-Score	
x_i	73,7 µg/l	entsprechen 101,94 % (Messwert des Labors)
X	72,3 µg/l	entsprechen 100 % (zugewiesener Wert)
σ_{pt}	5,6 µg/l	entsprechen 7,8 % (Standardabweichung für die Eignungsbewertung, siehe Tabelle unten)

Abweichungen in den Nachkommastellen können sich bei Nachberechnung dadurch ergeben, dass im Bericht bei den Wiederfindungen zwecks Übersichtlichkeit gerundete Werte angegeben sind.

Die folgende Tabelle enthält die Standardabweichung für die Eignungsbewertung bezogen auf den zugewiesenen Wert mit ihren Anwendungsbereichen.

Parameter	Standardabweichung für die Eignungsbewertung bezogen auf den zugewiesenen Wert	untere Grenze
Aluminium	7,8 %	7,5 µg/l
Arsen	7,1 %	0,5 µg/l
Blei	6,6 %	0,3 µg/l
Cadmium	5,2 %	0,1 µg/l
Chrom	6,2 %	0,5 µg/l
Eisen	6,6 %	10 µg/l
Kupfer	7,5 %	1,0 µg/l
Mangan	5,2 %	2,0 µg/l
Nickel	6,9 %	0,75 µg/l
Quecksilber	11 %	0,2 µg/l
Selen	8,8 %	0,3 µg/l
Uran	5,6 %	0,35 µg/l
Zink	6,9 %	3 µg/l

Zur Interpretation von z-Scores wird meist folgende Klassifikation vorgeschlagen:

z-Score	Klassifikation
≤2	zufriedenstellend
2< z <3	fraglich
≥3	nicht zufriedenstellend

Die z-Scores sind in der parameterorientierten Auswertung in den Tabellen neben den Wiederfindungen angegeben. Jedes Labor erhält zusätzlich zu dieser Auswertung ein Blatt, auf dem die erzielten z-Scores zusammengefasst und grafisch dargestellt sind. Die Standardabweichungen für die Eignungsbewertung sind dort in Konzentrationseinheiten angegeben.

Eine Übersichtstabelle aller z-Scores ist im Anschluss an die Rohdatentabellen im parameterorientierten Teil zu finden.

Zur Darstellung der Ergebnisse in der Auswertung:

Eine Legende zur Darstellung der Ergebnisse finden Sie auf der nächsten Seite. In den Tabellen der Auswertung sind jeweils zugewiesener Wert, Messwert, Unsicherheit und die Wiederfindung dargestellt. In der parameterorientierten Auswertung befindet sich der zugewiesene Wert direkt unter der Parameterbezeichnung. Die Unsicherheit des zugewiesenen Wertes ist immer als erweiterte Unsicherheit ($k = 2$; $\alpha = 0,05$) angegeben. Sie wurde nach den Vorgaben des EURACHEM / CITAC Guides „Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)“ ermittelt. Die grafische Darstellung der Ergebnisse enthält die Unsicherheit des zugewiesenen Wertes als grau unterlegtes Band.

In der Spalte „A“ bei der parameterorientierten Auswertung wurden die Messwerte, die nach dem Test nach Hampel als Ausreißer gewertet wurden, mit einem Stern (*) gekennzeichnet. Die Grafik der Messwerte wurde für alle Parameter auf $100 \% \pm 45 \%$ des zugewiesenen Wertes skaliert. Die kleine Tabelle unten links enthält statistische Parameter, darunter den 99 % - Vertrauensbereich der Labormittelwerte vor und nach Ausreißereliminierung.

Ergebnisse, für die keine Wiederfindung bzw. Abweichung vom zugewiesenen Wert berechnet werden kann (d.h. „kleiner als“ Ergebnisse oder Zahlenwerte bei nicht zugegebenen Substanzen) werden in den Tabellen und Grafiken entweder als **FN** (falsch negativ), **FP** (falsch positiv) oder als • - Symbol dargestellt.

- Als falsch negativ gelten „< Ergebnisse“ mit einem Betrag des Zahlenwertes unterhalb des zugewiesenen Wertes bzw. Messwert „0“ bei zugegebenen Substanzen.
- Falsch positive Ergebnisse sind für Substanzen möglich, die über „< zugewiesener Wert“ ausgewertet wurden. Mit FP werden alle Messwerte gekennzeichnet, die mit ihren Unsicherheiten das Kriterium „< zugewiesener Wert“ nicht einschließen (tangieren).
- Mit einem • - Symbol werden alle weiteren Ergebnisse illustriert, für die keine Wiederfindung berechnet werden kann

Prüfmethoden

Den Teilnehmenden stand die Wahl der Analysenmethode frei. Die Parameter sollten mit den im jeweiligen Teilnehmerlabor eingesetzten Routineverfahren bestimmt werden. Eine Übersicht der angewendeten Methoden befindet sich am Ende des Berichts.

„< Werte“ bzw. „> Werte“ sind in den Graphiken nicht berücksichtigt.

Tulln, 3. Mai 2024

Probe M106A

Parameter Kupfer

*Sollwert ± U (k=2) 4,79 µg/l ± 0,13 µg/l
 IFA-Kontrolle ± U (k=2) 4,79 µg/l ± 0,38 µg/l
 IFA-Stabilität ± U (k=2) 4,69 µg/l ± 0,38 µg/l

*Sollwert = "zugewiesener Wert"
Sollwert ± Unsicherheit aus Einwaage
Kontrollmessung IFA vor Versand
Messung IFA 3 Wochen nach Versand

Labor-Kennung	Messwert	±	Einheit	Wiederfindung	z-Score
A	5,16	0,4128	µg/l	108%	0,90
B	4,22	0,42	µg/l	88%	-1,38
C	4,45	0,13	µg/l	93%	-0,83
D			µg/l		
E			µg/l		
F	4,10	0,08	µg/l	86%	-1,68
G			µg/l		
H			µg/l		
I	4,75	0,74	µg/l	99%	-0,10
J	<5		µg/l	*	
K	4,76		µg/l	99%	-0,07
L	<10		µg/l	*	
M	4,8	0,5	µg/l	100%	0,02
N	3,7	0,4	µg/l	77%	-2,65
O	4,47	0,447	µg/l	93%	-0,78
P	6,0		µg/l	125%	2,94
Q	4,17	0,2	µg/l	87%	-1,51
R	4,6	0,8	µg/l	96%	-0,46
S	4,44	0,67	µg/l	93%	-0,85
T			µg/l		
U	4,675	0,935	µg/l	98%	-0,28
V	5,0	0,50	µg/l	104%	0,51
W	3,54	0,3	µg/l	74%	-3,03
X	7,108	0,749	µg/l	148%	5,63
Y	<10		µg/l	*	
Z			µg/l		
AA	<3,0		µg/l	FN	
AB	3,775	0,107	µg/l	79%	-2,46
AC	<10,0		µg/l	*	

Wiederfindung des zugewiesenen Wertes in Prozent

z-Score des Labors

Ein Stern markiert einen Ausreißer nach dem Hampel-Test

Ergebnisunsicherheit laut Teilnehmer

	alle Ergebnisse	ohne Ausreißer	Einheit
MW ± VB(99%)	4,65 ± 0,57	4,51 ± 0,42	µg/l
WF ± VB(99%)	97,1 ± 12,0	94,1 ± 8,8	%
Standardabw.	0,84	0,59	µg/l
rel. Standardabw.	18,1	13,2	%
n für Berechnung	18	17	

Standardabweichung zwischen den Labors

Mittelwert der Messwerte und Wiederfindung des zugewiesenen Wertes mit zugehörigen Vertrauensbereichen (p=99%)

Anzahl der Messungen zur Berechnung der statistischen Kenngrößen

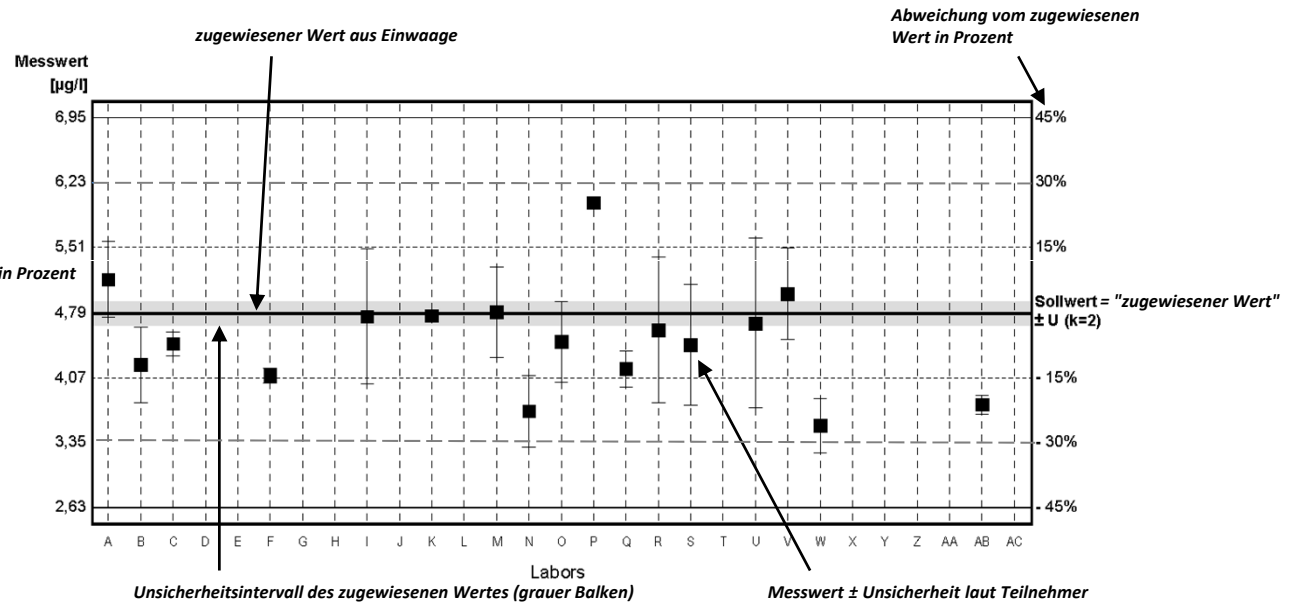
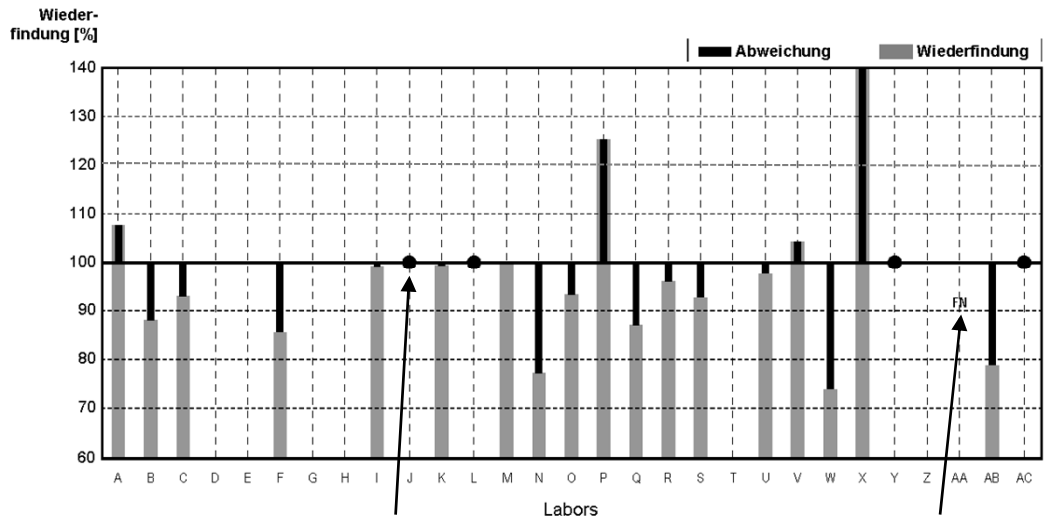


Diagramm 1: Messwerte mit zugehörigen Unsicherheitsintervallen



Ergebnis abgegeben, Berechnung der Wiederfindung oder Zuordnung FN, FP nicht möglich

Falsch negativ „< Ergebnis“ kleiner als der theoretische Sollwert

Diagramm 2: Wiederfindung und Abweichung vom zugewiesenen Wert

LEGENDE

Information

This report summarises the results of the round M171 (trace metals) within the IFA-Proficiency Testing Scheme for Water Analysis. The proficiency testing items M171A and M171B were distributed to 28 participants on Monday, 18 March 2024. Each participant received two proficiency testing items of 250 mL filled into LDPE bottles.

Closing date for reporting results to the IFA-Tulln was Friday, 19 April 2024. All participants submitted results. To make the participants anonymous, each laboratory obtained a letter code by random.

Proficiency testing items

The proficiency testing items consisted of artificial ground water spiked with pure standards. For the preparation, ultrapure water was spiked with concentrated solutions of salts in order to simulate the ionic composition of natural Austrian ground water. The following ultrapure salts were used: CaCO_3 , $\text{Mg}(\text{NO}_3)_2$, NaCl , KCl , besides ultrapure H_2SO_4 , HCl and a Sr standard. By this, the matrix of the proficiency testing items consisted of about 46 mg/L Ca, 19.5 mg/L Mg, 9 mg/L Na, 1.2 mg/L K, 19.4 mg/L SO_4^{2-} , 15.5 mg/L Cl^- and 427 (284) mg/L Sr in M171A (M171B). Ultrapure HNO_3 (0.5 % v/v) was added to stabilise the proficiency testing item at a pH below 2, which meets the standard sampling procedure in the Austrian monitoring program.

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

Homogeneity, accuracy and stability tests at the IFA-Tulln

Some proficiency testing items of the round M171A and M171B 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").

Stability tests will be carried out together with the accuracy tests of the following round (M172).

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

Results

Data evaluation was based on assigned concentrations that were calculated from the weights of the standards used to produce the proficiency testing items. Their uncertainty intervals correspond to the expanded uncertainty (coverage factor $k = 2$) as described in the EURACHEM/CITAC Guide "Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)".

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 %).

The recoveries of the assigned concentrations, calculated from outlier-corrected data mean values ranged between 89.6 % (Hg in M171B) and 106.1 % (As in M171B).

The between laboratory CVs covered the ranged between 1.6 % (U in M171A) and 13.2 % (Cu in M171B).

All confidence intervals of the outlier-corrected laboratory mean values except that for Pb (94.6 % \pm 3.3 %), Cu (92.8 % \pm 2.4 %) and Hg (90.3 % \pm 5.3 %) in M171A resp. As (106.1 % \pm 2.4 %) and Hg (89.6 % \pm 5.9 %) in M171B encompass the corresponding assigned values with their uncertainties.

z-scores

The most common approach to calculate a z-score is given by

$$z = \frac{x_i - X}{\sigma_{pt}}$$

z	z-score
x_i	result of laboratory
X	assigned value or mean value („consensus value“)
σ_{pt}	standard deviation for proficiency assessment

Thus, the z-score is the ratio of the estimated bias (difference between result and assigned value) and a standard deviation.

The z-score criteria were determined from relative standard deviations from all interlaboratory comparisons that have been organised by the IFA-Tulln from 2013 to 2023. They represent average performance data of all former participating laboratories.

This approach was chosen, because standard deviations of the outlier-corrected measurements substantially vary between individual proficiency test rounds. Averaging standard deviations from proficiency testing rounds of several years can provide standard deviations for proficiency assessment on a broad data basis. It is therefore more suitable than a standard deviation taken directly from the interlaboratory comparison (EN ISO/IEC 17043:2010, B.3.1.3). Another advantage of previously determined standard deviations is that the participants can foresee which z-scores can be expected by their routine analysis methods before participation.

Calculation example:

A laboratory found 73.7 µg/L for the parameter Aluminium (recovery of 101.94 %). The assigned value for Aluminium was 72.3 µg/L (100 %). The relative standard deviation for proficiency assessment is given in the table below (as well as in the annual program www.ifatest.eu) by 7.8 %, which is 5.6 µg/L Al, when based on the assigned value.

$$z = \frac{x_i - X}{\sigma_{pt}} = \frac{73.7 \mu\text{g/L} - 72.3 \mu\text{g/L}}{5.6 \mu\text{g/L}} \approx 0.25 \quad \text{or} \quad \frac{101.94 \% - 100 \%}{7.8 \%} \approx 0.25$$

z	z-score	
x_i	73.7 µg/L	equivalent to 101.94 % (result of the laboratory)
X	72.3 µg/L	equivalent to 100 % (assigned value)
σ_{pt}	5.6 µg/L	equivalent to 7.8 % (standard deviation for proficiency assessment see table below)

In the case of recalculation, deviations in the last digits may occur due to the fact that rounded values are given in the report for clarity.

The following table lists the standard deviations for proficiency assessment and their limits of applicability.

Parameter	standard deviation for proficiency assessment based on the assigned value	Lower limit
Aluminium	7.8 %	7.5 µg/L
Arsenic	7.1 %	0.5 µg/L
Cadmium	5.2 %	0.1 µg/L
Chromium	6.2 %	0.5 µg/L
Copper	7.5 %	1.0 µg/L
Iron	6.6 %	10 µg/L
Lead	6.6 %	0.3 µg/L
Manganese	5.2 %	2.0 µg/L
Mercury	11 %	0.2 µg/L
Nickel	6.9 %	0.75 µg/L
Selenium	8.8 %	0.3 µg/L
Uranium	5.6 %	0.35 µg/L
Zinc	6.9 %	3 µg/L

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

z-Score	Classification
≤2	satisfactory
2< z <3	questionable
≥3	unsatisfactory

The z-scores are listed in the parameter-oriented evaluation in the tables next to the recoveries. Additionally, each laboratory receives a sheet on which the obtained z-scores are summarized and graphically presented. The standard deviations for proficiency assessment are given in concentration units there.

An overview table of all z-scores can be found after the result tables in the parameter-oriented part.

Illustration of results

An explanation to the illustration of the results is given on the following page.

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.

In the **parameter oriented part** the reported results and corresponding uncertainties are illustrated together with recoveries of the assigned 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 assigned values. The uncertainty intervals correspond to the expanded uncertainty (coverage factor $k = 2$) as described in the EURACHEM / CITAC Guide "Quantifying Uncertainty in Analytical Measurement" 3rd Edition (2012) ". The uncertainty interval of the reference concentration is illustrated in the graphs as a grey band around the 100 % recovery line.

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 assigned value, or the measured value was given as "0" when the substance was added.
- "FP": False positive results can only be obtained for compounds that were evaluated on the basis of a "< assigned value". A result is termed FP if it does not include (strike) the "< assigned value" with its measurement uncertainty.
- "•": All other results for which no recoveries can be calculated are illustrated by this symbol

Overview of measurement methods

The participants were free to choose the analytical method. The test methods should be consistent with the methods applied in routine. An overview of the methods used can be found at the end of the report.

"< values" or "> values" are not included in the graphics.

Tulln, 3 May 2024

Sample M106A

Parameter Copper

*Target value ± U (k=2) 4,79 µg/l ± 0,13 µg/l
 IFA result ± U (k=2) 4,79 µg/l ± 0,38 µg/l
 Stability test ± U (k=2) 4,69 µg/l ± 0,38 µg/l

*Target value = "assigned value"

Obtained from sample preparation, U=uncertainty
 Determined at IFA prior to shipment of samples
 Determined at IFA 3 weeks after sample dispatch

Lab Code	Result	±	Unit	Recovery	z-Score
A	5.16	0.4128	µg/l	108%	0.90
B	4.22	0.42	µg/l	88%	-1.38
C	4.45	0.13	µg/l	93%	-0.83
D			µg/l		
E			µg/l		
F	4.10	0.08	µg/l	86%	-1.68
G			µg/l		
H			µg/l		
I	4.75	0.74	µg/l	99%	-0.10
J	<5		µg/l	.	.
K	4.76		µg/l	99%	-0.07
L	<10		µg/l	.	.
M	4.8	0.5	µg/l	100%	0.02
N	3.7	0.4	µg/l	77%	-2.65
O	4.47	0.447	µg/l	93%	-0.78
P	6.0		µg/l	125%	2.94
Q	4.17	0.2	µg/l	87%	-1.51
R	4.6	0.8	µg/l	96%	-0.46
S	4.44	0.67	µg/l	93%	-0.85
T			µg/l		
U	4.675	0.935	µg/l	98%	-0.28
V	5.0	0.50	µg/l	104%	0.51
W	3.54	0.3	µg/l	74%	-3.03
X	7.108 *	0.749	µg/l	148%	5.63
Y	<10		µg/l	.	.
Z			µg/l		
AA	<3.0		µg/l	FN	
AB	3.775	0.107	µg/l	79%	-2.46
AC	<10.0		µg/l	.	.

Recovery of assigned value in percent

z-Score of the laboratory

An asterik 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%)	4,65 ± 0,57	4,51 ± 0,42	µg/l
Recov. ± CI(99%)	97,1 ± 12,0	94,1 ± 8,8	%
SD between labs	0,84	0,59	µg/l
RSD between labs	18,1	13,2	%
n for calculation	18	17	

Between laboratory standard deviation

Laboratory mean and recovery of assigned value with corresponding confidence intervals (p=99%)

Number of results used for calculation of statistic parameters

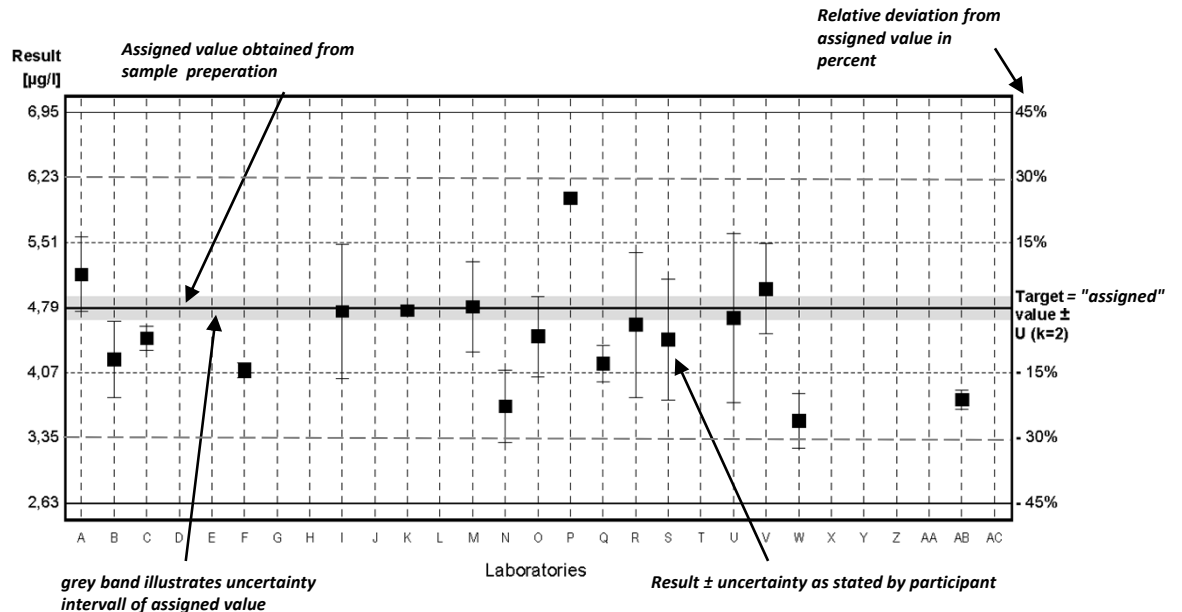
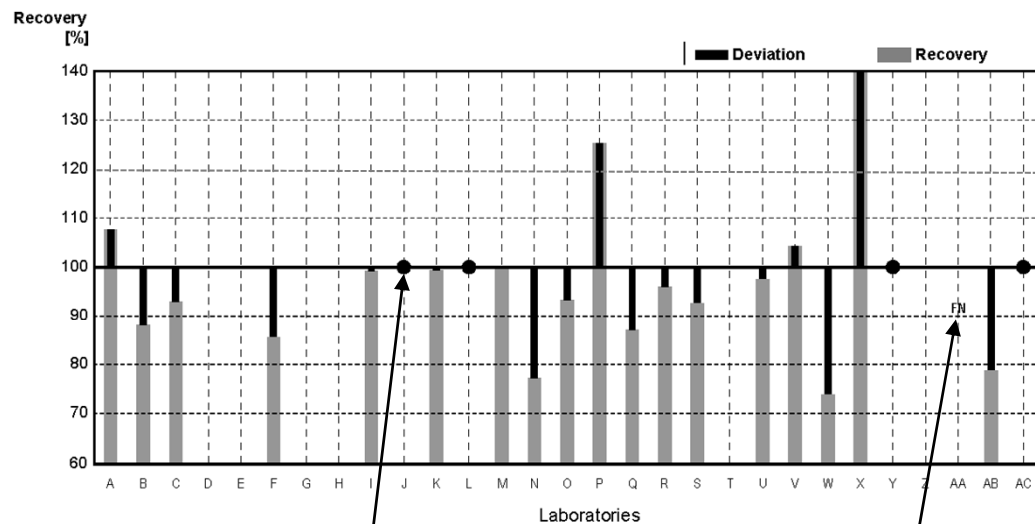


Diagram 1: Measurement results and their uncertainties



Result neither possible to calculate recovery nor false positive or false negative

False negative: reported „<-result“ is lower than target value

Diagram 2: Recoveries and deviations from assigned values

EXPLANATION

**Rohdatenblätter und
Parameterorientierte Auswertung
Tables and Parameter Oriented Part**

Eignungsprüfungsrunde / Proficiency testing round
M171

Metalle / Metals

Versand / Dispatch: 18.03.2024

Results M171A

	Aluminium	Arsenic	Lead	Cadmium	Chromium	Iron	Copper
assigned value	10.47	4.41	3.22	2.73	4.08	65.9	8.04
IFA result	10.2	4.75	3.19	2.76	4.14	66	8.2
A	10.4	4.61	3.03	2.68	3.96	62.8	7.33
B		4.99				70.1	7.3
C	10.4	4.62	3.14	2.71	3.99	64.5	7.58
D	10.1	4.51	2.89	2.66	3.85	67	6.9
E	12.0	4.72	3.01	2.62	4.07	71.6	7.58
F	12.0	4.20	3.20	2.74	4.10	66.0	7.50
G	9.84	4.33	3.06	2.68	3.95	61.6	7.67
H	10.6	4.51	2.81	2.69	4.16	65.9	<100
I	10.1	4.47	2.82	2.79	3.88	62.0	7.14
J	11.0					76.0	13.0
K							
L	9.30	4.78	3.00	2.79	3.87	63.8	7.6
M	<15	4.45	3.02	2.83	<5	67.0	8.88
N			2.954	3.057		61.16	7.535
O	<10						
P	11.3	4.81	3.21	2.75	3.90	67.9	7.92
Q	10.1	4.60	2.85	2.80	3.94	63.1	7.04
R	<10.0	4.74	3.18	2.61	3.98	60.8	7.75
S	12.6	4.69	3.25	2.65	4.18	68.2	7.77
T	10.2	4.28	3.12	2.70	4.07	65.3	7.50
U	10.9	4.52	3.11	2.79	4.03	65.2	7.41
V	8.93	4.67	2.89	2.72	4.13	66.8	7.57
W						67	
X	1.17	4.53	2.73	2.69	3.74		7.35
Y	<20	4.45	2.86	2.68	3.78	68.0	8.72
Z	6.26	4.06	3.36	2.56	3.61	59.1	6.91
AA	10.7	4.85	3.40	2.75	4.21	68.3	7.93
AB	<20	4.33	3.20	2.72	<5		<20

All data in µg/L

Measurement Uncertainties M171A

	Aluminium ±	Arsenic ±	Lead ±	Cadmium ±	Chromium ±	Iron ±	Copper ±
assigned value	0.15	0.03	0.02	0.02	0.03	0.3	0.06
IFA result	0.5	0.50	0.09	0.16	0.14	5	0.4
A	1.1	0.18	0.08	0.03	0.38	0.6	0.45
B		0.05				0.53	0.07
C	2.1	0.69	0.38	0.33	0.60	10	0.91
D	1.3	1.20	0.78	0.31	0.44	13	1.2
E	3.0	1.18	0.75	0.66	1.02	17.9	1.90
F	1.20	0.504	0.256	0.219	0.492	17.2	0.60
G	0.984	0.606	0.398	0.188	0.435	6.78	1.38
H	1.1	0.45	0.28	0.27	0.42	6.6	
I	1.52	0.89	0.56	0.42	0.58	9.30	1.07
J	4					4	5
K							
L	0.93	0.72	0.30	0.80	0.39	6.4	0.76
M		0.7	0.5	0.2		6.7	0.9
N			0.40	0.32		4.7	0.85
O							
P	4.0	1.0	1.0	0.52	1.0	12.9	1.7
Q	2.5	1.15	0.71	0.70	0.91	15.8	1.76
R		0.0751	0.0405	0.0462	0.132	0.356	0.106
S	0.416	0.072	0.091	0.056	0.112	2.07	0.104
T	0.7	0.30	0.22	0.19	0.28	4.6	0.53
U	1.8	0.77	0.37	0.33	0.76	11.7	0.82
V	1.6	0.75	0.43	0.33	0.58	9.4	1.3
W						6	
X	0.02	0.08	0.47	0.13	0.82		1.32
Y	3	0.7	0.45	0.4	0.6	10	2.6
Z	0.638	0.099	0.261	0.045	0.070	1.04	0.123
AA	1.60	0.73	0.51	0.41	0.63	10.2	1.19
AB		0.50	0.13	0.22			

All data in µg/L

Results M171A

	Manganese	Nickel	Mercury	Selenium	Uranium	Zinc
assigned value	17.44	3.15	1.79	1.20	3.83	42.2
IFA result	17.5	3.26	1.88	1.19	3.70	46.4
A	16.8	2.94	1.53	1.32	3.76	40.8
B		3.03	1.82	1.35	3.75	43.0
C	17.4	3.13	1.67	1.20	3.73	40.3
D	16.8	2.81	1.43	1.24	3.87	40.9
E	17.8	3.04	1.29	1.24	3.72	41.5
F	17.0	3.00	1.768	1.20	3.76	38.0
G	17.1	3.03		1.21	3.74	39.7
H	17.0	3.17	1.57	0.96		43.8
I	16.3	2.91		1.23	3.80	42.3
J	19.0					43.0
K			1.73			
L	16.8	3.00	1.40	1.21	3.80	43.6
M	18.2	3.11		<5		43.3
N						42.22
O						
P	17.5	3.39	1.72	1.29		43.2
Q	17.0	2.85	1.66	1.29	3.29	40.4
R	16.6	3.14	1.68	1.05	3.62	41.8
S	17.4	3.05	1.71	1.26	3.72	41.6
T	17.1	3.02			3.80	41.2
U	17.7	2.95	1.64	1.22	3.76	41.4
V	17.4	3.04	1.56	<5	3.40	42.7
W	<50					
X	17.2	2.88	1.50	1.41		37.2
Y	19.4	3.31	1.80		3.45	45.6
Z	15.7	2.79	1.54	0.94	3.71	36.5
AA	17.2	3.13	2.31	1.34	4.20	41.7
AB	16.9	3.25	1.71	1.25	3.67	42.5

All data in µg/L

Measurement Uncertainties M171A

	Manganese ±	Nickel ±	Mercury ±	Selenium ±	Uranium ±	Zinc ±
assigned value	0.12	0.03	0.02	0.02	0.03	1.6
IFA result	1.2	0.16	0.35	0.15	0.42	5.1
A	0.4	0.09	0.04	0.20	0.34	0.7
B		0.09	0.05	0.05	0.05	1.26
C	2.1	0.34	0.37	0.18	0.56	6.0
D	2.2	0.23	0.27	0.17		7.5
E	4.5	0.76	0.32	0.31	0.93	10.4
F	1.70	0.30	0.265	0.18	0.188	3.80
G	1.54	0.212		0.109	0.224	2.38
H	1.7	0.32	0.16	0.19		4.4
I	2.44	0.44		0.31	0.3	8.46
J	2					10
K			0.17			
L	1.68	0.30	0.14	0.18	0.38	4.4
M	2.0	0.4				6.0
N						4.3
O						
P	3.6	1.1	0.29	0.5		7.3
Q	4.3	0.71	0.50	0.32	0.82	10.1
R	0.515	0.0599	0.0153	0.0914	0.0849	0.207
S	0.173	0.047	0.035	0.030	0.076	0.808
T	1.2	0.21			0.27	2.9
U	2.7	0.68	0.29	0.41	0.75	6.6
V	1.9	0.49	0.34		0.41	6.8
W						
X	0.24	0.29	0.03	0.09		2.34
Y	4	0.65	0.45		0.7	6.8
Z	0.31	0.050	0.092	0.059	0.186	1.63
AA	2.58	0.47	0.35	0.20	0.63	6.25
AB	1.4	0.45	0.09	0.20	0.69	4.5

All data in µg/L

Results M171B

	Aluminium	Arsenic	Lead	Cadmium	Chromium	Iron	Copper
assigned value	33.7	1.271	4.84	1.863	2.227	45.4	1.62
IFA result	33.1	1.47	4.66	1.92	2.24	44.7	1.64
A	34.9	1.38	4.52	1.82	2.29	43.2	1.95
B		1.43				48.2	1.12
C	35.1	1.36	4.76	1.91	2.24	44.4	1.60
D	31.4	1.34	4.26	1.90	2.10	43.7	1.40
E	41.2	1.44	4.46	1.86	2.37	52.1	1.59
F	35.0	1.30	4.80	1.94	2.10	44.0	1.50
G	32.1	1.25	4.42	1.81	2.20	41.6	1.24
H	32.0	1.36	4.26	1.84	<4	44.0	<100
I	33.2	1.30	4.23	1.89	2.13	42.8	1.41
J	35.0					50.0	10.0
K							
L	34.4	1.33	4.61	1.86	2.10	43.1	1.46
M	39.0	<2	5.42	1.96	<5	46.5	7.24
N			4.963	1.993		39.20	1.589
O	34.2						
P	35.7	1.41	4.81	1.89	1.98	47.0	1.66
Q	33.1	1.32	4.27	1.90	2.13	43.4	1.30
R	31.5	1.34	4.75	1.75	2.06	43.9	1.52
S	35.0	1.37	4.79	1.76	2.21	46.5	1.55
T	33.9	1.27	4.57	1.84	2.29	46.0	1.56
U	34.2	1.36	4.67	1.94	2.21	45.3	1.51
V	24.8	1.36	4.37	1.89	2.22	45.4	1.48
W						<50	
X	15.1	1.32	4.46	1.87	1.90		1.15
Y	29.0	1.30	4.36	1.87	2.04	47.0	1.74
Z	29.0	1.14	4.91	1.75	1.99	40.9	1.34
AA	35.0	1.40	5.13	1.91	2.34	46.9	1.69
AB	33.3	1.37	4.83	1.89	<5		<20

All data in µg/L

Measurement Uncertainties M171B

	Aluminium ±	Arsenic ±	Lead ±	Cadmium ±	Chromium ±	Iron ±	Copper ±
assigned value	0.3	0.012	0.04	0.015	0.019	0.2	0.03
IFA result	1.8	0.16	0.13	0.11	0.09	3.4	0.12
A	0.84	0.21	0.07	0.05	0.20	0.36	0.71
B		0.05				0.44	0.05
C	7.0	0.20	0.57	0.23	0.34	6.7	0.19
D	4.1	0.36	1.15	0.22	0.24	8.7	0.25
E	10.3	0.36	1.12	0.47	0.59	13.0	0.40
F	3.50	0.156	0.384	0.155	0.252	11.4	0.120
G	3.21	0.175	0.575	0.127	0.242	4.58	0.223
H	3.2	0.14	0.43	0.18		4.4	
I	4.99	0.26	0.85	0.28	0.32	6.41	0.21
J	4					4	5
K							
L	3.4	0.20	0.46	0.19	0.21	4.3	0.15
M	6.0		0.9	0.1		5.0	0.7
N			0.67	0.21		3.1	0.18
O	5.8						
P	8.0	0.5	1.3	0.39	0.7	9.9	0.7
Q	8.3	0.33	1.07	0.48	0.53	10.9	0.33
R	0.898	0.0856	0.0387	0.0471	0.143	0.356	0.116
S	1.56	0.025	0.109	0.059	0.072	1.22	0.032
T	2.4	0.09	0.32	0.13	0.16	3.2	0.11
U	4.1	0.23	0.56	0.23	0.42	8.2	0.17
V	4.5	0.22	0.65	0.23	0.31	6.4	0.25
W							
X	1.83	0.09	0.96	0.06	0.50		0.08
Y	4	0.2	0.7	0.3	0.3	7	0.6
Z	1.94	0.059	0.247	0.037	0.051	0.65	0.011
AA	5.25	0.21	0.77	0.29	0.35	7.03	0.25
AB	2.9	0.16	0.19	0.16			

All data in µg/L

Results M171B

	Manganese	Nickel	Mercury	Selenium	Uranium	Zinc
assigned value	28.30	2.44	0.945	4.79	0.515	21.1
IFA result	28.2	2.51	0.91	4.92	0.463	23.3
A	27.0	2.18	0.78	4.92	0.63	20.2
B		2.36	0.99	5.16	0.380	21.6
C	28.5	2.53	0.895	4.67	0.513	21.0
D	27.3	2.22	0.78	4.95	0.51	19.9
E	30.9	2.51	0.725	5.29	0.495	21.8
F	27.0	2.30	0.930	4.80	0.52	19.0
G	27.4	2.33		4.48	0.470	19.6
H	27.4	2.44	0.91	4.45		<40
I	26.4	2.27		4.80	<0.001	21.2
J	31.0					22.0
K			0.91			
L	27.1	2.28	0.74	4.71	<1.0	21.5
M	29.6	2.40		<5		23.4
N						19.50
O						
P	28.7	2.82	0.88	5.25		21.7
Q	27.7	2.19	0.89	5.19	0.444	20.0
R	27.2	2.50	0.861	4.72	<1.00	21.1
S	27.7	2.29	0.881	4.97	0.496	19.8
T	28.5	2.39			0.513	21.3
U	28.7	2.28	0.855	4.87	0.505	20.5
V	27.6	2.33	0.81	5.5	0.430	20.3
W	<50					
X	27.9	2.19	1.27	4.36		16.9
Y	31.9	2.58	0.692		0.467	22.5
Z	25.7	2.25	0.79	4.25	0.51	18.4
AA	28.2	2.48	1.20	5.51	<1	20.6
AB	27.7	2.65	0.927	5.07	<1	21.5

All data in µg/L

Measurement Uncertainties M171B

	Manganese ±	Nickel ±	Mercury ±	Selenium ±	Uranium ±	Zinc ±
assigned value	0.15	0.03	0.015	0.04	0.006	1.6
IFA result	1.9	0.14	0.17	0.56	0.052	2.8
A	0.05	0.21	0.02	0.16	0.25	0.28
B		0.05	0.05	0.05	0.05	0.47
C	3.4	0.28	0.20	0.70	0.077	3.2
D	3.6	0.18	0.15	0.69		3.6
E	7.7	0.63	0.181	1.32	0.124	5.5
F	2.70	0.23	0.140	0.72	0.026	1.90
G	2.47	0.163		0.403	0.0282	1.18
H	2.7	0.24	0.09	0.45		
I	3.97	0.34		1.20		4.24
J	2					10
K			0.09			
L	2.7	0.23	0.074	0.71		2.2
M	3.0	0.3				3.0
N						2.0
O						
P	5.6	1.0	0.18	1.1		4.2
Q	6.9	0.55	0.27	1.29	0.111	5.0
R	0.486	0.0617	0.0148	0.0777		0.195
S	0.458	0.031	0.015	0.095	0.020	0.635
T	2.0	0.17			0.036	1.5
U	3.2	0.52	0.154	1.66	0.207	3.3
V	3.0	0.37	0.18	2.2	0.052	3.3
W						
X	0.54	0.32	0.09	0.73		1.98
Y	6.5	0.5	0.17		0.1	3.4
Z	0.38	0.190	0.071	0.220	0.023	0.51
AA	4.23	0.37	0.18	0.83		3.09
AB	2.4	0.37	0.050	0.83		2.3

All data in µg/L

z-Scores M171A

	Aluminium	Arsenic	Lead	Cadmium	Chromium	Iron	Copper
A	-0.09	0.64	-0.89	-0.35	-0.47	-0.71	-1.18
B		1.85				0.97	-1.23
C	-0.09	0.67	-0.38	-0.14	-0.36	-0.32	-0.76
D	-0.45	0.32	-1.55	-0.49	-0.91	0.25	-1.89
E	1.87	0.99	-0.99	-0.77	-0.04	1.31	-0.76
F	1.87	-0.67	-0.09	0.07	0.08	0.02	-0.90
G	-0.77	-0.26	-0.75	-0.35	-0.51	-0.99	-0.61
H	0.16	0.32	-1.93	-0.28	0.32	0.00	
I	-0.45	0.19	-1.88	0.42	-0.79	-0.90	-1.49
J	0.65					2.32	8.23
K							
L	-1.43	1.18	-1.04	0.42	-0.83	-0.48	-0.73
M		0.13	-0.94	0.70		0.25	1.39
N			-1.25	2.30		-1.09	-0.84
O							
P	1.02	1.28	-0.05	0.14	-0.71	0.46	-0.20
Q	-0.45	0.61	-1.74	0.49	-0.55	-0.64	-1.66
R		1.05	-0.19	-0.85	-0.40	-1.17	-0.48
S	2.61	0.89	0.14	-0.56	0.40	0.53	-0.45
T	-0.33	-0.42	-0.47	-0.21	-0.04	-0.14	-0.90
U	0.53	0.35	-0.52	0.42	-0.20	-0.16	-1.04
V	-1.89	0.83	-1.55	-0.07	0.20	0.21	-0.78
W						0.25	
X	-11.39	0.38	-2.31	-0.28	-1.34		-1.14
Y		0.13	-1.69	-0.35	-1.19	0.48	1.13
Z	-5.16	-1.12	0.66	-1.20	-1.86	-1.56	-1.87
AA	0.28	1.41	0.85	0.14	0.51	0.55	-0.18
AB		-0.26	-0.09	-0.07			

z-Scores M171A

	Manganese	Nickel	Mercury	Selenium	Uranium	Zinc
A	-0.71	-0.97	-1.32	1.14	-0.33	-0.48
B		-0.55	0.15	1.42	-0.37	0.27
C	-0.04	-0.09	-0.61	0.00	-0.47	-0.65
D	-0.71	-1.56	-1.83	0.38	0.19	-0.45
E	0.40	-0.51	-2.54	0.38	-0.51	-0.24
F	-0.49	-0.69	-0.11	0.00	-0.33	-1.44
G	-0.37	-0.55		0.09	-0.42	-0.86
H	-0.49	0.09	-1.12	-2.27		0.55
I	-1.26	-1.10		0.28	-0.14	0.03
J	1.72					0.27
K			-0.30			
L	-0.71	-0.69	-1.98	0.09	-0.14	0.48
M	0.84	-0.18				0.38
N						0.01
O						
P	0.07	1.10	-0.36	0.85		0.34
Q	-0.49	-1.38	-0.66	0.85	-2.52	-0.62
R	-0.93	-0.05	-0.56	-1.42	-0.98	-0.14
S	-0.04	-0.46	-0.41	0.57	-0.51	-0.21
T	-0.37	-0.60			-0.14	-0.34
U	0.29	-0.92	-0.76	0.19	-0.33	-0.27
V	-0.04	-0.51	-1.17		-2.00	0.17
W						
X	-0.26	-1.24	-1.47	1.99		-1.72
Y	2.16	0.74	0.05		-1.77	1.17
Z	-1.92	-1.66	-1.27	-2.46	-0.56	-1.96
AA	-0.26	-0.09	2.64	1.33	1.73	-0.17
AB	-0.60	0.46	-0.41	0.47	-0.75	0.10

z-Scores M171B

	Aluminium	Arsenic	Lead	Cadmium	Chromium	Iron	Copper
A	0.46	1.21	-1.00	-0.44	0.46	-0.73	2.72
B		1.76				0.93	-4.12
C	0.53	0.99	-0.25	0.49	0.09	-0.33	-0.16
D	-0.87	0.76	-1.82	0.38	-0.92	-0.57	-1.81
E	2.85	1.87	-1.19	-0.03	1.04	2.24	-0.25
F	0.49	0.32	-0.13	0.79	-0.92	-0.47	-0.99
G	-0.61	-0.23	-1.31	-0.55	-0.20	-1.27	-3.13
H	-0.65	0.99	-1.82	-0.24		-0.47	
I	-0.19	0.32	-1.91	0.28	-0.70	-0.87	-1.73
J	0.49					1.54	68.97
K							
L	0.27	0.65	-0.72	-0.03	-0.92	-0.77	-1.32
M	2.02		1.82	1.00		0.37	46.26
N			0.39	1.34		-2.07	-0.26
O	0.19						
P	0.76	1.54	-0.09	0.28	-1.79	0.53	0.33
Q	-0.23	0.54	-1.78	0.38	-0.70	-0.67	-2.63
R	-0.84	0.76	-0.28	-1.17	-1.21	-0.50	-0.82
S	0.49	1.10	-0.16	-1.06	-0.12	0.37	-0.58
T	0.08	-0.01	-0.85	-0.24	0.46	0.20	-0.49
U	0.19	0.99	-0.53	0.79	-0.12	-0.03	-0.91
V	-3.39	0.99	-1.47	0.28	-0.05	0.00	-1.15
W							
X	-7.08	0.54	-1.19	0.07	-2.37		-3.87
Y	-1.79	0.32	-1.50	0.07	-1.35	0.53	0.99
Z	-1.79	-1.45	0.22	-1.17	-1.72	-1.50	-2.30
AA	0.49	1.43	0.91	0.49	0.82	0.50	0.58
AB	-0.15	1.10	-0.03	0.28			

z-Scores M171B

	Manganese	Nickel	Mercury	Selenium	Uranium	Zinc
A	-0.88	-1.54	-1.59	0.31	3.99	-0.62
B		-0.48	0.43	0.88	-4.68	0.34
C	0.14	0.53	-0.48	-0.28	-0.07	-0.07
D	-0.68	-1.31	-1.59	0.38	-0.17	-0.82
E	1.77	0.42	-2.12	1.19	-0.69	0.48
F	-0.88	-0.83	-0.14	0.02	0.17	-1.44
G	-0.61	-0.65		-0.74	-1.56	-1.03
H	-0.61	0.00	-0.34	-0.81		
I	-1.29	-1.01		0.02		0.07
J	1.83					0.62
K			-0.34			
L	-0.82	-0.95	-1.97	-0.19		0.27
M	0.88	-0.24				1.58
N						-1.10
O						
P	0.27	2.26	-0.63	1.09		0.41
Q	-0.41	-1.48	-0.53	0.95	-2.46	-0.76
R	-0.75	0.36	-0.81	-0.17		0.00
S	-0.41	-0.89	-0.62	0.43	-0.66	-0.89
T	0.14	-0.30			-0.07	0.14
U	0.27	-0.95	-0.87	0.19	-0.35	-0.41
V	-0.48	-0.65	-1.30	1.68	-2.95	-0.55
W						
X	-0.27	-1.48	3.13	-1.02		-2.88
Y	2.45	0.83	-2.43		-1.66	0.96
Z	-1.77	-1.13	-1.49	-1.28	-0.17	-1.85
AA	-0.07	0.24	2.45	1.71		-0.34
AB	-0.41	1.25	-0.17	0.66		0.27

Sample M171A

Parameter Aluminium

Assigned value $\pm U$ (k=2) 10,47 $\mu\text{g/l}$ \pm 0,15 $\mu\text{g/l}$

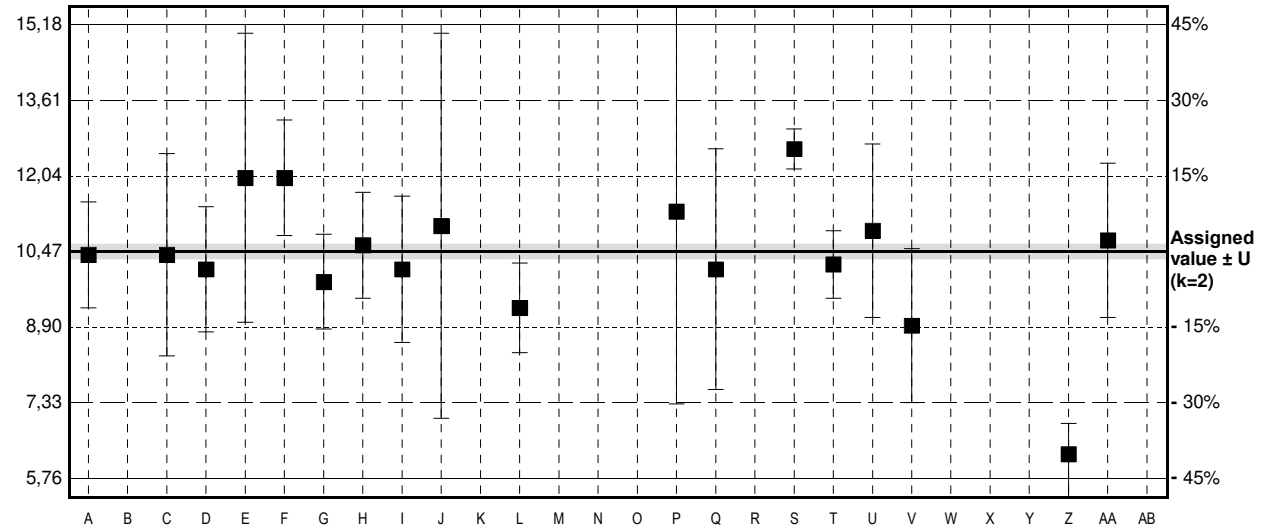
IFA result $\pm U$ (k=2) 10,2 $\mu\text{g/l}$ \pm 0,5 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

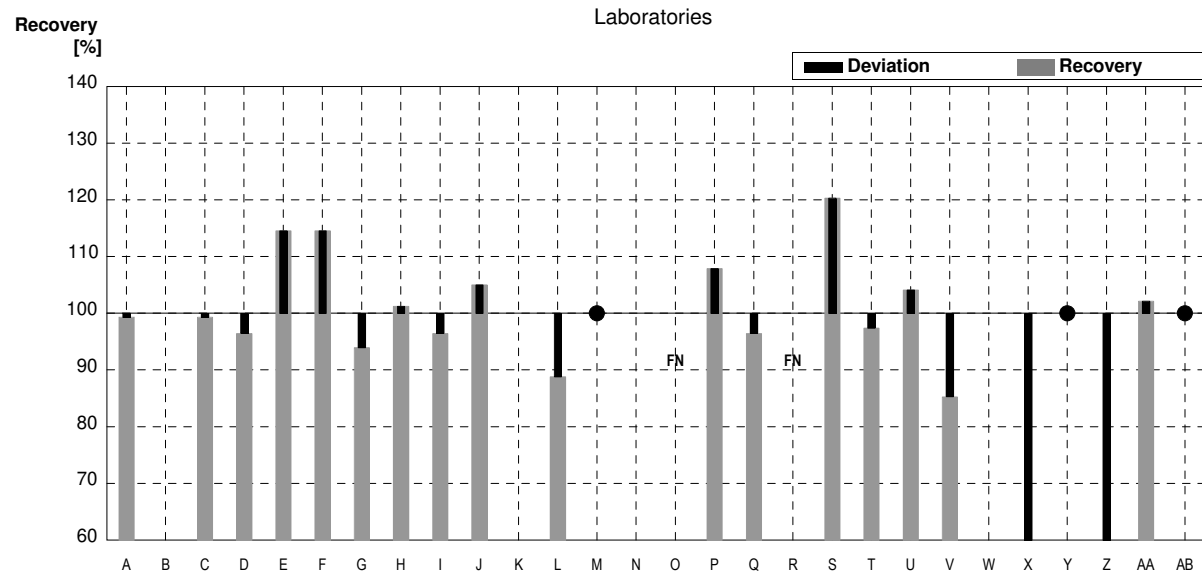
Lab Code	Result	\pm	Unit	Recovery	z-Score	
A	10,4	1,1	$\mu\text{g/l}$	99%	-0,09	
B			$\mu\text{g/l}$			
C	10,4	2,1	$\mu\text{g/l}$	99%	-0,09	
D	10,1	1,3	$\mu\text{g/l}$	96%	-0,45	
E	12,0	3,0	$\mu\text{g/l}$	115%	1,87	
F	12,0	1,20	$\mu\text{g/l}$	115%	1,87	
G	9,84	0,984	$\mu\text{g/l}$	94%	-0,77	
H	10,6	1,1	$\mu\text{g/l}$	101%	0,16	
I	10,1	1,52	$\mu\text{g/l}$	96%	-0,45	
J	11,0	4	$\mu\text{g/l}$	105%	0,65	
K			$\mu\text{g/l}$			
L	9,30	0,93	$\mu\text{g/l}$	89%	-1,43	
M	<15		$\mu\text{g/l}$	*		
N			$\mu\text{g/l}$			
O	<10		$\mu\text{g/l}$	FN		
P	11,3	4,0	$\mu\text{g/l}$	108%	1,02	
Q	10,1	2,5	$\mu\text{g/l}$	96%	-0,45	
R	<10,0		$\mu\text{g/l}$	FN		
S	12,6	0,416	$\mu\text{g/l}$	120%	2,61	
T	10,2	0,7	$\mu\text{g/l}$	97%	-0,33	
U	10,9	1,8	$\mu\text{g/l}$	104%	0,53	
V	8,93	1,6	$\mu\text{g/l}$	85%	-1,89	
W			$\mu\text{g/l}$			
X	1,17	*	0,02	$\mu\text{g/l}$	11%	-11,39
Y	<20		3	$\mu\text{g/l}$	*	
Z	6,26	*	0,638	$\mu\text{g/l}$	60%	-5,16
AA	10,7	1,60	$\mu\text{g/l}$	102%	0,28	
AB	<20		$\mu\text{g/l}$	*		

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	9,89 \pm 1,65	10,62 \pm 0,68	$\mu\text{g/l}$
Recov. \pm CI(99%)	94,5 \pm 15,8	101,4 \pm 6,5	%
SD between labs	2,50	0,96	$\mu\text{g/l}$
RSD between labs	25,3	9,0	%
n for calculation	19	17	

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



Recovery
[%]



Sample M171B

Parameter Aluminium

Assigned value $\pm U$ (k=2) 33,7 $\mu\text{g/l}$ \pm 0,3 $\mu\text{g/l}$

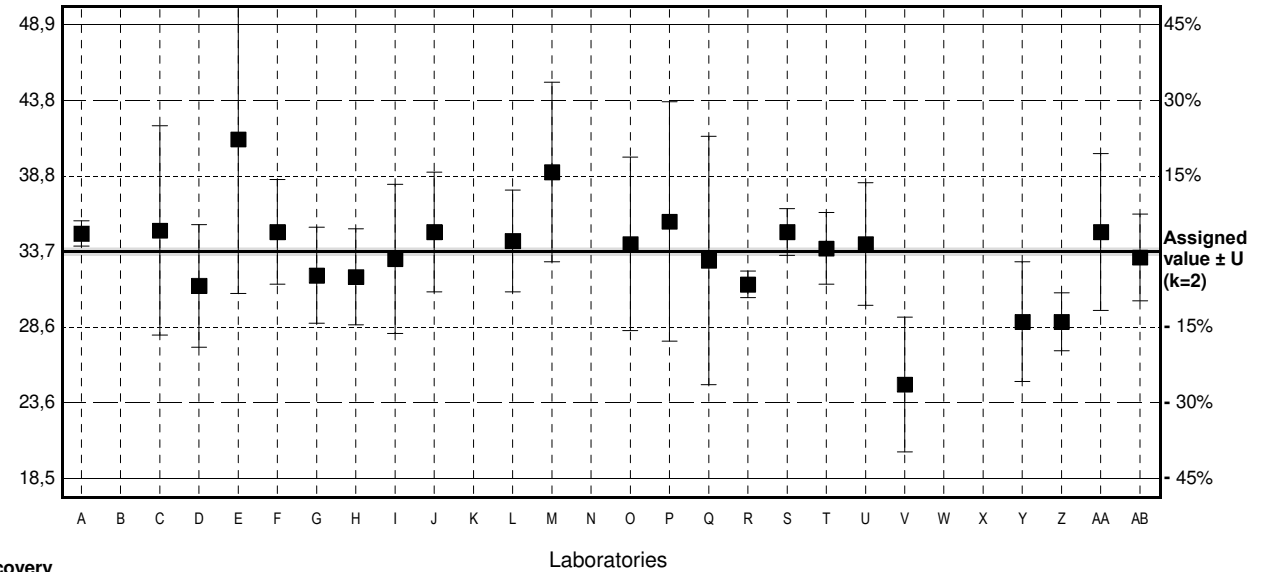
IFA result $\pm U$ (k=2) 33,1 $\mu\text{g/l}$ \pm 1,8 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

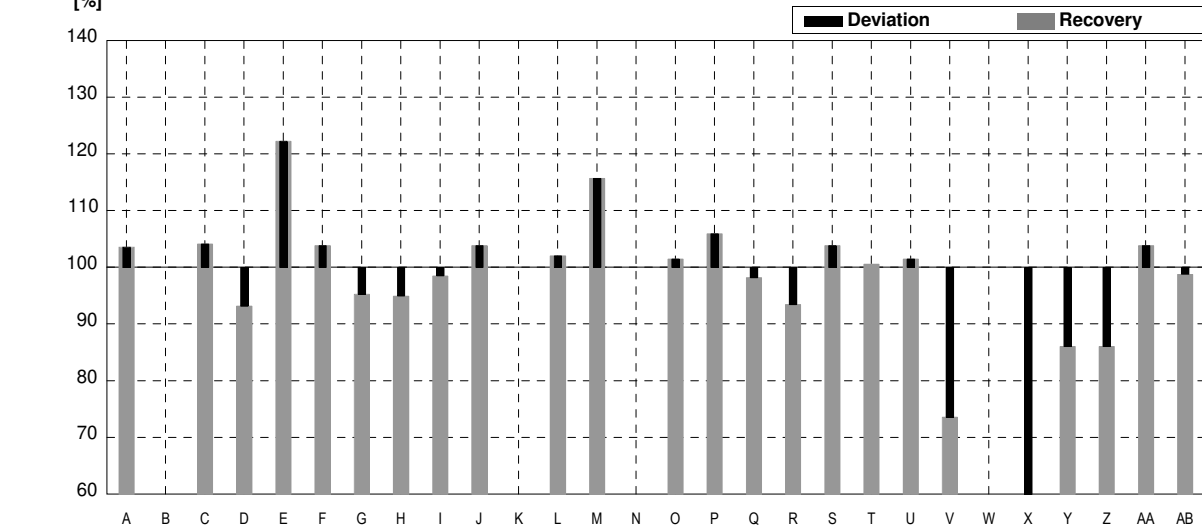
Lab Code	Result	\pm	Unit	Recovery	z-Score
A	34,9	0,84	$\mu\text{g/l}$	104%	0,46
B			$\mu\text{g/l}$		
C	35,1	7,0	$\mu\text{g/l}$	104%	0,53
D	31,4	4,1	$\mu\text{g/l}$	93%	-0,87
E	41,2 *	10,3	$\mu\text{g/l}$	122%	2,85
F	35,0	3,50	$\mu\text{g/l}$	104%	0,49
G	32,1	3,21	$\mu\text{g/l}$	95%	-0,61
H	32,0	3,2	$\mu\text{g/l}$	95%	-0,65
I	33,2	4,99	$\mu\text{g/l}$	99%	-0,19
J	35,0	4	$\mu\text{g/l}$	104%	0,49
K			$\mu\text{g/l}$		
L	34,4	3,4	$\mu\text{g/l}$	102%	0,27
M	39,0 *	6,0	$\mu\text{g/l}$	116%	2,02
N			$\mu\text{g/l}$		
O	34,2	5,8	$\mu\text{g/l}$	101%	0,19
P	35,7	8,0	$\mu\text{g/l}$	106%	0,76
Q	33,1	8,3	$\mu\text{g/l}$	98%	-0,23
R	31,5	0,898	$\mu\text{g/l}$	93%	-0,84
S	35,0	1,56	$\mu\text{g/l}$	104%	0,49
T	33,9	2,4	$\mu\text{g/l}$	101%	0,08
U	34,2	4,1	$\mu\text{g/l}$	101%	0,19
V	24,8 *	4,5	$\mu\text{g/l}$	74%	-3,39
W			$\mu\text{g/l}$		
X	15,1 *	1,83	$\mu\text{g/l}$	45%	-7,08
Y	29,0 *	4	$\mu\text{g/l}$	86%	-1,79
Z	29,0 *	1,94	$\mu\text{g/l}$	86%	-1,79
AA	35,0	5,25	$\mu\text{g/l}$	104%	0,49
AB	33,3	2,9	$\mu\text{g/l}$	99%	-0,15

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	32,8 \pm 2,8	33,8 \pm 0,9	$\mu\text{g/l}$
Recov. \pm CI(99%)	97,3 \pm 8,4	100,4 \pm 2,7	%
SD between labs	5,0	1,4	$\mu\text{g/l}$
RSD between labs	15,1	4,0	%
n for calculation	24	18	

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



Recovery
[%]



Sample M171A

Parameter Arsenic

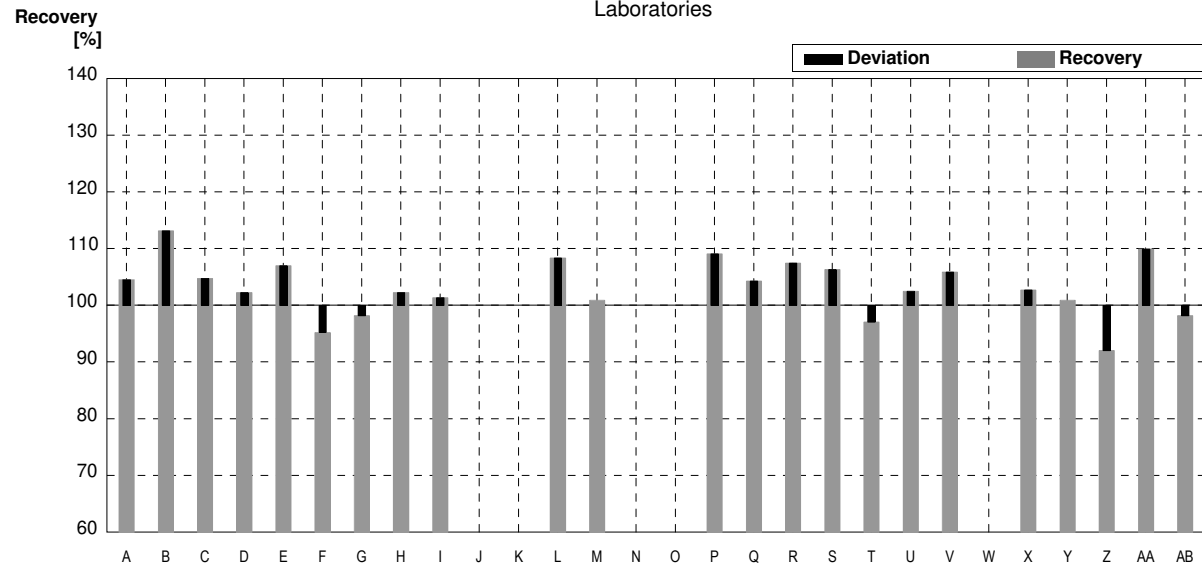
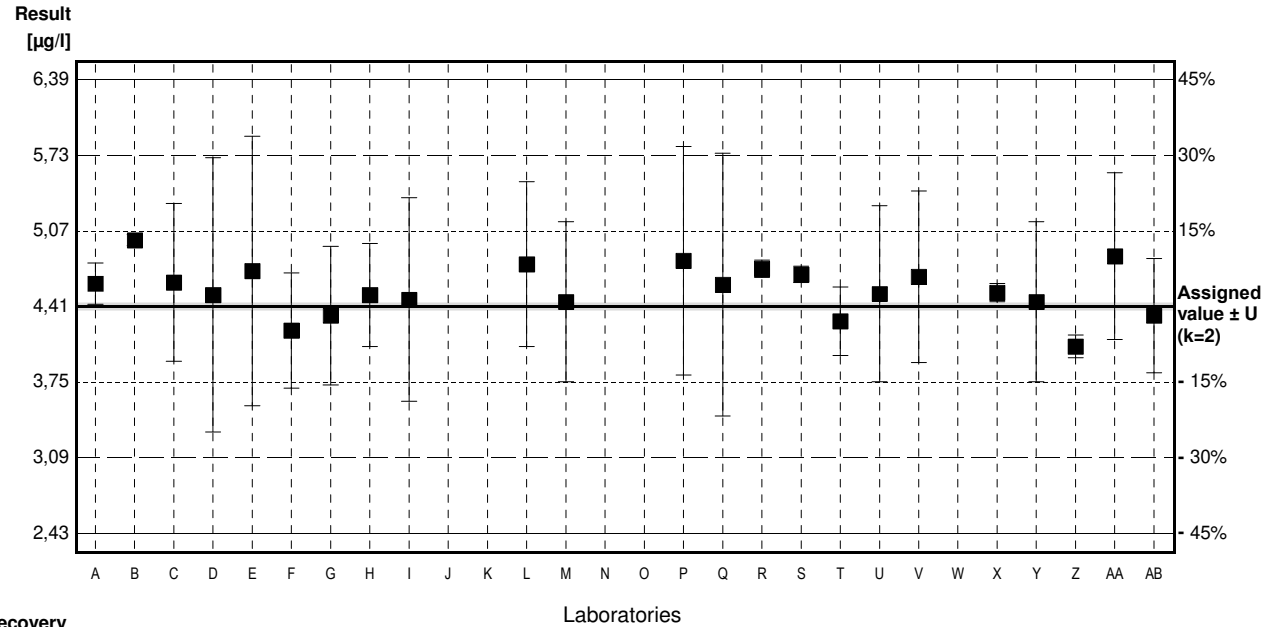
Assigned value $\pm U$ (k=2) 4,41 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$

