Institut national de santé publique Québec
Centre de toxicologie

INTERLABORATORY COMPARISON PROGRAM FOR METALS IN BIOLOGICAL MATRICES (PCI)

REPORT FOR ROUND: **2014-01**

PTMS SHIPPING DATE: **2014-01-20**

DATE OF PUBLICATION: **2014-03-19**

SCC Accredited PTP PSEA Accrédité CCN TM

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TABLE OF CONTENTS

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INTRODUCTION

Dear PCI participants:

This report includes the results and performance evaluations of round 2014-01.

Participating laboratories are identified only by their unique subscription number. Identity of participants will be kept strictly confidential by the PCI organizer.

All analytes meet the homogeneity criteria as per ISO/CEI 17043 and 13528 guidelines.

A study had been previously performed to demonstrate that all the analytes are stable for the duration of the PT exercise and meet the stability criteria according to ISO/CEI 17043 and 13528 guidelines.

Please note that the appendices containing statistical approaches are no longer included in the reports. You will find them within the "Participant's Guide".

We are available to assist you at any time. If you have any questions or concerns regarding our program, do not hesitate to contact us. Your comments help us enhance the quality of our schemes.

Best regards,

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Individual results

Blood Cadmium (nmol/L)

Round #2014-01

Participant	PC-B-C1401	z'-score	PC-B-C1402	z'-score	PC-B-C1403	z'-score	Method
176	7.12	-1.01	98.7	-0.60	22.2	-0.35	ICP-MS
194	10.1	0.70	113	1.03	29.9	**2.43**	ND
217	8.27	-0.35	103	-0.14	21.4	-0.64	ICP-MS
323	11.0	1.22	88.0	-1.83	22.0	-0.43	GFAAS
744	11.0	1.23	93.9	-1.15	25.1	0.69	ND
747	8.25	-0.36	101	-0.34	22.0	-0.43	ICP-MS
1095	9.00	0.07	114	1.14	24.0	0.29	ICP-MS (C/R)
1109	10.7	1.03	117	1.43	27.6	1.59	ND
1188	9.87	0.57	103	-0.11	24.1	0.33	ICP-MS (C/R)
1418	8.63	-0.14	107	0.31	23.8	0.20	ICP-MS (C/R)
1865	8.45	-0.25	108	0.42	22.9	-0.12	ICP-MS (C/R)
2305	***98.6***	**51.61**	***2.19***	**-11.64**	6.67	**-5.99**	ND
2991	8.27	-0.35	113	1.08	27.2	1.46	ND
3187	8.01	-0.50	103	-0.11	21.9	-0.47	ICP-MS
3211	6.10	-1.60	98.7	-0.61	19.9	-1.20	GFAAS
3215	7.10	-1.02	104	0.00	26.8	1.30	GFAAS
3248	9.70	0.47	74.5	**-3.37**	35.3	**4.39**	GFAAS
3853	11.5	1.51	105	0.15	25.1	0.70	ICP-MS
4708	8.30	-0.33	106	0.23	22.6	-0.22	ICP-MS
4953	8.10	-0.45	107	0.31	22.2	-0.38	ICP-MS
5591	7.80	-0.62	97.8	-0.71	22.3	-0.33	ICP-MS
5654	9.43	0.32	92.0	-1.37	23.0	-0.06	ICP-MS (C/R)
5691	9.00	0.07	112	0.91	24.0	0.29	ICP-MS
6511	8.90	0.01	104	0.01	22.2	-0.35	ND
6545	4.14	**-2.73**	71.5	**-3.71**	20.8	-0.87	ICP-MS
6689	12.4	2.00	113	1.00	26.2	1.07	ND
6794	9.70	0.47	95.0	-1.03	23.5	0.10	GFAAS
6858	4.55	**-2.49**	105	0.13	18.4	-1.74	ICP-MS
7760	8.60	-0.16	108	0.48	25.2	0.73	ICP-MS
9777	11.1	1.29	115	1.30	21.9	-0.45	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-B-C1401	8.88	0.382	1.70	5.40 - 12.4	Accepted	---
PC-B-C1402	104	1.98	8.51	86.5 - 121	Accepted	---
PC-B-C1403	23.2	0.440	2.72	17.7 - 28.7	Accepted	---

Statistics
Blood Cadmium (nmol/L)

All methods	PC-B-C1401	PC-B-C1402	PC-B-C1403
N	29	29	30
Robust mean Algo A	8.88	104	23.2
Robust STDev	1.64	8.55	1.93
Median	8.63	104	23.0
STDev from MAD	1.58	7.98	1.63
Arithmetic mean	8.80	102	23.3
STDev	1.89	10.9	4.51
CV or Variability	18.5%	8.2%	8.3%

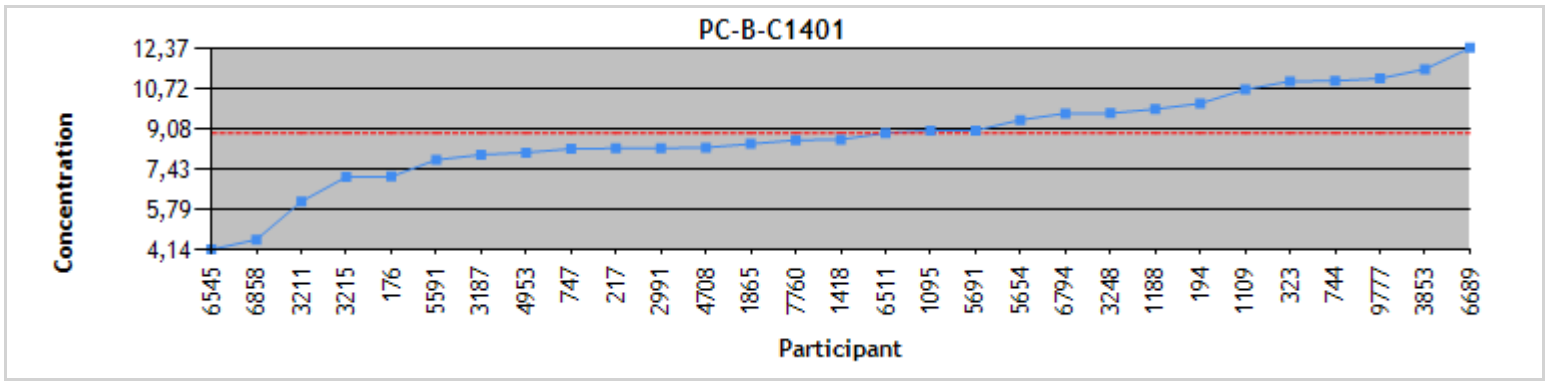
Graphite furnace-AAS	PC-B-C1401	PC-B-C1402	PC-B-C1403
N	6	6	6
Robust mean Algo A	9.21	96.6	23.5
Robust STDev	2.17	14.1	3.18
Median	9.70	96.9	22.7
STDev from MAD	2.02	11.9	2.70
Arithmetic mean	9.12	95.9	24.9
STDev	2.07	14.0	5.59
CV or Variability	23.5%	14.6%	13.5%

