Proficiency Testing Scheme for Water Analysis

Round C58

Volatile Halogenated Hydrocarbons

Sample Dispatch: 12 February 2018

IFA TULLN

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Round: **C58**	Date / Signature:	16.3.2018 W. Kandl

This report summarises the results of round C58 “Volatile Halogenated Hydrocarbons” within the IFA-Test Proficiency Testing Scheme for Water Analysis. The samples were distributed to the participants on Monday, 12 February 2018. Closing date for reporting results to the IFA-Tulln was Friday, 9 March 2018.

Each participant received two samples (each 600 mL), filled in 600 mL aluminium bottles.

14 laboratories participated in this interlaboratory comparison. All laboratories submitted results.

To anonymize results of this round, each laboratory was given a laboratory code on a random basis.

Samples

For sample preparation, ultrapure water was spiked with concentrated solutions of inorganic salts in order to simulate the ionic composition of natural ground water. The following salts were added to the samples: $Mg(NO_3)_2$, $MgSO_4$, Na_2SO_4, $NaHCO_3$, $KHCO_3$, $CaCl_2$ and $Ca(NO_3)_2$. Prior to sample preparation, blank samples of ultrapure water and artificial water matrix were analysed by Purge&Trap-GC-MS to exclude contamination.

The samples C58A and C58B were spiked with traces of trichloroethene, trichloromethane, 1,1,1-trichloroethane, tetrachloromethane, tribromomethane, tetrachloroethene, bromodichloromethane, 1,2-dichloroethane, dibromochloromethane, 1,1-dichloroethene, dichloromethane, cis-1,2-dichloroethene and trans-1,2-dichloroethene.

The calculation of the mass concentrations of the compounds was based on the weights of standards added to the samples.

Homogeneity, accuracy and stability tests at the IFA-Tulln

For verification of homogeneity, samples were analysed for the compounds of interest by Purge&Trap-GC-MS measurements prior to shipment to the participants. The results of the measurements are listed in the result tables and the parameter oriented part of the report (”IFA result”).

Usually we perform an additional check of PT-samples’ stability three weeks after sample preparation. The results of the measurements are listed in the result tables and the parameter oriented part of the report (”Stability test”).

Results

Data evaluation was based on target concentrations that were calculated from the weights of the standards used to prepare the samples. Their uncertainty intervals correspond to the expanded uncertainty (coverage factor k = 2) as described in the EURACHEM/CITAC Guide “Quantifying Uncertainty in Analytical Measurement, 3rd Edition (2012)”.

Recoveries for individual laboratory results and overall mean values were calculated from these target concentrations. The results were tested for outliers using the Hampel outlier test (level of significance 99 %). A minimum number of four results was required for the outlier test.

To sample C58A, 0.30 µg/L 1,2-dichloroethane and 0.29 µg/L bromodichloromethane were added. In the homogeneity measurements, an additional input of about one third was ascertained. For this reason, the target values for these parameters were set to <0.5 µg/L bromodichloromethane and <0.6 µg/L 1,2-dichloroethane. The measurements showed that the homogeneity of the batch was given. So, the results can be compared with each other in the parameter report and in the raw data sheets. Since these two substances were added, there is no labeling as false positive (FP).

1,1,1-trichloroethane and trichloromethane were not added to sample C58A, trichloroethene was not added to sample C58B, in order to check analytical blank values. The target concentrations were set to <0.08 µg/L 1,1,1-trichloroethane, <0.14 µg/L trichloromethane and <0.08 µg/L trichloroethene, which meets the minimum quantifiable values defined by the Austrian ground and river water monitoring program and the quantification limits of the analytical methods applied at the IFA-Tulln.

Standard deviations and coefficients of variation (CVs) were only calculated, when at least three results were available. The recoveries of the target concentrations, calculated from outlier-corrected data mean values ranged between 85.5 % (tetrachloroethene in sample C58B) and 126.6 % (tetrachloromethane in sample C58A). The between-laboratory coefficients of variation ranged from 8.4 % (tribromomethane in sample C58B) to 33.2 % (tetrachloromethane in sample C58A).

The confidence intervals of the outlier-corrected laboratory mean values encompass the corresponding target values with their uncertainties.

z-Scores

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

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

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

Thus, the z-score is the ratio of the estimated bias (difference between result and target value) and a standard deviation. The z-score criteria were determined from relative standard deviations from all interlaboratory comparisons that were organised by the IFA-Tulln in the period from 2007 to 2017. They represent long-term performance data of all former participating laboratories. The z-scores are listed together with the recoveries in the tables of the parameter oriented part.

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

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

Parameter	z-Score-criteria (%)	Lower limit [µg/L]
1,1,1-Trichloroethane	15	0.15
1,1-Dichloroethene	20	0.4
1,2-Dichloroethane	14	0.5
cis-1,2-Dichloroethene	14	0.15
trans-1,2-Dichloroethene	13	0.15
Bromodichloromethane	14	0.15
Dibromochloromethane	14	0.2
Dichloromethane	13	1
Tetrachloroethene	17	0.15
Tetrachloromethane	18	0.15
Tribromomethane	17	0.2
Trichloroethene	16	0.15
Trichloromethane	14	0.25

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

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

Please note that this evaluation is made on the background of the average performance of all participants of the IFA-Test-Systems proficiency testing scheme during the period from 2007 to 2017.

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 target values and the z-scores for each parameter and all laboratories. This information is presented in graphical and tabular form. Results, which were identified as outliers by the Hampel test are marked with an asterisk in the column “out”. These values were not considered for the calculation of statistical parameters (mean values, standard deviations and confidence intervals). Moreover, the parameter oriented part contains the uncertainties of the target value. The uncertainty intervals correspond to the expanded uncertainty (coverage factor k = 2) as described in the EURACHEM / CITAC Guide “Quantifying Uncertainty in Analytical Measurement, 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 target value
- “FP”: False positive results can be obtained for compounds not added to the samples: a result is termed FP if it is higher than the corresponding limit of quantification of the analytical procedure employed at the IFA-Tulln.
- “•”: All other results for which no recovery can be calculated are illustrated by this symbol

Tulln, 16 March 2018

Sample C10B
Parameter Dichloromethane

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

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

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

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

Recovery of target value in percent

z-Score of the laboratory

An asterisk indicates a result detected as outlier by Hampel test

Interval expected to encompass target value as stated by participant

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

Between laboratory standard deviation

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

Number of data used for calculation of statistic parameters

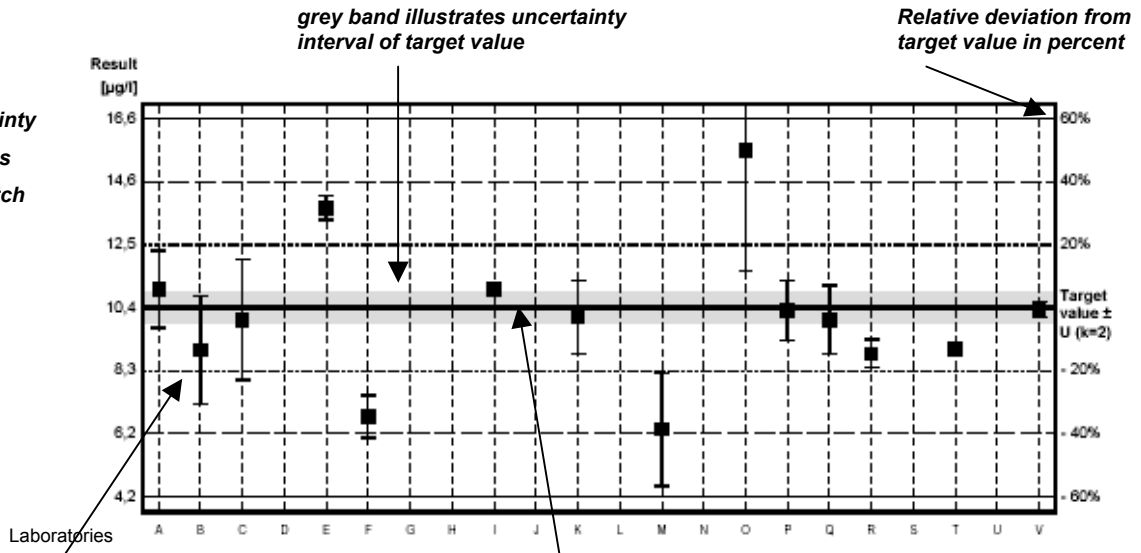


Diagram 1. Measurement results and corresponding uncertainty intervals

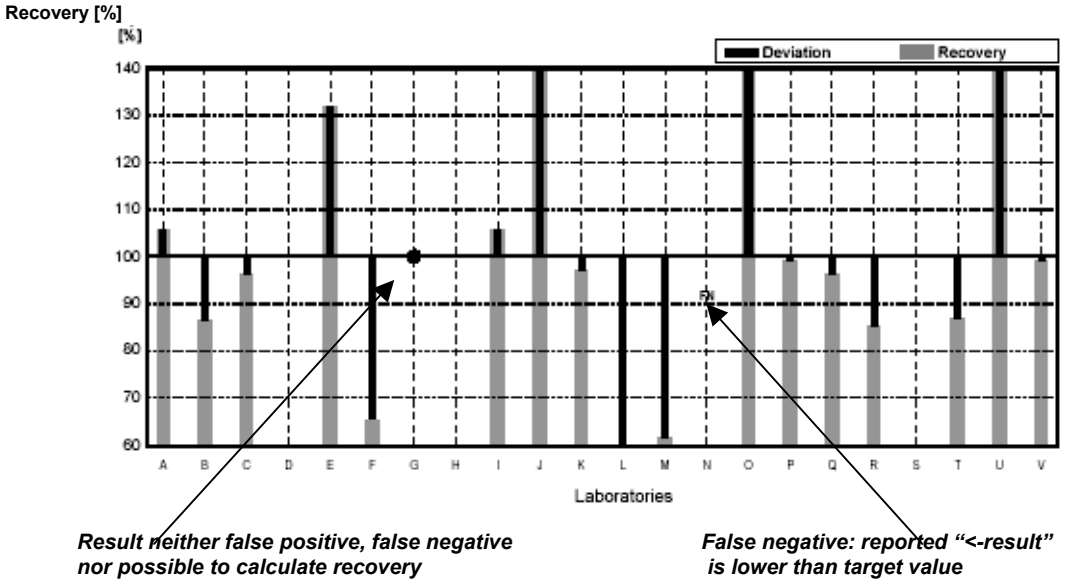


Diagram 2. Recoveries and deviations from target values

EXPLANATION

Illustration of Results
Tables and Parameter Oriented Part

Round C58
Volatile Halogenated Hydrocarbons

Sample Dispatch: 12 February 2018

IFA
TULLN

Results Sample C58A

	Trichloro-ethene	Tetrachloro-ethene	1,1,1-Tri-chloroethane	Trichloro-methane	Tetrachloro-methane	1,1-Dichloro-ethene	Tribromo-methane
Target value	1.10	0.49	<0.08	<0.14	0.35	0.50	0.41
IFA Result	1.08	0.55	<0.04	<0.07	0.40	0.51	0.48
Stability test	1.06	0.54	<0.04	<0.07	0.37	0.50	0.40
A	0.852	0.447	<0.02	0.022	0.355	0.418	0.394
B	4.02197	1.50676	0.14900	0.09541	1.67295	0.76915	1.35140
C	1.7	1.2	<0.1	<0.2	0.8		<0.2
D	0.93	0.51	<0.4	<0.04	0.54	0.64	0.39
E	1.0	0.5	<0.83	<0.4	0.3	0.5	0.5
F	1.004	0.562	<0.1	<0.1	0.345	0.729	0.535
G	1.33	0.68	<0.1	<0.1	0.58	0.82	0.47
H	0.995	0.503	0.020	0.027	0.438	0.626	0.340
I	0.99	0.46	<0.1	<0.1	0.34	0.54	0.42
J	5.475	2.966	<0.1	0.647	2.029		1.788
K	1.10	0.58	0.020	<0.06	0.41	0.56	0.44
L	0.985	<0.5	<0.5	<0.5	<0.5		<0.5
M	0.940	0.409	<BG	<BG	0.334	0.463	0.453
N	1.07	0.583	<0.050	<0.050	0.433	0.606	0.419

All data in µg/L

Measurement Uncertainties Sample C58A

	Trichloro-ethene ±	Tetrachloro-ethene ±	1,1,1-Tri-chloroethane ±	Trichloro-methane ±	Tetrachloro-methane ±	1,1-Dichloro-ethene ±	Tribromo-methane ±
Target value	0.11	0.05			0.04	0.05	0.04
IFA Result	0.16	0.08			0.06	0.08	0.07
Stability test	0.16	0.08			0.06	0.08	0.06
A	0.172	0.089		0.004	0.071	0.084	0.079
B	0.8044	0.3014	0.0298	0.0190	0.3346	0.1538	0.2703
C							
D	0.19	0.10			0.11	0.13	0.08
E	0.1						
F	0.151	0.084			0.052	0.109	0.080
G	0.21	0.15			0.11	0.13	0.01
H	0.219	0.161	0.005	0.007	0.131	0.257	0.133
I	0.15	0.07			0.05	0.08	0.06
J							
K	0.22	0.12	0.008		0.08	0.11	0.09
L	0.1						
M	0.310	0.135			0.063	0.074	0.136
N	0.085	0.017			0.013	0.083	0.009

All data in µg/L

Results Sample C58A

	Bromodichloro-methane	Dibromochloro-methane	Dichloro-methane	1,2-Dichloro-ethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Target value	<0.5	1.09	1.88	<0.6	0.79	1.64
IFA Result	0.37	1.08	1.91	0.40	0.82	1.62
Stability test	0.37	1.07	1.84	0.34	0.85	1.63
A	0.326	0.951	1.79	0.388	0.633	1.59
B	0.14900	0.93249	1.37450	0.85032	0.60026	1.19312
C	0.4	1.3				
D	0.46	1.09	1.93	0.54	0.96	2.17
E	0.3	0.9	1.7	0.4	0.7	1.5
F	0.419	1.068	2.763	0.392	0.804	1.489
G	0.47	1.34	2.08	0.45	0.78	2.26
H	0.370	1.039	1.913	0.626	0.922	1.827
I	0.32	0.96	1.92	0.49	0.73	1.46
J	1.036	3.684				
K	0.36	1.03	1.92	0.40	0.80	1.77
L	<0.5	0.881	1.569	0.325	0.726	
M	0.343	0.960	1.863	0.394	0.660	1.280
N	0.348	0.997	2.02	0.436	0.857	1.71

All data in µg/L

Measurement Uncertainties Sample C58A

	Bromodichloro-methane ±	Dibromochloro-methane ±	Dichloro-methane ±	1,2-Dichloro-ethane ±	cis-1,2-Dichloroethene ±	trans-1,2-Dichloroethene ±
Target value		0.11	0.19		0.08	0.16
IFA Result	0.06	0.16	0.29	0.06	0.12	0.24
Stability test	0.06	0.16	0.28	0.05	0.13	0.24
A	0.065	0.190	0.36	0.078	0.127	0.32
B	0.0298	0.1865	0.2749	0.1700	0.1201	0.2386
C						
D	0.09	0.22	0.39	0.11	0.19	0.43
E			0.1		0.1	0.1
F	0.063	0.160	0.414	0.059	0.121	0.223
G	0.05	0.08	0.37	0.03	0.13	0.28
H	0.100	0.395	0.536	0.257	0.138	0.237
I	0.05	0.14	0.29	0.07	0.11	0.22
J						
K	0.07	0.21	0.38	0.08	0.16	0.35
L		0.1	0.2	0.05	0.1	
M	0.086	0.25	0.54	0.134	0.152	0.333
N	0.008	0.052	0.056	0.010	0.025	0.062

All data in µg/L

Results Sample C58B

	Trichloro-ethene	Tetrachloro-ethene	1,1,1-Tri-chloroethane	Trichloro-methane	Tetrachloro-methane	1,1-Dichloro-ethene	Tribromo-methane
Target value	<0.08	1.47	0.45	0.40	1.31	2.02	0.92
IFA Result	<0.04	1.39	0.43	0.37	1.21	1.89	0.87
Stability test	<0.04	1.38	0.40	0.36	1.30	1.95	0.86
A	<0.02	1.17	0.417	0.377	1.17	1.62	0.784
B	<0.05	3.74518	1.73497	0.31645	6.04887	2.49414	2.28758
C	<0.2	2.9	0.8	0.5	2.3		0.9
D	<0.04	1.29	0.65	0.49	1.65	2.36	0.80
E	<0.93	1.2	0.4	<0.4	1.2	1.75	0.8
F	<0.1	1.322	0.404	0.346	1.109	3.176	0.93
G	<0.1	1.70	0.55	0.48	1.59	2.54	0.91
H	0.005	0.881	0.470	0.414	1.003	1.595	0.721
I	<0.1	1.20	0.39	0.35	1.06	1.82	0.80
J	<0.1	5.866	1.285	4.843	5.095		3.591
K	<0.03	1.39	0.45	0.38	1.34	2.15	0.86
L	<0.5	1.128	<0.5	<0.5	1.029		0.713
M	<BG	1.060	0.378	0.338	0.960	1.570	0.800
N	<0.05	1.49	0.468	0.319	1.38	2.16	0.844

All data in µg/L

Measurement Uncertainties Sample C58B

	Trichloro-ethene ±	Tetrachloro-ethene ±	1,1,1-Tri-chloroethane ±	Trichloro-methane ±	Tetrachloro-methane ±	1,1-Dichloro-ethene ±	Tribromo-methane ±
Target value		0.15	0.05	0.04	0.13	0.20	0.09
IFA Result		0.21	0.06	0.06	0.18	0.28	0.13
Stability test		0.21	0.06	0.05	0.20	0.29	0.13
A		0.23	0.083	0.075	0.23	0.32	0.157
B		0.7490	0.3469	0.0632	1.2098	0.4988	0.4575
C							
D		0.26	0.13	0.10	0.33	0.47	0.16
E							
F		0.198	0.061	0.052	0.166	0.476	0.140
G		0.23	0.09	0.06	0.19	0.25	0.03
H	0.001	0.282	0.108	0.112	0.131	0.654	0.281
I		0.18	0.06	0.05	0.16	0.27	0.12
J							
K		0.28	0.09	0.08	0.27	0.43	0.17
L		0.1			0.1		0.1
M		0.350	0.083	0.091	0.182	0.251	0.240
N		0.050	0.024	0.007	0.074	0.096	0.020

All data in µg/L

Results Sample C58B

	Bromodichloro-methane	Dibromochloro-methane	Dichloro-methane	1,2-Dichloro-ethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Target value	1.36	0.24	1.97	2.15	1.10	0.61
IFA Result	1.31	0.26	1.87	2.07	1.04	0.57
Stability test	1.34	0.24	1.91	2.16	1.11	0.55
A	1.19	0.231	1.84	2.05	0.787	0.569
B	0.81304	0.29064	1.35340	4.72085	0.77124	0.42207
C	1.4	0.3				
D	1.72	0.26	2.00	2.89	1.24	0.75
E	1.1	<0.58	1.7	1.9	0.9	0.6
F	1.61	0.281	2.625	1.995	0.932	0.502
G	1.54	0.29	2.12	2.25	0.96	0.75
H	1.132	0.209	1.713	1.595	0.888	0.690
I	1.16	0.22	1.92	2.19	0.91	0.51
J	3.876	0.905				
K	1.33	0.27	1.91	2.08	1.07	0.56
L	1.077	<0.5	1.514	1.672	0.952	
M	1.270	0.243	1.940	2.200	0.800	0.523
N	1.35	0.254	1.96	2.27	1.16	0.519

All data in µg/L

Measurement Uncertainties Sample C58B

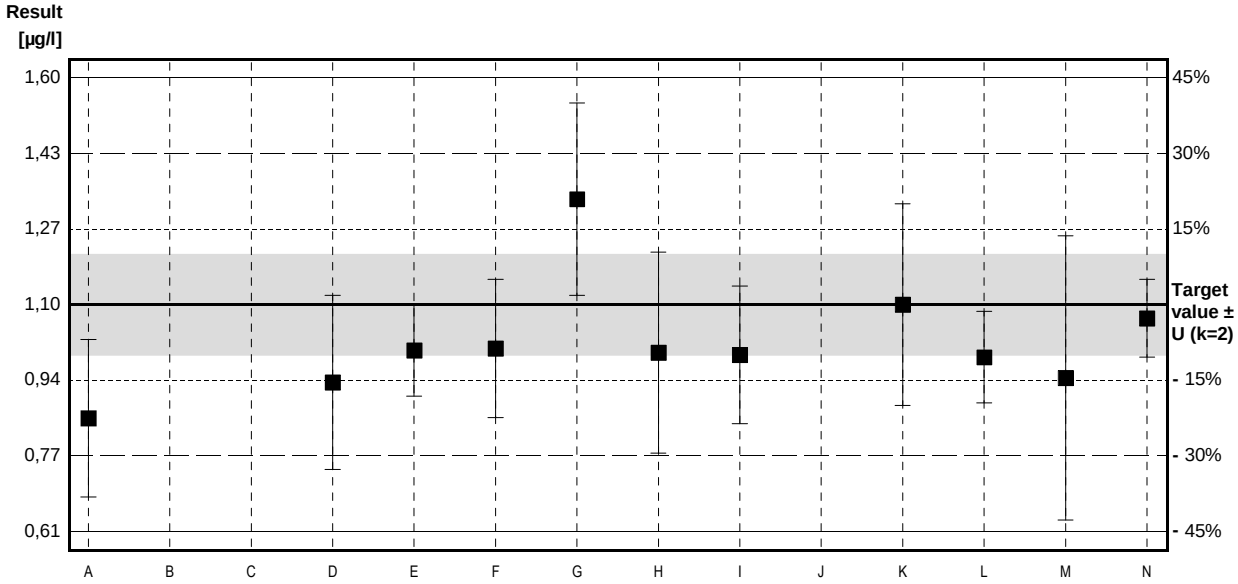
	Bromodichloro-methane ±	Dibromochloro-methane ±	Dichloro-methane ±	1,2-Dichloro-ethane ±	cis-1,2-Dichloroethene ±	trans-1,2-Dichloroethene ±
Target value	0.14	0.02	0.20	0.22	0.11	0.06
IFA Result	0.20	0.04	0.28	0.31	0.16	0.09
Stability test	0.20	0.04	0.29	0.32	0.17	0.08
A	0.24	0.046	0.37	0.41	0.157	0.114
B	0.1626	0.0581	0.2707	0.9442	0.1542	0.0844
C						
D	0.34	0.05	0.40	0.58	0.25	0.15
E						
F	0.242	0.042	0.394	0.299	0.140	0.075
G	0.09	0.02	0.11	0.10	0.12	0.10
H	0.308	0.080	0.480	0.654	0.133	0.090
I	0.17	0.03	0.29	0.33	0.14	0.08
J						
K	0.27	0.06	0.38	0.42	0.21	0.11
L	0.1		0.15	0.15	0.1	
M	0.318	0.063	0.563	0.748	0.184	0.136
N	0.053	0.007	0.055	0.134	0.067	0.064

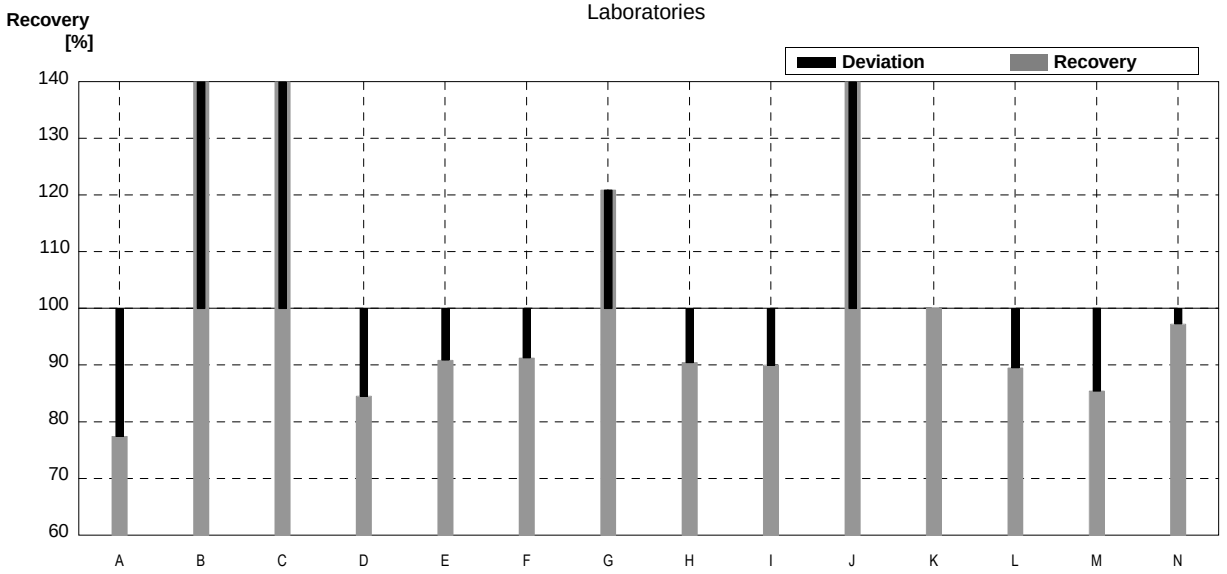
All data in µg/L

Sample C58A
Parameter Trichloroethene

Target value ± U (k=2)	1,10	µg/l	±	0,11	µg/l
IFA result ± U (k=2)	1,08	µg/l	±	0,16	µg/l
Stability test ± U (k=2)	1,06	µg/l	±	0,16	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,852	0,172	µg/l	77%	-1,41
B	4,02197 *	0,8044	µg/l	366%	16,60
C	1,7 *		µg/l	155%	3,41
D	0,93	0,19	µg/l	85%	-0,97
E	1,0	0,1	µg/l	91%	-0,57
F	1,004	0,151	µg/l	91%	-0,55
G	1,33	0,21	µg/l	121%	1,31
H	0,995	0,219	µg/l	90%	-0,60
I	0,99	0,15	µg/l	90%	-0,63
J	5,475 *		µg/l	498%	24,86
K	1,10	0,22	µg/l	100%	0,00
L	0,985	0,1	µg/l	90%	-0,65
M	0,940	0,310	µg/l	85%	-0,91
N	1,07	0,085	µg/l	97%	-0,17



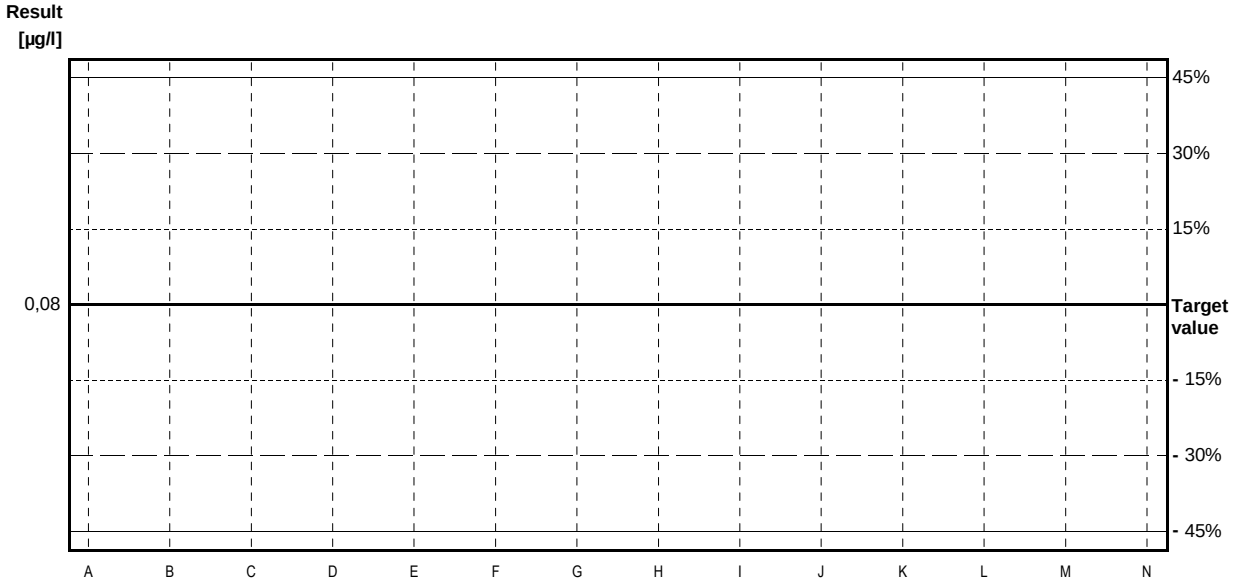


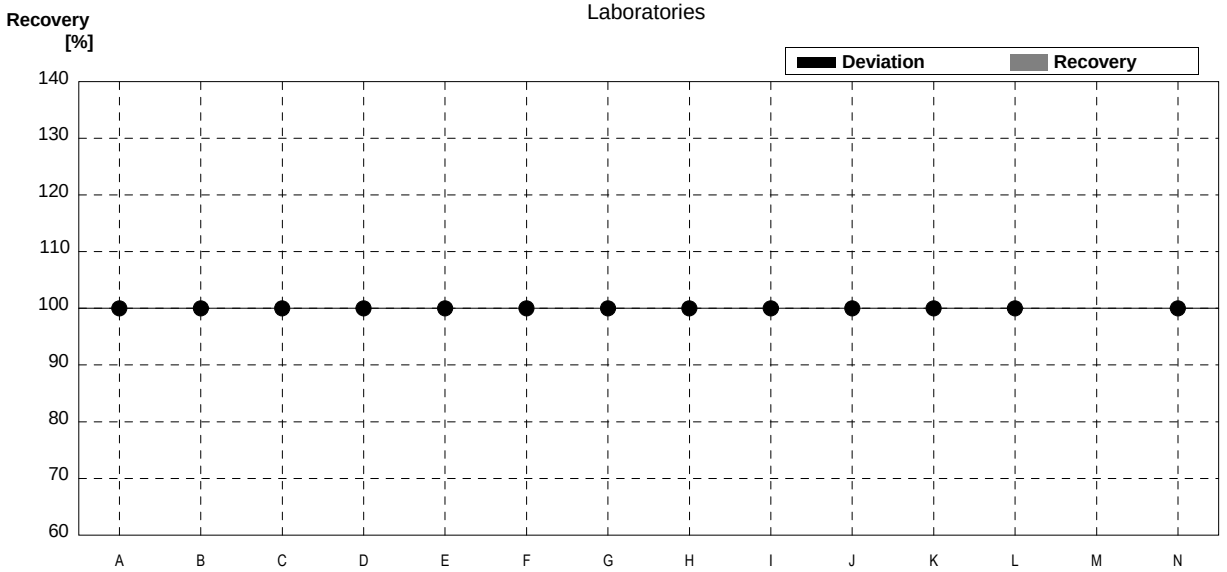
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,60 ± 1,11	1,02 ± 0,12	µg/l
Recov. ± CI(99%)	145,4 ± 101,0	92,5 ± 10,7	%
SD between labs	1,38	0,12	µg/l
RSD between labs	86,3	12,1	%
n for calculation	14	11	

Sample C58B
Parameter Trichloroethene

Target value	<0,08	µg/l
IFA result	<0,04	µg/l
Stability test	<0,04	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0,02		µg/l	•	
B	<0,05		µg/l	•	
C	<0,2		µg/l	•	
D	<0,04		µg/l	•	
E	<0,93		µg/l	•	
F	<0,1		µg/l	•	
G	<0,1		µg/l	•	
H	0,005	0,001	µg/l	•	
I	<0,1		µg/l	•	
J	<0,1		µg/l	•	
K	<0,03		µg/l	•	
L	<0,5		µg/l	•	
M	<BG		µg/l		
N	<0,05		µg/l	•	





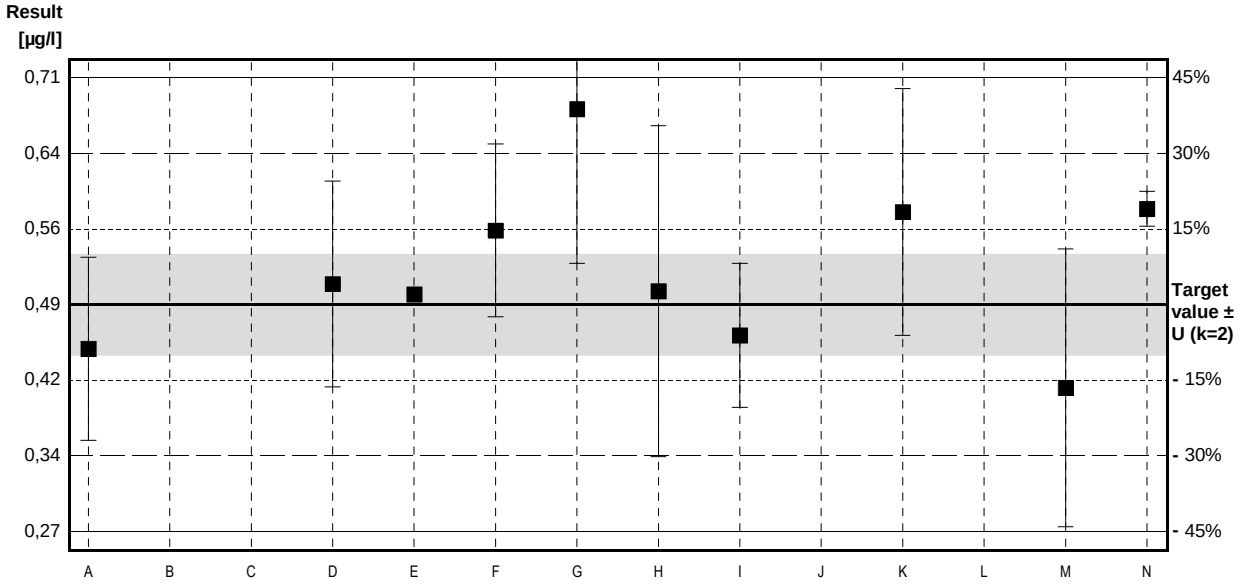
	All results	Outliers excl.	Unit
Mean ± CI(99%)			µg/l
Recov. ± CI(99%)			%
SD between labs			µg/l
RSD between labs			%
n for calculation			

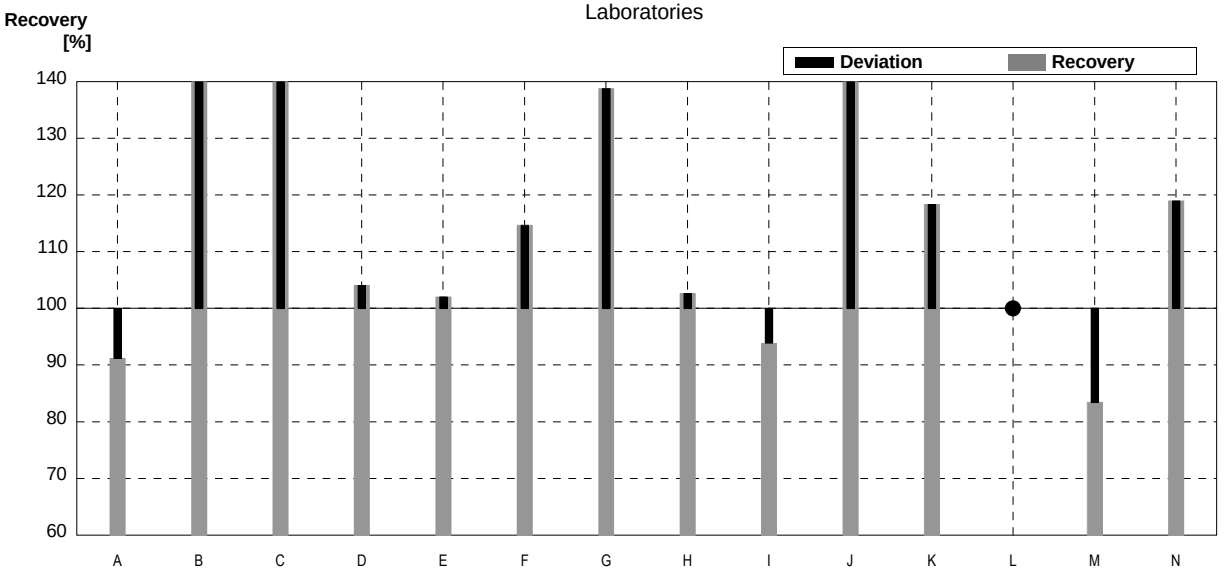
Sample C58A

Parameter Tetrachloroethene

Target value	± U (k=2)	0,49	µg/l	±	0,05 µg/l
IFA result	± U (k=2)	0,55	µg/l	±	0,08 µg/l
Stability test	± U (k=2)	0,54	µg/l	±	0,08 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,447	0,089	µg/l	91%	-0,52
B	1,50676 *	0,3014	µg/l	308%	12,21
C	1,2 *		µg/l	245%	8,52
D	0,51	0,10	µg/l	104%	0,24
E	0,5		µg/l	102%	0,12
F	0,562	0,084	µg/l	115%	0,86
G	0,68	0,15	µg/l	139%	2,28
H	0,503	0,161	µg/l	103%	0,16
I	0,46	0,07	µg/l	94%	-0,36
J	2,966 *		µg/l	605%	29,72
K	0,58	0,12	µg/l	118%	1,08
L	<0,5		µg/l	•	
M	0,409	0,135	µg/l	83%	-0,97
N	0,583	0,017	µg/l	119%	1,12