IFA result $\pm U$ (k=2) 4,75 $\mu\text{g/l}$ \pm 0,50 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	4,61	0,18	$\mu\text{g/l}$	105%	0,64
B	4,99	0,05	$\mu\text{g/l}$	113%	1,85
C	4,62	0,69	$\mu\text{g/l}$	105%	0,67
D	4,51	1,20	$\mu\text{g/l}$	102%	0,32
E	4,72	1,18	$\mu\text{g/l}$	107%	0,99
F	4,20	0,504	$\mu\text{g/l}$	95%	-0,67
G	4,33	0,606	$\mu\text{g/l}$	98%	-0,26
H	4,51	0,45	$\mu\text{g/l}$	102%	0,32
I	4,47	0,89	$\mu\text{g/l}$	101%	0,19
J			$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L	4,78	0,72	$\mu\text{g/l}$	108%	1,18
M	4,45	0,7	$\mu\text{g/l}$	101%	0,13
N			$\mu\text{g/l}$		
O			$\mu\text{g/l}$		
P	4,81	1,0	$\mu\text{g/l}$	109%	1,28
Q	4,60	1,15	$\mu\text{g/l}$	104%	0,61
R	4,74	0,0751	$\mu\text{g/l}$	107%	1,05
S	4,69	0,072	$\mu\text{g/l}$	106%	0,89
T	4,28	0,30	$\mu\text{g/l}$	97%	-0,42
U	4,52	0,77	$\mu\text{g/l}$	102%	0,35
V	4,67	0,75	$\mu\text{g/l}$	106%	0,83
W			$\mu\text{g/l}$		
X	4,53	0,08	$\mu\text{g/l}$	103%	0,38
Y	4,45	0,7	$\mu\text{g/l}$	101%	0,13
Z	4,06	0,099	$\mu\text{g/l}$	92%	-1,12
AA	4,85	0,73	$\mu\text{g/l}$	110%	1,41
AB	4,33	0,50	$\mu\text{g/l}$	98%	-0,26

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	4,55 \pm 0,13	4,55 \pm 0,13	$\mu\text{g/l}$
Recov. \pm CI(99%)	103,2 \pm 3,0	103,2 \pm 3,0	%
SD between labs	0,22	0,22	$\mu\text{g/l}$
RSD between labs	4,9	4,9	%
n for calculation	23	23	



Sample M171B

Parameter Arsenic

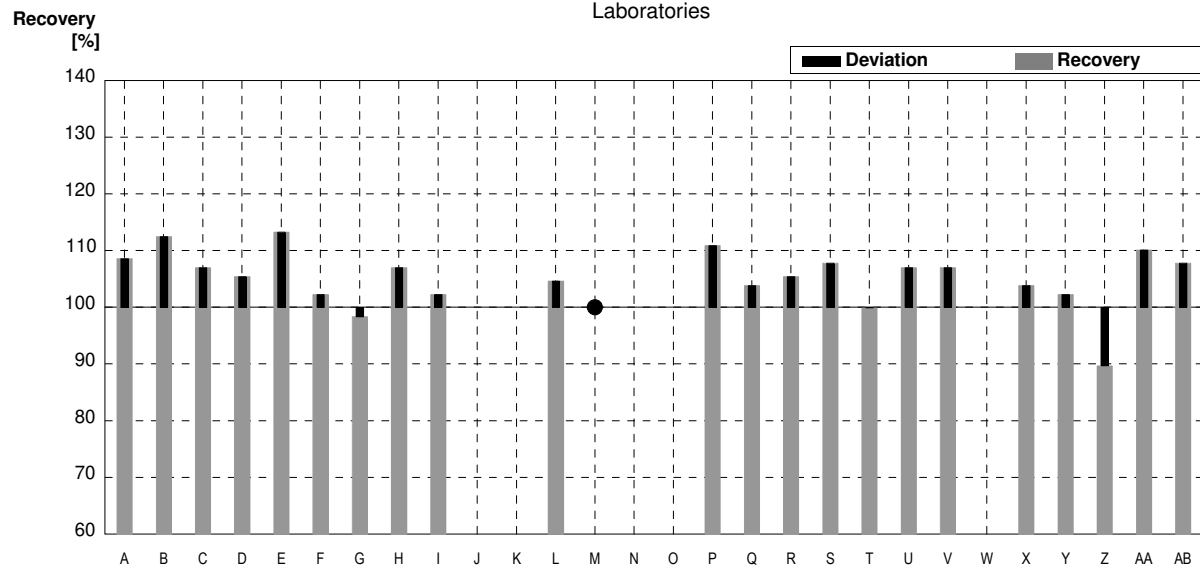
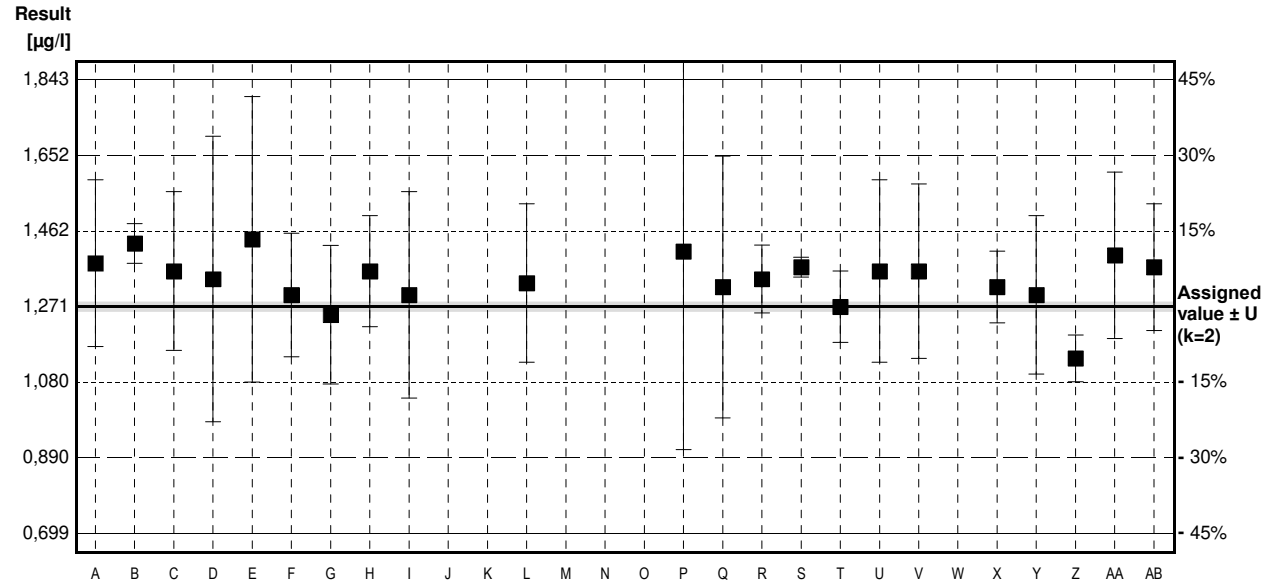
Assigned value ± U (k=2) 1,271 µg/l ± 0,012 µg/l

IFA result ± U (k=2) 1,47 µg/l ± 0,16 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,38	0,21	µg/l	109%	1,21
B	1,43	0,05	µg/l	113%	1,76
C	1,36	0,20	µg/l	107%	0,99
D	1,34	0,36	µg/l	105%	0,76
E	1,44	0,36	µg/l	113%	1,87
F	1,30	0,156	µg/l	102%	0,32
G	1,25	0,175	µg/l	98%	-0,23
H	1,36	0,14	µg/l	107%	0,99
I	1,30	0,26	µg/l	102%	0,32
J			µg/l		
K			µg/l		
L	1,33	0,20	µg/l	105%	0,65
M	<2		µg/l	*	
N			µg/l		
O			µg/l		
P	1,41	0,5	µg/l	111%	1,54
Q	1,32	0,33	µg/l	104%	0,54
R	1,34	0,0856	µg/l	105%	0,76
S	1,37	0,025	µg/l	108%	1,10
T	1,27	0,09	µg/l	100%	-0,01
U	1,36	0,23	µg/l	107%	0,99
V	1,36	0,22	µg/l	107%	0,99
W			µg/l		
X	1,32	0,09	µg/l	104%	0,54
Y	1,30	0,2	µg/l	102%	0,32
Z	1,14 *	0,059	µg/l	90%	-1,45
AA	1,40	0,21	µg/l	110%	1,43
AB	1,37	0,16	µg/l	108%	1,10

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,339 ± 0,040	1,348 ± 0,031	µg/l
Recov. ± CI(99%)	105,3 ± 3,1	106,1 ± 2,4	%
SD between labs	0,066	0,049	µg/l
RSD between labs	4,9	3,7	%
n for calculation	22	21	



Sample M171A

Parameter Lead

Assigned value $\pm U$ (k=2) 3,22 $\mu\text{g/l}$ \pm 0,02 $\mu\text{g/l}$

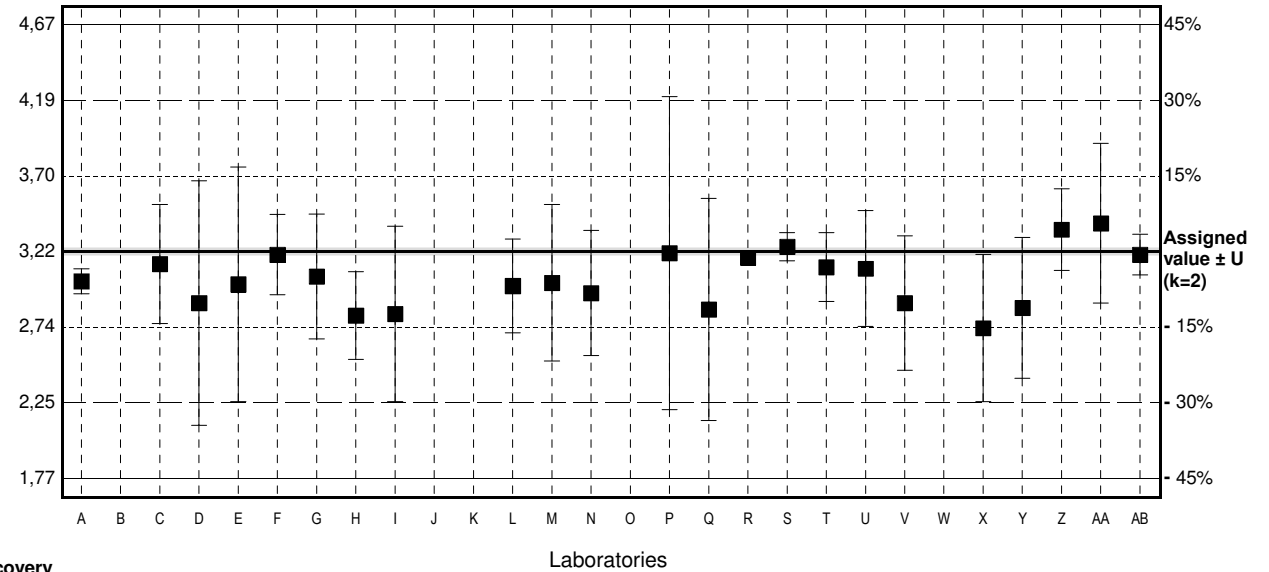
IFA result $\pm U$ (k=2) 3,19 $\mu\text{g/l}$ \pm 0,09 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

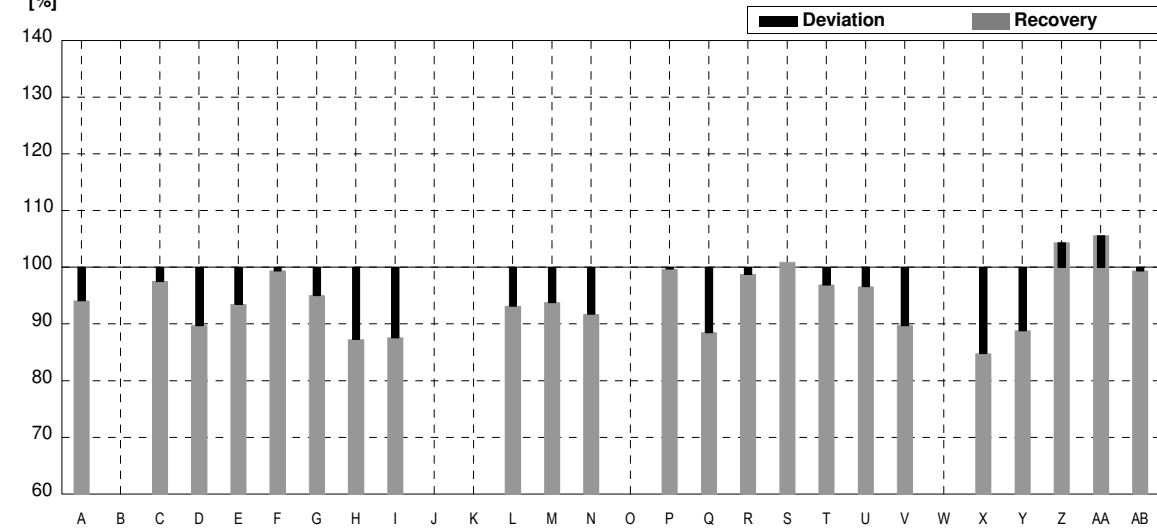
Lab Code	Result	\pm	Unit	Recovery	z-Score
A	3,03	0,08	$\mu\text{g/l}$	94%	-0,89
B			$\mu\text{g/l}$		
C	3,14	0,38	$\mu\text{g/l}$	98%	-0,38
D	2,89	0,78	$\mu\text{g/l}$	90%	-1,55
E	3,01	0,75	$\mu\text{g/l}$	93%	-0,99
F	3,20	0,256	$\mu\text{g/l}$	99%	-0,09
G	3,06	0,398	$\mu\text{g/l}$	95%	-0,75
H	2,81	0,28	$\mu\text{g/l}$	87%	-1,93
I	2,82	0,56	$\mu\text{g/l}$	88%	-1,88
J			$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L	3,00	0,30	$\mu\text{g/l}$	93%	-1,04
M	3,02	0,5	$\mu\text{g/l}$	94%	-0,94
N	2,954	0,40	$\mu\text{g/l}$	92%	-1,25
O			$\mu\text{g/l}$		
P	3,21	1,0	$\mu\text{g/l}$	100%	-0,05
Q	2,85	0,71	$\mu\text{g/l}$	89%	-1,74
R	3,18	0,0405	$\mu\text{g/l}$	99%	-0,19
S	3,25	0,091	$\mu\text{g/l}$	101%	0,14
T	3,12	0,22	$\mu\text{g/l}$	97%	-0,47
U	3,11	0,37	$\mu\text{g/l}$	97%	-0,52
V	2,89	0,43	$\mu\text{g/l}$	90%	-1,55
W			$\mu\text{g/l}$		
X	2,73	0,47	$\mu\text{g/l}$	85%	-2,31
Y	2,86	0,45	$\mu\text{g/l}$	89%	-1,69
Z	3,36	0,261	$\mu\text{g/l}$	104%	0,66
AA	3,40	0,51	$\mu\text{g/l}$	106%	0,85
AB	3,20	0,13	$\mu\text{g/l}$	99%	-0,09

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	3,05 \pm 0,11	3,05 \pm 0,11	$\mu\text{g/l}$
Recov. \pm CI(99%)	94,6 \pm 3,3	94,6 \pm 3,3	%
SD between labs	0,18	0,18	$\mu\text{g/l}$
RSD between labs	5,9	5,9	%
n for calculation	23	23	

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



Recovery
[%]



Sample M171B

Parameter Lead

Assigned value $\pm U$ (k=2) 4,84 $\mu\text{g/l}$ \pm 0,04 $\mu\text{g/l}$

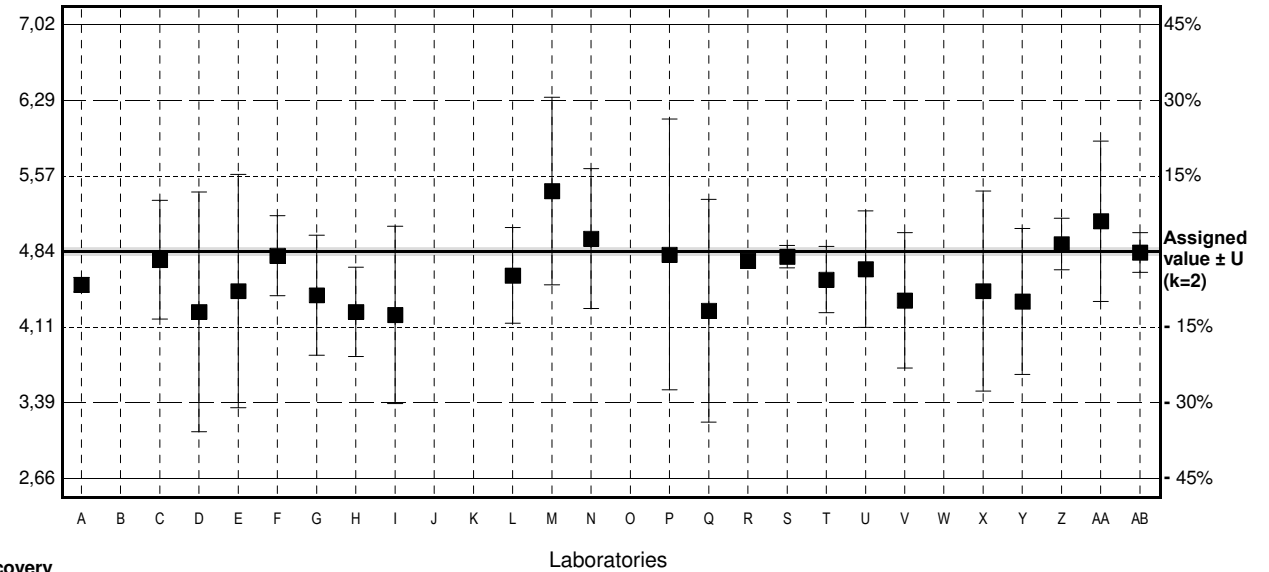
IFA result $\pm U$ (k=2) 4,66 $\mu\text{g/l}$ \pm 0,13 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

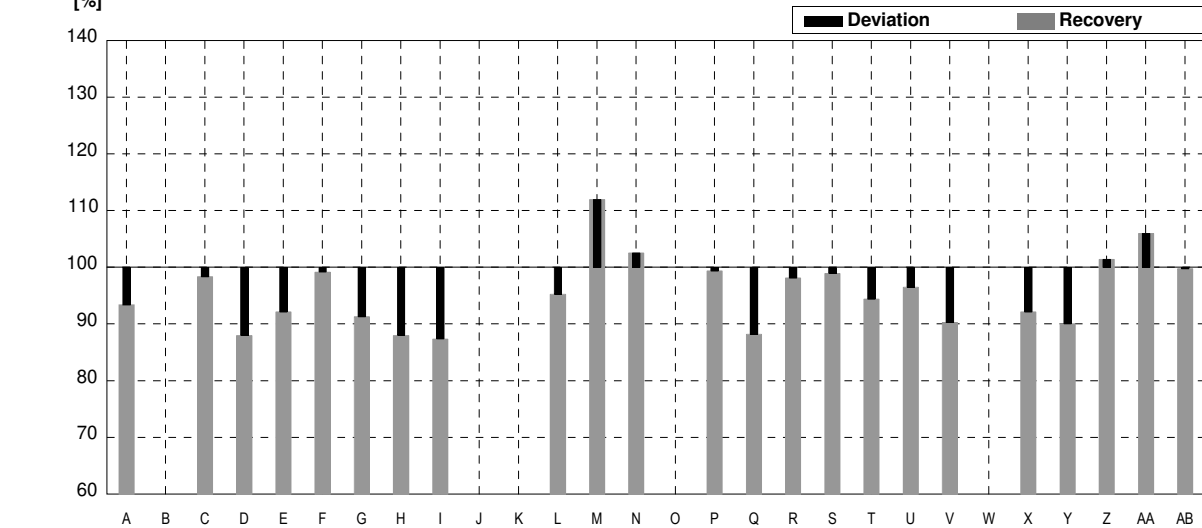
Lab Code	Result	\pm	Unit	Recovery	z-Score
A	4,52	0,07	$\mu\text{g/l}$	93%	-1,00
B			$\mu\text{g/l}$		
C	4,76	0,57	$\mu\text{g/l}$	98%	-0,25
D	4,26	1,15	$\mu\text{g/l}$	88%	-1,82
E	4,46	1,12	$\mu\text{g/l}$	92%	-1,19
F	4,80	0,384	$\mu\text{g/l}$	99%	-0,13
G	4,42	0,575	$\mu\text{g/l}$	91%	-1,31
H	4,26	0,43	$\mu\text{g/l}$	88%	-1,82
I	4,23	0,85	$\mu\text{g/l}$	87%	-1,91
J			$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L	4,61	0,46	$\mu\text{g/l}$	95%	-0,72
M	5,42	0,9	$\mu\text{g/l}$	112%	1,82
N	4,963	0,67	$\mu\text{g/l}$	103%	0,39
O			$\mu\text{g/l}$		
P	4,81	1,3	$\mu\text{g/l}$	99%	-0,09
Q	4,27	1,07	$\mu\text{g/l}$	88%	-1,78
R	4,75	0,0387	$\mu\text{g/l}$	98%	-0,28
S	4,79	0,109	$\mu\text{g/l}$	99%	-0,16
T	4,57	0,32	$\mu\text{g/l}$	94%	-0,85
U	4,67	0,56	$\mu\text{g/l}$	96%	-0,53
V	4,37	0,65	$\mu\text{g/l}$	90%	-1,47
W			$\mu\text{g/l}$		
X	4,46	0,96	$\mu\text{g/l}$	92%	-1,19
Y	4,36	0,7	$\mu\text{g/l}$	90%	-1,50
Z	4,91	0,247	$\mu\text{g/l}$	101%	0,22
AA	5,13	0,77	$\mu\text{g/l}$	106%	0,91
AB	4,83	0,19	$\mu\text{g/l}$	100%	-0,03

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	4,64 \pm 0,18	4,64 \pm 0,18	$\mu\text{g/l}$
Recov. \pm CI(99%)	95,8 \pm 3,7	95,8 \pm 3,7	%
SD between labs	0,30	0,30	$\mu\text{g/l}$
RSD between labs	6,6	6,6	%
n for calculation	23	23	

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



Recovery
[%]



Sample M171A

Parameter Cadmium

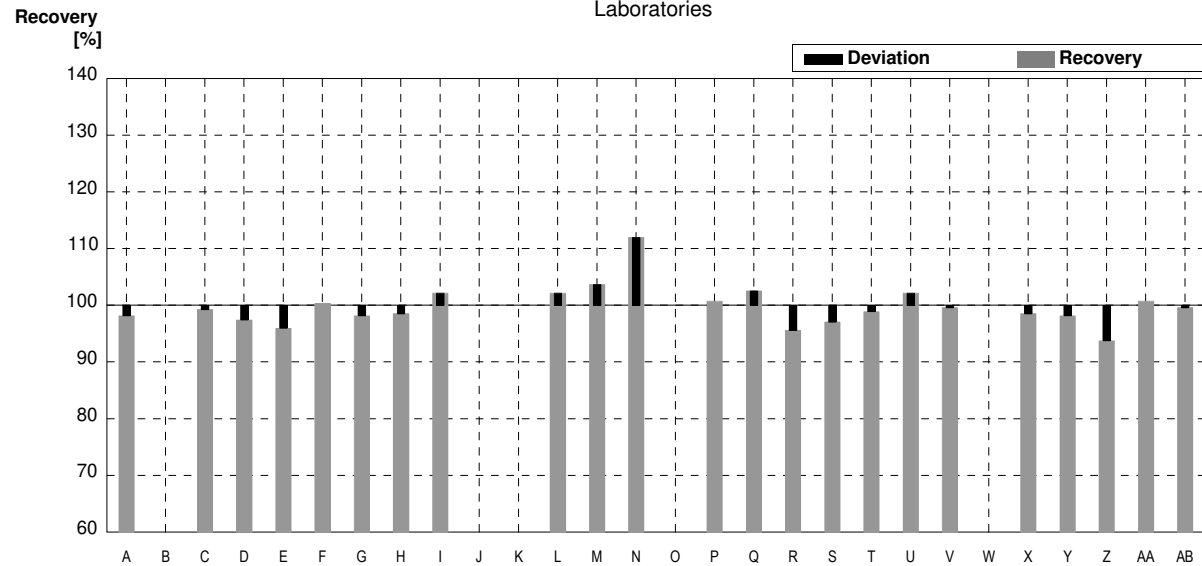
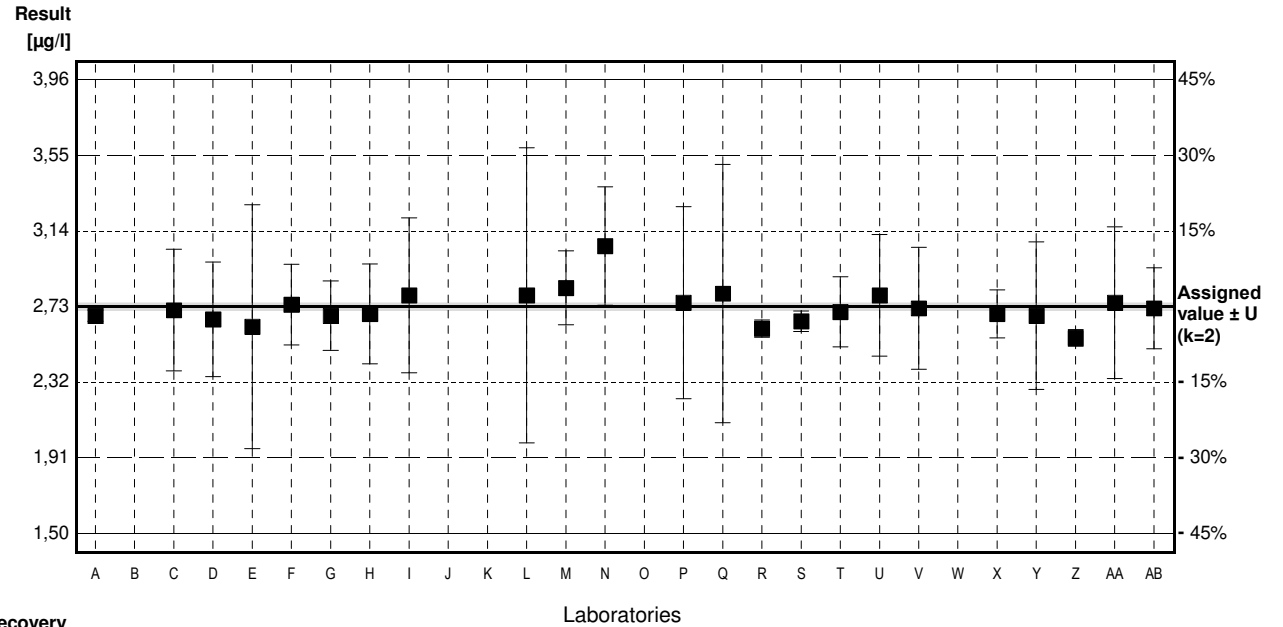
Assigned value $\pm U$ (k=2) 2,73 $\mu\text{g/l}$ \pm 0,02 $\mu\text{g/l}$

IFA result $\pm U$ (k=2) 2,76 $\mu\text{g/l}$ \pm 0,16 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	2,68	0,03	$\mu\text{g/l}$	98%	-0,35
B			$\mu\text{g/l}$		
C	2,71	0,33	$\mu\text{g/l}$	99%	-0,14
D	2,66	0,31	$\mu\text{g/l}$	97%	-0,49
E	2,62	0,66	$\mu\text{g/l}$	96%	-0,77
F	2,74	0,219	$\mu\text{g/l}$	100%	0,07
G	2,68	0,188	$\mu\text{g/l}$	98%	-0,35
H	2,69	0,27	$\mu\text{g/l}$	99%	-0,28
I	2,79	0,42	$\mu\text{g/l}$	102%	0,42
J			$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L	2,79	0,80	$\mu\text{g/l}$	102%	0,42
M	2,83	0,2	$\mu\text{g/l}$	104%	0,70
N	3,057 *	0,32	$\mu\text{g/l}$	112%	2,30
O			$\mu\text{g/l}$		
P	2,75	0,52	$\mu\text{g/l}$	101%	0,14
Q	2,80	0,70	$\mu\text{g/l}$	103%	0,49
R	2,61	0,0462	$\mu\text{g/l}$	96%	-0,85
S	2,65	0,056	$\mu\text{g/l}$	97%	-0,56
T	2,70	0,19	$\mu\text{g/l}$	99%	-0,21
U	2,79	0,33	$\mu\text{g/l}$	102%	0,42
V	2,72	0,33	$\mu\text{g/l}$	100%	-0,07
W			$\mu\text{g/l}$		
X	2,69	0,13	$\mu\text{g/l}$	99%	-0,28
Y	2,68	0,4	$\mu\text{g/l}$	98%	-0,35
Z	2,56	0,045	$\mu\text{g/l}$	94%	-1,20
AA	2,75	0,41	$\mu\text{g/l}$	101%	0,14
AB	2,72	0,22	$\mu\text{g/l}$	100%	-0,07

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	2,72 \pm 0,06	2,71 \pm 0,04	$\mu\text{g/l}$
Recov. \pm CI(99%)	99,8 \pm 2,1	99,3 \pm 1,5	%
SD between labs	0,10	0,07	$\mu\text{g/l}$
RSD between labs	3,6	2,5	%
n for calculation	23	22	



Sample M171B

Parameter Cadmium

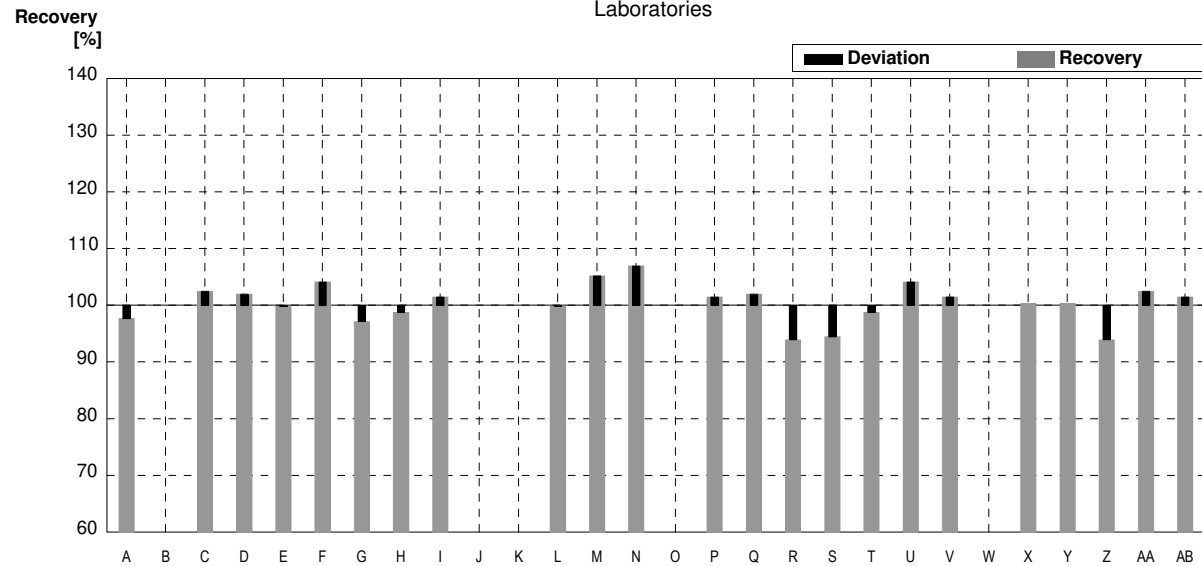
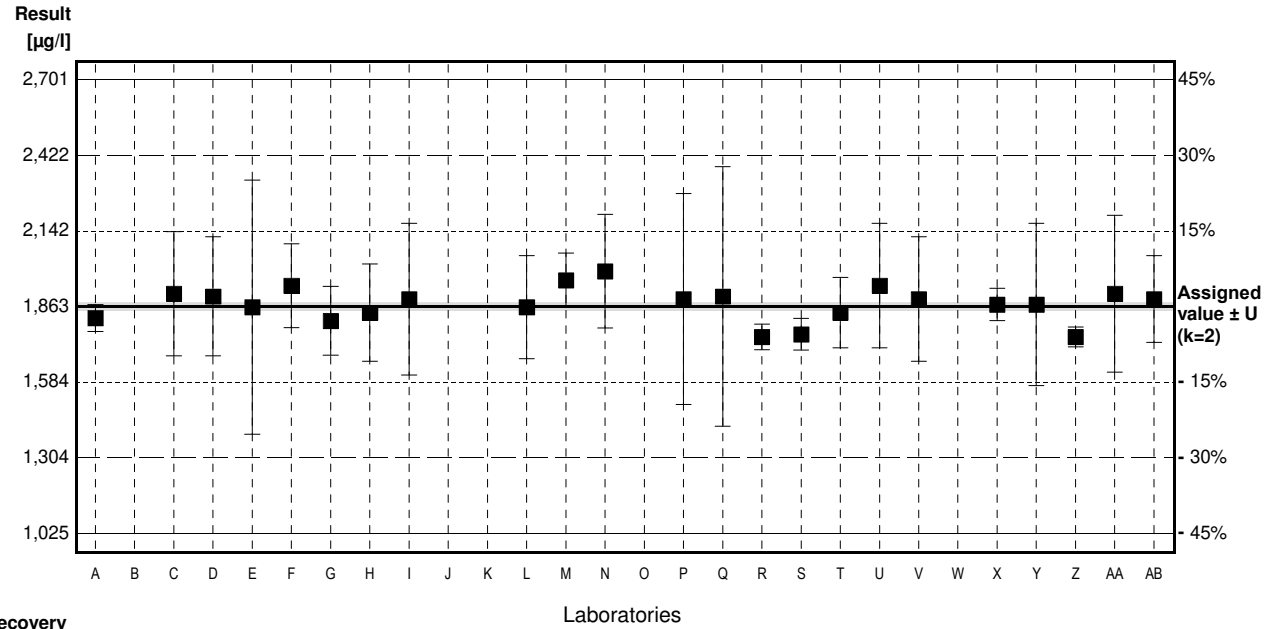
Assigned value ± U (k=2) 1,863 µg/l ± 0,015 µg/l

IFA result ± U (k=2) 1,92 µg/l ± 0,11 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,82	0,05	µg/l	98%	-0,44
B			µg/l		
C	1,91	0,23	µg/l	103%	0,49
D	1,90	0,22	µg/l	102%	0,38
E	1,86	0,47	µg/l	100%	-0,03
F	1,94	0,155	µg/l	104%	0,79
G	1,81	0,127	µg/l	97%	-0,55
H	1,84	0,18	µg/l	99%	-0,24
I	1,89	0,28	µg/l	101%	0,28
J			µg/l		
K			µg/l		
L	1,86	0,19	µg/l	100%	-0,03
M	1,96	0,1	µg/l	105%	1,00
N	1,993	0,21	µg/l	107%	1,34
O			µg/l		
P	1,89	0,39	µg/l	101%	0,28
Q	1,90	0,48	µg/l	102%	0,38
R	1,75 *	0,0471	µg/l	94%	-1,17
S	1,76	0,059	µg/l	94%	-1,06
T	1,84	0,13	µg/l	99%	-0,24
U	1,94	0,23	µg/l	104%	0,79
V	1,89	0,23	µg/l	101%	0,28
W			µg/l		
X	1,87	0,06	µg/l	100%	0,07
Y	1,87	0,3	µg/l	100%	0,07
Z	1,75 *	0,037	µg/l	94%	-1,17
AA	1,91	0,29	µg/l	103%	0,49
AB	1,89	0,16	µg/l	101%	0,28

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,871 ± 0,037	1,883 ± 0,033	µg/l
Recov. ± CI(99%)	100,5 ± 2,0	101,1 ± 1,8	%
SD between labs	0,063	0,053	µg/l
RSD between labs	3,4	2,8	%
n for calculation	23	21	



Sample M171A

Parameter Chromium

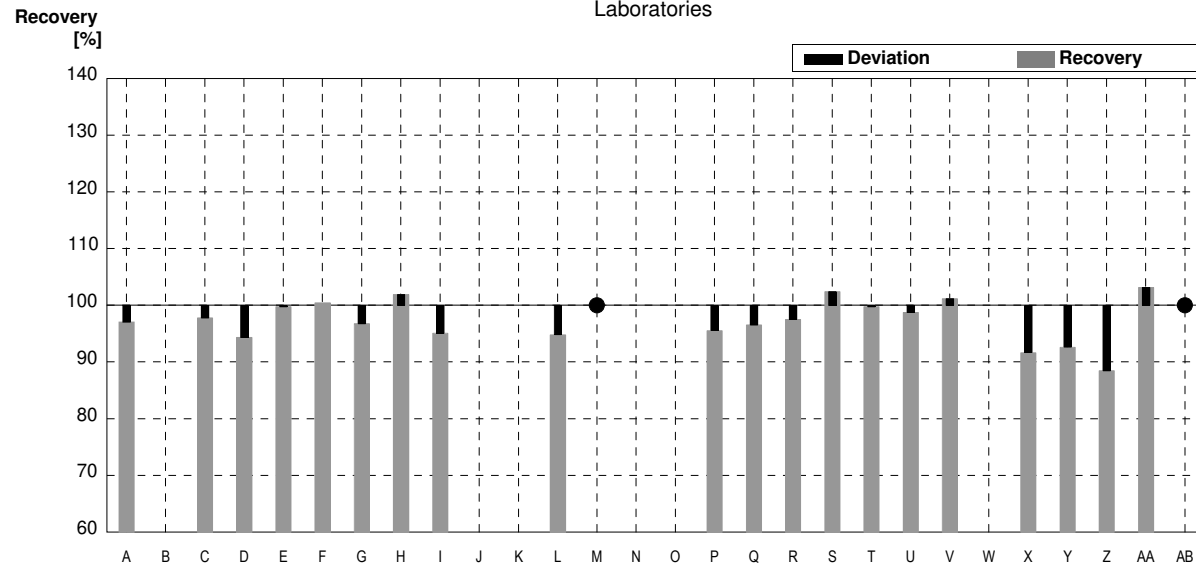
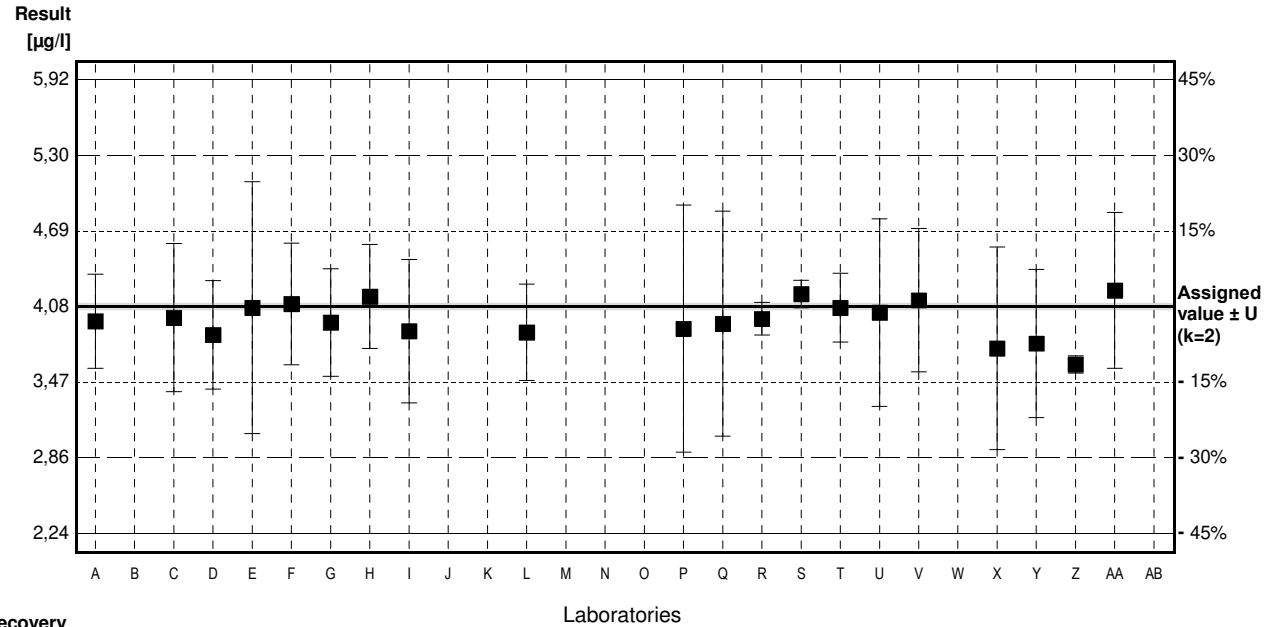
Assigned value ± U (k=2) 4,08 µg/l ± 0,03 µg/l

IFA result ± U (k=2) 4,14 µg/l ± 0,14 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	3,96	0,38	µg/l	97%	-0,47
B			µg/l		
C	3,99	0,60	µg/l	98%	-0,36
D	3,85	0,44	µg/l	94%	-0,91
E	4,07	1,02	µg/l	100%	-0,04
F	4,10	0,492	µg/l	100%	0,08
G	3,95	0,435	µg/l	97%	-0,51
H	4,16	0,42	µg/l	102%	0,32
I	3,88	0,58	µg/l	95%	-0,79
J			µg/l		
K			µg/l		
L	3,87	0,39	µg/l	95%	-0,83
M	<5		µg/l	*	
N			µg/l		
O			µg/l		
P	3,90	1,0	µg/l	96%	-0,71
Q	3,94	0,91	µg/l	97%	-0,55
R	3,98	0,132	µg/l	98%	-0,40
S	4,18	0,112	µg/l	102%	0,40
T	4,07	0,28	µg/l	100%	-0,04
U	4,03	0,76	µg/l	99%	-0,20
V	4,13	0,58	µg/l	101%	0,20
W			µg/l		
X	3,74	0,82	µg/l	92%	-1,34
Y	3,78	0,6	µg/l	93%	-1,19
Z	3,61	0,070	µg/l	88%	-1,86
AA	4,21	0,63	µg/l	103%	0,51
AB	<5		µg/l	*	

	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,97 ± 0,10	3,97 ± 0,10	µg/l
Recov. ± CI(99%)	97,3 ± 2,4	97,3 ± 2,4	%
SD between labs	0,16	0,16	µg/l
RSD between labs	3,9	3,9	%
n for calculation	20	20	



Sample M171B

Parameter Chromium

Assigned value ± U (k=2) 2,227 µg/l ± 0,019 µg/l

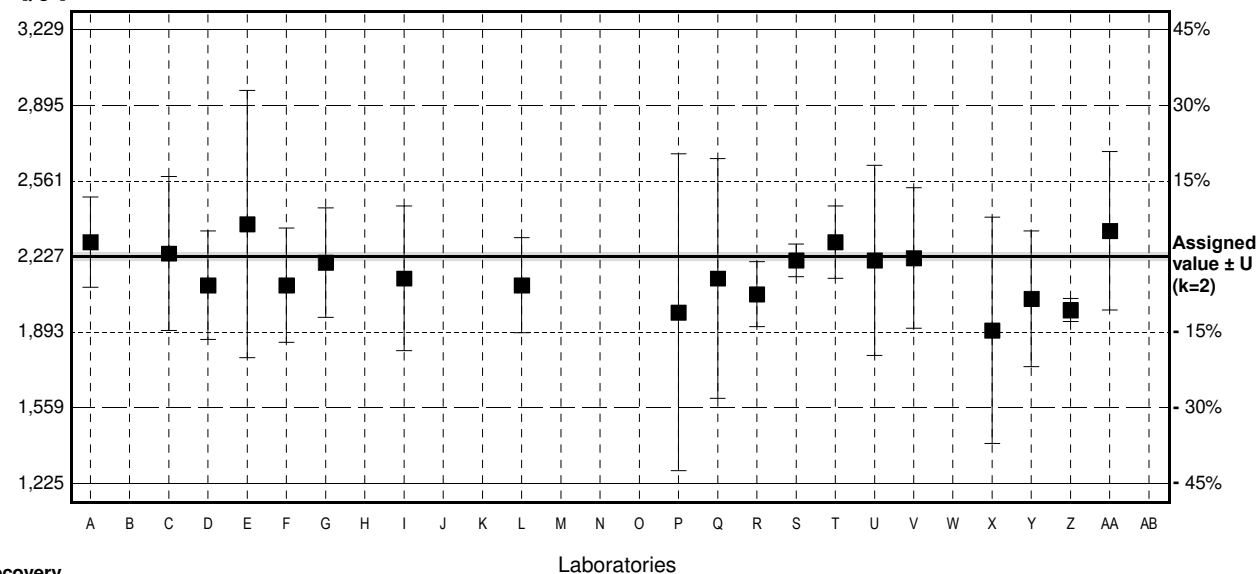
IFA result ± U (k=2) 2,24 µg/l ± 0,09 µg/l

Stability test µg/l

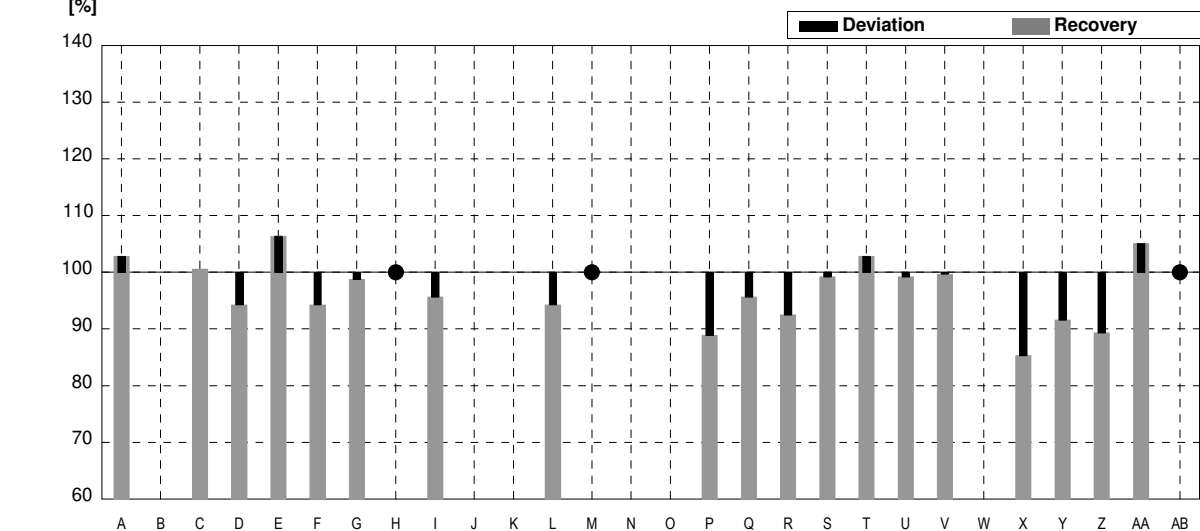
Lab Code	Result	±	Unit	Recovery	z-Score
A	2,29	0,20	µg/l	103%	0,46
B			µg/l		
C	2,24	0,34	µg/l	101%	0,09
D	2,10	0,24	µg/l	94%	-0,92
E	2,37	0,59	µg/l	106%	1,04
F	2,10	0,252	µg/l	94%	-0,92
G	2,20	0,242	µg/l	99%	-0,20
H	<4		µg/l	•	
I	2,13	0,32	µg/l	96%	-0,70
J			µg/l		
K			µg/l		
L	2,10	0,21	µg/l	94%	-0,92
M	<5		µg/l	•	
N			µg/l		
O			µg/l		
P	1,98	0,7	µg/l	89%	-1,79
Q	2,13	0,53	µg/l	96%	-0,70
R	2,06	0,143	µg/l	93%	-1,21
S	2,21	0,072	µg/l	99%	-0,12
T	2,29	0,16	µg/l	103%	0,46
U	2,21	0,42	µg/l	99%	-0,12
V	2,22	0,31	µg/l	100%	-0,05
W			µg/l		
X	1,90	0,50	µg/l	85%	-2,37
Y	2,04	0,3	µg/l	92%	-1,35
Z	1,99	0,051	µg/l	89%	-1,72
AA	2,34	0,35	µg/l	105%	0,82
AB	<5		µg/l	•	

	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,153 ± 0,084	2,153 ± 0,084	µg/l
Recov. ± CI(99%)	96,7 ± 3,8	96,7 ± 3,8	%
SD between labs	0,127	0,127	µg/l
RSD between labs	5,9	5,9	%
n for calculation	19	19	

Result [µg/l]



Recovery [%]



Sample M171A

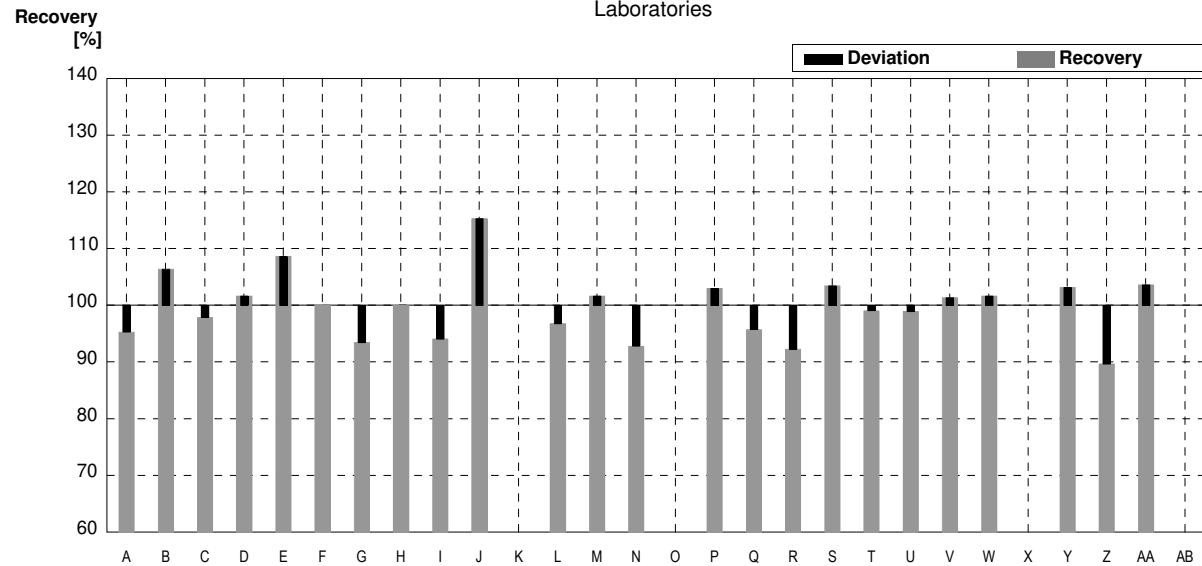
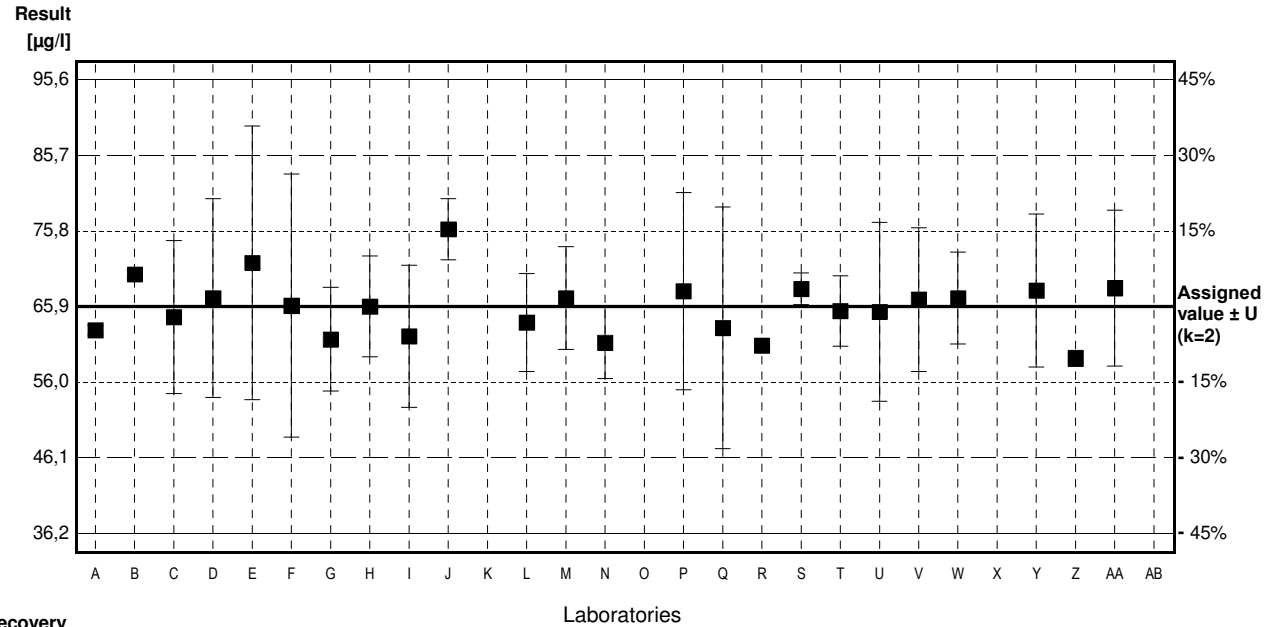
Parameter Iron

Assigned value $\pm U$ (k=2) 65,9 $\mu\text{g/l}$ \pm 0,3 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 66 $\mu\text{g/l}$ \pm 5 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	62,8	0,6	$\mu\text{g/l}$	95%	-0,71
B	70,1	0,53	$\mu\text{g/l}$	106%	0,97
C	64,5	10	$\mu\text{g/l}$	98%	-0,32
D	67	13	$\mu\text{g/l}$	102%	0,25
E	71,6	17,9	$\mu\text{g/l}$	109%	1,31
F	66,0	17,2	$\mu\text{g/l}$	100%	0,02
G	61,6	6,78	$\mu\text{g/l}$	93%	-0,99
H	65,9	6,6	$\mu\text{g/l}$	100%	0,00
I	62,0	9,30	$\mu\text{g/l}$	94%	-0,90
J	76,0	4	$\mu\text{g/l}$	115%	2,32
K			$\mu\text{g/l}$		
L	63,8	6,4	$\mu\text{g/l}$	97%	-0,48
M	67,0	6,7	$\mu\text{g/l}$	102%	0,25
N	61,16	4,7	$\mu\text{g/l}$	93%	-1,09
O			$\mu\text{g/l}$		
P	67,9	12,9	$\mu\text{g/l}$	103%	0,46
Q	63,1	15,8	$\mu\text{g/l}$	96%	-0,64
R	60,8	0,356	$\mu\text{g/l}$	92%	-1,17
S	68,2	2,07	$\mu\text{g/l}$	103%	0,53
T	65,3	4,6	$\mu\text{g/l}$	99%	-0,14
U	65,2	11,7	$\mu\text{g/l}$	99%	-0,16
V	66,8	9,4	$\mu\text{g/l}$	101%	0,21
W	67	6	$\mu\text{g/l}$	102%	0,25
X			$\mu\text{g/l}$		
Y	68,0	10	$\mu\text{g/l}$	103%	0,48
Z	59,1	1,04	$\mu\text{g/l}$	90%	-1,56
AA	68,3	10,2	$\mu\text{g/l}$	104%	0,55
AB			$\mu\text{g/l}$		

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	65,8 \pm 2,2	65,8 \pm 2,2	$\mu\text{g/l}$
Recov. \pm CI(99%)	99,8 \pm 3,3	99,8 \pm 3,3	%
SD between labs	3,8	3,8	$\mu\text{g/l}$
RSD between labs	5,7	5,7	%
n for calculation	24	24	



Sample M171B

Parameter Iron

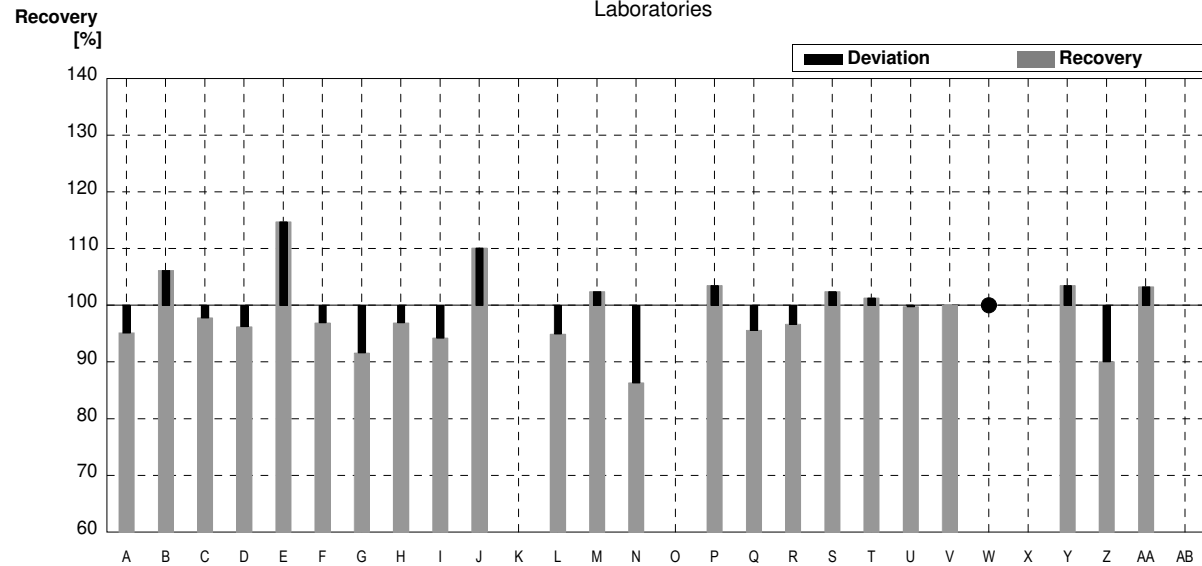
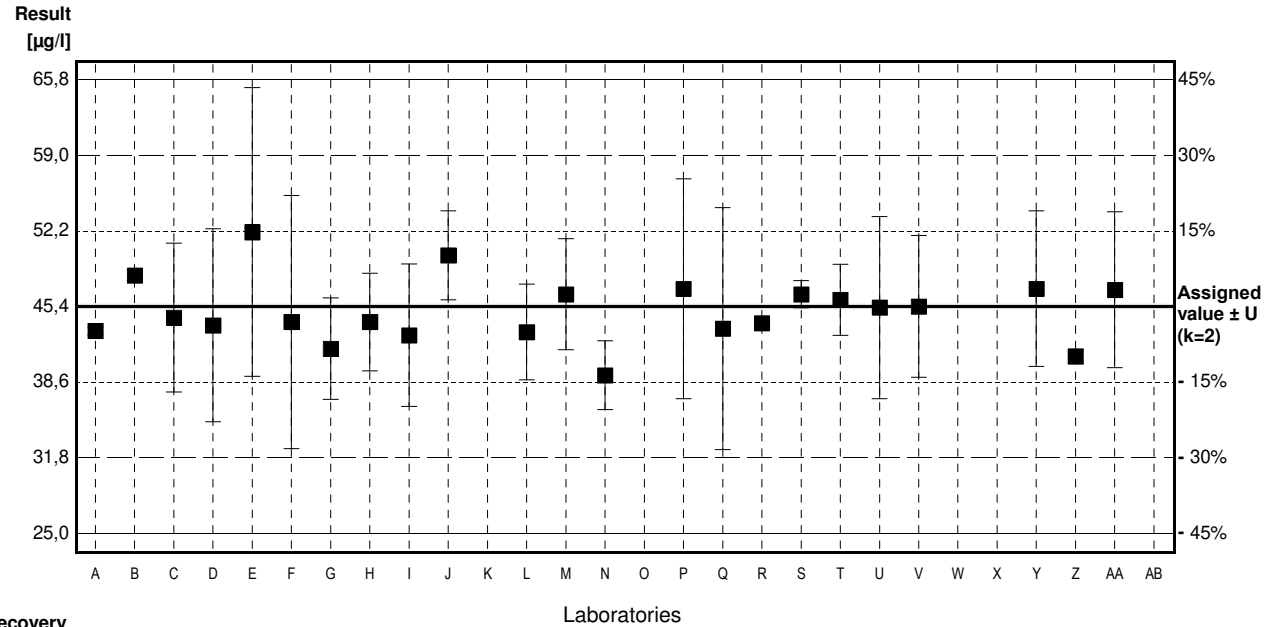
Assigned value ± U (k=2) 45,4 µg/l ± 0,2 µg/l

IFA result ± U (k=2) 44,7 µg/l ± 3,4 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	43,2	0,36	µg/l	95%	-0,73
B	48,2	0,44	µg/l	106%	0,93
C	44,4	6,7	µg/l	98%	-0,33
D	43,7	8,7	µg/l	96%	-0,57
E	52,1 *	13,0	µg/l	115%	2,24
F	44,0	11,4	µg/l	97%	-0,47
G	41,6	4,58	µg/l	92%	-1,27
H	44,0	4,4	µg/l	97%	-0,47
I	42,8	6,41	µg/l	94%	-0,87
J	50,0	4	µg/l	110%	1,54
K			µg/l		
L	43,1	4,3	µg/l	95%	-0,77
M	46,5	5,0	µg/l	102%	0,37
N	39,20	3,1	µg/l	86%	-2,07
O			µg/l		
P	47,0	9,9	µg/l	104%	0,53
Q	43,4	10,9	µg/l	96%	-0,67
R	43,9	0,356	µg/l	97%	-0,50
S	46,5	1,22	µg/l	102%	0,37
T	46,0	3,2	µg/l	101%	0,20
U	45,3	8,2	µg/l	100%	-0,03
V	45,4	6,4	µg/l	100%	0,00
W	<50		µg/l	*	
X			µg/l		
Y	47,0	7	µg/l	104%	0,53
Z	40,9	0,65	µg/l	90%	-1,50
AA	46,9	7,03	µg/l	103%	0,50
AB			µg/l		

	All results	Outliers excl.	Unit
Mean ± CI(99%)	45,0 ± 1,7	44,7 ± 1,5	µg/l
Recov. ± CI(99%)	99,1 ± 3,8	98,4 ± 3,3	%
SD between labs	2,9	2,5	µg/l
RSD between labs	6,4	5,6	%
n for calculation	23	22	