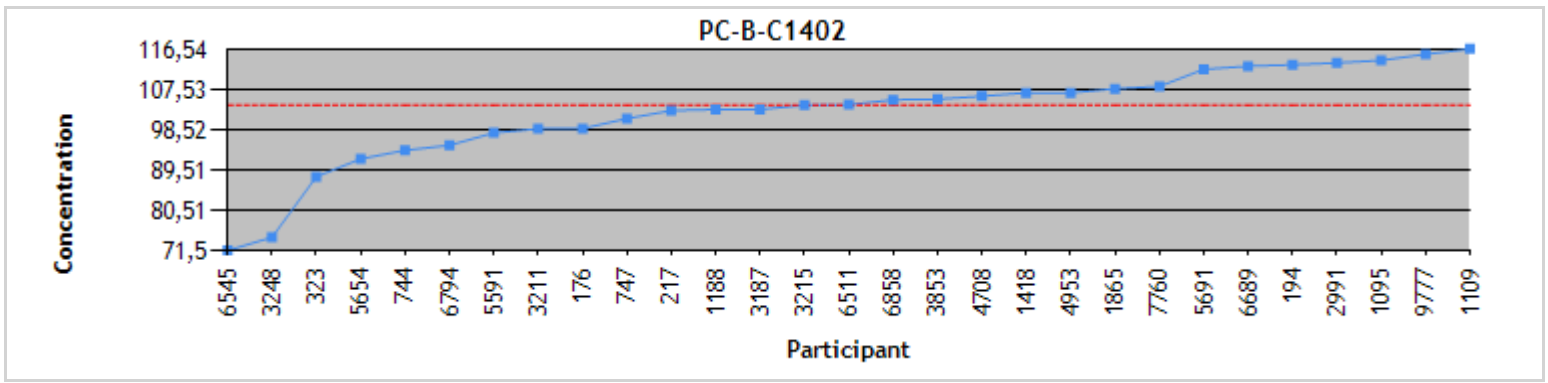
ICP-MS	PC-B-C1401	PC-B-C1402	PC-B-C1403
N	12	12	12
Robust mean Algo A	8.10	104	22.2
Robust STDev	0.701	4.70	1.04
Median	8.17	104	22.2
STDev from MAD	0.595	4.26	0.860
Arithmetic mean	7.80	102	22.3
STDev	1.93	10.3	1.86
CV or Variability	8.6%	4.5%	4.7%

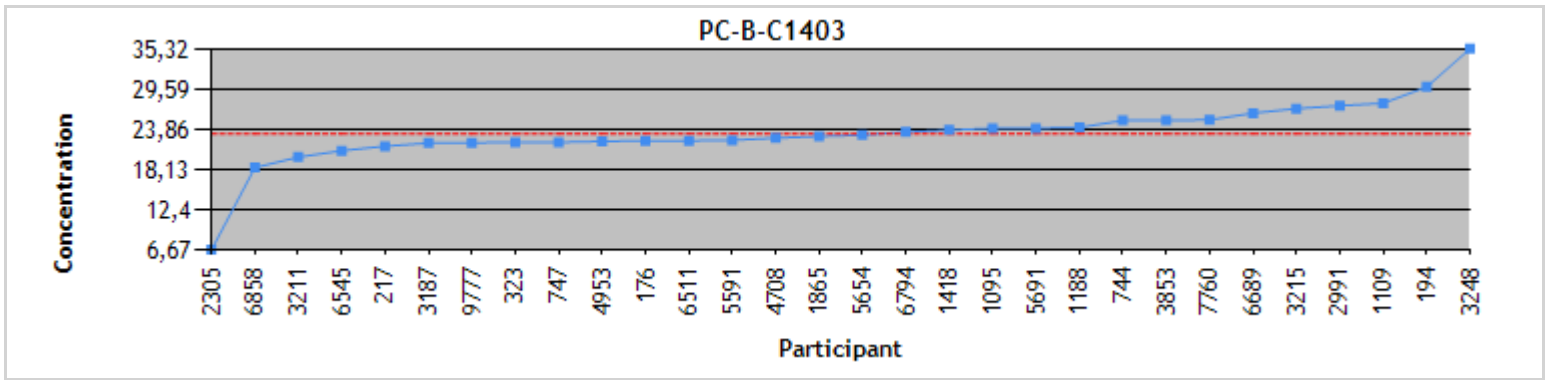
ICP-MS (collision/reaction cell)	PC-B-C1401	PC-B-C1402	PC-B-C1403
N	5	5	5
Robust mean Algo A	9.08	106	23.6
Robust STDev	0.659	6.56	0.603
Median	9.00	107	23.8
STDev from MAD	0.637	5.56	0.516
Arithmetic mean	9.08	105	23.6
STDev	0.581	8.12	0.565
CV or Variability	7.3%	6.2%	2.6%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Blood Cadmium (nmol/L)







Individual results

Blood Lead (µmol/L)

Round #2014-01

Participant	PC-B-L1401	z'-score	PC-B-L1402	z'-score	PC-B-L1403	z'-score	Method
194	1.06	**-2.74**	0.307	0.44	2.89	**-3.42**	ND
217	1.39	0.74	0.300	0.18	4.20	1.15	ICP-MS
226	1.28	-0.43	0.285	-0.38	3.72	-0.54	ICP-MS
317	1.37	0.53	0.299	0.15	3.75	-0.42	GFAAS
323	1.35	0.36	0.392	**3.58**	3.21	**-2.30**	GFAAS
387	1.31	-0.06	0.275	-0.74	3.71	-0.57	GFAAS
636	5.56	**44.61**	0.330	1.29	4.15	0.98	ICP-MS
744	1.57	**2.64**	0.316	0.78	3.96	0.32	ND
747	1.32	0.00	0.299	0.15	3.88	0.03	ICP-MS
1095	1.38	0.63	0.300	0.18	4.33	1.60	GFAAS
1109	0.138	**-12.44**	0.0304	**-9.76**	0.411	**-12.07**	ND
1188	1.26	-0.63	0.280	-0.56	3.61	-0.91	ICP-MS (C/R)
1418	1.31	-0.10	0.300	0.19	4.10	0.82	ND
1761	1.33	0.09	0.268	-0.98	3.78	-0.30	GFAAS
1855	1.29	-0.28	0.290	-0.20	4.03	0.54	ICP-MS
1865	1.31	-0.08	0.304	0.33	3.85	-0.08	ICP-MS (C/R)
2305	4.43	**32.72**	1.55	**46.29**	***0.0500***	**-13.32**	ND
2397	1.29	-0.34	0.275	-0.74	3.73	-0.51	GFAAS
2516	1.55	**2.40**	0.368	**2.69**	4.70	**2.88**	GFAAS
2580	1.31	-0.11	0.220	**-2.77**	3.72	-0.52	GFAAS
2629	1.45	1.37	0.330	1.29	4.36	1.71	ICP-MS (C/R)
2635	1.42	1.05	0.300	0.18	4.25	1.33	ND
2907	1.12	**-2.11**	0.248	-1.75	3.29	**-2.03**	ICP-MS
2937	1.36	0.42	0.319	0.89	---	---	GFAAS
2982	1.10	**-2.36**	0.236	**-2.18**	2.79	**-3.76**	GFAAS
2991	1.23	-0.93	0.311	0.58	3.23	**-2.22**	ND
3150	1.38	0.63	0.300	0.18	4.13	0.91	GFAAS
3167	1.37	0.53	0.340	1.66	4.26	1.36	GFAAS
3187	1.35	0.32	0.300	0.18	4.02	0.52	ICP-MS
3211	1.38	0.63	0.290	-0.18	3.85	-0.07	GFAAS
3215	1.30	-0.21	0.280	-0.55	>LL	---	GFAAS
3248	1.25	-0.74	0.290	-0.18	3.96	0.31	GFAAS
3423	1.16	-1.73	0.294	-0.05	3.62	-0.86	GFAAS
3513	1.38	0.63	0.330	1.29	3.94	0.24	ICP-MS
3853	1.36	0.42	0.320	0.92	4.21	1.19	ICP-MS
3970	1.50	1.85	0.280	-0.56	4.39	1.80	GFAAS
4082	1.38	0.63	0.287	-0.30	4.04	0.59	ICP-MS
4090	1.25	-0.74	0.270	-0.92	3.84	-0.10	ICP-MS (C/R)
4708	1.32	0.00	0.297	0.07	3.93	0.21	ICP-MS
4953	1.40	0.84	0.275	-0.73	4.09	0.78	GFAAS
5291	1.18	-1.47	0.230	**-2.40**	3.85	-0.07	ND
5432	1.31	-0.13	0.372	**2.83**	4.62	**2.63**	GFAAS
5491	1.35	0.34	0.289	-0.22	3.76	-0.37	GFAAS
5556	1.35	0.33	0.345	1.83	3.85	-0.08	GFAAS
5591	1.22	-1.05	0.280	-0.55	3.64	-0.80	ICP-MS
5654	1.26	-0.58	0.301	0.23	3.71	-0.55	ICP-MS (C/R)