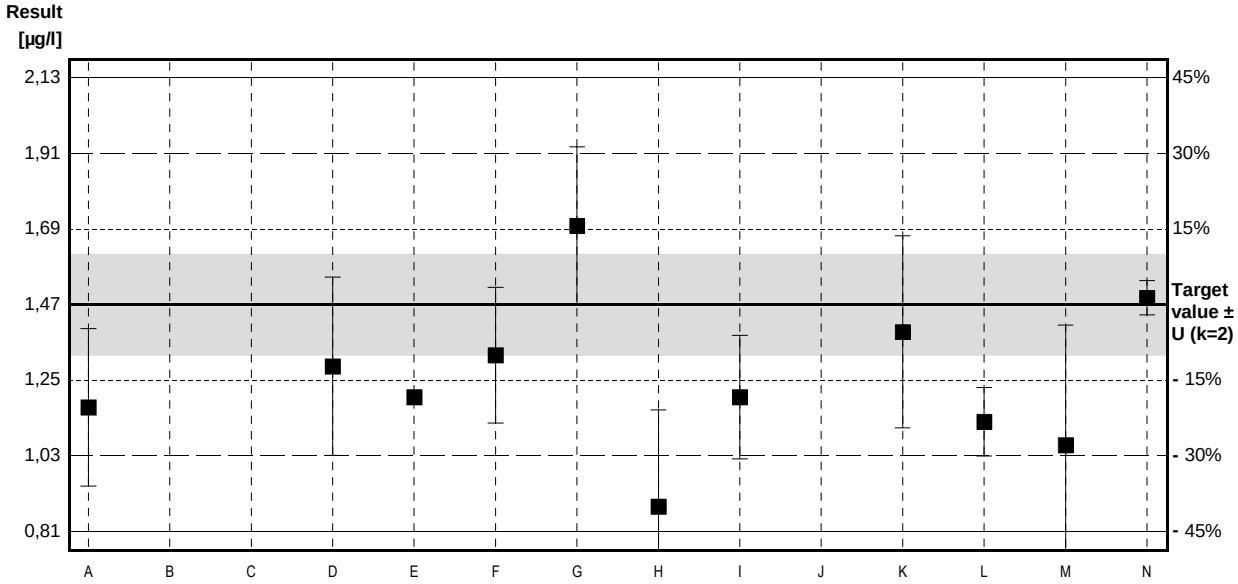
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,84 ± 0,61	0,52 ± 0,08	µg/l
Recov. ± CI(99%)	171,2 ± 123,6	106,8 ± 16,8	%
SD between labs	0,72	0,08	µg/l
RSD between labs	85,4	15,2	%
n for calculation	13	10	

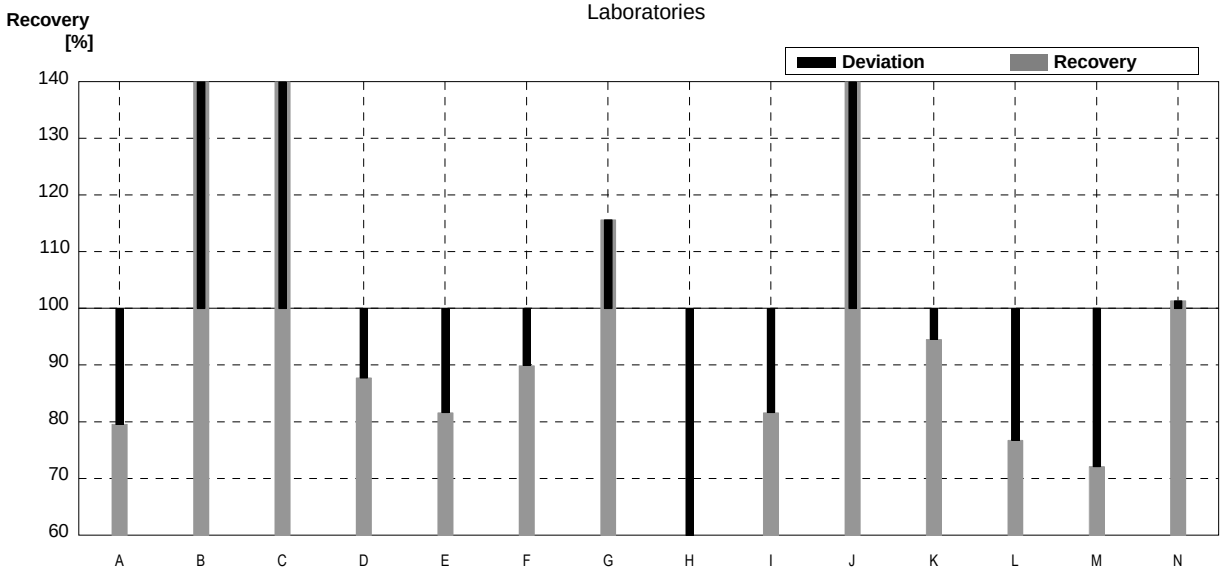
Sample C58B

Parameter Tetrachloroethene

Target value ± U (k=2)	1,47	µg/l	±	0,15	µg/l
IFA result ± U (k=2)	1,39	µg/l	±	0,21	µg/l
Stability test ± U (k=2)	1,38	µg/l	±	0,21	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,17	0,23	µg/l	80%	-1,20
B	3,74518 *	0,7490	µg/l	255%	9,10
C	2,9 *		µg/l	197%	5,72
D	1,29	0,26	µg/l	88%	-0,72
E	1,2		µg/l	82%	-1,08
F	1,322	0,198	µg/l	90%	-0,59
G	1,70	0,23	µg/l	116%	0,92
H	0,881	0,282	µg/l	60%	-2,36
I	1,20	0,18	µg/l	82%	-1,08
J	5,866 *		µg/l	399%	17,59
K	1,39	0,28	µg/l	95%	-0,32
L	1,128	0,1	µg/l	77%	-1,37
M	1,060	0,350	µg/l	72%	-1,64
N	1,49	0,050	µg/l	101%	0,08





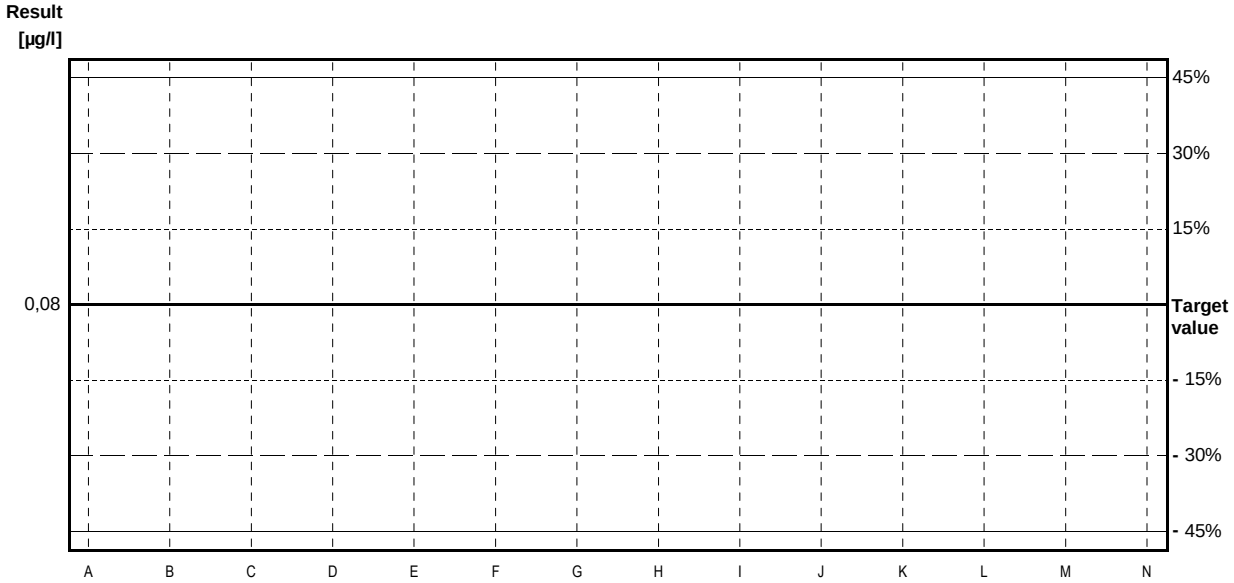
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,88 ± 1,12	1,26 ± 0,21	µg/l
Recov. ± CI(99%)	128,0 ± 76,1	85,5 ± 14,3	%
SD between labs	1,39	0,22	µg/l
RSD between labs	73,9	17,5	%
n for calculation	14	11	

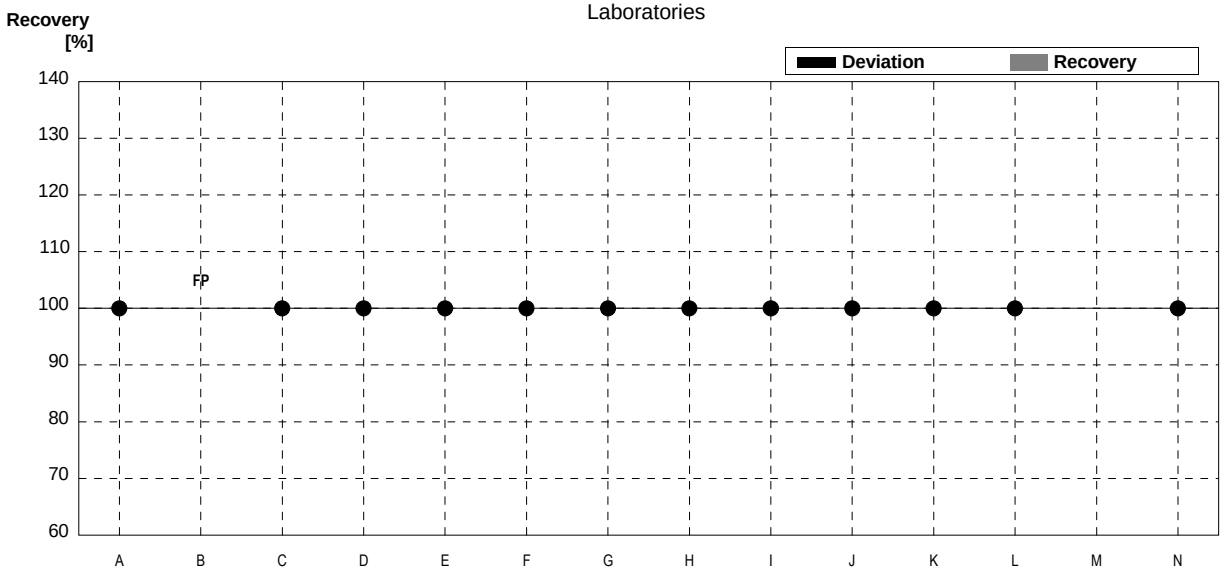
Sample C58A

Parameter 1,1,1-Trichloroethane

Target value	<0,08	µg/l
IFA result	<0,04	µg/l
Stability test	<0,04	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	<0,02		µg/l	•	
B	0,14900	0,0298	µg/l	FP	
C	<0,1		µg/l	•	
D	<0,4		µg/l	•	
E	<0,83		µg/l	•	
F	<0,1		µg/l	•	
G	<0,1		µg/l	•	
H	0,020	0,005	µg/l	•	
I	<0,1		µg/l	•	
J	<0,1		µg/l	•	
K	0,020	0,008	µg/l	•	
L	<0,5		µg/l	•	
M	<BG		µg/l		
N	<0,050		µg/l	•	





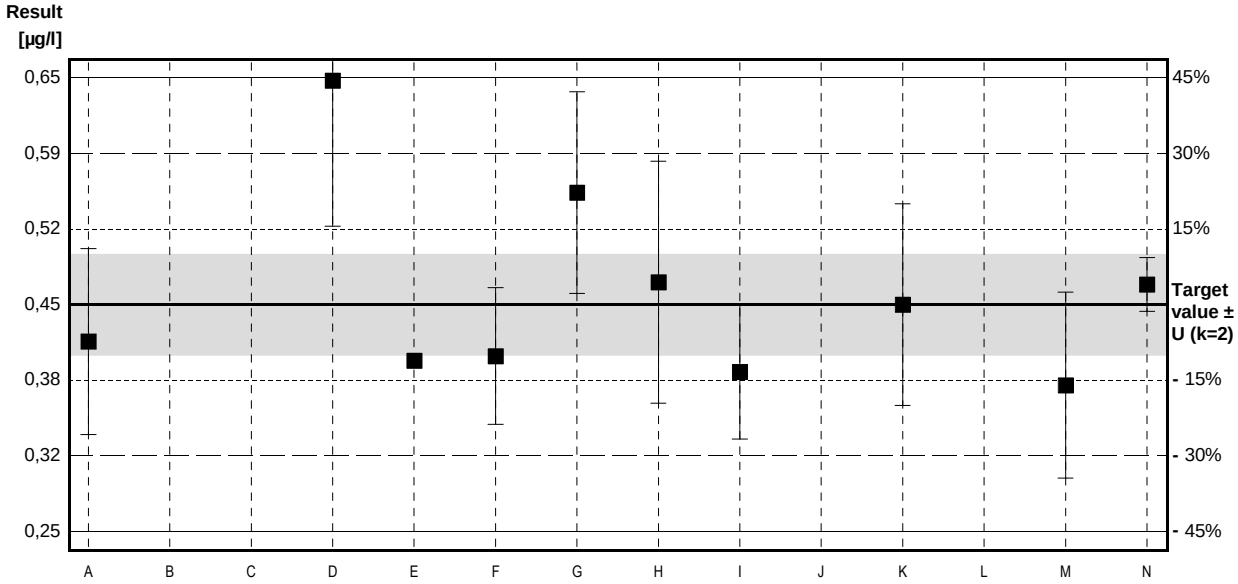
	All results	Outliers excl.	Unit
Mean ± CI(99%)			µg/l
Recov. ± CI(99%)			%
SD between labs			µg/l
RSD between labs			%
n for calculation			

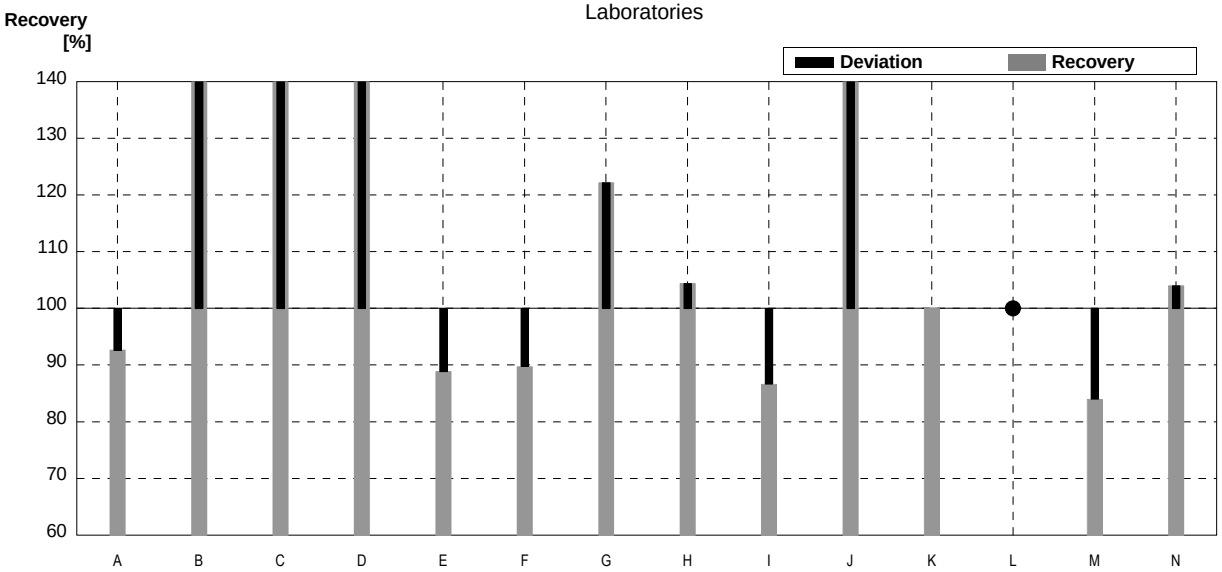
Sample C58B

Parameter 1,1,1-Trichloroethane

Target value	± U (k=2)	0,45	µg/l	±	0,05 µg/l
IFA result	± U (k=2)	0,43	µg/l	±	0,06 µg/l
Stability test	± U (k=2)	0,40	µg/l	±	0,06 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,417	0,083	µg/l	93%	-0,49
B	1,73497 *	0,3469	µg/l	386%	19,04
C	0,8		µg/l	178%	5,19
D	0,65	0,13	µg/l	144%	2,96
E	0,4		µg/l	89%	-0,74
F	0,404	0,061	µg/l	90%	-0,68
G	0,55	0,09	µg/l	122%	1,48
H	0,470	0,108	µg/l	104%	0,30
I	0,39	0,06	µg/l	87%	-0,89
J	1,285 *		µg/l	286%	12,37
K	0,45	0,09	µg/l	100%	0,00
L	<0,5		µg/l	•	
M	0,378	0,083	µg/l	84%	-1,07
N	0,468	0,024	µg/l	104%	0,27



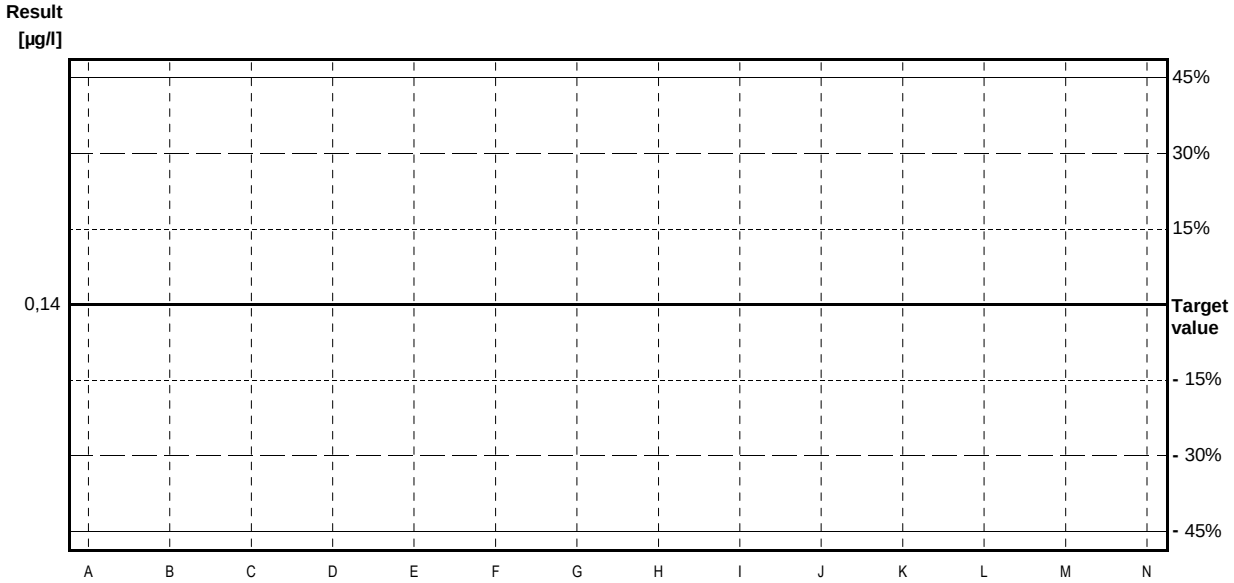


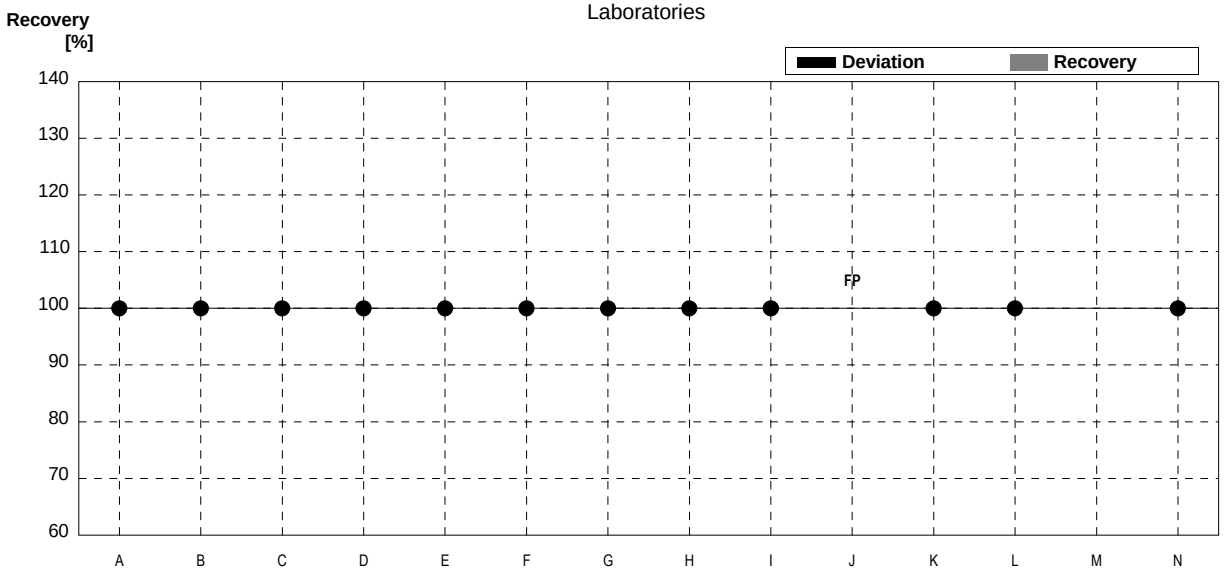
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,65 ± 0,35	0,49 ± 0,13	µg/l
Recov. ± CI(99%)	143,5 ± 77,5	108,6 ± 27,8	%
SD between labs	0,41	0,13	µg/l
RSD between labs	63,8	26,8	%
n for calculation	13	11	

Sample C58A
Parameter Trichloromethane

Target value <0,14 µg/l
IFA result <0,07 µg/l
Stability test <0,07 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,022	0,004	µg/l	•	
B	0,09541	0,0190	µg/l	•	
C	<0,2		µg/l	•	
D	<0,04		µg/l	•	
E	<0,4		µg/l	•	
F	<0,1		µg/l	•	
G	<0,1		µg/l	•	
H	0,027	0,007	µg/l	•	
I	<0,1		µg/l	•	
J	0,647		µg/l	FP	
K	<0,06		µg/l	•	
L	<0,5		µg/l	•	
M	<BG		µg/l		
N	<0,050		µg/l	•	





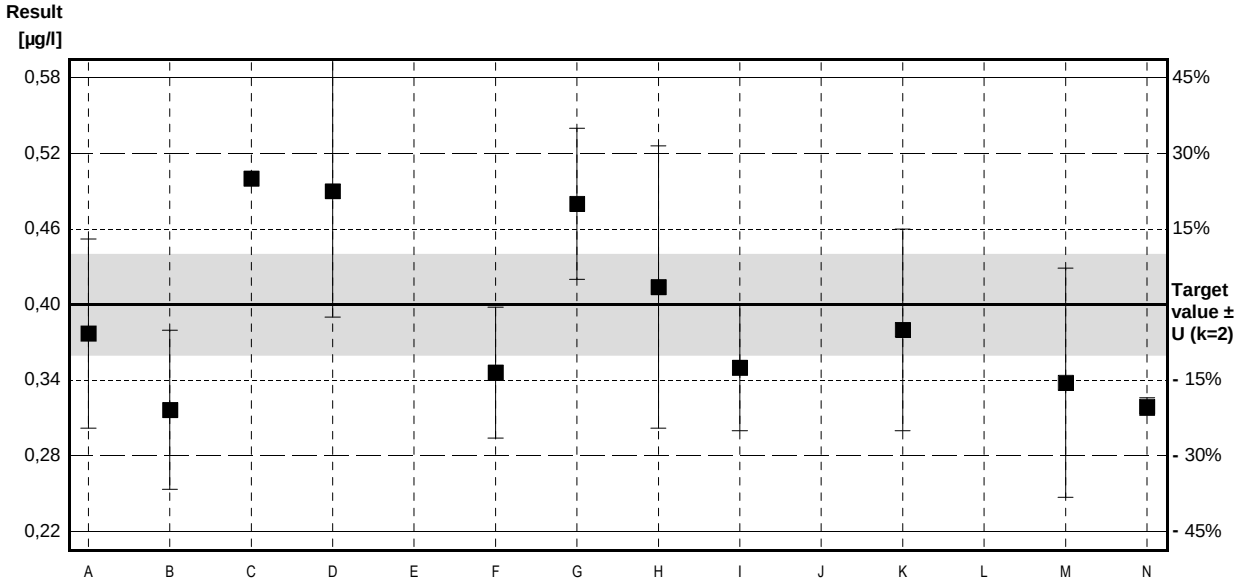
	All results	Outliers excl.	Unit
Mean ± CI(99%)			µg/l
Recov. ± CI(99%)			%
SD between labs			µg/l
RSD between labs			%
n for calculation			

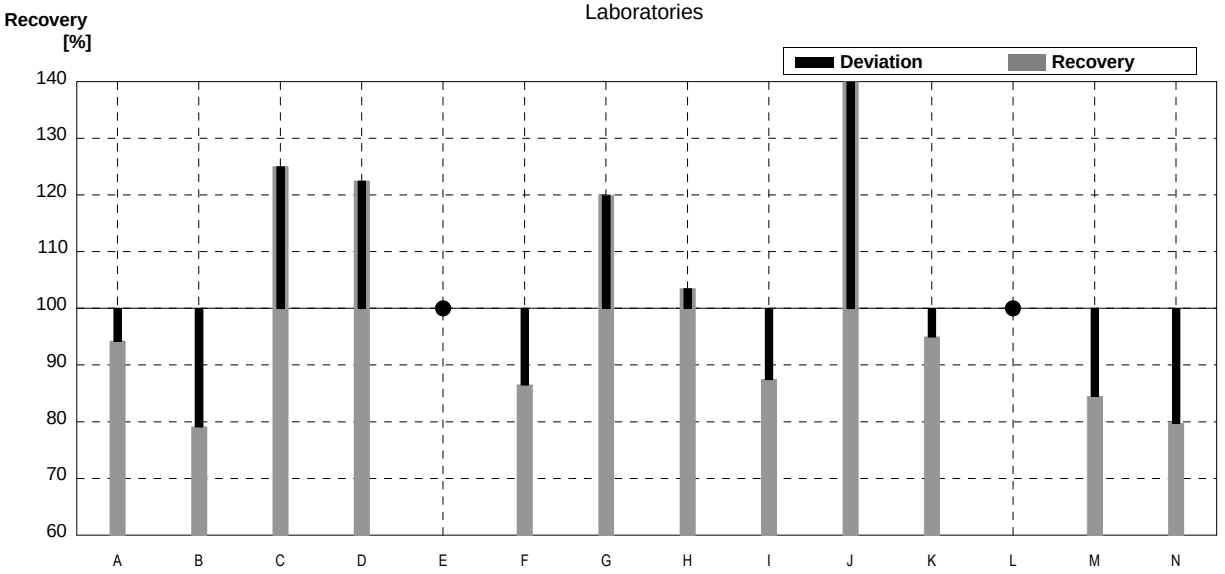
Sample C58B

Parameter Trichloromethane

Target value	± U (k=2)	0,40	µg/l	±	0,04 µg/l
IFA result	± U (k=2)	0,37	µg/l	±	0,06 µg/l
Stability test	± U (k=2)	0,36	µg/l	±	0,05 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,377	0,075	µg/l	94%	-0,41
B	0,31645	0,0632	µg/l	79%	-1,49
C	0,5		µg/l	125%	1,79
D	0,49	0,10	µg/l	123%	1,61
E	<0,4		µg/l	•	
F	0,346	0,052	µg/l	87%	-0,96
G	0,48	0,06	µg/l	120%	1,43
H	0,414	0,112	µg/l	104%	0,25
I	0,35	0,05	µg/l	88%	-0,89
J	4,843 *		µg/l	1211%	79,34
K	0,38	0,08	µg/l	95%	-0,36
L	<0,5		µg/l	•	
M	0,338	0,091	µg/l	85%	-1,11
N	0,319	0,007	µg/l	80%	-1,45





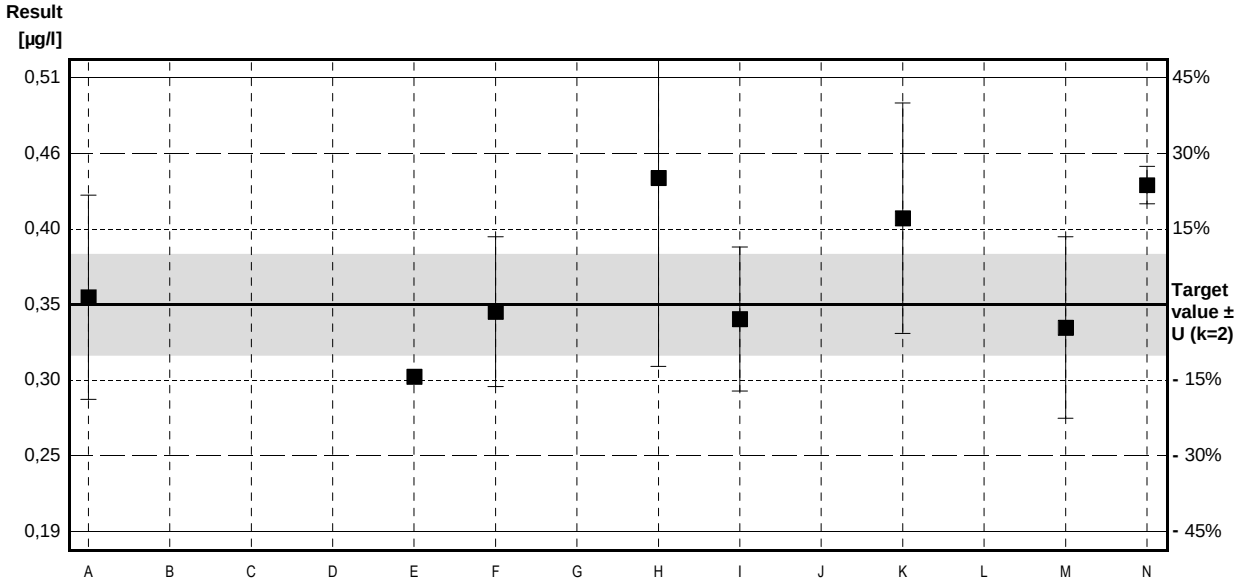
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,76 ± 1,16	0,39 ± 0,07	µg/l
Recov. ± CI(99%)	190,7 ± 288,8	98,0 ± 16,5	%
SD between labs	1,29	0,07	µg/l
RSD between labs	168,7	17,6	%
n for calculation	12	11	

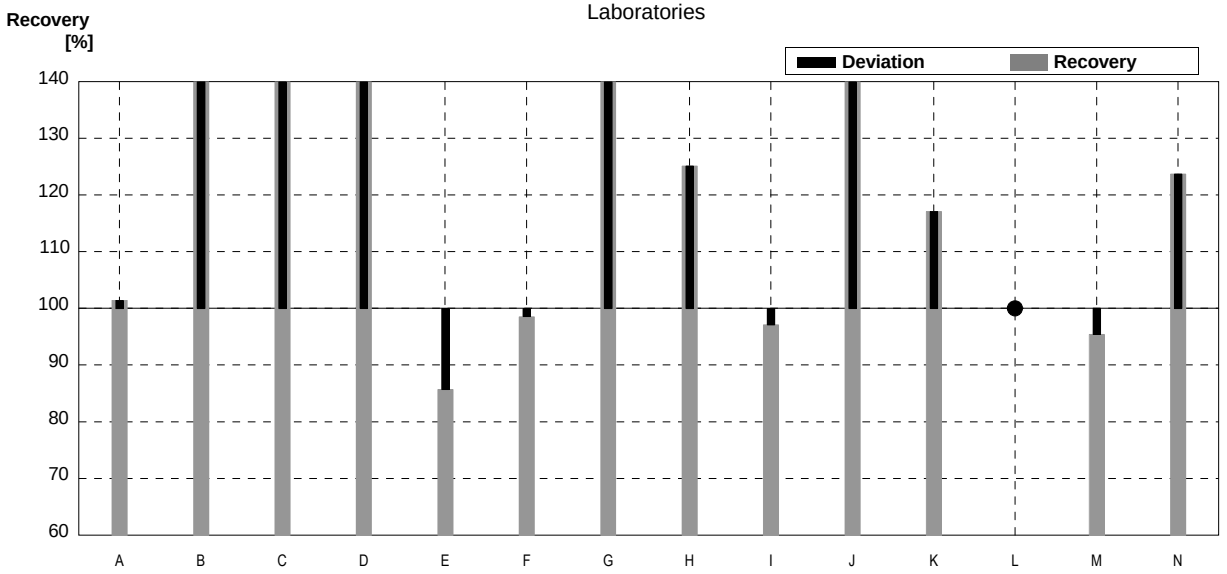
Sample C58A

Parameter Tetrachloromethane

Target value ± U (k=2)	0,35	µg/l	±	0,04	µg/l
IFA result ± U (k=2)	0,40	µg/l	±	0,06	µg/l
Stability test ± U (k=2)	0,37	µg/l	±	0,06	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,355	0,071	µg/l	101%	0,08
B	1,67295 *	0,3346	µg/l	478%	21,00
C	0,8		µg/l	229%	7,14
D	0,54	0,11	µg/l	154%	3,02
E	0,3		µg/l	86%	-0,79
F	0,345	0,052	µg/l	99%	-0,08
G	0,58	0,11	µg/l	166%	3,65
H	0,438	0,131	µg/l	125%	1,40
I	0,34	0,05	µg/l	97%	-0,16
J	2,029 *		µg/l	580%	26,65
K	0,41	0,08	µg/l	117%	0,95
L	<0,5		µg/l	•	
M	0,334	0,063	µg/l	95%	-0,25
N	0,433	0,013	µg/l	124%	1,32