Sample M171A

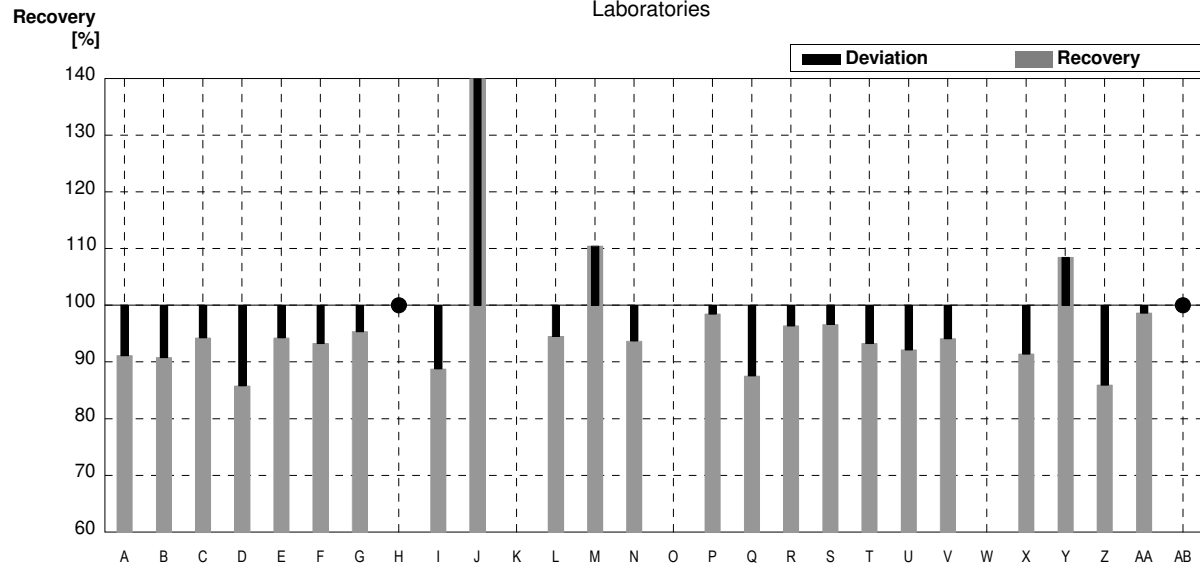
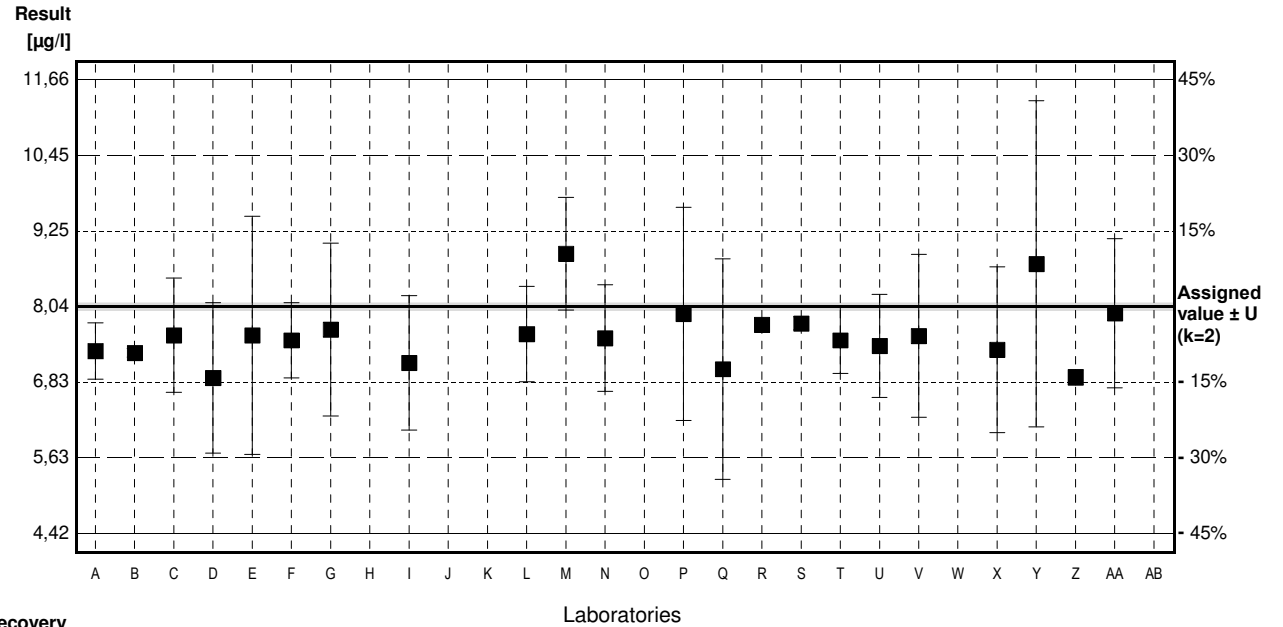
Parameter Copper

Assigned value $\pm U$ (k=2) 8,04 $\mu\text{g/l}$ \pm 0,06 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 8,2 $\mu\text{g/l}$ \pm 0,4 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	7,33	0,45	$\mu\text{g/l}$	91%	-1,18
B	7,3	0,07	$\mu\text{g/l}$	91%	-1,23
C	7,58	0,91	$\mu\text{g/l}$	94%	-0,76
D	6,9	1,2	$\mu\text{g/l}$	86%	-1,89
E	7,58	1,90	$\mu\text{g/l}$	94%	-0,76
F	7,50	0,60	$\mu\text{g/l}$	93%	-0,90
G	7,67	1,38	$\mu\text{g/l}$	95%	-0,61
H	<100		$\mu\text{g/l}$	*	
I	7,14	1,07	$\mu\text{g/l}$	89%	-1,49
J	13,0	5	$\mu\text{g/l}$	162%	8,23
K			$\mu\text{g/l}$		
L	7,6	0,76	$\mu\text{g/l}$	95%	-0,73
M	8,88	0,9	$\mu\text{g/l}$	110%	1,39
N	7,535	0,85	$\mu\text{g/l}$	94%	-0,84
O			$\mu\text{g/l}$		
P	7,92	1,7	$\mu\text{g/l}$	99%	-0,20
Q	7,04	1,76	$\mu\text{g/l}$	88%	-1,66
R	7,75	0,106	$\mu\text{g/l}$	96%	-0,48
S	7,77	0,104	$\mu\text{g/l}$	97%	-0,45
T	7,50	0,53	$\mu\text{g/l}$	93%	-0,90
U	7,41	0,82	$\mu\text{g/l}$	92%	-1,04
V	7,57	1,3	$\mu\text{g/l}$	94%	-0,78
W			$\mu\text{g/l}$		
X	7,35	1,32	$\mu\text{g/l}$	91%	-1,14
Y	8,72	2,6	$\mu\text{g/l}$	108%	1,13
Z	6,91	0,123	$\mu\text{g/l}$	86%	-1,87
AA	7,93	1,19	$\mu\text{g/l}$	99%	-0,18
AB	<20		$\mu\text{g/l}$	*	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	7,82 \pm 0,72	7,46 \pm 0,19	$\mu\text{g/l}$
Recov. \pm CI(99%)	97,3 \pm 9,0	92,8 \pm 2,4	%
SD between labs	1,22	0,30	$\mu\text{g/l}$
RSD between labs	15,7	4,0	%
n for calculation	23	20	



Sample M171B

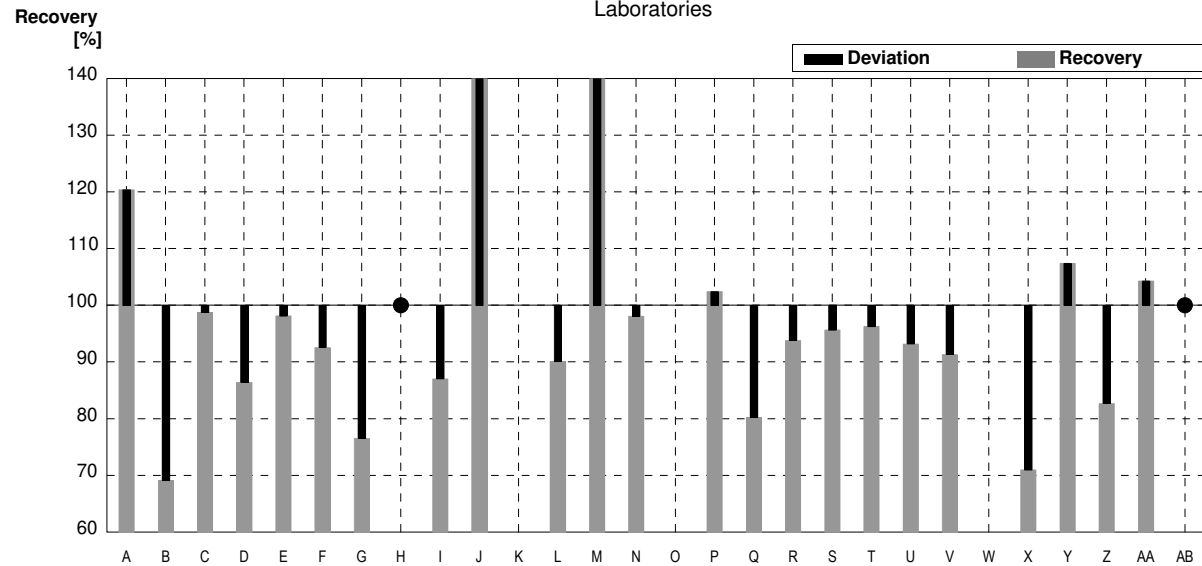
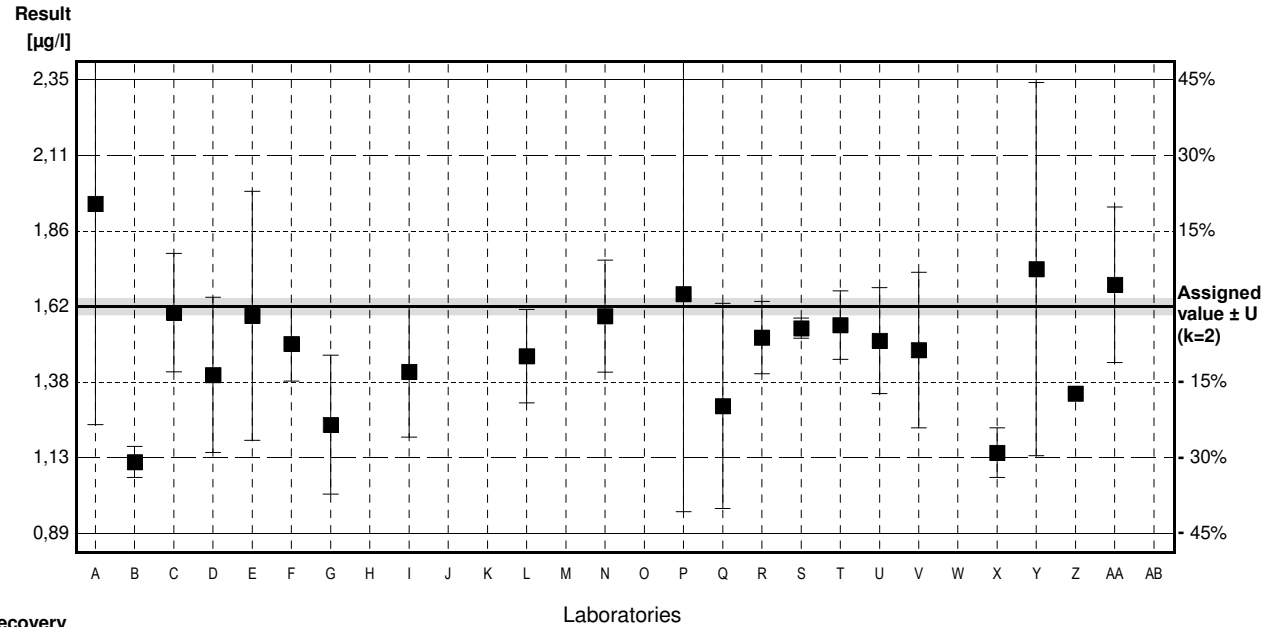
Parameter Copper

Assigned value $\pm U$ (k=2) 1,62 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$
 IFA result $\pm U$ (k=2) 1,64 $\mu\text{g/l}$ \pm 0,12 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	1,95	0,71	$\mu\text{g/l}$	120%	2,72
B	1,12	0,05	$\mu\text{g/l}$	69%	-4,12
C	1,60	0,19	$\mu\text{g/l}$	99%	-0,16
D	1,40	0,25	$\mu\text{g/l}$	86%	-1,81
E	1,59	0,40	$\mu\text{g/l}$	98%	-0,25
F	1,50	0,120	$\mu\text{g/l}$	93%	-0,99
G	1,24	0,223	$\mu\text{g/l}$	77%	-3,13
H	<100		$\mu\text{g/l}$	*	
I	1,41	0,21	$\mu\text{g/l}$	87%	-1,73
J	10,0	5	$\mu\text{g/l}$	617%	68,97
K			$\mu\text{g/l}$		
L	1,46	0,15	$\mu\text{g/l}$	90%	-1,32
M	7,24	0,7	$\mu\text{g/l}$	447%	46,26
N	1,589	0,18	$\mu\text{g/l}$	98%	-0,26
O			$\mu\text{g/l}$		
P	1,66	0,7	$\mu\text{g/l}$	102%	0,33
Q	1,30	0,33	$\mu\text{g/l}$	80%	-2,63
R	1,52	0,116	$\mu\text{g/l}$	94%	-0,82
S	1,55	0,032	$\mu\text{g/l}$	96%	-0,58
T	1,56	0,11	$\mu\text{g/l}$	96%	-0,49
U	1,51	0,17	$\mu\text{g/l}$	93%	-0,91
V	1,48	0,25	$\mu\text{g/l}$	91%	-1,15
W			$\mu\text{g/l}$		
X	1,15	0,08	$\mu\text{g/l}$	71%	-3,87
Y	1,74	0,6	$\mu\text{g/l}$	107%	0,99
Z	1,34	0,011	$\mu\text{g/l}$	83%	-2,30
AA	1,69	0,25	$\mu\text{g/l}$	104%	0,58
AB	<20		$\mu\text{g/l}$	*	

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	2,11 \pm 1,24	1,49 \pm 0,12	$\mu\text{g/l}$
Recov. \pm CI(99%)	130,4 \pm 76,3	92,2 \pm 7,6	%
SD between labs	2,10	0,20	$\mu\text{g/l}$
RSD between labs	99,5	13,2	%
n for calculation	23	21	



Sample M171A

Parameter Manganese

Assigned value ± U (k=2) 17,44 µg/l ± 0,12 µg/l

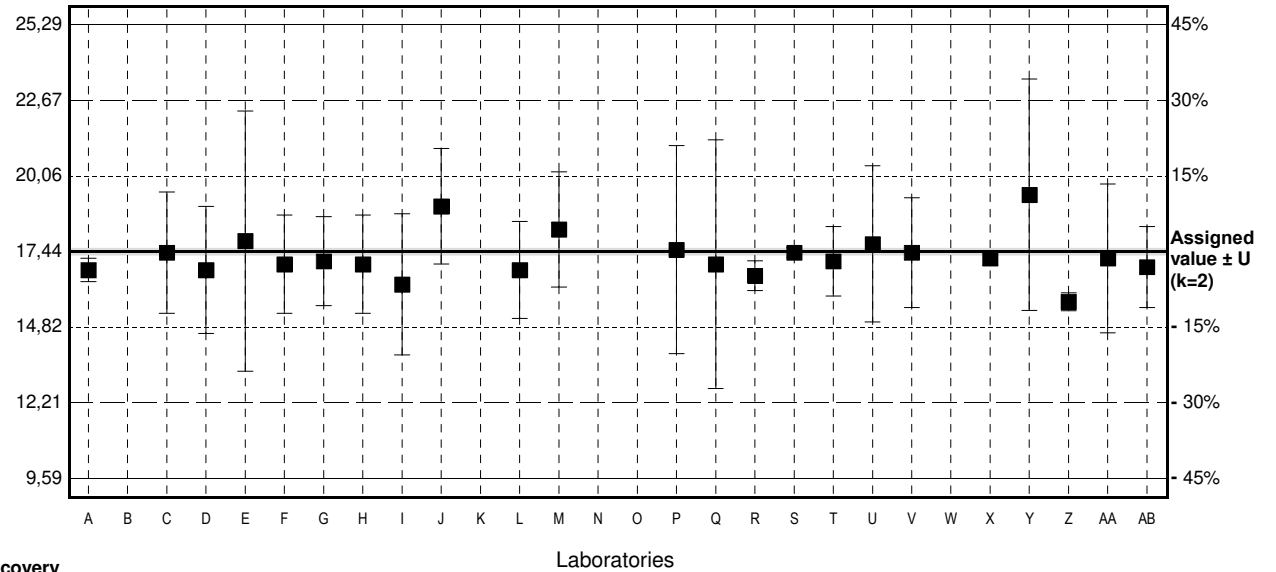
IFA result ± U (k=2) 17,5 µg/l ± 1,2 µg/l

Stability test µg/l

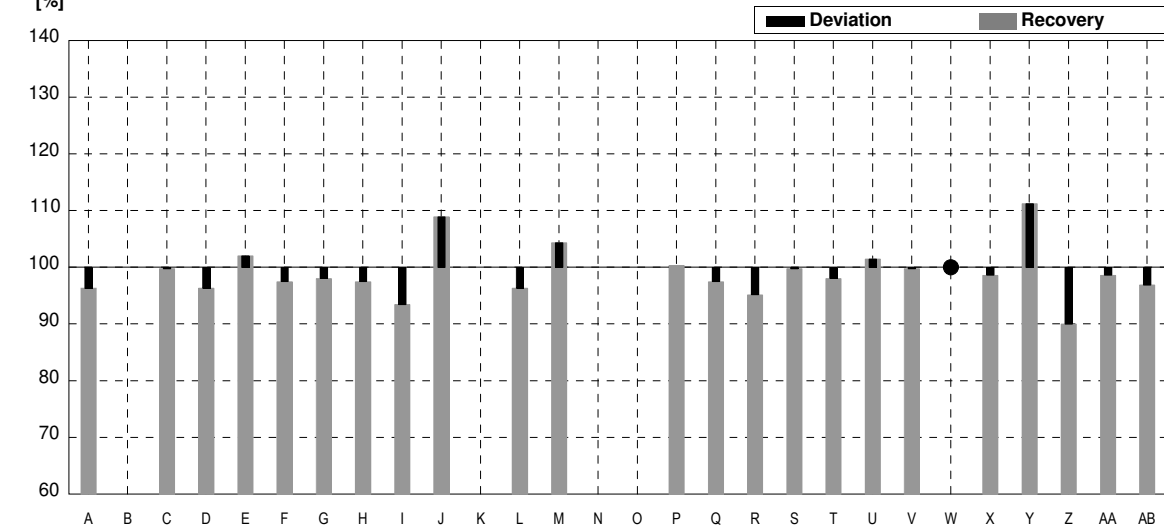
Lab Code	Result	±	Unit	Recovery	z-Score
A	16,8	0,4	µg/l	96%	-0,71
B			µg/l		
C	17,4	2,1	µg/l	100%	-0,04
D	16,8	2,2	µg/l	96%	-0,71
E	17,8	4,5	µg/l	102%	0,40
F	17,0	1,70	µg/l	97%	-0,49
G	17,1	1,54	µg/l	98%	-0,37
H	17,0	1,7	µg/l	97%	-0,49
I	16,3	2,44	µg/l	93%	-1,26
J	19,0 *	2	µg/l	109%	1,72
K			µg/l		
L	16,8	1,68	µg/l	96%	-0,71
M	18,2	2,0	µg/l	104%	0,84
N			µg/l		
O			µg/l		
P	17,5	3,6	µg/l	100%	0,07
Q	17,0	4,3	µg/l	97%	-0,49
R	16,6	0,515	µg/l	95%	-0,93
S	17,4	0,173	µg/l	100%	-0,04
T	17,1	1,2	µg/l	98%	-0,37
U	17,7	2,7	µg/l	101%	0,29
V	17,4	1,9	µg/l	100%	-0,04
W	<50		µg/l	*	
X	17,2	0,24	µg/l	99%	-0,26
Y	19,4 *	4	µg/l	111%	2,16
Z	15,7 *	0,31	µg/l	90%	-1,92
AA	17,2	2,58	µg/l	99%	-0,26
AB	16,9	1,4	µg/l	97%	-0,60

	All results	Outliers excl.	Unit
Mean ± CI(99%)	17,27 ± 0,47	17,16 ± 0,28	µg/l
Recov. ± CI(99%)	99,0 ± 2,7	98,4 ± 1,6	%
SD between labs	0,79	0,44	µg/l
RSD between labs	4,6	2,6	%
n for calculation	23	20	

Result [µg/l]



Recovery [%]



Sample M171B

Parameter Manganese

Assigned value ± U (k=2) 28,30 µg/l ± 0,15 µg/l

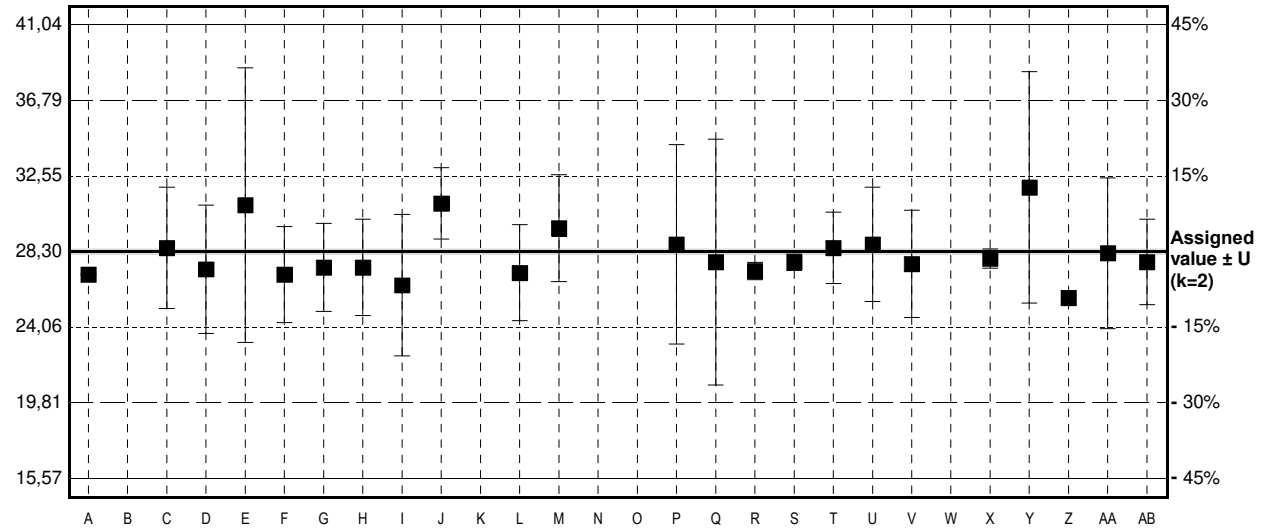
IFA result ± U (k=2) 28,2 µg/l ± 1,9 µg/l

Stability test µg/l

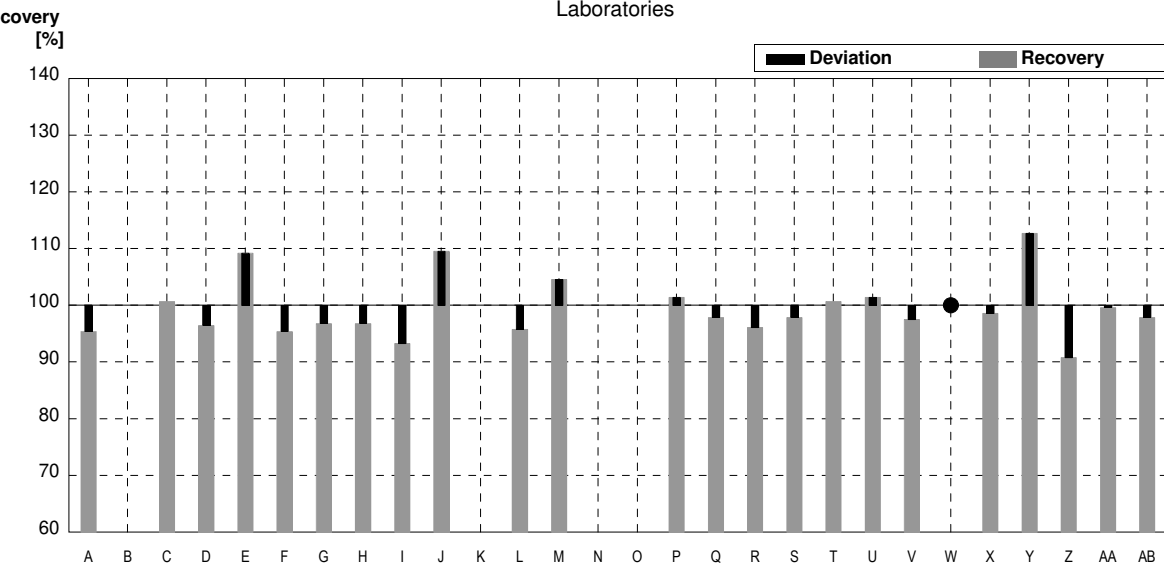
Lab Code	Result	±	Unit	Recovery	z-Score
A	27,0	0,05	µg/l	95%	-0,88
B			µg/l		
C	28,5	3,4	µg/l	101%	0,14
D	27,3	3,6	µg/l	96%	-0,68
E	30,9	7,7	µg/l	109%	1,77
F	27,0	2,70	µg/l	95%	-0,88
G	27,4	2,47	µg/l	97%	-0,61
H	27,4	2,7	µg/l	97%	-0,61
I	26,4	3,97	µg/l	93%	-1,29
J	31,0 *	2	µg/l	110%	1,83
K			µg/l		
L	27,1	2,7	µg/l	96%	-0,82
M	29,6	3,0	µg/l	105%	0,88
N			µg/l		
O			µg/l		
P	28,7	5,6	µg/l	101%	0,27
Q	27,7	6,9	µg/l	98%	-0,41
R	27,2	0,486	µg/l	96%	-0,75
S	27,7	0,458	µg/l	98%	-0,41
T	28,5	2,0	µg/l	101%	0,14
U	28,7	3,2	µg/l	101%	0,27
V	27,6	3,0	µg/l	98%	-0,48
W	<50		µg/l	*	
X	27,9	0,54	µg/l	99%	-0,27
Y	31,9 *	6,5	µg/l	113%	2,45
Z	25,7	0,38	µg/l	91%	-1,77
AA	28,2	4,23	µg/l	100%	-0,07
AB	27,7	2,4	µg/l	98%	-0,41

	All results	Outliers excl.	Unit
Mean ± CI(99%)	28,13 ± 0,88	27,82 ± 0,69	µg/l
Recov. ± CI(99%)	99,4 ± 3,1	98,3 ± 2,4	%
SD between labs	1,50	1,11	µg/l
RSD between labs	5,3	4,0	%
n for calculation	23	21	

Result [µg/l]



Recovery [%]



Sample M171A

Parameter Nickel

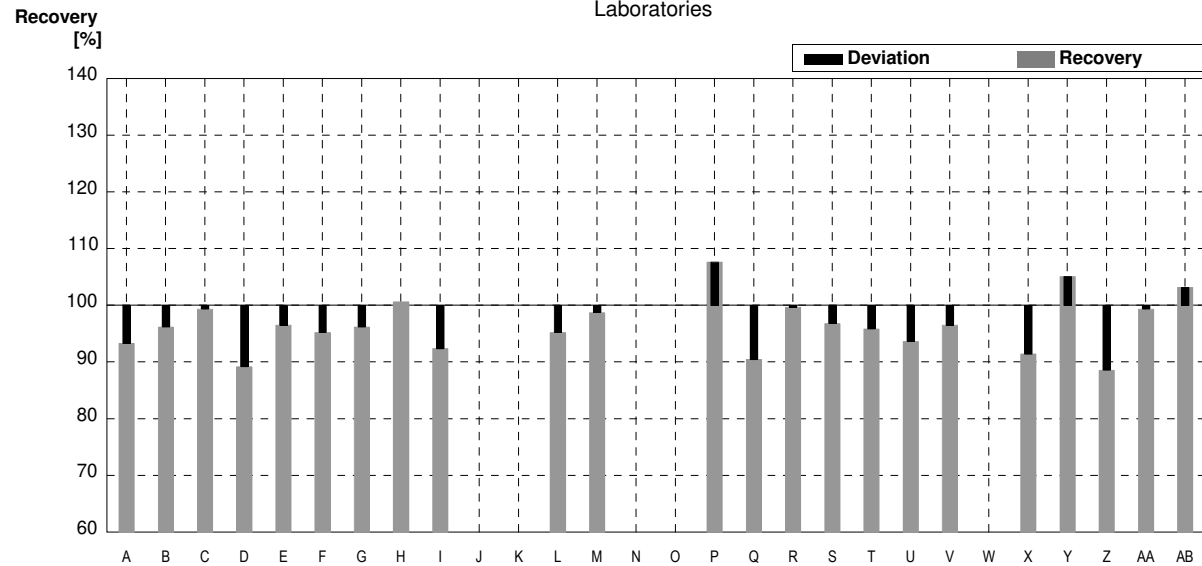
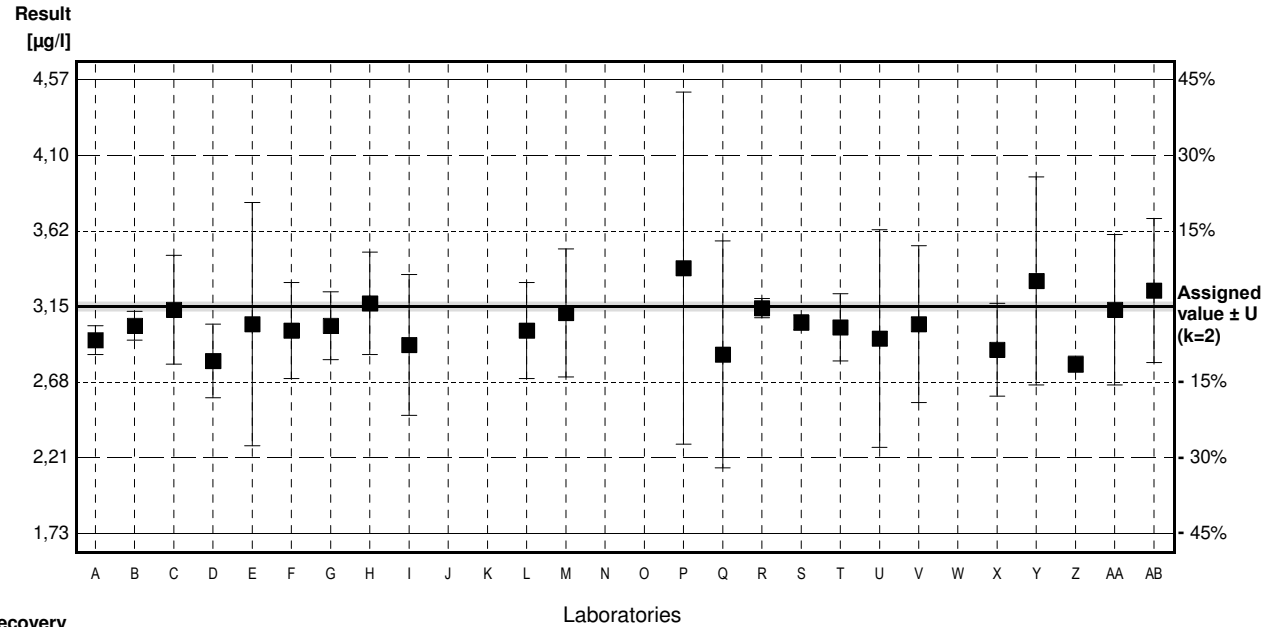
Assigned value $\pm U$ (k=2) 3,15 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$

IFA result $\pm U$ (k=2) 3,26 $\mu\text{g/l}$ \pm 0,16 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

Lab Code	Result	\pm	Unit	Recovery	z-Score
A	2,94	0,09	$\mu\text{g/l}$	93%	-0,97
B	3,03	0,09	$\mu\text{g/l}$	96%	-0,55
C	3,13	0,34	$\mu\text{g/l}$	99%	-0,09
D	2,81	0,23	$\mu\text{g/l}$	89%	-1,56
E	3,04	0,76	$\mu\text{g/l}$	97%	-0,51
F	3,00	0,30	$\mu\text{g/l}$	95%	-0,69
G	3,03	0,212	$\mu\text{g/l}$	96%	-0,55
H	3,17	0,32	$\mu\text{g/l}$	101%	0,09
I	2,91	0,44	$\mu\text{g/l}$	92%	-1,10
J			$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L	3,00	0,30	$\mu\text{g/l}$	95%	-0,69
M	3,11	0,4	$\mu\text{g/l}$	99%	-0,18
N			$\mu\text{g/l}$		
O			$\mu\text{g/l}$		
P	3,39	1,1	$\mu\text{g/l}$	108%	1,10
Q	2,85	0,71	$\mu\text{g/l}$	90%	-1,38
R	3,14	0,0599	$\mu\text{g/l}$	100%	-0,05
S	3,05	0,047	$\mu\text{g/l}$	97%	-0,46
T	3,02	0,21	$\mu\text{g/l}$	96%	-0,60
U	2,95	0,68	$\mu\text{g/l}$	94%	-0,92
V	3,04	0,49	$\mu\text{g/l}$	97%	-0,51
W			$\mu\text{g/l}$		
X	2,88	0,29	$\mu\text{g/l}$	91%	-1,24
Y	3,31	0,65	$\mu\text{g/l}$	105%	0,74
Z	2,79	0,050	$\mu\text{g/l}$	89%	-1,66
AA	3,13	0,47	$\mu\text{g/l}$	99%	-0,09
AB	3,25	0,45	$\mu\text{g/l}$	103%	0,46

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	3,04 \pm 0,09	3,04 \pm 0,09	$\mu\text{g/l}$
Recov. \pm CI(99%)	96,6 \pm 2,8	96,6 \pm 2,8	%
SD between labs	0,15	0,15	$\mu\text{g/l}$
RSD between labs	5,0	5,0	%
n for calculation	23	23	



Sample M171B

Parameter Nickel

Assigned value $\pm U$ (k=2) 2,44 $\mu\text{g/l}$ \pm 0,03 $\mu\text{g/l}$

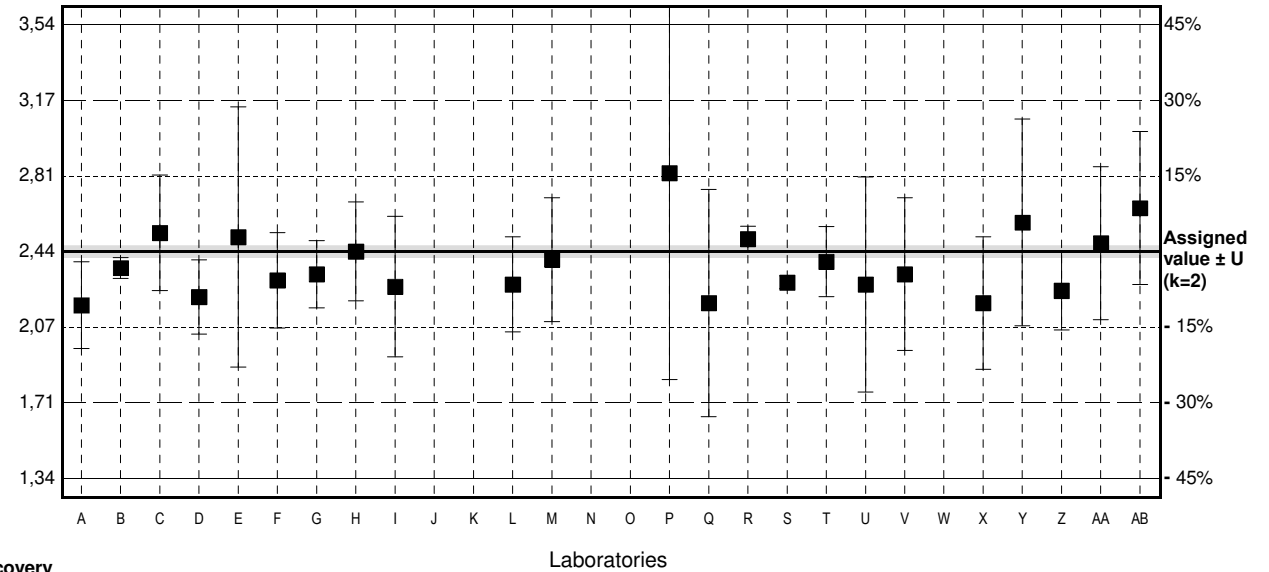
IFA result $\pm U$ (k=2) 2,51 $\mu\text{g/l}$ \pm 0,14 $\mu\text{g/l}$

Stability test $\mu\text{g/l}$

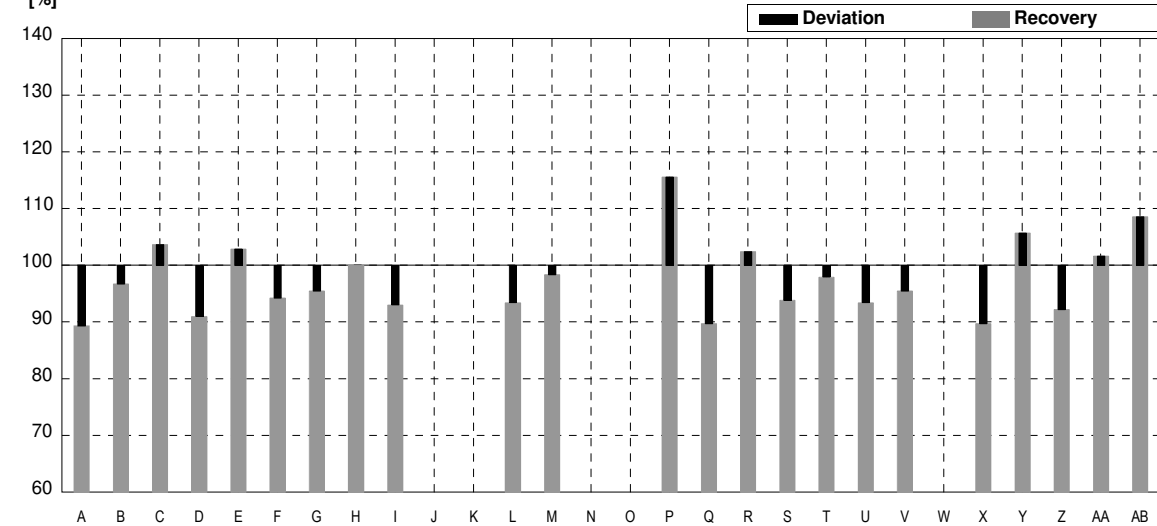
Lab Code	Result	\pm	Unit	Recovery	z-Score
A	2,18	0,21	$\mu\text{g/l}$	89%	-1,54
B	2,36	0,05	$\mu\text{g/l}$	97%	-0,48
C	2,53	0,28	$\mu\text{g/l}$	104%	0,53
D	2,22	0,18	$\mu\text{g/l}$	91%	-1,31
E	2,51	0,63	$\mu\text{g/l}$	103%	0,42
F	2,30	0,23	$\mu\text{g/l}$	94%	-0,83
G	2,33	0,163	$\mu\text{g/l}$	95%	-0,65
H	2,44	0,24	$\mu\text{g/l}$	100%	0,00
I	2,27	0,34	$\mu\text{g/l}$	93%	-1,01
J			$\mu\text{g/l}$		
K			$\mu\text{g/l}$		
L	2,28	0,23	$\mu\text{g/l}$	93%	-0,95
M	2,40	0,3	$\mu\text{g/l}$	98%	-0,24
N			$\mu\text{g/l}$		
O			$\mu\text{g/l}$		
P	2,82	1,0	$\mu\text{g/l}$	116%	2,26
Q	2,19	0,55	$\mu\text{g/l}$	90%	-1,48
R	2,50	0,0617	$\mu\text{g/l}$	102%	0,36
S	2,29	0,031	$\mu\text{g/l}$	94%	-0,89
T	2,39	0,17	$\mu\text{g/l}$	98%	-0,30
U	2,28	0,52	$\mu\text{g/l}$	93%	-0,95
V	2,33	0,37	$\mu\text{g/l}$	95%	-0,65
W			$\mu\text{g/l}$		
X	2,19	0,32	$\mu\text{g/l}$	90%	-1,48
Y	2,58	0,5	$\mu\text{g/l}$	106%	0,83
Z	2,25	0,190	$\mu\text{g/l}$	92%	-1,13
AA	2,48	0,37	$\mu\text{g/l}$	102%	0,24
AB	2,65	0,37	$\mu\text{g/l}$	109%	1,25

	All results	Outliers excl.	Unit
Mean \pm CI(99%)	2,38 \pm 0,10	2,38 \pm 0,10	$\mu\text{g/l}$
Recov. \pm CI(99%)	97,6 \pm 3,9	97,6 \pm 3,9	%
SD between labs	0,16	0,16	$\mu\text{g/l}$
RSD between labs	6,8	6,8	%
n for calculation	23	23	

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



Recovery
[%]



Sample M171A

Parameter Mercury

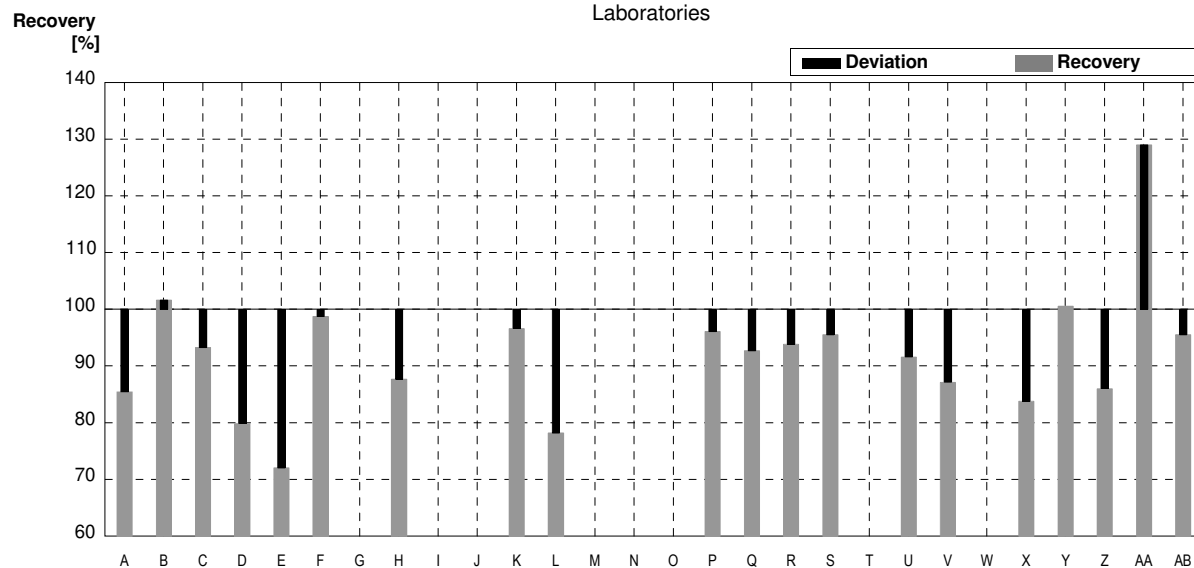
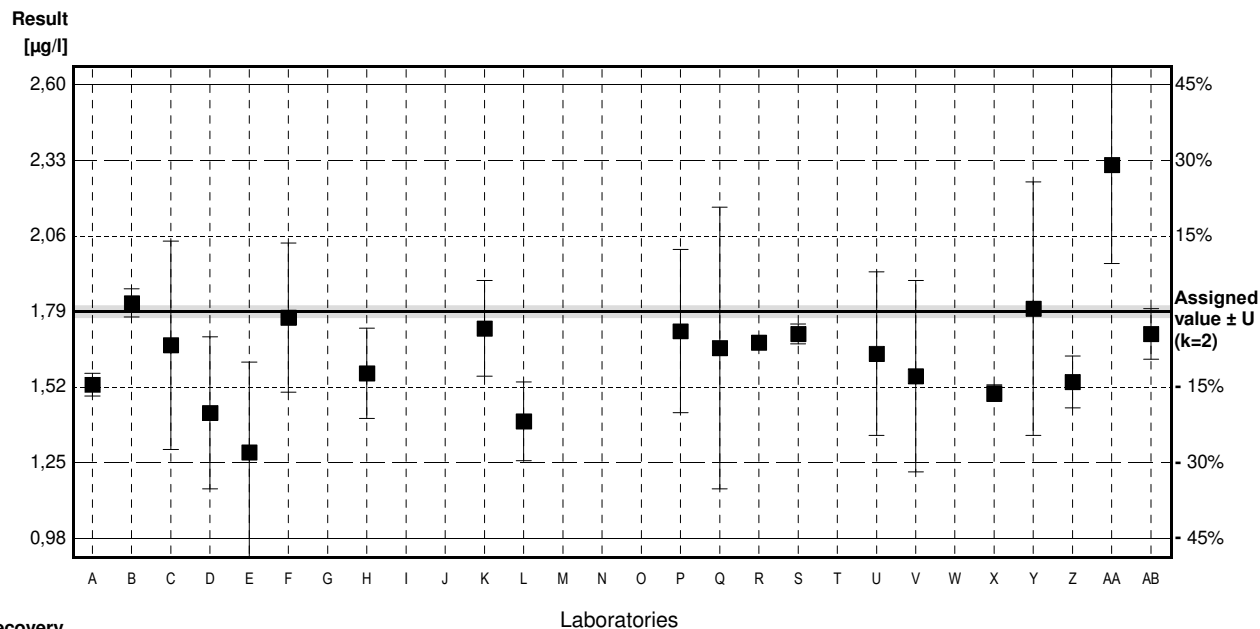
Assigned value ± U (k=2) 1,79 µg/l ± 0,02 µg/l

IFA result ± U (k=2) 1,88 µg/l ± 0,35 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,53	0,04	µg/l	85%	-1,32
B	1,82	0,05	µg/l	102%	0,15
C	1,67	0,37	µg/l	93%	-0,61
D	1,43	0,27	µg/l	80%	-1,83
E	1,29	0,32	µg/l	72%	-2,54
F	1,768	0,265	µg/l	99%	-0,11
G			µg/l		
H	1,57	0,16	µg/l	88%	-1,12
I			µg/l		
J			µg/l		
K	1,73	0,17	µg/l	97%	-0,30
L	1,40	0,14	µg/l	78%	-1,98
M			µg/l		
N			µg/l		
O			µg/l		
P	1,72	0,29	µg/l	96%	-0,36
Q	1,66	0,50	µg/l	93%	-0,66
R	1,68	0,0153	µg/l	94%	-0,56
S	1,71	0,035	µg/l	96%	-0,41
T			µg/l		
U	1,64	0,29	µg/l	92%	-0,76
V	1,56	0,34	µg/l	87%	-1,17
W			µg/l		
X	1,50	0,03	µg/l	84%	-1,47
Y	1,80	0,45	µg/l	101%	0,05
Z	1,54	0,092	µg/l	86%	-1,27
AA	2,31 *	0,35	µg/l	129%	2,64
AB	1,71	0,09	µg/l	96%	-0,41

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,65 ± 0,13	1,62 ± 0,09	µg/l
Recov. ± CI(99%)	92,3 ± 7,4	90,3 ± 5,3	%
SD between labs	0,21	0,14	µg/l
RSD between labs	12,6	8,9	%
n for calculation	20	19	



Sample M171B

Parameter Mercury

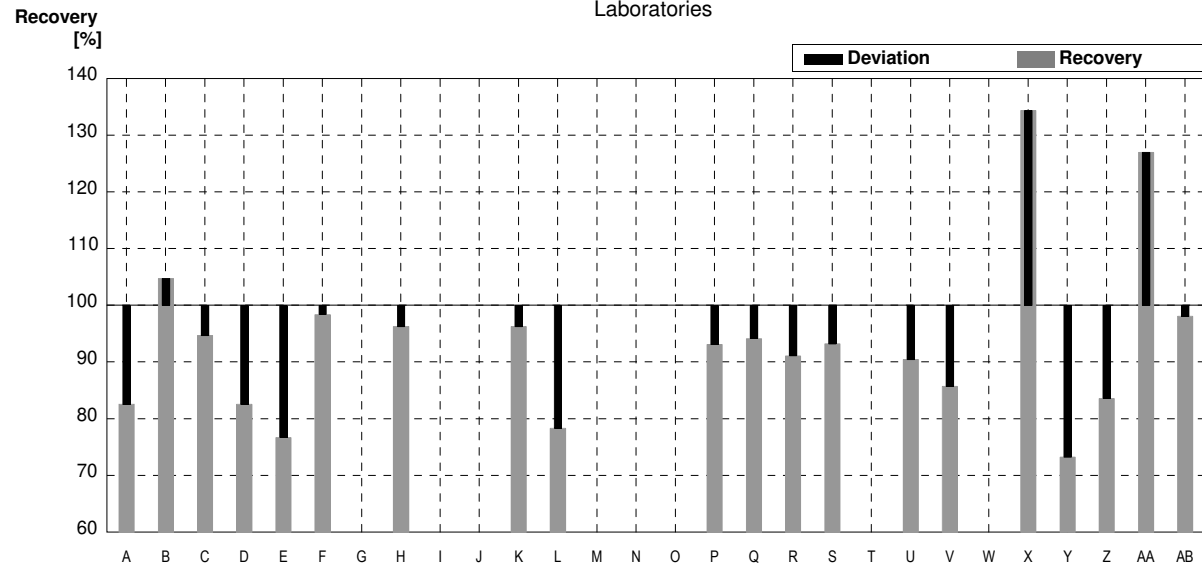
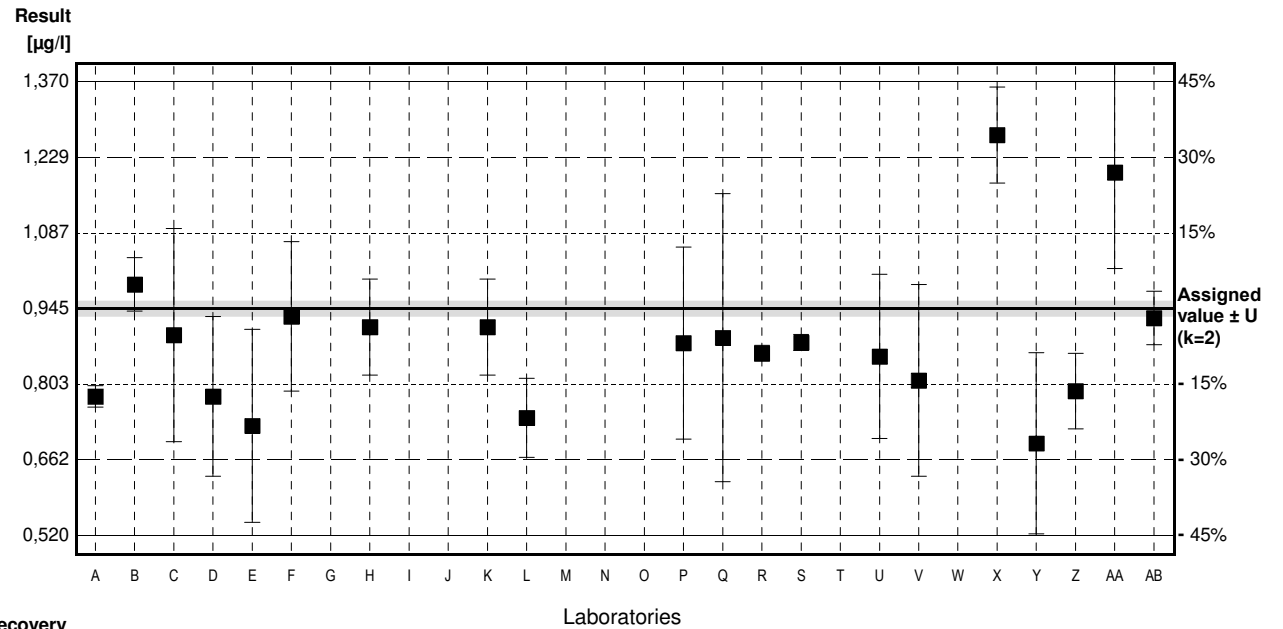
Assigned value ± U (k=2) 0,945 µg/l ± 0,015 µg/l

IFA result ± U (k=2) 0,91 µg/l ± 0,17 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,78	0,02	µg/l	83%	-1,59
B	0,99	0,05	µg/l	105%	0,43
C	0,895	0,20	µg/l	95%	-0,48
D	0,78	0,15	µg/l	83%	-1,59
E	0,725	0,181	µg/l	77%	-2,12
F	0,930	0,140	µg/l	98%	-0,14
G			µg/l		
H	0,91	0,09	µg/l	96%	-0,34
I			µg/l		
J			µg/l		
K	0,91	0,09	µg/l	96%	-0,34
L	0,74	0,074	µg/l	78%	-1,97
M			µg/l		
N			µg/l		
O			µg/l		
P	0,88	0,18	µg/l	93%	-0,63
Q	0,89	0,27	µg/l	94%	-0,53
R	0,861	0,0148	µg/l	91%	-0,81
S	0,881	0,015	µg/l	93%	-0,62
T			µg/l		
U	0,855	0,154	µg/l	90%	-0,87
V	0,81	0,18	µg/l	86%	-1,30
W			µg/l		
X	1,27 *	0,09	µg/l	134%	3,13
Y	0,692	0,17	µg/l	73%	-2,43
Z	0,79	0,071	µg/l	84%	-1,49
AA	1,20 *	0,18	µg/l	127%	2,45
AB	0,927	0,050	µg/l	98%	-0,17

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,886 ± 0,091	0,847 ± 0,056	µg/l
Recov. ± CI(99%)	93,7 ± 9,6	89,6 ± 5,9	%
SD between labs	0,142	0,081	µg/l
RSD between labs	16,1	9,6	%
n for calculation	20	18	



Sample M171A

Parameter Selenium

Assigned value ± U (k=2) 1,20 µg/l ± 0,02 µg/l

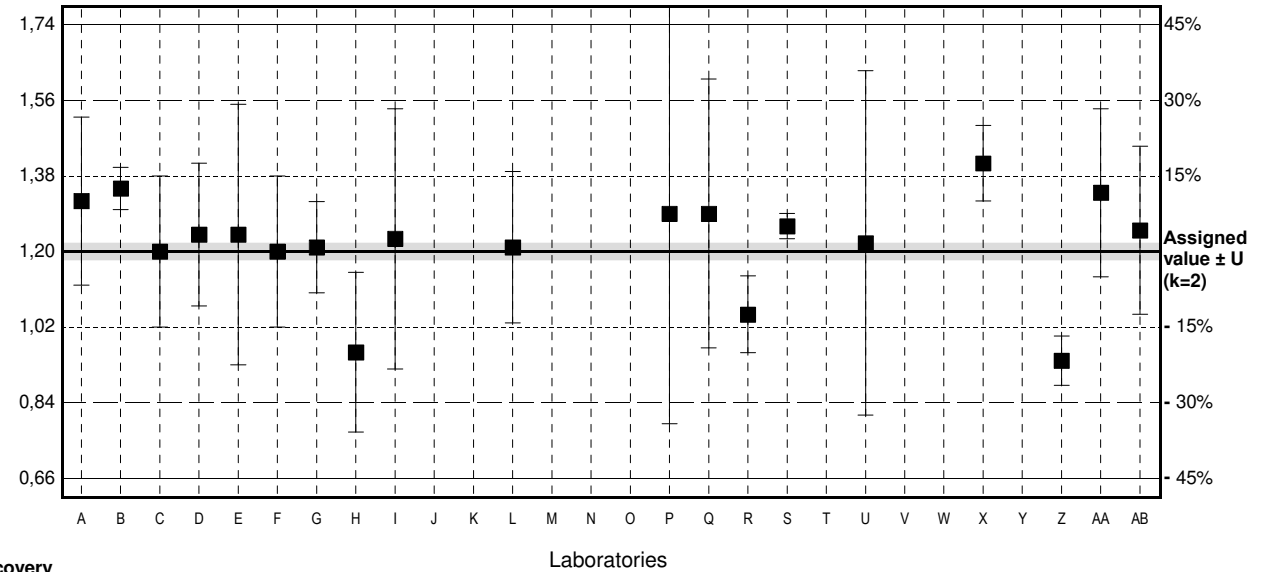
IFA result ± U (k=2) 1,19 µg/l ± 0,15 µg/l

Stability test µg/l

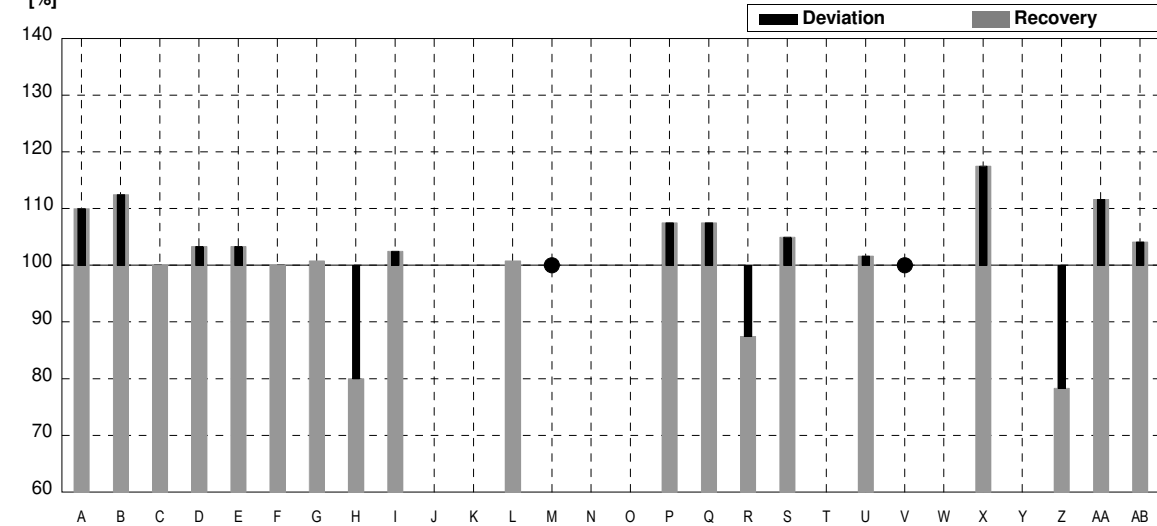
Lab Code	Result	±	Unit	Recovery	z-Score
A	1,32	0,20	µg/l	110%	1,14
B	1,35	0,05	µg/l	113%	1,42
C	1,20	0,18	µg/l	100%	0,00
D	1,24	0,17	µg/l	103%	0,38
E	1,24	0,31	µg/l	103%	0,38
F	1,20	0,18	µg/l	100%	0,00
G	1,21	0,109	µg/l	101%	0,09
H	0,96 *	0,19	µg/l	80%	-2,27
I	1,23	0,31	µg/l	103%	0,28
J			µg/l		
K			µg/l		
L	1,21	0,18	µg/l	101%	0,09
M	<5		µg/l	*	
N			µg/l		
O			µg/l		
P	1,29	0,5	µg/l	108%	0,85
Q	1,29	0,32	µg/l	108%	0,85
R	1,05 *	0,0914	µg/l	88%	-1,42
S	1,26	0,030	µg/l	105%	0,57
T			µg/l		
U	1,22	0,41	µg/l	102%	0,19
V	<5		µg/l	*	
W			µg/l		
X	1,41	0,09	µg/l	118%	1,99
Y			µg/l		
Z	0,94 *	0,059	µg/l	78%	-2,46
AA	1,34	0,20	µg/l	112%	1,33
AB	1,25	0,20	µg/l	104%	0,47

	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,22 ± 0,08	1,27 ± 0,05	µg/l
Recov. ± CI(99%)	101,8 ± 6,7	105,5 ± 3,8	%
SD between labs	0,12	0,06	µg/l
RSD between labs	10,0	4,9	%
n for calculation	19	16	

Result [µg/l]



Recovery [%]



Sample M171B

Parameter Selenium

Assigned value ± U (k=2) 4,79 µg/l ± 0,04 µg/l

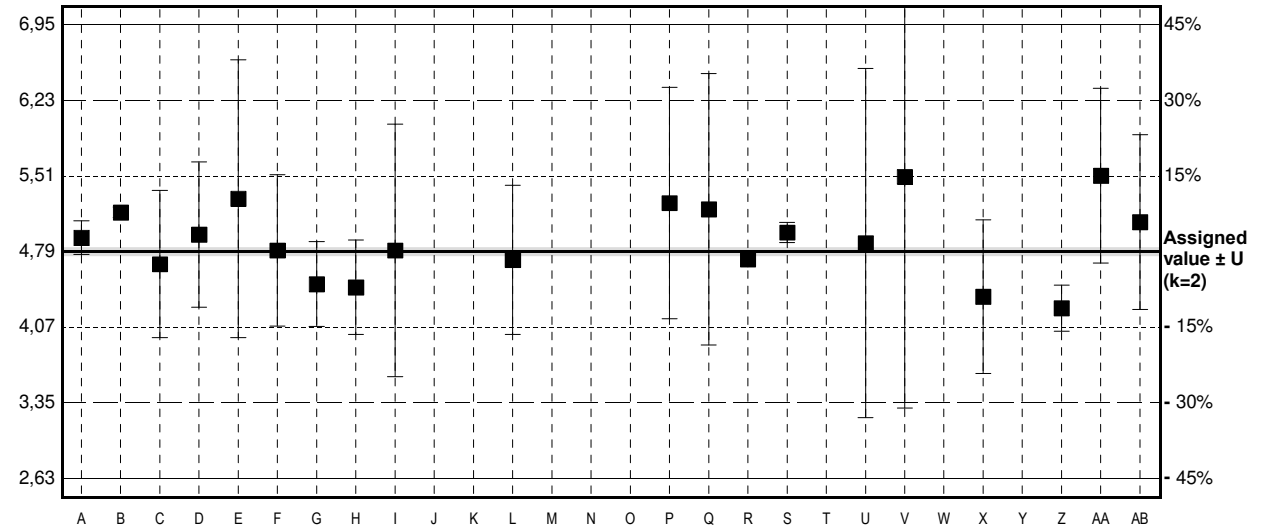
IFA result ± U (k=2) 4,92 µg/l ± 0,56 µg/l

Stability test µg/l

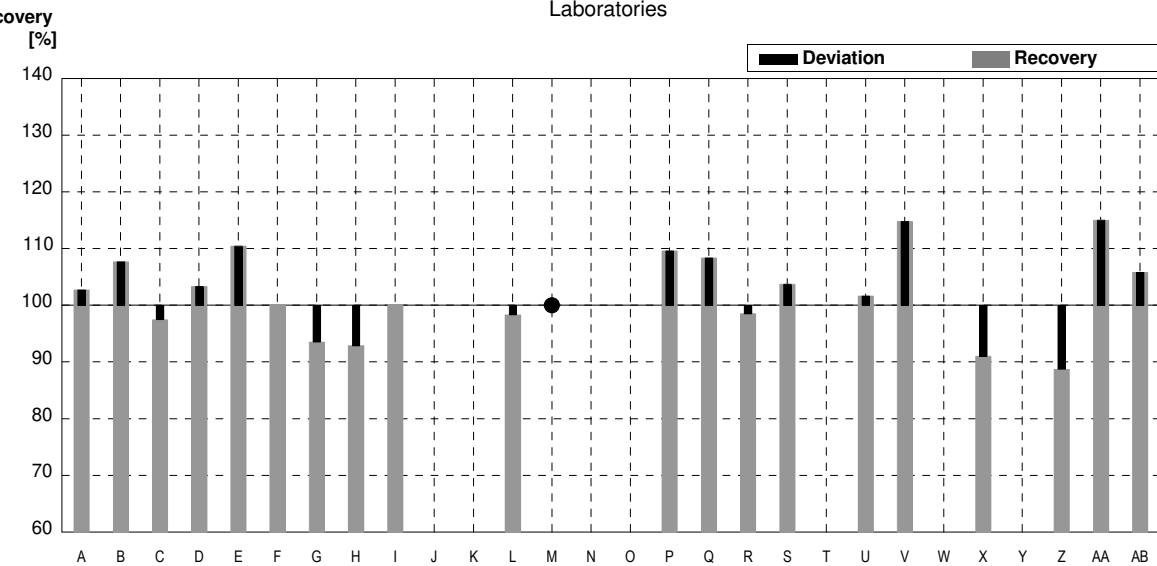
Lab Code	Result	±	Unit	Recovery	z-Score
A	4,92	0,16	µg/l	103%	0,31
B	5,16	0,05	µg/l	108%	0,88
C	4,67	0,70	µg/l	97%	-0,28
D	4,95	0,69	µg/l	103%	0,38
E	5,29	1,32	µg/l	110%	1,19
F	4,80	0,72	µg/l	100%	0,02
G	4,48	0,403	µg/l	94%	-0,74
H	4,45	0,45	µg/l	93%	-0,81
I	4,80	1,20	µg/l	100%	0,02
J			µg/l		
K			µg/l		
L	4,71	0,71	µg/l	98%	-0,19
M	<5		µg/l	*	
N			µg/l		
O			µg/l		
P	5,25	1,1	µg/l	110%	1,09
Q	5,19	1,29	µg/l	108%	0,95
R	4,72	0,0777	µg/l	99%	-0,17
S	4,97	0,095	µg/l	104%	0,43
T			µg/l		
U	4,87	1,66	µg/l	102%	0,19
V	5,5	2,2	µg/l	115%	1,68
W			µg/l		
X	4,36	0,73	µg/l	91%	-1,02
Y			µg/l		
Z	4,25	0,220	µg/l	89%	-1,28
AA	5,51	0,83	µg/l	115%	1,71
AB	5,07	0,83	µg/l	106%	0,66