Individual results
Blood Lead (µmol/L)
Round #2014-01

Participant	PC-B-L1401	z'-score	PC-B-L1402	z'-score	PC-B-L1403	z'-score	Method
5691	1.32	0.00	0.290	-0.18	3.85	-0.07	ICP-MS
6200	1.31	-0.07	0.294	-0.03	3.93	0.21	ICP-MS
6276	1.28	-0.38	0.280	-0.56	3.64	-0.81	ICP-MS
6511	1.29	-0.33	0.295	0.01	4.00	0.44	ND
6545	1.28	-0.42	0.280	-0.55	3.62	-0.87	ICP-MS
6794	1.39	0.77	0.302	0.24	4.46	**2.06**	GFAAS
7111	1.30	-0.17	0.289	-0.22	3.82	-0.18	ICP-MS
7269	1.33	0.11	0.330	1.29	3.76	-0.38	GFAAS
7311	1.33	0.11	0.300	0.18	3.88	0.03	ICP-MS
7760	1.24	-0.82	0.274	-0.79	4.09	0.76	ICP-MS
7804	0.813	**-5.33**	0.231	**-2.35**	3.85	-0.06	ND
7932	1.25	-0.74	0.315	0.74	3.14	**-2.56**	GFAAS
8701	1.22	-1.05	0.270	-0.92	3.55	-1.12	ND

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-B-L1401	1.32	0.0137	0.0937	1.13 - 1.51	Rejected	---
PC-B-L1402	0.295	0.00399	0.0268	0.241 - 0.349	Rejected	---
PC-B-L1403	3.87	0.0518	0.282	3.30 - 4.44	Accepted	---

Statistics
Blood Lead (µmol/L)

All methods	PC-B-L1401	PC-B-L1402	PC-B-L1403
N	60	59	56
Robust mean Algo A	1.32	0.295	3.87
Robust STDev	0.0848	0.0245	0.310
Median	1.31	0.295	3.85
STDev from MAD	0.0838	0.0229	0.297
Arithmetic mean	1.41	0.313	3.80
STDev	0.705	0.170	0.594
CV or Variability	6.4%	8.3%	8.0%

Graphite furnace-AAS	PC-B-L1401	PC-B-L1402	PC-B-L1403
N	24	24	22
Robust mean Algo A	1.34	0.300	3.89
Robust STDev	0.0583	0.0333	0.393
Median	1.35	0.296	3.82
STDev from MAD	0.0585	0.0316	0.348
Arithmetic mean	1.34	0.302	3.89
STDev	0.0928	0.0405	0.471
CV or Variability	4.3%	11.1%	10.1%

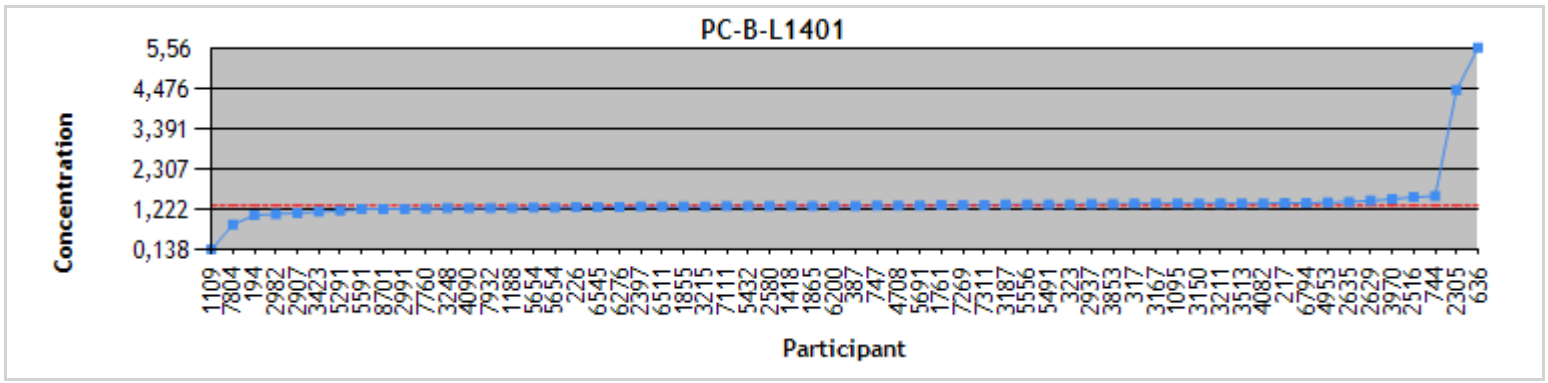
ICP-MS	PC-B-L1401	PC-B-L1402	PC-B-L1403
N	19	19	19
Robust mean Algo A	1.32	0.292	3.91
Robust STDev	0.0594	0.0143	0.196
Median	1.32	0.290	3.93
STDev from MAD	0.0593	0.0148	0.166
Arithmetic mean	1.53	0.293	3.89
STDev	0.978	0.0194	0.232
CV or Variability	4.5%	4.9%	5.0%