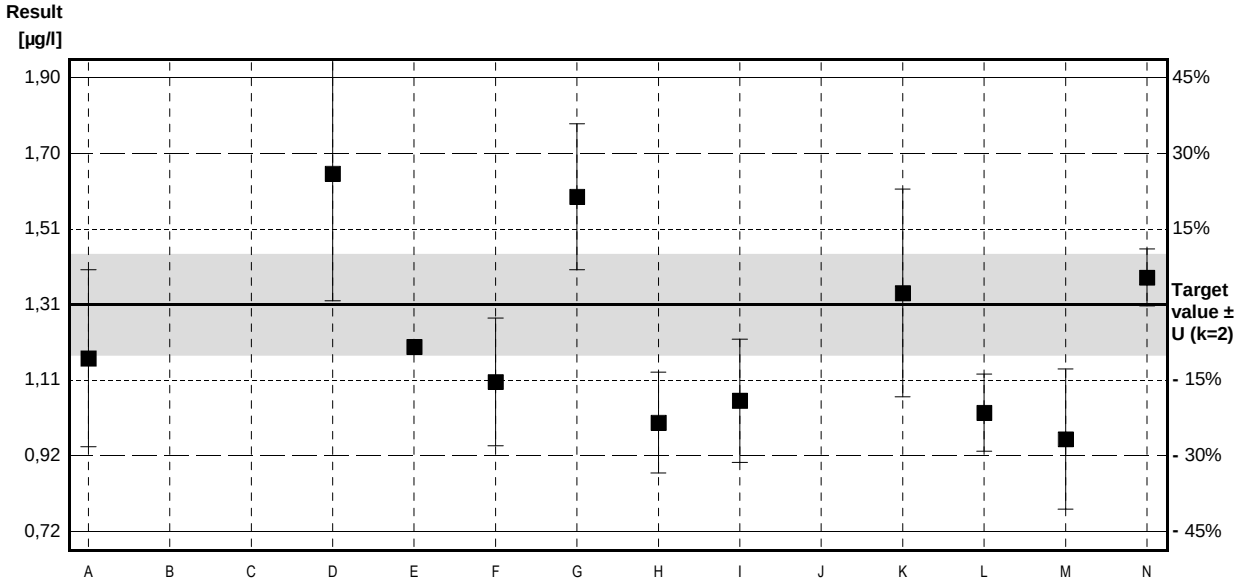
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,66 ± 0,47	0,44 ± 0,14	µg/l
Recov. ± CI(99%)	188,5 ± 133,0	126,6 ± 40,2	%
SD between labs	0,55	0,15	µg/l
RSD between labs	83,4	33,2	%
n for calculation	13	11	

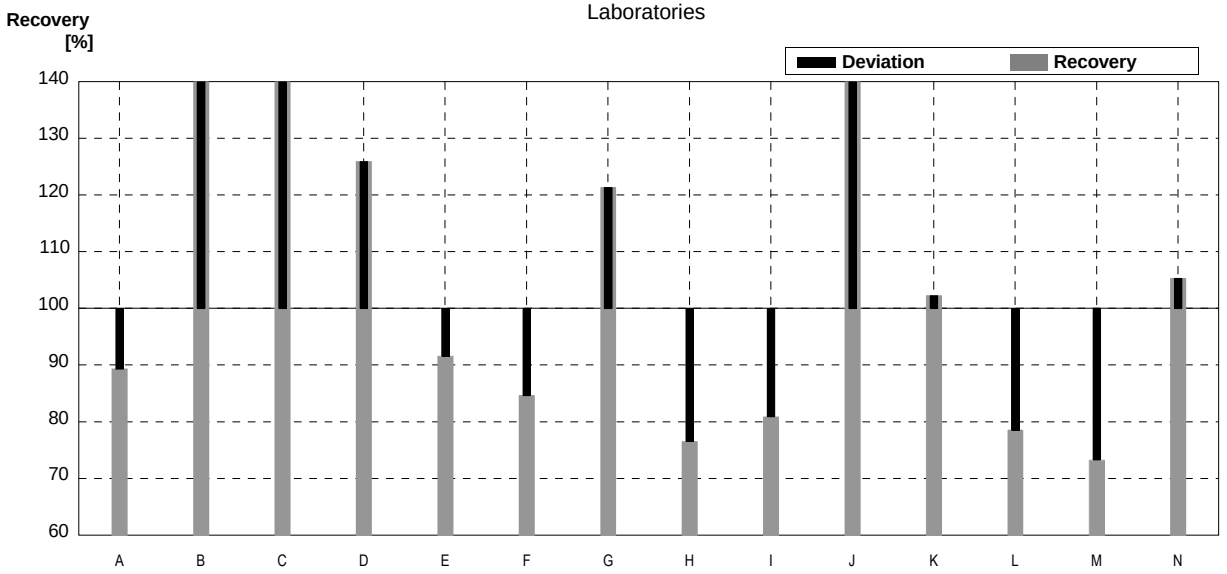
Sample C58B

Parameter Tetrachloromethane

Target value ± U (k=2)	1,31 µg/l	±	0,13 µg/l	
IFA result ± U (k=2)	1,21 µg/l	±	0,18 µg/l	
Stability test ± U (k=2)	1,30 µg/l	±	0,20 µg/l	

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,17	0,23	µg/l	89%	-0,59
B	6,04887 *	1,2098	µg/l	462%	20,10
C	2,3		µg/l	176%	4,20
D	1,65	0,33	µg/l	126%	1,44
E	1,2		µg/l	92%	-0,47
F	1,109	0,166	µg/l	85%	-0,85
G	1,59	0,19	µg/l	121%	1,19
H	1,003	0,131	µg/l	77%	-1,30
I	1,06	0,16	µg/l	81%	-1,06
J	5,095 *		µg/l	389%	16,05
K	1,34	0,27	µg/l	102%	0,13
L	1,029	0,1	µg/l	79%	-1,19
M	0,960	0,182	µg/l	73%	-1,48
N	1,38	0,074	µg/l	105%	0,30





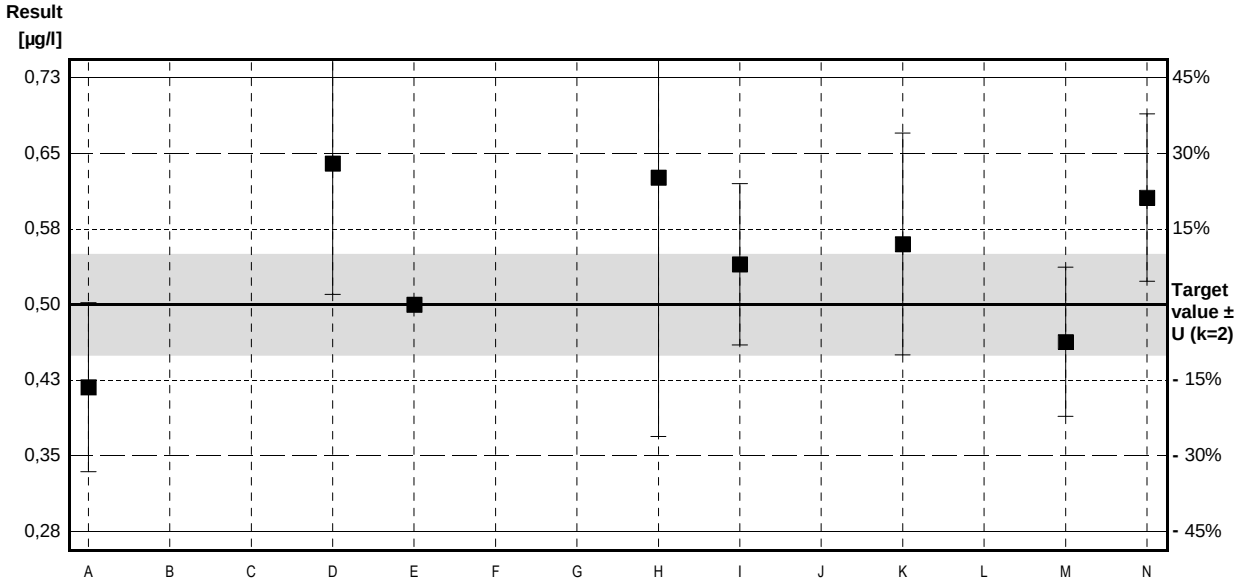
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,92 ± 1,28	1,32 ± 0,34	µg/l
Recov. ± CI(99%)	146,9 ± 98,0	100,5 ± 26,2	%
SD between labs	1,60	0,38	µg/l
RSD between labs	83,0	29,1	%
n for calculation	14	12	

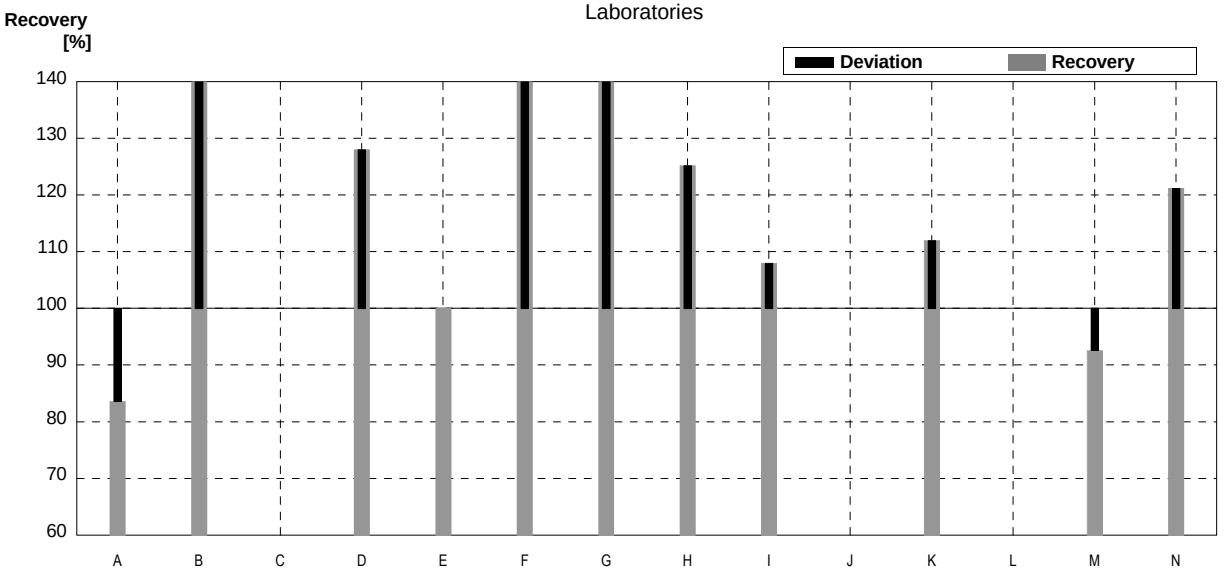
Sample C58A

Parameter 1,1-Dichloroethene

Target value	± U (k=2)	0,50 µg/l	±	0,05 µg/l
IFA result	± U (k=2)	0,51 µg/l	±	0,08 µg/l
Stability test	± U (k=2)	0,50 µg/l	±	0,08 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,418	0,084	µg/l	84%	-0,82
B	0,76915	0,1538	µg/l	154%	2,69
C			µg/l		
D	0,64	0,13	µg/l	128%	1,40
E	0,5		µg/l	100%	0,00
F	0,729	0,109	µg/l	146%	2,29
G	0,82	0,13	µg/l	164%	3,20
H	0,626	0,257	µg/l	125%	1,26
I	0,54	0,08	µg/l	108%	0,40
J			µg/l		
K	0,56	0,11	µg/l	112%	0,60
L			µg/l		
M	0,463	0,074	µg/l	93%	-0,37
N	0,606	0,083	µg/l	121%	1,06





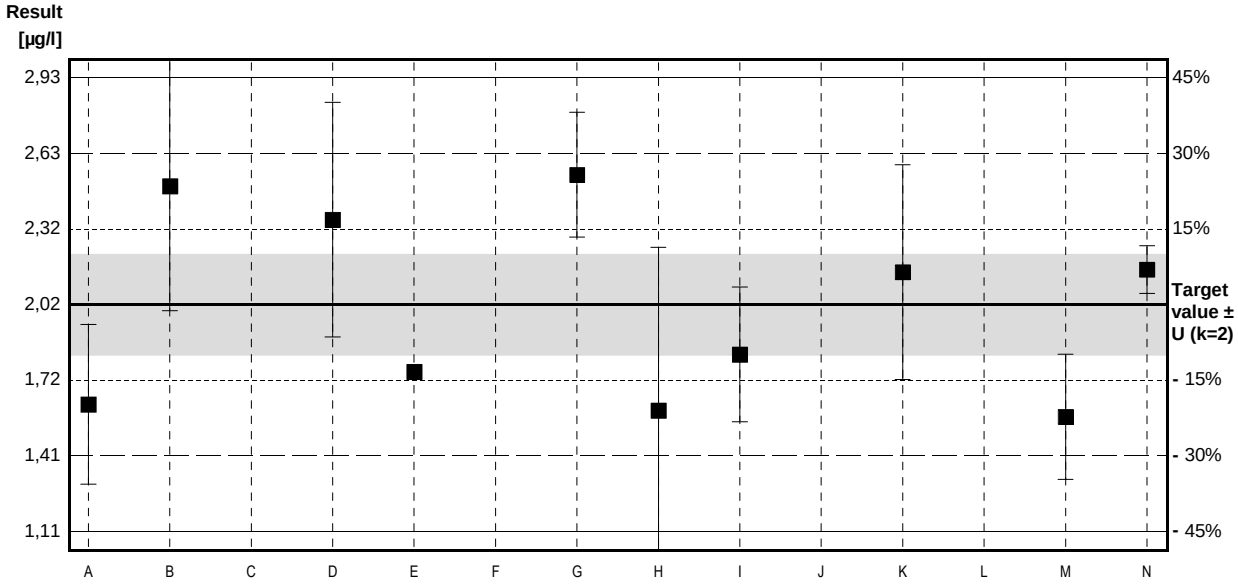
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,61 ± 0,12	0,61 ± 0,12	µg/l
Recov. ± CI(99%)	121,3 ± 24,4	121,3 ± 24,4	%
SD between labs	0,13	0,13	µg/l
RSD between labs	21,0	21,0	%
n for calculation	11	11	

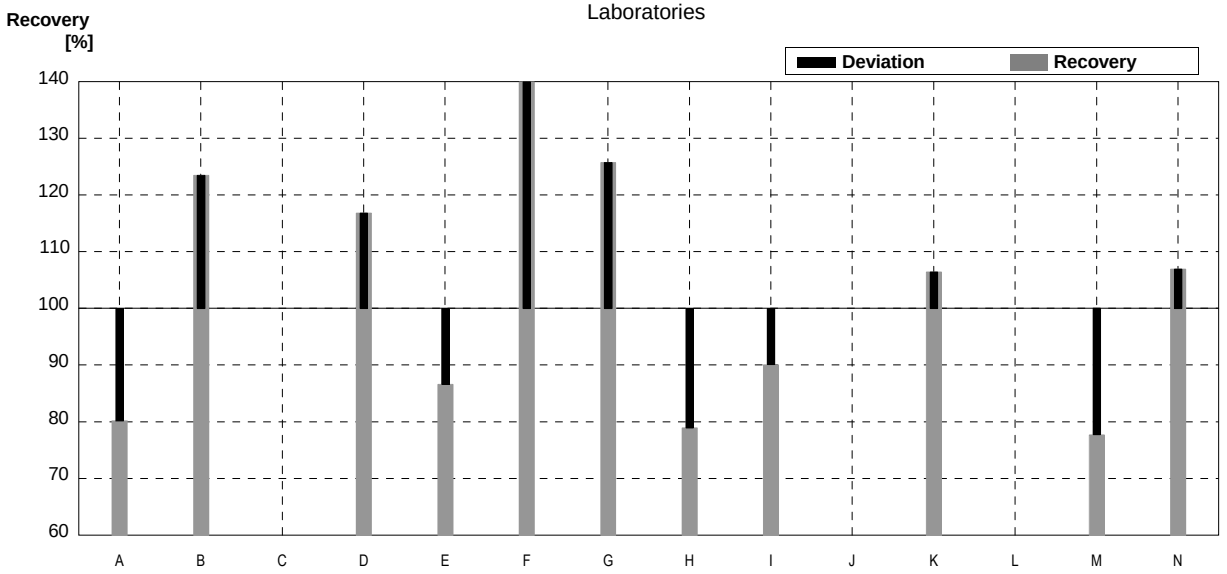
Sample C58B

Parameter 1,1-Dichloroethene

Target value ± U (k=2)	2,02	µg/l	±	0,20	µg/l
IFA result ± U (k=2)	1,89	µg/l	±	0,28	µg/l
Stability test ± U (k=2)	1,95	µg/l	±	0,29	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,62	0,32	µg/l	80%	-0,99
B	2,49414	0,4988	µg/l	123%	1,17
C			µg/l		
D	2,36	0,47	µg/l	117%	0,84
E	1,75		µg/l	87%	-0,67
F	3,176	0,476	µg/l	157%	2,86
G	2,54	0,25	µg/l	126%	1,29
H	1,595	0,654	µg/l	79%	-1,05
I	1,82	0,27	µg/l	90%	-0,50
J			µg/l		
K	2,15	0,43	µg/l	106%	0,32
L			µg/l		
M	1,570	0,251	µg/l	78%	-1,11
N	2,16	0,096	µg/l	107%	0,35



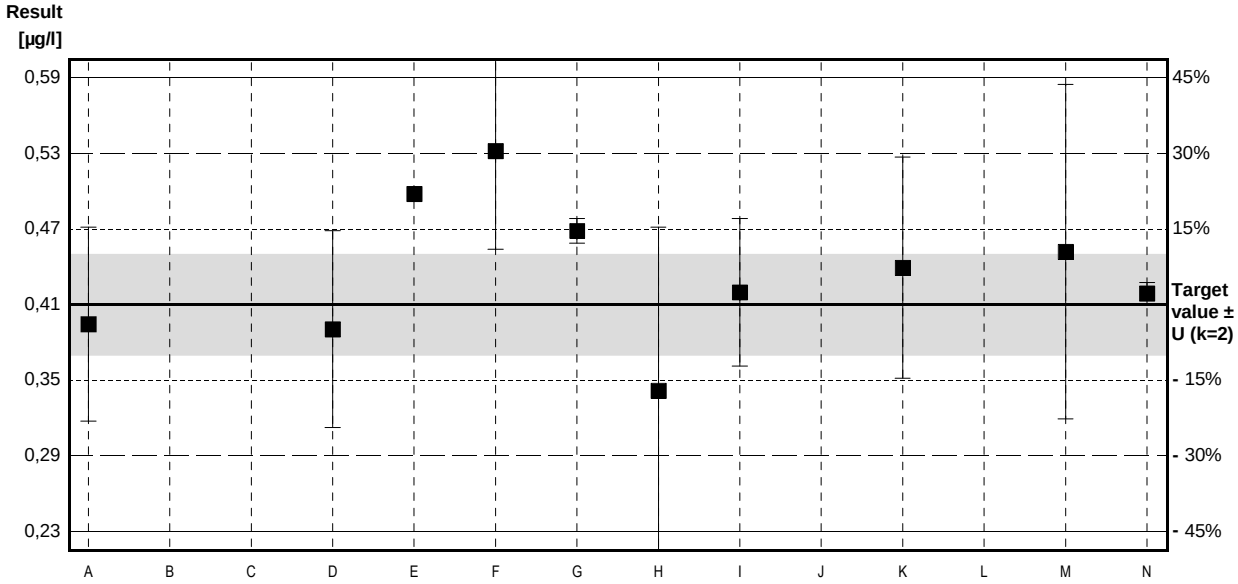


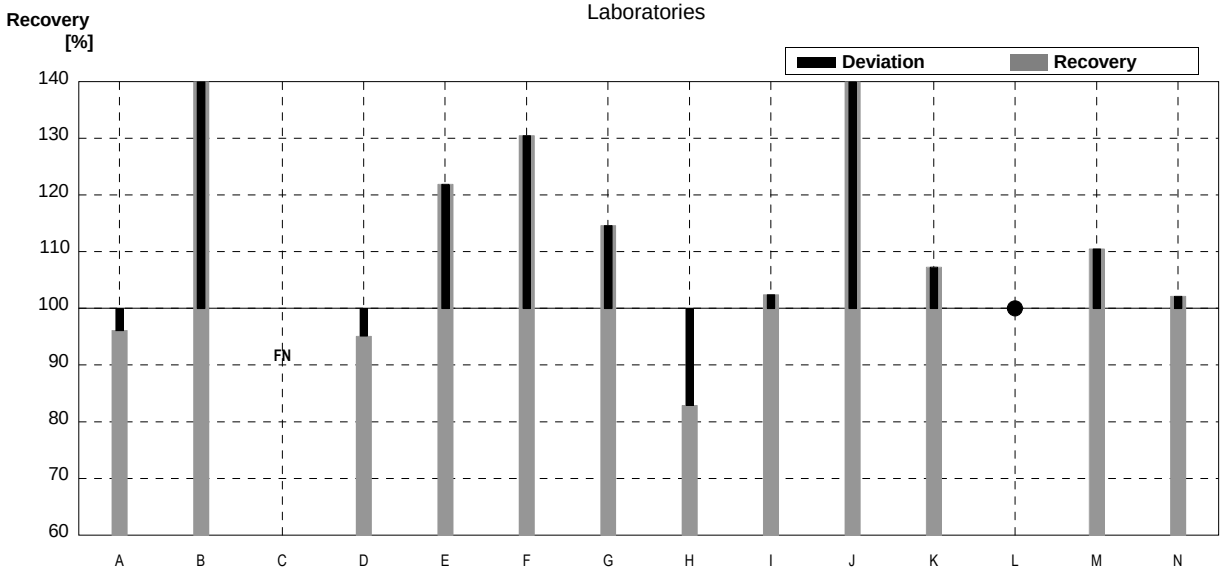
	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,11 ± 0,48	2,11 ± 0,48	µg/l
Recov. ± CI(99%)	104,6 ± 23,9	104,6 ± 23,9	%
SD between labs	0,50	0,50	µg/l
RSD between labs	23,9	23,9	%
n for calculation	11	11	

Sample C58A
Parameter Tribromomethane

Target value	± U (k=2)	0,41	µg/l	±	0,04 µg/l
IFA result	± U (k=2)	0,48	µg/l	±	0,07 µg/l
Stability test	± U (k=2)	0,40	µg/l	±	0,06 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,394	0,079	µg/l	96%	-0,23
B	1,35140 *	0,2703	µg/l	330%	13,51
C	<0,2		µg/l	FN	
D	0,39	0,08	µg/l	95%	-0,29
E	0,5		µg/l	122%	1,29
F	0,535	0,080	µg/l	130%	1,79
G	0,47	0,01	µg/l	115%	0,86
H	0,340	0,133	µg/l	83%	-1,00
I	0,42	0,06	µg/l	102%	0,14
J	1,788 *		µg/l	436%	19,77
K	0,44	0,09	µg/l	107%	0,43
L	<0,5		µg/l	•	
M	0,453	0,136	µg/l	110%	0,62
N	0,419	0,009	µg/l	102%	0,13





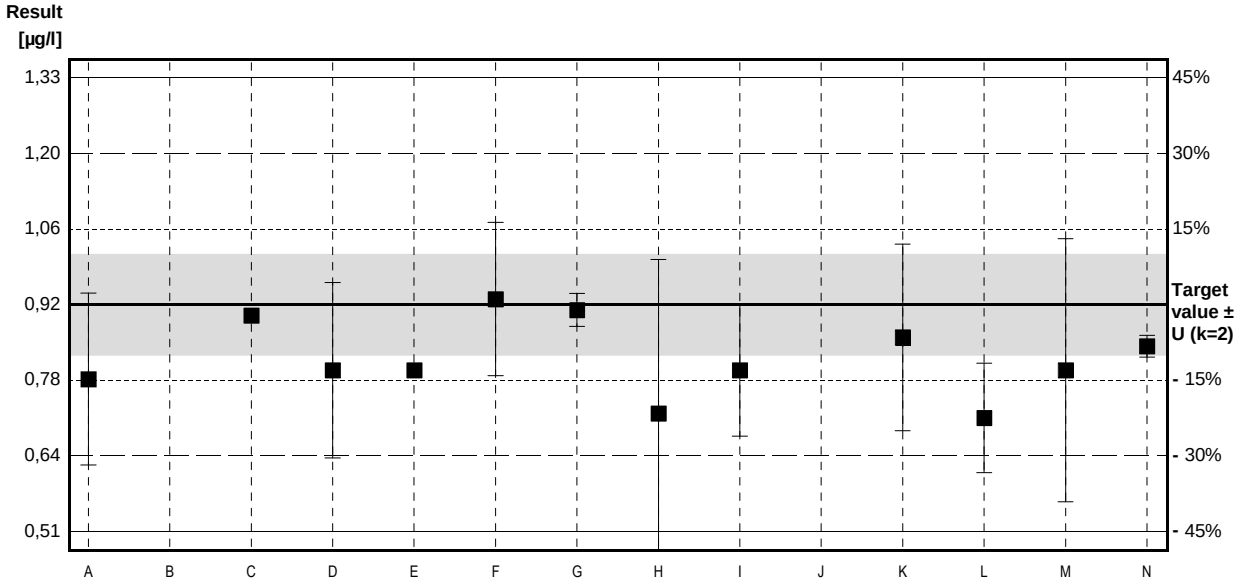
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,63 ± 0,41	0,44 ± 0,06	µg/l
Recov. ± CI(99%)	152,4 ± 99,4	106,4 ± 14,4	%
SD between labs	0,45	0,06	µg/l
RSD between labs	72,6	13,0	%
n for calculation	12	10	

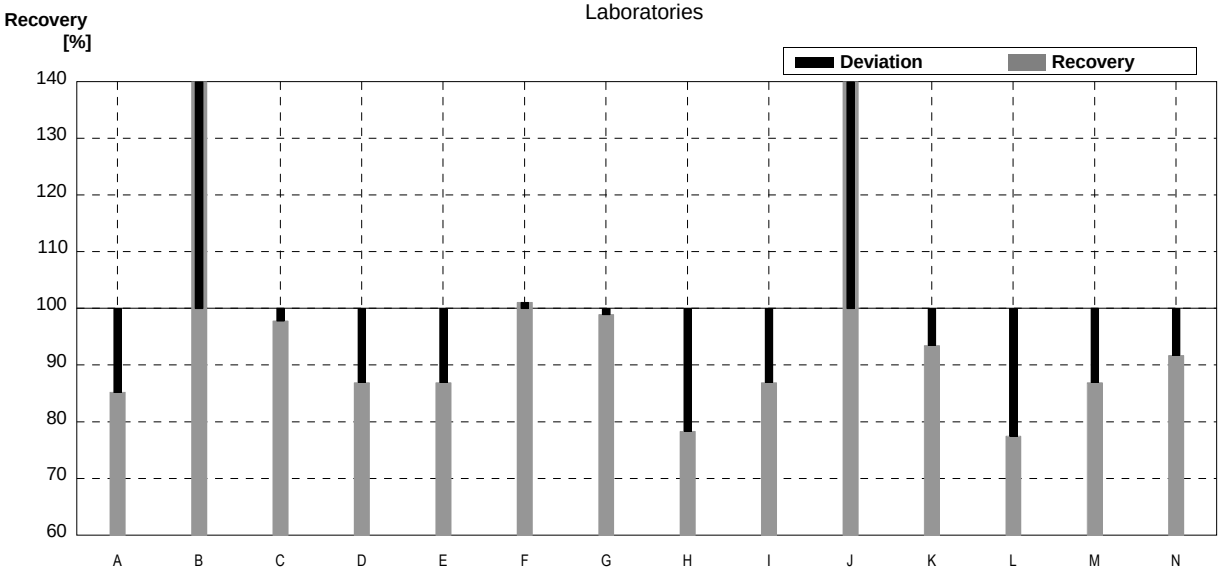
Sample C58B

Parameter Tribromomethane

Target value	± U (k=2)	0,92	µg/l	±	0,09 µg/l
IFA result	± U (k=2)	0,87	µg/l	±	0,13 µg/l
Stability test	± U (k=2)	0,86	µg/l	±	0,13 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,784	0,157	µg/l	85%	-0,87
B	2,28758 *	0,4575	µg/l	249%	8,74
C	0,9		µg/l	98%	-0,13
D	0,80	0,16	µg/l	87%	-0,77
E	0,8		µg/l	87%	-0,77
F	0,93	0,140	µg/l	101%	0,06
G	0,91	0,03	µg/l	99%	-0,06
H	0,721	0,281	µg/l	78%	-1,27
I	0,80	0,12	µg/l	87%	-0,77
J	3,591 *		µg/l	390%	17,08
K	0,86	0,17	µg/l	93%	-0,38
L	0,713	0,1	µg/l	78%	-1,32
M	0,800	0,240	µg/l	87%	-0,77
N	0,844	0,020	µg/l	92%	-0,49





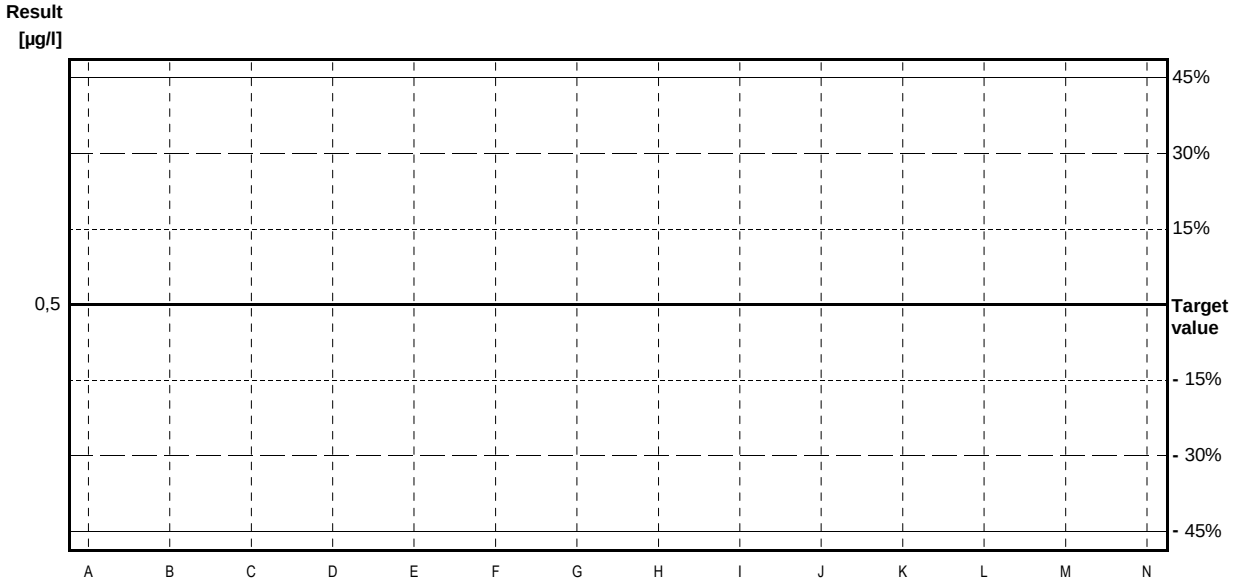
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,12 ± 0,65	0,82 ± 0,06	µg/l
Recov. ± CI(99%)	122,2 ± 71,1	89,3 ± 6,8	%
SD between labs	0,81	0,07	µg/l
RSD between labs	72,3	8,4	%
n for calculation	14	12	

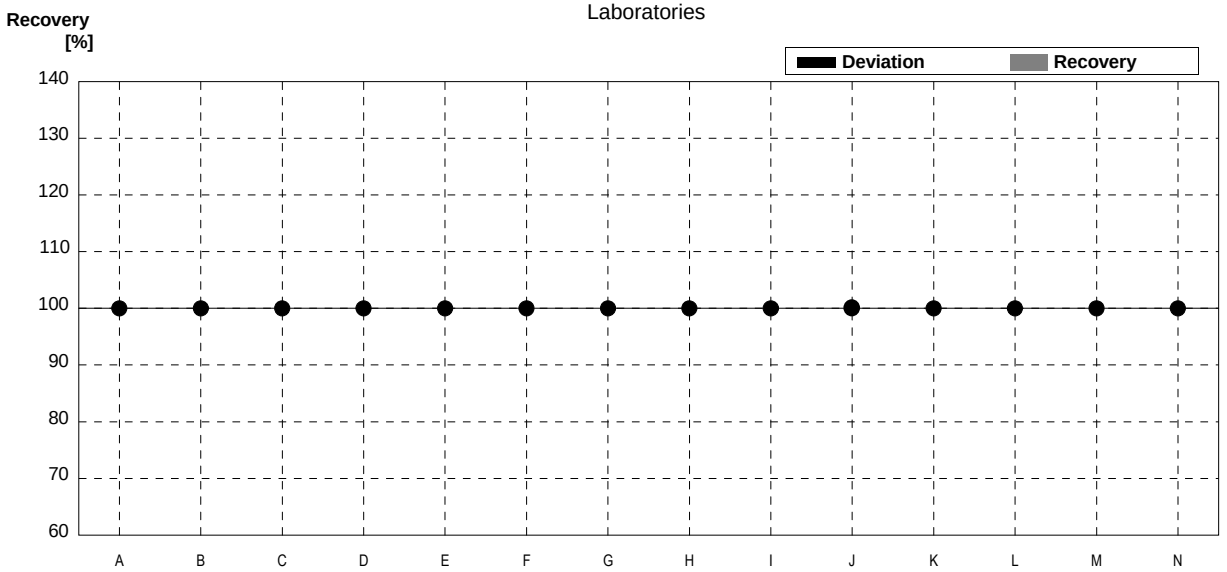
Sample C58A

Parameter Bromodichloromethane

Target value		<0,5	µg/l		
IFA result	± U (k=2)	0,37	µg/l	±	0,06 µg/l
Stability test	± U (k=2)	0,37	µg/l	±	0,06 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,326	0,065	µg/l	•	
B	0,14900	0,0298	µg/l	•	
C	0,4		µg/l	•	
D	0,46	0,09	µg/l	•	
E	0,3		µg/l	•	
F	0,419	0,063	µg/l	•	
G	0,47	0,05	µg/l	•	
H	0,370	0,100	µg/l	•	
I	0,32	0,05	µg/l	•	
J	1,036		µg/l	•	
K	0,36	0,07	µg/l	•	
L	<0,5		µg/l	•	
M	0,343	0,086	µg/l	•	
N	0,348	0,008	µg/l	•	





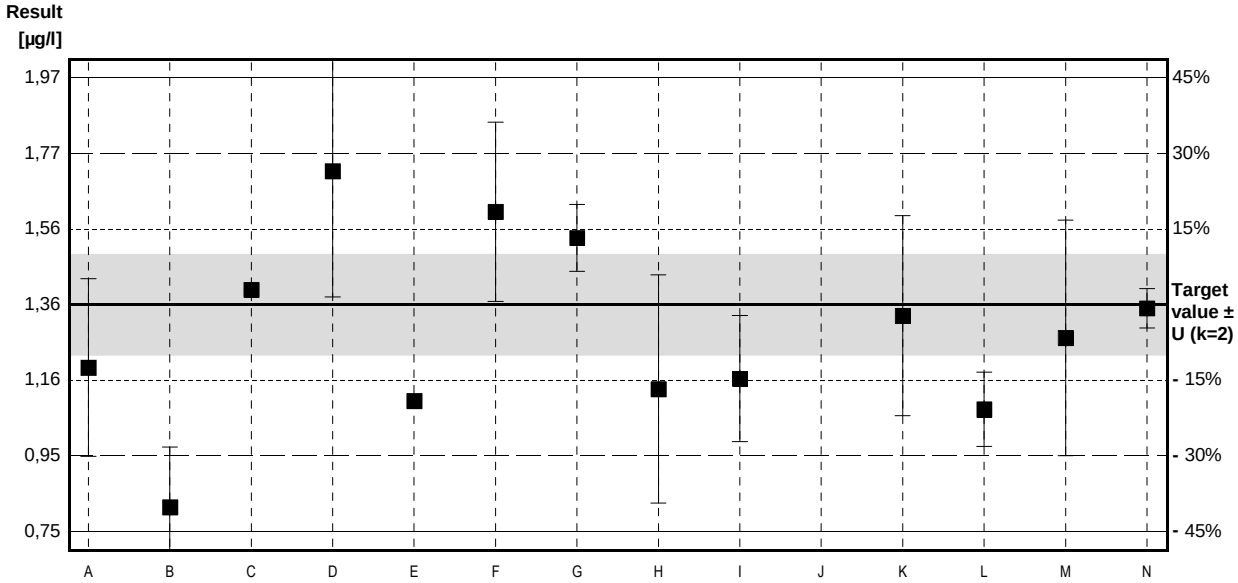
	All results	Outliers excl.	Unit
Mean ± CI(99%)			µg/l
Recov. ± CI(99%)			%
SD between labs			µg/l
RSD between labs			%
n for calculation			