	All results	Outliers excl.	Unit
Mean ± CI(99%)	4,90 ± 0,23	4,90 ± 0,23	µg/l
Recov. ± CI(99%)	102,2 ± 4,8	102,2 ± 4,8	%
SD between labs	0,36	0,36	µg/l
RSD between labs	7,3	7,3	%
n for calculation	20	20	

Result [µg/l]



Recovery [%]



Sample M171A

Parameter Uranium

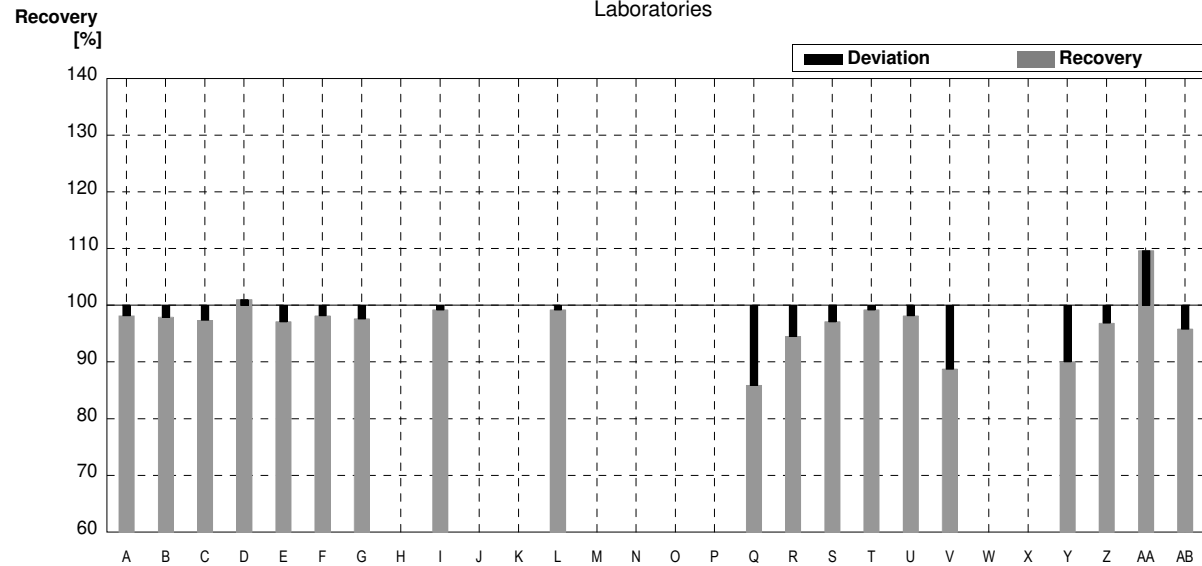
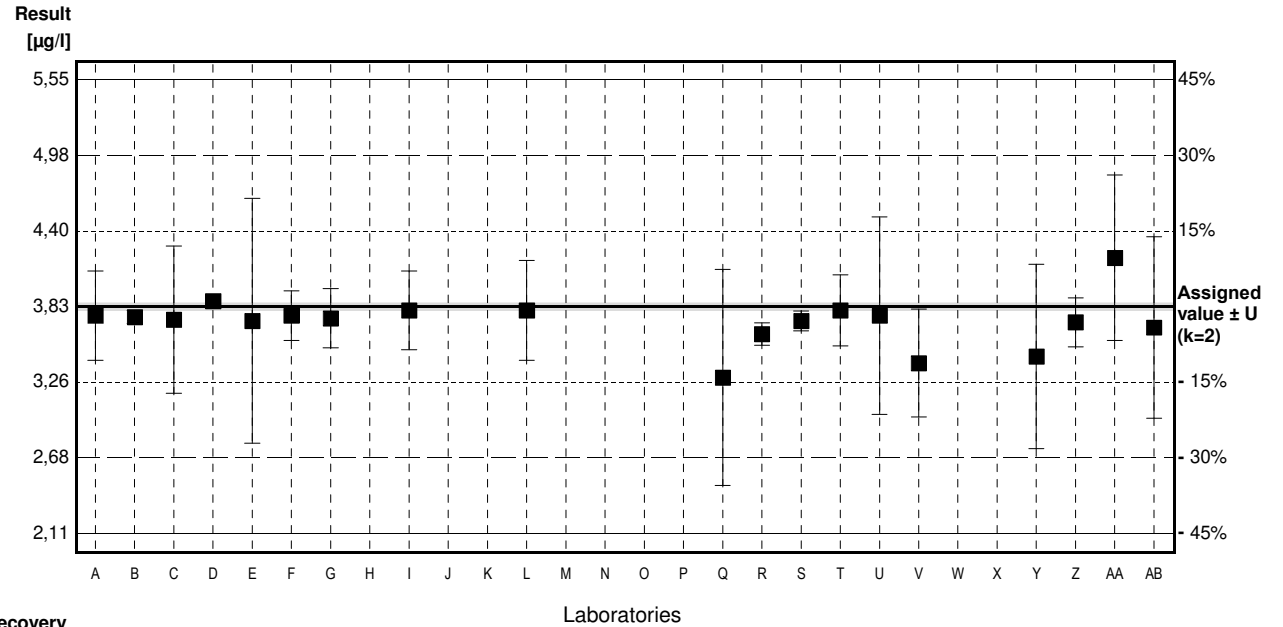
Assigned value ± U (k=2) 3,83 µg/l ± 0,03 µg/l

IFA result ± U (k=2) 3,70 µg/l ± 0,42 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	3,76	0,34	µg/l	98%	-0,33
B	3,75	0,05	µg/l	98%	-0,37
C	3,73	0,56	µg/l	97%	-0,47
D	3,87		µg/l	101%	0,19
E	3,72	0,93	µg/l	97%	-0,51
F	3,76	0,188	µg/l	98%	-0,33
G	3,74	0,224	µg/l	98%	-0,42
H			µg/l		
I	3,80	0,3	µg/l	99%	-0,14
J			µg/l		
K			µg/l		
L	3,80	0,38	µg/l	99%	-0,14
M			µg/l		
N			µg/l		
O			µg/l		
P			µg/l		
Q	3,29 *	0,82	µg/l	86%	-2,52
R	3,62	0,0849	µg/l	95%	-0,98
S	3,72	0,076	µg/l	97%	-0,51
T	3,80	0,27	µg/l	99%	-0,14
U	3,76	0,75	µg/l	98%	-0,33
V	3,40 *	0,41	µg/l	89%	-2,00
W			µg/l		
X			µg/l		
Y	3,45 *	0,7	µg/l	90%	-1,77
Z	3,71	0,186	µg/l	97%	-0,56
AA	4,20 *	0,63	µg/l	110%	1,73
AB	3,67	0,69	µg/l	96%	-0,75

	All results	Outliers excl.	Unit
Mean ± CI(99%)	3,71 ± 0,13	3,75 ± 0,05	µg/l
Recov. ± CI(99%)	96,9 ± 3,3	97,8 ± 1,2	%
SD between labs	0,19	0,06	µg/l
RSD between labs	5,1	1,6	%
n for calculation	19	15	



Sample M171B

Parameter Uranium

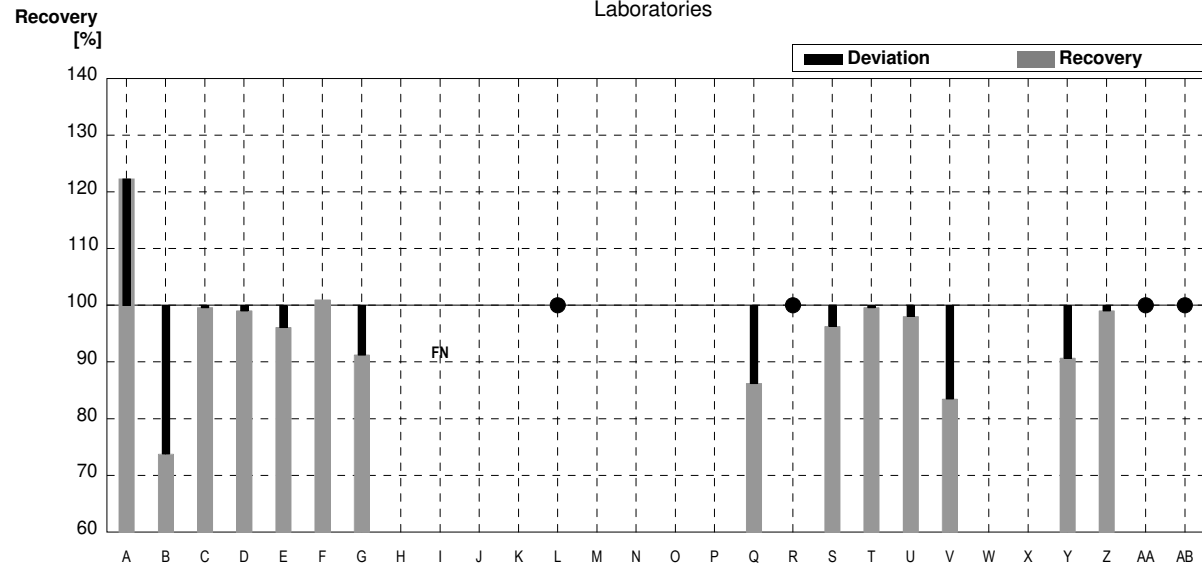
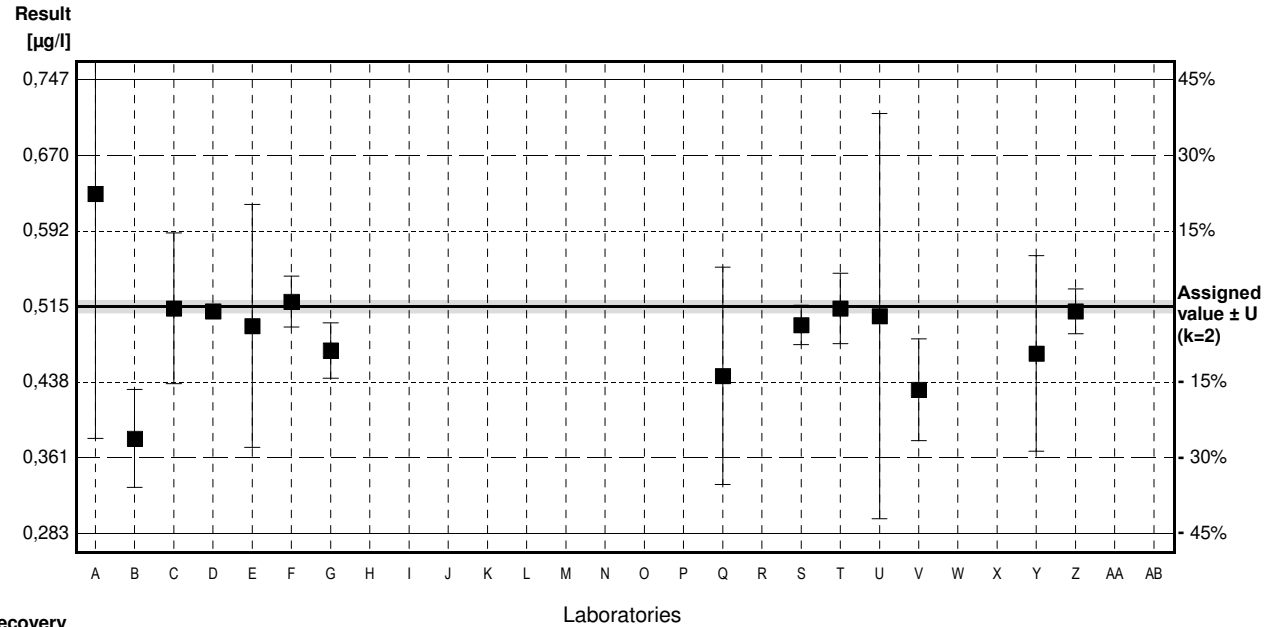
Assigned value ± U (k=2) 0,515 µg/l ± 0,006 µg/l

IFA result ± U (k=2) 0,463 µg/l ± 0,052 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,63 *	0,25	µg/l	122%	3,99
B	0,380 *	0,05	µg/l	74%	-4,68
C	0,513	0,077	µg/l	100%	-0,07
D	0,51		µg/l	99%	-0,17
E	0,495	0,124	µg/l	96%	-0,69
F	0,52	0,026	µg/l	101%	0,17
G	0,470	0,0282	µg/l	91%	-1,56
H			µg/l		
I	<0,001		µg/l	FN	
J			µg/l		
K			µg/l		
L	<1,0		µg/l	•	
M			µg/l		
N			µg/l		
O			µg/l		
P			µg/l		
Q	0,444	0,111	µg/l	86%	-2,46
R	<1,00		µg/l	•	
S	0,496	0,020	µg/l	96%	-0,66
T	0,513	0,036	µg/l	100%	-0,07
U	0,505	0,207	µg/l	98%	-0,35
V	0,430	0,052	µg/l	83%	-2,95
W			µg/l		
X			µg/l		
Y	0,467	0,1	µg/l	91%	-1,66
Z	0,51	0,023	µg/l	99%	-0,17
AA	<1		µg/l	•	
AB	<1		µg/l	•	

	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,492 ± 0,045	0,489 ± 0,027	µg/l
Recov. ± CI(99%)	95,5 ± 8,8	95,0 ± 5,2	%
SD between labs	0,056	0,030	µg/l
RSD between labs	11,5	6,1	%
n for calculation	14	12	



Sample M171A

Parameter Zinc

Assigned value ± U (k=2) 42,2 µg/l ± 1,6 µg/l

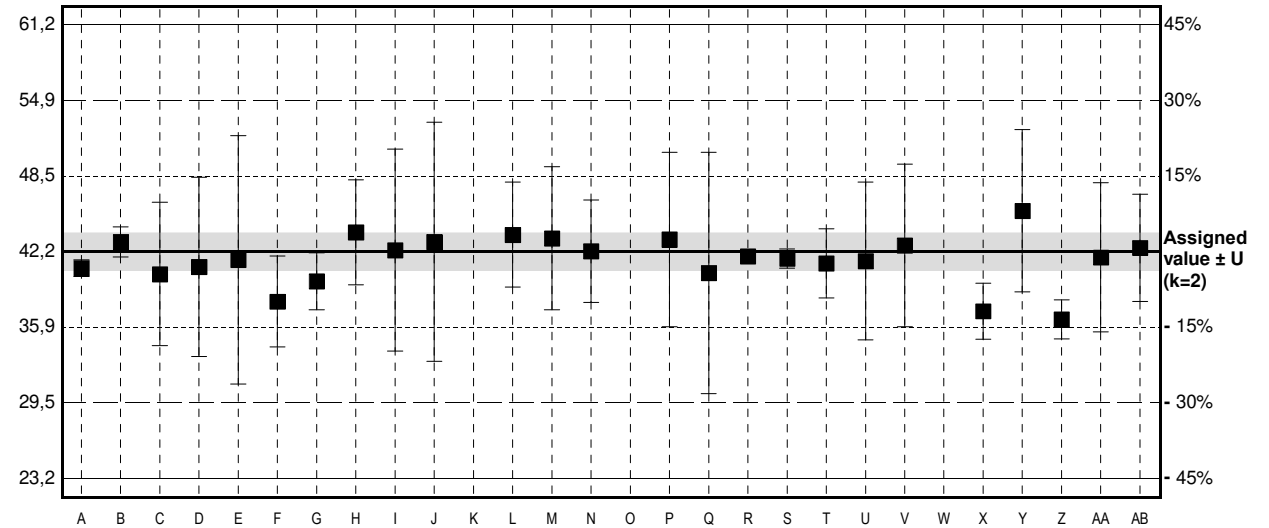
IFA result ± U (k=2) 46,4 µg/l ± 5,1 µg/l

Stability test µg/l

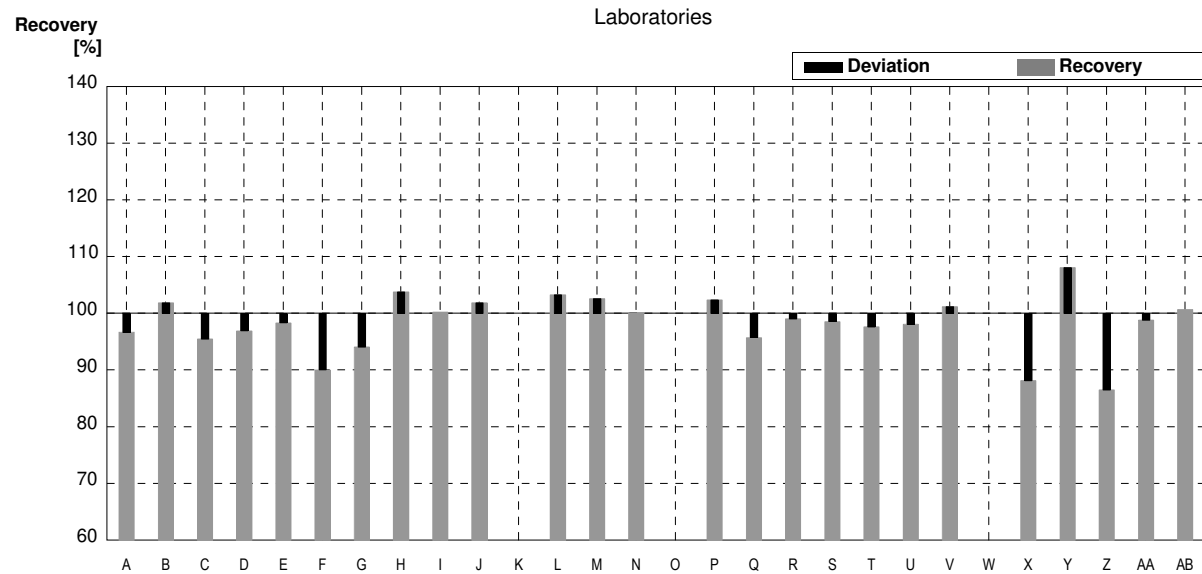
Lab Code	Result	±	Unit	Recovery	z-Score
A	40,8	0,7	µg/l	97%	-0,48
B	43,0	1,26	µg/l	102%	0,27
C	40,3	6,0	µg/l	95%	-0,65
D	40,9	7,5	µg/l	97%	-0,45
E	41,5	10,4	µg/l	98%	-0,24
F	38,0	3,80	µg/l	90%	-1,44
G	39,7	2,38	µg/l	94%	-0,86
H	43,8	4,4	µg/l	104%	0,55
I	42,3	8,46	µg/l	100%	0,03
J	43,0	10	µg/l	102%	0,27
K			µg/l		
L	43,6	4,4	µg/l	103%	0,48
M	43,3	6,0	µg/l	103%	0,38
N	42,22	4,3	µg/l	100%	0,01
O			µg/l		
P	43,2	7,3	µg/l	102%	0,34
Q	40,4	10,1	µg/l	96%	-0,62
R	41,8	0,207	µg/l	99%	-0,14
S	41,6	0,808	µg/l	99%	-0,21
T	41,2	2,9	µg/l	98%	-0,34
U	41,4	6,6	µg/l	98%	-0,27
V	42,7	6,8	µg/l	101%	0,17
W			µg/l		
X	37,2	2,34	µg/l	88%	-1,72
Y	45,6	6,8	µg/l	108%	1,17
Z	36,5	1,63	µg/l	86%	-1,96
AA	41,7	6,25	µg/l	99%	-0,17
AB	42,5	4,5	µg/l	101%	0,10

	All results	Outliers excl.	Unit
Mean ± CI(99%)	41,5 ± 1,2	41,5 ± 1,2	µg/l
Recov. ± CI(99%)	98,4 ± 2,8	98,4 ± 2,8	%
SD between labs	2,1	2,1	µg/l
RSD between labs	5,0	5,0	%
n for calculation	25	25	

Result [µg/l]



Recovery [%]



Sample M171B

Parameter Zinc

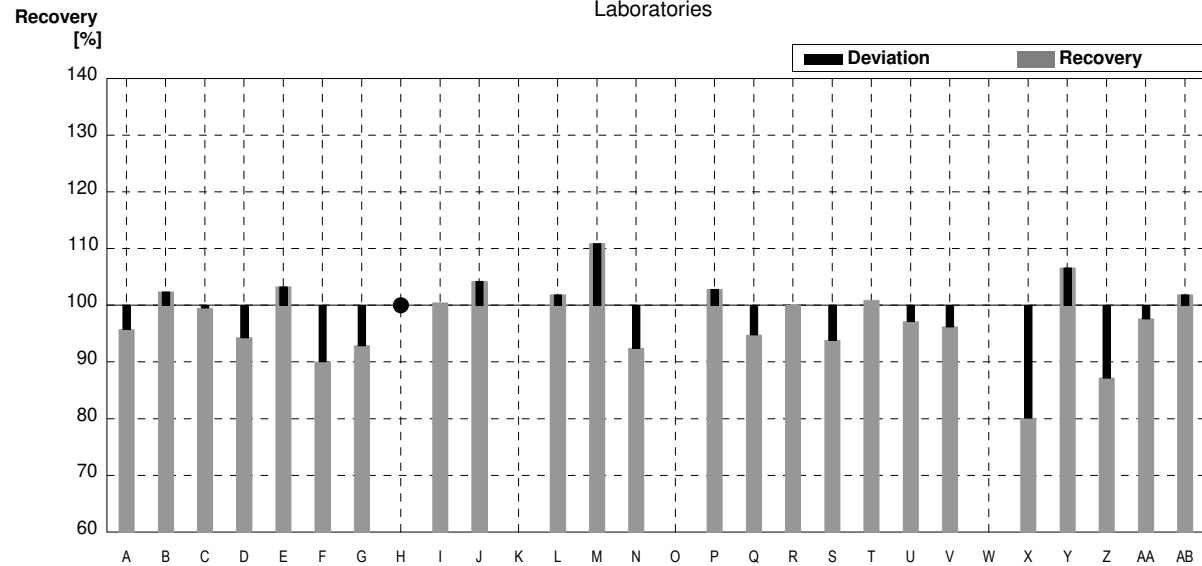
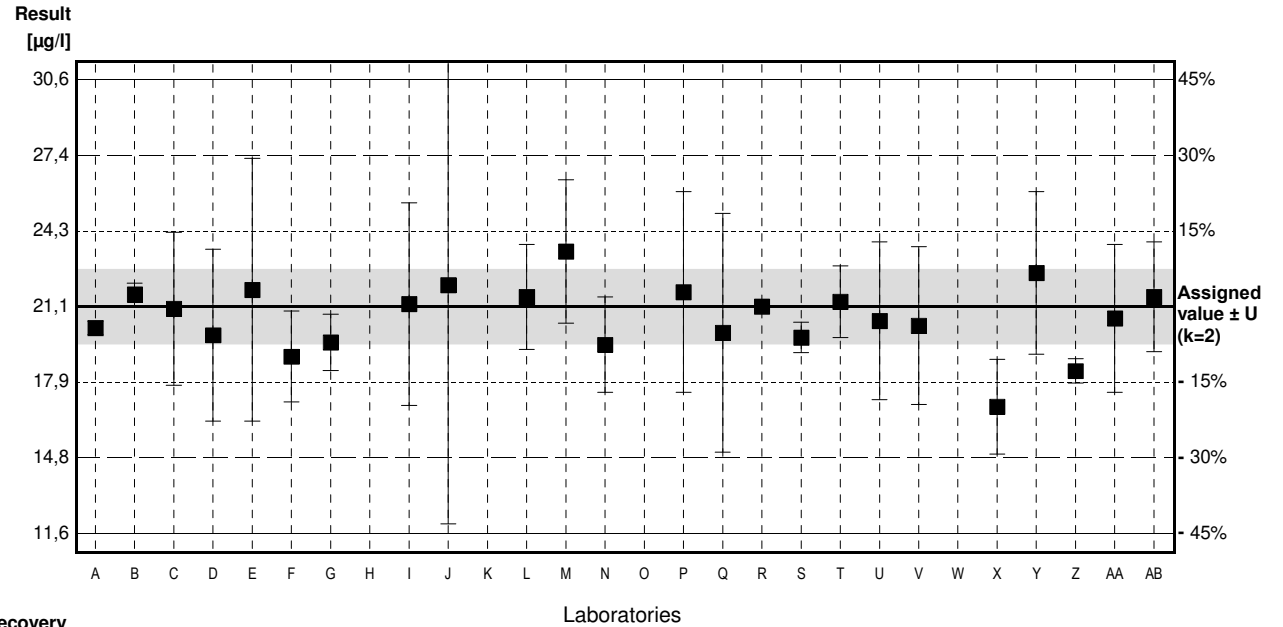
Assigned value ± U (k=2) 21,1 µg/l ± 1,6 µg/l

IFA result ± U (k=2) 23,3 µg/l ± 2,8 µg/l

Stability test µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	20,2	0,28	µg/l	96%	-0,62
B	21,6	0,47	µg/l	102%	0,34
C	21,0	3,2	µg/l	100%	-0,07
D	19,9	3,6	µg/l	94%	-0,82
E	21,8	5,5	µg/l	103%	0,48
F	19,0	1,90	µg/l	90%	-1,44
G	19,6	1,18	µg/l	93%	-1,03
H	<40		µg/l	•	
I	21,2	4,24	µg/l	100%	0,07
J	22,0	10	µg/l	104%	0,62
K			µg/l		
L	21,5	2,2	µg/l	102%	0,27
M	23,4	3,0	µg/l	111%	1,58
N	19,50	2,0	µg/l	92%	-1,10
O			µg/l		
P	21,7	4,2	µg/l	103%	0,41
Q	20,0	5,0	µg/l	95%	-0,76
R	21,1	0,195	µg/l	100%	0,00
S	19,8	0,635	µg/l	94%	-0,89
T	21,3	1,5	µg/l	101%	0,14
U	20,5	3,3	µg/l	97%	-0,41
V	20,3	3,3	µg/l	96%	-0,55
W			µg/l		
X	16,9	1,98	µg/l	80%	-2,88
Y	22,5	3,4	µg/l	107%	0,96
Z	18,4	0,51	µg/l	87%	-1,85
AA	20,6	3,09	µg/l	98%	-0,34
AB	21,5	2,3	µg/l	102%	0,27

	All results	Outliers excl.	Unit
Mean ± CI(99%)	20,6 ± 0,8	20,6 ± 0,8	µg/l
Recov. ± CI(99%)	97,8 ± 3,8	97,8 ± 3,8	%
SD between labs	1,4	1,4	µg/l
RSD between labs	6,8	6,8	%
n for calculation	24	24	



Labororientierte Auswertung

Laboratory Oriented Part

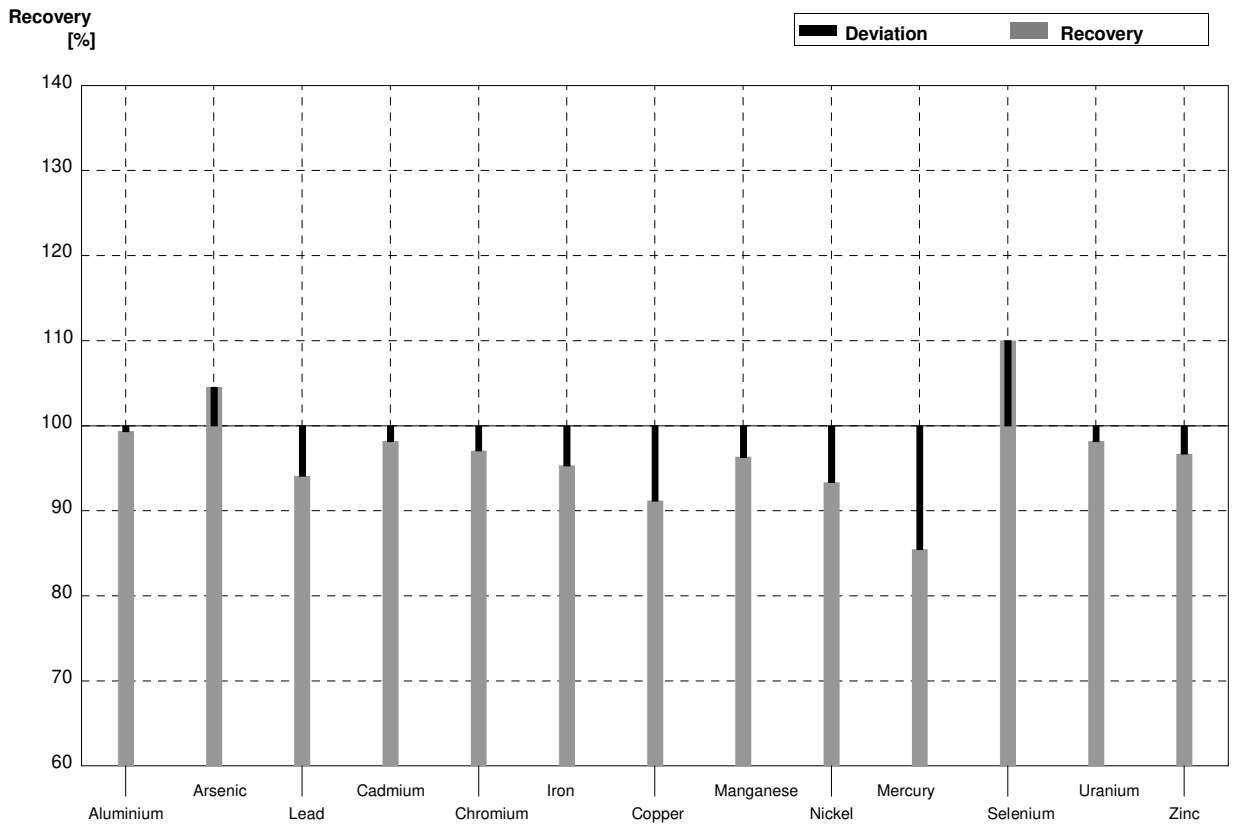
Eignungsprüfungsrunde / Proficiency testing round
M171

Metalle / Metals

Versand / Dispatch: 18.03.2024

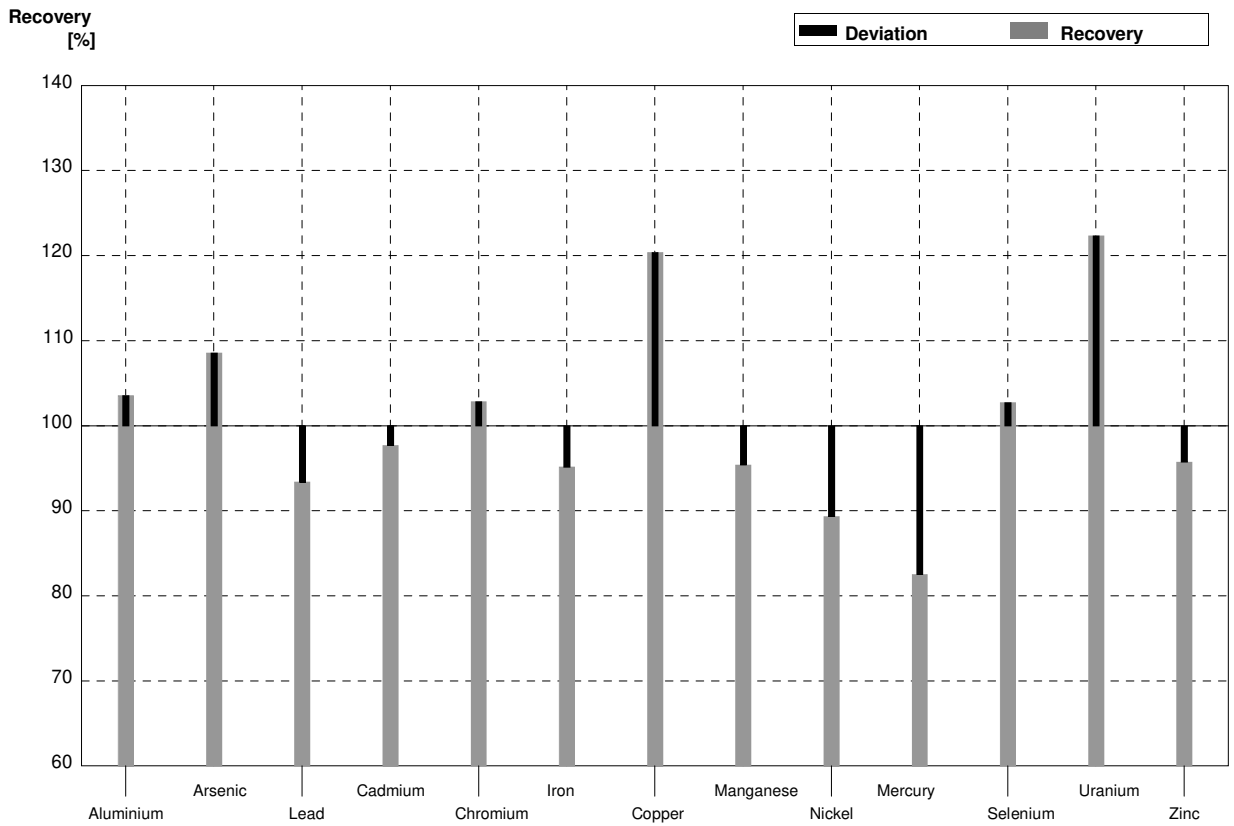
Sample M171A
Laboratory A

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,4	1,1	$\mu\text{g/l}$	99%
Arsenic	4,41	0,03	4,61	0,18	$\mu\text{g/l}$	105%
Lead	3,22	0,02	3,03	0,08	$\mu\text{g/l}$	94%
Cadmium	2,73	0,02	2,68	0,03	$\mu\text{g/l}$	98%
Chromium	4,08	0,03	3,96	0,38	$\mu\text{g/l}$	97%
Iron	65,9	0,3	62,8	0,6	$\mu\text{g/l}$	95%
Copper	8,04	0,06	7,33	0,45	$\mu\text{g/l}$	91%
Manganese	17,44	0,12	16,8	0,4	$\mu\text{g/l}$	96%
Nickel	3,15	0,03	2,94	0,09	$\mu\text{g/l}$	93%
Mercury	1,79	0,02	1,53	0,04	$\mu\text{g/l}$	85%
Selenium	1,20	0,02	1,32	0,20	$\mu\text{g/l}$	110%
Uranium	3,83	0,03	3,76	0,34	$\mu\text{g/l}$	98%
Zinc	42,2	1,6	40,8	0,7	$\mu\text{g/l}$	97%



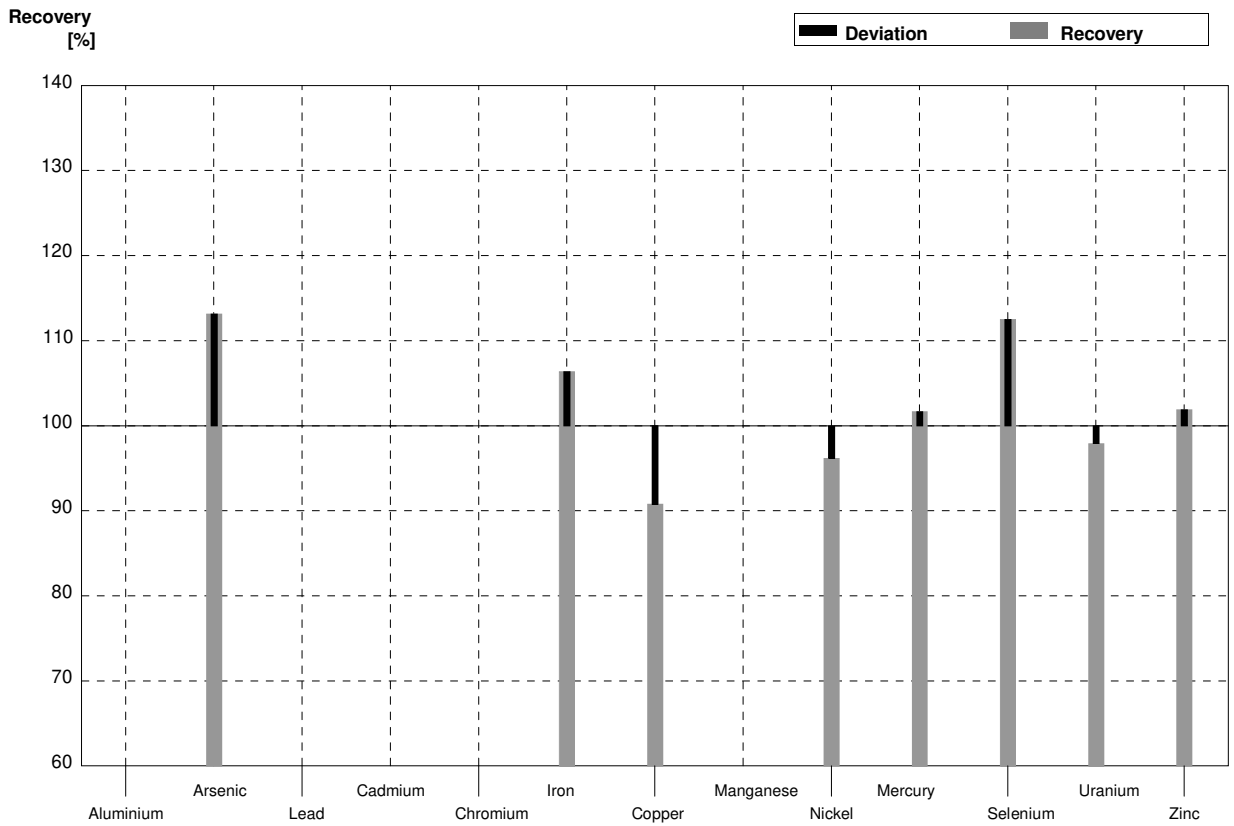
Sample M171B
Laboratory A

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	34,9	0,84	$\mu\text{g/l}$	104%
Arsenic	1,271	0,012	1,38	0,21	$\mu\text{g/l}$	109%
Lead	4,84	0,04	4,52	0,07	$\mu\text{g/l}$	93%
Cadmium	1,863	0,015	1,82	0,05	$\mu\text{g/l}$	98%
Chromium	2,227	0,019	2,29	0,20	$\mu\text{g/l}$	103%
Iron	45,4	0,2	43,2	0,36	$\mu\text{g/l}$	95%
Copper	1,62	0,03	1,95	0,71	$\mu\text{g/l}$	120%
Manganese	28,30	0,15	27,0	0,05	$\mu\text{g/l}$	95%
Nickel	2,44	0,03	2,18	0,21	$\mu\text{g/l}$	89%
Mercury	0,945	0,015	0,78	0,02	$\mu\text{g/l}$	83%
Selenium	4,79	0,04	4,92	0,16	$\mu\text{g/l}$	103%
Uranium	0,515	0,006	0,63	0,25	$\mu\text{g/l}$	122%
Zinc	21,1	1,6	20,2	0,28	$\mu\text{g/l}$	96%



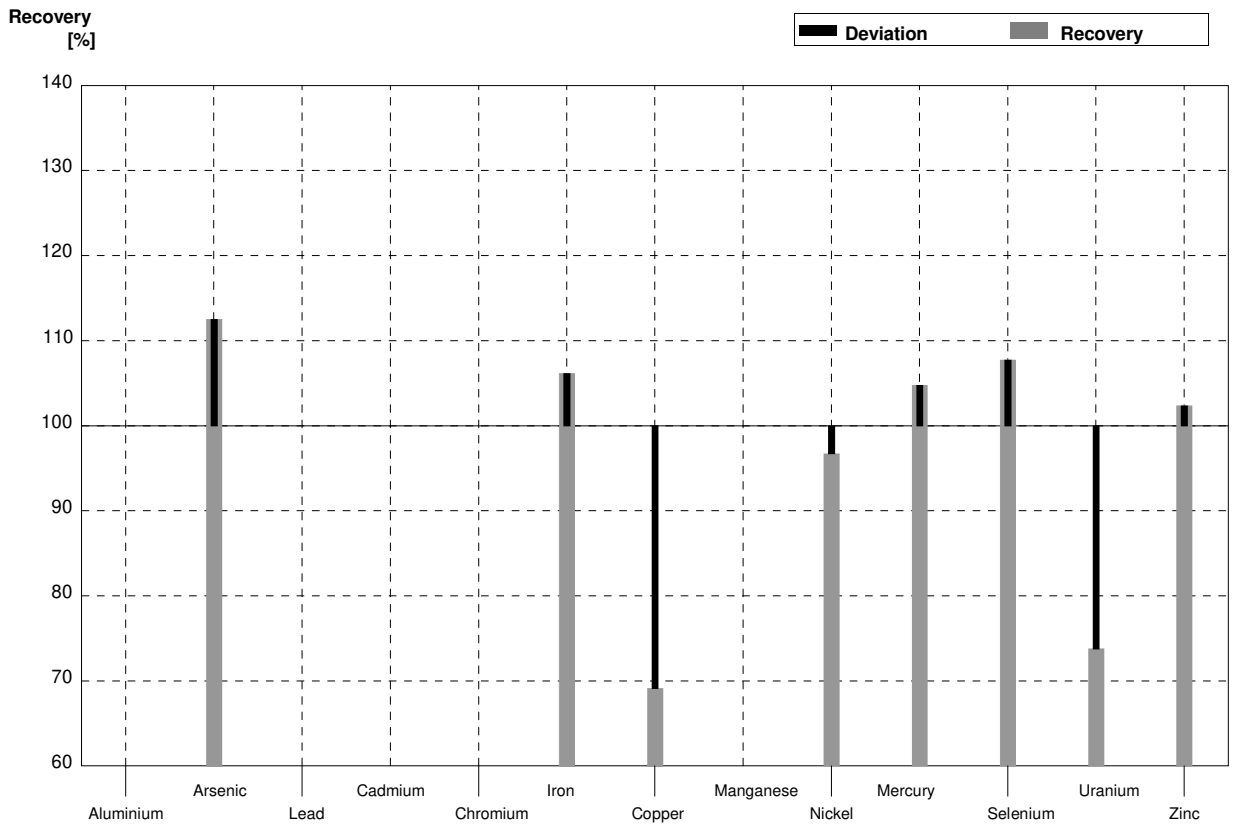
Sample M171A
Laboratory B

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15			$\mu\text{g/l}$	
Arsenic	4,41	0,03	4,99	0,05	$\mu\text{g/l}$	113%
Lead	3,22	0,02			$\mu\text{g/l}$	
Cadmium	2,73	0,02			$\mu\text{g/l}$	
Chromium	4,08	0,03			$\mu\text{g/l}$	
Iron	65,9	0,3	70,1	0,53	$\mu\text{g/l}$	106%
Copper	8,04	0,06	7,3	0,07	$\mu\text{g/l}$	91%
Manganese	17,44	0,12			$\mu\text{g/l}$	
Nickel	3,15	0,03	3,03	0,09	$\mu\text{g/l}$	96%
Mercury	1,79	0,02	1,82	0,05	$\mu\text{g/l}$	102%
Selenium	1,20	0,02	1,35	0,05	$\mu\text{g/l}$	113%
Uranium	3,83	0,03	3,75	0,05	$\mu\text{g/l}$	98%
Zinc	42,2	1,6	43,0	1,26	$\mu\text{g/l}$	102%



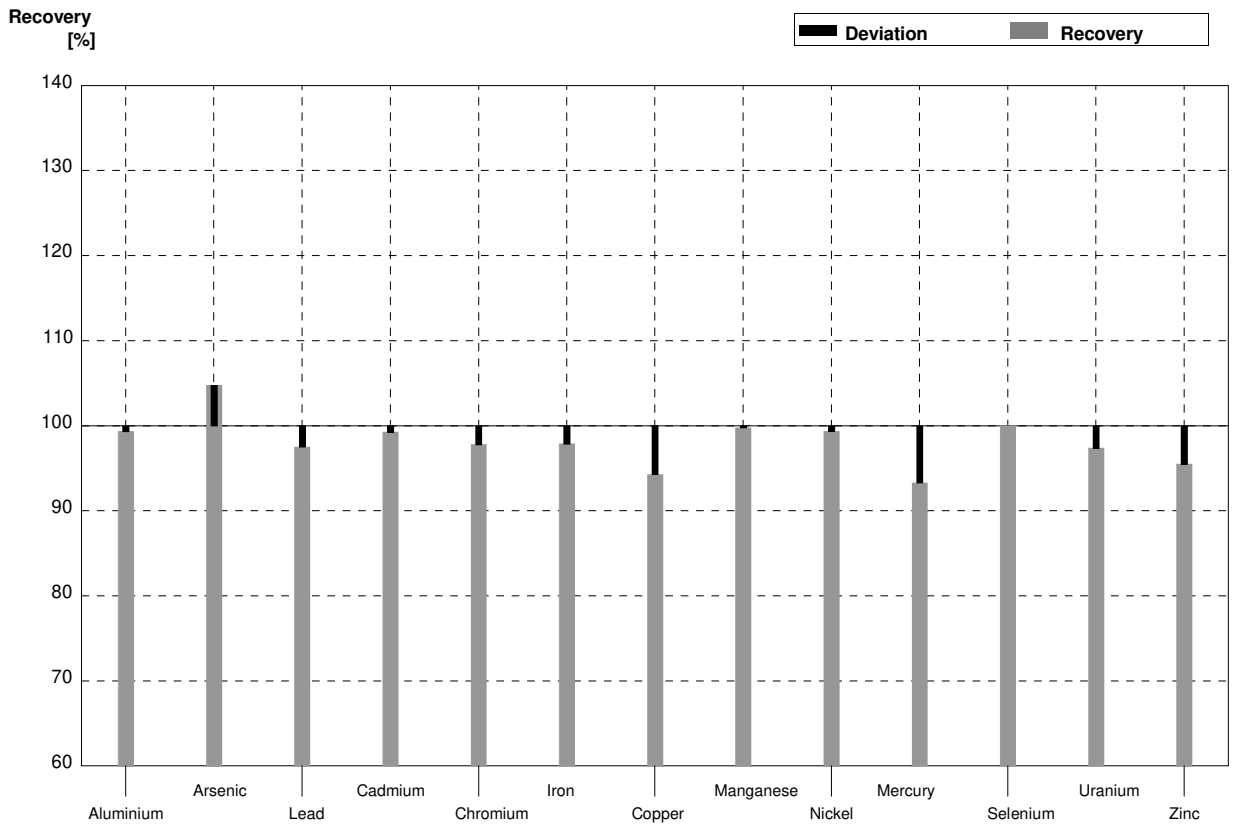
Sample M171B
Laboratory B

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3			µg/l	
Arsenic	1,271	0,012	1,43	0,05	µg/l	113%
Lead	4,84	0,04			µg/l	
Cadmium	1,863	0,015			µg/l	
Chromium	2,227	0,019			µg/l	
Iron	45,4	0,2	48,2	0,44	µg/l	106%
Copper	1,62	0,03	1,12	0,05	µg/l	69%
Manganese	28,30	0,15			µg/l	
Nickel	2,44	0,03	2,36	0,05	µg/l	97%
Mercury	0,945	0,015	0,99	0,05	µg/l	105%
Selenium	4,79	0,04	5,16	0,05	µg/l	108%
Uranium	0,515	0,006	0,380	0,05	µg/l	74%
Zinc	21,1	1,6	21,6	0,47	µg/l	102%



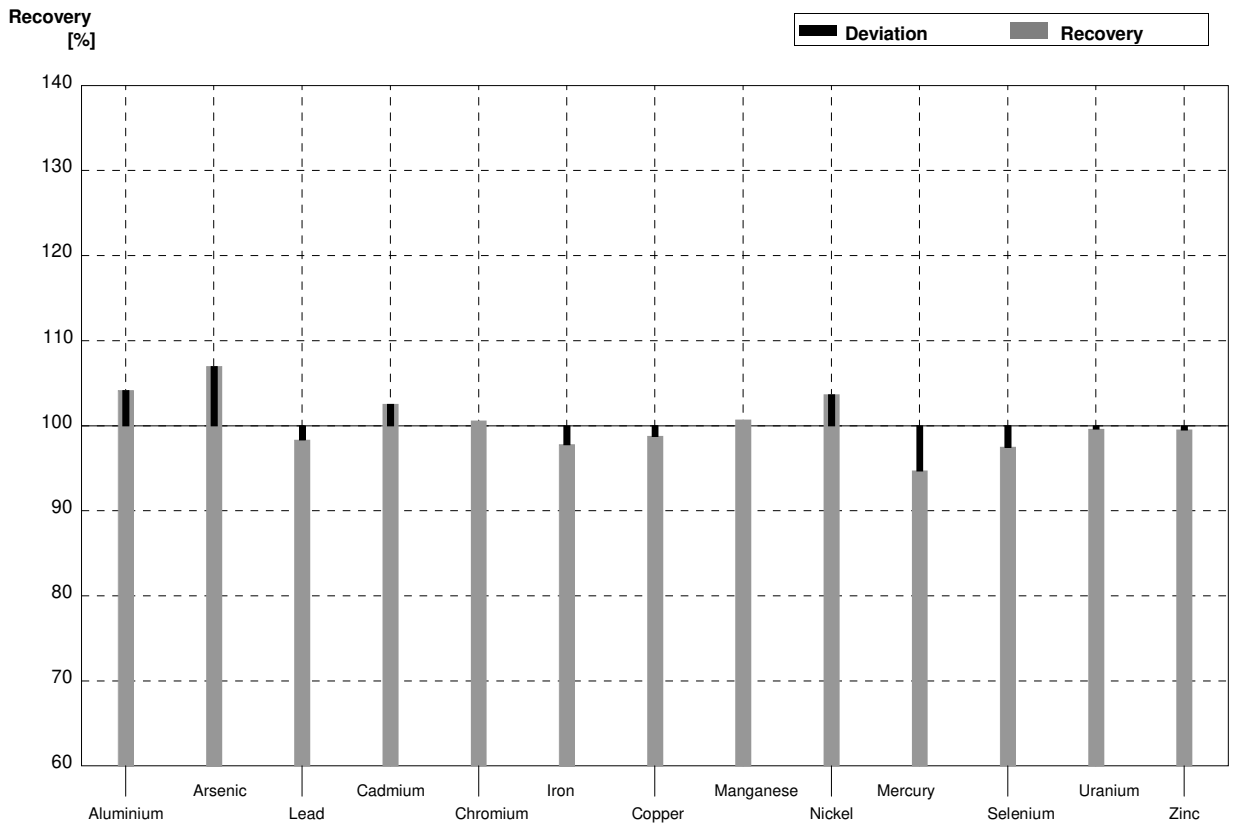
Sample M171A
Laboratory C

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,4	2,1	$\mu\text{g/l}$	99%
Arsenic	4,41	0,03	4,62	0,69	$\mu\text{g/l}$	105%
Lead	3,22	0,02	3,14	0,38	$\mu\text{g/l}$	98%
Cadmium	2,73	0,02	2,71	0,33	$\mu\text{g/l}$	99%
Chromium	4,08	0,03	3,99	0,60	$\mu\text{g/l}$	98%
Iron	65,9	0,3	64,5	10	$\mu\text{g/l}$	98%
Copper	8,04	0,06	7,58	0,91	$\mu\text{g/l}$	94%
Manganese	17,44	0,12	17,4	2,1	$\mu\text{g/l}$	100%
Nickel	3,15	0,03	3,13	0,34	$\mu\text{g/l}$	99%
Mercury	1,79	0,02	1,67	0,37	$\mu\text{g/l}$	93%
Selenium	1,20	0,02	1,20	0,18	$\mu\text{g/l}$	100%
Uranium	3,83	0,03	3,73	0,56	$\mu\text{g/l}$	97%
Zinc	42,2	1,6	40,3	6,0	$\mu\text{g/l}$	95%



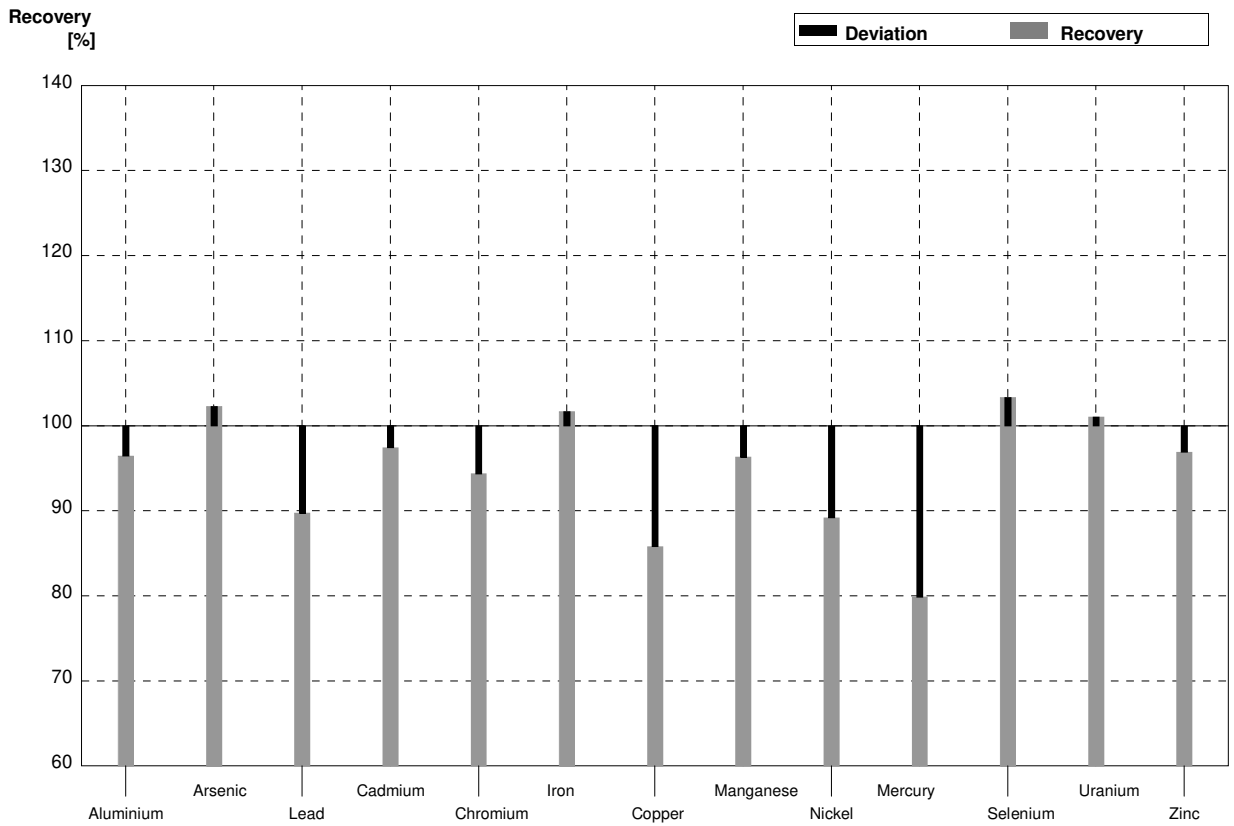
Sample M171B
Laboratory C

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	35,1	7,0	$\mu\text{g/l}$	104%
Arsenic	1,271	0,012	1,36	0,20	$\mu\text{g/l}$	107%
Lead	4,84	0,04	4,76	0,57	$\mu\text{g/l}$	98%
Cadmium	1,863	0,015	1,91	0,23	$\mu\text{g/l}$	103%
Chromium	2,227	0,019	2,24	0,34	$\mu\text{g/l}$	101%
Iron	45,4	0,2	44,4	6,7	$\mu\text{g/l}$	98%
Copper	1,62	0,03	1,60	0,19	$\mu\text{g/l}$	99%
Manganese	28,30	0,15	28,5	3,4	$\mu\text{g/l}$	101%
Nickel	2,44	0,03	2,53	0,28	$\mu\text{g/l}$	104%
Mercury	0,945	0,015	0,895	0,20	$\mu\text{g/l}$	95%
Selenium	4,79	0,04	4,67	0,70	$\mu\text{g/l}$	97%
Uranium	0,515	0,006	0,513	0,077	$\mu\text{g/l}$	100%
Zinc	21,1	1,6	21,0	3,2	$\mu\text{g/l}$	100%



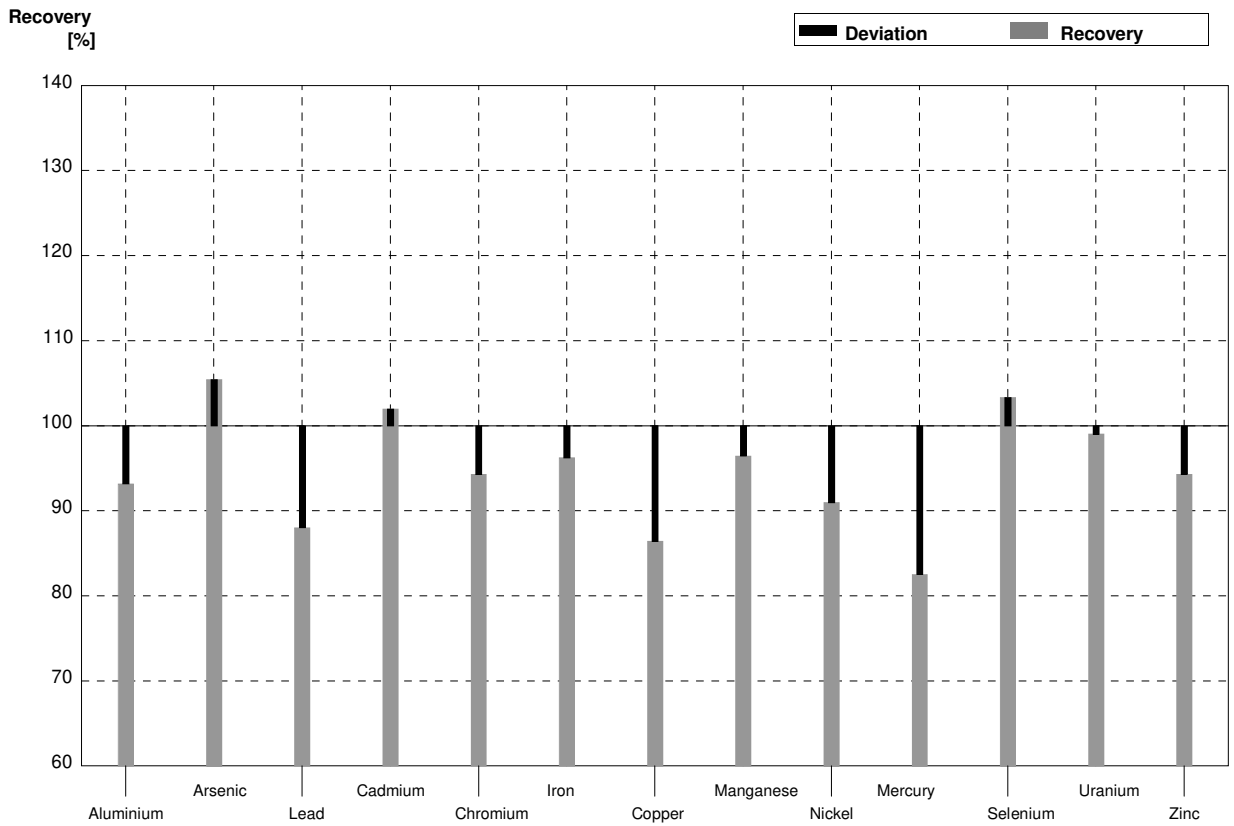
Sample M171A
Laboratory D

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,1	1,3	$\mu\text{g/l}$	96%
Arsenic	4,41	0,03	4,51	1,20	$\mu\text{g/l}$	102%
Lead	3,22	0,02	2,89	0,78	$\mu\text{g/l}$	90%
Cadmium	2,73	0,02	2,66	0,31	$\mu\text{g/l}$	97%
Chromium	4,08	0,03	3,85	0,44	$\mu\text{g/l}$	94%
Iron	65,9	0,3	67	13	$\mu\text{g/l}$	102%
Copper	8,04	0,06	6,9	1,2	$\mu\text{g/l}$	86%
Manganese	17,44	0,12	16,8	2,2	$\mu\text{g/l}$	96%
Nickel	3,15	0,03	2,81	0,23	$\mu\text{g/l}$	89%
Mercury	1,79	0,02	1,43	0,27	$\mu\text{g/l}$	80%
Selenium	1,20	0,02	1,24	0,17	$\mu\text{g/l}$	103%
Uranium	3,83	0,03	3,87		$\mu\text{g/l}$	101%
Zinc	42,2	1,6	40,9	7,5	$\mu\text{g/l}$	97%



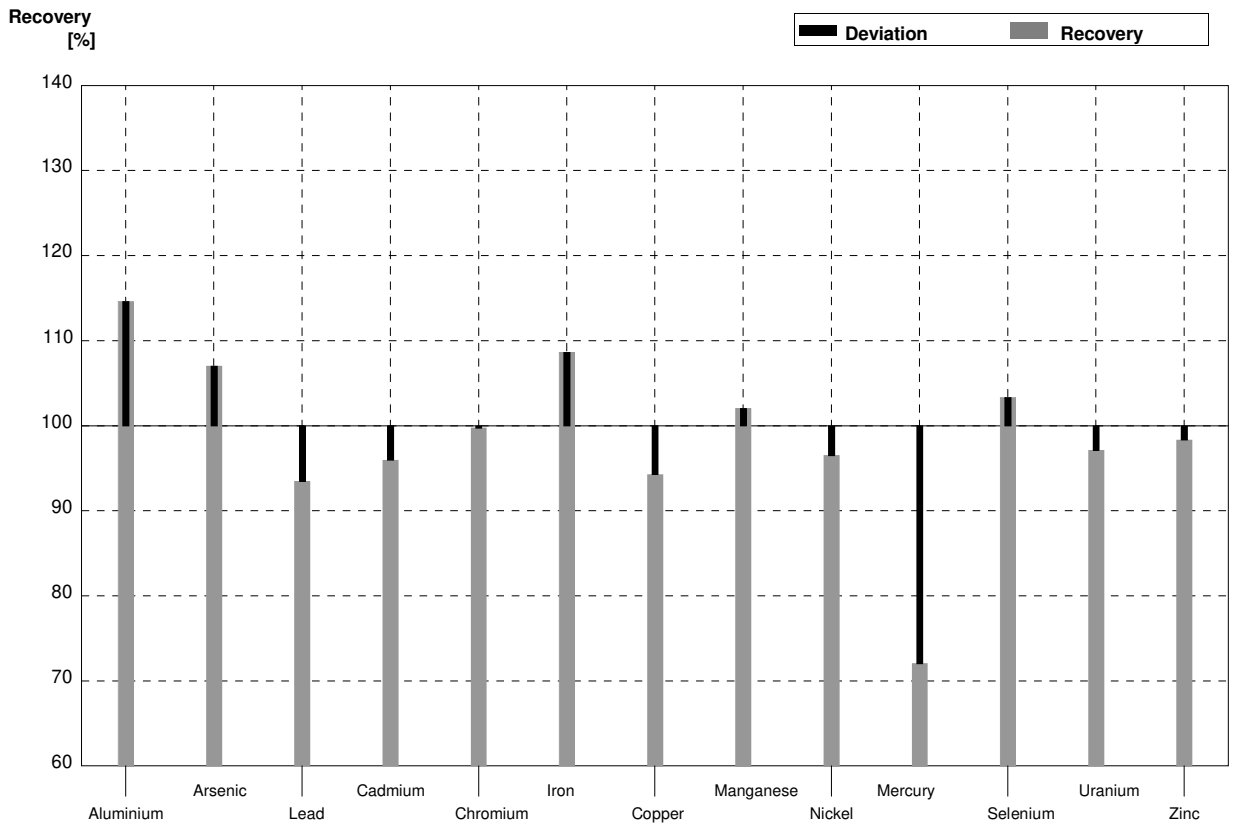
Sample M171B
Laboratory D

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	31,4	4,1	µg/l	93%
Arsenic	1,271	0,012	1,34	0,36	µg/l	105%
Lead	4,84	0,04	4,26	1,15	µg/l	88%
Cadmium	1,863	0,015	1,90	0,22	µg/l	102%
Chromium	2,227	0,019	2,10	0,24	µg/l	94%
Iron	45,4	0,2	43,7	8,7	µg/l	96%
Copper	1,62	0,03	1,40	0,25	µg/l	86%
Manganese	28,30	0,15	27,3	3,6	µg/l	96%
Nickel	2,44	0,03	2,22	0,18	µg/l	91%
Mercury	0,945	0,015	0,78	0,15	µg/l	83%
Selenium	4,79	0,04	4,95	0,69	µg/l	103%
Uranium	0,515	0,006	0,51		µg/l	99%
Zinc	21,1	1,6	19,9	3,6	µg/l	94%