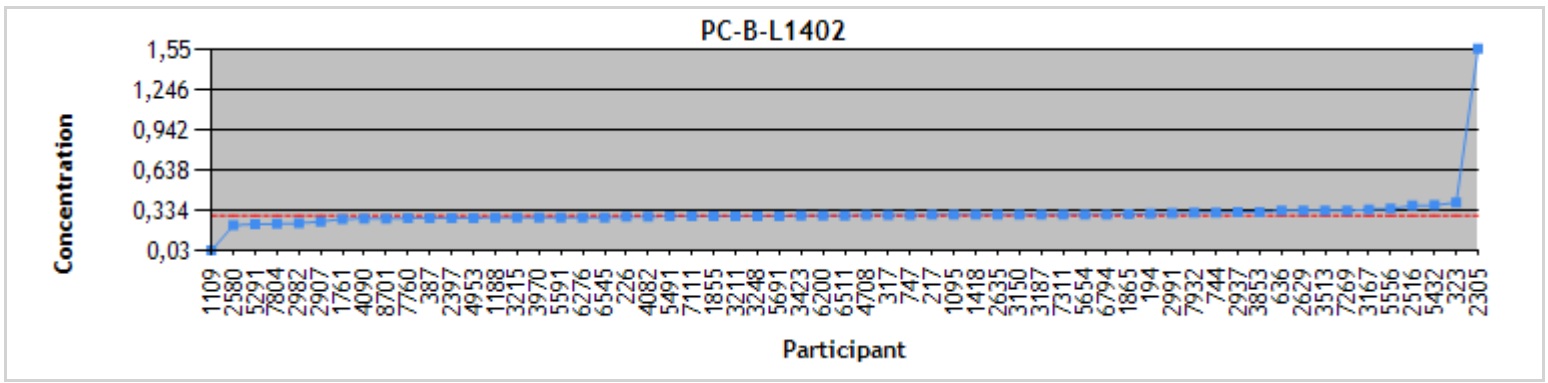
ICP-MS (collision/reaction cell)	PC-B-L1401	PC-B-L1402	PC-B-L1403
N	6	5	5
Robust mean Algo A	1.27	0.297	3.83
Robust STDev	0.0163	0.0265	0.220
Median	1.26	0.301	3.84
STDev from MAD	0.0141	0.0315	0.191
Arithmetic mean	1.30	0.297	3.87
STDev	0.0765	0.0233	0.289
CV or Variability	1.3%	8.9%	5.7%

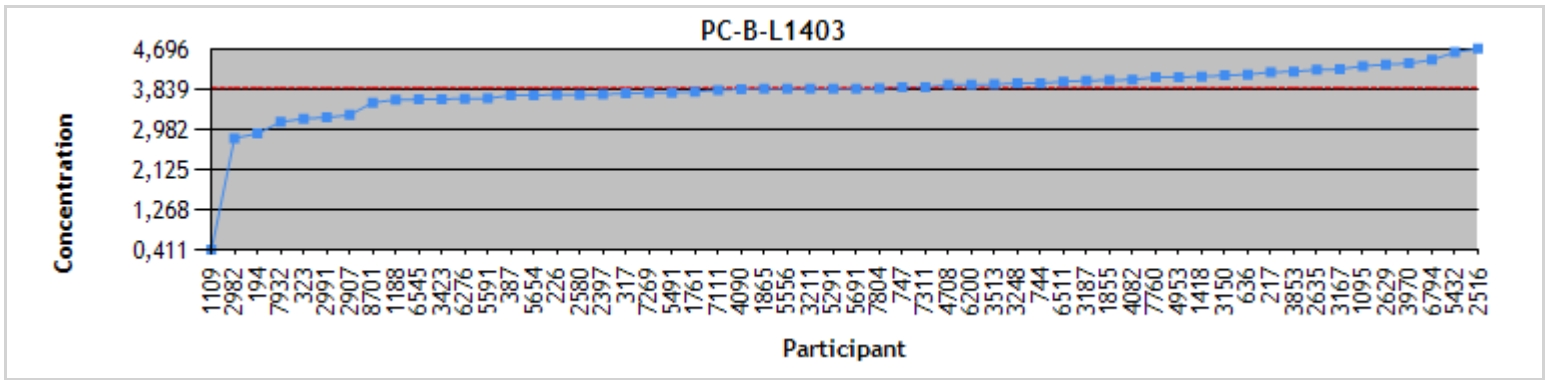
When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution

Blood Lead (µmol/L)







Individual results

Blood Mercury (nmol/L)

Round #2014-01

Participant	PC-B-M1401	z'-score	PC-B-M1402	z'-score	PC-B-M1403	z'-score	Method
176	19.9	-0.32	<19,9	---	419	1.22	ICP-MS
217	14.0	**-2.51**	12.0	**2.33**	451	1.92	ICP-MS
323	21.0	0.07	8.00	-0.87	328	-0.76	CV
428	22.9	0.79	9.77	0.55	318	-0.99	ICP-MS
744	19.7	-0.42	8.59	-0.40	388	0.55	ND
747	20.6	-0.07	8.73	-0.29	353	-0.22	ICP-MS
1095	19.0	-0.67	8.00	-0.87	354	-0.20	CV
1109	79.9	**21.84**	***123***	**90.90**	357	-0.13	ND
1156	39.9	**7.07**	7.26	-1.47	384	0.45	ND
1188	20.3	-0.18	8.38	-0.57	361	-0.04	ICP-MS (C/R)
1418	18.9	-0.70	8.48	-0.49	306	-1.25	ND
1865	22.7	0.71	9.87	0.63	384	0.47	CV
2907	<LQ	---	<LQ	---	296	-1.46	ICP-MS
3187	20.6	-0.07	8.79	-0.24	366	0.07	ICP-MS
3468	72.5	**19.12**	28.4	**15.47**	429	1.44	GA-AAS
3513	22.0	0.44	11.0	1.53	403	0.87	ICP-MS
3853	23.0	0.81	9.00	-0.07	453	1.96	ICP-MS
4708	22.8	0.74	9.55	0.37	390	0.59	ICP-MS
4953	21.3	0.18	8.97	-0.09	363	0.01	ICP-MS
5029	4.52	**-6.02**	45.5	**29.19**	155	**-4.53**	ND
5591	21.8	0.37	9.10	0.01	375	0.27	ICP-MS
5654	24.0	1.18	10.6	1.18	420	1.25	ICP-MS (C/R)
5691	22.0	0.44	9.00	-0.07	385	0.48	ICP-MS
5881	19.4	-0.50	9.97	0.71	329	-0.74	ICP-MS (C/R)
5980	4.02	**-6.21**	1.73	**-5.90**	68.8	**-6.41**	ND
6511	21.9	0.42	9.47	0.31	392	0.64	ND
6545	23.8	1.11	10.7	1.29	---	---	ICP-MS
6892	18.9	-0.70	7.68	-1.13	382	0.41	ND
6920	18.4	-0.89	6.94	-1.72	347	-0.34	ND
7263	20.0	-0.28	9.42	0.27	35.9	**-7.13**	GA-AAS
7269	<10	---	<10	---	415	1.13	CV
9313	---	---	3.73	**-4.29**	---	---	ICP-MS
9674	---	---	---	---	378	0.34	CV
9759	9.97	**-4.00**	<LQ	---	309	-1.17	GA-AAS
9777	19.7	-0.41	9.28	0.15	320	-0.94	GA-AAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-B-M1401	20.8	0.599	2.64	15.4 - 26.2	Rejected	Organic
PC-B-M1402	9.09	0.323	1.21	6.59 - 11.6	Rejected	Inorganic
PC-B-M1403	363	11.3	44.5	271 - 455	Accepted	Inorganic