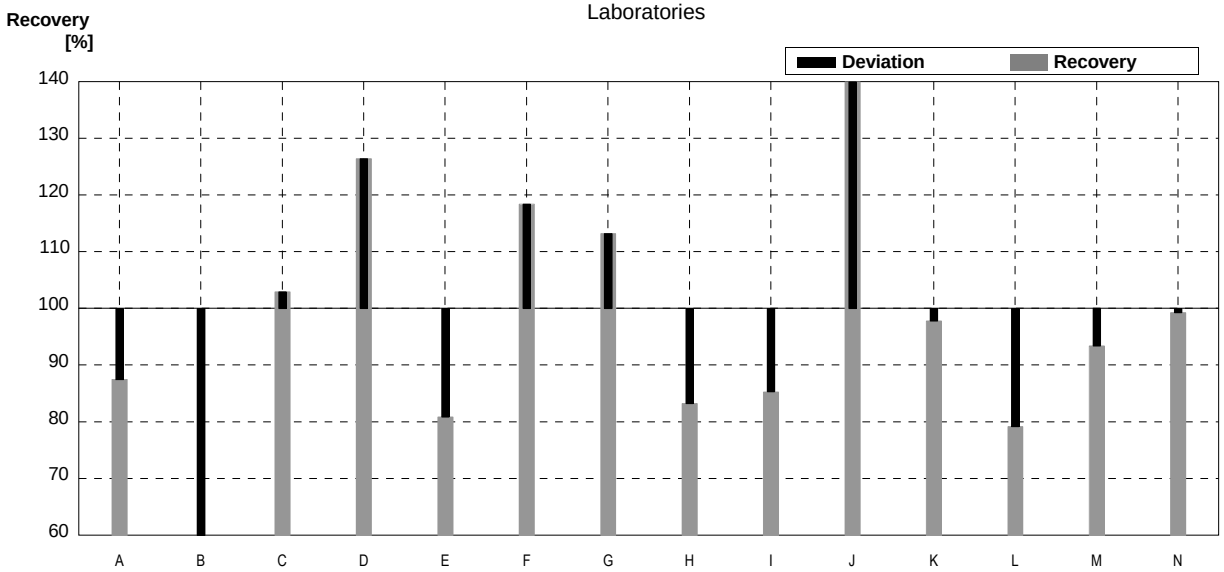
Sample C58B

Parameter Bromodichloromethane

Target value ± U (k=2)	1,36	µg/l	±	0,14	µg/l
IFA result ± U (k=2)	1,31	µg/l	±	0,20	µg/l
Stability test ± U (k=2)	1,34	µg/l	±	0,20	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,19	0,24	µg/l	88%	-0,89
B	0,81304	0,1626	µg/l	60%	-2,87
C	1,4		µg/l	103%	0,21
D	1,72	0,34	µg/l	126%	1,89
E	1,1		µg/l	81%	-1,37
F	1,61	0,242	µg/l	118%	1,31
G	1,54	0,09	µg/l	113%	0,95
H	1,132	0,308	µg/l	83%	-1,20
I	1,16	0,17	µg/l	85%	-1,05
J	3,876 *		µg/l	285%	13,21
K	1,33	0,27	µg/l	98%	-0,16
L	1,077	0,1	µg/l	79%	-1,49
M	1,270	0,318	µg/l	93%	-0,47
N	1,35	0,053	µg/l	99%	-0,05





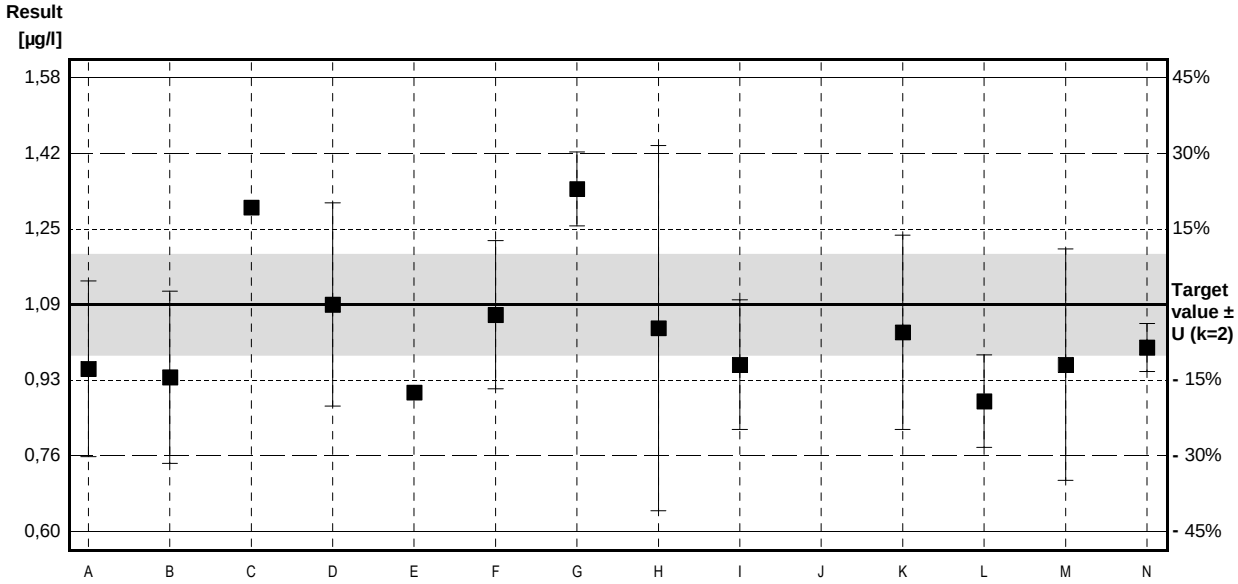
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,47 ± 0,59	1,28 ± 0,21	µg/l
Recov. ± CI(99%)	108,0 ± 43,3	94,4 ± 15,3	%
SD between labs	0,73	0,25	µg/l
RSD between labs	49,8	19,2	%
n for calculation	14	13	

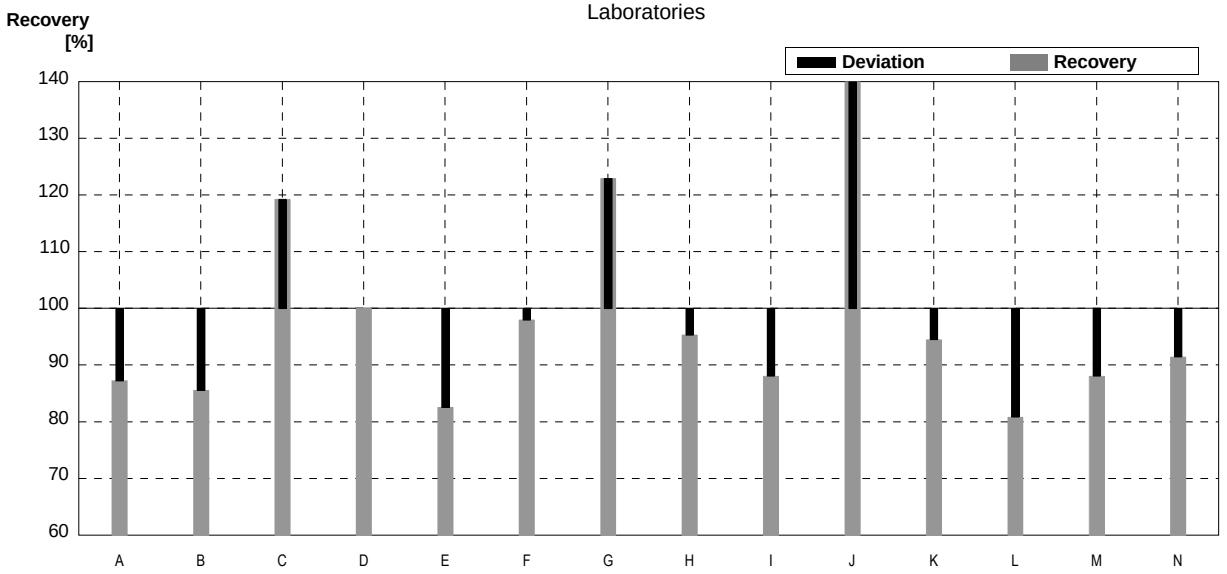
Sample C58A

Parameter Dibromochloromethane

Target value ± U (k=2)	1,09 µg/l	±	0,11 µg/l	
IFA result ± U (k=2)	1,08 µg/l	±	0,16 µg/l	
Stability test ± U (k=2)	1,07 µg/l	±	0,16 µg/l	

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,951	0,190	µg/l	87%	-0,91
B	0,93249	0,1865	µg/l	86%	-1,03
C	1,3		µg/l	119%	1,38
D	1,09	0,22	µg/l	100%	0,00
E	0,9		µg/l	83%	-1,25
F	1,068	0,160	µg/l	98%	-0,14
G	1,34	0,08	µg/l	123%	1,64
H	1,039	0,395	µg/l	95%	-0,33
I	0,96	0,14	µg/l	88%	-0,85
J	3,684 *		µg/l	338%	17,00
K	1,03	0,21	µg/l	94%	-0,39
L	0,881	0,1	µg/l	81%	-1,37
M	0,960	0,25	µg/l	88%	-0,85
N	0,997	0,052	µg/l	91%	-0,61





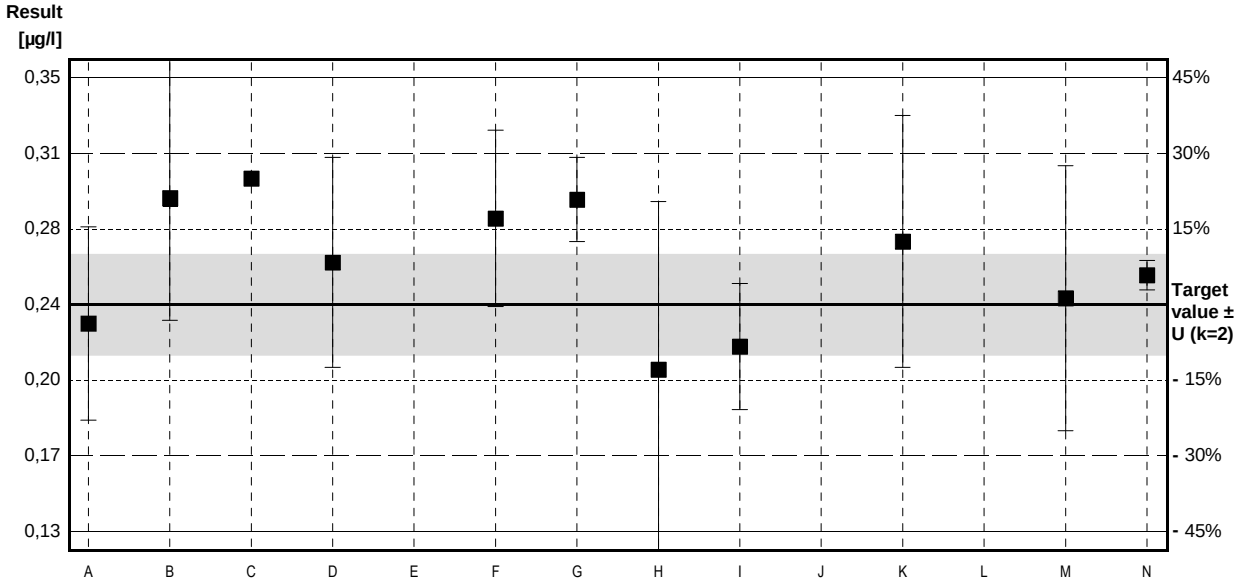
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,22 ± 0,58	1,03 ± 0,12	µg/l
Recov. ± CI(99%)	112,3 ± 53,2	94,9 ± 11,0	%
SD between labs	0,72	0,14	µg/l
RSD between labs	58,9	13,7	%
n for calculation	14	13	

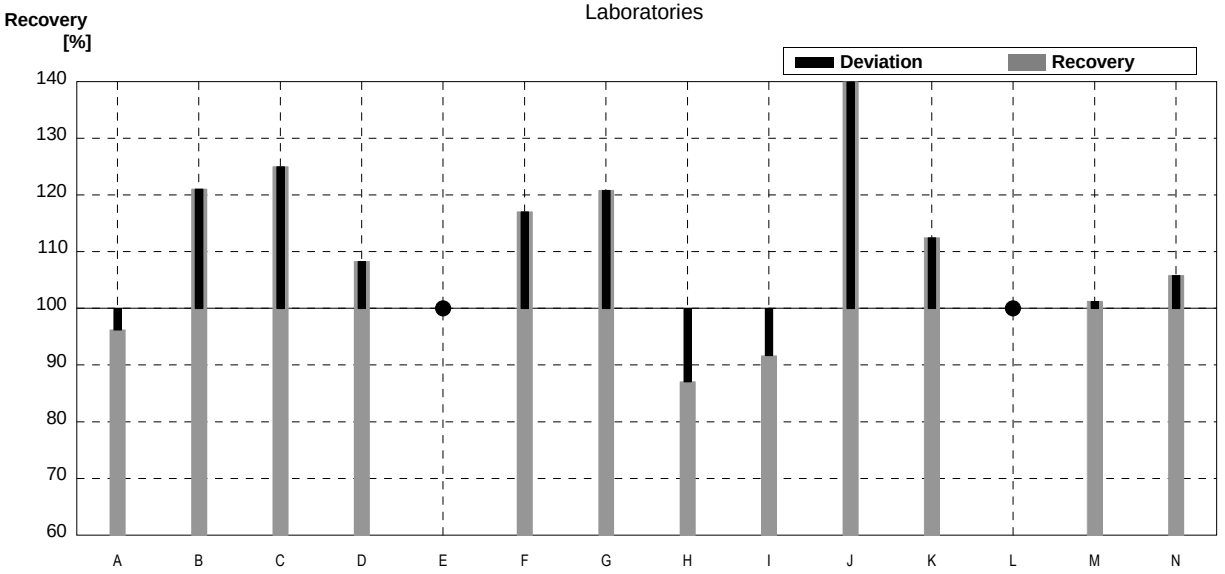
Sample C58B

Parameter Dibromochloromethane

Target value ± U (k=2)	0,24	µg/l	±	0,02	µg/l
IFA result ± U (k=2)	0,26	µg/l	±	0,04	µg/l
Stability test ± U (k=2)	0,24	µg/l	±	0,04	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,231	0,046	µg/l	96%	-0,27
B	0,29064	0,0581	µg/l	121%	1,51
C	0,3		µg/l	125%	1,79
D	0,26	0,05	µg/l	108%	0,60
E	<0,58		µg/l	•	
F	0,281	0,042	µg/l	117%	1,22
G	0,29	0,02	µg/l	121%	1,49
H	0,209	0,080	µg/l	87%	-0,92
I	0,22	0,03	µg/l	92%	-0,60
J	0,905 *		µg/l	377%	19,79
K	0,27	0,06	µg/l	113%	0,89
L	<0,5		µg/l	•	
M	0,243	0,063	µg/l	101%	0,09
N	0,254	0,007	µg/l	106%	0,42





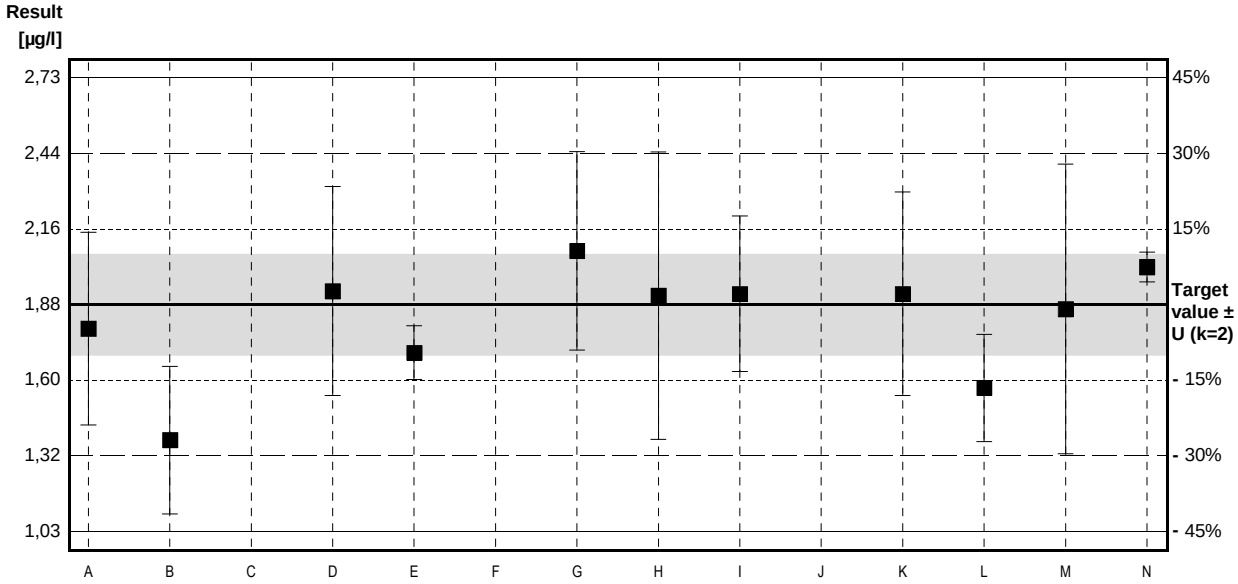
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,31 ± 0,17	0,26 ± 0,03	µg/l
Recov. ± CI(99%)	130,3 ± 70,6	107,9 ± 12,2	%
SD between labs	0,19	0,03	µg/l
RSD between labs	60,3	11,8	%
n for calculation	12	11	

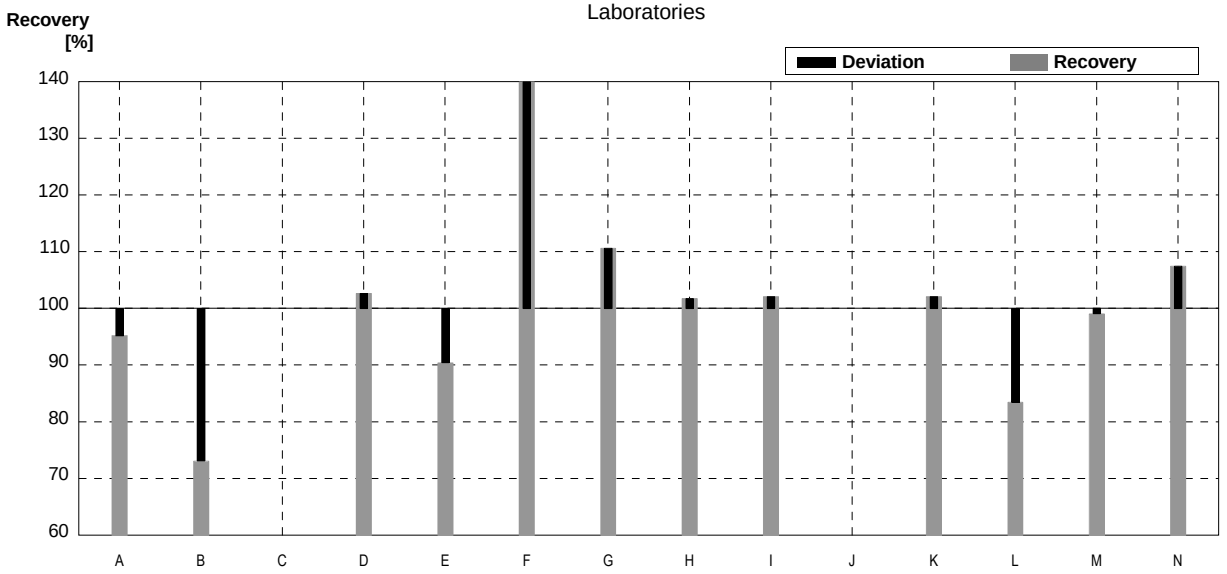
Sample C58A

Parameter Dichloromethane

Target value	± U (k=2)	1,88 µg/l	±	0,19 µg/l	
IFA result	± U (k=2)	1,91 µg/l	±	0,29 µg/l	
Stability test	± U (k=2)	1,84 µg/l	±	0,28 µg/l	

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,79	0,36	µg/l	95%	-0,37
B	1,37450	0,2749	µg/l	73%	-2,07
C			µg/l		
D	1,93	0,39	µg/l	103%	0,20
E	1,7	0,1	µg/l	90%	-0,74
F	2,763 *	0,414	µg/l	147%	3,61
G	2,08	0,37	µg/l	111%	0,82
H	1,913	0,536	µg/l	102%	0,14
I	1,92	0,29	µg/l	102%	0,16
J			µg/l		
K	1,92	0,38	µg/l	102%	0,16
L	1,569	0,2	µg/l	83%	-1,27
M	1,863	0,54	µg/l	99%	-0,07
N	2,02	0,056	µg/l	107%	0,57





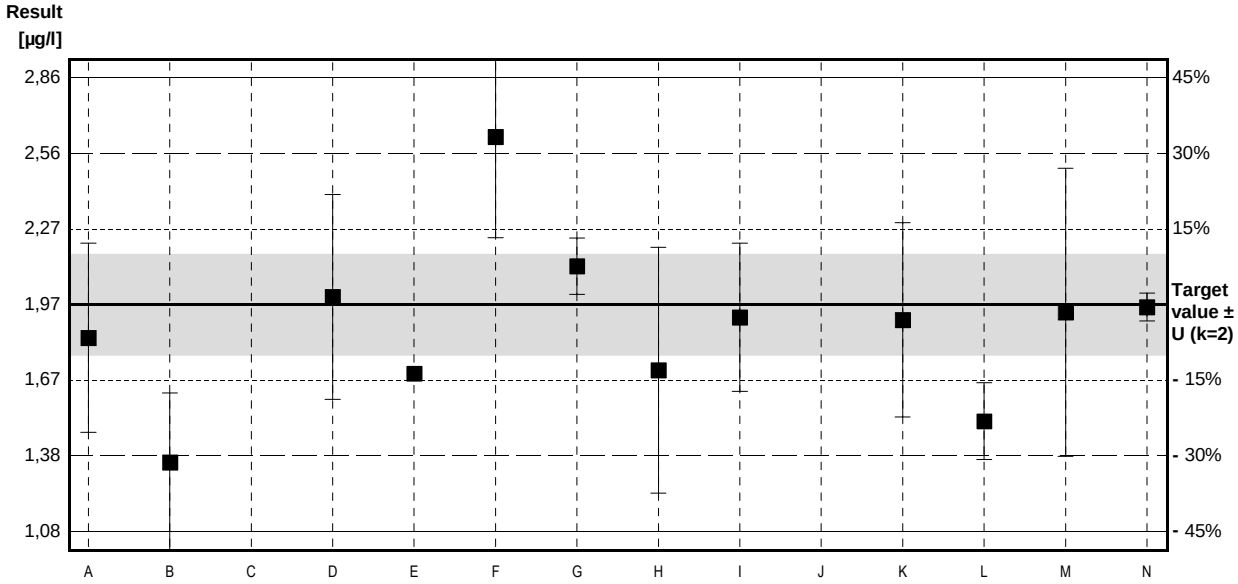
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,90 ± 0,30	1,83 ± 0,20	µg/l
Recov. ± CI(99%)	101,3 ± 16,0	97,1 ± 10,5	%
SD between labs	0,33	0,21	µg/l
RSD between labs	17,6	11,3	%
n for calculation	12	11	

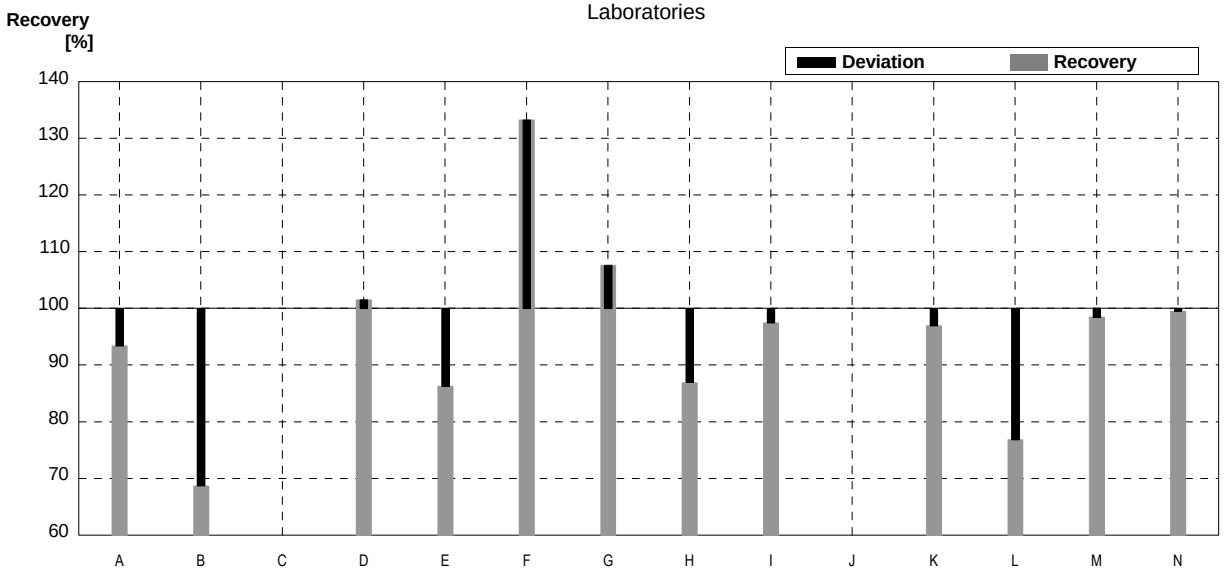
Sample C58B

Parameter Dichloromethane

Target value	± U (k=2)	1,97	µg/l	±	0,20 µg/l
IFA result	± U (k=2)	1,87	µg/l	±	0,28 µg/l
Stability test	± U (k=2)	1,91	µg/l	±	0,29 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,84	0,37	µg/l	93%	-0,51
B	1,35340	0,2707	µg/l	69%	-2,41
C			µg/l		
D	2,00	0,40	µg/l	102%	0,12
E	1,7		µg/l	86%	-1,05
F	2,625 *	0,394	µg/l	133%	2,56
G	2,12	0,11	µg/l	108%	0,59
H	1,713	0,480	µg/l	87%	-1,00
I	1,92	0,29	µg/l	97%	-0,20
J			µg/l		
K	1,91	0,38	µg/l	97%	-0,23
L	1,514	0,15	µg/l	77%	-1,78
M	1,940	0,563	µg/l	98%	-0,12
N	1,96	0,055	µg/l	99%	-0,04





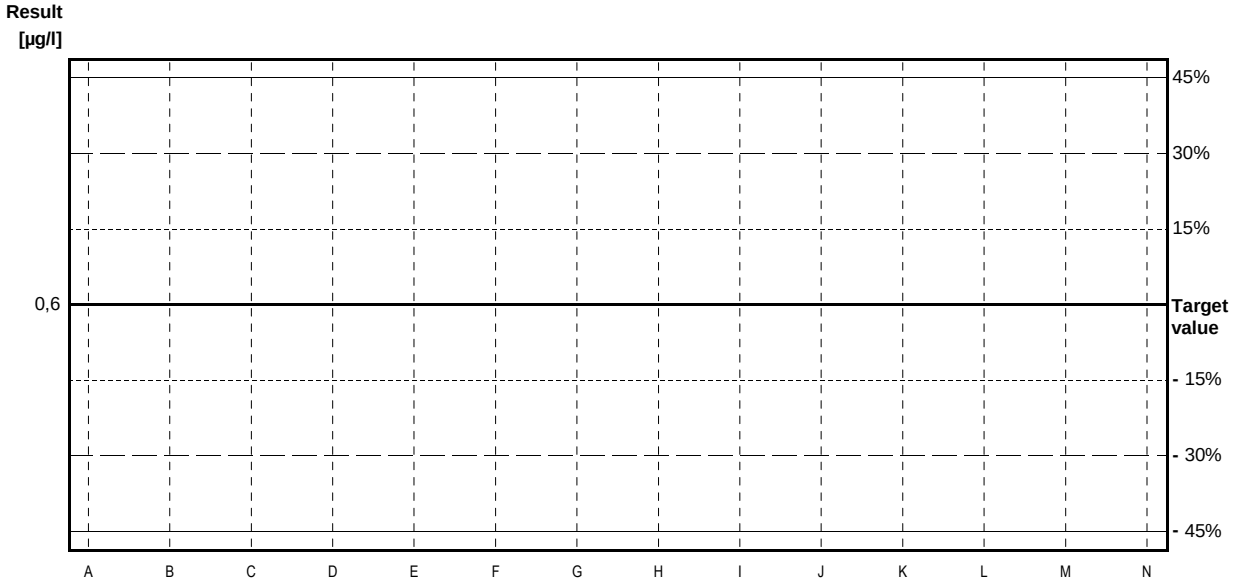
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,88 ± 0,29	1,82 ± 0,22	µg/l
Recov. ± CI(99%)	95,6 ± 14,5	92,2 ± 11,0	%
SD between labs	0,32	0,23	µg/l
RSD between labs	16,9	12,5	%
n for calculation	12	11	

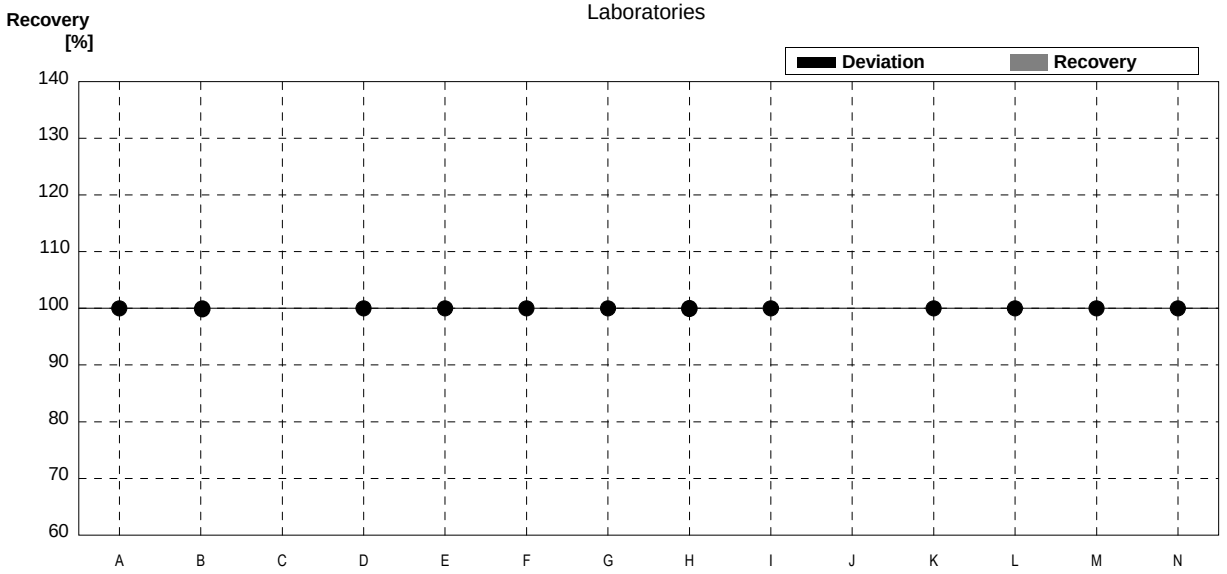
Sample C58A

Parameter 1,2-Dichloroethane

Target value		<0,6	µg/l		
IFA result	± U (k=2)	0,40	µg/l	±	0,06 µg/l
Stability test	± U (k=2)	0,34	µg/l	±	0,05 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,388	0,078	µg/l	•	
B	0,85032	0,1700	µg/l	•	
C			µg/l		
D	0,54	0,11	µg/l	•	
E	0,4		µg/l	•	
F	0,392	0,059	µg/l	•	
G	0,45	0,03	µg/l	•	
H	0,626	0,257	µg/l	•	
I	0,49	0,07	µg/l	•	
J			µg/l		
K	0,40	0,08	µg/l	•	
L	0,325	0,05	µg/l	•	
M	0,394	0,134	µg/l	•	
N	0,436	0,010	µg/l	•	





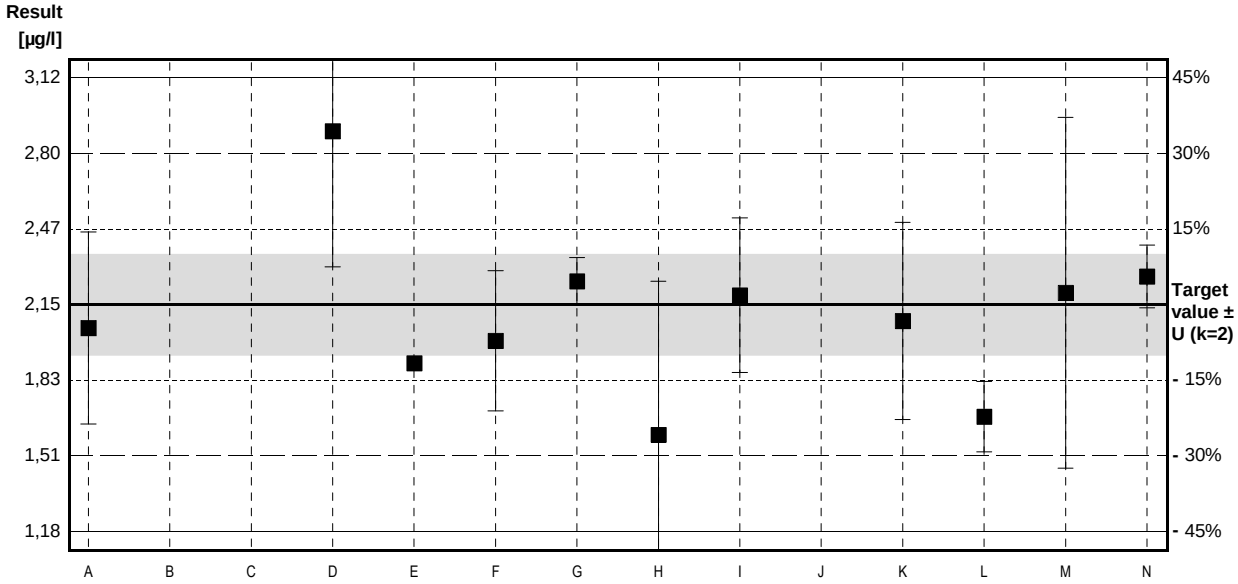
	All results	Outliers excl.	Unit
Mean ± CI(99%)			µg/l
Recov. ± CI(99%)			%
SD between labs			µg/l
RSD between labs			%
n for calculation			