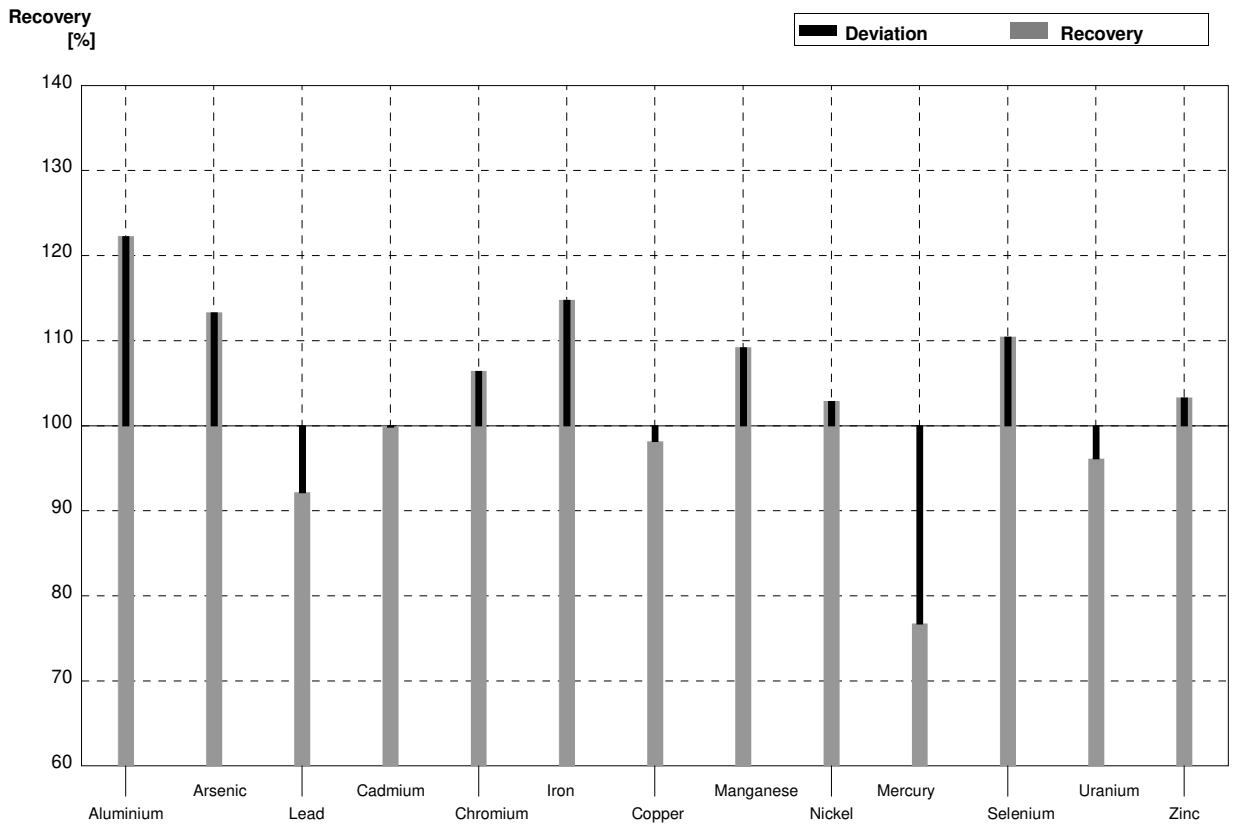
Sample M171A
Laboratory E

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	12,0	3,0	$\mu\text{g/l}$	115%
Arsenic	4,41	0,03	4,72	1,18	$\mu\text{g/l}$	107%
Lead	3,22	0,02	3,01	0,75	$\mu\text{g/l}$	93%
Cadmium	2,73	0,02	2,62	0,66	$\mu\text{g/l}$	96%
Chromium	4,08	0,03	4,07	1,02	$\mu\text{g/l}$	100%
Iron	65,9	0,3	71,6	17,9	$\mu\text{g/l}$	109%
Copper	8,04	0,06	7,58	1,90	$\mu\text{g/l}$	94%
Manganese	17,44	0,12	17,8	4,5	$\mu\text{g/l}$	102%
Nickel	3,15	0,03	3,04	0,76	$\mu\text{g/l}$	97%
Mercury	1,79	0,02	1,29	0,32	$\mu\text{g/l}$	72%
Selenium	1,20	0,02	1,24	0,31	$\mu\text{g/l}$	103%
Uranium	3,83	0,03	3,72	0,93	$\mu\text{g/l}$	97%
Zinc	42,2	1,6	41,5	10,4	$\mu\text{g/l}$	98%



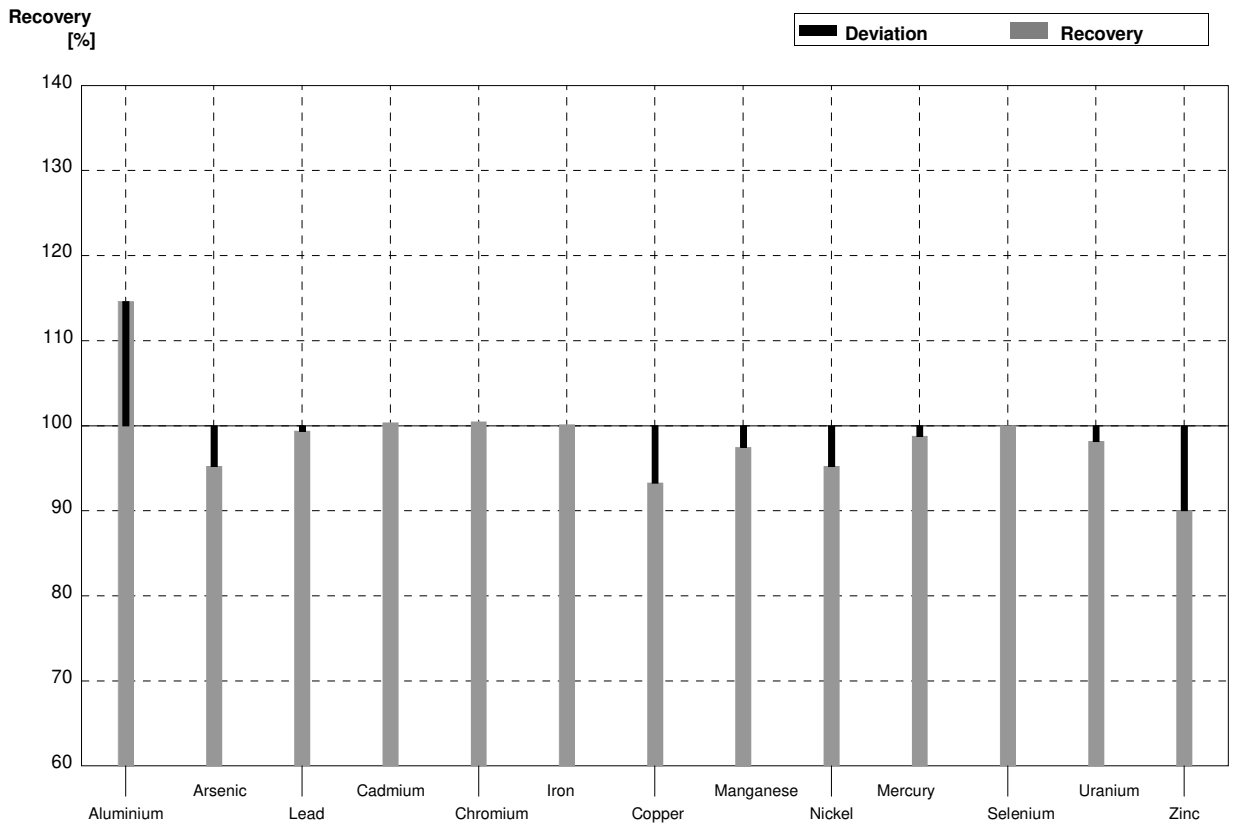
Sample M171B
Laboratory E

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	41,2	10,3	µg/l	122%
Arsenic	1,271	0,012	1,44	0,36	µg/l	113%
Lead	4,84	0,04	4,46	1,12	µg/l	92%
Cadmium	1,863	0,015	1,86	0,47	µg/l	100%
Chromium	2,227	0,019	2,37	0,59	µg/l	106%
Iron	45,4	0,2	52,1	13,0	µg/l	115%
Copper	1,62	0,03	1,59	0,40	µg/l	98%
Manganese	28,30	0,15	30,9	7,7	µg/l	109%
Nickel	2,44	0,03	2,51	0,63	µg/l	103%
Mercury	0,945	0,015	0,725	0,181	µg/l	77%
Selenium	4,79	0,04	5,29	1,32	µg/l	110%
Uranium	0,515	0,006	0,495	0,124	µg/l	96%
Zinc	21,1	1,6	21,8	5,5	µg/l	103%



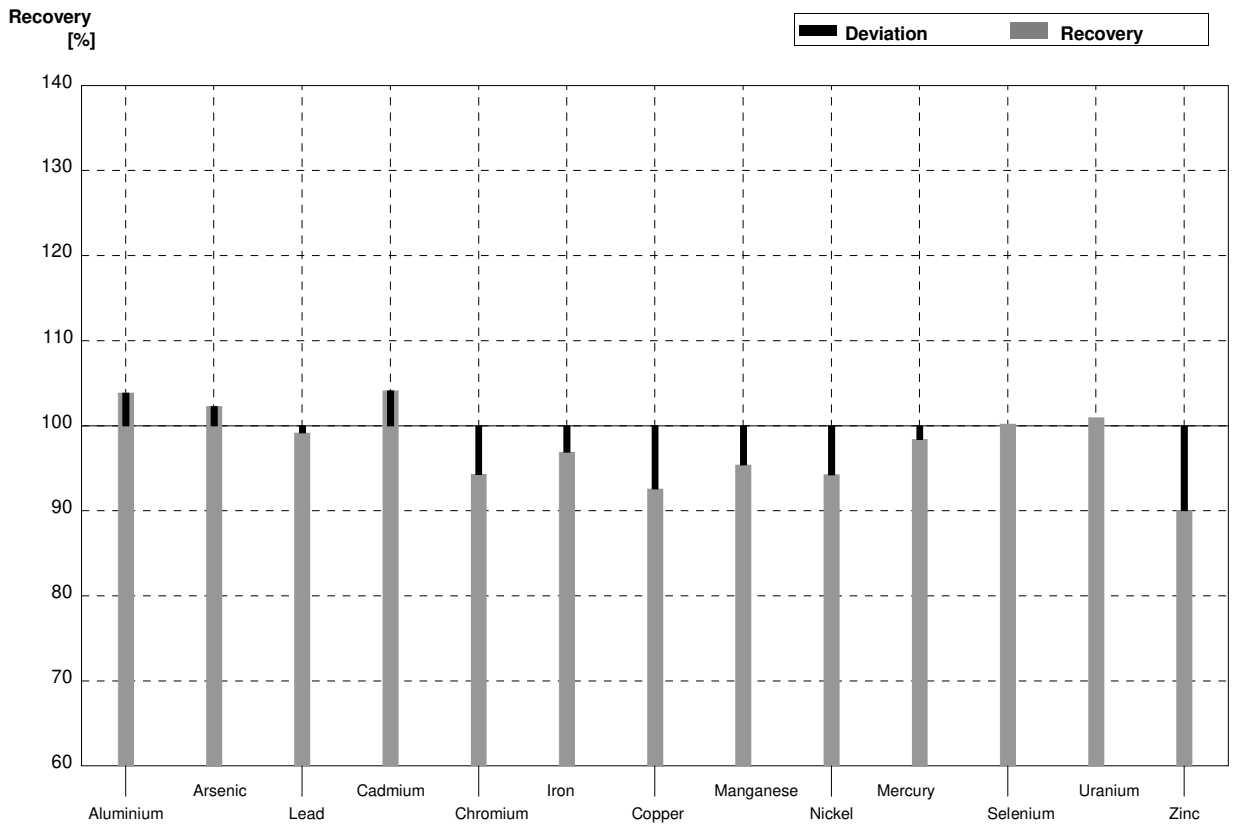
Sample M171A
Laboratory F

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	12,0	1,20	$\mu\text{g/l}$	115%
Arsenic	4,41	0,03	4,20	0,504	$\mu\text{g/l}$	95%
Lead	3,22	0,02	3,20	0,256	$\mu\text{g/l}$	99%
Cadmium	2,73	0,02	2,74	0,219	$\mu\text{g/l}$	100%
Chromium	4,08	0,03	4,10	0,492	$\mu\text{g/l}$	100%
Iron	65,9	0,3	66,0	17,2	$\mu\text{g/l}$	100%
Copper	8,04	0,06	7,50	0,60	$\mu\text{g/l}$	93%
Manganese	17,44	0,12	17,0	1,70	$\mu\text{g/l}$	97%
Nickel	3,15	0,03	3,00	0,30	$\mu\text{g/l}$	95%
Mercury	1,79	0,02	1,768	0,265	$\mu\text{g/l}$	99%
Selenium	1,20	0,02	1,20	0,18	$\mu\text{g/l}$	100%
Uranium	3,83	0,03	3,76	0,188	$\mu\text{g/l}$	98%
Zinc	42,2	1,6	38,0	3,80	$\mu\text{g/l}$	90%



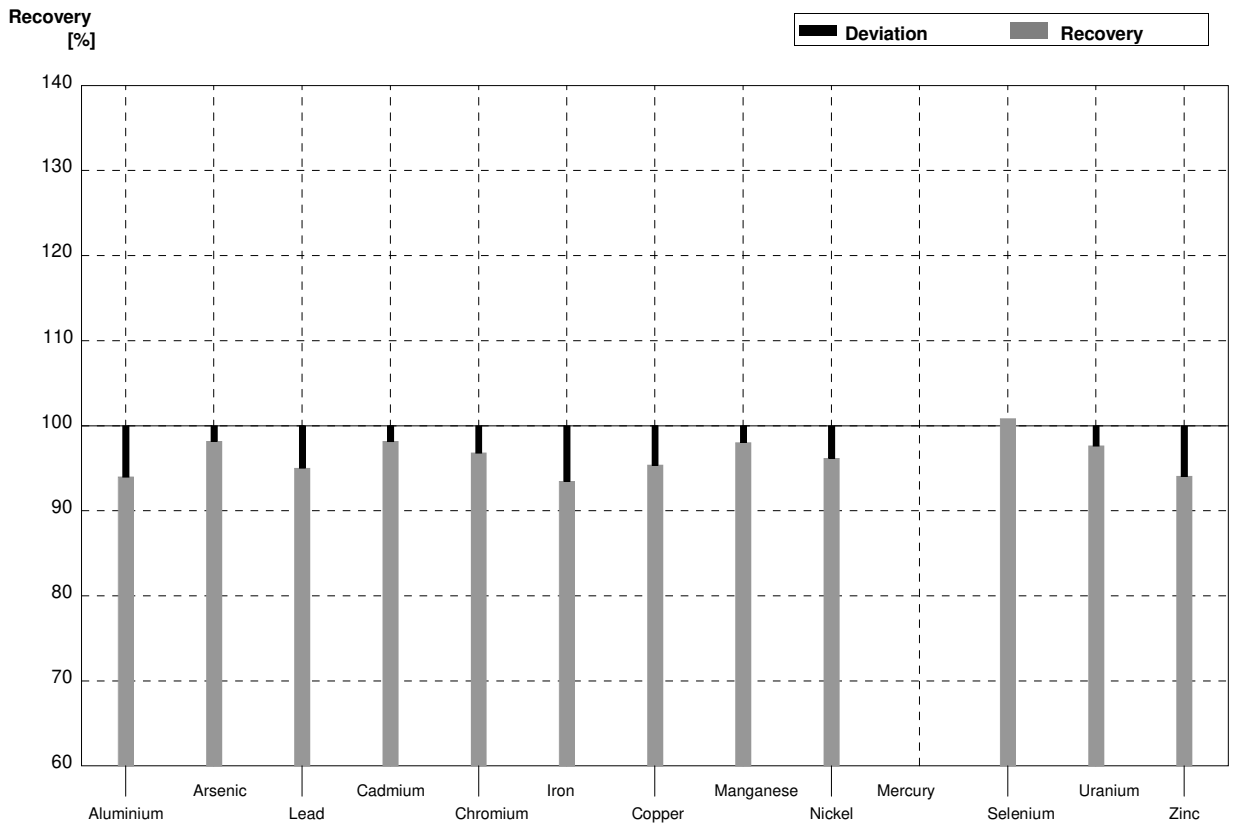
Sample M171B
Laboratory F

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	35,0	3,50	$\mu\text{g/l}$	104%
Arsenic	1,271	0,012	1,30	0,156	$\mu\text{g/l}$	102%
Lead	4,84	0,04	4,80	0,384	$\mu\text{g/l}$	99%
Cadmium	1,863	0,015	1,94	0,155	$\mu\text{g/l}$	104%
Chromium	2,227	0,019	2,10	0,252	$\mu\text{g/l}$	94%
Iron	45,4	0,2	44,0	11,4	$\mu\text{g/l}$	97%
Copper	1,62	0,03	1,50	0,120	$\mu\text{g/l}$	93%
Manganese	28,30	0,15	27,0	2,70	$\mu\text{g/l}$	95%
Nickel	2,44	0,03	2,30	0,23	$\mu\text{g/l}$	94%
Mercury	0,945	0,015	0,930	0,140	$\mu\text{g/l}$	98%
Selenium	4,79	0,04	4,80	0,72	$\mu\text{g/l}$	100%
Uranium	0,515	0,006	0,52	0,026	$\mu\text{g/l}$	101%
Zinc	21,1	1,6	19,0	1,90	$\mu\text{g/l}$	90%



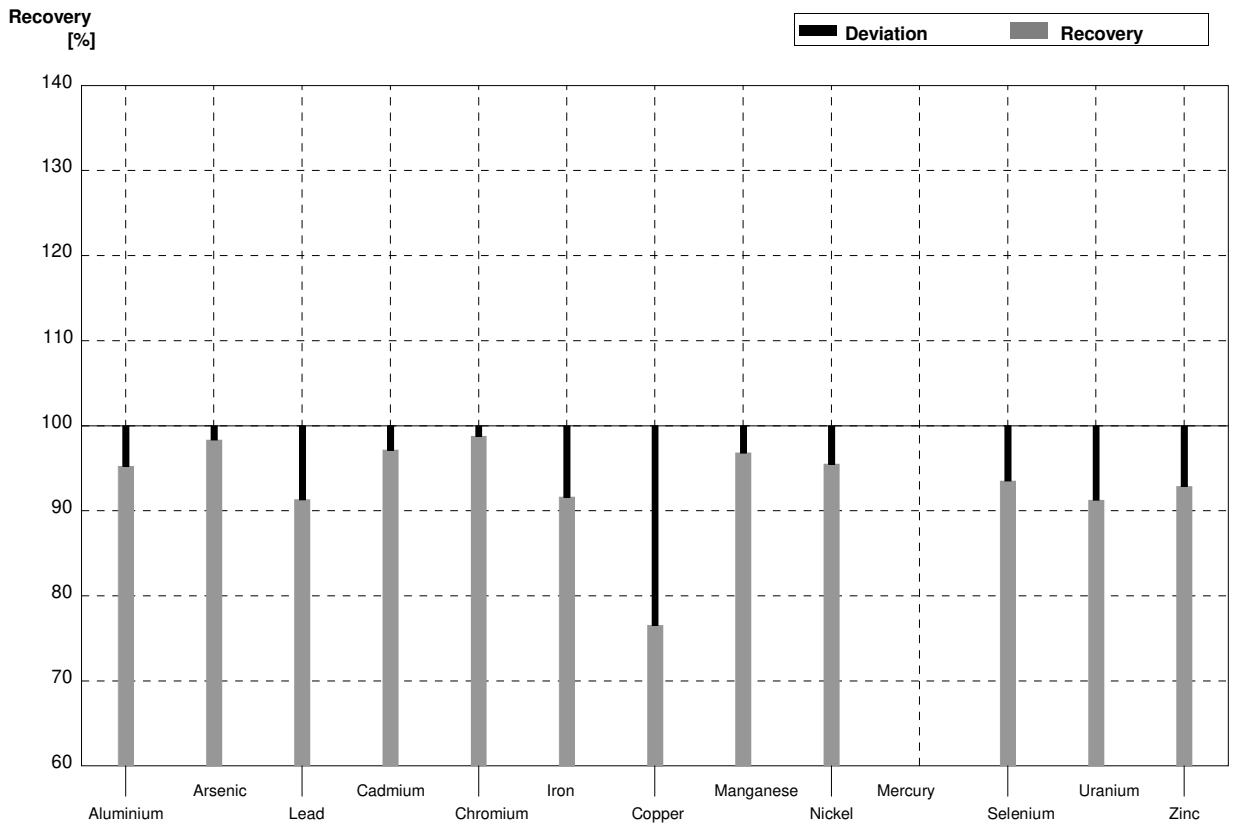
Sample M171A
Laboratory G

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	9,84	0,984	$\mu\text{g/l}$	94%
Arsenic	4,41	0,03	4,33	0,606	$\mu\text{g/l}$	98%
Lead	3,22	0,02	3,06	0,398	$\mu\text{g/l}$	95%
Cadmium	2,73	0,02	2,68	0,188	$\mu\text{g/l}$	98%
Chromium	4,08	0,03	3,95	0,435	$\mu\text{g/l}$	97%
Iron	65,9	0,3	61,6	6,78	$\mu\text{g/l}$	93%
Copper	8,04	0,06	7,67	1,38	$\mu\text{g/l}$	95%
Manganese	17,44	0,12	17,1	1,54	$\mu\text{g/l}$	98%
Nickel	3,15	0,03	3,03	0,212	$\mu\text{g/l}$	96%
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02	1,21	0,109	$\mu\text{g/l}$	101%
Uranium	3,83	0,03	3,74	0,224	$\mu\text{g/l}$	98%
Zinc	42,2	1,6	39,7	2,38	$\mu\text{g/l}$	94%



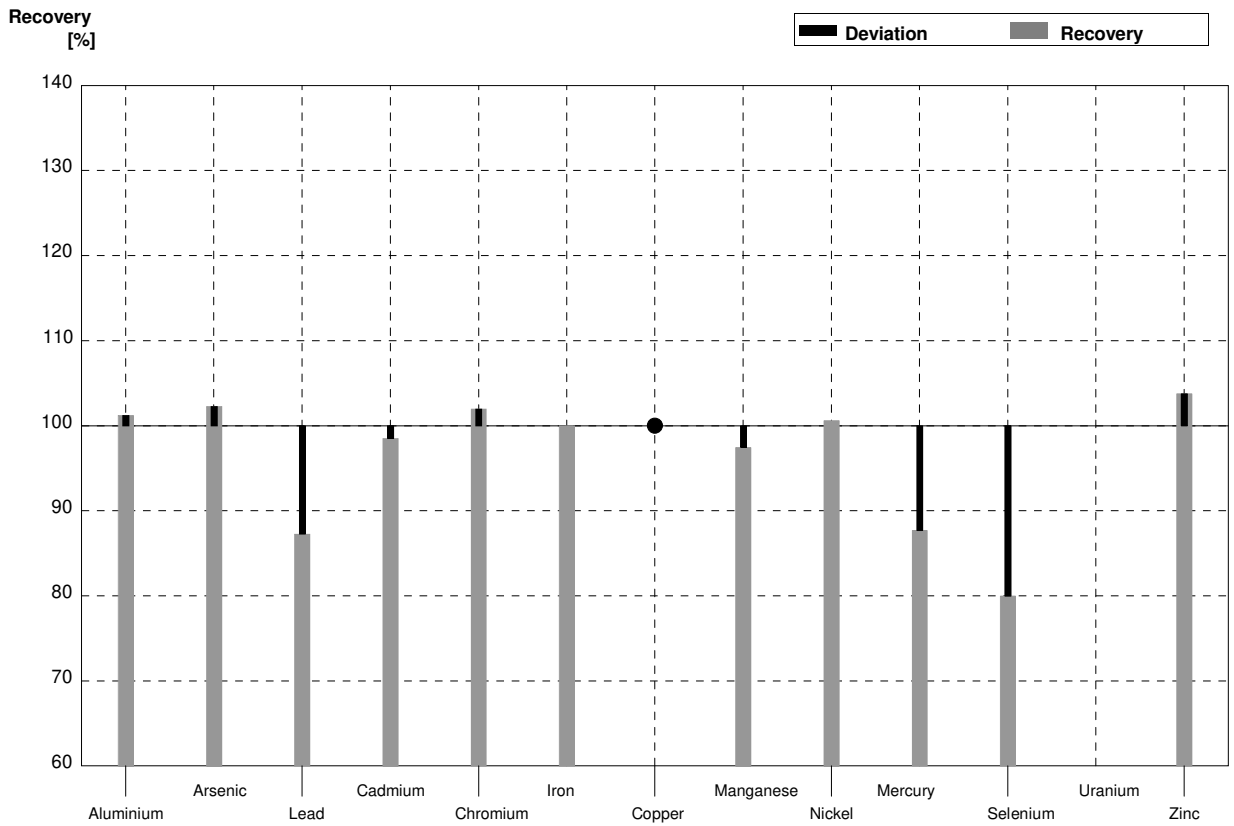
Sample M171B
Laboratory G

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	32,1	3,21	µg/l	95%
Arsenic	1,271	0,012	1,25	0,175	µg/l	98%
Lead	4,84	0,04	4,42	0,575	µg/l	91%
Cadmium	1,863	0,015	1,81	0,127	µg/l	97%
Chromium	2,227	0,019	2,20	0,242	µg/l	99%
Iron	45,4	0,2	41,6	4,58	µg/l	92%
Copper	1,62	0,03	1,24	0,223	µg/l	77%
Manganese	28,30	0,15	27,4	2,47	µg/l	97%
Nickel	2,44	0,03	2,33	0,163	µg/l	95%
Mercury	0,945	0,015			µg/l	
Selenium	4,79	0,04	4,48	0,403	µg/l	94%
Uranium	0,515	0,006	0,470	0,0282	µg/l	91%
Zinc	21,1	1,6	19,6	1,18	µg/l	93%



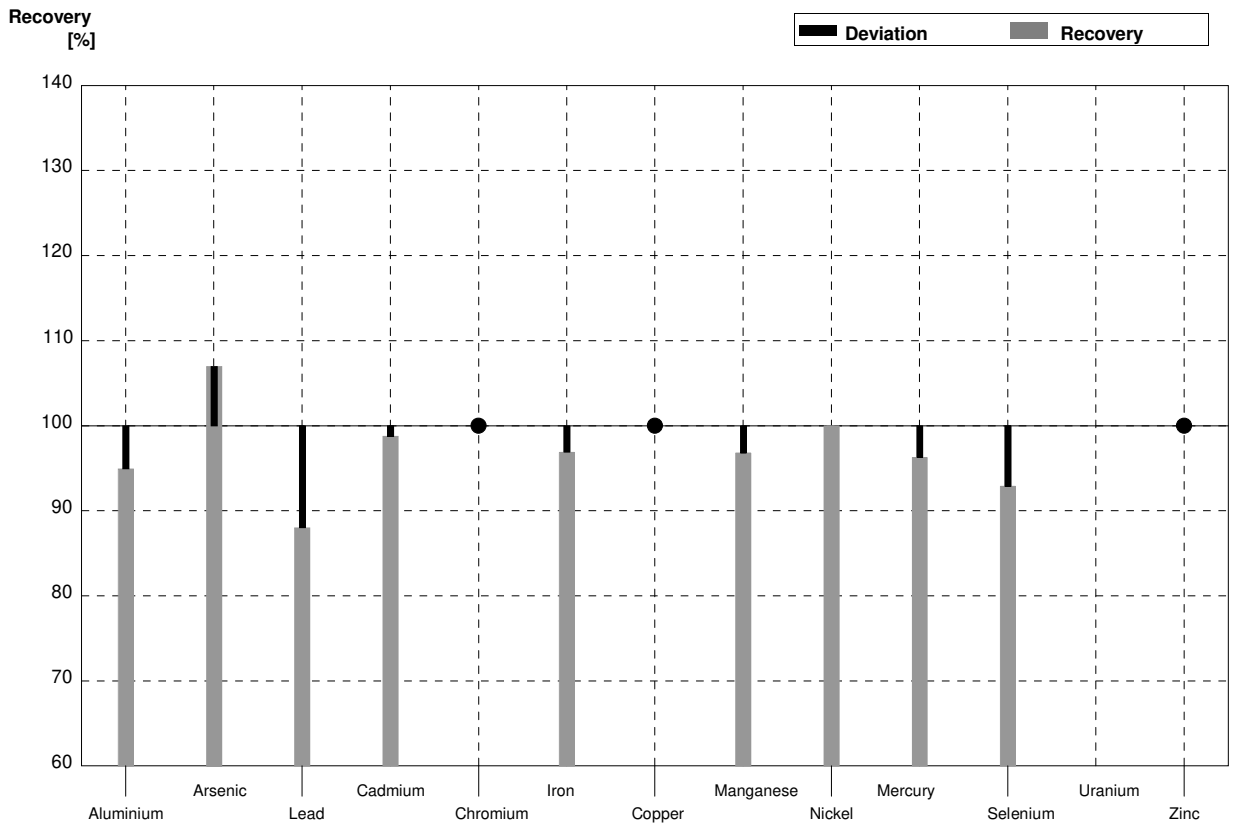
Sample M171A
Laboratory H

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,6	1,1	$\mu\text{g/l}$	101%
Arsenic	4,41	0,03	4,51	0,45	$\mu\text{g/l}$	102%
Lead	3,22	0,02	2,81	0,28	$\mu\text{g/l}$	87%
Cadmium	2,73	0,02	2,69	0,27	$\mu\text{g/l}$	99%
Chromium	4,08	0,03	4,16	0,42	$\mu\text{g/l}$	102%
Iron	65,9	0,3	65,9	6,6	$\mu\text{g/l}$	100%
Copper	8,04	0,06	<100		$\mu\text{g/l}$	•
Manganese	17,44	0,12	17,0	1,7	$\mu\text{g/l}$	97%
Nickel	3,15	0,03	3,17	0,32	$\mu\text{g/l}$	101%
Mercury	1,79	0,02	1,57	0,16	$\mu\text{g/l}$	88%
Selenium	1,20	0,02	0,96	0,19	$\mu\text{g/l}$	80%
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6	43,8	4,4	$\mu\text{g/l}$	104%



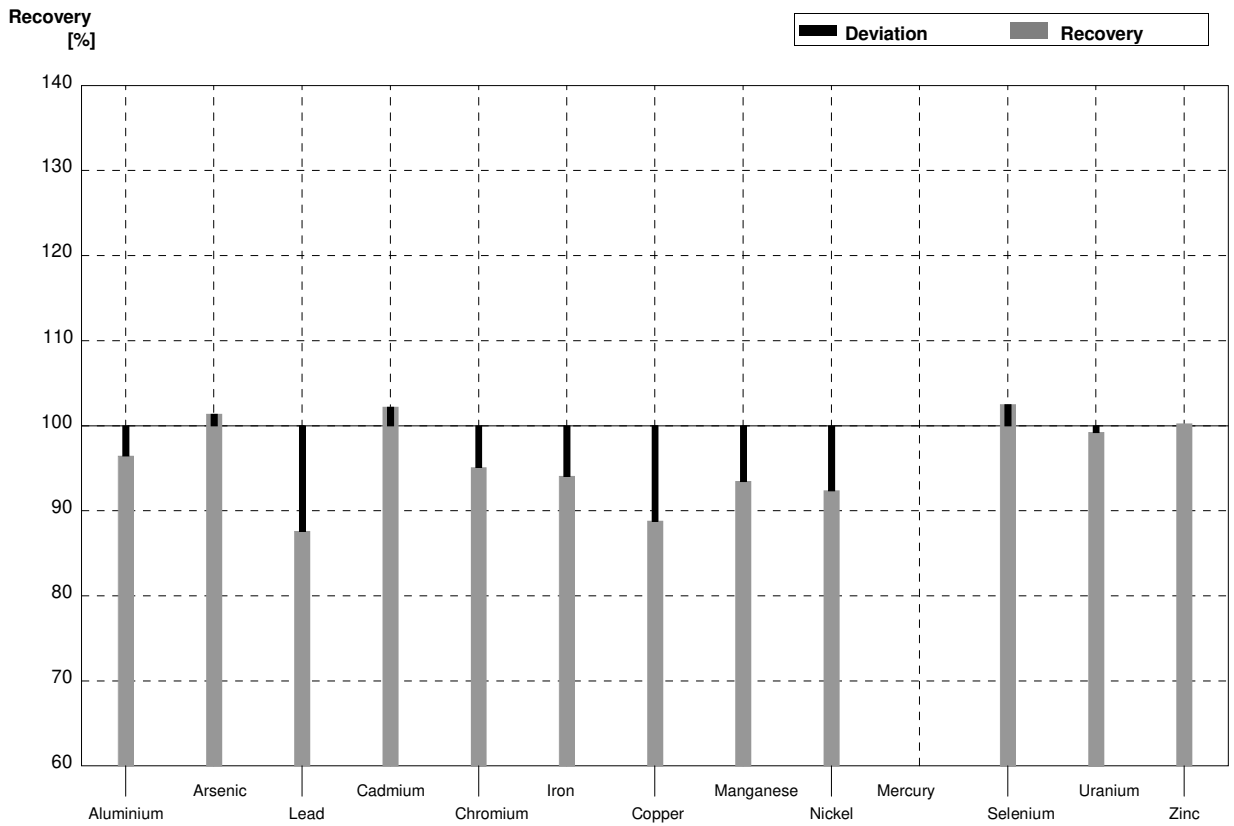
Sample M171B
Laboratory H

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	32,0	3,2	µg/l	95%
Arsenic	1,271	0,012	1,36	0,14	µg/l	107%
Lead	4,84	0,04	4,26	0,43	µg/l	88%
Cadmium	1,863	0,015	1,84	0,18	µg/l	99%
Chromium	2,227	0,019	<4		µg/l	•
Iron	45,4	0,2	44,0	4,4	µg/l	97%
Copper	1,62	0,03	<100		µg/l	•
Manganese	28,30	0,15	27,4	2,7	µg/l	97%
Nickel	2,44	0,03	2,44	0,24	µg/l	100%
Mercury	0,945	0,015	0,91	0,09	µg/l	96%
Selenium	4,79	0,04	4,45	0,45	µg/l	93%
Uranium	0,515	0,006			µg/l	
Zinc	21,1	1,6	<40		µg/l	•



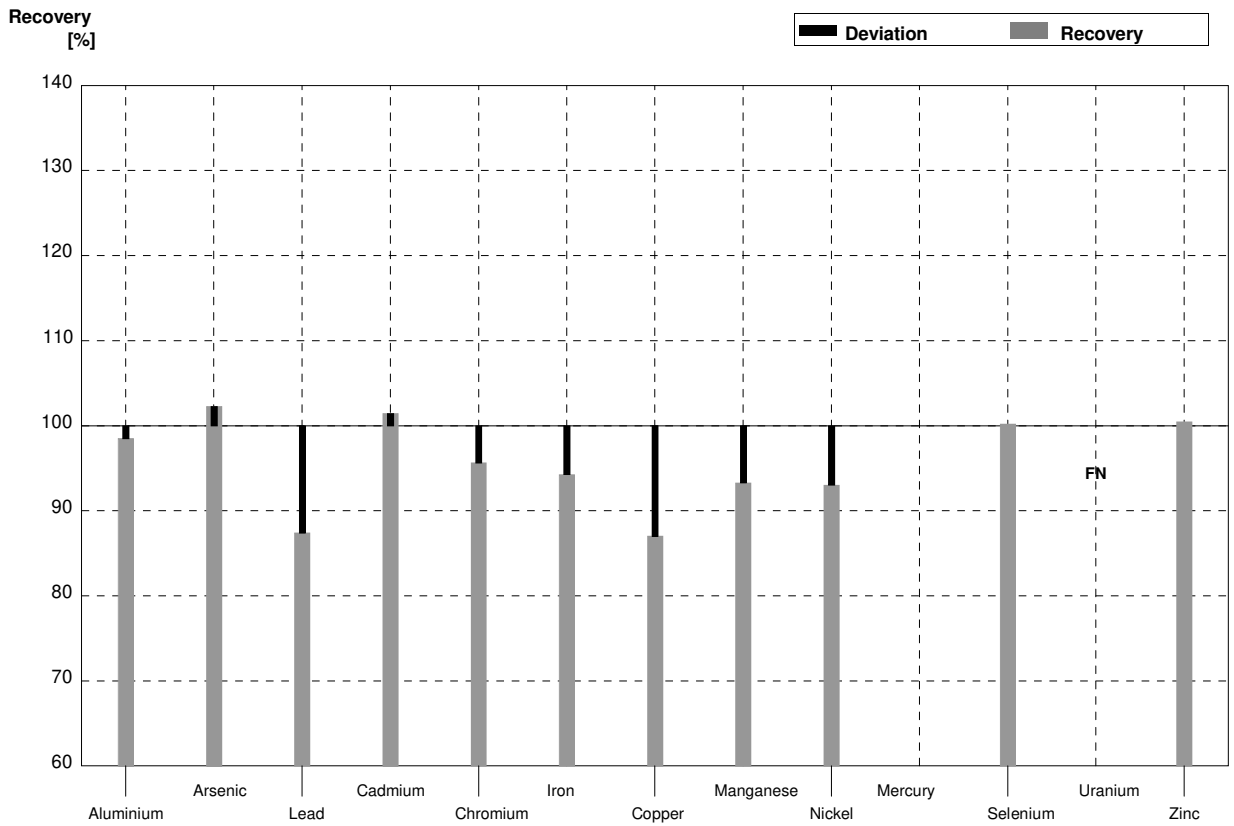
Sample M171A
Laboratory I

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,1	1,52	$\mu\text{g/l}$	96%
Arsenic	4,41	0,03	4,47	0,89	$\mu\text{g/l}$	101%
Lead	3,22	0,02	2,82	0,56	$\mu\text{g/l}$	88%
Cadmium	2,73	0,02	2,79	0,42	$\mu\text{g/l}$	102%
Chromium	4,08	0,03	3,88	0,58	$\mu\text{g/l}$	95%
Iron	65,9	0,3	62,0	9,30	$\mu\text{g/l}$	94%
Copper	8,04	0,06	7,14	1,07	$\mu\text{g/l}$	89%
Manganese	17,44	0,12	16,3	2,44	$\mu\text{g/l}$	93%
Nickel	3,15	0,03	2,91	0,44	$\mu\text{g/l}$	92%
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02	1,23	0,31	$\mu\text{g/l}$	103%
Uranium	3,83	0,03	3,80	0,3	$\mu\text{g/l}$	99%
Zinc	42,2	1,6	42,3	8,46	$\mu\text{g/l}$	100%



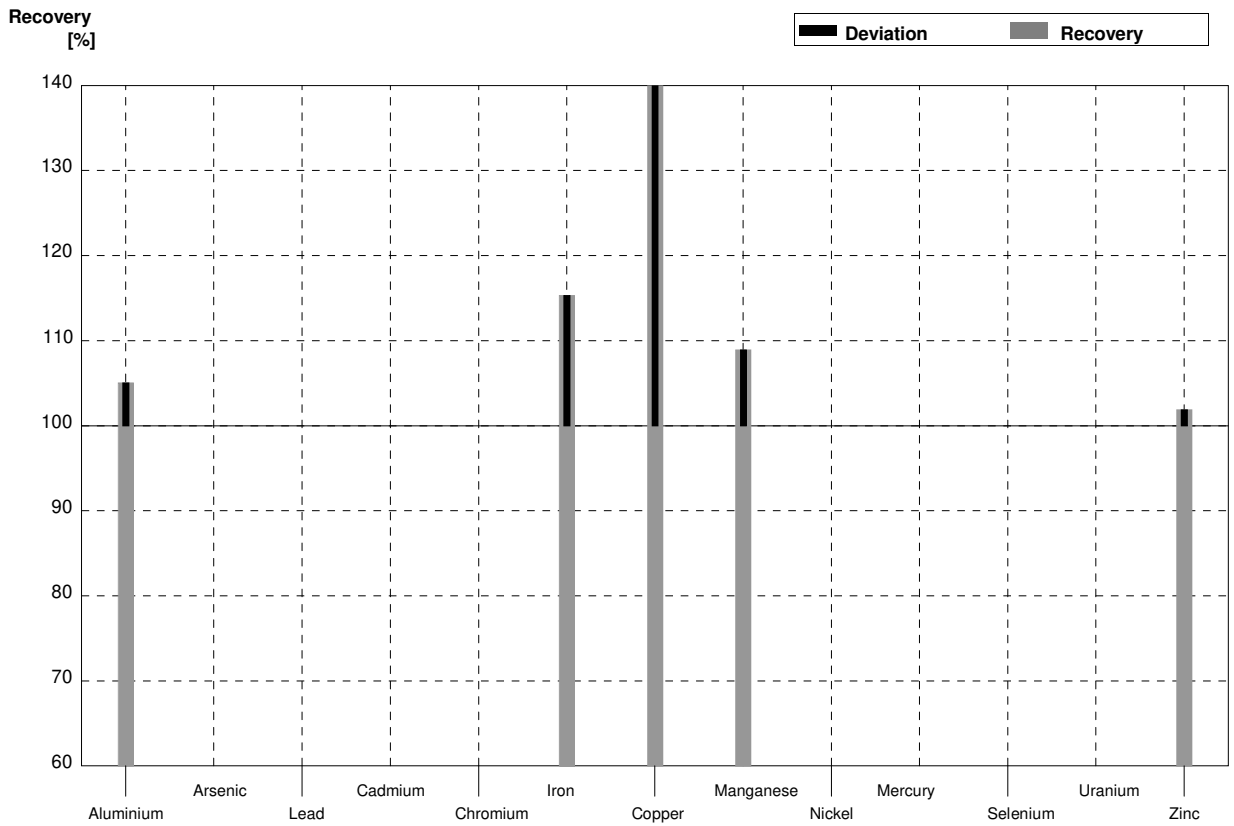
Sample M171B
Laboratory I

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	33,2	4,99	µg/l	99%
Arsenic	1,271	0,012	1,30	0,26	µg/l	102%
Lead	4,84	0,04	4,23	0,85	µg/l	87%
Cadmium	1,863	0,015	1,89	0,28	µg/l	101%
Chromium	2,227	0,019	2,13	0,32	µg/l	96%
Iron	45,4	0,2	42,8	6,41	µg/l	94%
Copper	1,62	0,03	1,41	0,21	µg/l	87%
Manganese	28,30	0,15	26,4	3,97	µg/l	93%
Nickel	2,44	0,03	2,27	0,34	µg/l	93%
Mercury	0,945	0,015			µg/l	
Selenium	4,79	0,04	4,80	1,20	µg/l	100%
Uranium	0,515	0,006	<0,001		µg/l	FN
Zinc	21,1	1,6	21,2	4,24	µg/l	100%



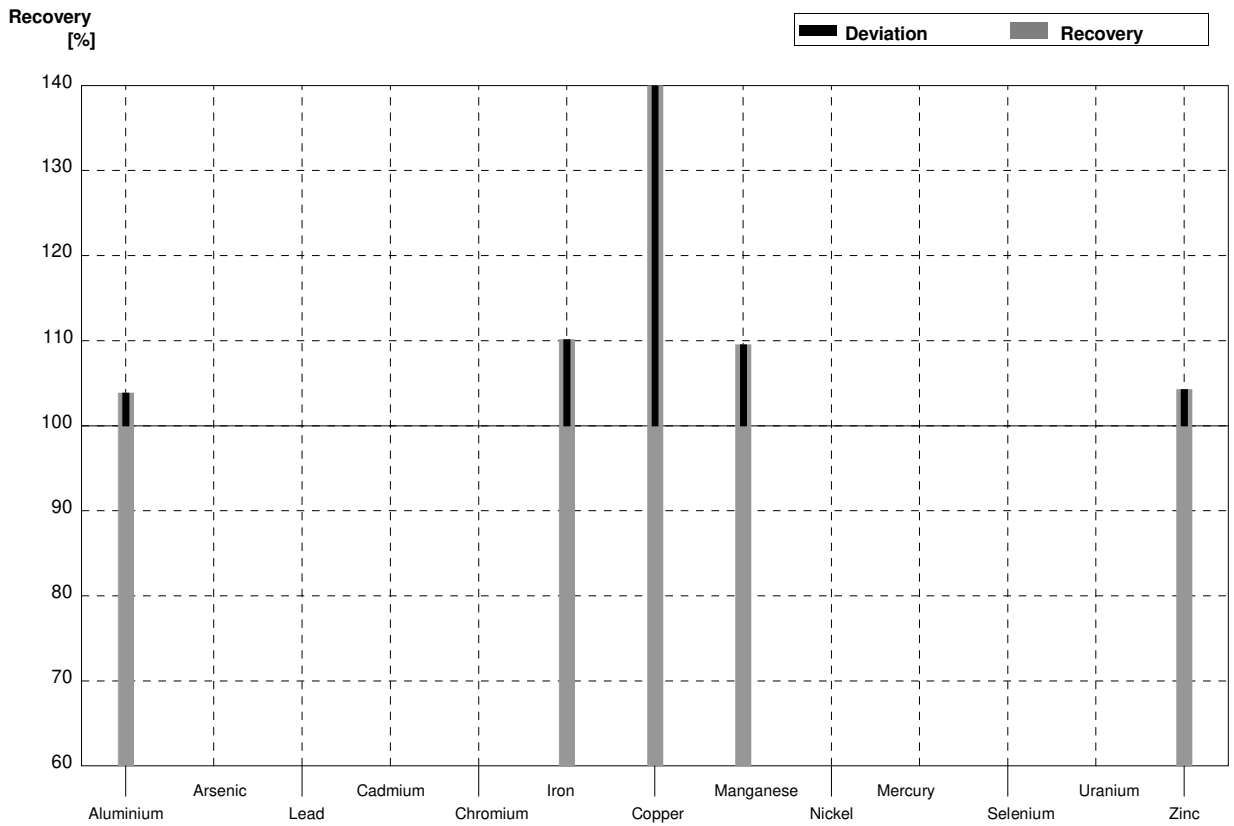
Sample M171A
Laboratory J

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	11,0	4	$\mu\text{g/l}$	105%
Arsenic	4,41	0,03			$\mu\text{g/l}$	
Lead	3,22	0,02			$\mu\text{g/l}$	
Cadmium	2,73	0,02			$\mu\text{g/l}$	
Chromium	4,08	0,03			$\mu\text{g/l}$	
Iron	65,9	0,3	76,0	4	$\mu\text{g/l}$	115%
Copper	8,04	0,06	13,0	5	$\mu\text{g/l}$	162%
Manganese	17,44	0,12	19,0	2	$\mu\text{g/l}$	109%
Nickel	3,15	0,03			$\mu\text{g/l}$	
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6	43,0	10	$\mu\text{g/l}$	102%



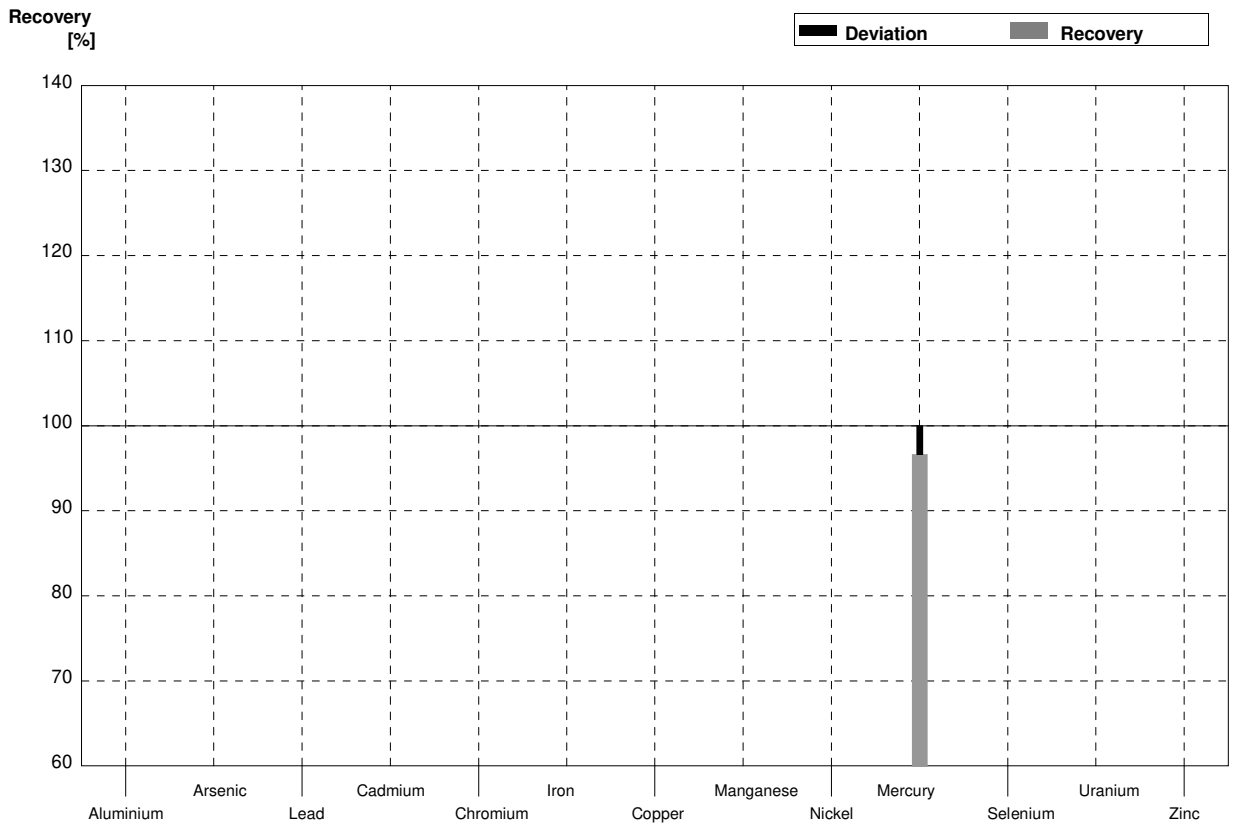
Sample M171B
Laboratory J

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	35,0	4	$\mu\text{g/l}$	104%
Arsenic	1,271	0,012			$\mu\text{g/l}$	
Lead	4,84	0,04			$\mu\text{g/l}$	
Cadmium	1,863	0,015			$\mu\text{g/l}$	
Chromium	2,227	0,019			$\mu\text{g/l}$	
Iron	45,4	0,2	50,0	4	$\mu\text{g/l}$	110%
Copper	1,62	0,03	10,0	5	$\mu\text{g/l}$	617%
Manganese	28,30	0,15	31,0	2	$\mu\text{g/l}$	110%
Nickel	2,44	0,03			$\mu\text{g/l}$	
Mercury	0,945	0,015			$\mu\text{g/l}$	
Selenium	4,79	0,04			$\mu\text{g/l}$	
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6	22,0	10	$\mu\text{g/l}$	104%



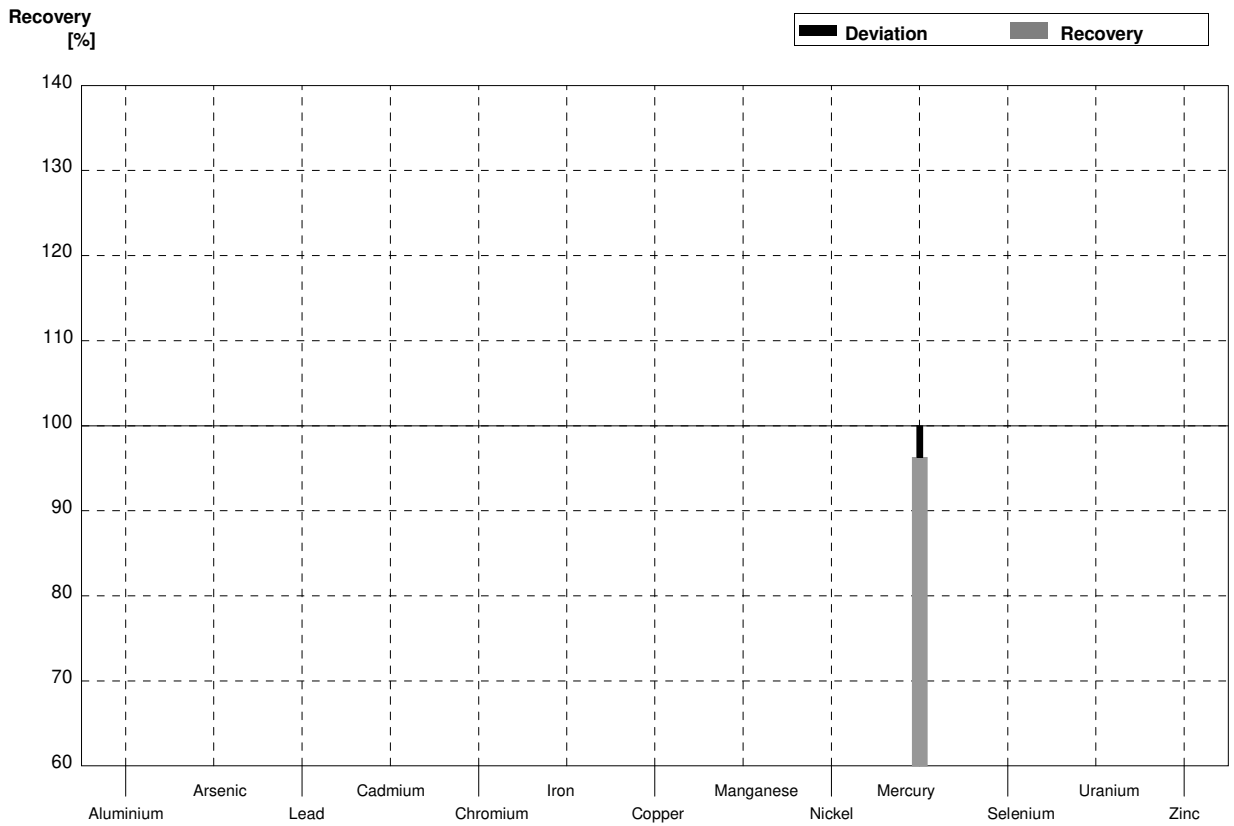
Sample M171A
Laboratory K

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15			$\mu\text{g/l}$	
Arsenic	4,41	0,03			$\mu\text{g/l}$	
Lead	3,22	0,02			$\mu\text{g/l}$	
Cadmium	2,73	0,02			$\mu\text{g/l}$	
Chromium	4,08	0,03			$\mu\text{g/l}$	
Iron	65,9	0,3			$\mu\text{g/l}$	
Copper	8,04	0,06			$\mu\text{g/l}$	
Manganese	17,44	0,12			$\mu\text{g/l}$	
Nickel	3,15	0,03			$\mu\text{g/l}$	
Mercury	1,79	0,02	1,73	0,17	$\mu\text{g/l}$	97%
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6			$\mu\text{g/l}$	



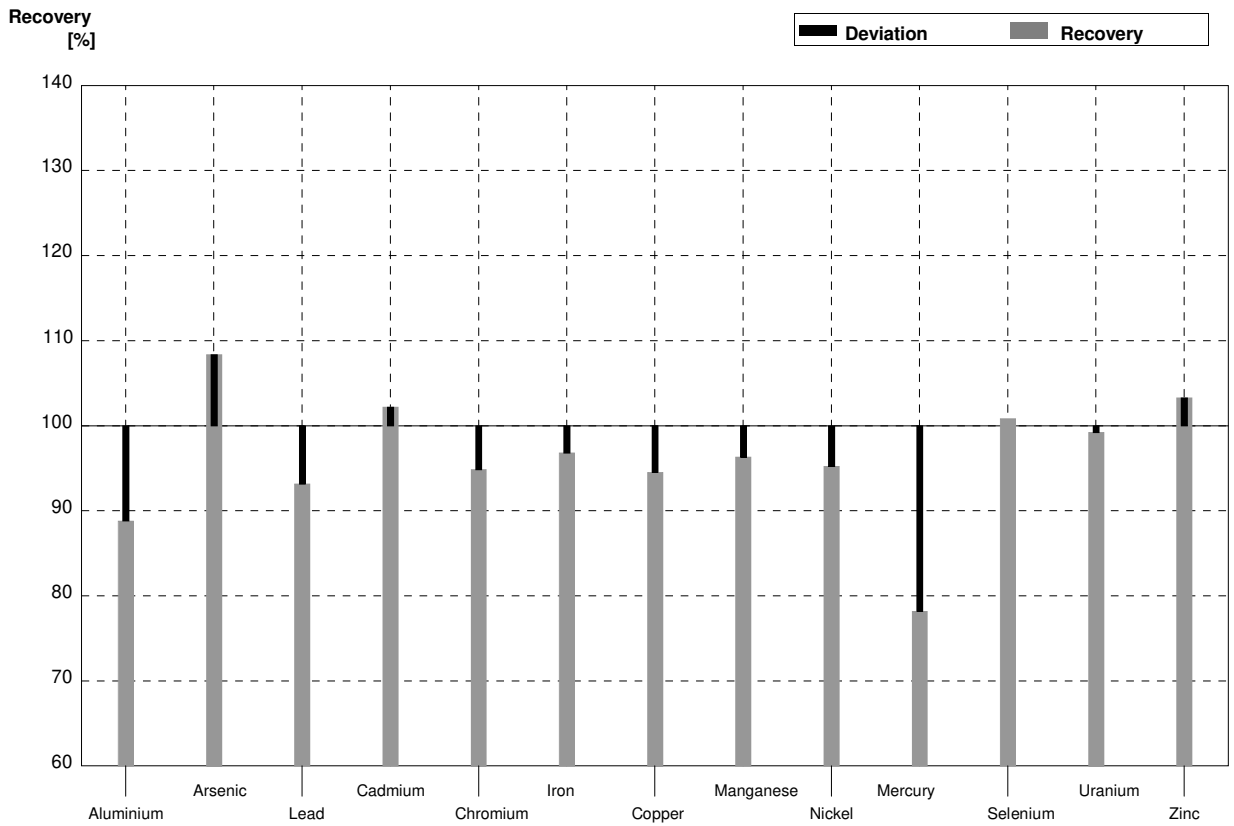
Sample M171B
Laboratory K

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3			$\mu\text{g/l}$	
Arsenic	1,271	0,012			$\mu\text{g/l}$	
Lead	4,84	0,04			$\mu\text{g/l}$	
Cadmium	1,863	0,015			$\mu\text{g/l}$	
Chromium	2,227	0,019			$\mu\text{g/l}$	
Iron	45,4	0,2			$\mu\text{g/l}$	
Copper	1,62	0,03			$\mu\text{g/l}$	
Manganese	28,30	0,15			$\mu\text{g/l}$	
Nickel	2,44	0,03			$\mu\text{g/l}$	
Mercury	0,945	0,015	0,91	0,09	$\mu\text{g/l}$	96%
Selenium	4,79	0,04			$\mu\text{g/l}$	
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6			$\mu\text{g/l}$	



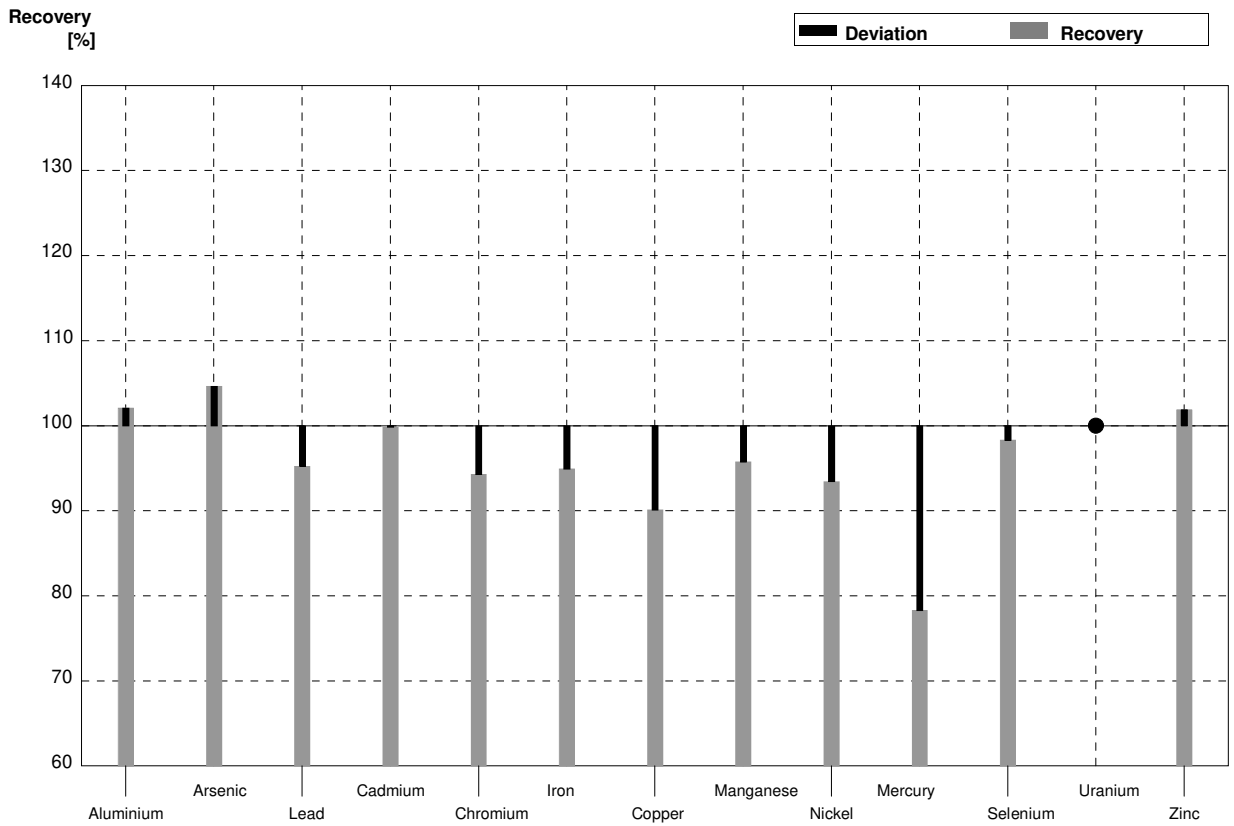
Sample M171A
Laboratory L

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	9,30	0,93	$\mu\text{g/l}$	89%
Arsenic	4,41	0,03	4,78	0,72	$\mu\text{g/l}$	108%
Lead	3,22	0,02	3,00	0,30	$\mu\text{g/l}$	93%
Cadmium	2,73	0,02	2,79	0,80	$\mu\text{g/l}$	102%
Chromium	4,08	0,03	3,87	0,39	$\mu\text{g/l}$	95%
Iron	65,9	0,3	63,8	6,4	$\mu\text{g/l}$	97%
Copper	8,04	0,06	7,6	0,76	$\mu\text{g/l}$	95%
Manganese	17,44	0,12	16,8	1,68	$\mu\text{g/l}$	96%
Nickel	3,15	0,03	3,00	0,30	$\mu\text{g/l}$	95%
Mercury	1,79	0,02	1,40	0,14	$\mu\text{g/l}$	78%
Selenium	1,20	0,02	1,21	0,18	$\mu\text{g/l}$	101%
Uranium	3,83	0,03	3,80	0,38	$\mu\text{g/l}$	99%
Zinc	42,2	1,6	43,6	4,4	$\mu\text{g/l}$	103%