Statistics
Blood Mercury (nmol/L)

All methods	PC-B-M1401	PC-B-M1402	PC-B-M1403
N	31	29	33
Robust mean Algo A	20.8	9.09	363
Robust STDev	2.67	1.39	52.0
Median	20.6	9.00	366
STDev from MAD	2.52	1.29	54.8
Arithmetic mean	23.5	10.6	346
STDev	15.4	7.90	93.5
CV or Variability	12.8%	15.3%	14.3%

Cold vapor	PC-B-M1401	PC-B-M1402	PC-B-M1403
N	3	3	5
Robust mean Algo A	20.9	8.00	372
Robust STDev	2.12	0.00	37.2
Median	21.0	8.00	378
STDev from MAD	2.57	0.00	36.2
Arithmetic mean	20.9	8.62	372
STDev	1.87	1.08	32.8
CV or Variability	10.1%	0.0%	10.0%

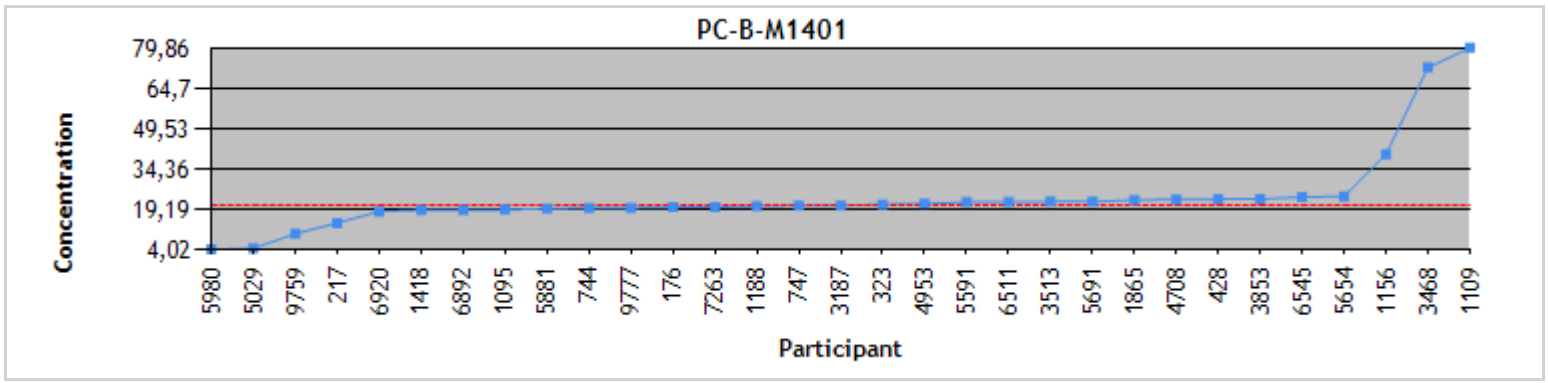
Gold amalgamation-AAS	PC-B-M1401	PC-B-M1402	PC-B-M1403
N	4	3	4
Robust mean Algo A	20.2	9.48	310
Robust STDev	9.78	0.261	115
Median	19.9	9.42	315
STDev from MAD	7.47	0.206	89.1
Arithmetic mean	30.5	15.7	274
STDev	28.4	11.0	167
CV or Variability	48.4%	2.7%	37.2%

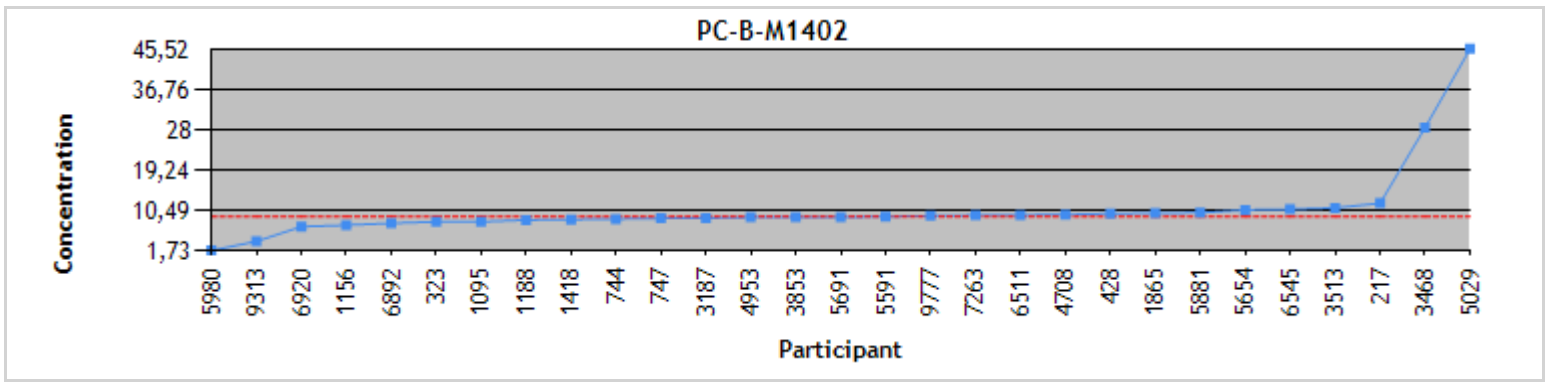
ICP-MS	PC-B-M1401	PC-B-M1402	PC-B-M1403
N	12	12	12
Robust mean Algo A	21.7	9.25	381
Robust STDev	1.51	0.649	42.9
Median	21.9	9.05	380
STDev from MAD	1.58	0.608	37.1
Arithmetic mean	21.2	9.20	381
STDev	2.55	2.01	47.4
CV or Variability	6.9%	7.0%	11.2%

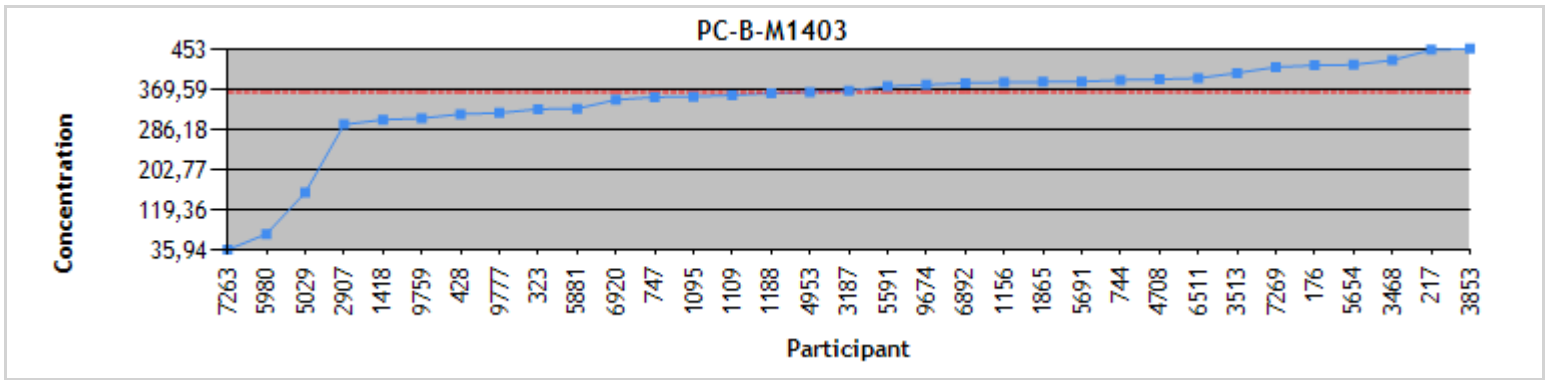
ICP-MS (collision/reaction cell)	PC-B-M1401	PC-B-M1402	PC-B-M1403
N	3	3	3
Robust mean Algo A	20.6	9.73	370
Robust STDev	1.60	1.12	52.4
Median	20.3	9.97	361
STDev from MAD	1.27	0.887	47.4
Arithmetic mean	21.2	9.64	370
STDev	2.41	1.13	46.2
CV or Variability	7.8%	11.5%	14.2%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Blood Mercury (nmol/L)