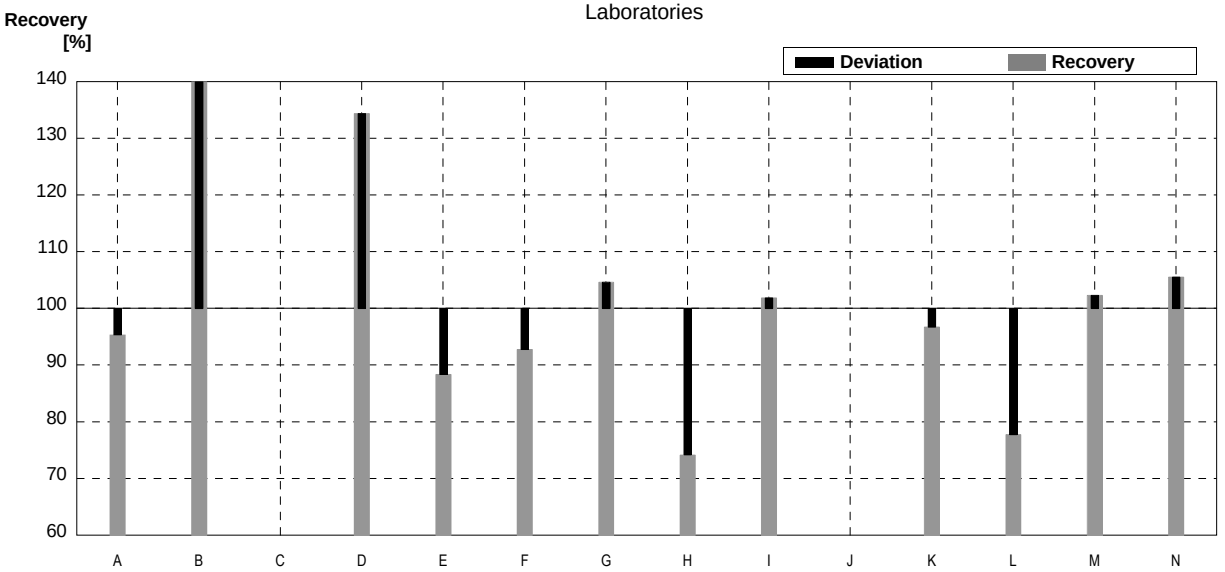
Sample C58B

Parameter 1,2-Dichloroethane

Target value ± U (k=2)	2,15	µg/l	±	0,22	µg/l
IFA result ± U (k=2)	2,07	µg/l	±	0,31	µg/l
Stability test ± U (k=2)	2,16	µg/l	±	0,32	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	2,05	0,41	µg/l	95%	-0,33
B	4,72085 *	0,9442	µg/l	220%	8,54
C			µg/l		
D	2,89 *	0,58	µg/l	134%	2,46
E	1,9		µg/l	88%	-0,83
F	1,995	0,299	µg/l	93%	-0,51
G	2,25	0,10	µg/l	105%	0,33
H	1,595	0,654	µg/l	74%	-1,84
I	2,19	0,33	µg/l	102%	0,13
J			µg/l		
K	2,08	0,42	µg/l	97%	-0,23
L	1,672	0,15	µg/l	78%	-1,59
M	2,200	0,748	µg/l	102%	0,17
N	2,27	0,134	µg/l	106%	0,40





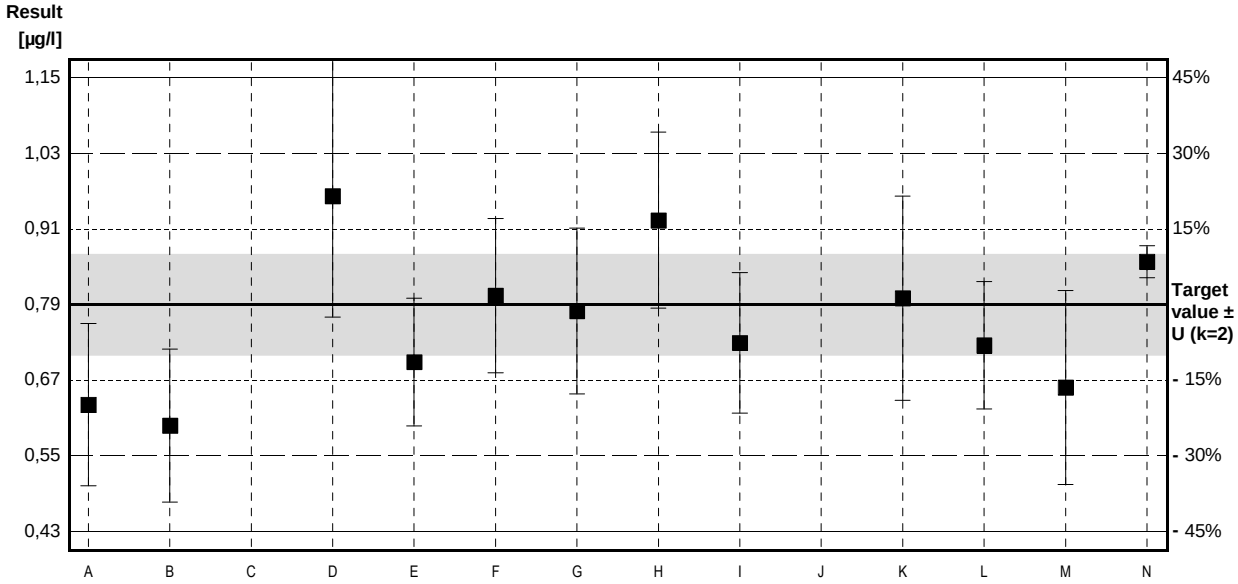
	All results	Outliers excl.	Unit
Mean ± CI(99%)	2,32 ± 0,74	2,02 ± 0,24	µg/l
Recov. ± CI(99%)	107,8 ± 34,4	94,0 ± 11,3	%
SD between labs	0,82	0,24	µg/l
RSD between labs	35,6	11,6	%
n for calculation	12	10	

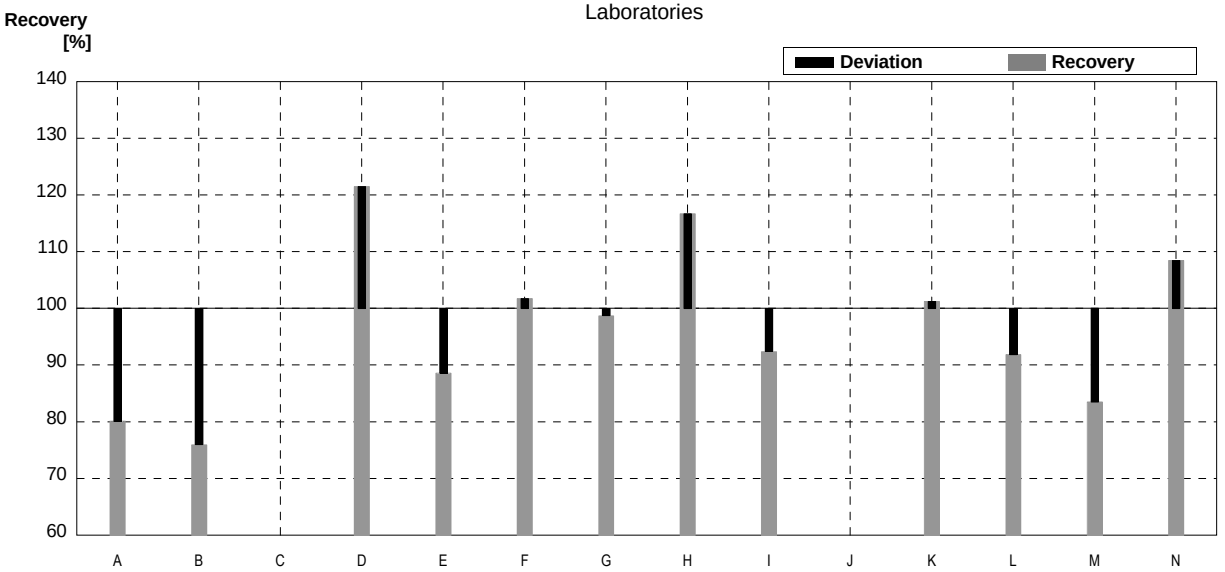
Sample C58A

Parameter cis-1,2-Dichloroethene

Target value	± U (k=2)	0,79	µg/l	±	0,08 µg/l
IFA result	± U (k=2)	0,82	µg/l	±	0,12 µg/l
Stability test	± U (k=2)	0,85	µg/l	±	0,13 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,633	0,127	µg/l	80%	-1,42
B	0,60026	0,1201	µg/l	76%	-1,72
C			µg/l		
D	0,96	0,19	µg/l	122%	1,54
E	0,7	0,1	µg/l	89%	-0,81
F	0,804	0,121	µg/l	102%	0,13
G	0,78	0,13	µg/l	99%	-0,09
H	0,922	0,138	µg/l	117%	1,19
I	0,73	0,11	µg/l	92%	-0,54
J			µg/l		
K	0,80	0,16	µg/l	101%	0,09
L	0,726	0,1	µg/l	92%	-0,58
M	0,660	0,152	µg/l	84%	-1,18
N	0,857	0,025	µg/l	108%	0,61





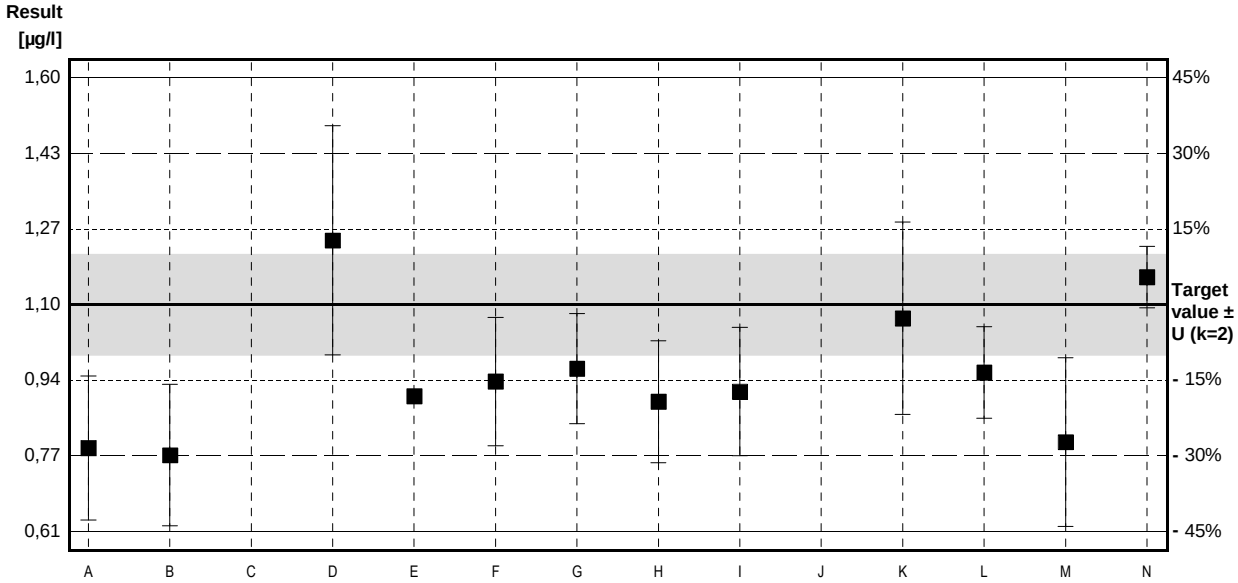
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,76 ± 0,10	0,76 ± 0,10	µg/l
Recov. ± CI(99%)	96,8 ± 12,7	96,8 ± 12,7	%
SD between labs	0,11	0,11	µg/l
RSD between labs	14,6	14,6	%
n for calculation	12	12	

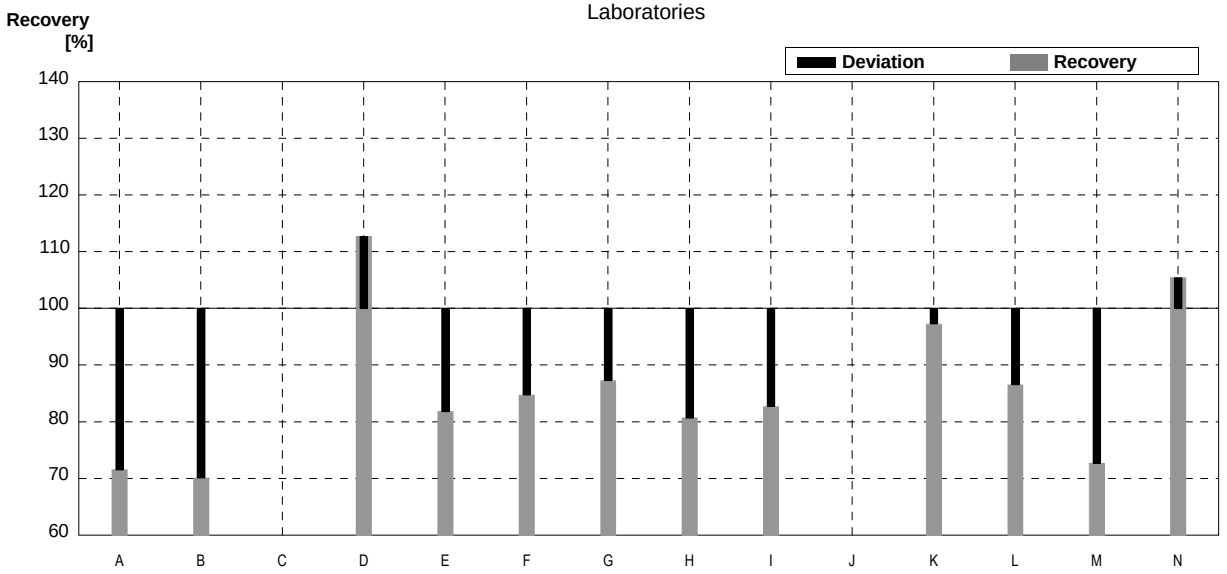
Sample C58B

Parameter cis-1,2-Dichloroethene

Target value	± U (k=2)	1,10	µg/l	±	0,11 µg/l
IFA result	± U (k=2)	1,04	µg/l	±	0,16 µg/l
Stability test	± U (k=2)	1,11	µg/l	±	0,17 µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,787	0,157	µg/l	72%	-2,03
B	0,77124	0,1542	µg/l	70%	-2,13
C			µg/l		
D	1,24	0,25	µg/l	113%	0,91
E	0,9		µg/l	82%	-1,30
F	0,932	0,140	µg/l	85%	-1,09
G	0,96	0,12	µg/l	87%	-0,91
H	0,888	0,133	µg/l	81%	-1,38
I	0,91	0,14	µg/l	83%	-1,23
J			µg/l		
K	1,07	0,21	µg/l	97%	-0,19
L	0,952	0,1	µg/l	87%	-0,96
M	0,800	0,184	µg/l	73%	-1,95
N	1,16	0,067	µg/l	105%	0,39





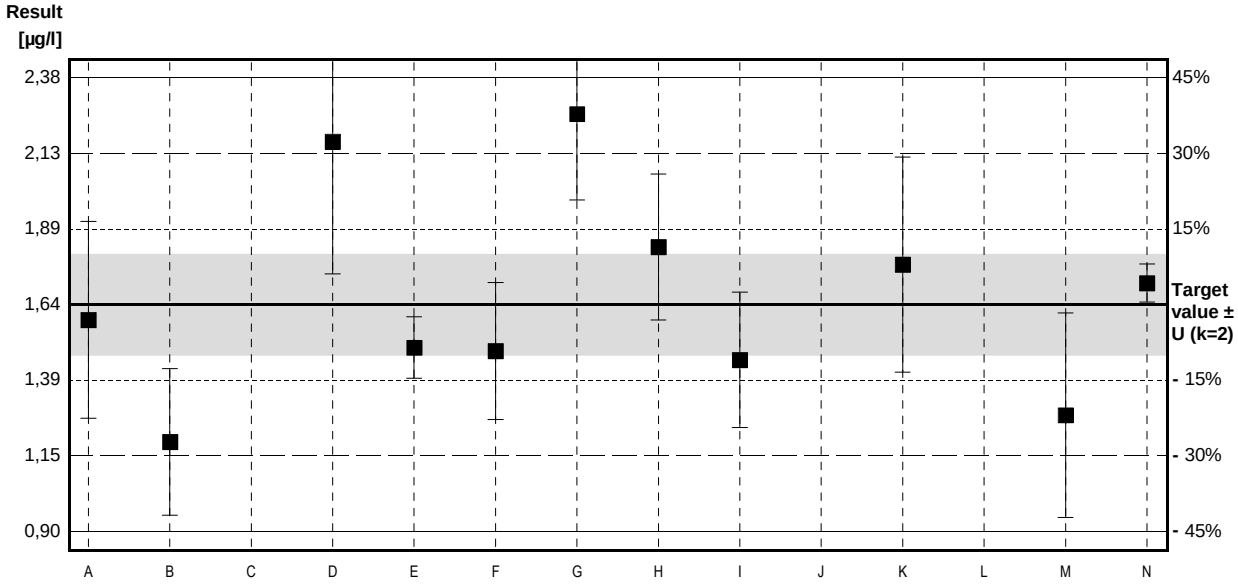
	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,95 ± 0,13	0,95 ± 0,13	µg/l
Recov. ± CI(99%)	86,1 ± 11,9	86,1 ± 11,9	%
SD between labs	0,15	0,15	µg/l
RSD between labs	15,3	15,3	%
n for calculation	12	12	

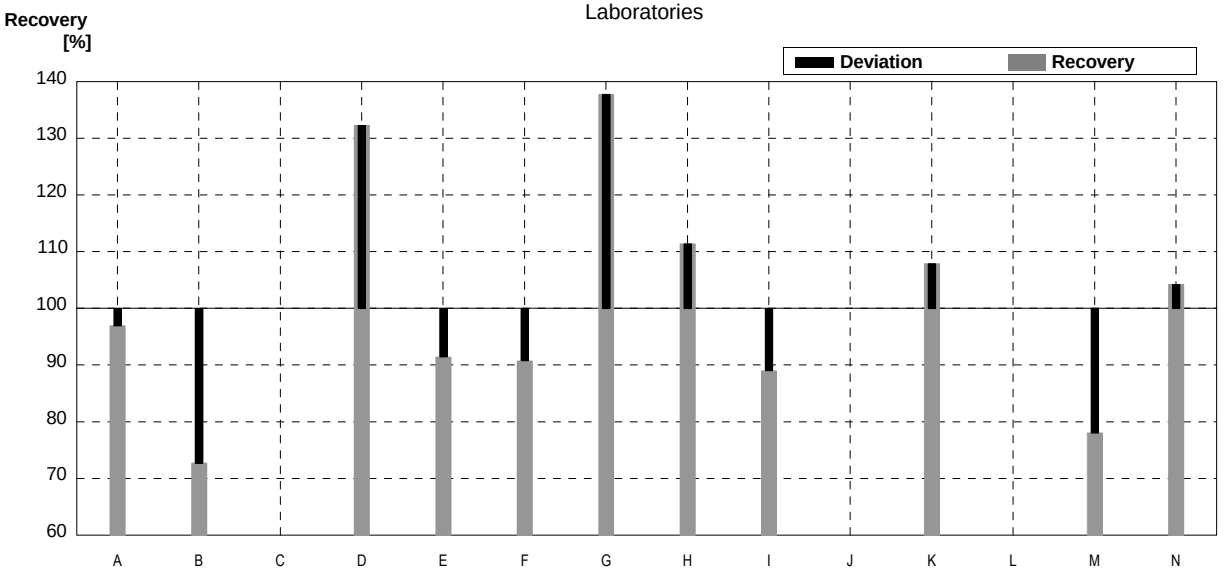
Sample C58A

Parameter trans-1,2-Dichloroethene

Target value ± U (k=2)	1,64	µg/l	±	0,16	µg/l
IFA result ± U (k=2)	1,62	µg/l	±	0,24	µg/l
Stability test ± U (k=2)	1,63	µg/l	±	0,24	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	1,59	0,32	µg/l	97%	-0,23
B	1,19312	0,2386	µg/l	73%	-2,10
C			µg/l		
D	2,17	0,43	µg/l	132%	2,49
E	1,5	0,1	µg/l	91%	-0,66
F	1,489	0,223	µg/l	91%	-0,71
G	2,26	0,28	µg/l	138%	2,91
H	1,827	0,237	µg/l	111%	0,88
I	1,46	0,22	µg/l	89%	-0,84
J			µg/l		
K	1,77	0,35	µg/l	108%	0,61
L			µg/l		
M	1,280	0,333	µg/l	78%	-1,69
N	1,71	0,062	µg/l	104%	0,33





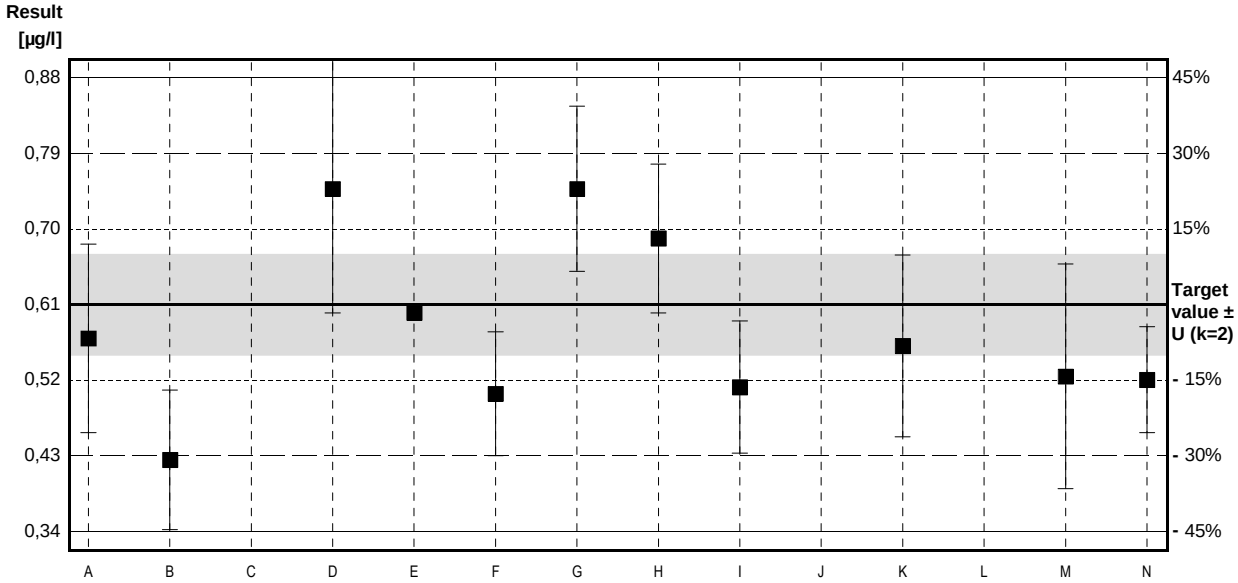
	All results	Outliers excl.	Unit
Mean ± CI(99%)	1,66 ± 0,32	1,66 ± 0,32	µg/l
Recov. ± CI(99%)	101,2 ± 19,5	101,2 ± 19,5	%
SD between labs	0,34	0,34	µg/l
RSD between labs	20,2	20,2	%
n for calculation	11	11	

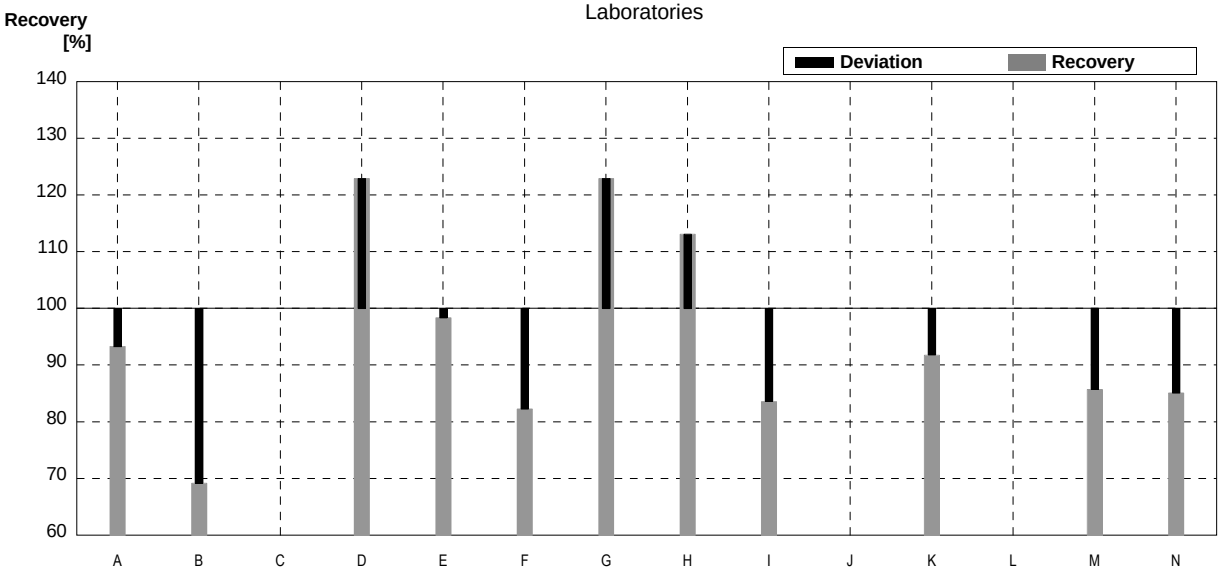
Sample C58B

Parameter trans-1,2-Dichloroethene

Target value ± U (k=2)	0,61	µg/l	±	0,06	µg/l
IFA result ± U (k=2)	0,57	µg/l	±	0,09	µg/l
Stability test ± U (k=2)	0,55	µg/l	±	0,08	µg/l

Lab Code	Result	±	Unit	Recovery	z-Score
A	0,569	0,114	µg/l	93%	-0,52
B	0,42207	0,0844	µg/l	69%	-2,37
C			µg/l		
D	0,75	0,15	µg/l	123%	1,77
E	0,6		µg/l	98%	-0,13
F	0,502	0,075	µg/l	82%	-1,36
G	0,75	0,10	µg/l	123%	1,77
H	0,690	0,090	µg/l	113%	1,01
I	0,51	0,08	µg/l	84%	-1,26
J			µg/l		
K	0,56	0,11	µg/l	92%	-0,63
L			µg/l		
M	0,523	0,136	µg/l	86%	-1,10
N	0,519	0,064	µg/l	85%	-1,15





	All results	Outliers excl.	Unit
Mean ± CI(99%)	0,58 ± 0,10	0,58 ± 0,10	µg/l
Recov. ± CI(99%)	95,3 ± 16,7	95,3 ± 16,7	%
SD between labs	0,11	0,11	µg/l
RSD between labs	18,3	18,3	%
n for calculation	11	11	

Illustration of Results
Laboratory Oriented Part

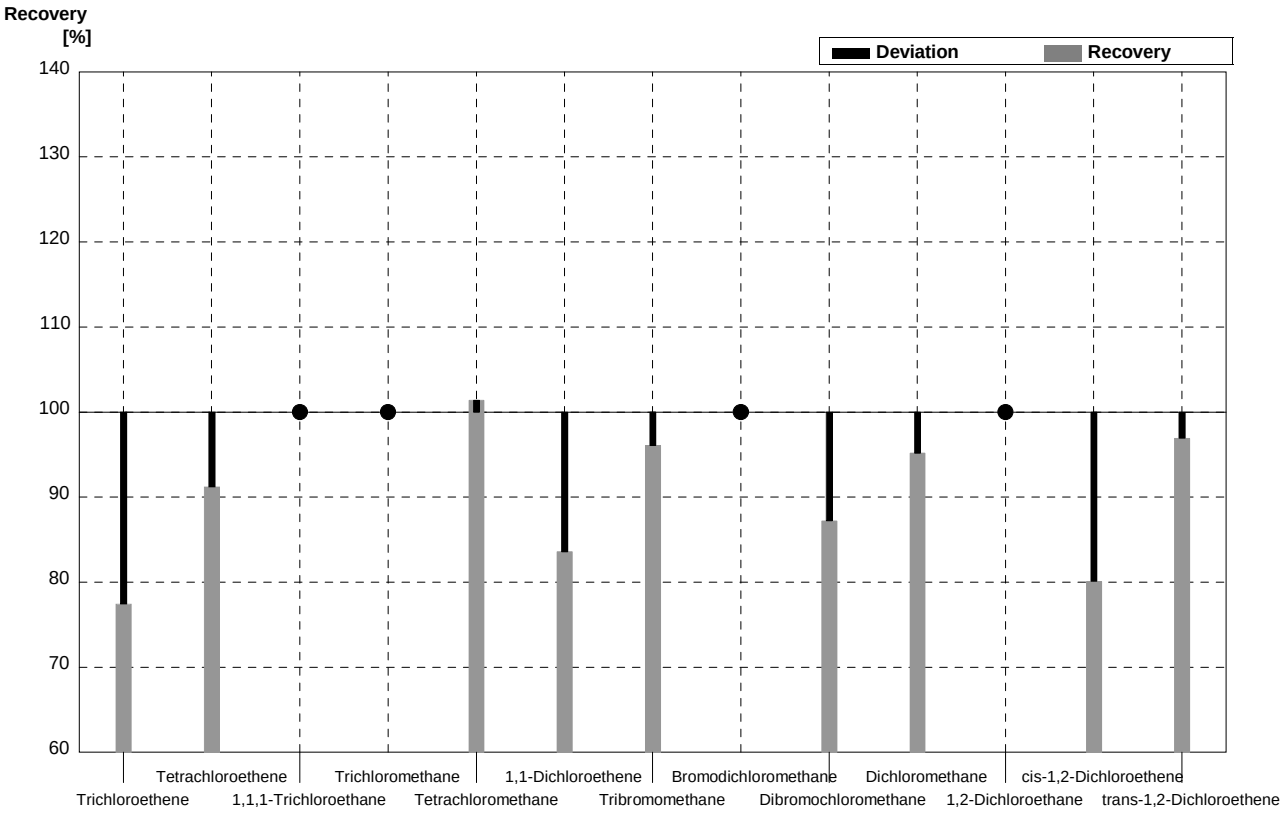
Round C58
Volatile Halogenated Hydrocarbons

Sample Dispatch: 12 February 2018

IFA
TULLN

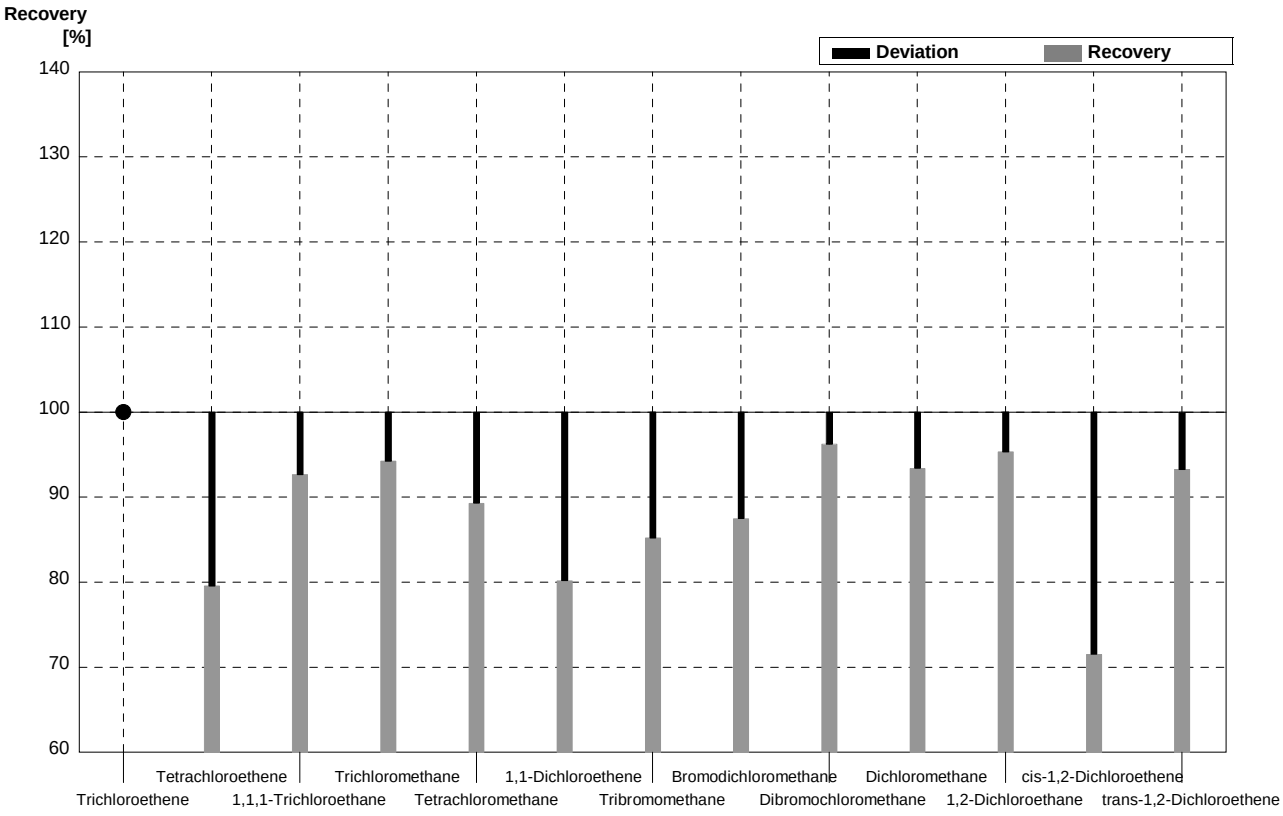
Sample C58A
Laboratory A

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	0,852	0,172	µg/l	77%
Tetrachloroethene	0,49	0,05	0,447	0,089	µg/l	91%
1,1,1-Trichloroethane	<0,08		<0,02		µg/l	•
Trichloromethane	<0,14		0,022	0,004	µg/l	•
Tetrachloromethane	0,35	0,04	0,355	0,071	µg/l	101%
1,1-Dichloroethene	0,50	0,05	0,418	0,084	µg/l	84%
Tribromomethane	0,41	0,04	0,394	0,079	µg/l	96%
Bromodichloromethane	<0,5		0,326	0,065	µg/l	•
Dibromochloromethane	1,09	0,11	0,951	0,190	µg/l	87%
Dichloromethane	1,88	0,19	1,79	0,36	µg/l	95%
1,2-Dichloroethane	<0,6		0,388	0,078	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,633	0,127	µg/l	80%
trans-1,2-Dichloroethene	1,64	0,16	1,59	0,32	µg/l	97%



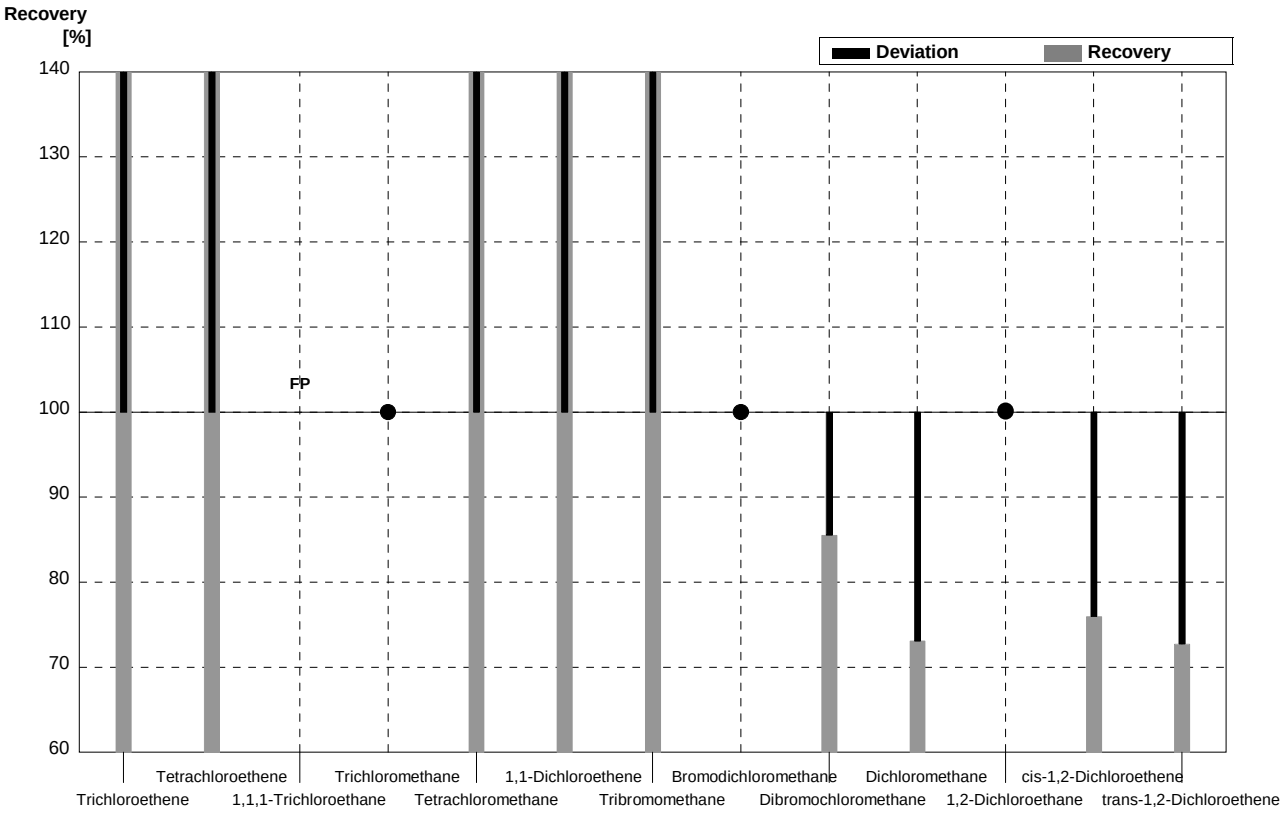
Sample C58B
Laboratory A

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,02		µg/l	•
Tetrachloroethene	1,47	0,15	1,17	0,23	µg/l	80%
1,1,1-Trichloroethane	0,45	0,05	0,417	0,083	µg/l	93%
Trichloromethane	0,40	0,04	0,377	0,075	µg/l	94%
Tetrachloromethane	1,31	0,13	1,17	0,23	µg/l	89%
1,1-Dichloroethene	2,02	0,20	1,62	0,32	µg/l	80%
Tribromomethane	0,92	0,09	0,784	0,157	µg/l	85%
Bromodichloromethane	1,36	0,14	1,19	0,24	µg/l	88%
Dibromochloromethane	0,24	0,02	0,231	0,046	µg/l	96%
Dichloromethane	1,97	0,20	1,84	0,37	µg/l	93%
1,2-Dichloroethane	2,15	0,22	2,05	0,41	µg/l	95%
cis-1,2-Dichloroethene	1,10	0,11	0,787	0,157	µg/l	72%
trans-1,2-Dichloroethene	0,61	0,06	0,569	0,114	µg/l	93%