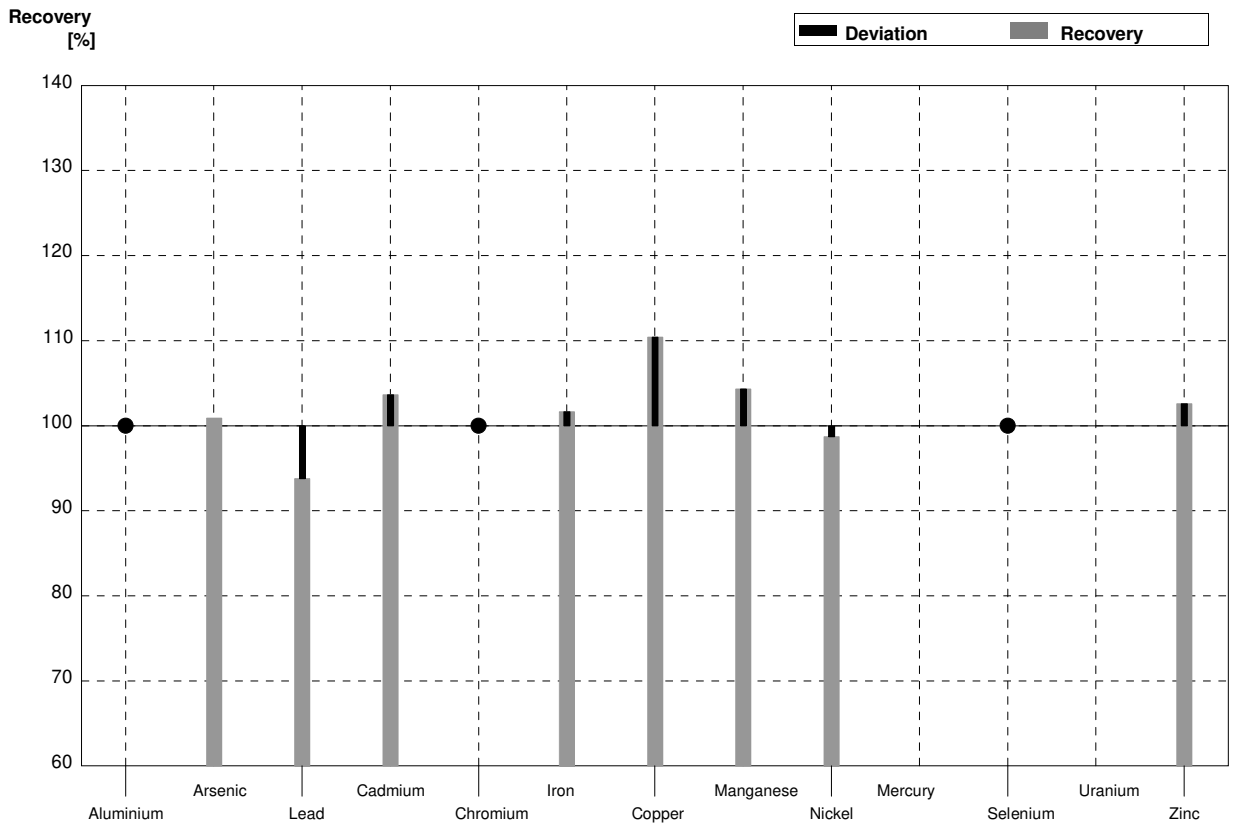
Sample M171B
Laboratory L

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	34,4	3,4	µg/l	102%
Arsenic	1,271	0,012	1,33	0,20	µg/l	105%
Lead	4,84	0,04	4,61	0,46	µg/l	95%
Cadmium	1,863	0,015	1,86	0,19	µg/l	100%
Chromium	2,227	0,019	2,10	0,21	µg/l	94%
Iron	45,4	0,2	43,1	4,3	µg/l	95%
Copper	1,62	0,03	1,46	0,15	µg/l	90%
Manganese	28,30	0,15	27,1	2,7	µg/l	96%
Nickel	2,44	0,03	2,28	0,23	µg/l	93%
Mercury	0,945	0,015	0,74	0,074	µg/l	78%
Selenium	4,79	0,04	4,71	0,71	µg/l	98%
Uranium	0,515	0,006	<1,0		µg/l	•
Zinc	21,1	1,6	21,5	2,2	µg/l	102%



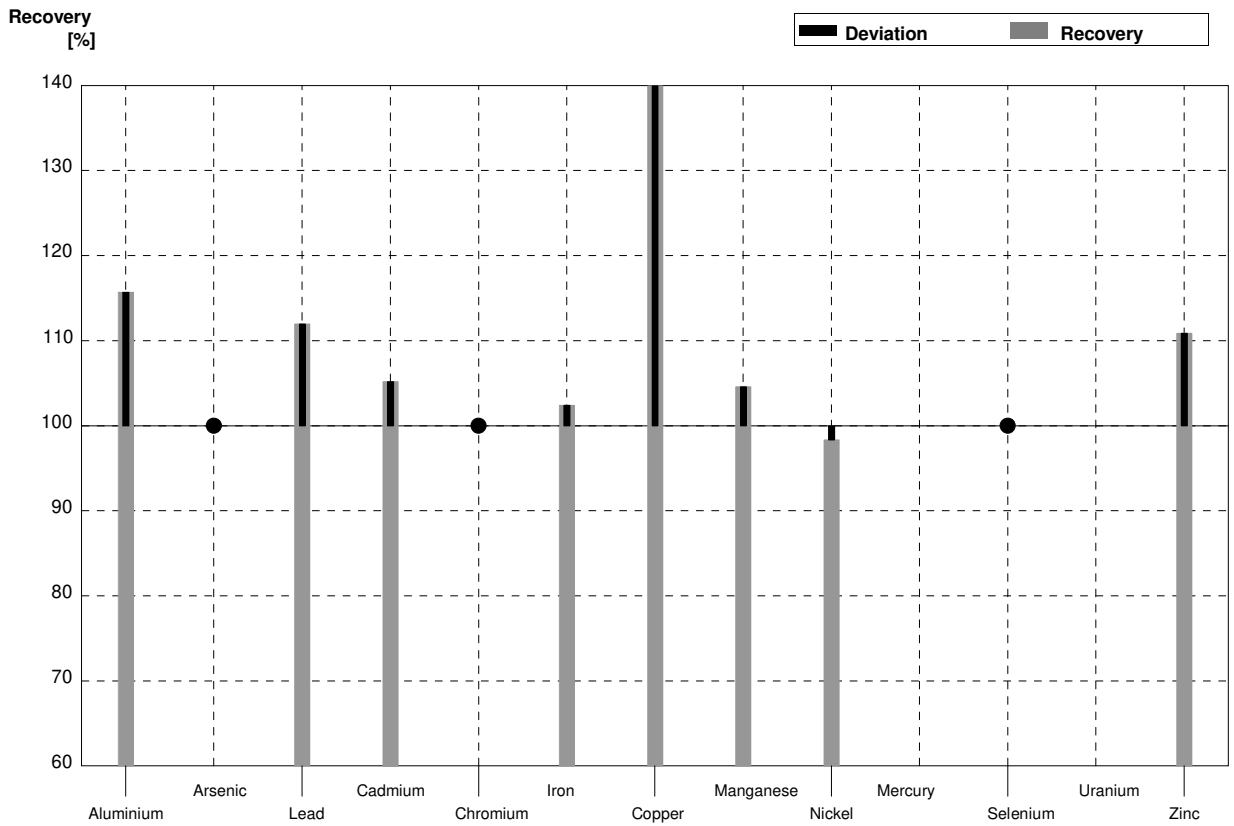
Sample M171A
Laboratory M

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	<15		$\mu\text{g/l}$	•
Arsenic	4,41	0,03	4,45	0,7	$\mu\text{g/l}$	101%
Lead	3,22	0,02	3,02	0,5	$\mu\text{g/l}$	94%
Cadmium	2,73	0,02	2,83	0,2	$\mu\text{g/l}$	104%
Chromium	4,08	0,03	<5		$\mu\text{g/l}$	•
Iron	65,9	0,3	67,0	6,7	$\mu\text{g/l}$	102%
Copper	8,04	0,06	8,88	0,9	$\mu\text{g/l}$	110%
Manganese	17,44	0,12	18,2	2,0	$\mu\text{g/l}$	104%
Nickel	3,15	0,03	3,11	0,4	$\mu\text{g/l}$	99%
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02	<5		$\mu\text{g/l}$	•
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6	43,3	6,0	$\mu\text{g/l}$	103%



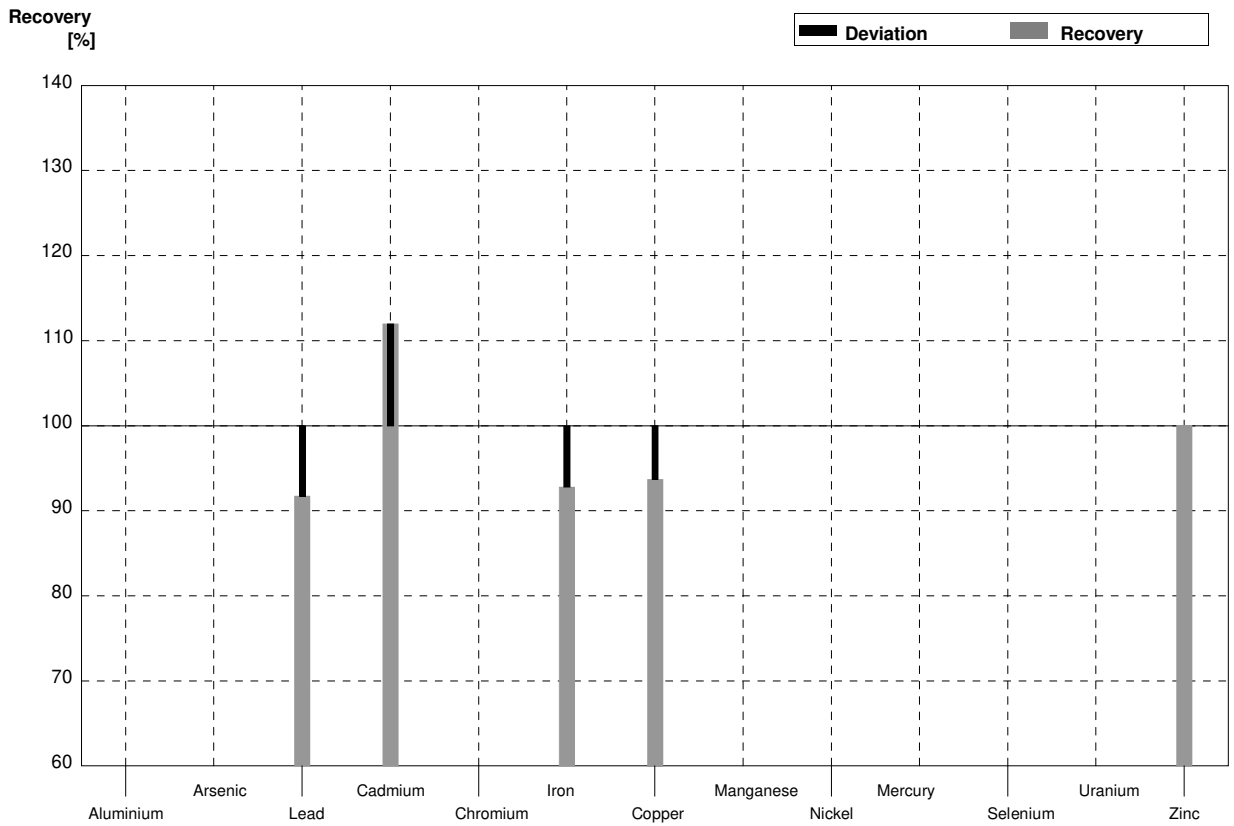
Sample M171B
Laboratory M

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	39,0	6,0	$\mu\text{g/l}$	116%
Arsenic	1,271	0,012	<2		$\mu\text{g/l}$	•
Lead	4,84	0,04	5,42	0,9	$\mu\text{g/l}$	112%
Cadmium	1,863	0,015	1,96	0,1	$\mu\text{g/l}$	105%
Chromium	2,227	0,019	<5		$\mu\text{g/l}$	•
Iron	45,4	0,2	46,5	5,0	$\mu\text{g/l}$	102%
Copper	1,62	0,03	7,24	0,7	$\mu\text{g/l}$	447%
Manganese	28,30	0,15	29,6	3,0	$\mu\text{g/l}$	105%
Nickel	2,44	0,03	2,40	0,3	$\mu\text{g/l}$	98%
Mercury	0,945	0,015			$\mu\text{g/l}$	
Selenium	4,79	0,04	<5		$\mu\text{g/l}$	•
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6	23,4	3,0	$\mu\text{g/l}$	111%



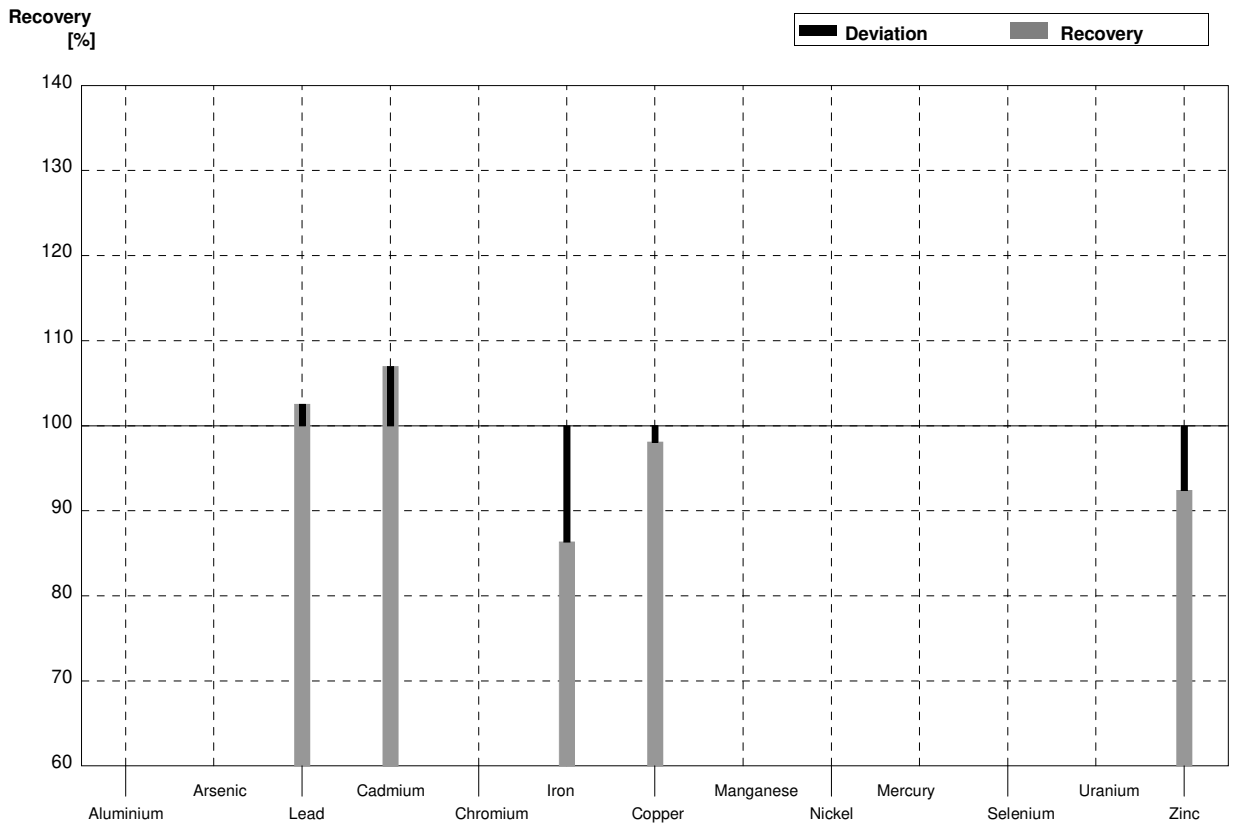
Sample M171A
Laboratory N

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15			$\mu\text{g/l}$	
Arsenic	4,41	0,03			$\mu\text{g/l}$	
Lead	3,22	0,02	2,954	0,40	$\mu\text{g/l}$	92%
Cadmium	2,73	0,02	3,057	0,32	$\mu\text{g/l}$	112%
Chromium	4,08	0,03			$\mu\text{g/l}$	
Iron	65,9	0,3	61,16	4,7	$\mu\text{g/l}$	93%
Copper	8,04	0,06	7,535	0,85	$\mu\text{g/l}$	94%
Manganese	17,44	0,12			$\mu\text{g/l}$	
Nickel	3,15	0,03			$\mu\text{g/l}$	
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6	42,22	4,3	$\mu\text{g/l}$	100%



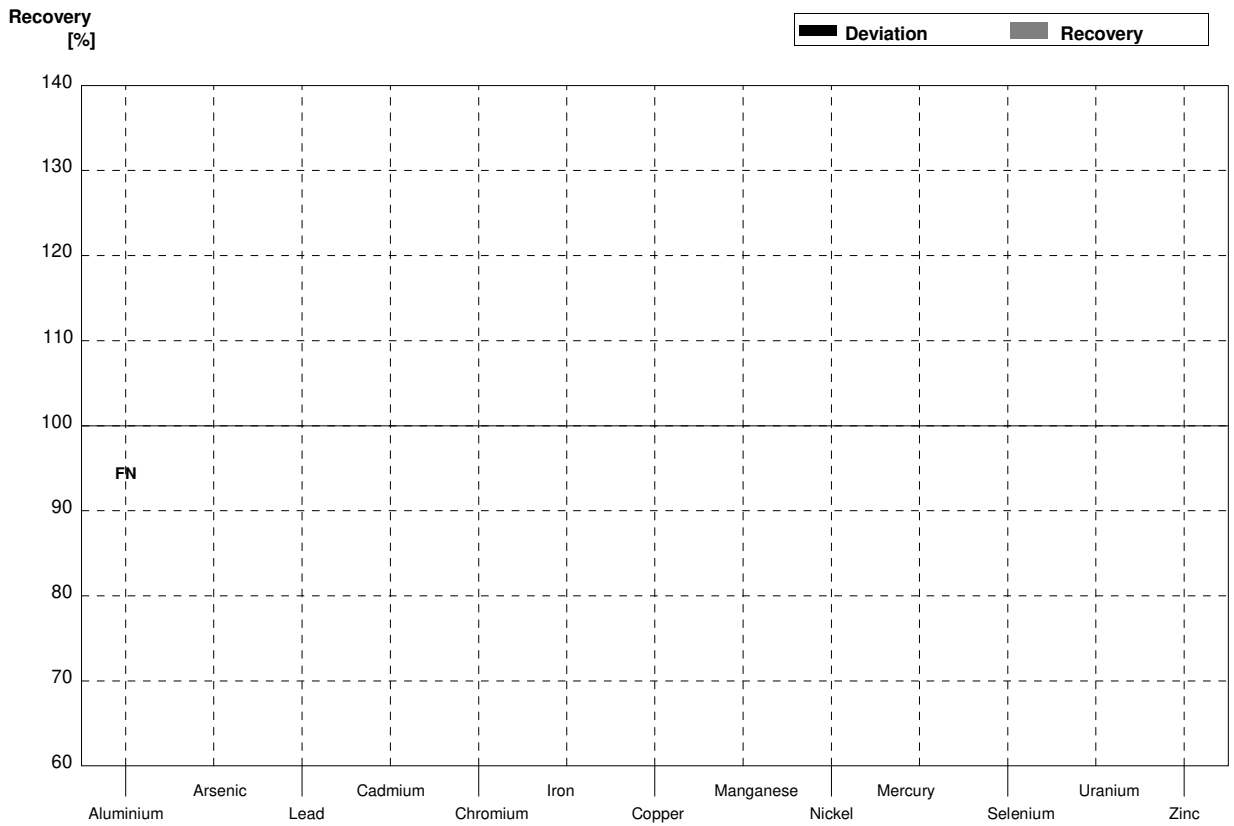
Sample M171B
Laboratory N

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3			$\mu\text{g/l}$	
Arsenic	1,271	0,012			$\mu\text{g/l}$	
Lead	4,84	0,04	4,963	0,67	$\mu\text{g/l}$	103%
Cadmium	1,863	0,015	1,993	0,21	$\mu\text{g/l}$	107%
Chromium	2,227	0,019			$\mu\text{g/l}$	
Iron	45,4	0,2	39,20	3,1	$\mu\text{g/l}$	86%
Copper	1,62	0,03	1,589	0,18	$\mu\text{g/l}$	98%
Manganese	28,30	0,15			$\mu\text{g/l}$	
Nickel	2,44	0,03			$\mu\text{g/l}$	
Mercury	0,945	0,015			$\mu\text{g/l}$	
Selenium	4,79	0,04			$\mu\text{g/l}$	
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6	19,50	2,0	$\mu\text{g/l}$	92%



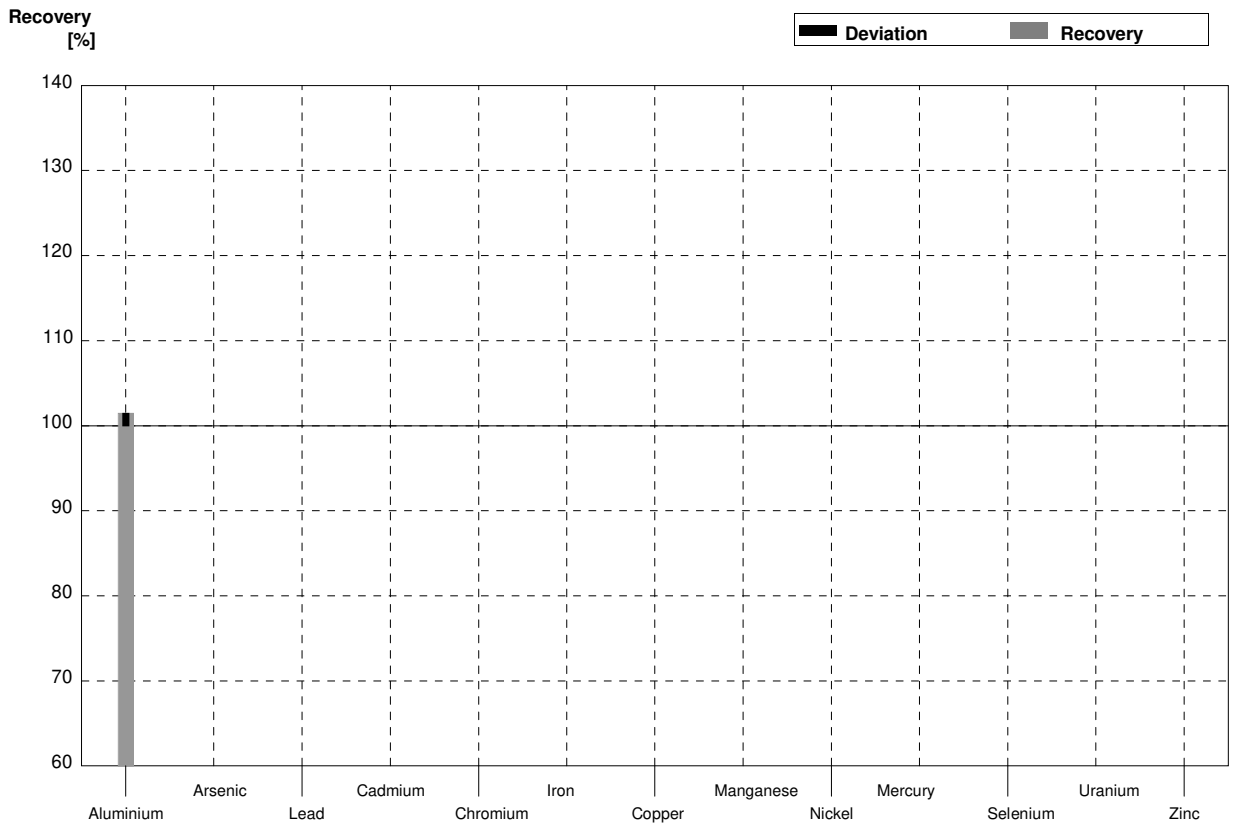
Sample M171A
Laboratory O

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	<10		$\mu\text{g/l}$	FN
Arsenic	4,41	0,03			$\mu\text{g/l}$	
Lead	3,22	0,02			$\mu\text{g/l}$	
Cadmium	2,73	0,02			$\mu\text{g/l}$	
Chromium	4,08	0,03			$\mu\text{g/l}$	
Iron	65,9	0,3			$\mu\text{g/l}$	
Copper	8,04	0,06			$\mu\text{g/l}$	
Manganese	17,44	0,12			$\mu\text{g/l}$	
Nickel	3,15	0,03			$\mu\text{g/l}$	
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6			$\mu\text{g/l}$	



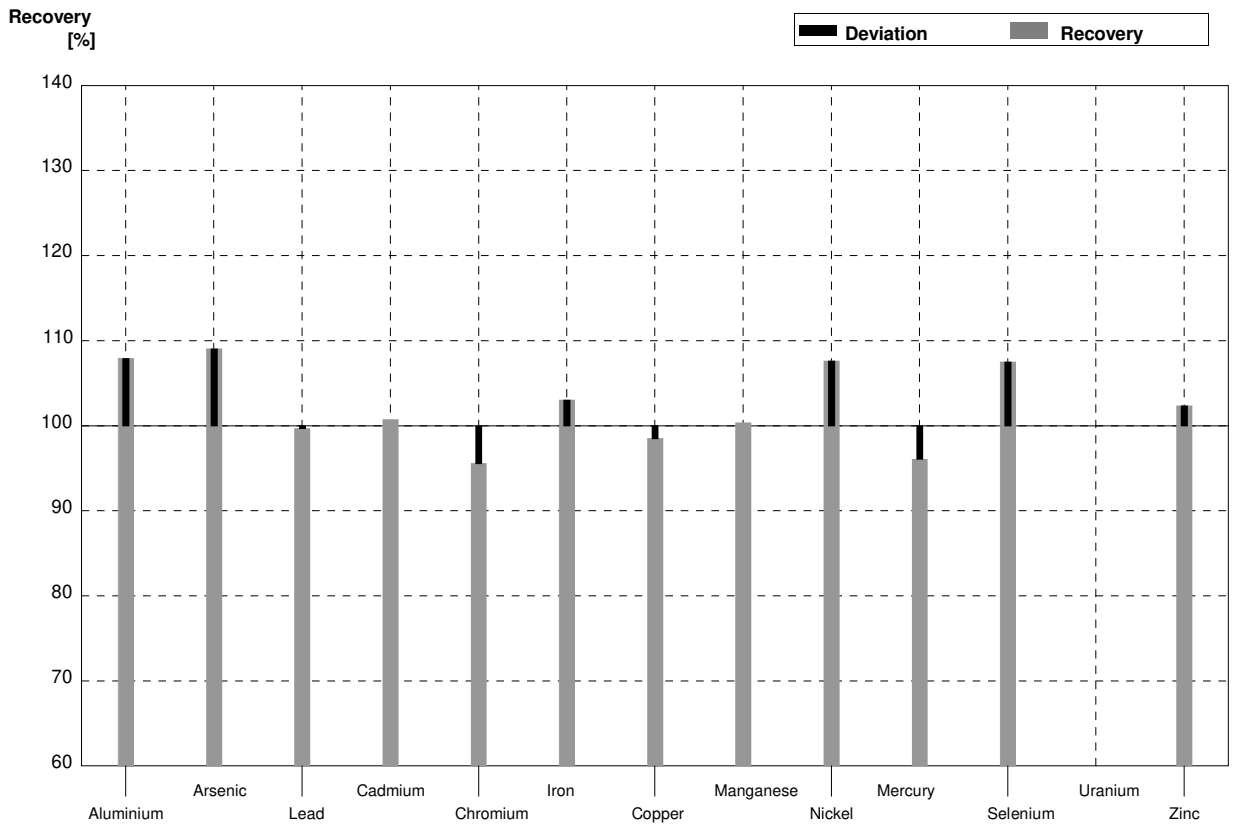
Sample M171B
Laboratory O

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	34,2	5,8	$\mu\text{g/l}$	101%
Arsenic	1,271	0,012			$\mu\text{g/l}$	
Lead	4,84	0,04			$\mu\text{g/l}$	
Cadmium	1,863	0,015			$\mu\text{g/l}$	
Chromium	2,227	0,019			$\mu\text{g/l}$	
Iron	45,4	0,2			$\mu\text{g/l}$	
Copper	1,62	0,03			$\mu\text{g/l}$	
Manganese	28,30	0,15			$\mu\text{g/l}$	
Nickel	2,44	0,03			$\mu\text{g/l}$	
Mercury	0,945	0,015			$\mu\text{g/l}$	
Selenium	4,79	0,04			$\mu\text{g/l}$	
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6			$\mu\text{g/l}$	



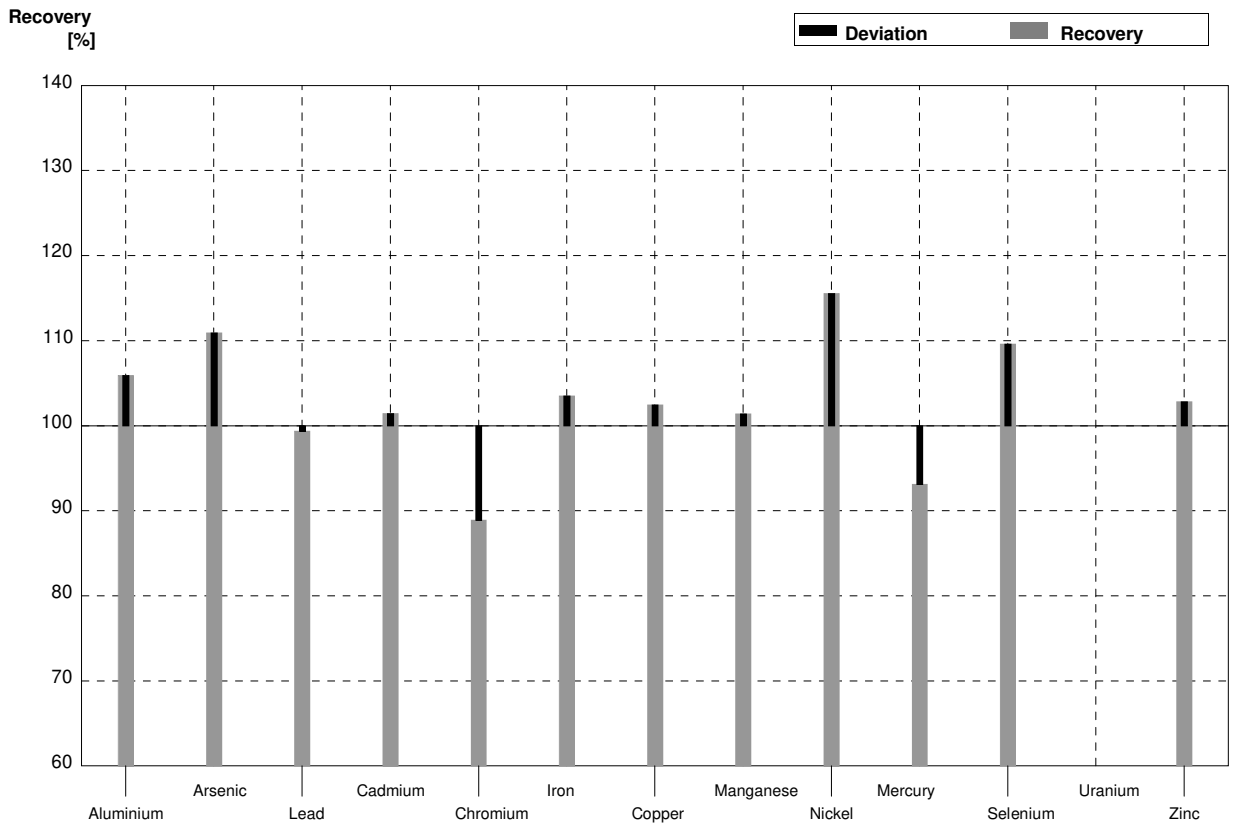
Sample M171A
Laboratory P

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	11,3	4,0	$\mu\text{g/l}$	108%
Arsenic	4,41	0,03	4,81	1,0	$\mu\text{g/l}$	109%
Lead	3,22	0,02	3,21	1,0	$\mu\text{g/l}$	100%
Cadmium	2,73	0,02	2,75	0,52	$\mu\text{g/l}$	101%
Chromium	4,08	0,03	3,90	1,0	$\mu\text{g/l}$	96%
Iron	65,9	0,3	67,9	12,9	$\mu\text{g/l}$	103%
Copper	8,04	0,06	7,92	1,7	$\mu\text{g/l}$	99%
Manganese	17,44	0,12	17,5	3,6	$\mu\text{g/l}$	100%
Nickel	3,15	0,03	3,39	1,1	$\mu\text{g/l}$	108%
Mercury	1,79	0,02	1,72	0,29	$\mu\text{g/l}$	96%
Selenium	1,20	0,02	1,29	0,5	$\mu\text{g/l}$	108%
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6	43,2	7,3	$\mu\text{g/l}$	102%



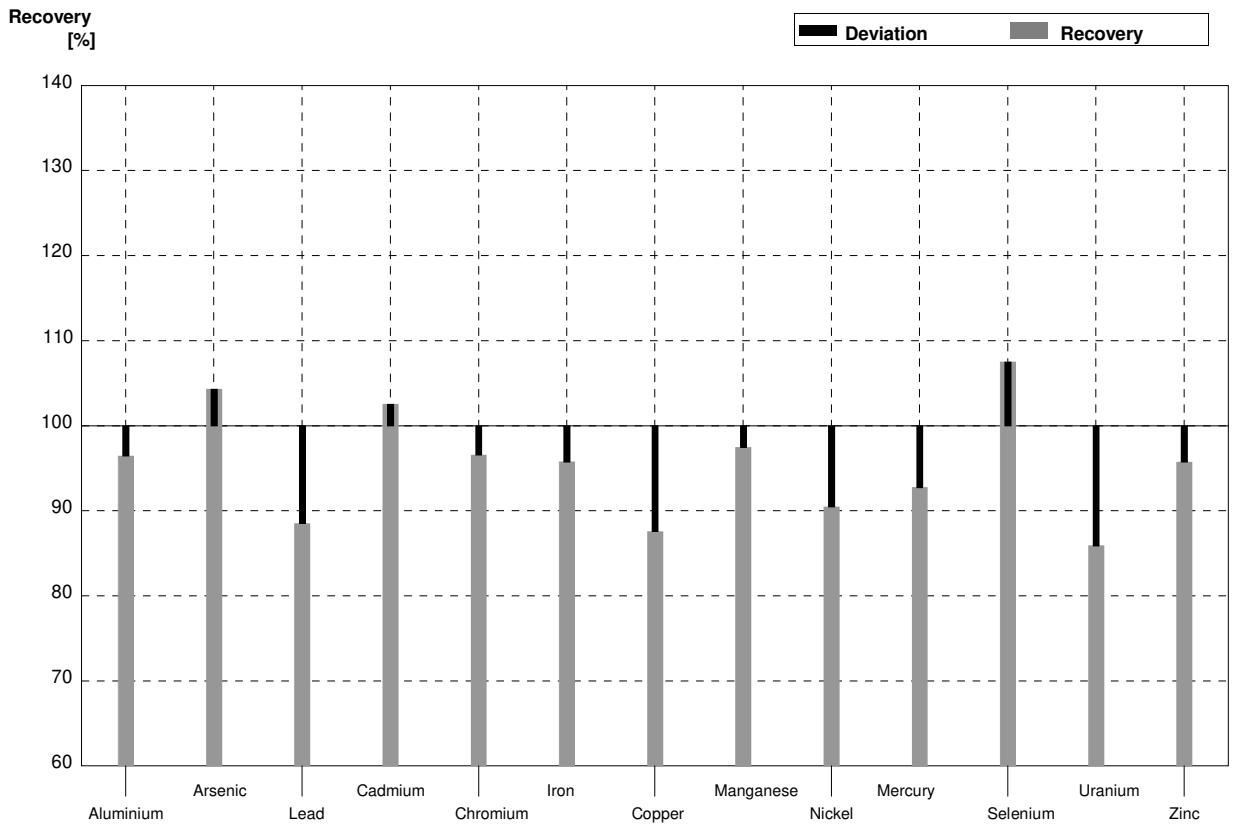
Sample M171B
Laboratory P

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	35,7	8,0	$\mu\text{g/l}$	106%
Arsenic	1,271	0,012	1,41	0,5	$\mu\text{g/l}$	111%
Lead	4,84	0,04	4,81	1,3	$\mu\text{g/l}$	99%
Cadmium	1,863	0,015	1,89	0,39	$\mu\text{g/l}$	101%
Chromium	2,227	0,019	1,98	0,7	$\mu\text{g/l}$	89%
Iron	45,4	0,2	47,0	9,9	$\mu\text{g/l}$	104%
Copper	1,62	0,03	1,66	0,7	$\mu\text{g/l}$	102%
Manganese	28,30	0,15	28,7	5,6	$\mu\text{g/l}$	101%
Nickel	2,44	0,03	2,82	1,0	$\mu\text{g/l}$	116%
Mercury	0,945	0,015	0,88	0,18	$\mu\text{g/l}$	93%
Selenium	4,79	0,04	5,25	1,1	$\mu\text{g/l}$	110%
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6	21,7	4,2	$\mu\text{g/l}$	103%



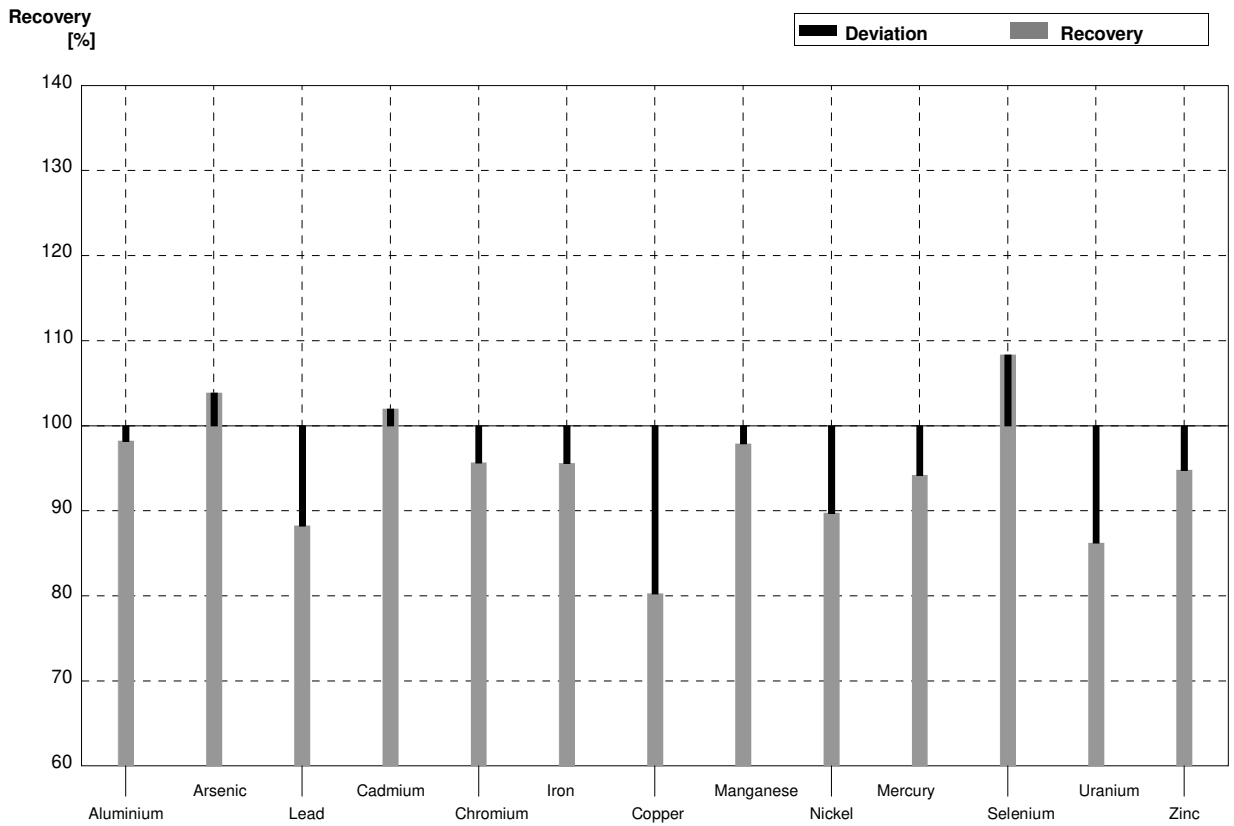
Sample M171A
Laboratory Q

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,1	2,5	$\mu\text{g/l}$	96%
Arsenic	4,41	0,03	4,60	1,15	$\mu\text{g/l}$	104%
Lead	3,22	0,02	2,85	0,71	$\mu\text{g/l}$	89%
Cadmium	2,73	0,02	2,80	0,70	$\mu\text{g/l}$	103%
Chromium	4,08	0,03	3,94	0,91	$\mu\text{g/l}$	97%
Iron	65,9	0,3	63,1	15,8	$\mu\text{g/l}$	96%
Copper	8,04	0,06	7,04	1,76	$\mu\text{g/l}$	88%
Manganese	17,44	0,12	17,0	4,3	$\mu\text{g/l}$	97%
Nickel	3,15	0,03	2,85	0,71	$\mu\text{g/l}$	90%
Mercury	1,79	0,02	1,66	0,50	$\mu\text{g/l}$	93%
Selenium	1,20	0,02	1,29	0,32	$\mu\text{g/l}$	108%
Uranium	3,83	0,03	3,29	0,82	$\mu\text{g/l}$	86%
Zinc	42,2	1,6	40,4	10,1	$\mu\text{g/l}$	96%



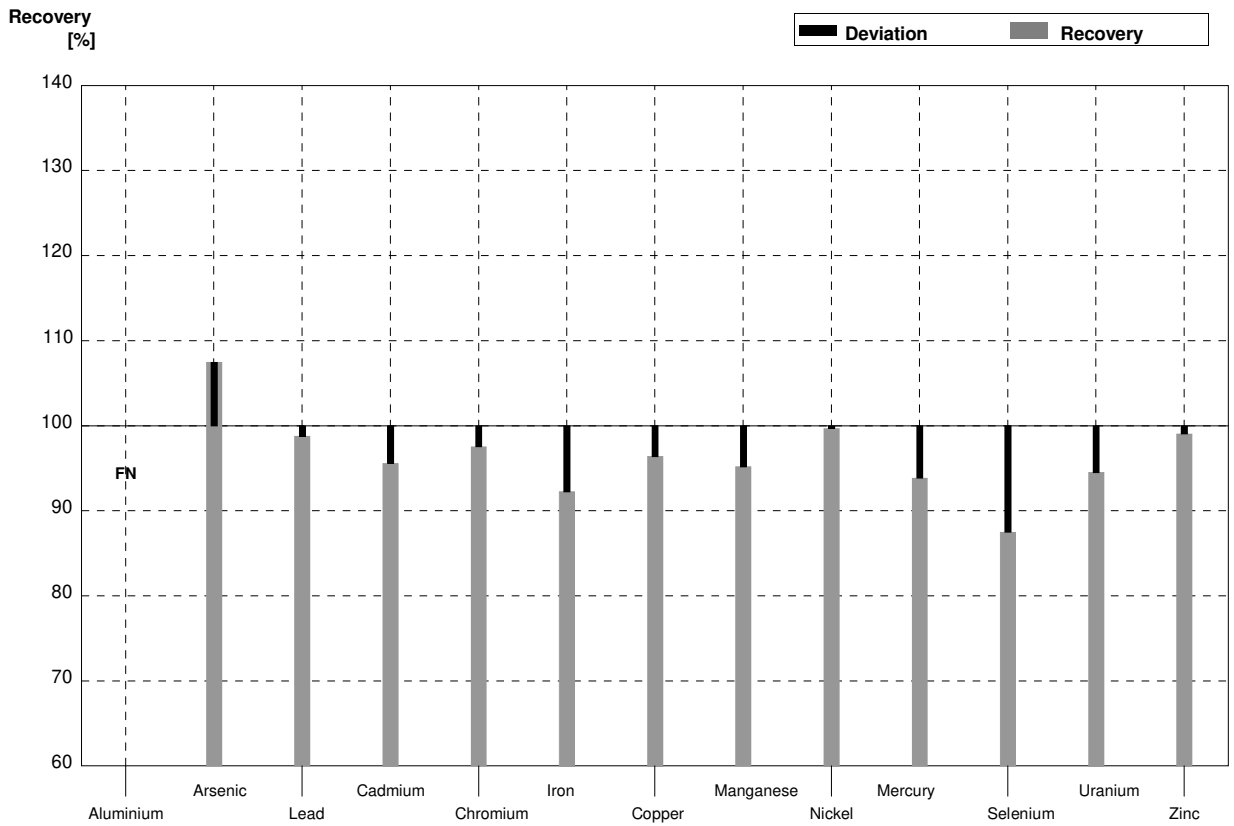
Sample M171B
Laboratory Q

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	33,1	8,3	µg/l	98%
Arsenic	1,271	0,012	1,32	0,33	µg/l	104%
Lead	4,84	0,04	4,27	1,07	µg/l	88%
Cadmium	1,863	0,015	1,90	0,48	µg/l	102%
Chromium	2,227	0,019	2,13	0,53	µg/l	96%
Iron	45,4	0,2	43,4	10,9	µg/l	96%
Copper	1,62	0,03	1,30	0,33	µg/l	80%
Manganese	28,30	0,15	27,7	6,9	µg/l	98%
Nickel	2,44	0,03	2,19	0,55	µg/l	90%
Mercury	0,945	0,015	0,89	0,27	µg/l	94%
Selenium	4,79	0,04	5,19	1,29	µg/l	108%
Uranium	0,515	0,006	0,444	0,111	µg/l	86%
Zinc	21,1	1,6	20,0	5,0	µg/l	95%



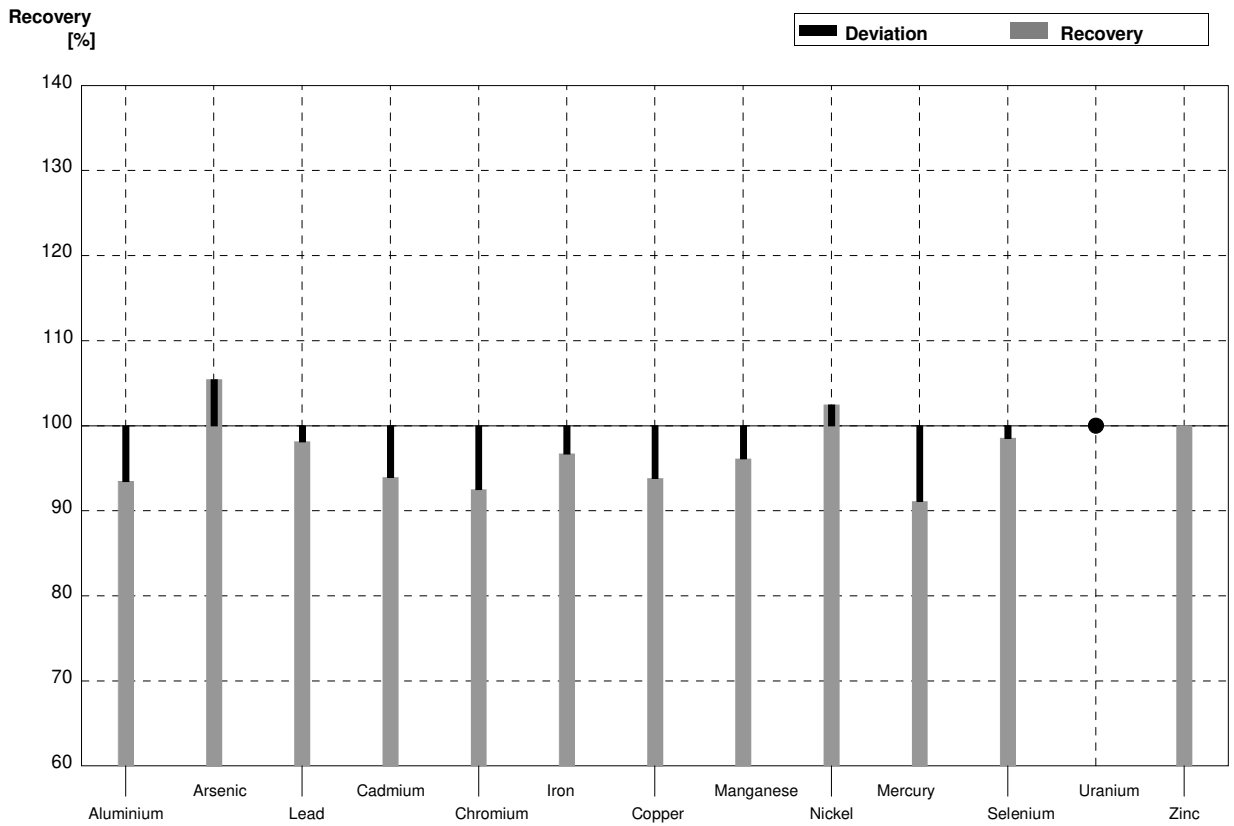
Sample M171A
Laboratory R

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	10,47	0,15	<10,0		µg/l	FN
Arsenic	4,41	0,03	4,74	0,0751	µg/l	107%
Lead	3,22	0,02	3,18	0,0405	µg/l	99%
Cadmium	2,73	0,02	2,61	0,0462	µg/l	96%
Chromium	4,08	0,03	3,98	0,132	µg/l	98%
Iron	65,9	0,3	60,8	0,356	µg/l	92%
Copper	8,04	0,06	7,75	0,106	µg/l	96%
Manganese	17,44	0,12	16,6	0,515	µg/l	95%
Nickel	3,15	0,03	3,14	0,0599	µg/l	100%
Mercury	1,79	0,02	1,68	0,0153	µg/l	94%
Selenium	1,20	0,02	1,05	0,0914	µg/l	88%
Uranium	3,83	0,03	3,62	0,0849	µg/l	95%
Zinc	42,2	1,6	41,8	0,207	µg/l	99%



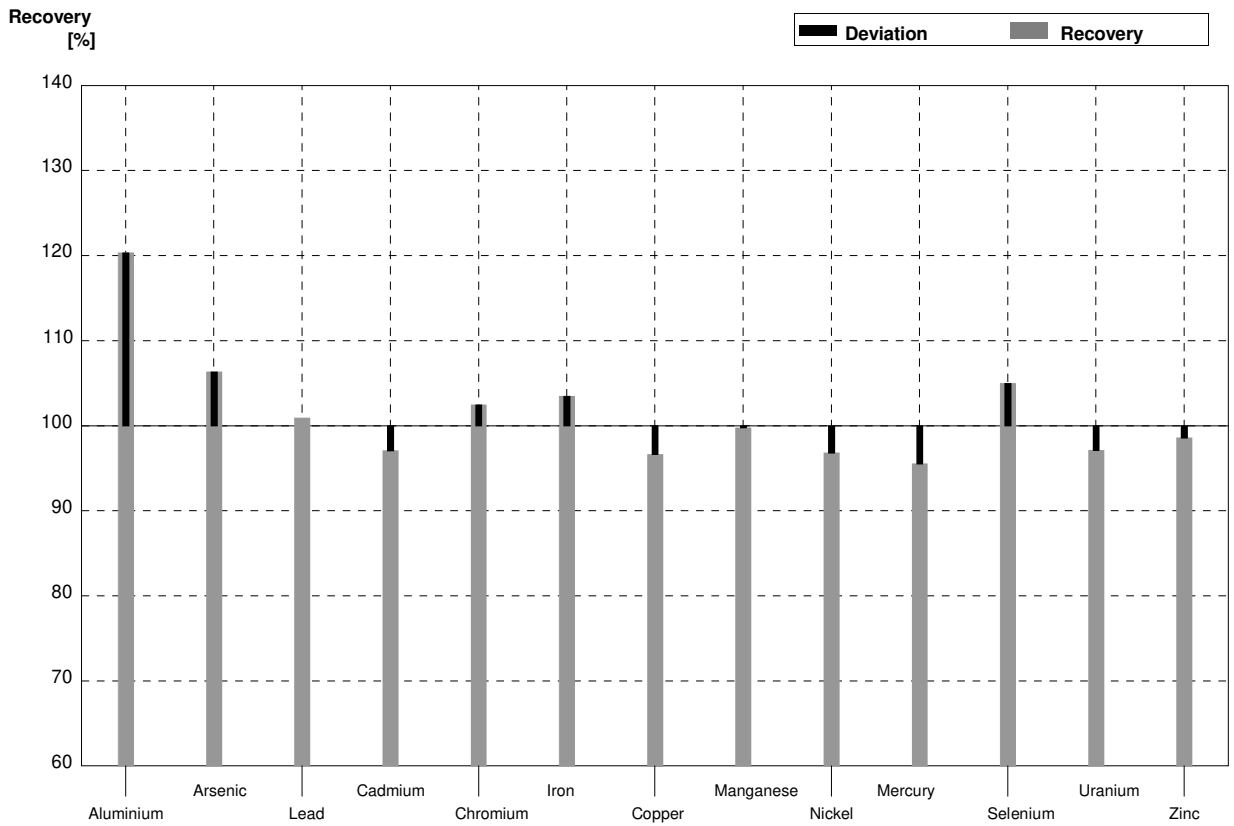
Sample M171B
Laboratory R

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	31,5	0,898	$\mu\text{g/l}$	93%
Arsenic	1,271	0,012	1,34	0,0856	$\mu\text{g/l}$	105%
Lead	4,84	0,04	4,75	0,0387	$\mu\text{g/l}$	98%
Cadmium	1,863	0,015	1,75	0,0471	$\mu\text{g/l}$	94%
Chromium	2,227	0,019	2,06	0,143	$\mu\text{g/l}$	93%
Iron	45,4	0,2	43,9	0,356	$\mu\text{g/l}$	97%
Copper	1,62	0,03	1,52	0,116	$\mu\text{g/l}$	94%
Manganese	28,30	0,15	27,2	0,486	$\mu\text{g/l}$	96%
Nickel	2,44	0,03	2,50	0,0617	$\mu\text{g/l}$	102%
Mercury	0,945	0,015	0,861	0,0148	$\mu\text{g/l}$	91%
Selenium	4,79	0,04	4,72	0,0777	$\mu\text{g/l}$	99%
Uranium	0,515	0,006	<1,00		$\mu\text{g/l}$	•
Zinc	21,1	1,6	21,1	0,195	$\mu\text{g/l}$	100%



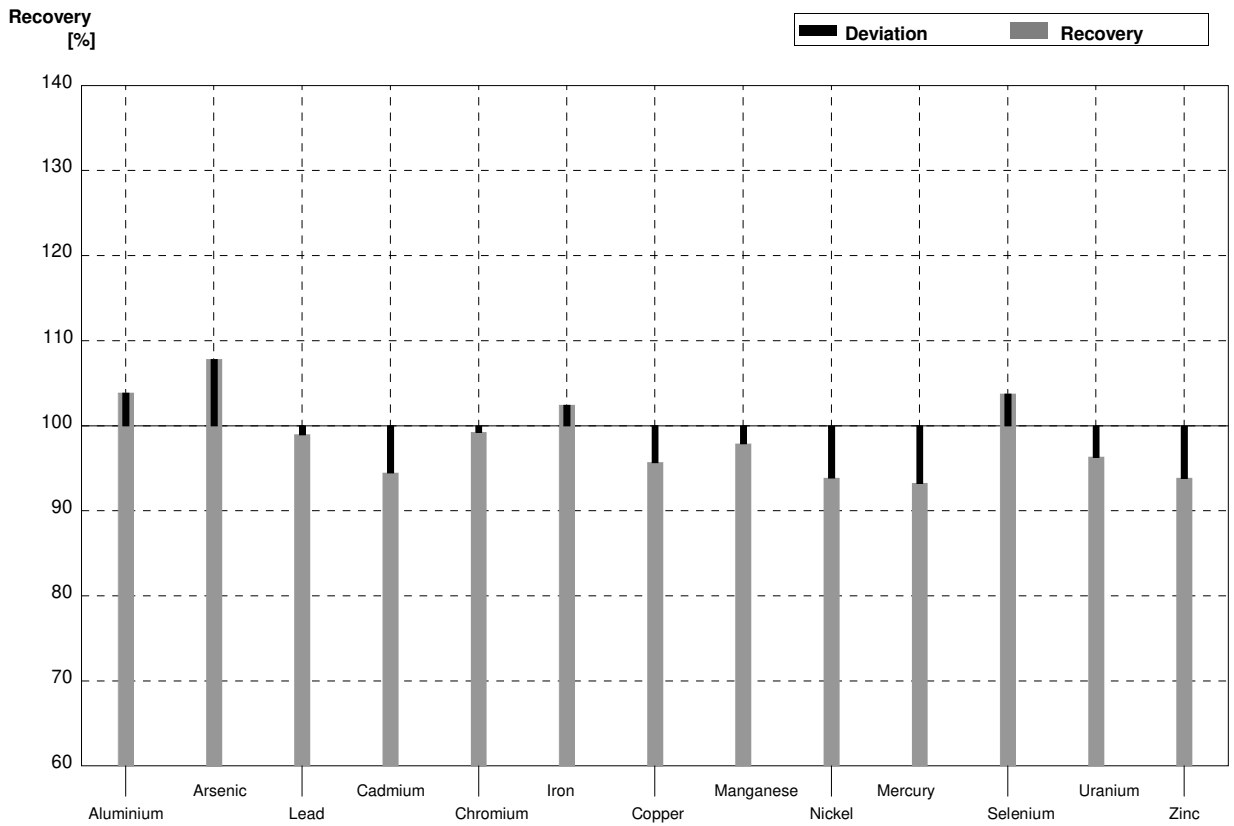
Sample M171A
Laboratory S

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	12,6	0,416	$\mu\text{g/l}$	120%
Arsenic	4,41	0,03	4,69	0,072	$\mu\text{g/l}$	106%
Lead	3,22	0,02	3,25	0,091	$\mu\text{g/l}$	101%
Cadmium	2,73	0,02	2,65	0,056	$\mu\text{g/l}$	97%
Chromium	4,08	0,03	4,18	0,112	$\mu\text{g/l}$	102%
Iron	65,9	0,3	68,2	2,07	$\mu\text{g/l}$	103%
Copper	8,04	0,06	7,77	0,104	$\mu\text{g/l}$	97%
Manganese	17,44	0,12	17,4	0,173	$\mu\text{g/l}$	100%
Nickel	3,15	0,03	3,05	0,047	$\mu\text{g/l}$	97%
Mercury	1,79	0,02	1,71	0,035	$\mu\text{g/l}$	96%
Selenium	1,20	0,02	1,26	0,030	$\mu\text{g/l}$	105%
Uranium	3,83	0,03	3,72	0,076	$\mu\text{g/l}$	97%
Zinc	42,2	1,6	41,6	0,808	$\mu\text{g/l}$	99%



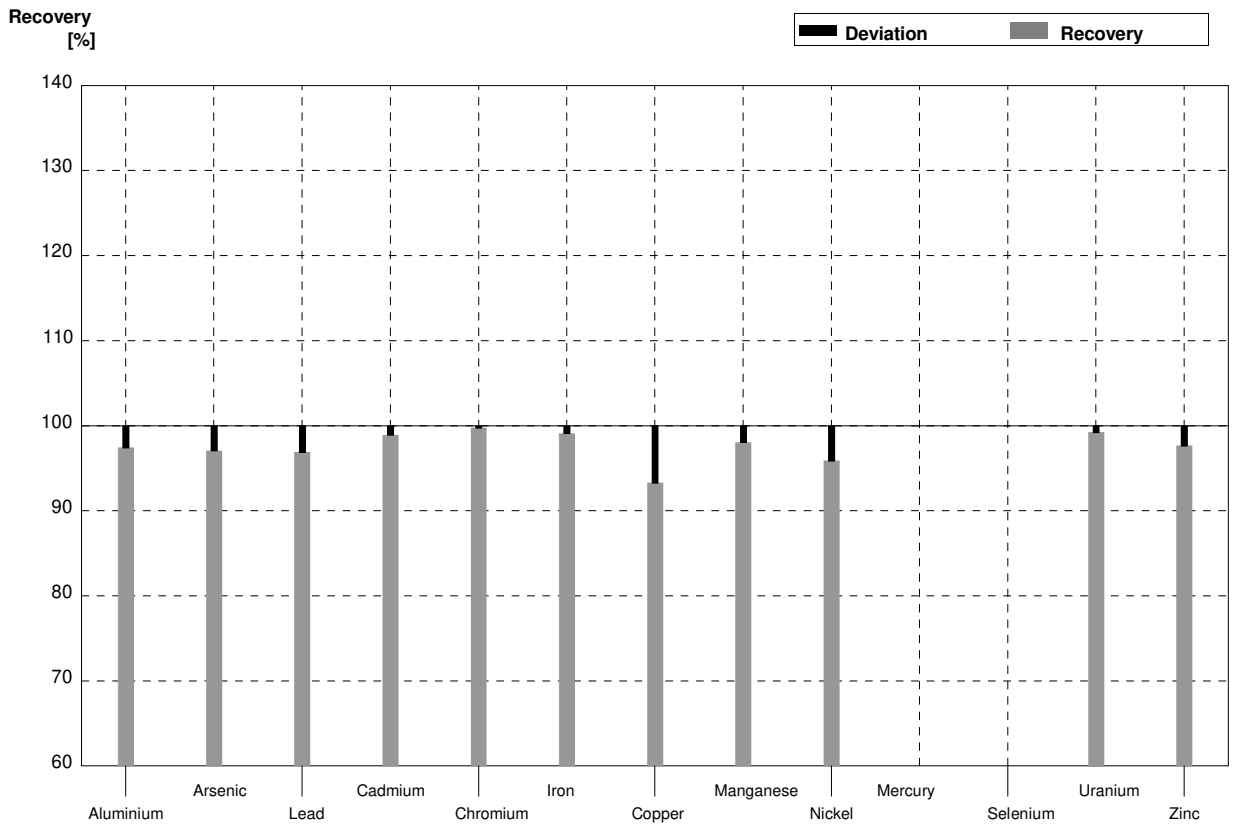
Sample M171B
Laboratory S

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	35,0	1,56	µg/l	104%
Arsenic	1,271	0,012	1,37	0,025	µg/l	108%
Lead	4,84	0,04	4,79	0,109	µg/l	99%
Cadmium	1,863	0,015	1,76	0,059	µg/l	94%
Chromium	2,227	0,019	2,21	0,072	µg/l	99%
Iron	45,4	0,2	46,5	1,22	µg/l	102%
Copper	1,62	0,03	1,55	0,032	µg/l	96%
Manganese	28,30	0,15	27,7	0,458	µg/l	98%
Nickel	2,44	0,03	2,29	0,031	µg/l	94%
Mercury	0,945	0,015	0,881	0,015	µg/l	93%
Selenium	4,79	0,04	4,97	0,095	µg/l	104%
Uranium	0,515	0,006	0,496	0,020	µg/l	96%
Zinc	21,1	1,6	19,8	0,635	µg/l	94%