Individual results

Serum Aluminium (µmol/L)

Round #2014-01

Participant	PC-S-A1401	z'-score	PC-S-A1402	z'-score	PC-S-A1403	z'-score	Method
217	1.61	0.73	0.790	1.32	6.73	0.60	ICP-MS
323	1.09	-1.82	0.490	-1.38	4.40	**-2.45**	GFAAS
387	1.27	-0.93	0.490	-1.38	5.37	-1.18	GFAAS
636	1.47	0.05	0.680	0.33	6.40	0.17	ICP-MS
747	1.41	-0.24	0.555	-0.79	6.35	0.10	ICP-MS
1095	1.59	0.64	0.660	0.15	6.46	0.25	GFAAS
1109	1.33	-0.62	0.600	-0.38	5.39	-1.15	ND
1418	2.14	**3.32**	0.849	1.85	8.04	**2.31**	ICP-MS (C/R)
1855	1.45	-0.07	0.593	-0.45	5.74	-0.69	ICP-MS
1865	1.41	-0.23	0.582	-0.55	6.06	-0.27	GFAAS
2305	1.16	-1.47	0.170	**-4.26**	5.38	-1.16	ND
2516	1.20	-1.29	0.397	**-2.22**	5.71	-0.73	GFAAS
2580	1.59	0.61	0.741	0.88	7.00	0.95	GFAAS
2629	1.53	0.34	0.820	1.59	7.56	1.68	GFAAS
2763	1.45	-0.05	0.734	0.82	5.70	-0.74	ICP-MS
3150	1.51	0.24	0.660	0.15	7.60	1.74	GFAAS
3167	1.39	-0.34	0.600	-0.39	6.70	0.56	GFAAS
3513	1.28	-0.88	0.560	-0.75	5.87	-0.52	ICP-MS (C/R)
3853	1.33	-0.64	0.440	-1.83	6.09	-0.24	ICP-MS
4090	---	---	***7.23***	**59.33**	1.52	**-6.20**	ICP-MS (C/R)
4953	1.63	0.84	0.667	0.22	7.04	1.01	GFAAS
5291	1.85	1.91	0.800	1.41	7.04	1.01	ND
5654	1.25	-1.02	0.597	-0.41	6.25	-0.03	ICP-MS (C/R)
5691	1.31	-0.73	0.580	-0.57	5.38	-1.16	ICP-MS
5881	1.42	-0.20	0.597	-0.42	6.67	0.52	ICP-MS (C/R)
5955	1.60	0.69	0.685	0.38	6.94	0.88	ND
6511	1.50	0.22	0.689	0.42	6.54	0.35	ND
6702	1.52	0.29	0.709	0.59	6.31	0.05	GFAAS
7804	1.40	-0.29	0.660	0.15	5.95	-0.42	ND
8376	1.73	1.33	0.803	1.44	6.83	0.73	GFAAS
8454	1.46	0.00	0.520	-1.11	5.83	-0.57	GFAAS
9759	1.72	1.27	0.786	1.29	>LL	---	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-S-A1401	1.46	0.0425	0.200	1.05 - 1.87	Accepted	---
PC-S-A1402	0.643	0.0279	0.107	0.421 - 0.865	Accepted	---
PC-S-A1403	6.27	0.180	0.744	4.74 - 7.80	Accepted	---

Statistics

Serum Aluminium (µmol/L)

All methods	PC-S-A1401	PC-S-A1402	PC-S-A1403
N	31	31	31
Robust mean Algo A	1.46	0.643	6.27
Robust STDev	0.189	0.124	0.803
Median	1.45	0.660	6.31
STDev from MAD	0.200	0.118	0.838
Arithmetic mean	1.47	0.629	6.16
STDev	0.212	0.142	1.16
CV or Variability	13.0%	19.3%	12.8%

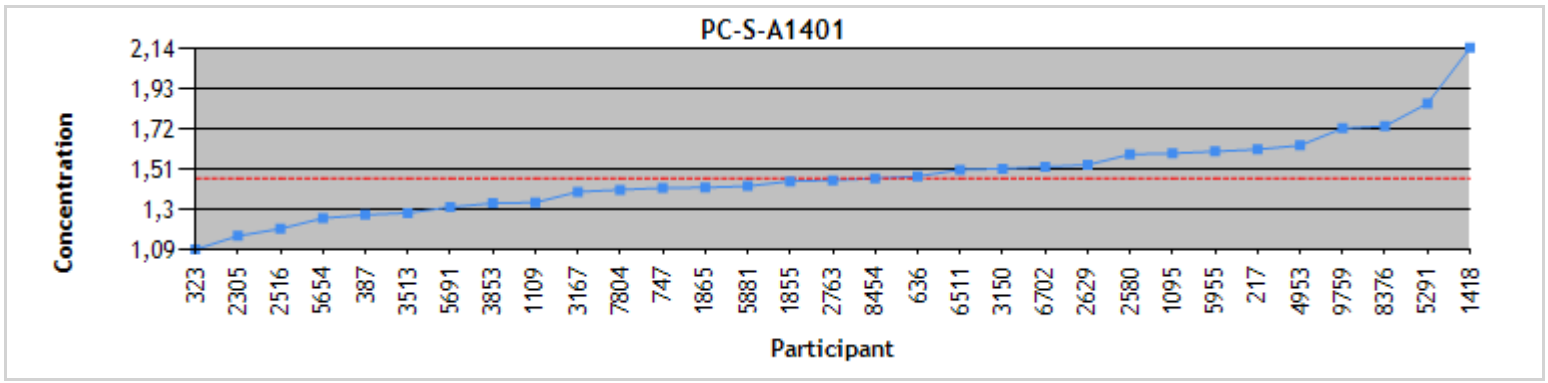
Graphite furnace-AAS	PC-S-A1401	PC-S-A1402	PC-S-A1403
N	14	14	13
Robust mean Algo A	1.49	0.640	6.43
Robust STDev	0.176	0.142	0.886
Median	1.52	0.660	6.46
STDev from MAD	0.162	0.153	0.863
Arithmetic mean	1.47	0.637	6.37
STDev	0.188	0.130	0.905
CV or Variability	11.8%	22.3%	13.8%