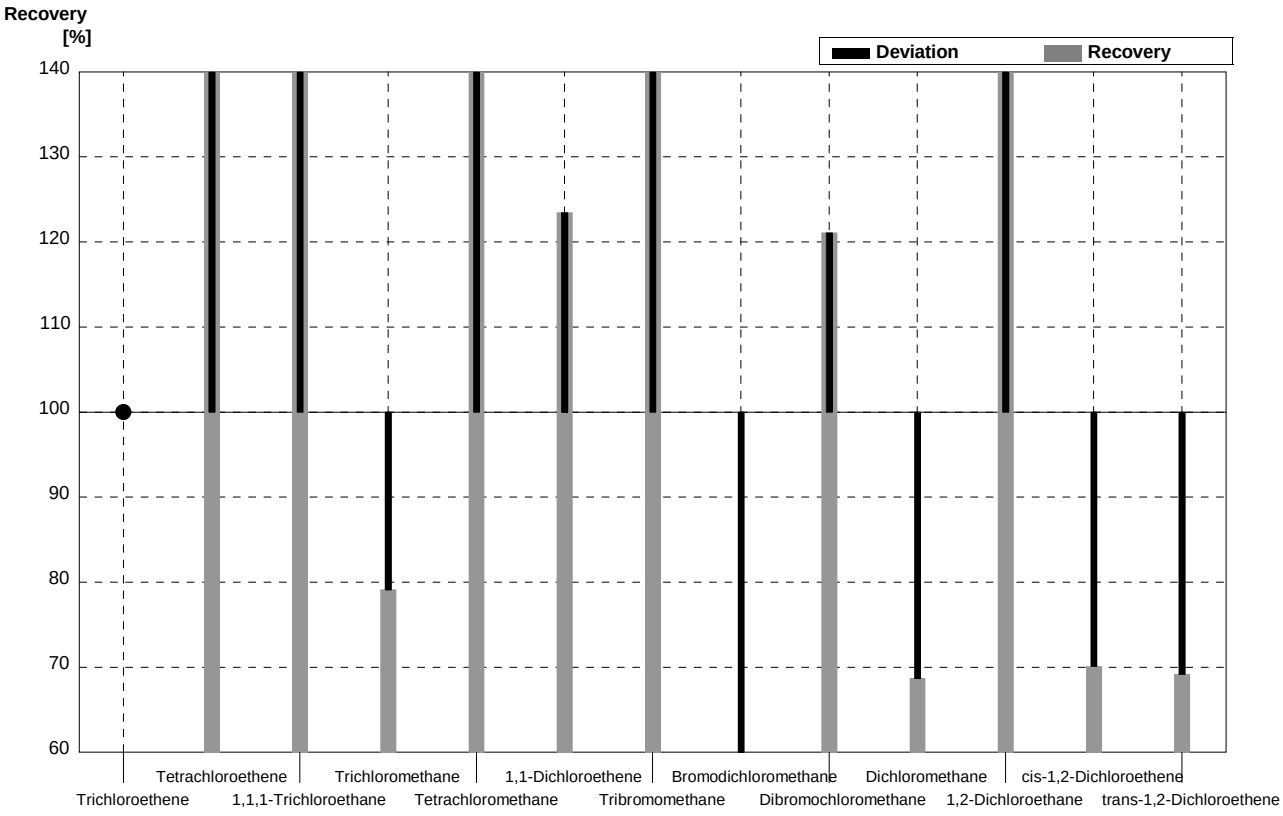
Sample C58A
Laboratory B

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	4,02197	0,8044	µg/l	366%
Tetrachloroethene	0,49	0,05	1,50676	0,3014	µg/l	308%
1,1,1-Trichloroethane	<0,08		0,14900	0,0298	µg/l	FP
Trichloromethane	<0,14		0,09541	0,0190	µg/l	•
Tetrachloromethane	0,35	0,04	1,67295	0,3346	µg/l	478%
1,1-Dichloroethene	0,50	0,05	0,76915	0,1538	µg/l	154%
Tribromomethane	0,41	0,04	1,35140	0,2703	µg/l	330%
Bromodichloromethane	<0,5		0,14900	0,0298	µg/l	•
Dibromochloromethane	1,09	0,11	0,93249	0,1865	µg/l	86%
Dichloromethane	1,88	0,19	1,37450	0,2749	µg/l	73%
1,2-Dichloroethane	<0,6		0,85032	0,1700	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,60026	0,1201	µg/l	76%
trans-1,2-Dichloroethene	1,64	0,16	1,19312	0,2386	µg/l	73%



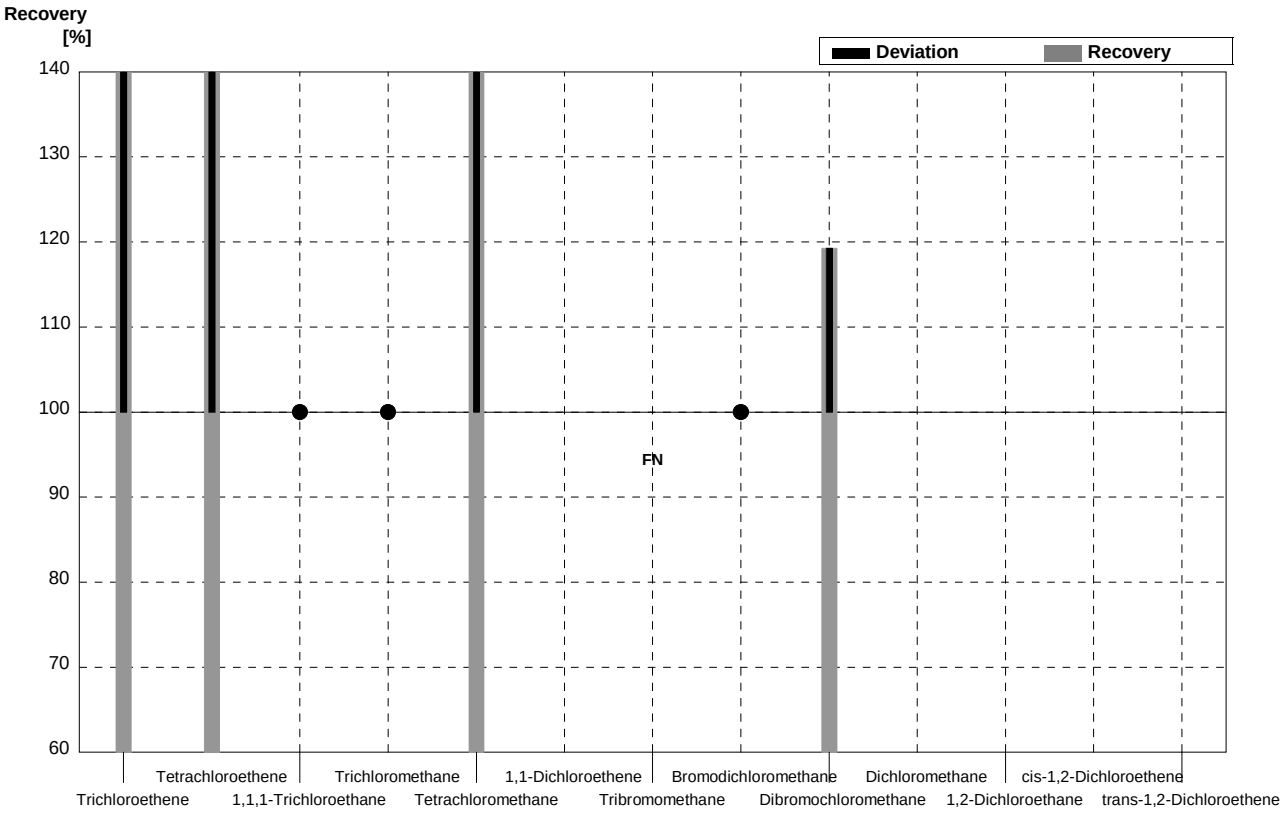
Sample C58B
Laboratory B

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,05		µg/l	•
Tetrachloroethene	1,47	0,15	3,74518	0,7490	µg/l	255%
1,1,1-Trichloroethane	0,45	0,05	1,73497	0,3469	µg/l	386%
Trichloromethane	0,40	0,04	0,31645	0,0632	µg/l	79%
Tetrachloromethane	1,31	0,13	6,04887	1,2098	µg/l	462%
1,1-Dichloroethene	2,02	0,20	2,49414	0,4988	µg/l	123%
Tribromomethane	0,92	0,09	2,28758	0,4575	µg/l	249%
Bromodichloromethane	1,36	0,14	0,81304	0,1626	µg/l	60%
Dibromochloromethane	0,24	0,02	0,29064	0,0581	µg/l	121%
Dichloromethane	1,97	0,20	1,35340	0,2707	µg/l	69%
1,2-Dichloroethane	2,15	0,22	4,72085	0,9442	µg/l	220%
cis-1,2-Dichloroethene	1,10	0,11	0,77124	0,1542	µg/l	70%
trans-1,2-Dichloroethene	0,61	0,06	0,42207	0,0844	µg/l	69%



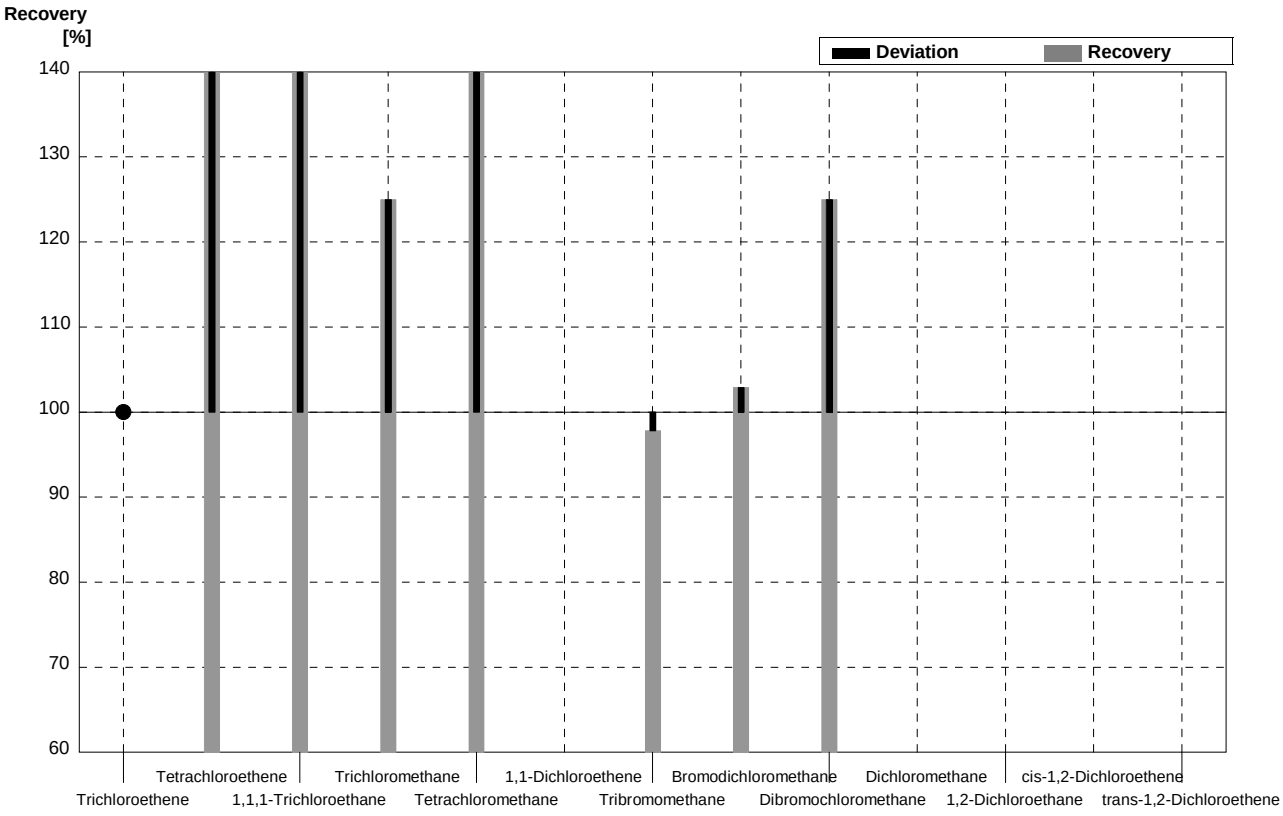
Sample C58A
Laboratory C

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	1,7		µg/l	155%
Tetrachloroethene	0,49	0,05	1,2		µg/l	245%
1,1,1-Trichloroethane	<0,08		<0,1		µg/l	•
Trichloromethane	<0,14		<0,2		µg/l	•
Tetrachloromethane	0,35	0,04	0,8		µg/l	229%
1,1-Dichloroethene	0,50	0,05			µg/l	
Tribromomethane	0,41	0,04	<0,2		µg/l	FN
Bromodichloromethane	<0,5		0,4		µg/l	•
Dibromochloromethane	1,09	0,11	1,3		µg/l	119%
Dichloromethane	1,88	0,19			µg/l	
1,2-Dichloroethane	<0,6				µg/l	
cis-1,2-Dichloroethene	0,79	0,08			µg/l	
trans-1,2-Dichloroethene	1,64	0,16			µg/l	



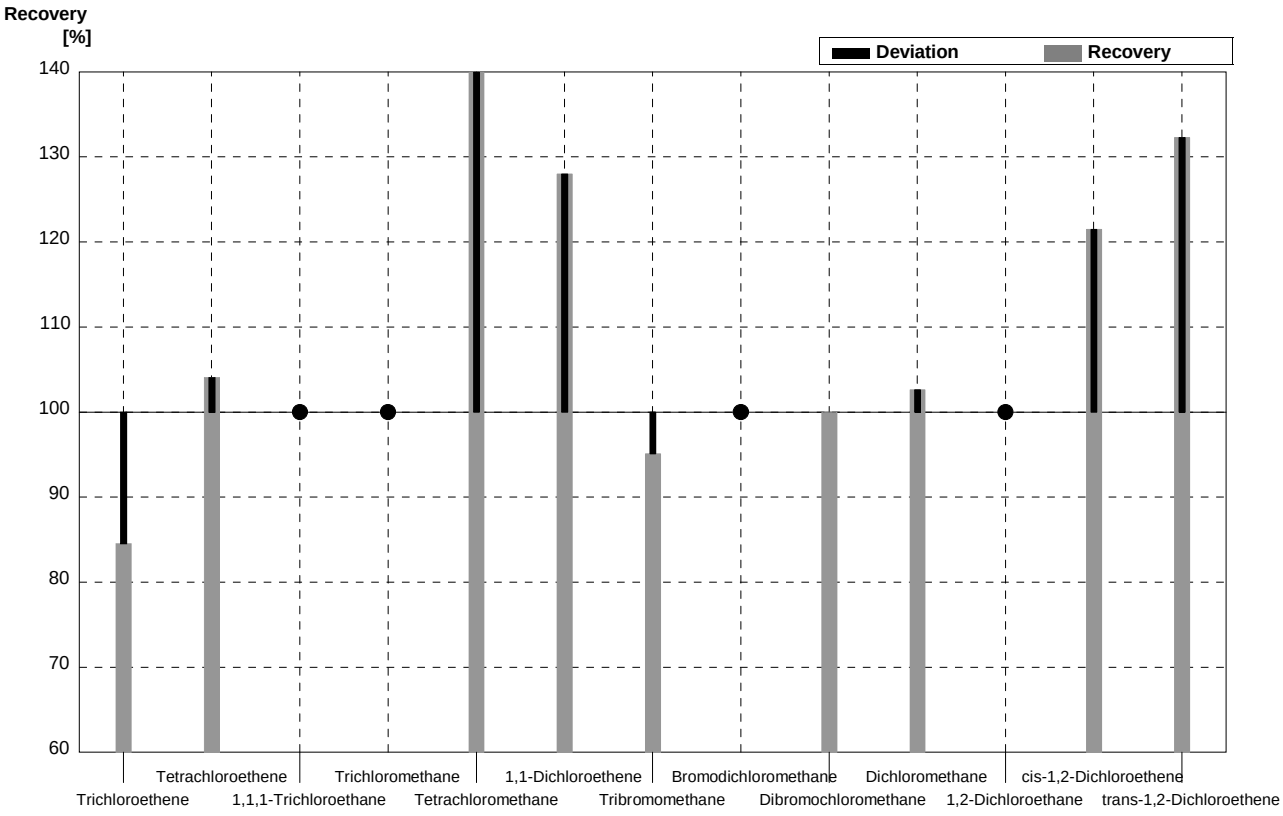
Sample C58B
Laboratory C

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,2		µg/l	•
Tetrachloroethene	1,47	0,15	2,9		µg/l	197%
1,1,1-Trichloroethane	0,45	0,05	0,8		µg/l	178%
Trichloromethane	0,40	0,04	0,5		µg/l	125%
Tetrachloromethane	1,31	0,13	2,3		µg/l	176%
1,1-Dichloroethene	2,02	0,20			µg/l	
Tribromomethane	0,92	0,09	0,9		µg/l	98%
Bromodichloromethane	1,36	0,14	1,4		µg/l	103%
Dibromochloromethane	0,24	0,02	0,3		µg/l	125%
Dichloromethane	1,97	0,20			µg/l	
1,2-Dichloroethane	2,15	0,22			µg/l	
cis-1,2-Dichloroethene	1,10	0,11			µg/l	
trans-1,2-Dichloroethene	0,61	0,06			µg/l	



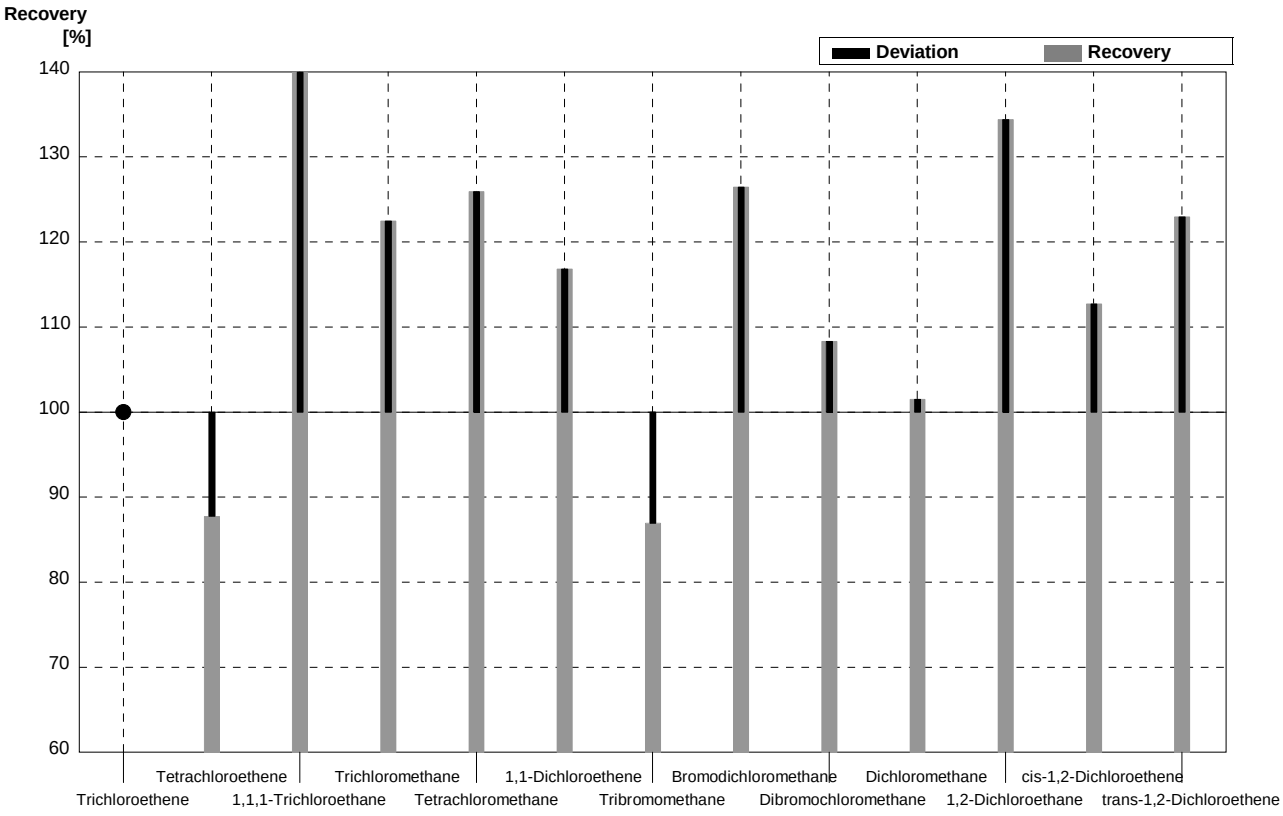
Sample C58A
Laboratory D

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	0,93	0,19	µg/l	85%
Tetrachloroethene	0,49	0,05	0,51	0,10	µg/l	104%
1,1,1-Trichloroethane	<0,08		<0,4		µg/l	•
Trichloromethane	<0,14		<0,04		µg/l	•
Tetrachloromethane	0,35	0,04	0,54	0,11	µg/l	154%
1,1-Dichloroethene	0,50	0,05	0,64	0,13	µg/l	128%
Tribromomethane	0,41	0,04	0,39	0,08	µg/l	95%
Bromodichloromethane	<0,5		0,46	0,09	µg/l	•
Dibromochloromethane	1,09	0,11	1,09	0,22	µg/l	100%
Dichloromethane	1,88	0,19	1,93	0,39	µg/l	103%
1,2-Dichloroethane	<0,6		0,54	0,11	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,96	0,19	µg/l	122%
trans-1,2-Dichloroethene	1,64	0,16	2,17	0,43	µg/l	132%



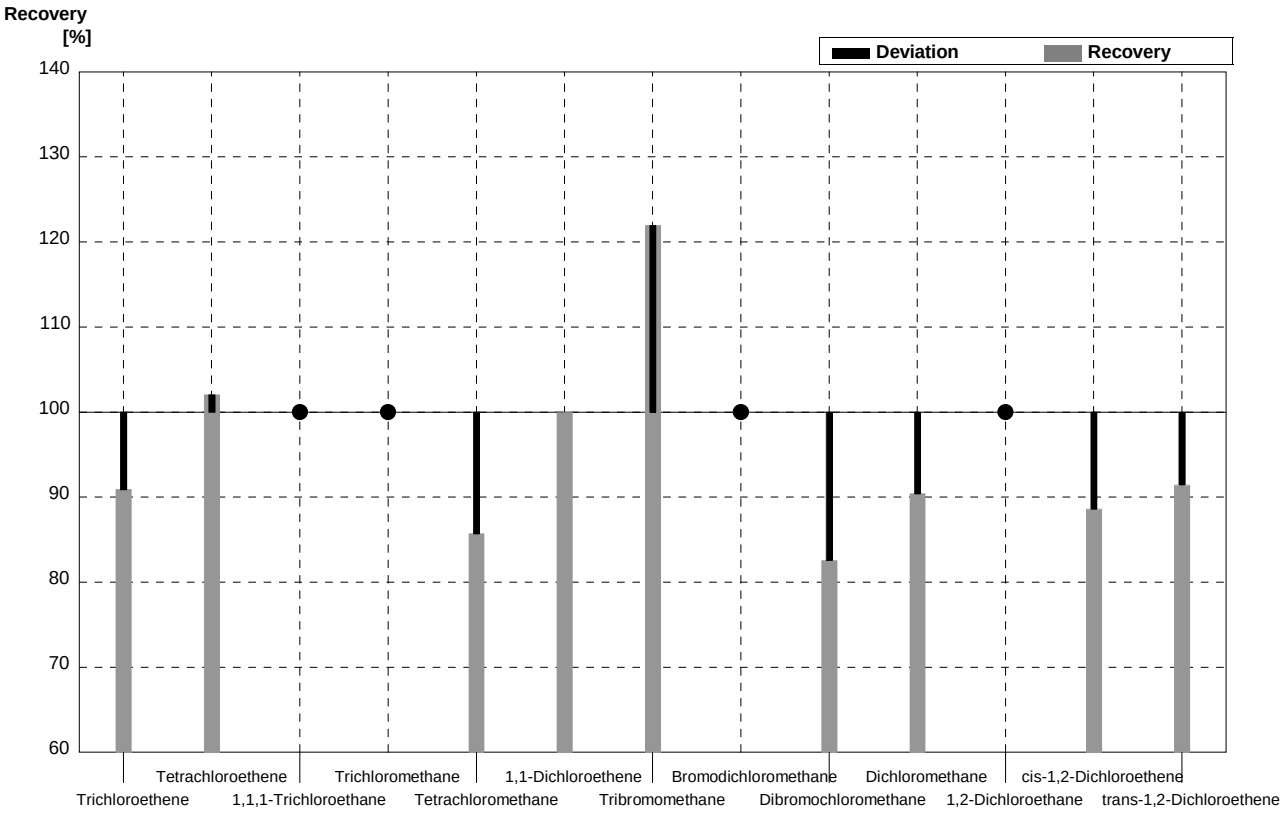
Sample C58B
Laboratory D

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,04		µg/l	•
Tetrachloroethene	1,47	0,15	1,29	0,26	µg/l	88%
1,1,1-Trichloroethane	0,45	0,05	0,65	0,13	µg/l	144%
Trichloromethane	0,40	0,04	0,49	0,10	µg/l	123%
Tetrachloromethane	1,31	0,13	1,65	0,33	µg/l	126%
1,1-Dichloroethene	2,02	0,20	2,36	0,47	µg/l	117%
Tribromomethane	0,92	0,09	0,80	0,16	µg/l	87%
Bromodichloromethane	1,36	0,14	1,72	0,34	µg/l	126%
Dibromochloromethane	0,24	0,02	0,26	0,05	µg/l	108%
Dichloromethane	1,97	0,20	2,00	0,40	µg/l	102%
1,2-Dichloroethane	2,15	0,22	2,89	0,58	µg/l	134%
cis-1,2-Dichloroethene	1,10	0,11	1,24	0,25	µg/l	113%
trans-1,2-Dichloroethene	0,61	0,06	0,75	0,15	µg/l	123%



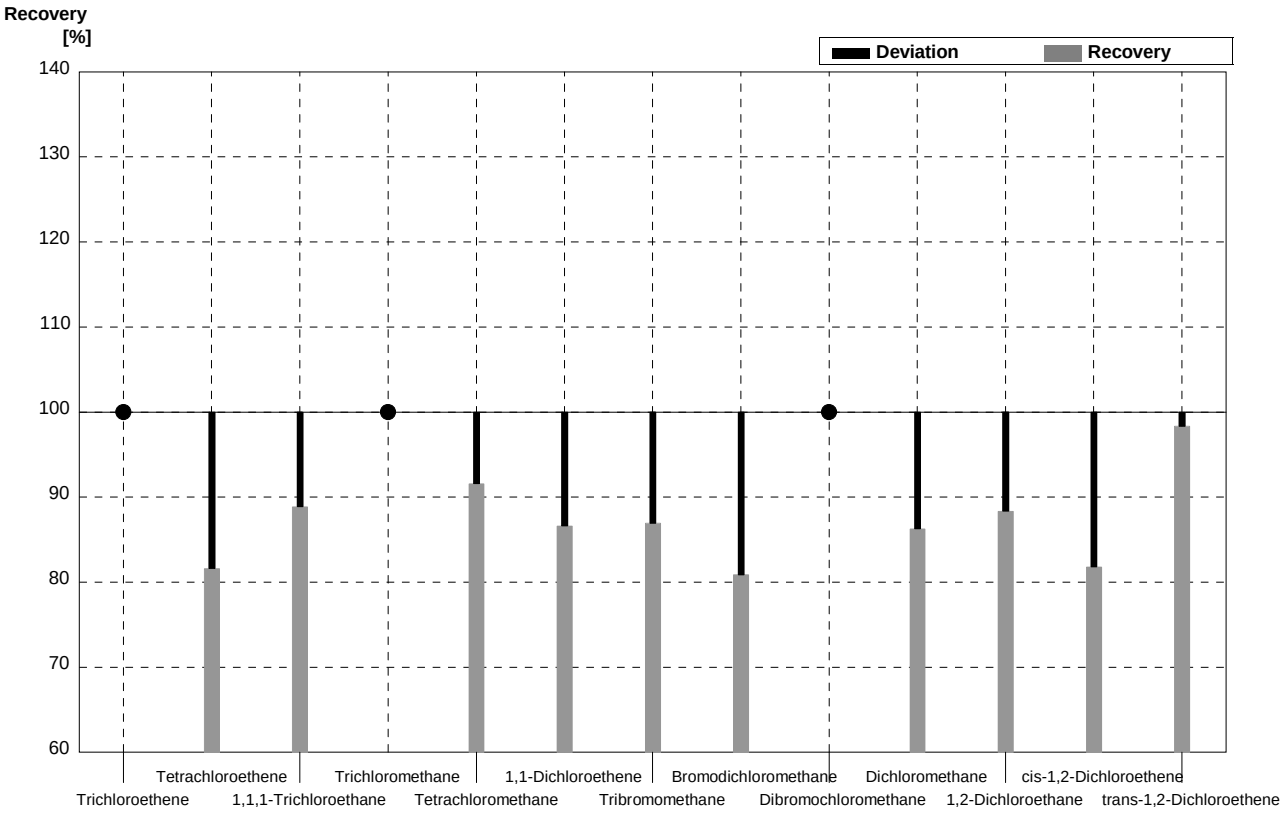
Sample C58A
Laboratory E

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	1,0	0,1	µg/l	91%
Tetrachloroethene	0,49	0,05	0,5		µg/l	102%
1,1,1-Trichloroethane	<0,08		<0,83		µg/l	•
Trichloromethane	<0,14		<0,4		µg/l	•
Tetrachloromethane	0,35	0,04	0,3		µg/l	86%
1,1-Dichloroethene	0,50	0,05	0,5		µg/l	100%
Tribromomethane	0,41	0,04	0,5		µg/l	122%
Bromodichloromethane	<0,5		0,3		µg/l	•
Dibromochloromethane	1,09	0,11	0,9		µg/l	83%
Dichloromethane	1,88	0,19	1,7	0,1	µg/l	90%
1,2-Dichloroethane	<0,6		0,4		µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,7	0,1	µg/l	89%
trans-1,2-Dichloroethene	1,64	0,16	1,5	0,1	µg/l	91%



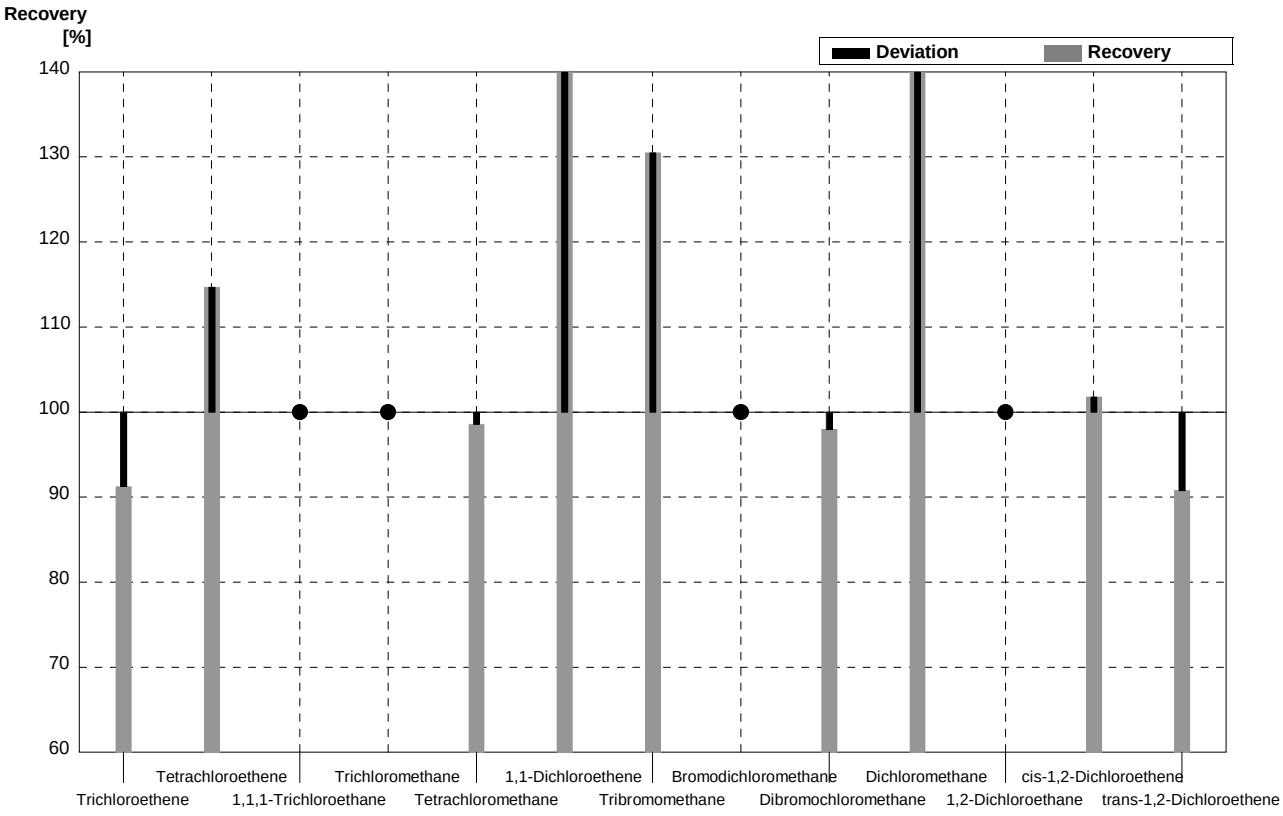
Sample C58B
Laboratory E

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,93		µg/l	•
Tetrachloroethene	1,47	0,15	1,2		µg/l	82%
1,1,1-Trichloroethane	0,45	0,05	0,4		µg/l	89%
Trichloromethane	0,40	0,04	<0,4		µg/l	•
Tetrachloromethane	1,31	0,13	1,2		µg/l	92%
1,1-Dichloroethene	2,02	0,20	1,75		µg/l	87%
Tribromomethane	0,92	0,09	0,8		µg/l	87%
Bromodichloromethane	1,36	0,14	1,1		µg/l	81%
Dibromochloromethane	0,24	0,02	<0,58		µg/l	•
Dichloromethane	1,97	0,20	1,7		µg/l	86%
1,2-Dichloroethane	2,15	0,22	1,9		µg/l	88%
cis-1,2-Dichloroethene	1,10	0,11	0,9		µg/l	82%
trans-1,2-Dichloroethene	0,61	0,06	0,6		µg/l	98%