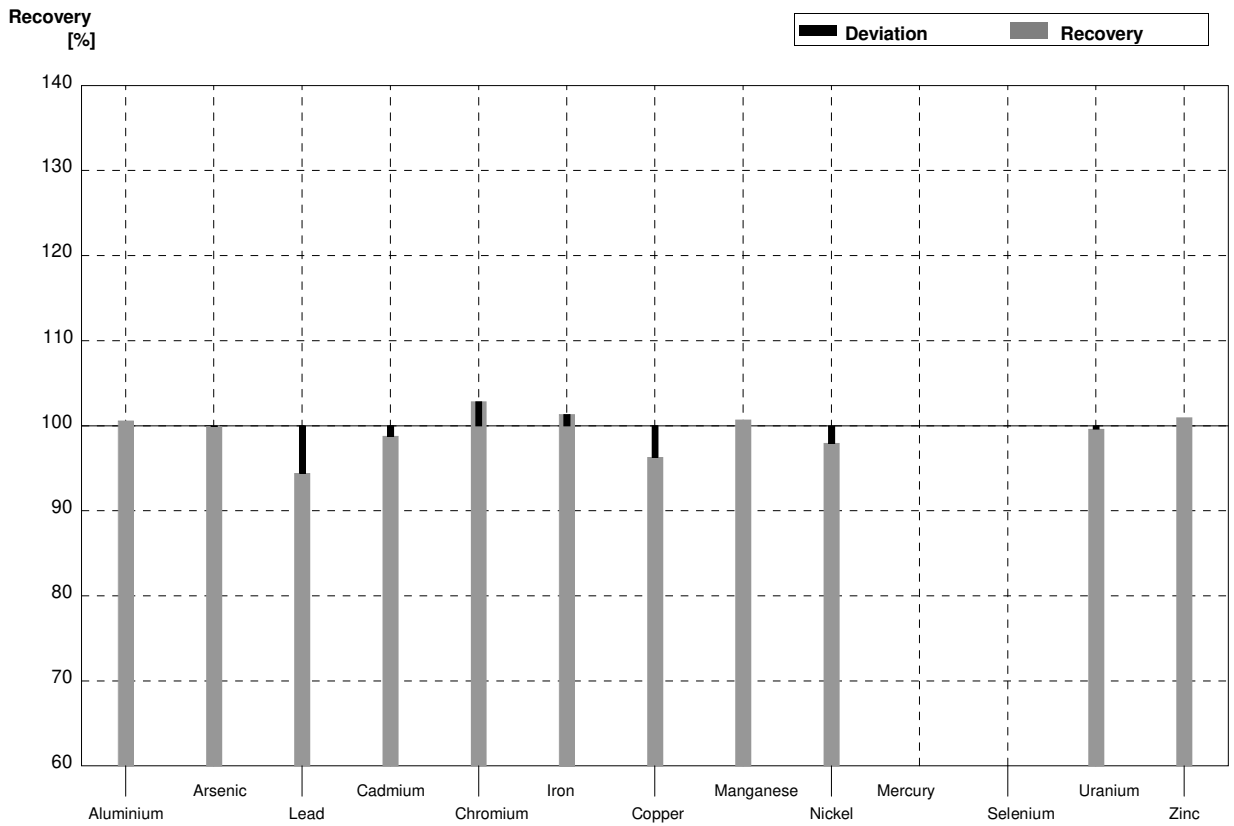
Sample M171A
Laboratory T

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,2	0,7	$\mu\text{g/l}$	97%
Arsenic	4,41	0,03	4,28	0,30	$\mu\text{g/l}$	97%
Lead	3,22	0,02	3,12	0,22	$\mu\text{g/l}$	97%
Cadmium	2,73	0,02	2,70	0,19	$\mu\text{g/l}$	99%
Chromium	4,08	0,03	4,07	0,28	$\mu\text{g/l}$	100%
Iron	65,9	0,3	65,3	4,6	$\mu\text{g/l}$	99%
Copper	8,04	0,06	7,50	0,53	$\mu\text{g/l}$	93%
Manganese	17,44	0,12	17,1	1,2	$\mu\text{g/l}$	98%
Nickel	3,15	0,03	3,02	0,21	$\mu\text{g/l}$	96%
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03	3,80	0,27	$\mu\text{g/l}$	99%
Zinc	42,2	1,6	41,2	2,9	$\mu\text{g/l}$	98%



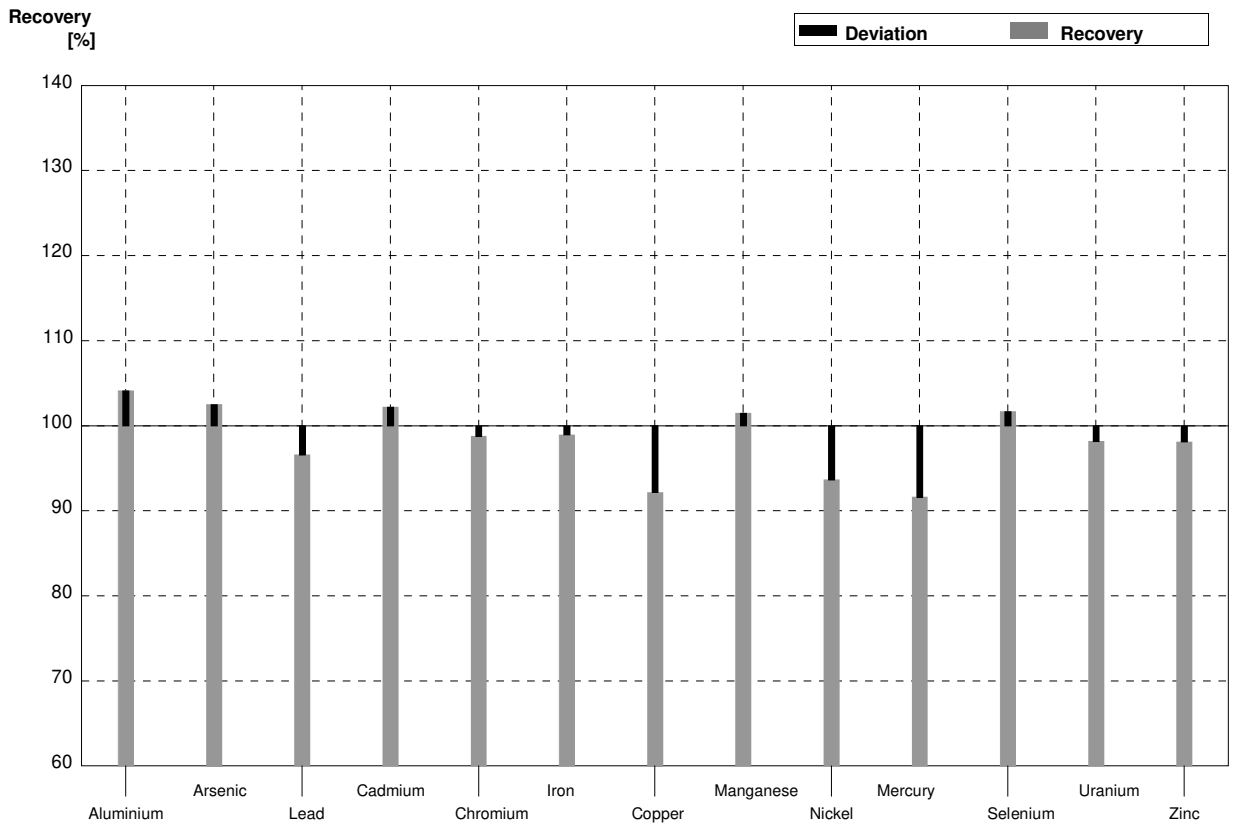
Sample M171B
Laboratory T

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	33,9	2,4	$\mu\text{g/l}$	101%
Arsenic	1,271	0,012	1,27	0,09	$\mu\text{g/l}$	100%
Lead	4,84	0,04	4,57	0,32	$\mu\text{g/l}$	94%
Cadmium	1,863	0,015	1,84	0,13	$\mu\text{g/l}$	99%
Chromium	2,227	0,019	2,29	0,16	$\mu\text{g/l}$	103%
Iron	45,4	0,2	46,0	3,2	$\mu\text{g/l}$	101%
Copper	1,62	0,03	1,56	0,11	$\mu\text{g/l}$	96%
Manganese	28,30	0,15	28,5	2,0	$\mu\text{g/l}$	101%
Nickel	2,44	0,03	2,39	0,17	$\mu\text{g/l}$	98%
Mercury	0,945	0,015			$\mu\text{g/l}$	
Selenium	4,79	0,04			$\mu\text{g/l}$	
Uranium	0,515	0,006	0,513	0,036	$\mu\text{g/l}$	100%
Zinc	21,1	1,6	21,3	1,5	$\mu\text{g/l}$	101%



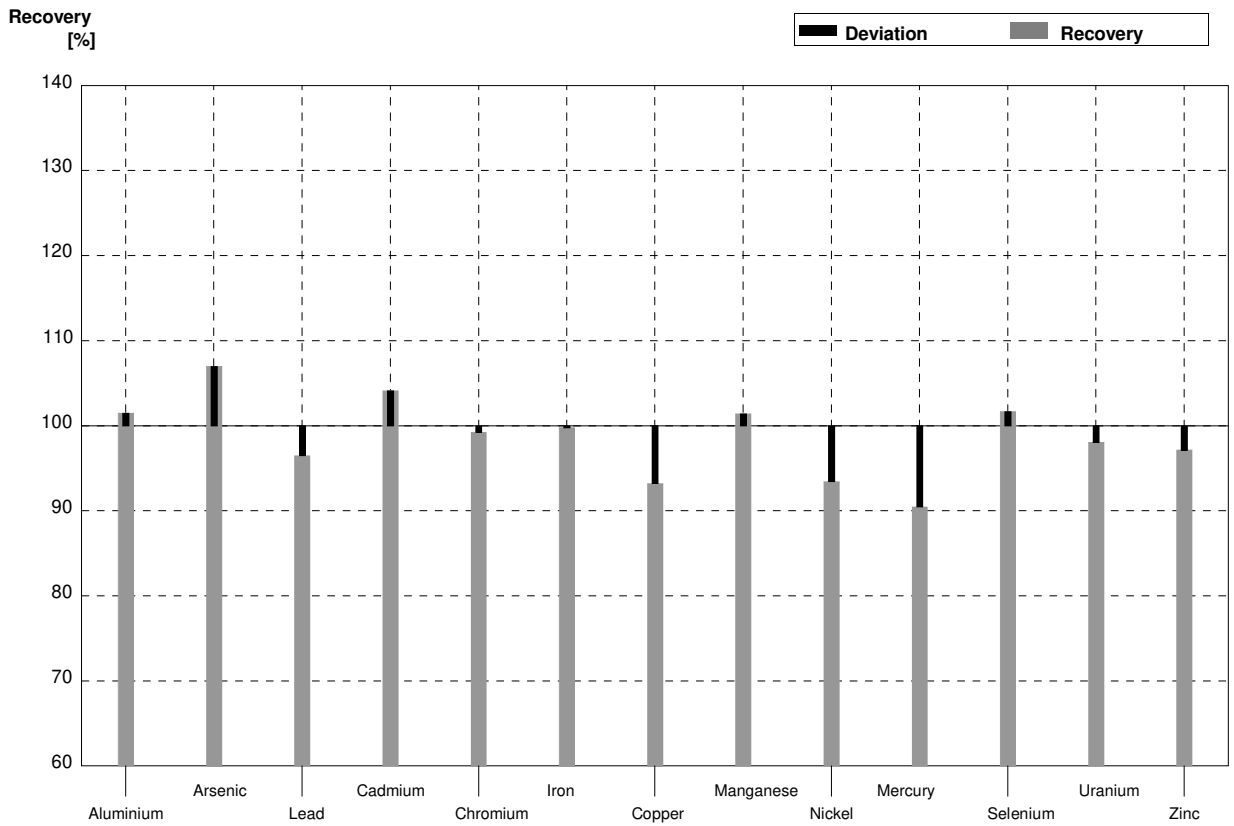
Sample M171A
Laboratory U

Parameter	Assigned value	$\pm U$ (k=2)	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,9	1,8	$\mu\text{g/l}$	104%
Arsenic	4,41	0,03	4,52	0,77	$\mu\text{g/l}$	102%
Lead	3,22	0,02	3,11	0,37	$\mu\text{g/l}$	97%
Cadmium	2,73	0,02	2,79	0,33	$\mu\text{g/l}$	102%
Chromium	4,08	0,03	4,03	0,76	$\mu\text{g/l}$	99%
Iron	65,9	0,3	65,2	11,7	$\mu\text{g/l}$	99%
Copper	8,04	0,06	7,41	0,82	$\mu\text{g/l}$	92%
Manganese	17,44	0,12	17,7	2,7	$\mu\text{g/l}$	101%
Nickel	3,15	0,03	2,95	0,68	$\mu\text{g/l}$	94%
Mercury	1,79	0,02	1,64	0,29	$\mu\text{g/l}$	92%
Selenium	1,20	0,02	1,22	0,41	$\mu\text{g/l}$	102%
Uranium	3,83	0,03	3,76	0,75	$\mu\text{g/l}$	98%
Zinc	42,2	1,6	41,4	6,6	$\mu\text{g/l}$	98%



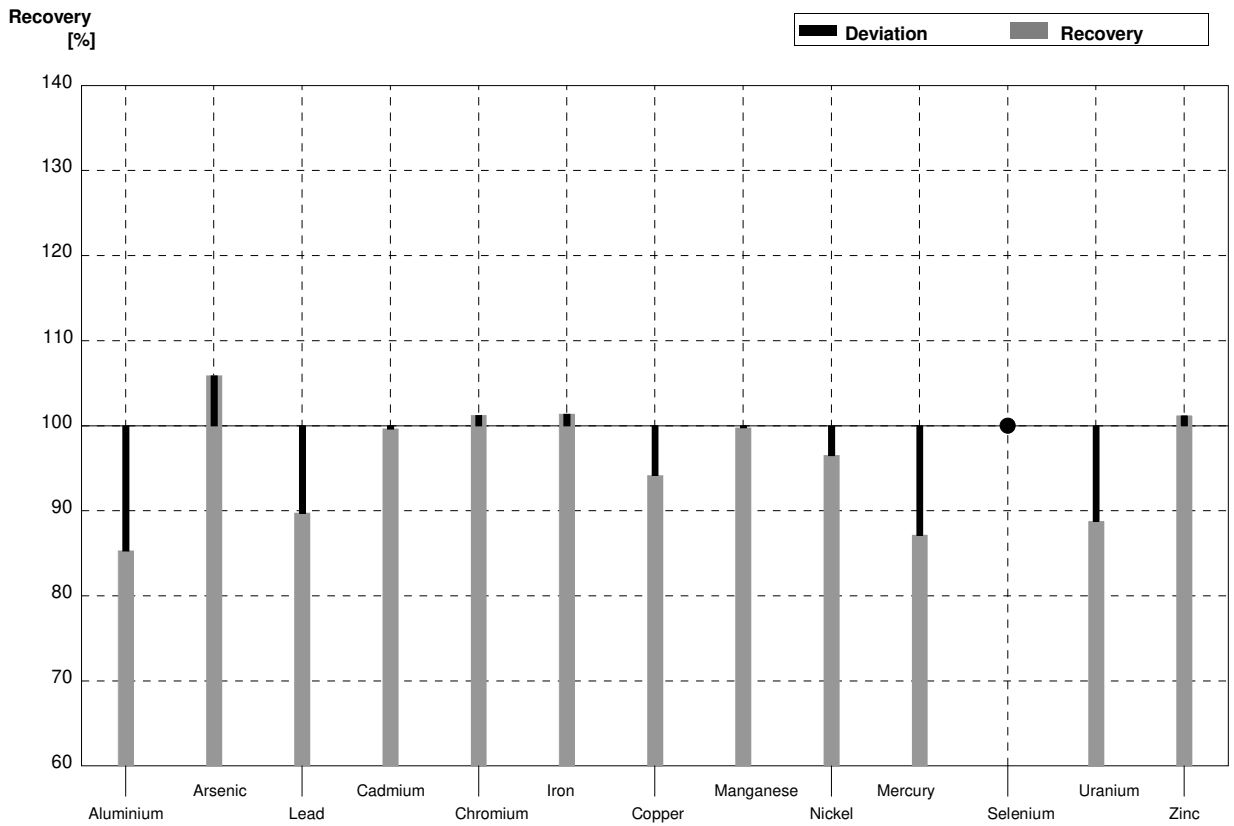
Sample M171B
Laboratory U

Parameter	Assigned value	$\pm U$ (k=2)	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	34,2	4,1	$\mu\text{g/l}$	101%
Arsenic	1,271	0,012	1,36	0,23	$\mu\text{g/l}$	107%
Lead	4,84	0,04	4,67	0,56	$\mu\text{g/l}$	96%
Cadmium	1,863	0,015	1,94	0,23	$\mu\text{g/l}$	104%
Chromium	2,227	0,019	2,21	0,42	$\mu\text{g/l}$	99%
Iron	45,4	0,2	45,3	8,2	$\mu\text{g/l}$	100%
Copper	1,62	0,03	1,51	0,17	$\mu\text{g/l}$	93%
Manganese	28,30	0,15	28,7	3,2	$\mu\text{g/l}$	101%
Nickel	2,44	0,03	2,28	0,52	$\mu\text{g/l}$	93%
Mercury	0,945	0,015	0,855	0,154	$\mu\text{g/l}$	90%
Selenium	4,79	0,04	4,87	1,66	$\mu\text{g/l}$	102%
Uranium	0,515	0,006	0,505	0,207	$\mu\text{g/l}$	98%
Zinc	21,1	1,6	20,5	3,3	$\mu\text{g/l}$	97%



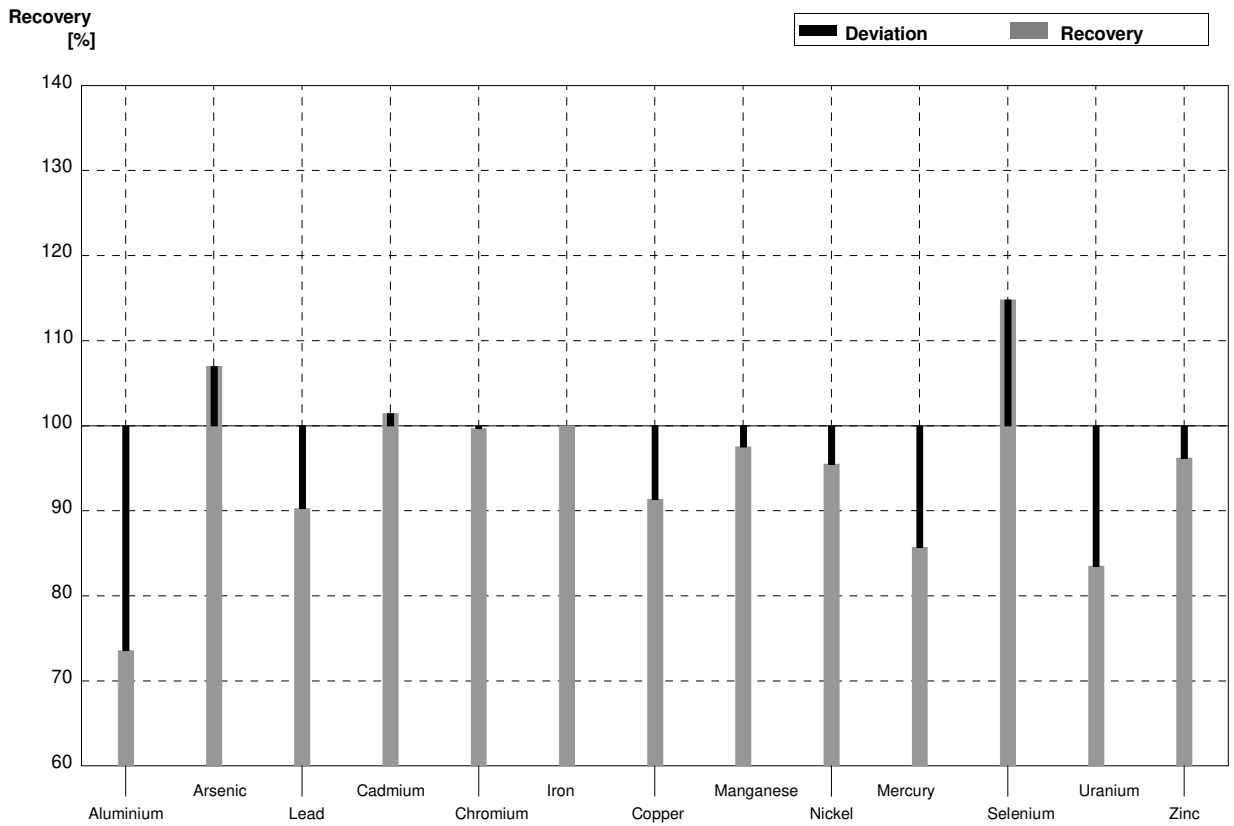
Sample M171A
Laboratory V

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	8,93	1,6	$\mu\text{g/l}$	85%
Arsenic	4,41	0,03	4,67	0,75	$\mu\text{g/l}$	106%
Lead	3,22	0,02	2,89	0,43	$\mu\text{g/l}$	90%
Cadmium	2,73	0,02	2,72	0,33	$\mu\text{g/l}$	100%
Chromium	4,08	0,03	4,13	0,58	$\mu\text{g/l}$	101%
Iron	65,9	0,3	66,8	9,4	$\mu\text{g/l}$	101%
Copper	8,04	0,06	7,57	1,3	$\mu\text{g/l}$	94%
Manganese	17,44	0,12	17,4	1,9	$\mu\text{g/l}$	100%
Nickel	3,15	0,03	3,04	0,49	$\mu\text{g/l}$	97%
Mercury	1,79	0,02	1,56	0,34	$\mu\text{g/l}$	87%
Selenium	1,20	0,02	<5		$\mu\text{g/l}$	•
Uranium	3,83	0,03	3,40	0,41	$\mu\text{g/l}$	89%
Zinc	42,2	1,6	42,7	6,8	$\mu\text{g/l}$	101%



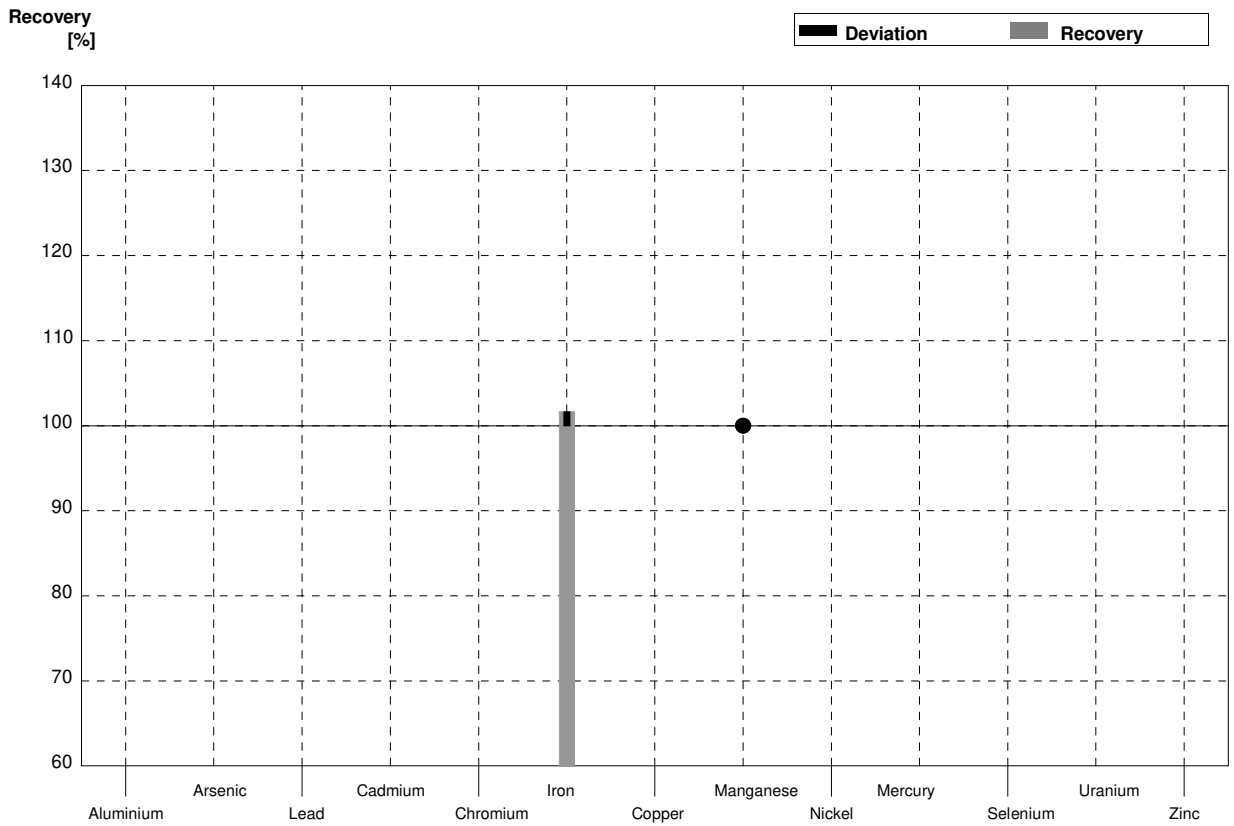
Sample M171B
Laboratory V

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	24,8	4,5	$\mu\text{g/l}$	74%
Arsenic	1,271	0,012	1,36	0,22	$\mu\text{g/l}$	107%
Lead	4,84	0,04	4,37	0,65	$\mu\text{g/l}$	90%
Cadmium	1,863	0,015	1,89	0,23	$\mu\text{g/l}$	101%
Chromium	2,227	0,019	2,22	0,31	$\mu\text{g/l}$	100%
Iron	45,4	0,2	45,4	6,4	$\mu\text{g/l}$	100%
Copper	1,62	0,03	1,48	0,25	$\mu\text{g/l}$	91%
Manganese	28,30	0,15	27,6	3,0	$\mu\text{g/l}$	98%
Nickel	2,44	0,03	2,33	0,37	$\mu\text{g/l}$	95%
Mercury	0,945	0,015	0,81	0,18	$\mu\text{g/l}$	86%
Selenium	4,79	0,04	5,5	2,2	$\mu\text{g/l}$	115%
Uranium	0,515	0,006	0,430	0,052	$\mu\text{g/l}$	83%
Zinc	21,1	1,6	20,3	3,3	$\mu\text{g/l}$	96%



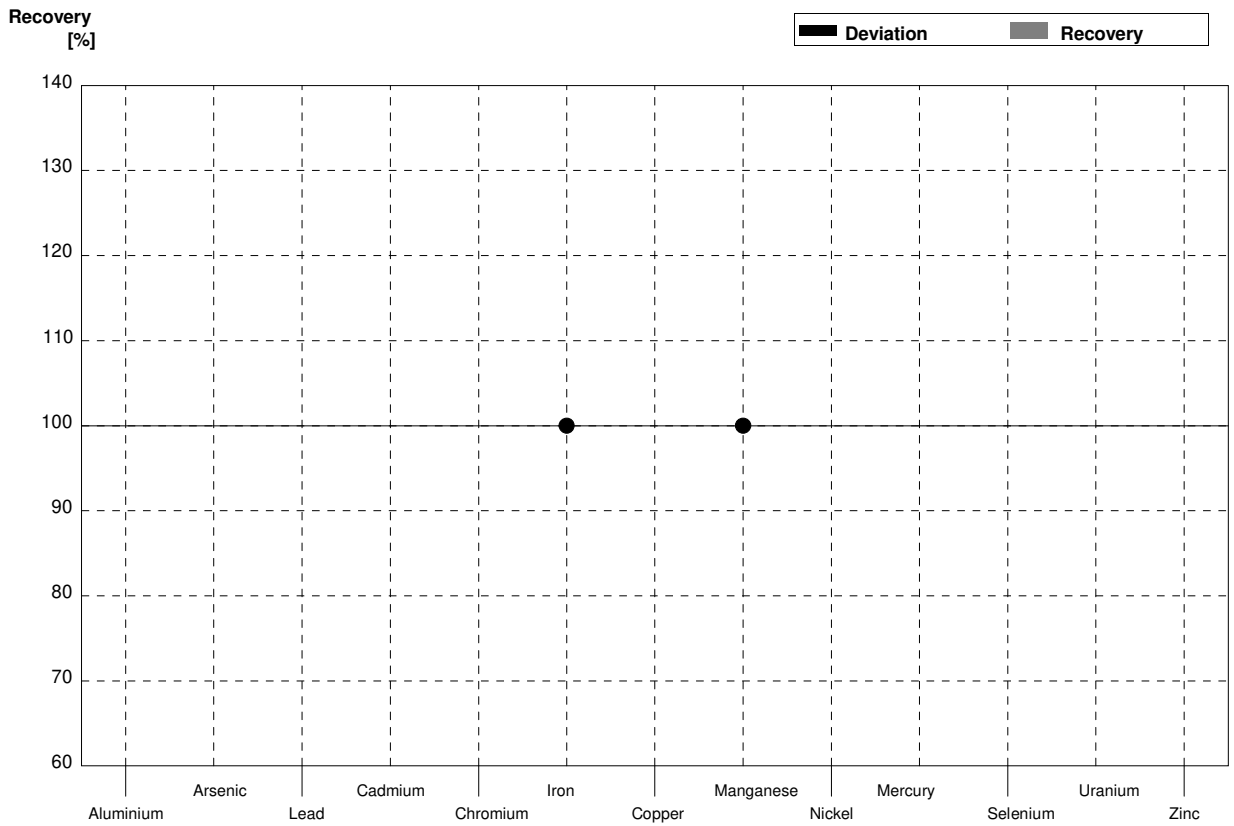
Sample M171A
Laboratory W

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15			$\mu\text{g/l}$	
Arsenic	4,41	0,03			$\mu\text{g/l}$	
Lead	3,22	0,02			$\mu\text{g/l}$	
Cadmium	2,73	0,02			$\mu\text{g/l}$	
Chromium	4,08	0,03			$\mu\text{g/l}$	
Iron	65,9	0,3	67	6	$\mu\text{g/l}$	102%
Copper	8,04	0,06			$\mu\text{g/l}$	
Manganese	17,44	0,12	<50		$\mu\text{g/l}$	•
Nickel	3,15	0,03			$\mu\text{g/l}$	
Mercury	1,79	0,02			$\mu\text{g/l}$	
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6			$\mu\text{g/l}$	



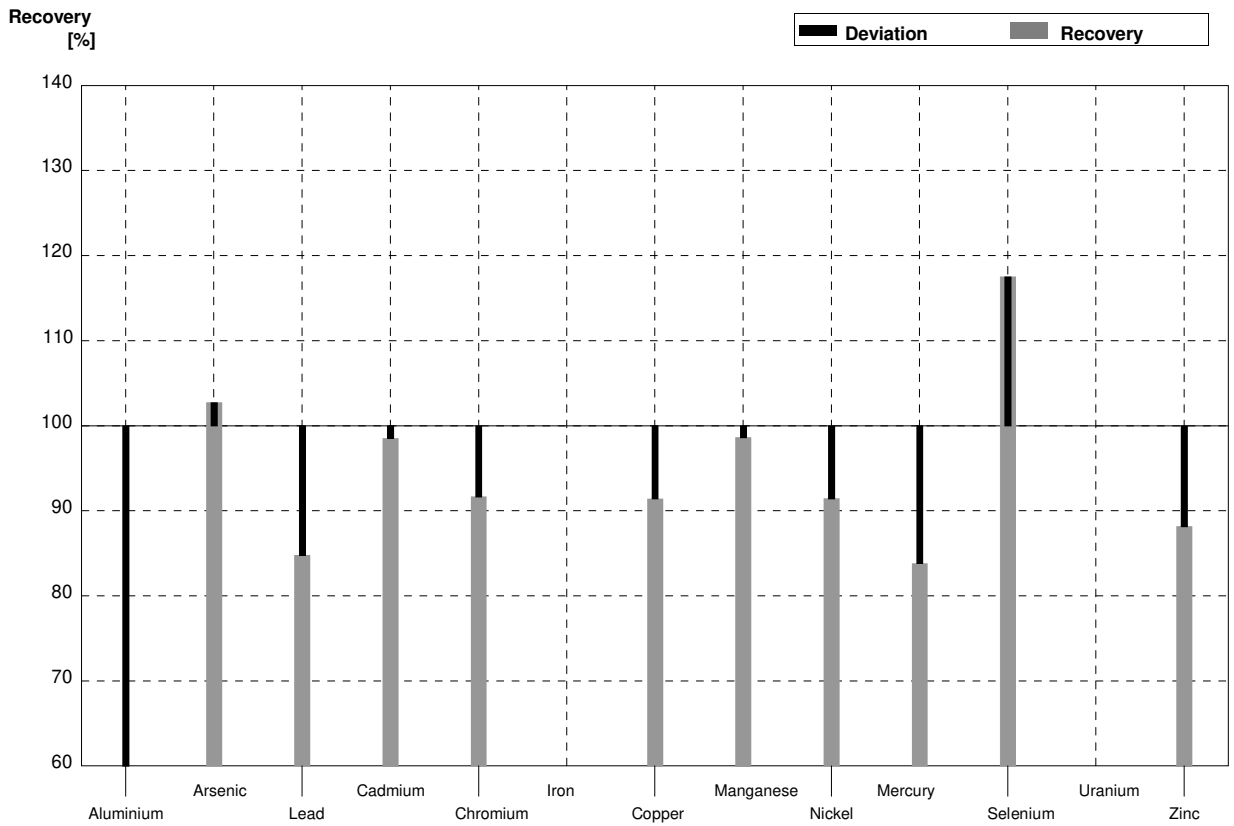
Sample M171B
Laboratory W

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3			$\mu\text{g/l}$	
Arsenic	1,271	0,012			$\mu\text{g/l}$	
Lead	4,84	0,04			$\mu\text{g/l}$	
Cadmium	1,863	0,015			$\mu\text{g/l}$	
Chromium	2,227	0,019			$\mu\text{g/l}$	
Iron	45,4	0,2	<50		$\mu\text{g/l}$	•
Copper	1,62	0,03			$\mu\text{g/l}$	
Manganese	28,30	0,15	<50		$\mu\text{g/l}$	•
Nickel	2,44	0,03			$\mu\text{g/l}$	
Mercury	0,945	0,015			$\mu\text{g/l}$	
Selenium	4,79	0,04			$\mu\text{g/l}$	
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6			$\mu\text{g/l}$	



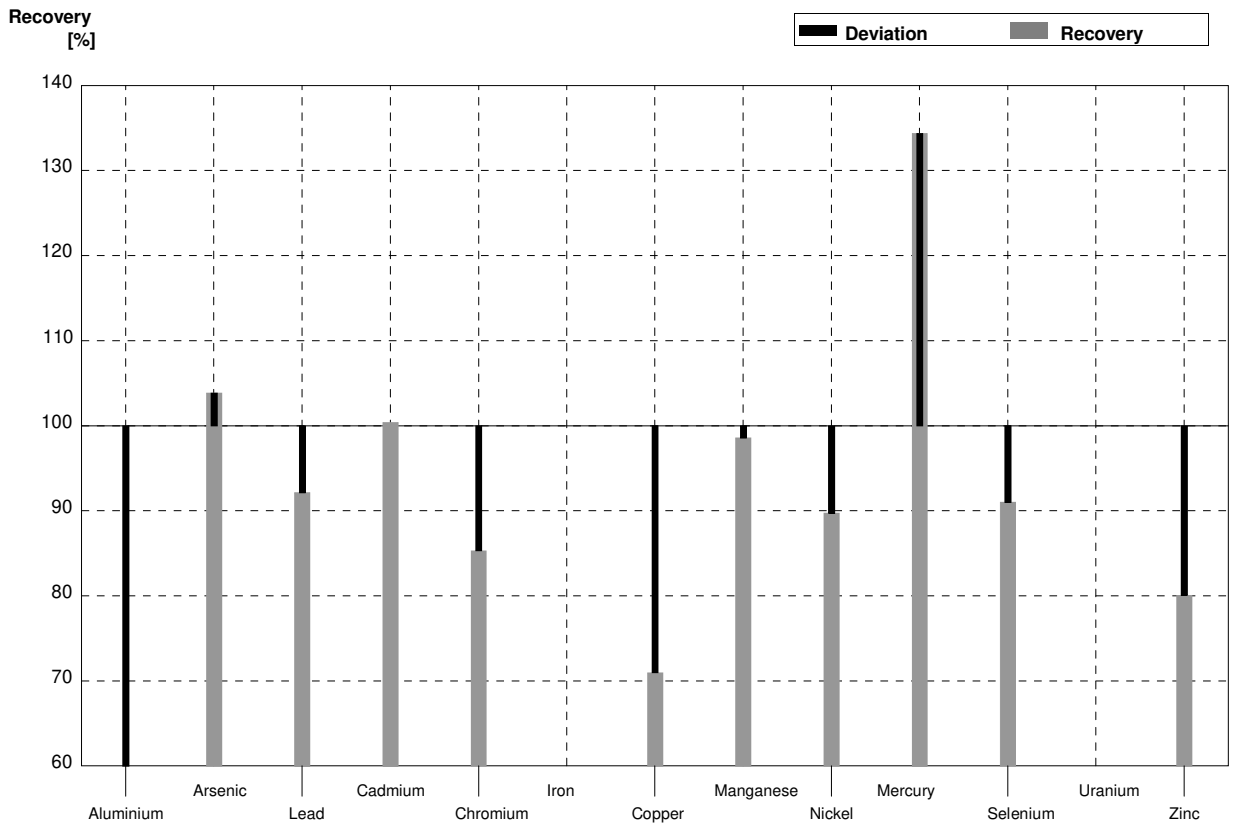
Sample M171A
Laboratory X

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	1,17	0,02	$\mu\text{g/l}$	11%
Arsenic	4,41	0,03	4,53	0,08	$\mu\text{g/l}$	103%
Lead	3,22	0,02	2,73	0,47	$\mu\text{g/l}$	85%
Cadmium	2,73	0,02	2,69	0,13	$\mu\text{g/l}$	99%
Chromium	4,08	0,03	3,74	0,82	$\mu\text{g/l}$	92%
Iron	65,9	0,3			$\mu\text{g/l}$	
Copper	8,04	0,06	7,35	1,32	$\mu\text{g/l}$	91%
Manganese	17,44	0,12	17,2	0,24	$\mu\text{g/l}$	99%
Nickel	3,15	0,03	2,88	0,29	$\mu\text{g/l}$	91%
Mercury	1,79	0,02	1,50	0,03	$\mu\text{g/l}$	84%
Selenium	1,20	0,02	1,41	0,09	$\mu\text{g/l}$	118%
Uranium	3,83	0,03			$\mu\text{g/l}$	
Zinc	42,2	1,6	37,2	2,34	$\mu\text{g/l}$	88%



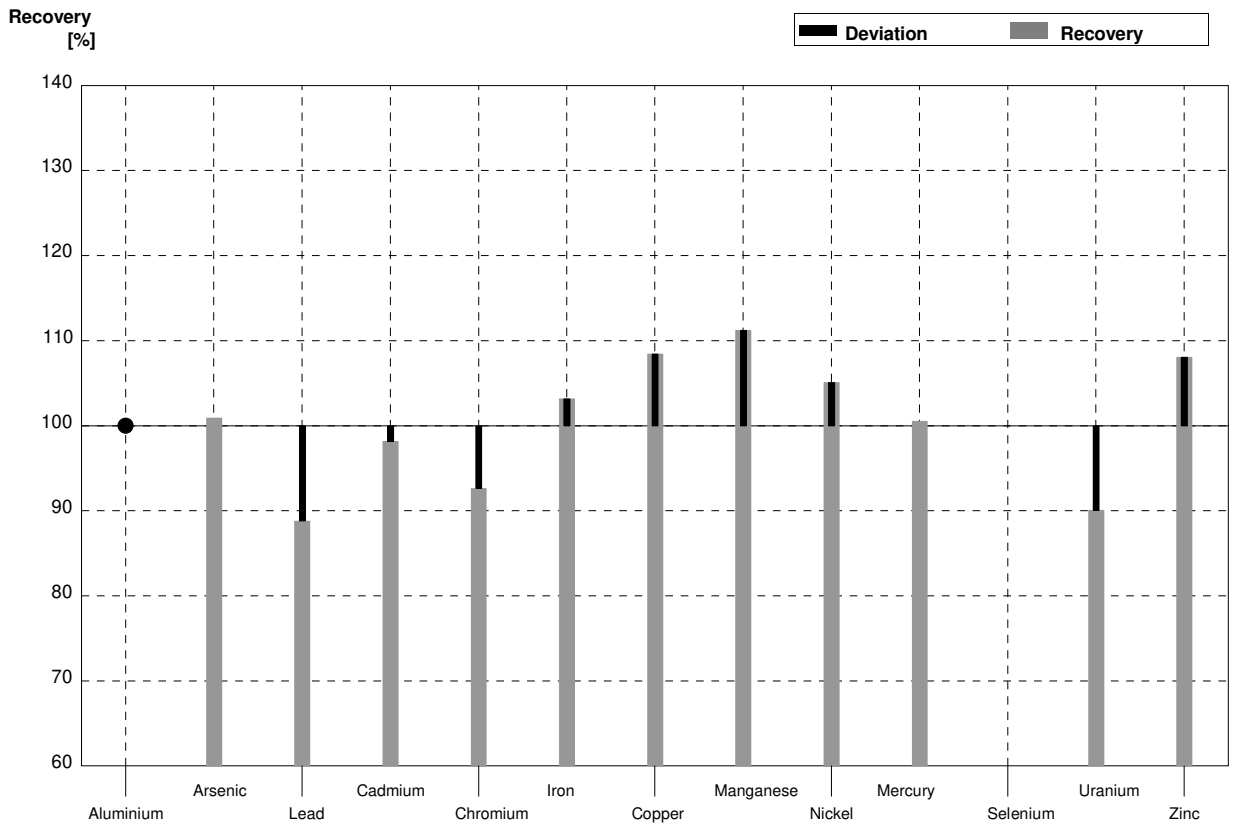
Sample M171B
Laboratory X

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	15,1	1,83	$\mu\text{g/l}$	45%
Arsenic	1,271	0,012	1,32	0,09	$\mu\text{g/l}$	104%
Lead	4,84	0,04	4,46	0,96	$\mu\text{g/l}$	92%
Cadmium	1,863	0,015	1,87	0,06	$\mu\text{g/l}$	100%
Chromium	2,227	0,019	1,90	0,50	$\mu\text{g/l}$	85%
Iron	45,4	0,2			$\mu\text{g/l}$	
Copper	1,62	0,03	1,15	0,08	$\mu\text{g/l}$	71%
Manganese	28,30	0,15	27,9	0,54	$\mu\text{g/l}$	99%
Nickel	2,44	0,03	2,19	0,32	$\mu\text{g/l}$	90%
Mercury	0,945	0,015	1,27	0,09	$\mu\text{g/l}$	134%
Selenium	4,79	0,04	4,36	0,73	$\mu\text{g/l}$	91%
Uranium	0,515	0,006			$\mu\text{g/l}$	
Zinc	21,1	1,6	16,9	1,98	$\mu\text{g/l}$	80%



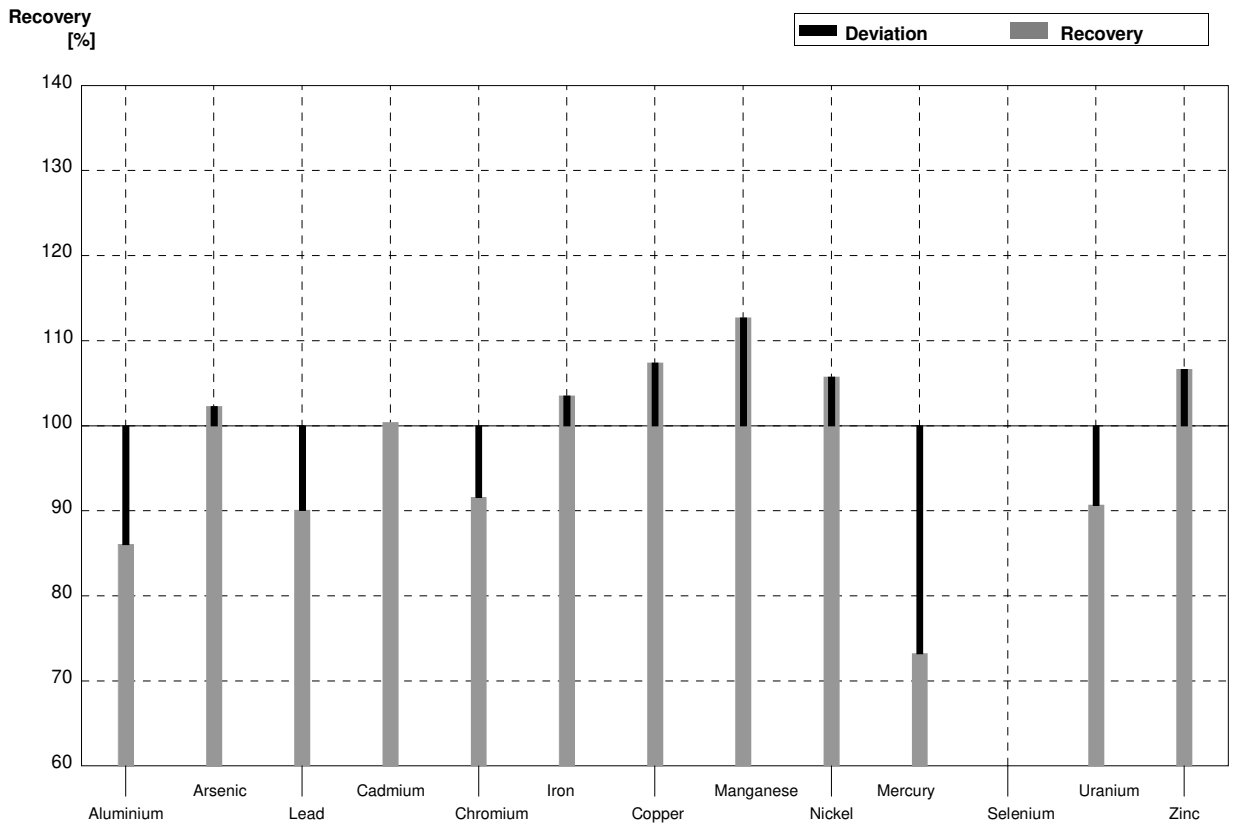
Sample M171A
Laboratory Y

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	<20	3	$\mu\text{g/l}$	•
Arsenic	4,41	0,03	4,45	0,7	$\mu\text{g/l}$	101%
Lead	3,22	0,02	2,86	0,45	$\mu\text{g/l}$	89%
Cadmium	2,73	0,02	2,68	0,4	$\mu\text{g/l}$	98%
Chromium	4,08	0,03	3,78	0,6	$\mu\text{g/l}$	93%
Iron	65,9	0,3	68,0	10	$\mu\text{g/l}$	103%
Copper	8,04	0,06	8,72	2,6	$\mu\text{g/l}$	108%
Manganese	17,44	0,12	19,4	4	$\mu\text{g/l}$	111%
Nickel	3,15	0,03	3,31	0,65	$\mu\text{g/l}$	105%
Mercury	1,79	0,02	1,80	0,45	$\mu\text{g/l}$	101%
Selenium	1,20	0,02			$\mu\text{g/l}$	
Uranium	3,83	0,03	3,45	0,7	$\mu\text{g/l}$	90%
Zinc	42,2	1,6	45,6	6,8	$\mu\text{g/l}$	108%



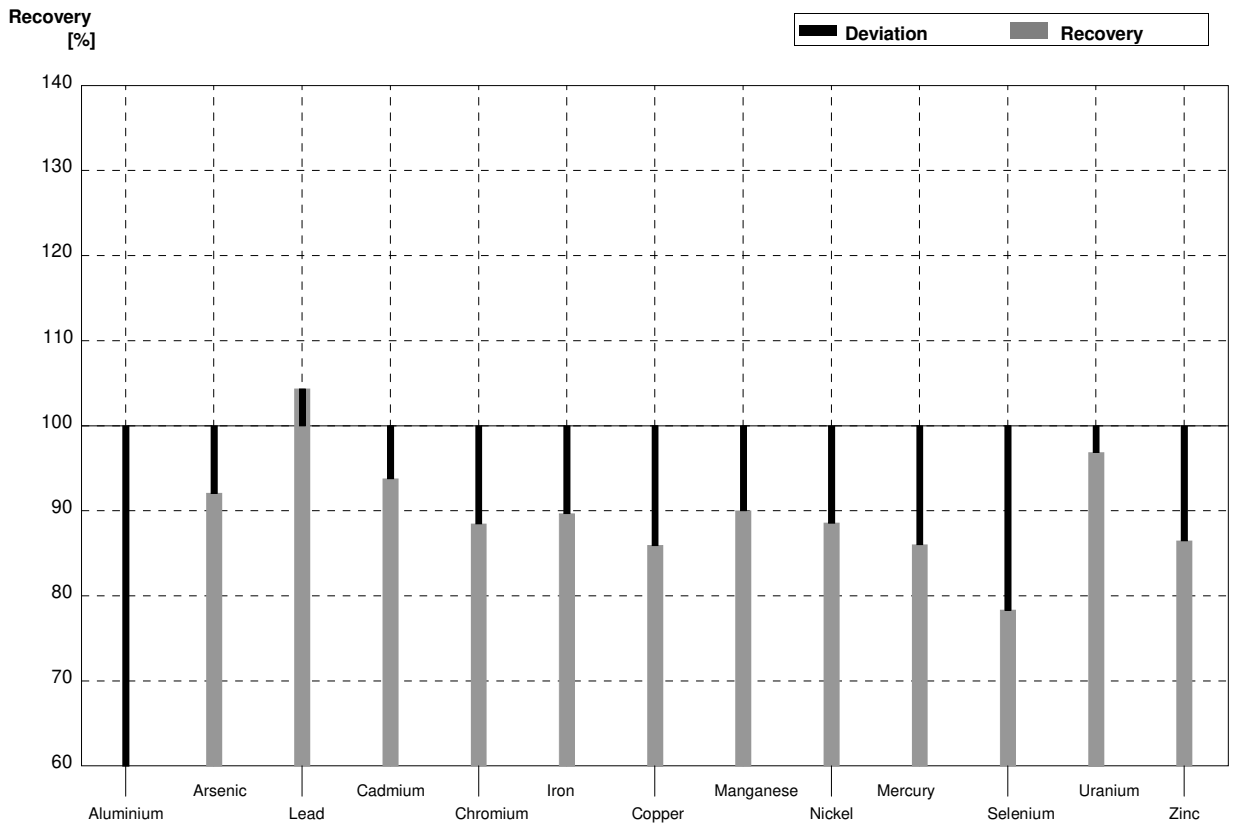
Sample M171B
Laboratory Y

Parameter	Assigned value	± U (k=2)	Result	±	Unit	Recovery
Aluminium	33,7	0,3	29,0	4	µg/l	86%
Arsenic	1,271	0,012	1,30	0,2	µg/l	102%
Lead	4,84	0,04	4,36	0,7	µg/l	90%
Cadmium	1,863	0,015	1,87	0,3	µg/l	100%
Chromium	2,227	0,019	2,04	0,3	µg/l	92%
Iron	45,4	0,2	47,0	7	µg/l	104%
Copper	1,62	0,03	1,74	0,6	µg/l	107%
Manganese	28,30	0,15	31,9	6,5	µg/l	113%
Nickel	2,44	0,03	2,58	0,5	µg/l	106%
Mercury	0,945	0,015	0,692	0,17	µg/l	73%
Selenium	4,79	0,04			µg/l	
Uranium	0,515	0,006	0,467	0,1	µg/l	91%
Zinc	21,1	1,6	22,5	3,4	µg/l	107%



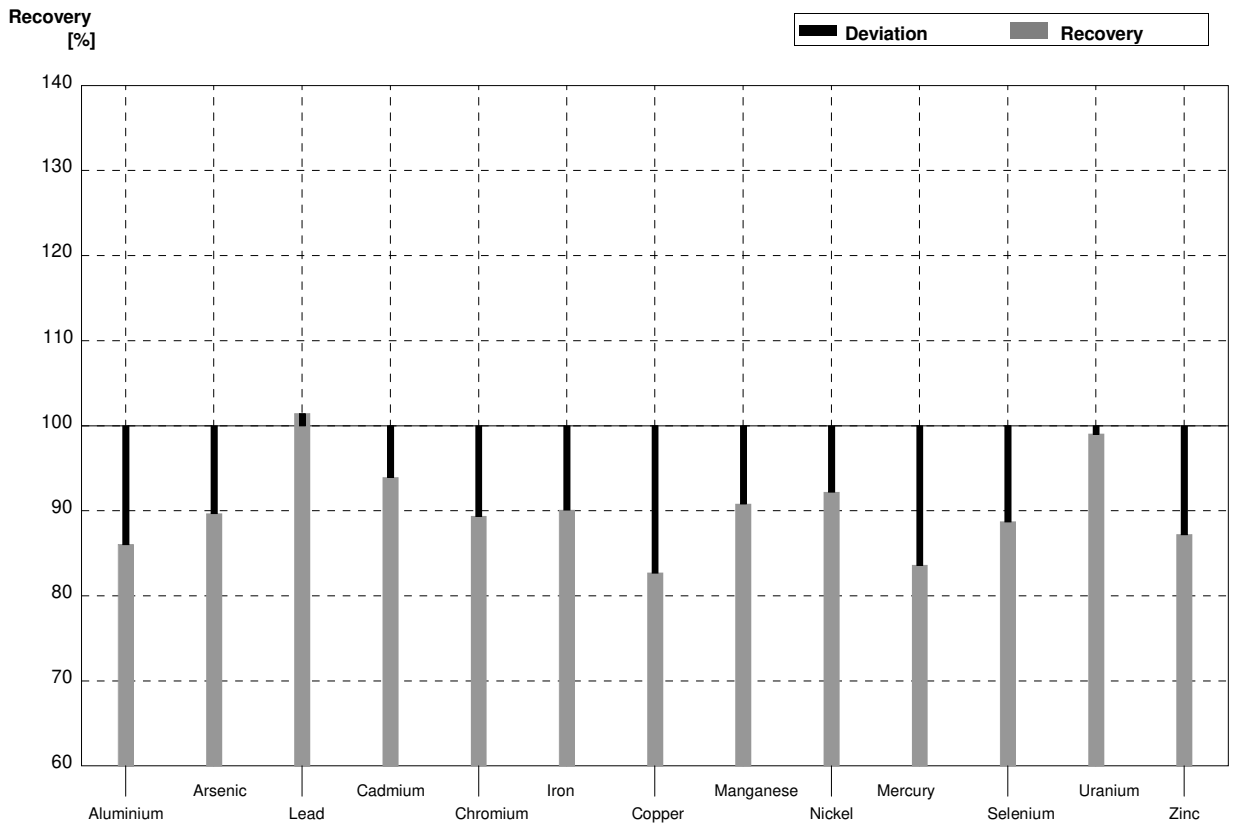
Sample M171A
Laboratory Z

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	6,26	0,638	$\mu\text{g/l}$	60%
Arsenic	4,41	0,03	4,06	0,099	$\mu\text{g/l}$	92%
Lead	3,22	0,02	3,36	0,261	$\mu\text{g/l}$	104%
Cadmium	2,73	0,02	2,56	0,045	$\mu\text{g/l}$	94%
Chromium	4,08	0,03	3,61	0,070	$\mu\text{g/l}$	88%
Iron	65,9	0,3	59,1	1,04	$\mu\text{g/l}$	90%
Copper	8,04	0,06	6,91	0,123	$\mu\text{g/l}$	86%
Manganese	17,44	0,12	15,7	0,31	$\mu\text{g/l}$	90%
Nickel	3,15	0,03	2,79	0,050	$\mu\text{g/l}$	89%
Mercury	1,79	0,02	1,54	0,092	$\mu\text{g/l}$	86%
Selenium	1,20	0,02	0,94	0,059	$\mu\text{g/l}$	78%
Uranium	3,83	0,03	3,71	0,186	$\mu\text{g/l}$	97%
Zinc	42,2	1,6	36,5	1,63	$\mu\text{g/l}$	86%



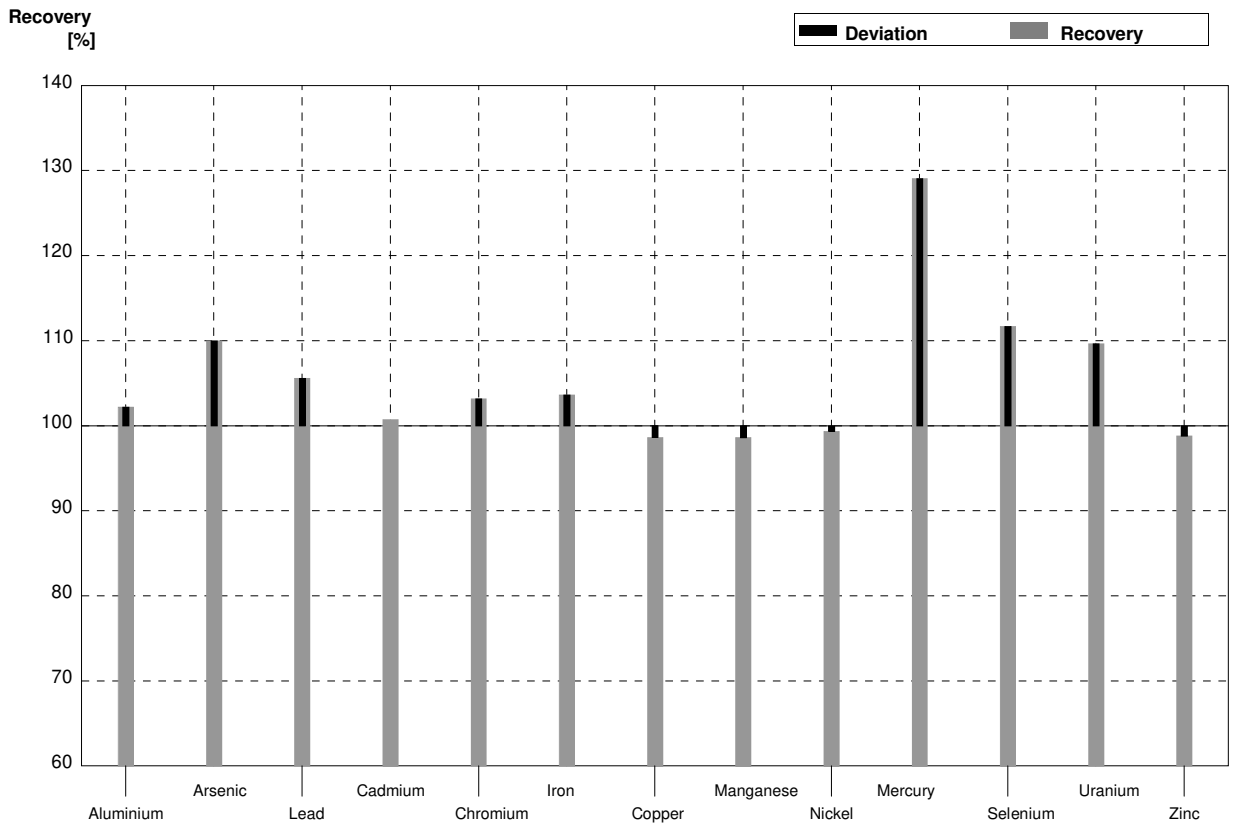
Sample M171B
Laboratory Z

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	29,0	1,94	$\mu\text{g/l}$	86%
Arsenic	1,271	0,012	1,14	0,059	$\mu\text{g/l}$	90%
Lead	4,84	0,04	4,91	0,247	$\mu\text{g/l}$	101%
Cadmium	1,863	0,015	1,75	0,037	$\mu\text{g/l}$	94%
Chromium	2,227	0,019	1,99	0,051	$\mu\text{g/l}$	89%
Iron	45,4	0,2	40,9	0,65	$\mu\text{g/l}$	90%
Copper	1,62	0,03	1,34	0,011	$\mu\text{g/l}$	83%
Manganese	28,30	0,15	25,7	0,38	$\mu\text{g/l}$	91%
Nickel	2,44	0,03	2,25	0,190	$\mu\text{g/l}$	92%
Mercury	0,945	0,015	0,79	0,071	$\mu\text{g/l}$	84%
Selenium	4,79	0,04	4,25	0,220	$\mu\text{g/l}$	89%
Uranium	0,515	0,006	0,51	0,023	$\mu\text{g/l}$	99%
Zinc	21,1	1,6	18,4	0,51	$\mu\text{g/l}$	87%



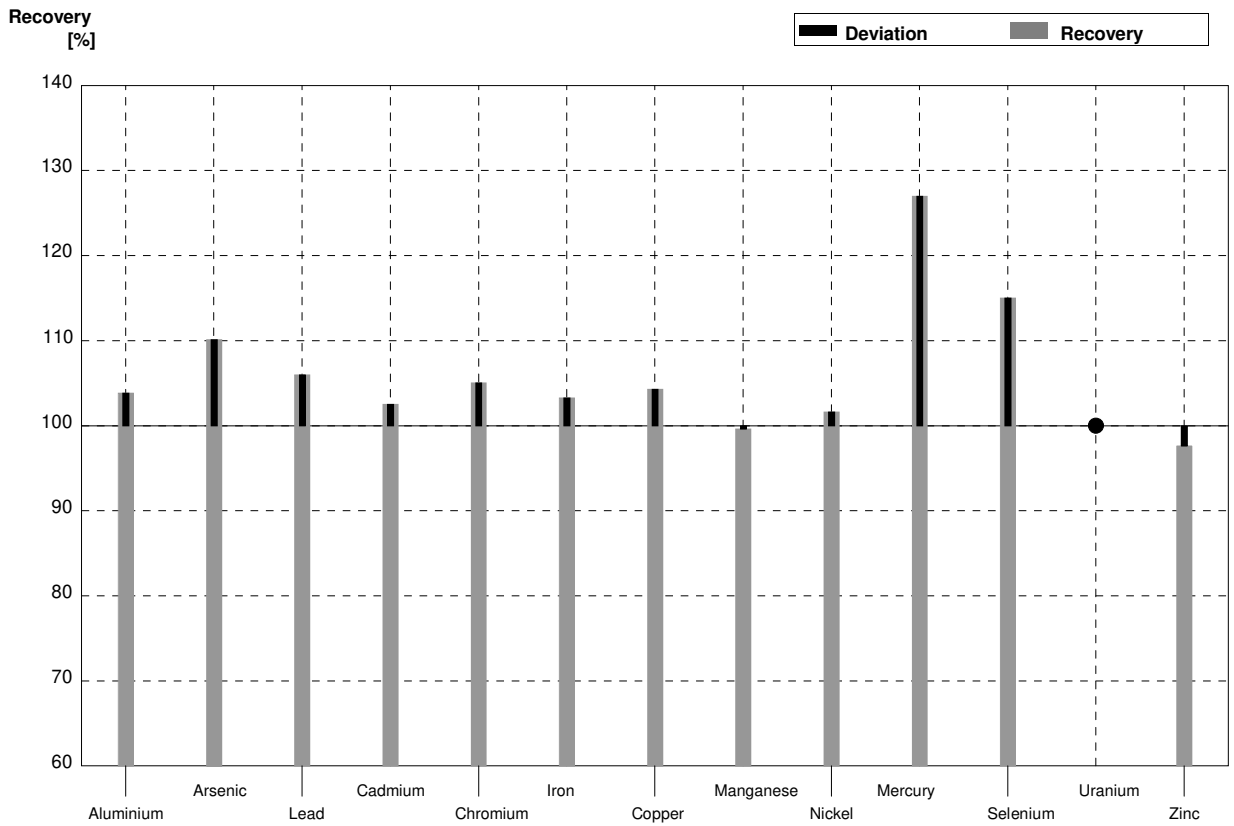
Sample M171A
Laboratory AA

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	10,7	1,60	$\mu\text{g/l}$	102%
Arsenic	4,41	0,03	4,85	0,73	$\mu\text{g/l}$	110%
Lead	3,22	0,02	3,40	0,51	$\mu\text{g/l}$	106%
Cadmium	2,73	0,02	2,75	0,41	$\mu\text{g/l}$	101%
Chromium	4,08	0,03	4,21	0,63	$\mu\text{g/l}$	103%
Iron	65,9	0,3	68,3	10,2	$\mu\text{g/l}$	104%
Copper	8,04	0,06	7,93	1,19	$\mu\text{g/l}$	99%
Manganese	17,44	0,12	17,2	2,58	$\mu\text{g/l}$	99%
Nickel	3,15	0,03	3,13	0,47	$\mu\text{g/l}$	99%
Mercury	1,79	0,02	2,31	0,35	$\mu\text{g/l}$	129%
Selenium	1,20	0,02	1,34	0,20	$\mu\text{g/l}$	112%
Uranium	3,83	0,03	4,20	0,63	$\mu\text{g/l}$	110%
Zinc	42,2	1,6	41,7	6,25	$\mu\text{g/l}$	99%