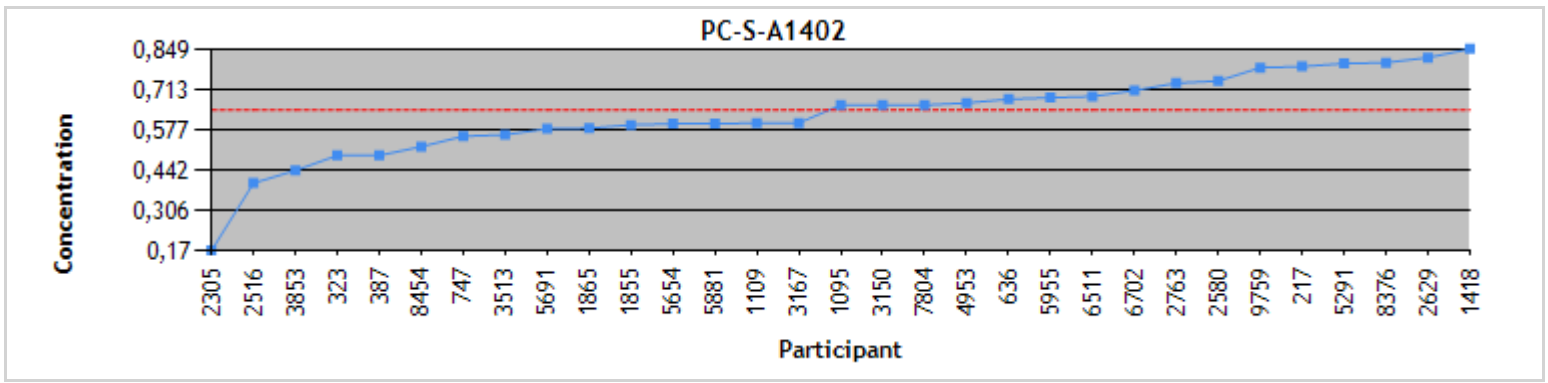
ICP-MS	PC-S-A1401	PC-S-A1402	PC-S-A1403
N	7	7	7
Robust mean Algo A	1.43	0.624	6.06
Robust STDev	0.0646	0.134	0.536
Median	1.45	0.593	6.09
STDev from MAD	0.0525	0.129	0.512
Arithmetic mean	1.43	0.625	6.06
STDev	0.0995	0.119	0.473
CV or Variability	4.5%	21.4%	8.9%

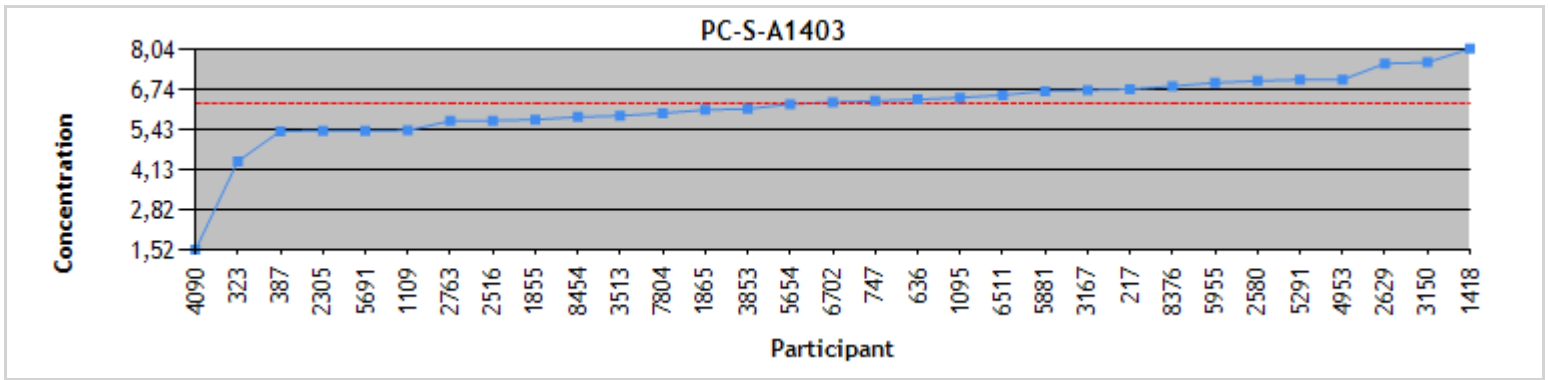
ICP-MS (collision/reaction cell)	PC-S-A1401	PC-S-A1402	PC-S-A1403
N	4	4	5
Robust mean Algo A	1.37	0.598	6.26
Robust STDev	0.150	0.0365	0.821
Median	1.35	0.597	6.25
STDev from MAD	0.124	0.0278	0.628
Arithmetic mean	1.52	0.651	5.67
STDev	0.417	0.133	2.46
CV or Variability	10.9%	6.1%	13.1%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Serum Aluminium (µmol/L)







Individual results

Serum Copper (µmol/L)