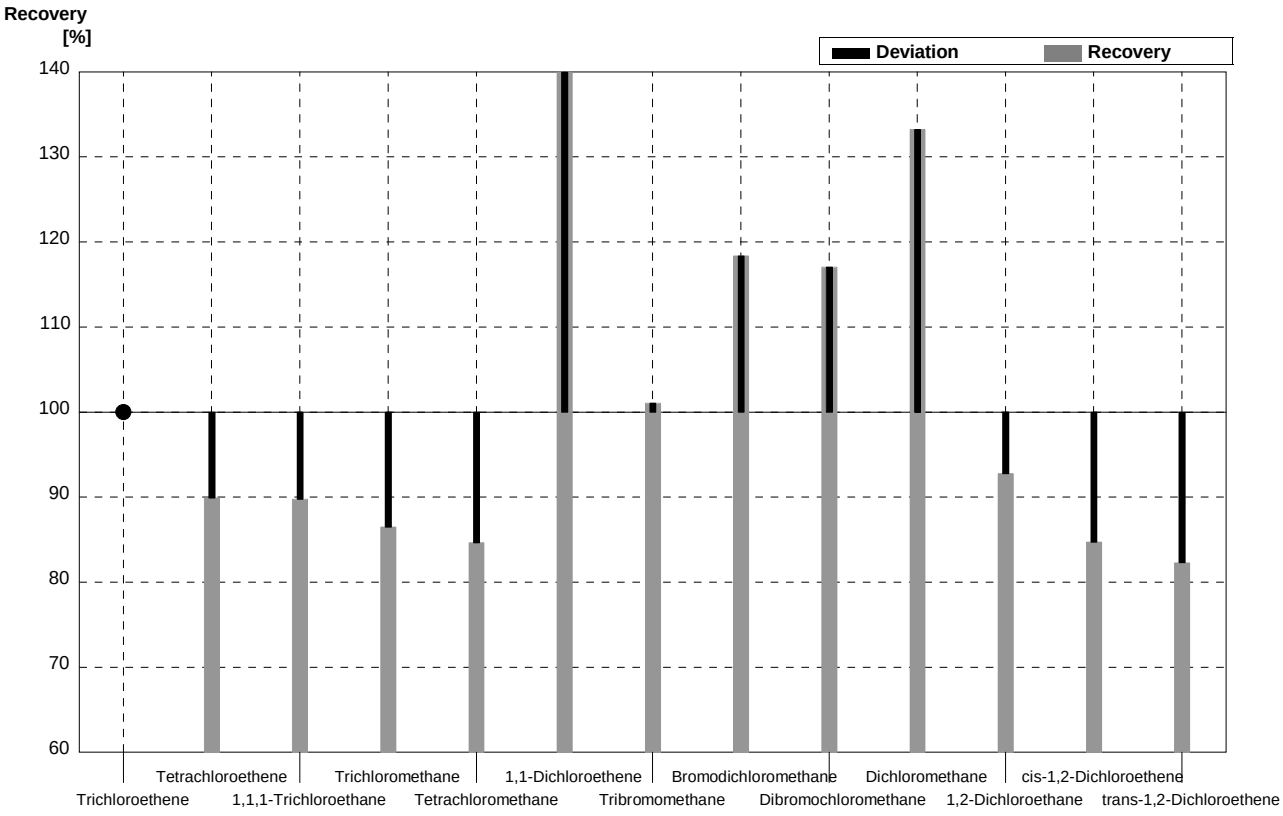
Sample C58A
Laboratory F

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	1,004	0,151	µg/l	91%
Tetrachloroethene	0,49	0,05	0,562	0,084	µg/l	115%
1,1,1-Trichloroethane	<0,08		<0,1		µg/l	•
Trichloromethane	<0,14		<0,1		µg/l	•
Tetrachloromethane	0,35	0,04	0,345	0,052	µg/l	99%
1,1-Dichloroethene	0,50	0,05	0,729	0,109	µg/l	146%
Tribromomethane	0,41	0,04	0,535	0,080	µg/l	130%
Bromodichloromethane	<0,5		0,419	0,063	µg/l	•
Dibromochloromethane	1,09	0,11	1,068	0,160	µg/l	98%
Dichloromethane	1,88	0,19	2,763	0,414	µg/l	147%
1,2-Dichloroethane	<0,6		0,392	0,059	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,804	0,121	µg/l	102%
trans-1,2-Dichloroethene	1,64	0,16	1,489	0,223	µg/l	91%



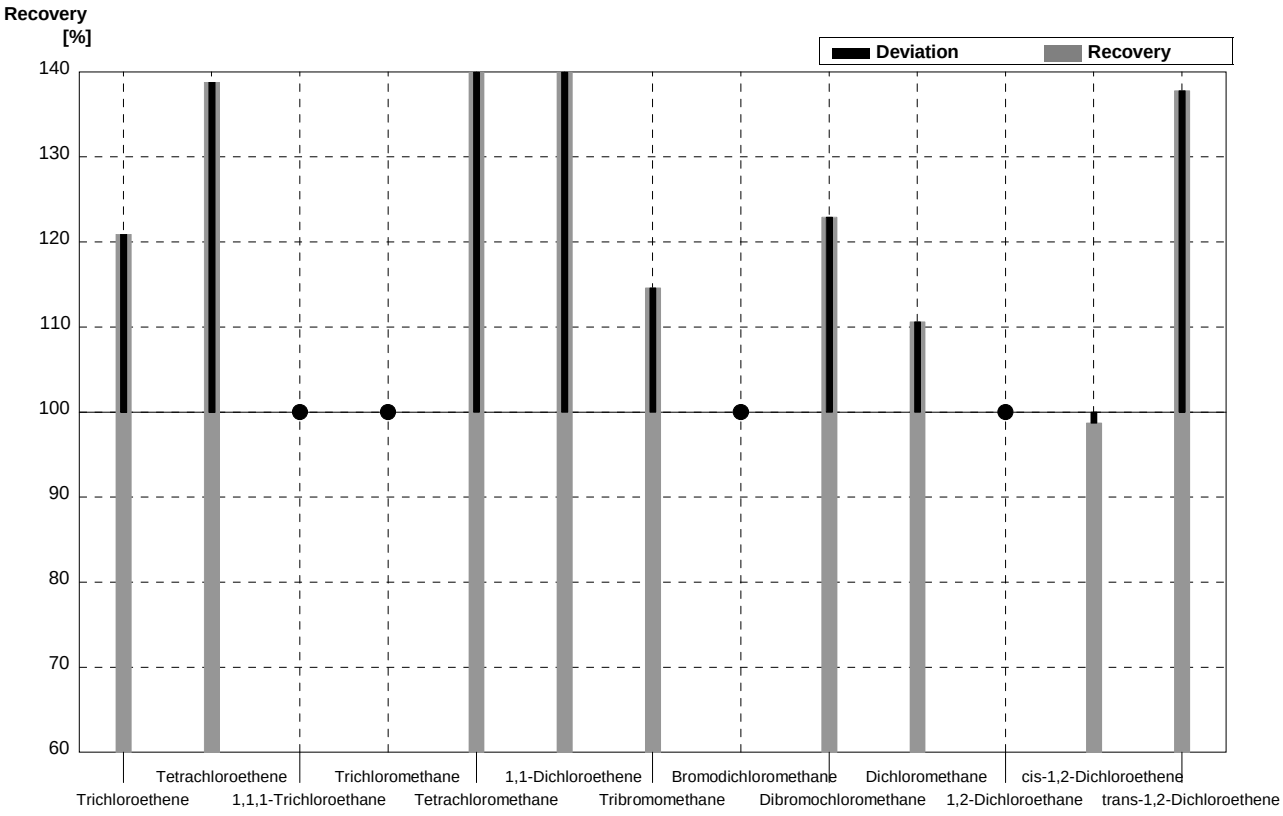
Sample C58B
Laboratory F

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,1		µg/l	•
Tetrachloroethene	1,47	0,15	1,322	0,198	µg/l	90%
1,1,1-Trichloroethane	0,45	0,05	0,404	0,061	µg/l	90%
Trichloromethane	0,40	0,04	0,346	0,052	µg/l	87%
Tetrachloromethane	1,31	0,13	1,109	0,166	µg/l	85%
1,1-Dichloroethene	2,02	0,20	3,176	0,476	µg/l	157%
Tribromomethane	0,92	0,09	0,93	0,140	µg/l	101%
Bromodichloromethane	1,36	0,14	1,61	0,242	µg/l	118%
Dibromochloromethane	0,24	0,02	0,281	0,042	µg/l	117%
Dichloromethane	1,97	0,20	2,625	0,394	µg/l	133%
1,2-Dichloroethane	2,15	0,22	1,995	0,299	µg/l	93%
cis-1,2-Dichloroethene	1,10	0,11	0,932	0,140	µg/l	85%
trans-1,2-Dichloroethene	0,61	0,06	0,502	0,075	µg/l	82%



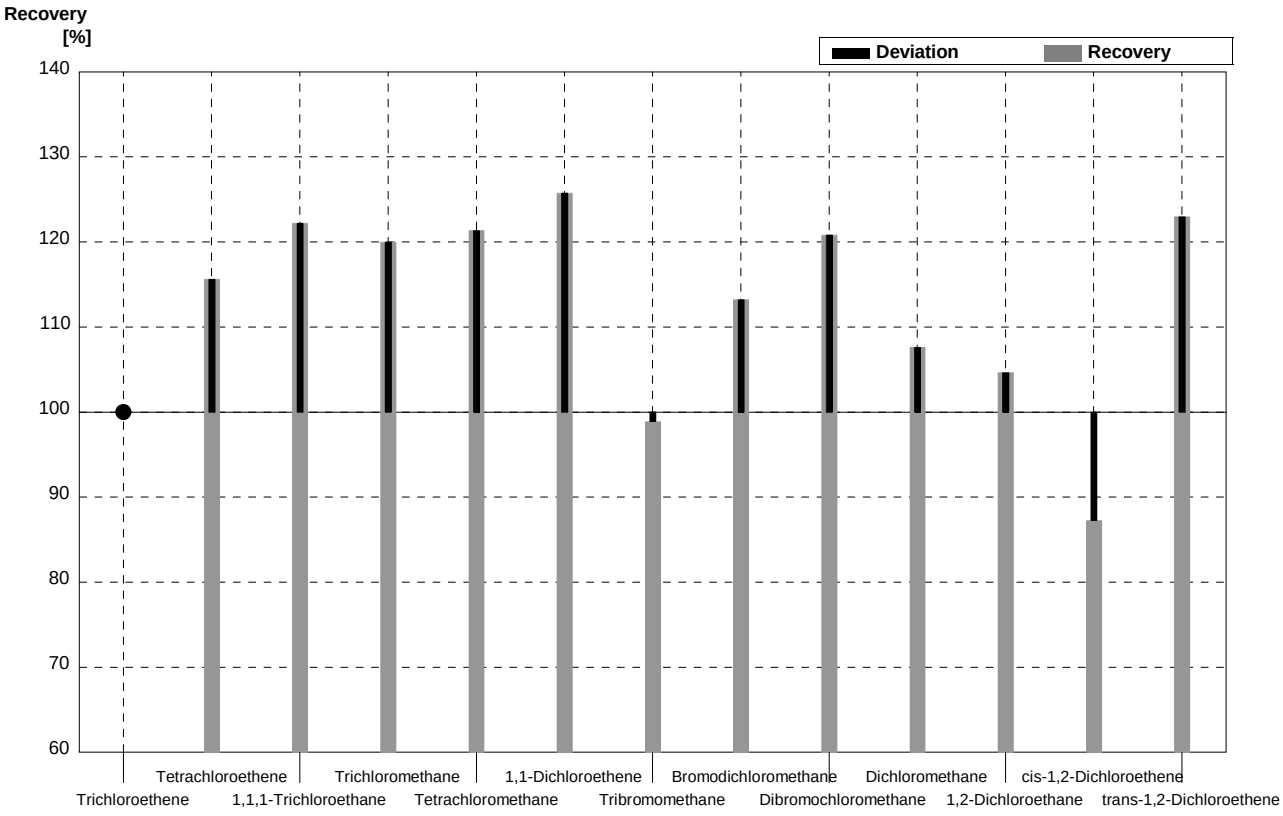
Sample C58A
Laboratory G

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	1,33	0,21	µg/l	121%
Tetrachloroethene	0,49	0,05	0,68	0,15	µg/l	139%
1,1,1-Trichloroethane	<0,08		<0,1		µg/l	•
Trichloromethane	<0,14		<0,1		µg/l	•
Tetrachloromethane	0,35	0,04	0,58	0,11	µg/l	166%
1,1-Dichloroethene	0,50	0,05	0,82	0,13	µg/l	164%
Tribromomethane	0,41	0,04	0,47	0,01	µg/l	115%
Bromodichloromethane	<0,5		0,47	0,05	µg/l	•
Dibromochloromethane	1,09	0,11	1,34	0,08	µg/l	123%
Dichloromethane	1,88	0,19	2,08	0,37	µg/l	111%
1,2-Dichloroethane	<0,6		0,45	0,03	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,78	0,13	µg/l	99%
trans-1,2-Dichloroethene	1,64	0,16	2,26	0,28	µg/l	138%



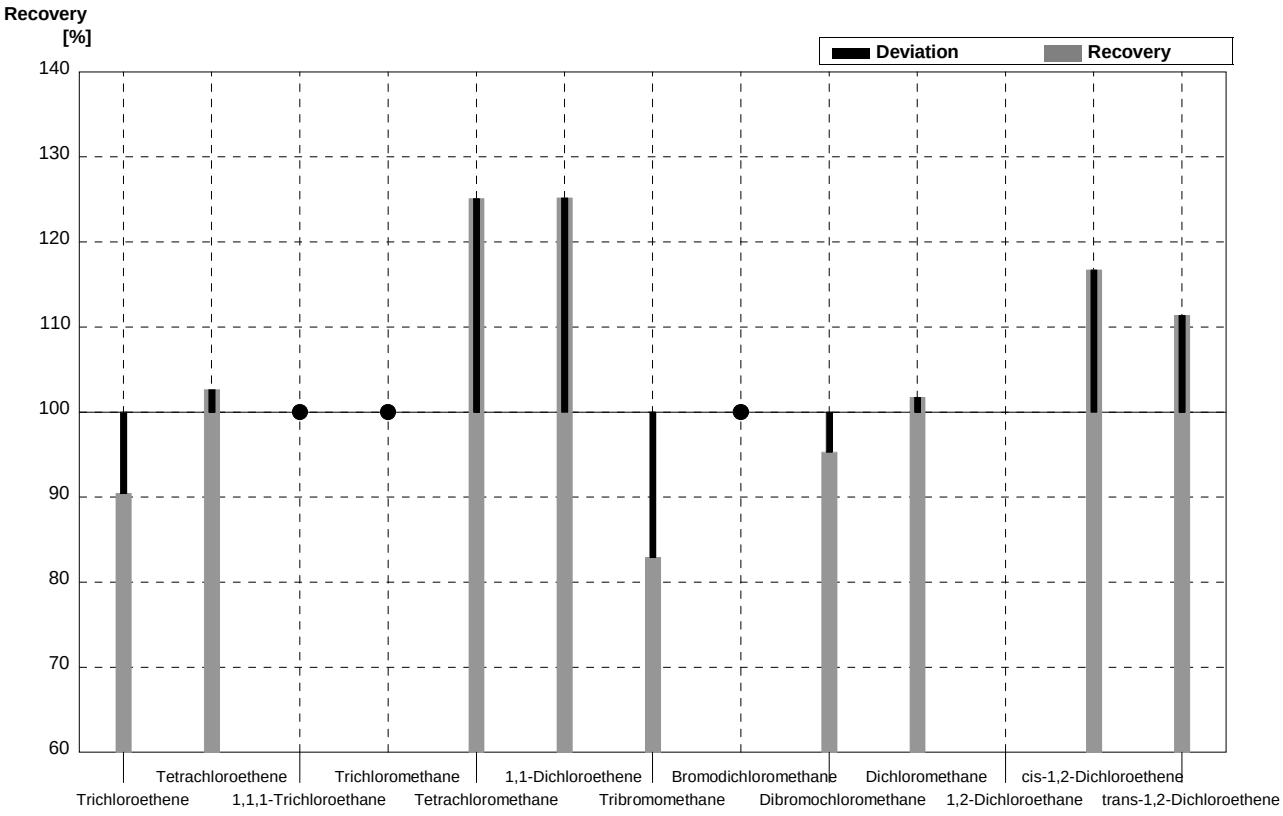
Sample C58B
Laboratory G

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,1		µg/l	•
Tetrachloroethene	1,47	0,15	1,70	0,23	µg/l	116%
1,1,1-Trichloroethane	0,45	0,05	0,55	0,09	µg/l	122%
Trichloromethane	0,40	0,04	0,48	0,06	µg/l	120%
Tetrachloromethane	1,31	0,13	1,59	0,19	µg/l	121%
1,1-Dichloroethene	2,02	0,20	2,54	0,25	µg/l	126%
Tribromomethane	0,92	0,09	0,91	0,03	µg/l	99%
Bromodichloromethane	1,36	0,14	1,54	0,09	µg/l	113%
Dibromochloromethane	0,24	0,02	0,29	0,02	µg/l	121%
Dichloromethane	1,97	0,20	2,12	0,11	µg/l	108%
1,2-Dichloroethane	2,15	0,22	2,25	0,10	µg/l	105%
cis-1,2-Dichloroethene	1,10	0,11	0,96	0,12	µg/l	87%
trans-1,2-Dichloroethene	0,61	0,06	0,75	0,10	µg/l	123%



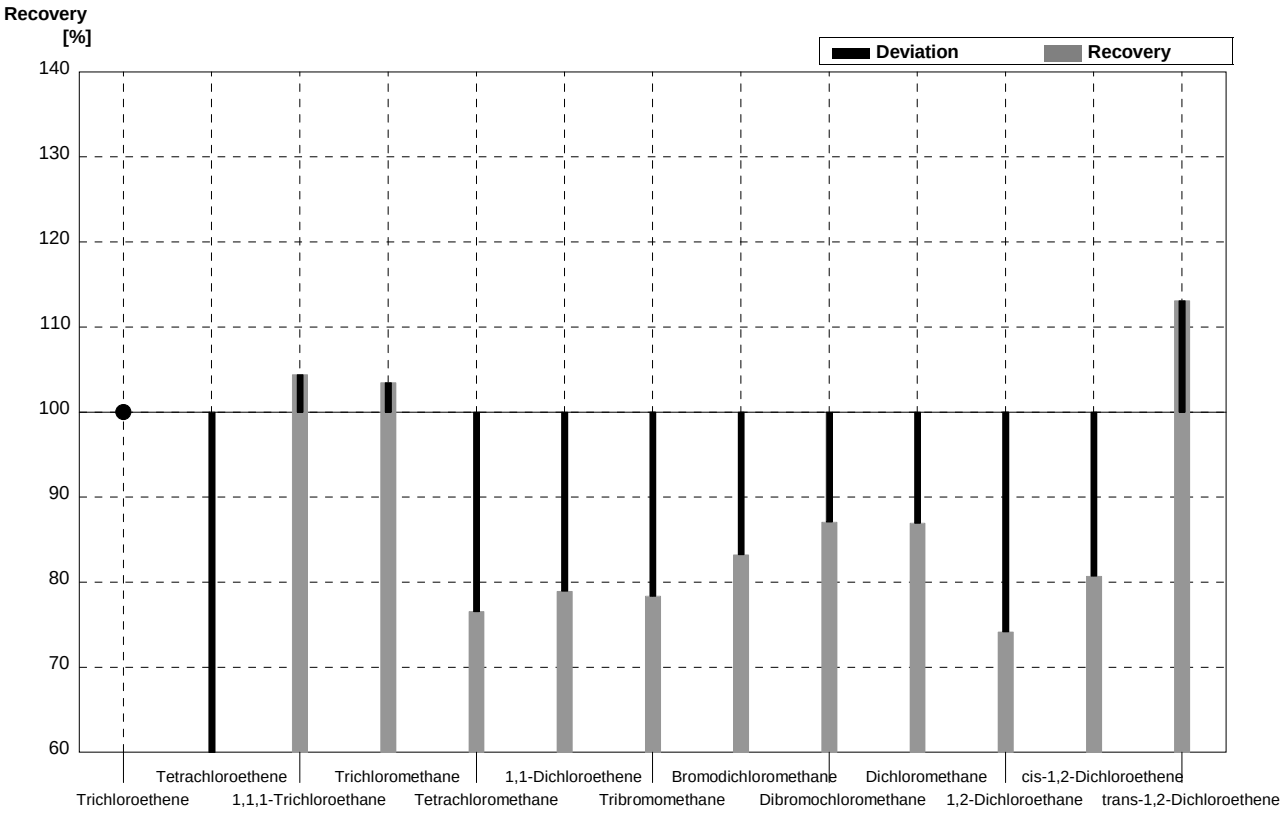
Sample C58A
Laboratory H

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	0,995	0,219	µg/l	90%
Tetrachloroethene	0,49	0,05	0,503	0,161	µg/l	103%
1,1,1-Trichloroethane	<0,08		0,020	0,005	µg/l	•
Trichloromethane	<0,14		0,027	0,007	µg/l	•
Tetrachloromethane	0,35	0,04	0,438	0,131	µg/l	125%
1,1-Dichloroethene	0,50	0,05	0,626	0,257	µg/l	125%
Tribromomethane	0,41	0,04	0,340	0,133	µg/l	83%
Bromodichloromethane	<0,5		0,370	0,100	µg/l	•
Dibromochloromethane	1,09	0,11	1,039	0,395	µg/l	95%
Dichloromethane	1,88	0,19	1,913	0,536	µg/l	102%
1,2-Dichloroethane	<0,6		0,626	0,257	µg/l	
cis-1,2-Dichloroethene	0,79	0,08	0,922	0,138	µg/l	117%
trans-1,2-Dichloroethene	1,64	0,16	1,827	0,237	µg/l	111%



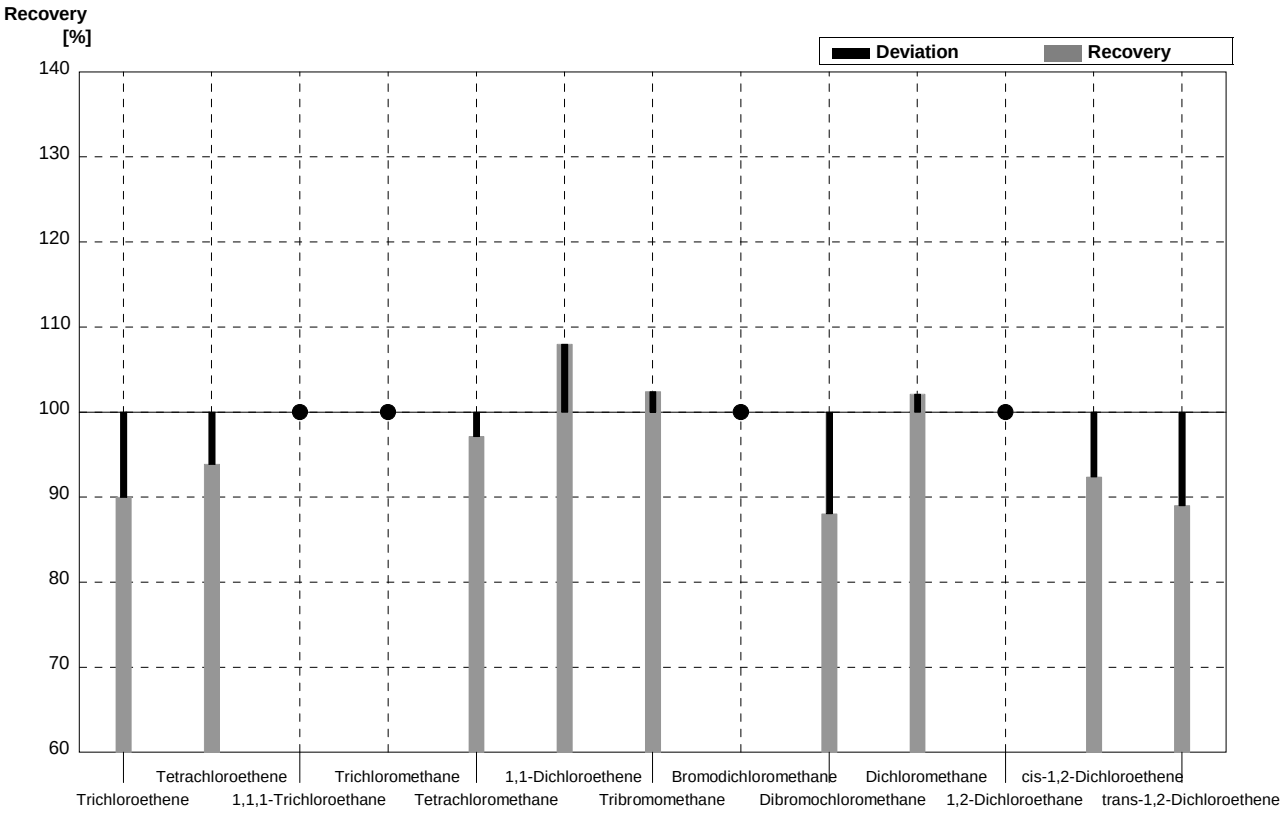
Sample C58B
Laboratory H

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		0,005	0,001	µg/l	•
Tetrachloroethene	1,47	0,15	0,881	0,282	µg/l	60%
1,1,1-Trichloroethane	0,45	0,05	0,470	0,108	µg/l	104%
Trichloromethane	0,40	0,04	0,414	0,112	µg/l	104%
Tetrachloromethane	1,31	0,13	1,003	0,131	µg/l	77%
1,1-Dichloroethene	2,02	0,20	1,595	0,654	µg/l	79%
Tribromomethane	0,92	0,09	0,721	0,281	µg/l	78%
Bromodichloromethane	1,36	0,14	1,132	0,308	µg/l	83%
Dibromochloromethane	0,24	0,02	0,209	0,080	µg/l	87%
Dichloromethane	1,97	0,20	1,713	0,480	µg/l	87%
1,2-Dichloroethane	2,15	0,22	1,595	0,654	µg/l	74%
cis-1,2-Dichloroethene	1,10	0,11	0,888	0,133	µg/l	81%
trans-1,2-Dichloroethene	0,61	0,06	0,690	0,090	µg/l	113%



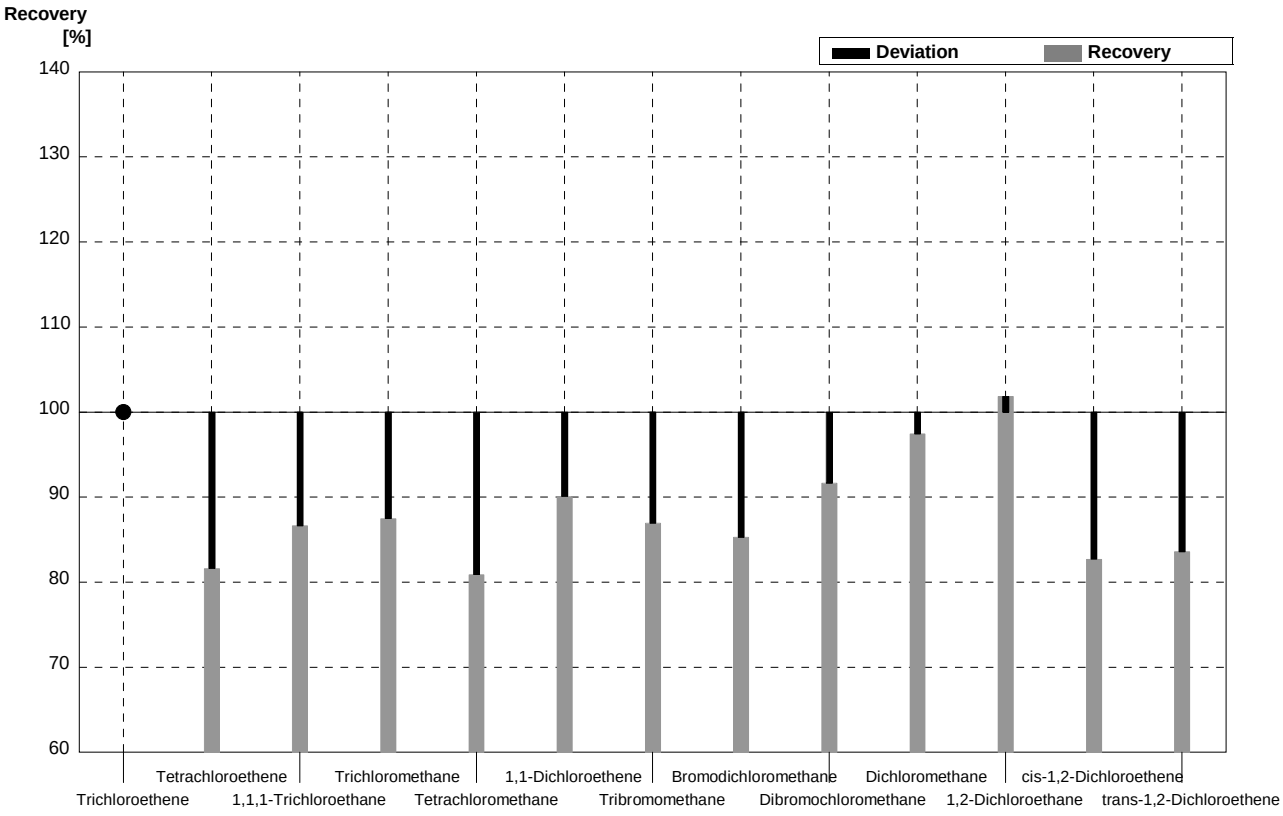
Sample C58A
Laboratory I

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	0,99	0,15	µg/l	90%
Tetrachloroethene	0,49	0,05	0,46	0,07	µg/l	94%
1,1,1-Trichloroethane	<0,08		<0,1		µg/l	•
Trichloromethane	<0,14		<0,1		µg/l	•
Tetrachloromethane	0,35	0,04	0,34	0,05	µg/l	97%
1,1-Dichloroethene	0,50	0,05	0,54	0,08	µg/l	108%
Tribromomethane	0,41	0,04	0,42	0,06	µg/l	102%
Bromodichloromethane	<0,5		0,32	0,05	µg/l	•
Dibromochloromethane	1,09	0,11	0,96	0,14	µg/l	88%
Dichloromethane	1,88	0,19	1,92	0,29	µg/l	102%
1,2-Dichloroethane	<0,6		0,49	0,07	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,73	0,11	µg/l	92%
trans-1,2-Dichloroethene	1,64	0,16	1,46	0,22	µg/l	89%



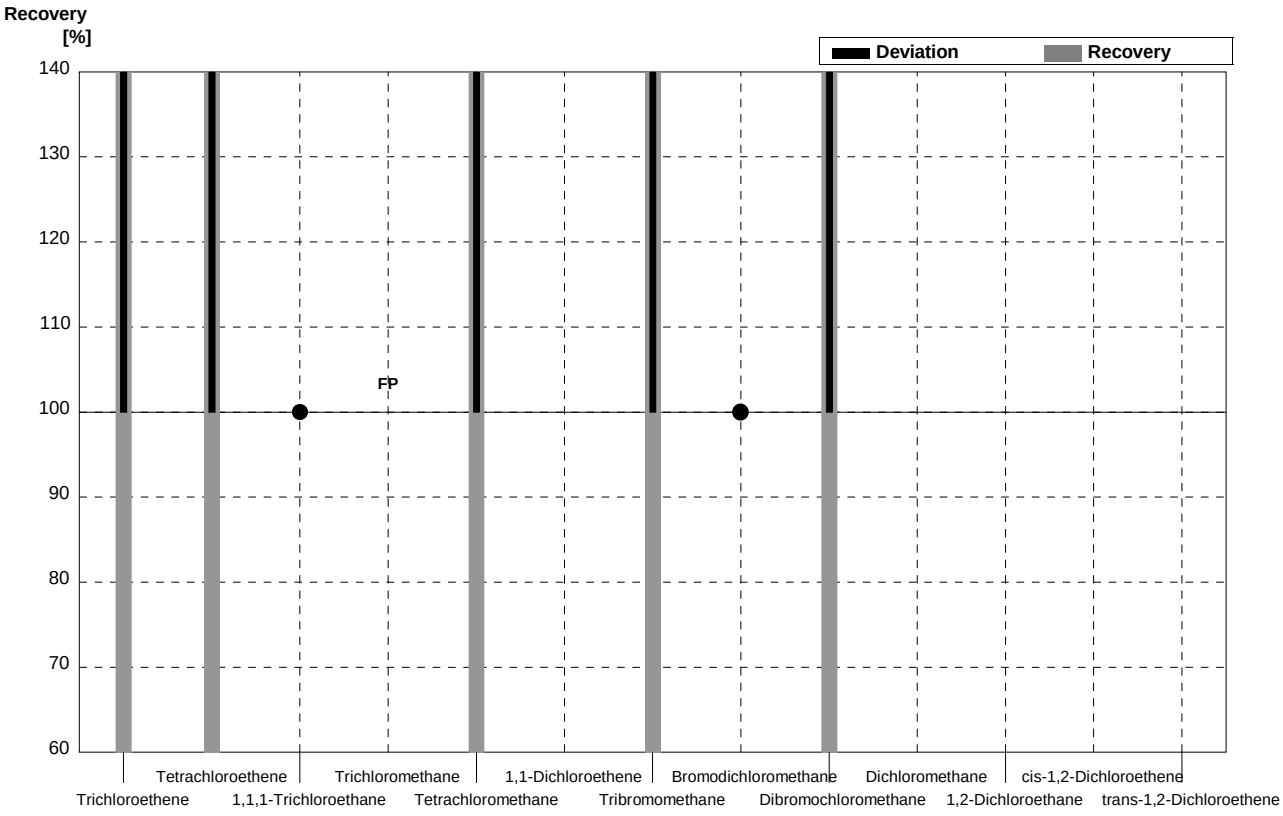
Sample C58B
Laboratory I

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,1		µg/l	•
Tetrachloroethene	1,47	0,15	1,20	0,18	µg/l	82%
1,1,1-Trichloroethane	0,45	0,05	0,39	0,06	µg/l	87%
Trichloromethane	0,40	0,04	0,35	0,05	µg/l	88%
Tetrachloromethane	1,31	0,13	1,06	0,16	µg/l	81%
1,1-Dichloroethene	2,02	0,20	1,82	0,27	µg/l	90%
Tribromomethane	0,92	0,09	0,80	0,12	µg/l	87%
Bromodichloromethane	1,36	0,14	1,16	0,17	µg/l	85%
Dibromochloromethane	0,24	0,02	0,22	0,03	µg/l	92%
Dichloromethane	1,97	0,20	1,92	0,29	µg/l	97%
1,2-Dichloroethane	2,15	0,22	2,19	0,33	µg/l	102%
cis-1,2-Dichloroethene	1,10	0,11	0,91	0,14	µg/l	83%
trans-1,2-Dichloroethene	0,61	0,06	0,51	0,08	µg/l	84%