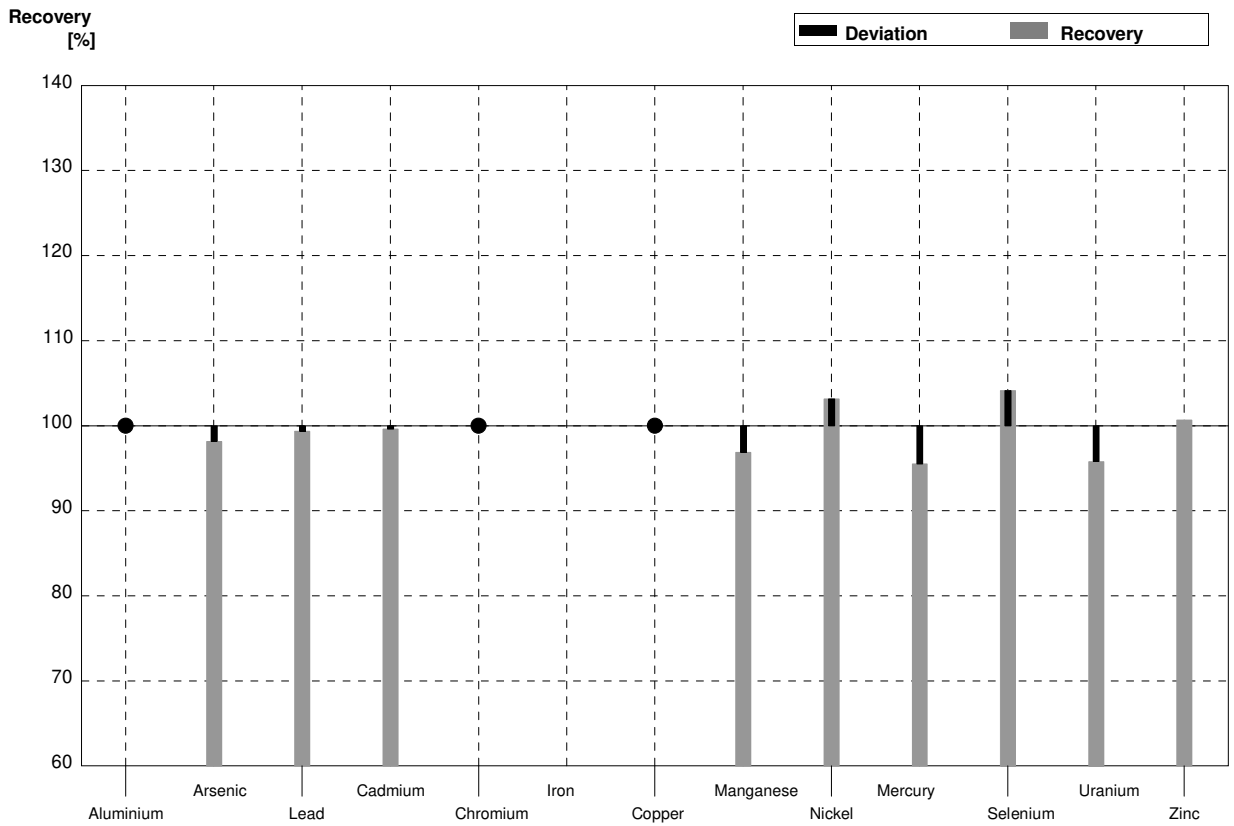
Sample M171B
Laboratory AA

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	35,0	5,25	$\mu\text{g/l}$	104%
Arsenic	1,271	0,012	1,40	0,21	$\mu\text{g/l}$	110%
Lead	4,84	0,04	5,13	0,77	$\mu\text{g/l}$	106%
Cadmium	1,863	0,015	1,91	0,29	$\mu\text{g/l}$	103%
Chromium	2,227	0,019	2,34	0,35	$\mu\text{g/l}$	105%
Iron	45,4	0,2	46,9	7,03	$\mu\text{g/l}$	103%
Copper	1,62	0,03	1,69	0,25	$\mu\text{g/l}$	104%
Manganese	28,30	0,15	28,2	4,23	$\mu\text{g/l}$	100%
Nickel	2,44	0,03	2,48	0,37	$\mu\text{g/l}$	102%
Mercury	0,945	0,015	1,20	0,18	$\mu\text{g/l}$	127%
Selenium	4,79	0,04	5,51	0,83	$\mu\text{g/l}$	115%
Uranium	0,515	0,006	<1		$\mu\text{g/l}$	•
Zinc	21,1	1,6	20,6	3,09	$\mu\text{g/l}$	98%



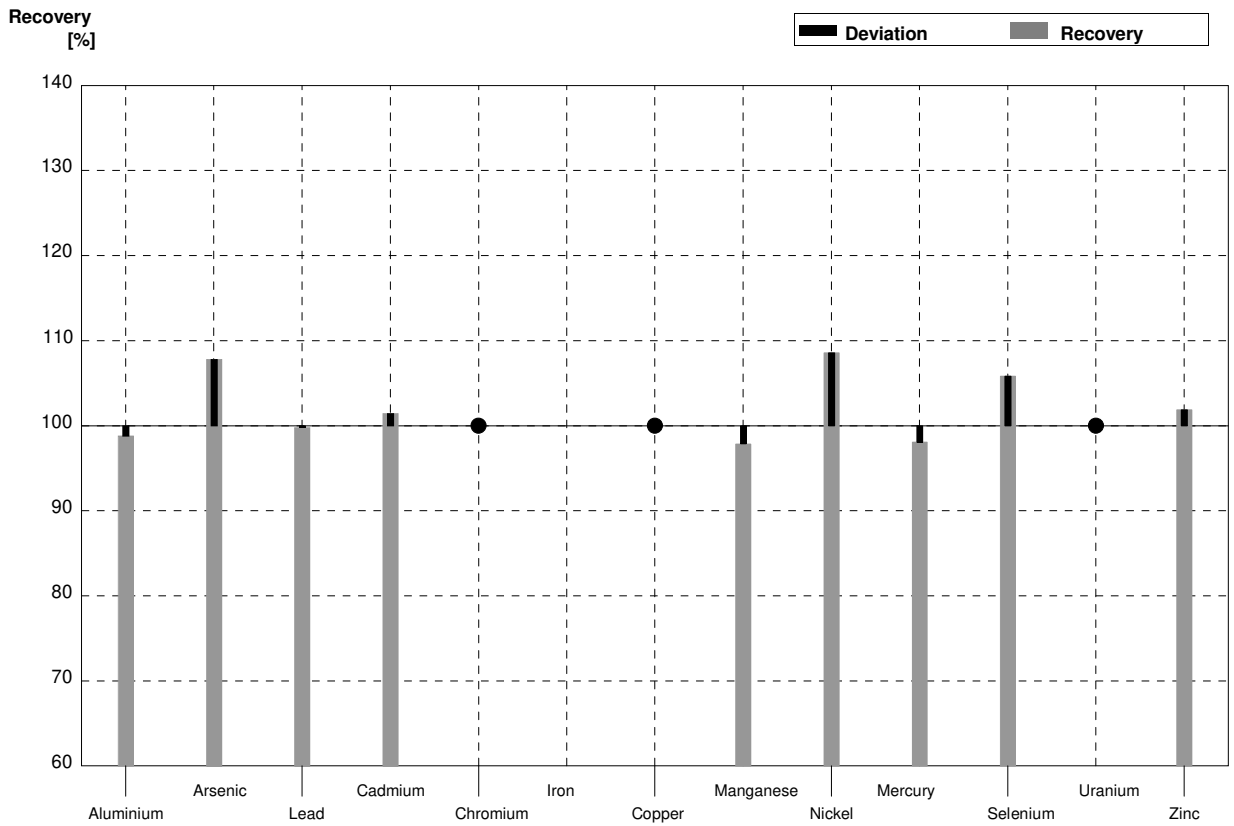
Sample M171A
Laboratory AB

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	10,47	0,15	<20		$\mu\text{g/l}$	•
Arsenic	4,41	0,03	4,33	0,50	$\mu\text{g/l}$	98%
Lead	3,22	0,02	3,20	0,13	$\mu\text{g/l}$	99%
Cadmium	2,73	0,02	2,72	0,22	$\mu\text{g/l}$	100%
Chromium	4,08	0,03	<5		$\mu\text{g/l}$	•
Iron	65,9	0,3			$\mu\text{g/l}$	
Copper	8,04	0,06	<20		$\mu\text{g/l}$	•
Manganese	17,44	0,12	16,9	1,4	$\mu\text{g/l}$	97%
Nickel	3,15	0,03	3,25	0,45	$\mu\text{g/l}$	103%
Mercury	1,79	0,02	1,71	0,09	$\mu\text{g/l}$	96%
Selenium	1,20	0,02	1,25	0,20	$\mu\text{g/l}$	104%
Uranium	3,83	0,03	3,67	0,69	$\mu\text{g/l}$	96%
Zinc	42,2	1,6	42,5	4,5	$\mu\text{g/l}$	101%



Sample M171B
Laboratory AB

Parameter	Assigned value	$\pm U (k=2)$	Result	\pm	Unit	Recovery
Aluminium	33,7	0,3	33,3	2,9	$\mu\text{g/l}$	99%
Arsenic	1,271	0,012	1,37	0,16	$\mu\text{g/l}$	108%
Lead	4,84	0,04	4,83	0,19	$\mu\text{g/l}$	100%
Cadmium	1,863	0,015	1,89	0,16	$\mu\text{g/l}$	101%
Chromium	2,227	0,019	<5		$\mu\text{g/l}$	•
Iron	45,4	0,2			$\mu\text{g/l}$	
Copper	1,62	0,03	<20		$\mu\text{g/l}$	•
Manganese	28,30	0,15	27,7	2,4	$\mu\text{g/l}$	98%
Nickel	2,44	0,03	2,65	0,37	$\mu\text{g/l}$	109%
Mercury	0,945	0,015	0,927	0,050	$\mu\text{g/l}$	98%
Selenium	4,79	0,04	5,07	0,83	$\mu\text{g/l}$	106%
Uranium	0,515	0,006	<1		$\mu\text{g/l}$	•
Zinc	21,1	1,6	21,5	2,3	$\mu\text{g/l}$	102%



Methodenvergleich

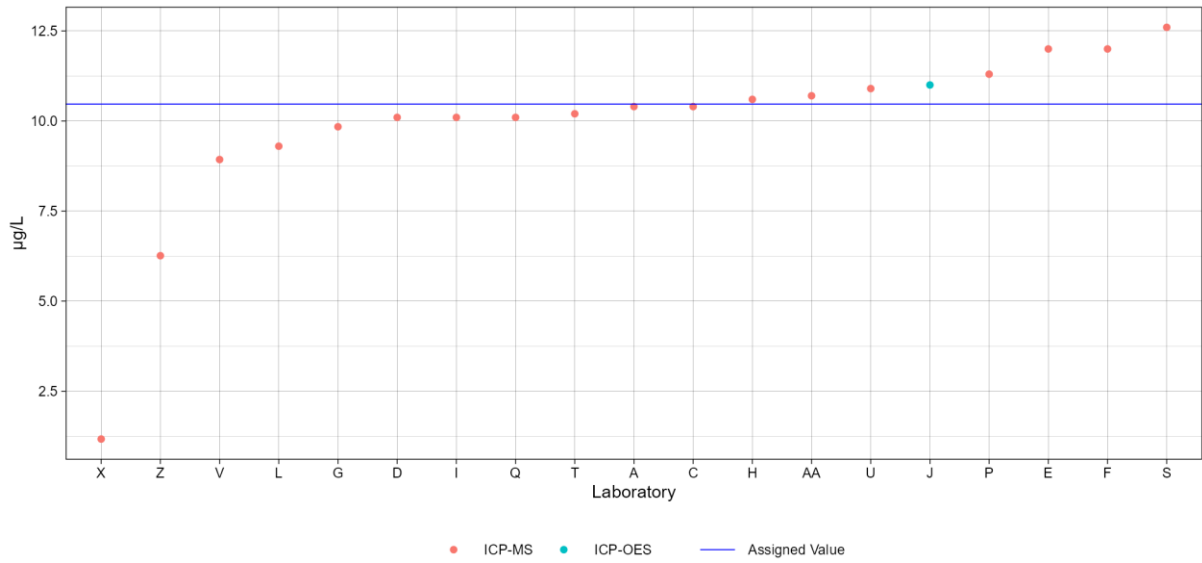
Method comparison

Eignungsprüfungsrunde / Proficiency testing round
M171

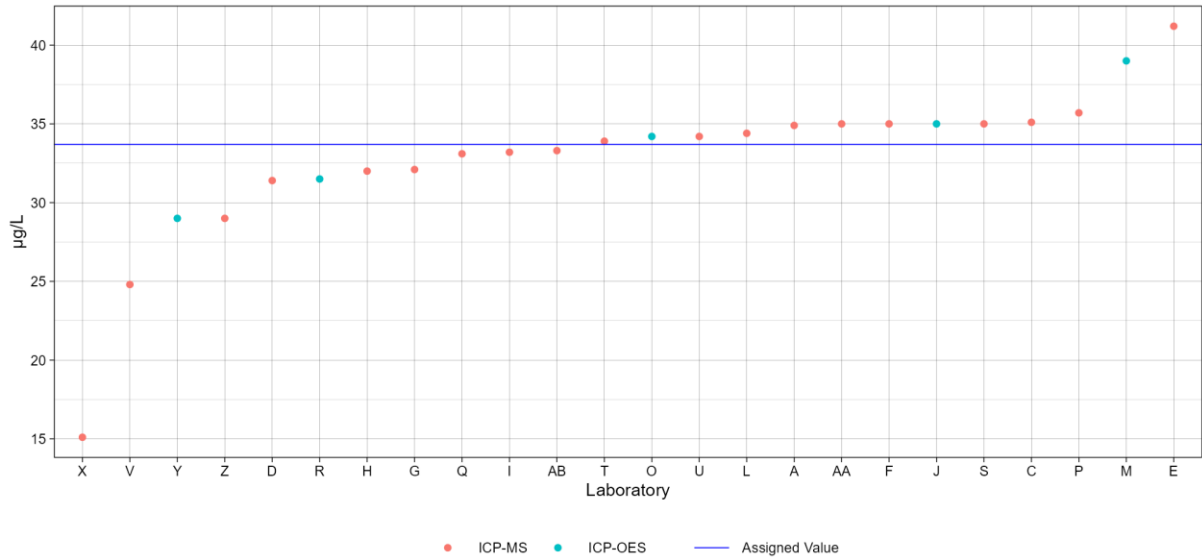
Metalle / Metals

Versand / Dispatch: 18.03.2024

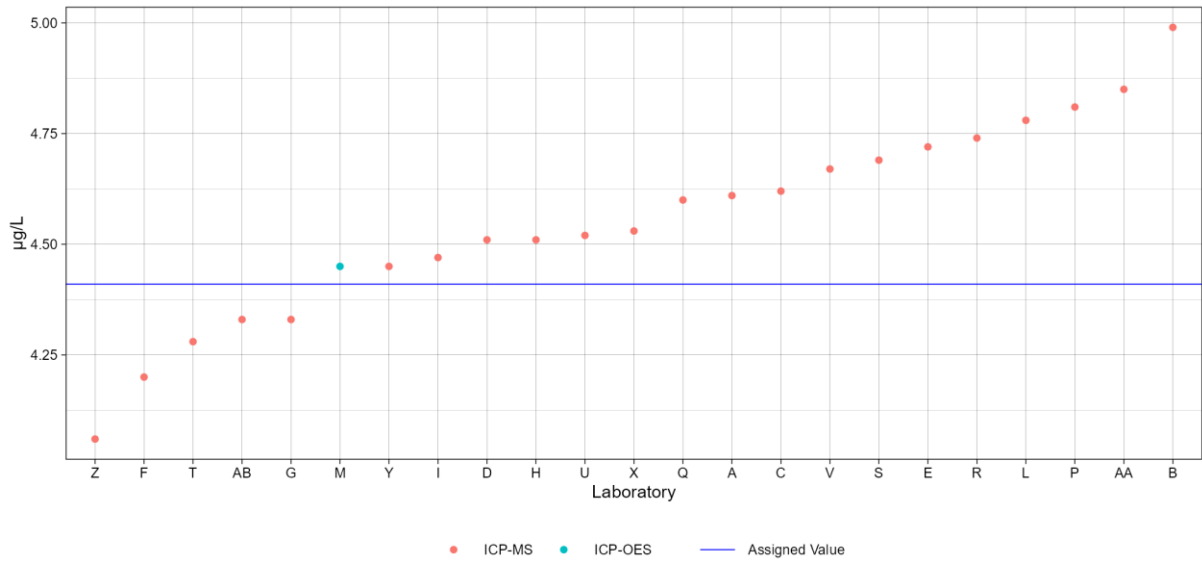
Sample M171A
Parameter Aluminium



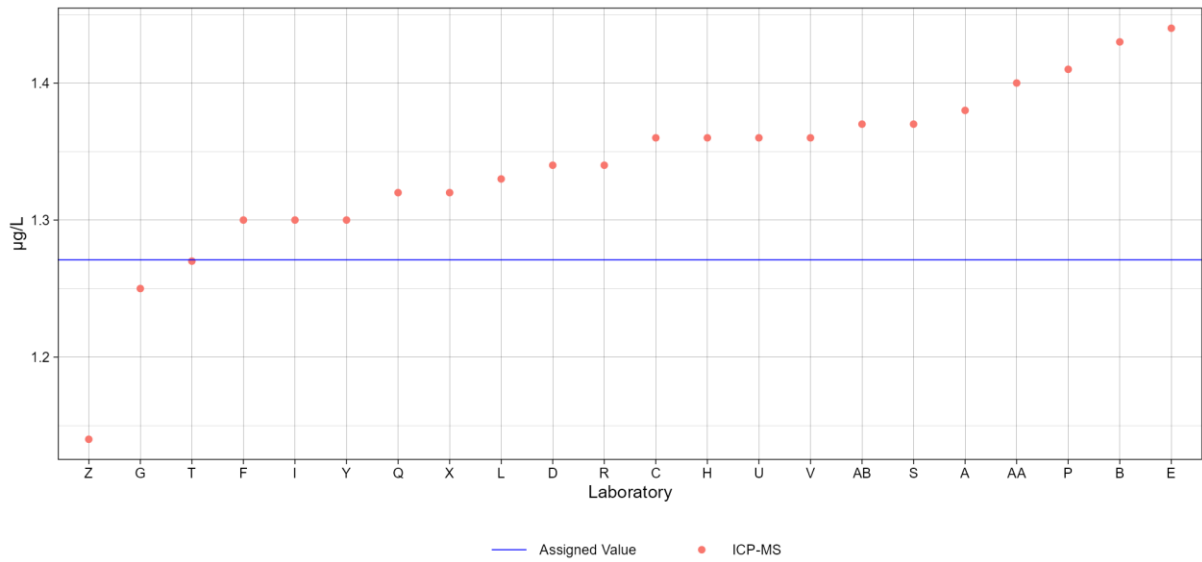
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Parameter Aluminium



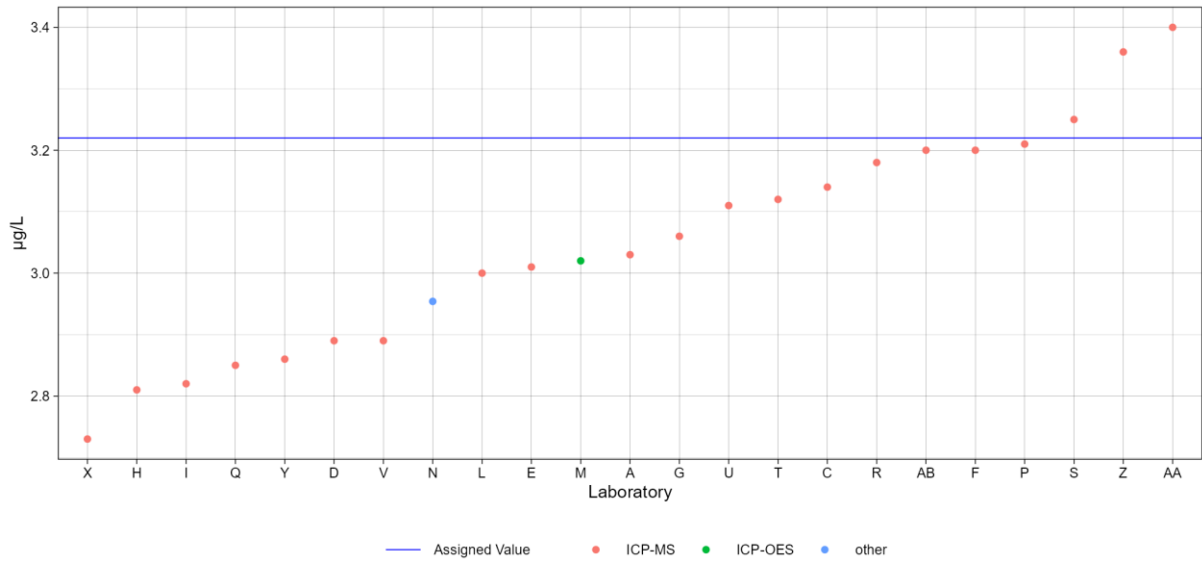
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Parameter Arsenic



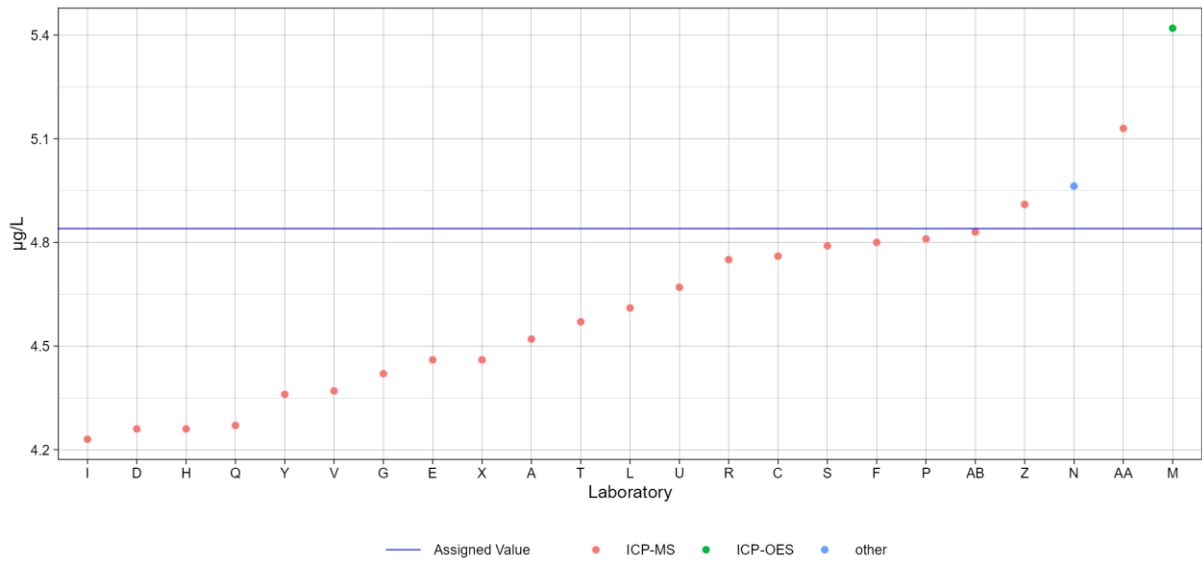
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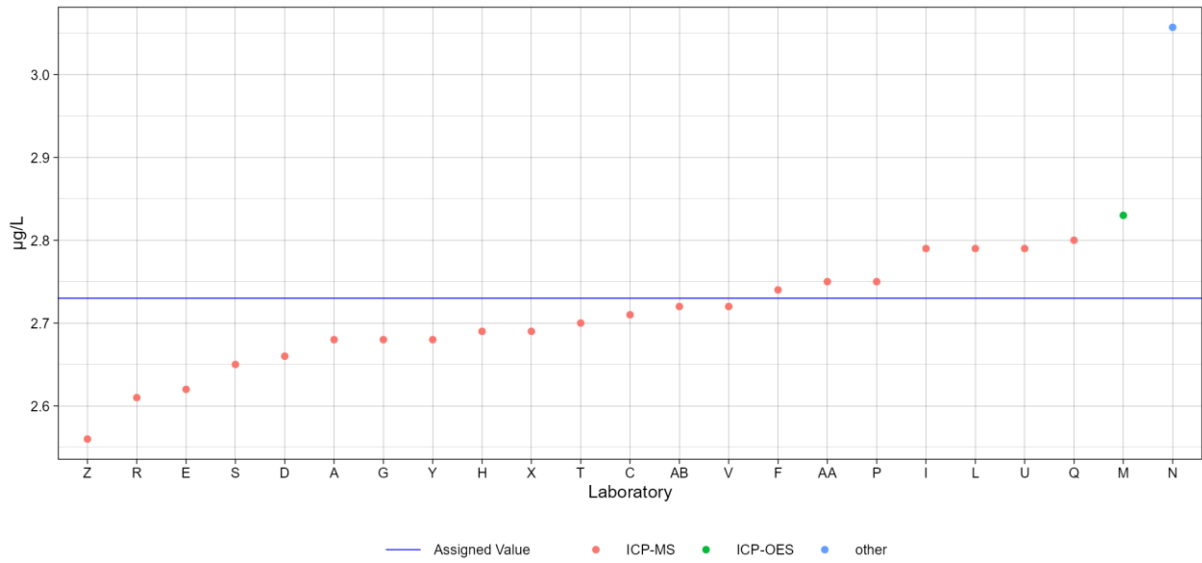
Sample M171A
Parameter Lead



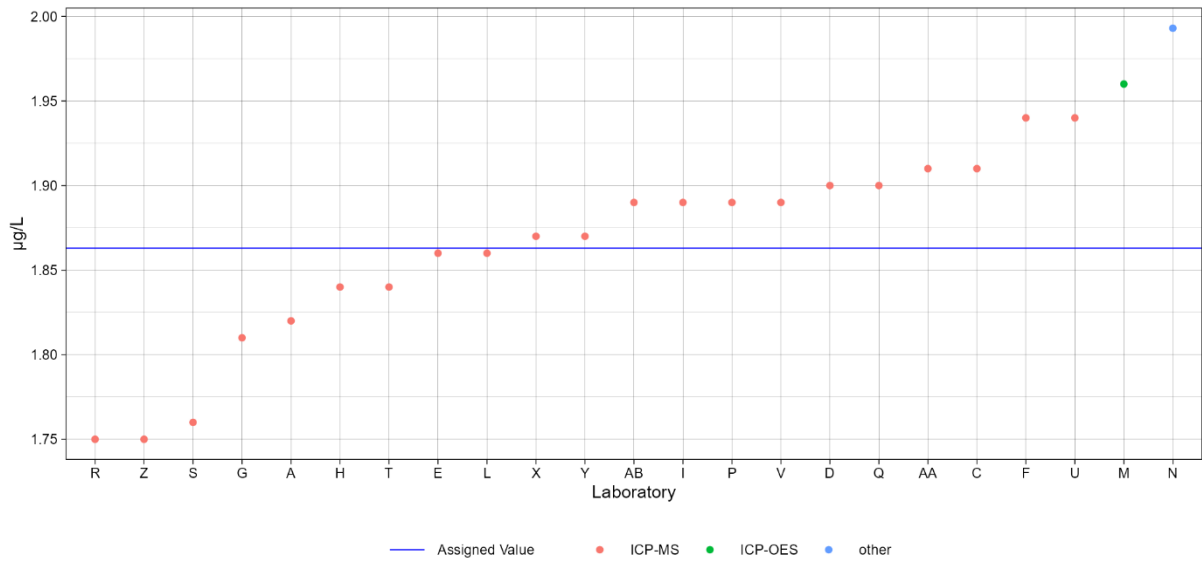
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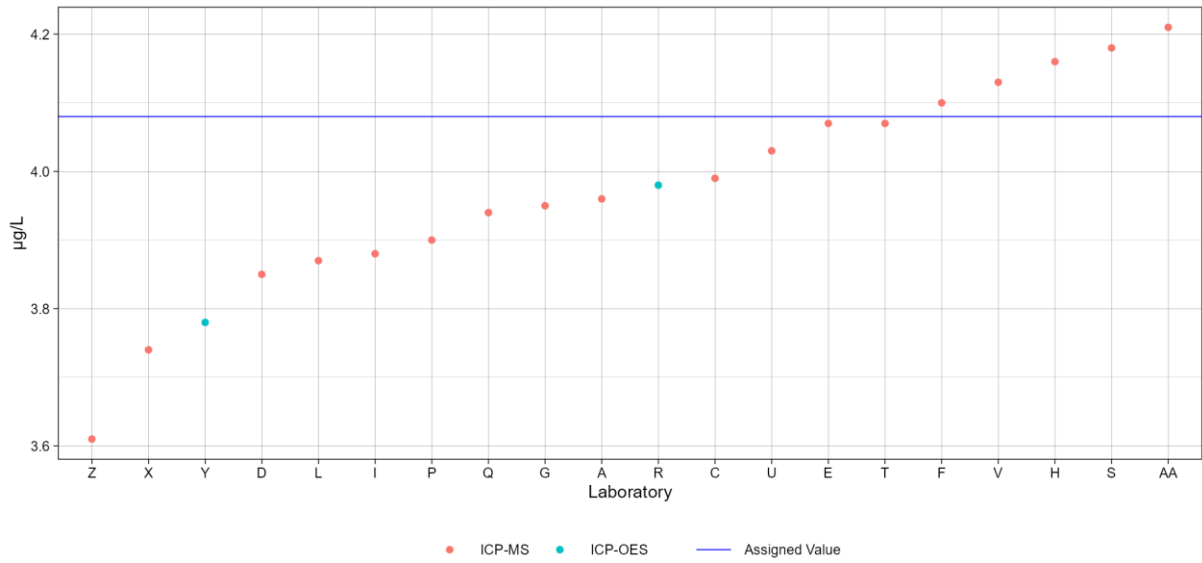
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Parameter Cadmium



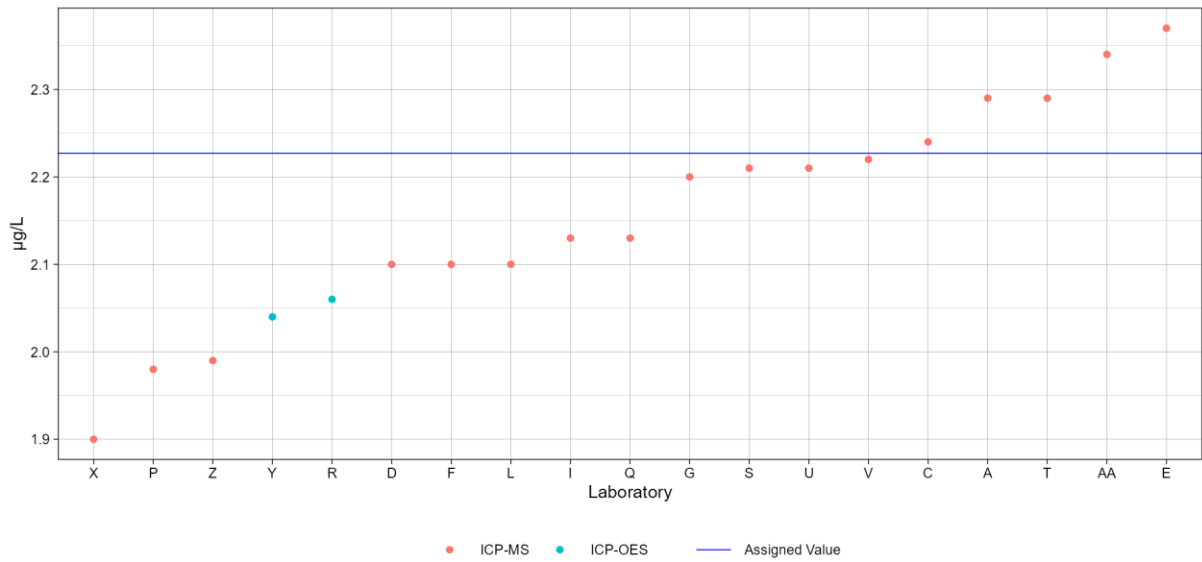
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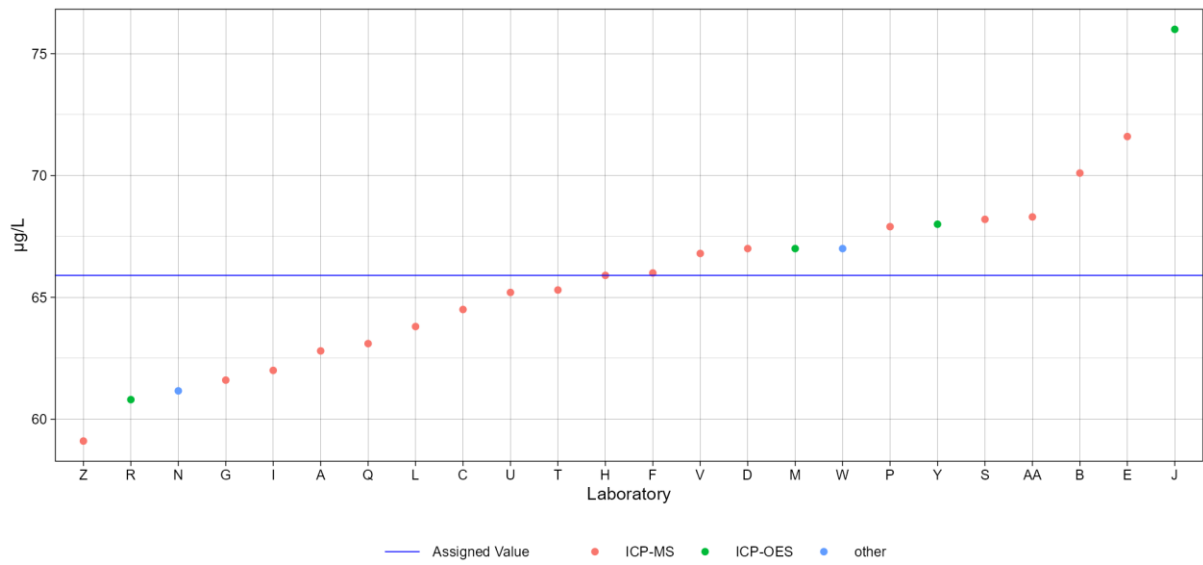
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Parameter Chromium



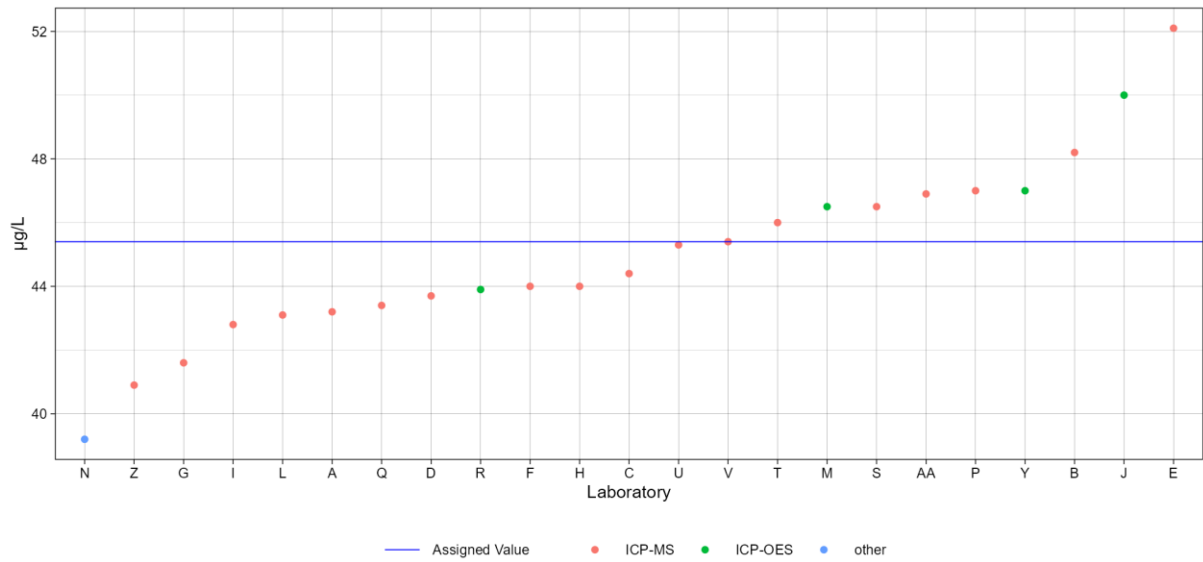
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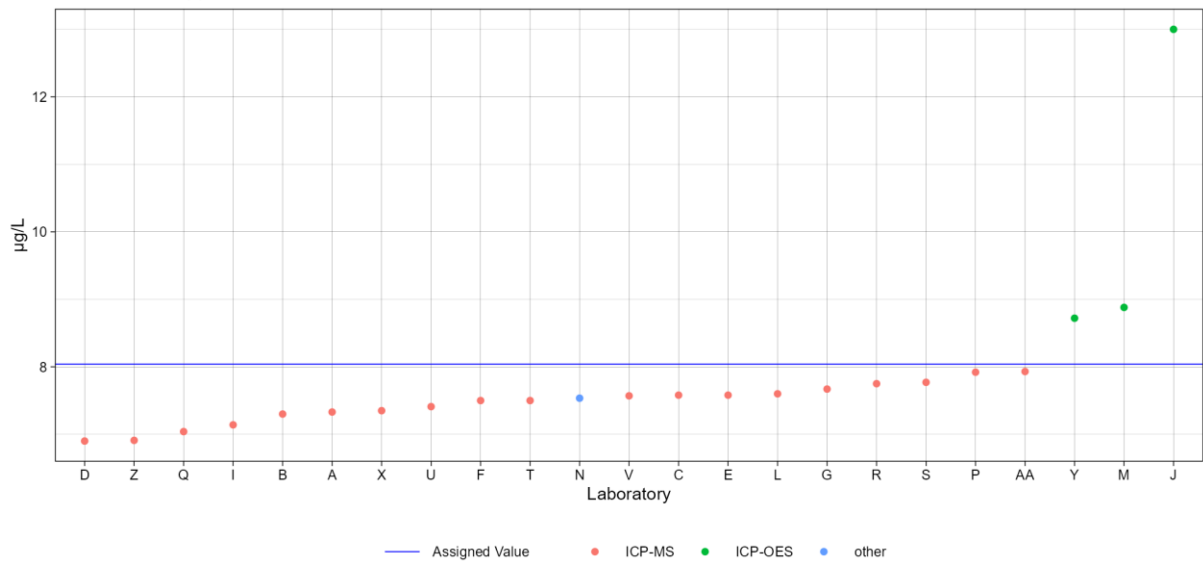
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Parameter Iron



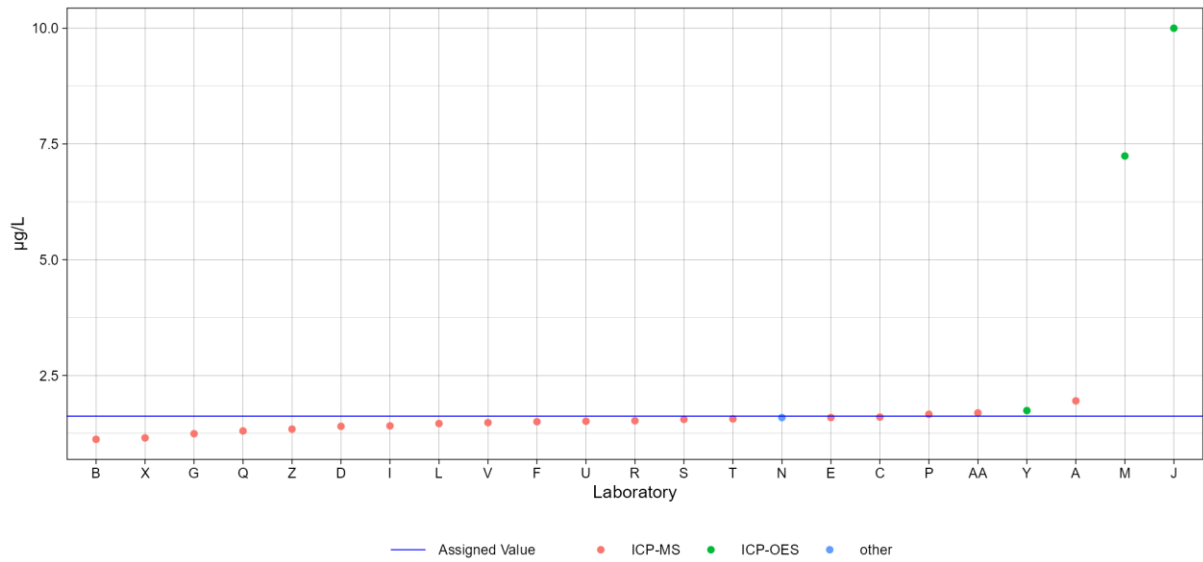
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Parameter Iron



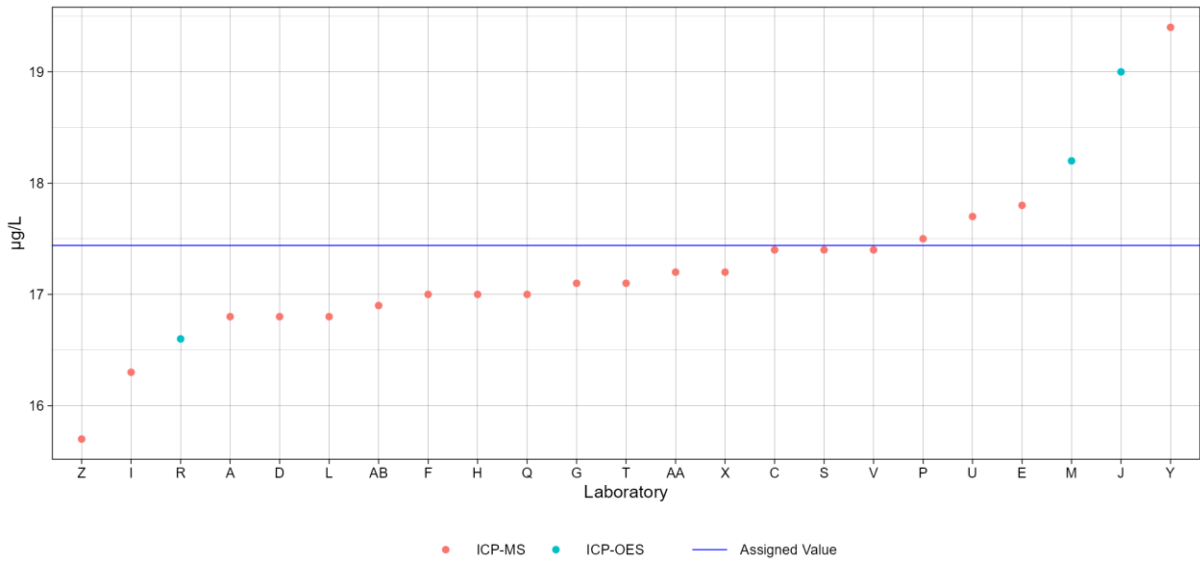
Sample M171A
Parameter Copper



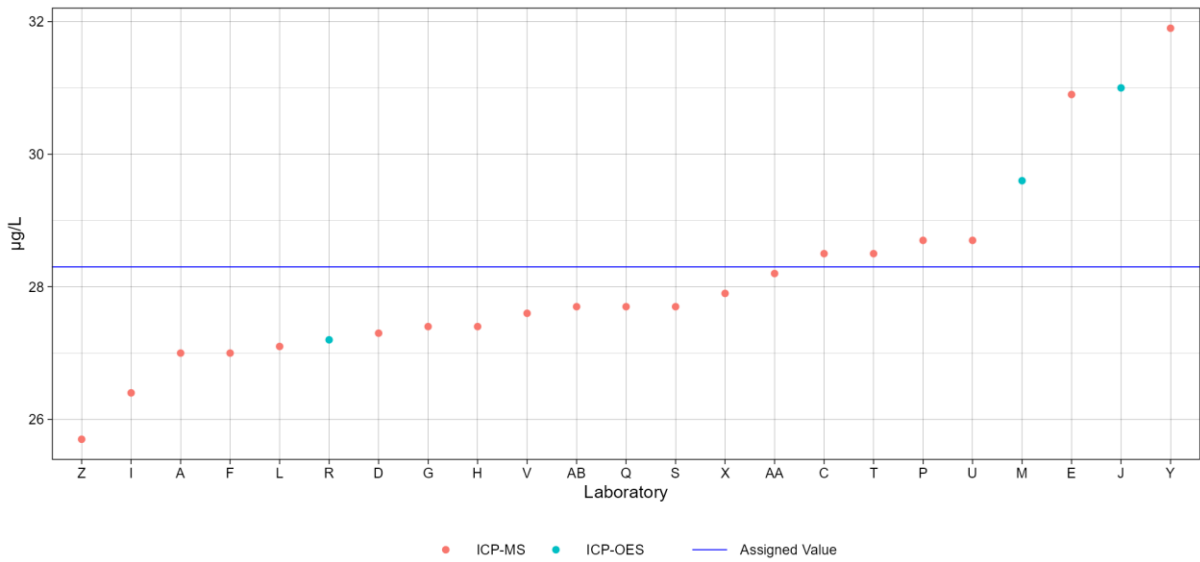
Sample M171B
Parameter Copper



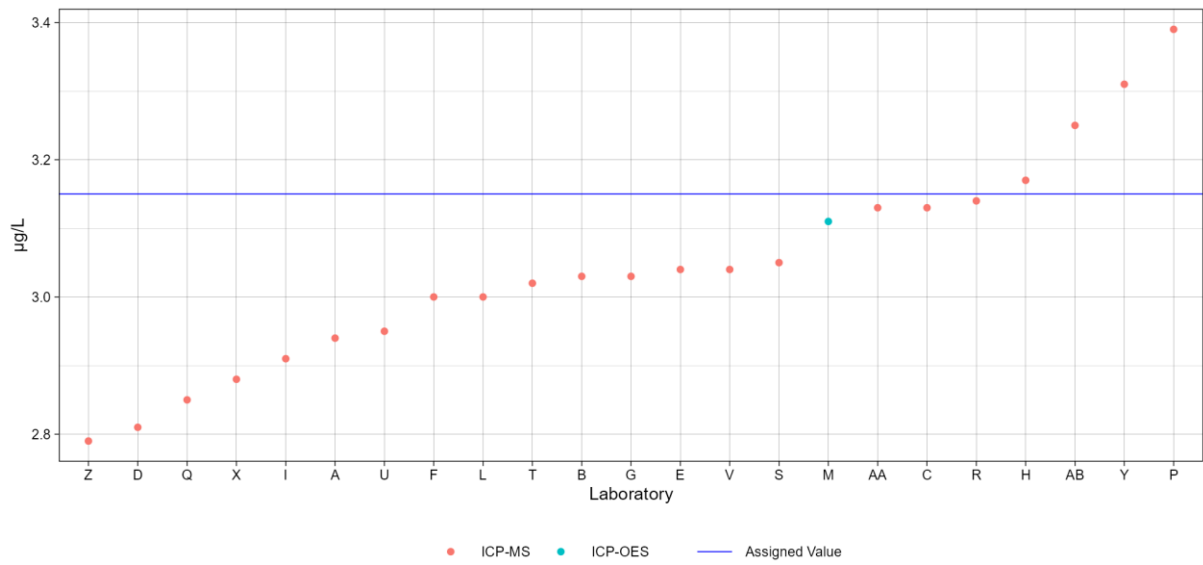
Sample M171A
Parameter Manganium



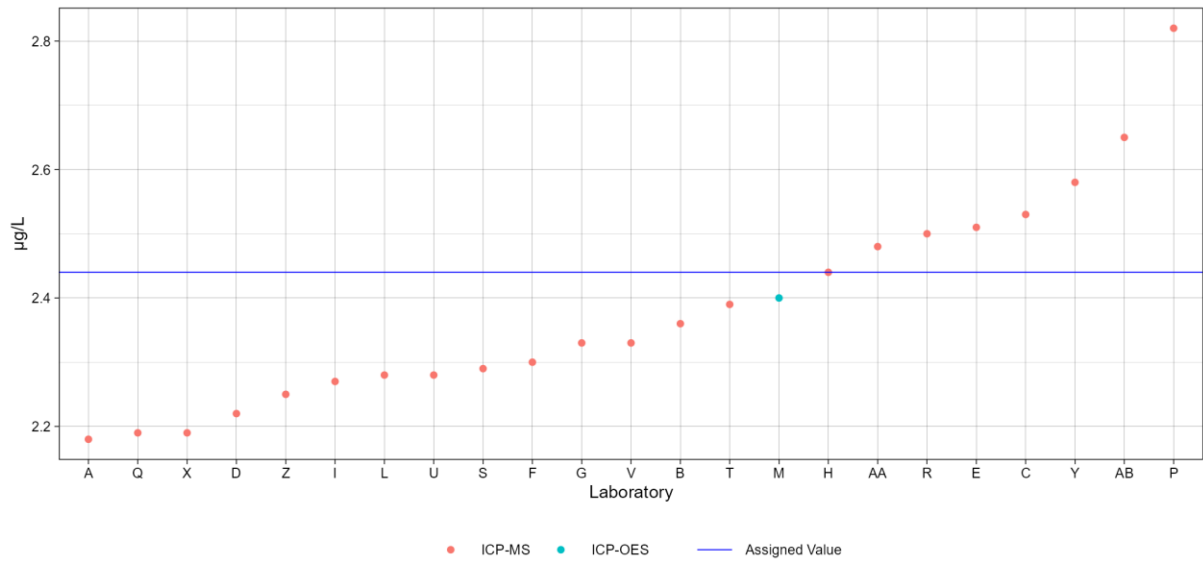
Sample M171B
Parameter Manganium



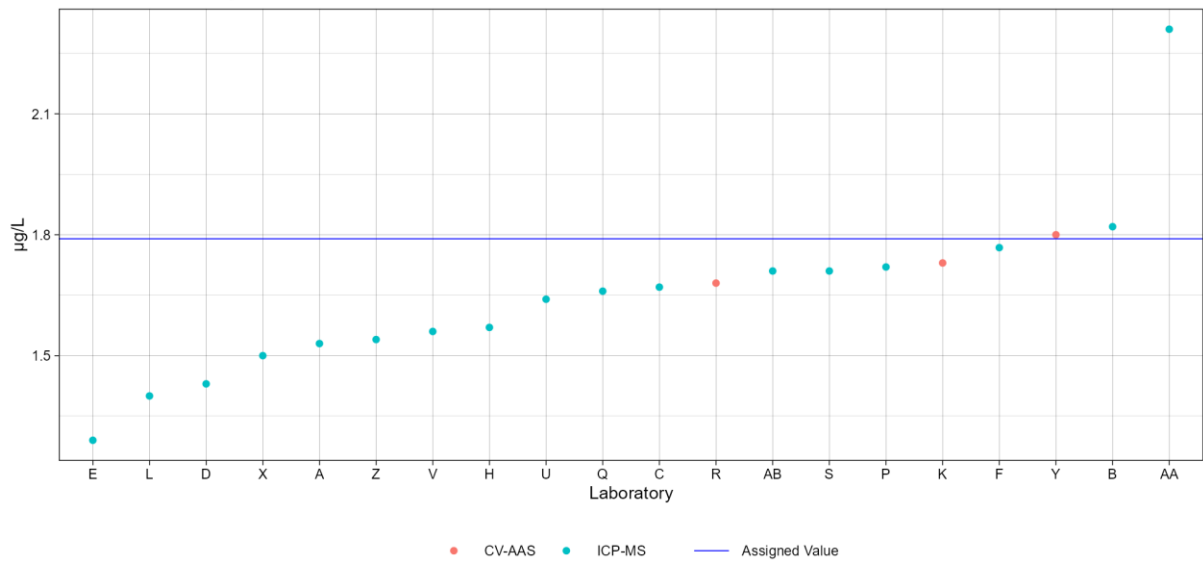
Sample M171A
Parameter Nickel



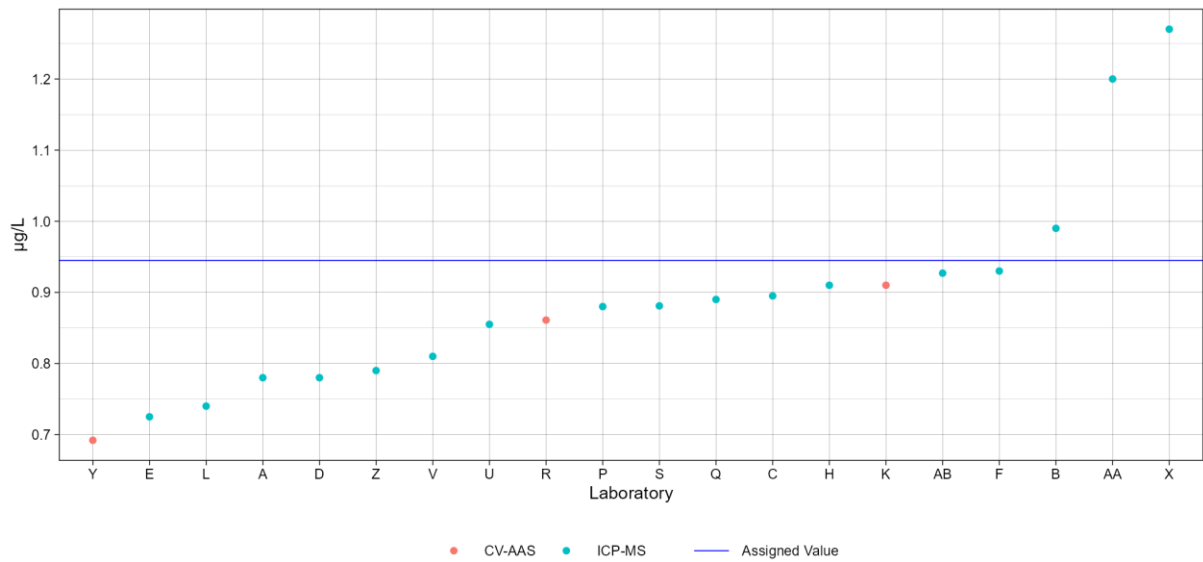
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Parameter Nickel



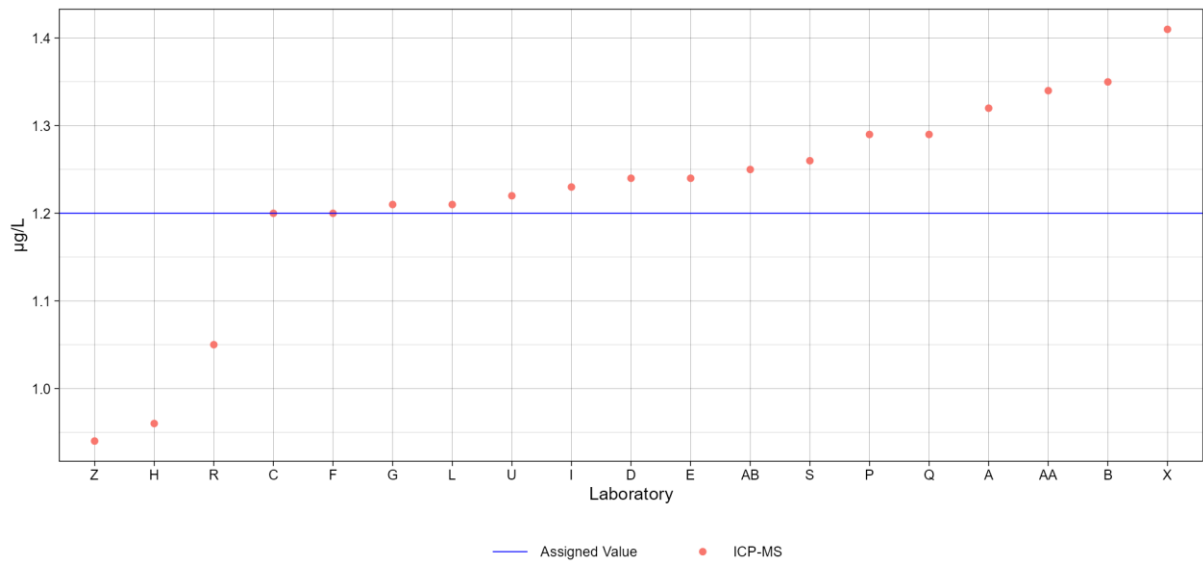
Sample M171A
Parameter Mercury



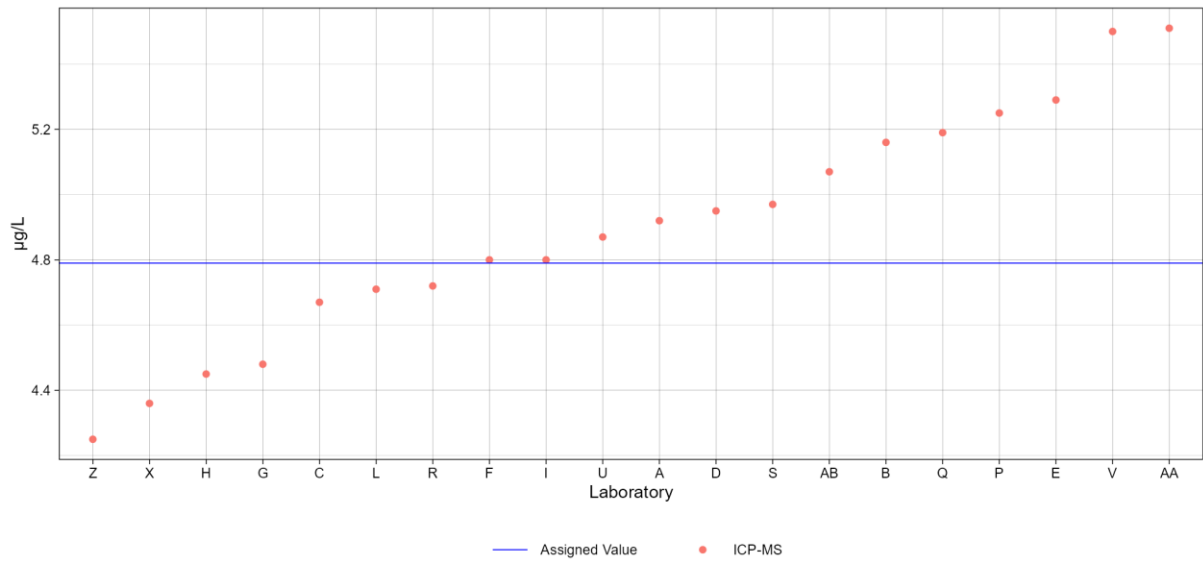
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Parameter Mercury



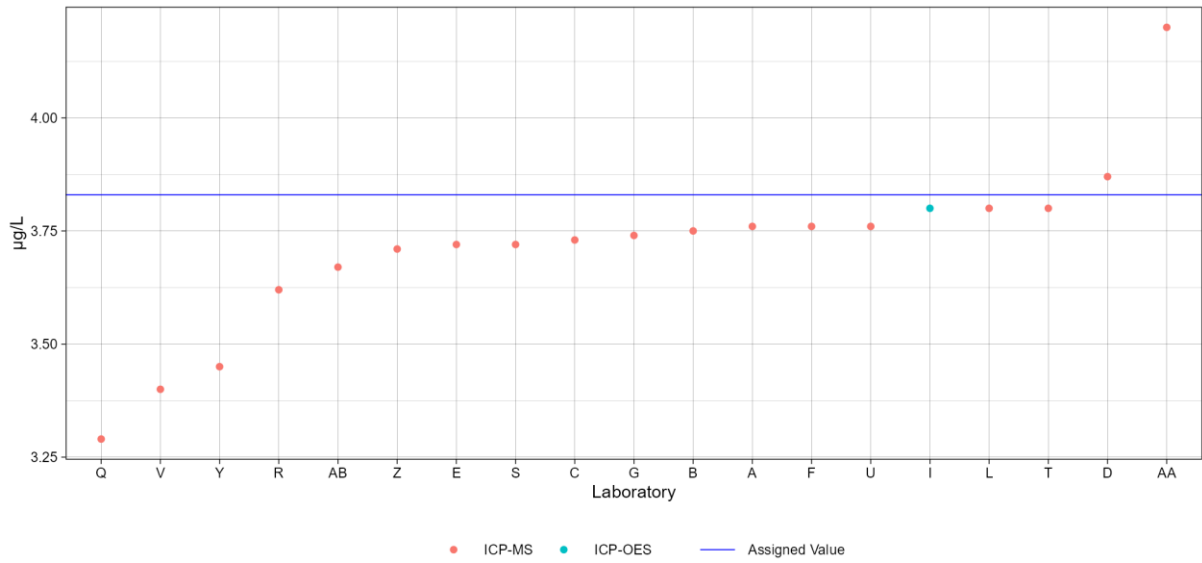
Sample M171A
Parameter Selenium



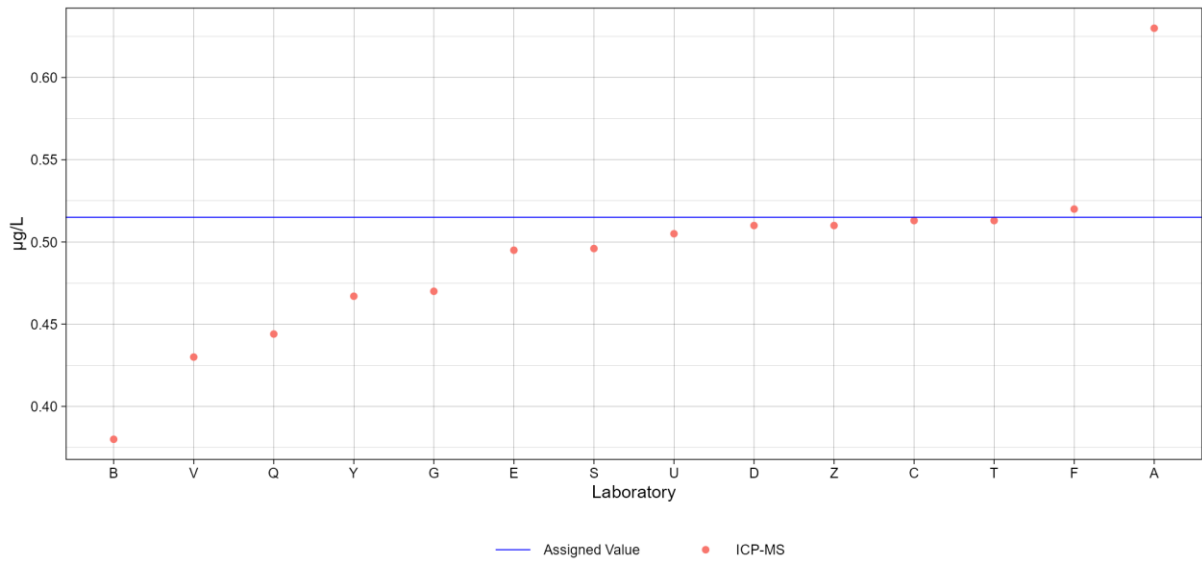
Sample M171B
Parameter Selenium



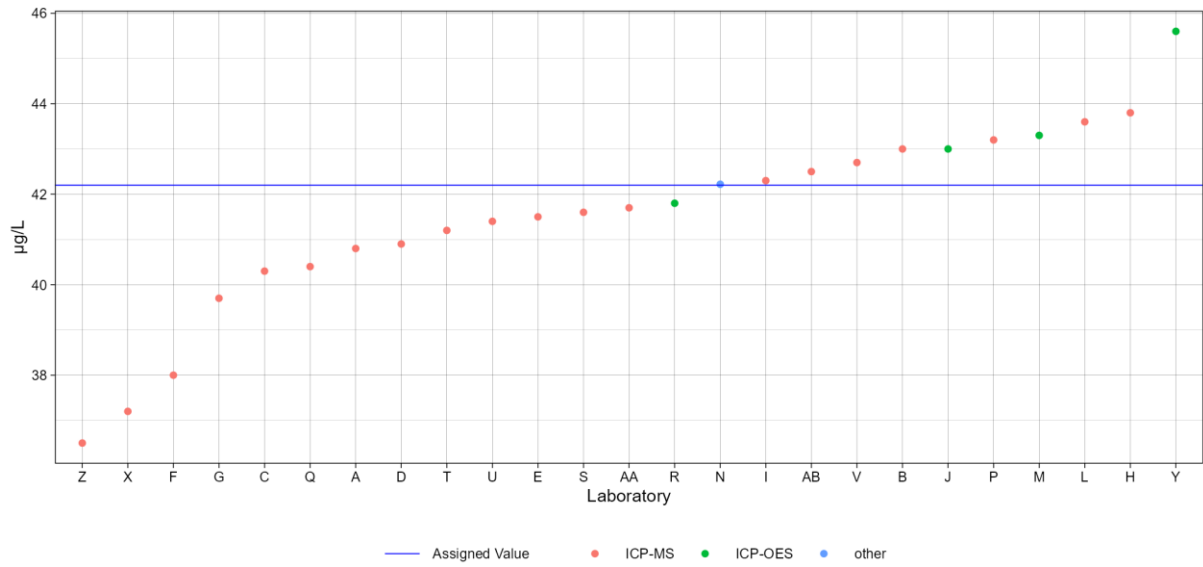
Sample M171A
Parameter Uranium



Sample M171B
Parameter Uranium



Sample M171A
Parameter Zinc



Sample M171B
Parameter Zinc