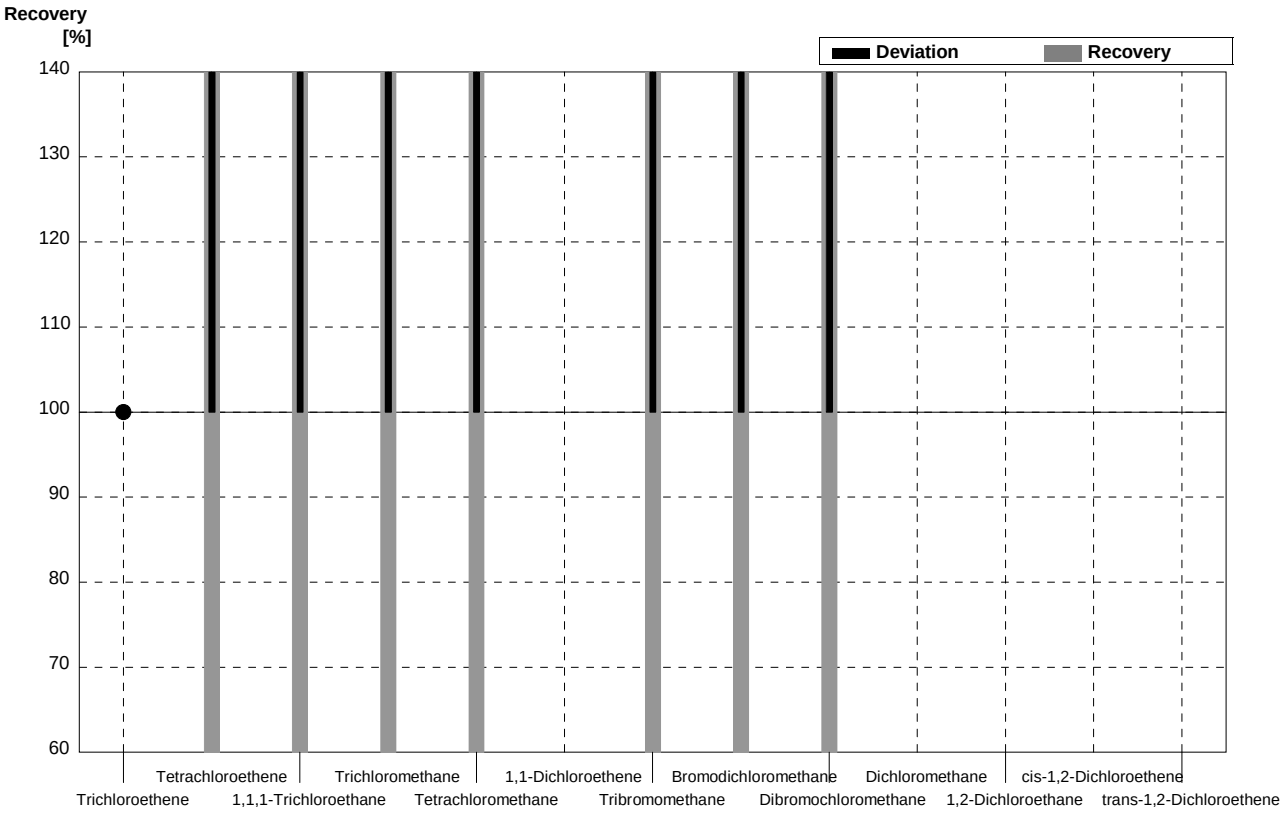
Sample C58A
Laboratory J

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	5,475		µg/l	498%
Tetrachloroethene	0,49	0,05	2,966		µg/l	605%
1,1,1-Trichloroethane	<0,08		<0,1		µg/l	•
Trichloromethane	<0,14		0,647		µg/l	FP
Tetrachloromethane	0,35	0,04	2,029		µg/l	580%
1,1-Dichloroethene	0,50	0,05			µg/l	
Tribromomethane	0,41	0,04	1,788		µg/l	436%
Bromodichloromethane	<0,5		1,036		µg/l	•
Dibromochloromethane	1,09	0,11	3,684		µg/l	338%
Dichloromethane	1,88	0,19			µg/l	
1,2-Dichloroethane	<0,6				µg/l	
cis-1,2-Dichloroethene	0,79	0,08			µg/l	
trans-1,2-Dichloroethene	1,64	0,16			µg/l	



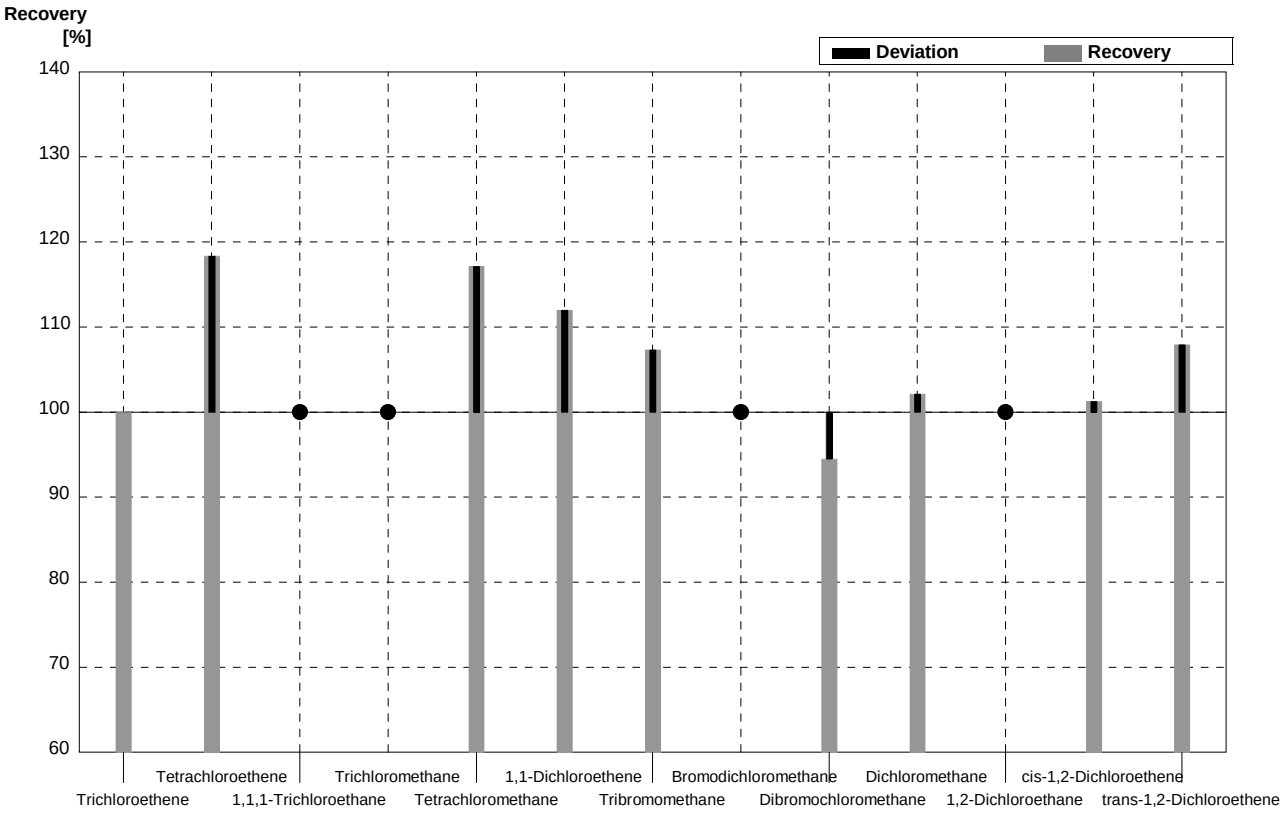
Sample C58B
Laboratory J

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,1		µg/l	•
Tetrachloroethene	1,47	0,15	5,866		µg/l	399%
1,1,1-Trichloroethane	0,45	0,05	1,285		µg/l	286%
Trichloromethane	0,40	0,04	4,843		µg/l	1211%
Tetrachloromethane	1,31	0,13	5,095		µg/l	389%
1,1-Dichloroethene	2,02	0,20			µg/l	
Tribromomethane	0,92	0,09	3,591		µg/l	390%
Bromodichloromethane	1,36	0,14	3,876		µg/l	285%
Dibromochloromethane	0,24	0,02	0,905		µg/l	377%
Dichloromethane	1,97	0,20			µg/l	
1,2-Dichloroethane	2,15	0,22			µg/l	
cis-1,2-Dichloroethene	1,10	0,11			µg/l	
trans-1,2-Dichloroethene	0,61	0,06			µg/l	



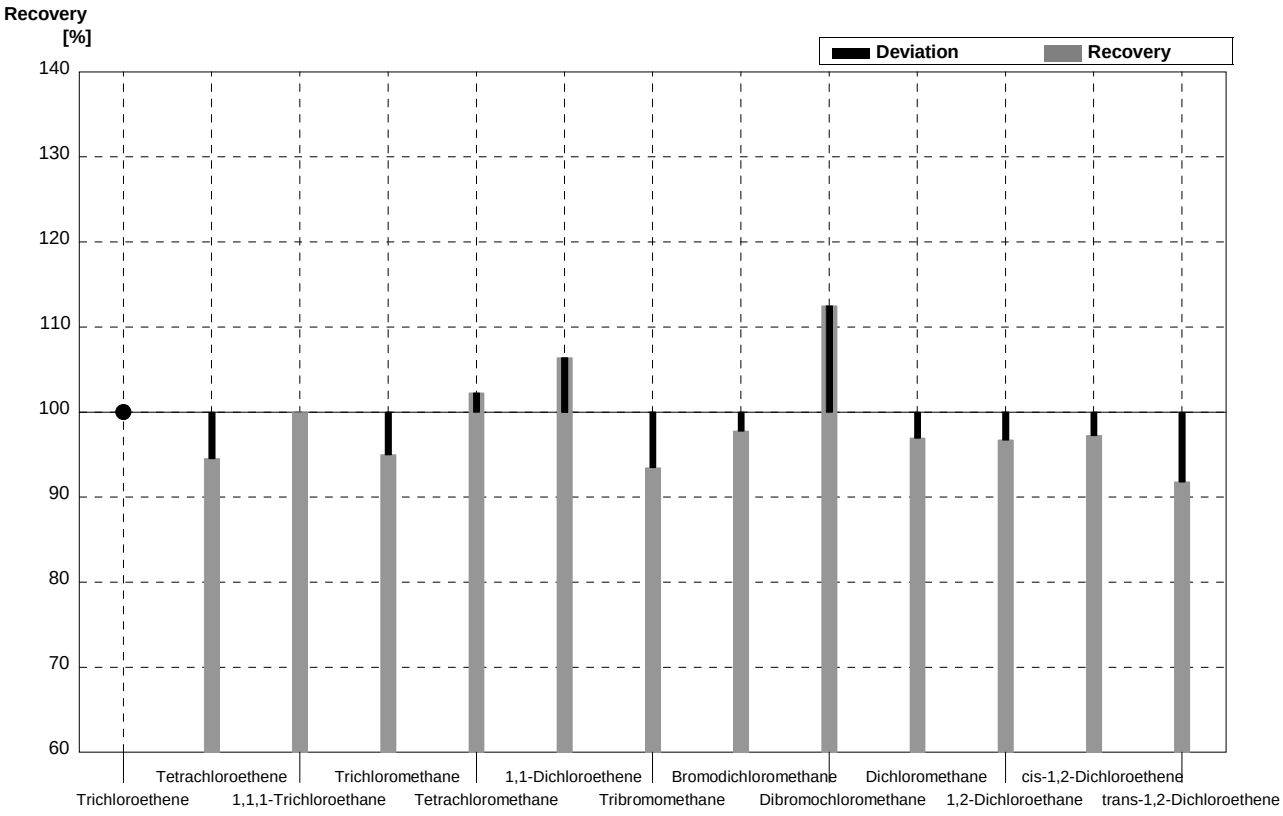
Sample C58A
Laboratory K

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	1,10	0,22	µg/l	100%
Tetrachloroethene	0,49	0,05	0,58	0,12	µg/l	118%
1,1,1-Trichloroethane	<0,08		0,020	0,008	µg/l	•
Trichloromethane	<0,14		<0,06		µg/l	•
Tetrachloromethane	0,35	0,04	0,41	0,08	µg/l	117%
1,1-Dichloroethene	0,50	0,05	0,56	0,11	µg/l	112%
Tribromomethane	0,41	0,04	0,44	0,09	µg/l	107%
Bromodichloromethane	<0,5		0,36	0,07	µg/l	•
Dibromochloromethane	1,09	0,11	1,03	0,21	µg/l	94%
Dichloromethane	1,88	0,19	1,92	0,38	µg/l	102%
1,2-Dichloroethane	<0,6		0,40	0,08	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,80	0,16	µg/l	101%
trans-1,2-Dichloroethene	1,64	0,16	1,77	0,35	µg/l	108%



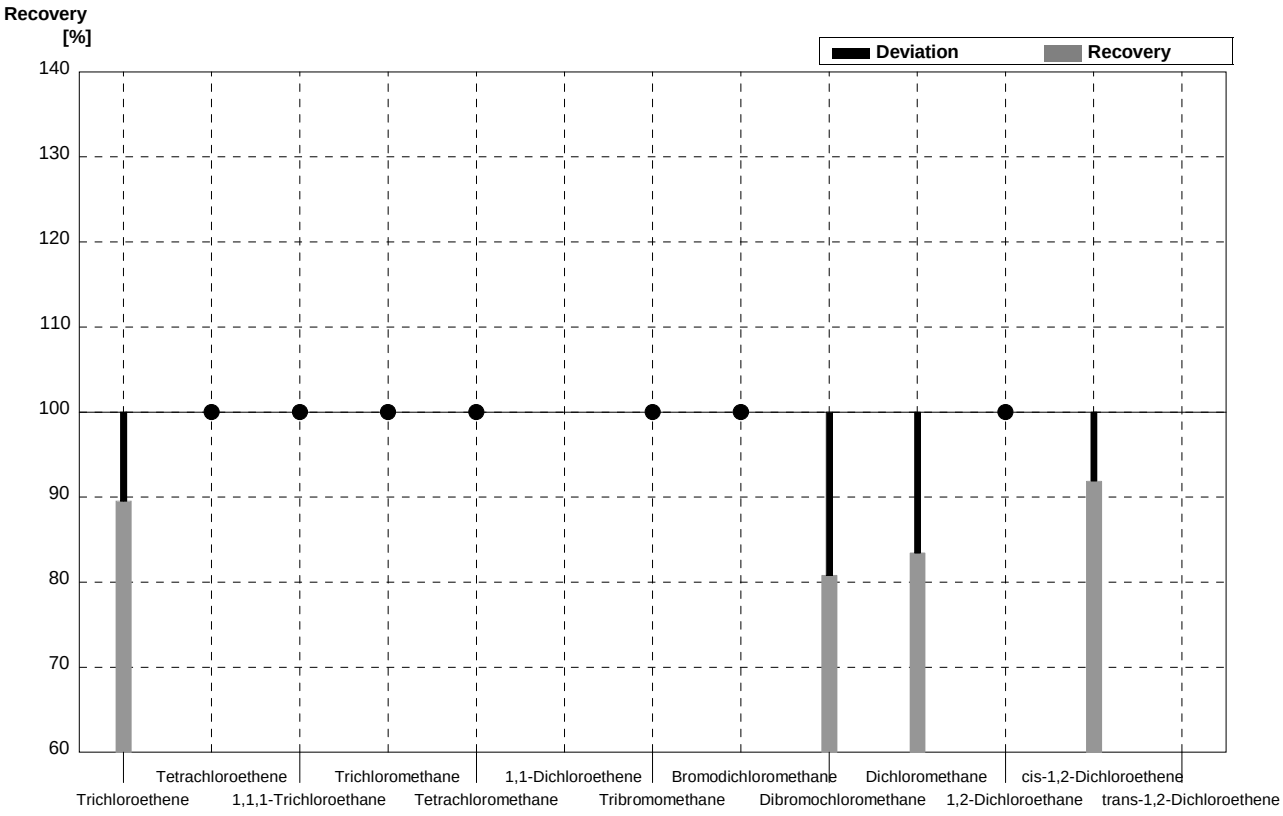
Sample C58B
Laboratory K

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,03		µg/l	•
Tetrachloroethene	1,47	0,15	1,39	0,28	µg/l	95%
1,1,1-Trichloroethane	0,45	0,05	0,45	0,09	µg/l	100%
Trichloromethane	0,40	0,04	0,38	0,08	µg/l	95%
Tetrachloromethane	1,31	0,13	1,34	0,27	µg/l	102%
1,1-Dichloroethene	2,02	0,20	2,15	0,43	µg/l	106%
Tribromomethane	0,92	0,09	0,86	0,17	µg/l	93%
Bromodichloromethane	1,36	0,14	1,33	0,27	µg/l	98%
Dibromochloromethane	0,24	0,02	0,27	0,06	µg/l	113%
Dichloromethane	1,97	0,20	1,91	0,38	µg/l	97%
1,2-Dichloroethane	2,15	0,22	2,08	0,42	µg/l	97%
cis-1,2-Dichloroethene	1,10	0,11	1,07	0,21	µg/l	97%
trans-1,2-Dichloroethene	0,61	0,06	0,56	0,11	µg/l	92%



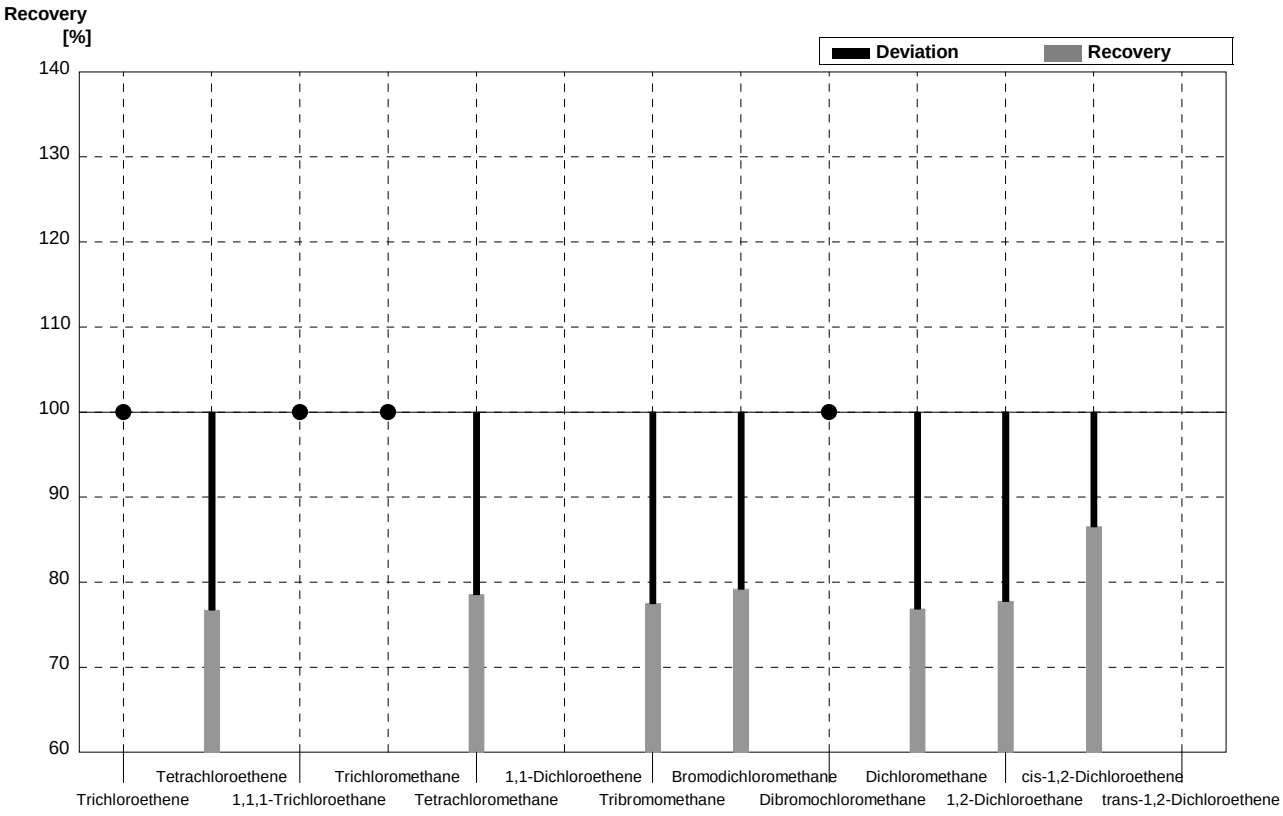
Sample C58A
Laboratory L

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	0,985	0,1	µg/l	90%
Tetrachloroethene	0,49	0,05	<0,5		µg/l	•
1,1,1-Trichloroethane	<0,08		<0,5		µg/l	•
Trichloromethane	<0,14		<0,5		µg/l	•
Tetrachloromethane	0,35	0,04	<0,5		µg/l	•
1,1-Dichloroethene	0,50	0,05			µg/l	
Tribromomethane	0,41	0,04	<0,5		µg/l	•
Bromodichloromethane	<0,5		<0,5		µg/l	•
Dibromochloromethane	1,09	0,11	0,881	0,1	µg/l	81%
Dichloromethane	1,88	0,19	1,569	0,2	µg/l	83%
1,2-Dichloroethane	<0,6		0,325	0,05	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,726	0,1	µg/l	92%
trans-1,2-Dichloroethene	1,64	0,16			µg/l	



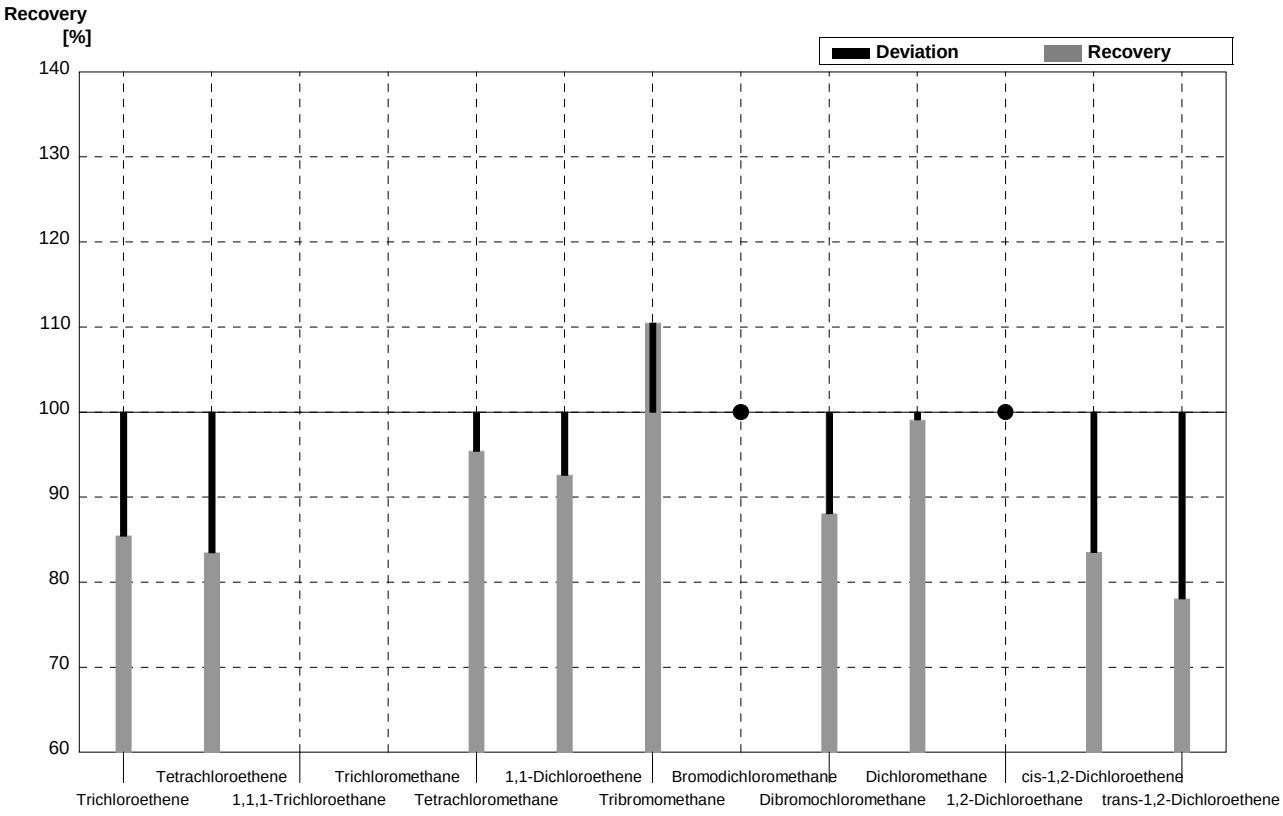
Sample C58B
Laboratory L

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,5		µg/l	•
Tetrachloroethene	1,47	0,15	1,128	0,1	µg/l	77%
1,1,1-Trichloroethane	0,45	0,05	<0,5		µg/l	•
Trichloromethane	0,40	0,04	<0,5		µg/l	•
Tetrachloromethane	1,31	0,13	1,029	0,1	µg/l	79%
1,1-Dichloroethene	2,02	0,20			µg/l	
Tribromomethane	0,92	0,09	0,713	0,1	µg/l	78%
Bromodichloromethane	1,36	0,14	1,077	0,1	µg/l	79%
Dibromochloromethane	0,24	0,02	<0,5		µg/l	•
Dichloromethane	1,97	0,20	1,514	0,15	µg/l	77%
1,2-Dichloroethane	2,15	0,22	1,672	0,15	µg/l	78%
cis-1,2-Dichloroethene	1,10	0,11	0,952	0,1	µg/l	87%
trans-1,2-Dichloroethene	0,61	0,06			µg/l	



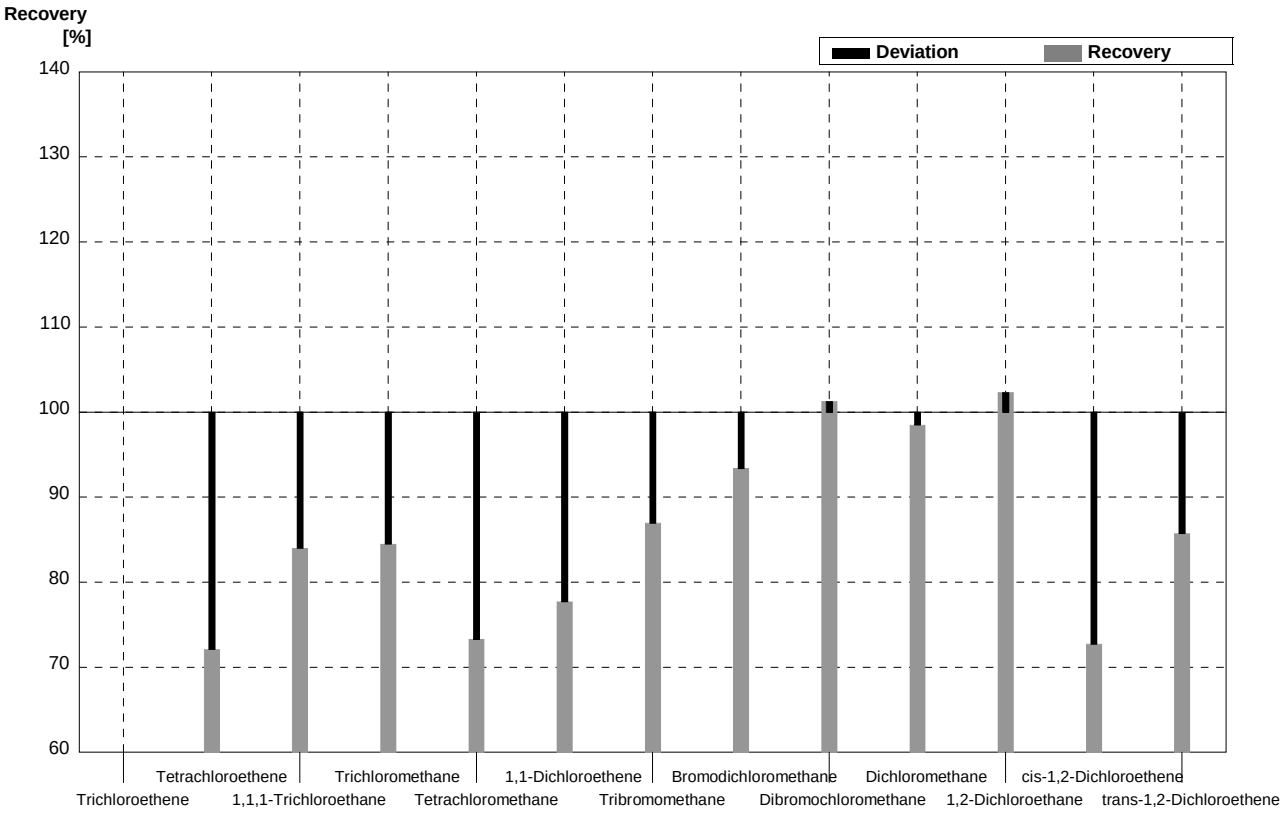
Sample C58A
Laboratory M

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	0,940	0,310	µg/l	85%
Tetrachloroethene	0,49	0,05	0,409	0,135	µg/l	83%
1,1,1-Trichloroethane	<0,08		<BG		µg/l	
Trichloromethane	<0,14		<BG		µg/l	
Tetrachloromethane	0,35	0,04	0,334	0,063	µg/l	95%
1,1-Dichloroethene	0,50	0,05	0,463	0,074	µg/l	93%
Tribromomethane	0,41	0,04	0,453	0,136	µg/l	110%
Bromodichloromethane	<0,5		0,343	0,086	µg/l	•
Dibromochloromethane	1,09	0,11	0,960	0,25	µg/l	88%
Dichloromethane	1,88	0,19	1,863	0,54	µg/l	99%
1,2-Dichloroethane	<0,6		0,394	0,134	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,660	0,152	µg/l	84%
trans-1,2-Dichloroethene	1,64	0,16	1,280	0,333	µg/l	78%



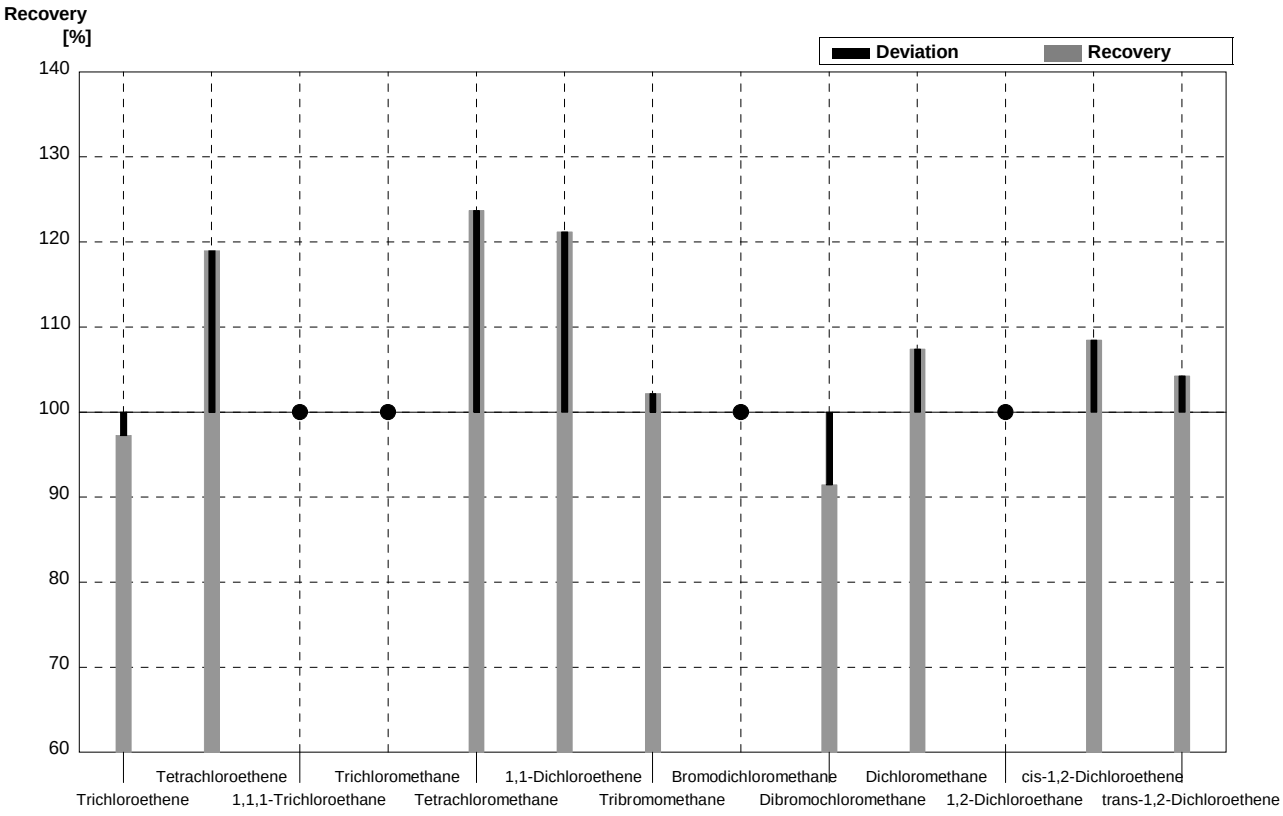
Sample C58B
Laboratory M

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<BG		µg/l	
Tetrachloroethene	1,47	0,15	1,060	0,350	µg/l	72%
1,1,1-Trichloroethane	0,45	0,05	0,378	0,083	µg/l	84%
Trichloromethane	0,40	0,04	0,338	0,091	µg/l	85%
Tetrachloromethane	1,31	0,13	0,960	0,182	µg/l	73%
1,1-Dichloroethene	2,02	0,20	1,570	0,251	µg/l	78%
Tribromomethane	0,92	0,09	0,800	0,240	µg/l	87%
Bromodichloromethane	1,36	0,14	1,270	0,318	µg/l	93%
Dibromochloromethane	0,24	0,02	0,243	0,063	µg/l	101%
Dichloromethane	1,97	0,20	1,940	0,563	µg/l	98%
1,2-Dichloroethane	2,15	0,22	2,200	0,748	µg/l	102%
cis-1,2-Dichloroethene	1,10	0,11	0,800	0,184	µg/l	73%
trans-1,2-Dichloroethene	0,61	0,06	0,523	0,136	µg/l	86%



Sample C58A
Laboratory N

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	1,10	0,11	1,07	0,085	µg/l	97%
Tetrachloroethene	0,49	0,05	0,583	0,017	µg/l	119%
1,1,1-Trichloroethane	<0,08		<0,050		µg/l	•
Trichloromethane	<0,14		<0,050		µg/l	•
Tetrachloromethane	0,35	0,04	0,433	0,013	µg/l	124%
1,1-Dichloroethene	0,50	0,05	0,606	0,083	µg/l	121%
Tribromomethane	0,41	0,04	0,419	0,009	µg/l	102%
Bromodichloromethane	<0,5		0,348	0,008	µg/l	•
Dibromochloromethane	1,09	0,11	0,997	0,052	µg/l	91%
Dichloromethane	1,88	0,19	2,02	0,056	µg/l	107%
1,2-Dichloroethane	<0,6		0,436	0,010	µg/l	•
cis-1,2-Dichloroethene	0,79	0,08	0,857	0,025	µg/l	108%
trans-1,2-Dichloroethene	1,64	0,16	1,71	0,062	µg/l	104%



Sample C58B
Laboratory N

Parameter	Target value	± U (k=2)	Result	±	Unit	Recovery
Trichloroethene	<0,08		<0,05		µg/l	•
Tetrachloroethene	1,47	0,15	1,49	0,050	µg/l	101%
1,1,1-Trichloroethane	0,45	0,05	0,468	0,024	µg/l	104%
Trichloromethane	0,40	0,04	0,319	0,007	µg/l	80%
Tetrachloromethane	1,31	0,13	1,38	0,074	µg/l	105%
1,1-Dichloroethene	2,02	0,20	2,16	0,096	µg/l	107%
Tribromomethane	0,92	0,09	0,844	0,020	µg/l	92%
Bromodichloromethane	1,36	0,14	1,35	0,053	µg/l	99%
Dibromochloromethane	0,24	0,02	0,254	0,007	µg/l	106%
Dichloromethane	1,97	0,20	1,96	0,055	µg/l	99%
1,2-Dichloroethane	2,15	0,22	2,27	0,134	µg/l	106%
cis-1,2-Dichloroethene	1,10	0,11	1,16	0,067	µg/l	105%
trans-1,2-Dichloroethene	0,61	0,06	0,519	0,064	µg/l	85%