Round #2014-01

Participant	PC-S-E1401	z'-score	PC-S-E1402	z'-score	PC-S-E1403	z'-score	Method
217	17.9	1.06	28.0	0.56	10.8	1.37	FAAS
226	17.6	0.80	27.7	0.35	9.47	-0.24	ICP-MS (C/R)
387	18.7	1.76	28.2	0.68	10.0	0.45	GFAAS
428	17.9	1.02	29.3	1.35	10.1	0.49	ICP-MS (C/R)
636	15.5	-1.03	24.7	-1.48	8.61	-1.29	ICP-MS
744	16.4	-0.31	26.9	-0.10	9.89	0.27	ND
747	16.8	0.09	27.4	0.19	9.73	0.07	ICP-MS
1095	17.2	0.44	28.0	0.56	9.70	0.04	FAAS
1109	16.8	0.09	27.9	0.53	9.62	-0.06	ND
1188	17.0	0.25	27.6	0.31	9.73	0.07	ICP-MS (C/R)
1300	16.8	0.12	27.5	0.27	9.60	-0.09	FAAS
1855	15.8	-0.75	25.8	-0.80	9.77	0.12	ICP-MS
2305	15.6	-1.01	9.35	**-11.05**	25.2	**18.81**	ND
2516	11.1	**-4.92**	19.4	**-4.79**	6.90	**-3.37**	ND
2580	17.6	0.79	29.0	1.18	10.5	1.01	FAAS
2763	16.7	0.00	27.0	-0.06	9.52	-0.18	ICP-MS (C/R)
2907	16.4	-0.31	26.9	-0.11	9.43	-0.30	ICP-MS
2982	16.8	0.12	26.5	-0.39	9.43	-0.30	FAAS
3150	16.6	-0.09	26.6	-0.31	9.10	-0.69	FAAS
3211	16.1	-0.53	26.4	-0.44	9.30	-0.45	FAAS
3423	16.1	-0.57	27.6	0.33	8.78	-1.09	FAAS
3513	17.3	0.53	28.6	0.93	10.2	0.64	ICP-MS
3773	19.2	**2.18**	30.3	**2.02**	11.4	**2.13**	ICP-MS (C/R)
3853	19.1	**2.09**	28.9	1.11	10.8	1.36	ICP-MS
4082	16.7	0.00	27.6	0.31	9.50	-0.21	ICP-MS
4090	16.1	-0.52	27.0	-0.08	8.90	-0.94	ICP-MS (C/R)
4953	17.8	0.95	29.1	1.26	10.4	0.87	ICP-MS
5291	17.7	0.88	29.3	1.37	10.5	1.01	ND
5556	17.0	0.26	26.0	-0.71	10.4	0.87	FAAS
5591	17.2	0.44	28.7	1.00	9.80	0.16	GFAAS
5596	14.8	-1.71	24.6	-1.56	8.88	-0.95	ICP-MS (C/R)
5654	15.4	-1.14	25.0	-1.33	8.63	-1.26	ICP-MS (C/R)
5691	15.9	-0.70	24.8	-1.43	9.30	-0.45	ICP-MS
5881	17.0	0.26	27.2	0.06	9.76	0.11	ICP-MS (C/R)
5955	16.9	0.18	27.7	0.37	9.69	0.02	ND
6511	16.4	-0.31	27.0	-0.04	9.13	-0.66	ND
6711	16.2	-0.47	26.1	-0.65	9.73	0.08	ND
7311	16.4	-0.24	27.2	0.08	9.79	0.15	ICP-MS
7804	24.4	**6.73**	19.0	**-5.05**	6.35	**-4.03**	ND
8376	18.8	1.84	31.8	**2.92**	11.3	1.98	FAAS
8454	16.4	-0.26	26.1	-0.62	9.71	0.05	FAAS
8981	15.9	-0.70	24.9	-1.37	9.43	-0.29	ND
9677	14.6	-1.86	23.8	**-2.06**	8.34	-1.61	ICP-OES
9759	15.9	-0.71	27.0	-0.07	9.65	-0.03	FAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-S-E1401	16.7	0.193	1.12	14.4 - 19.0	Rejected	---
PC-S-E1402	27.1	0.315	1.57	23.9 - 30.3	Rejected	---
PC-S-E1403	9.67	0.120	0.814	8.02 - 11.3	Rejected	---

Statistics
Serum Copper (µmol/L)

All methods	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	44	44	44
Robust mean Algo A	16.7	27.1	9.67
Robust STDev	1.02	1.67	0.636
Median	16.8	27.1	9.70
STDev from MAD	1.00	1.53	0.572
Arithmetic mean	16.8	26.5	9.93
STDev	1.77	3.51	2.52
CV or Variability	6.1%	6.2%	6.6%

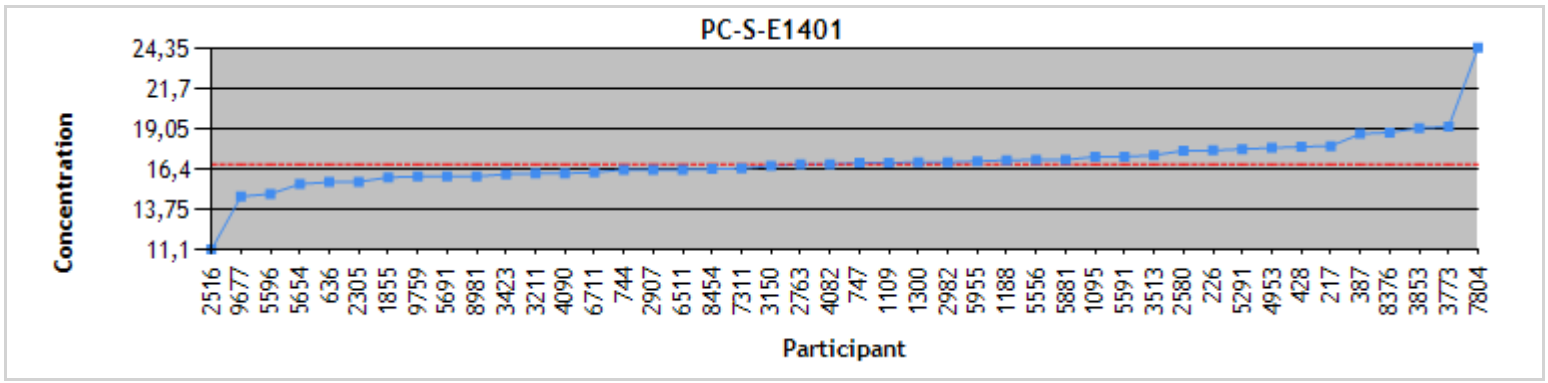
Flame-AAS	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	12	12	12
Robust mean Algo A	16.9	27.3	9.80
Robust STDev	0.823	1.19	0.730
Median	16.8	27.3	9.67
STDev from MAD	0.872	1.14	0.702
Arithmetic mean	16.9	27.5	9.85
STDev	0.847	1.62	0.742
CV or Variability	4.9%	4.3%	7.4%

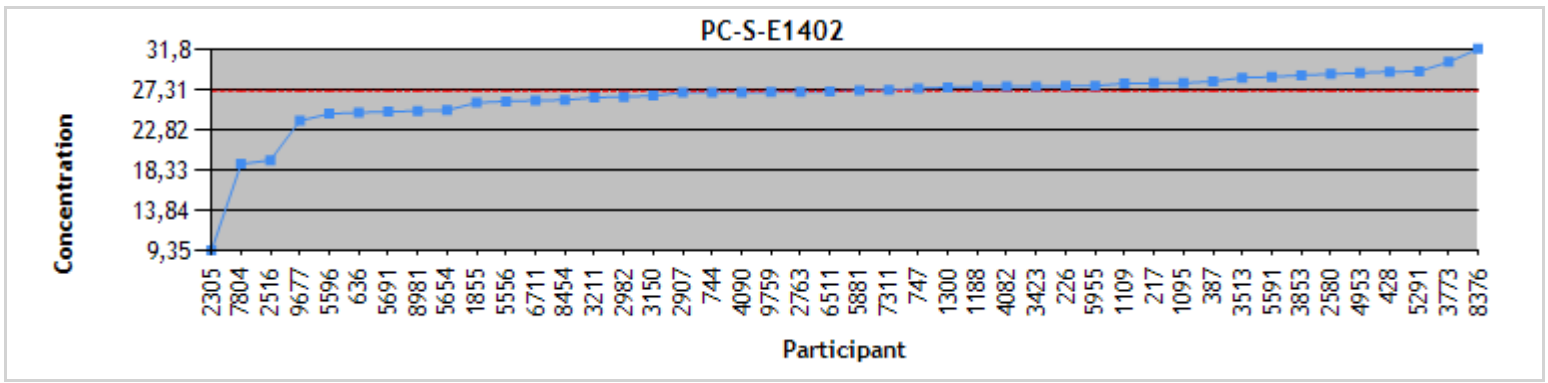
ICP-MS	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	10	10	10
Robust mean Algo A	16.7	27.1	9.76
Robust STDev	0.959	1.79	0.593
Median	16.6	27.3	9.75
STDev from MAD	1.03	2.07	0.574
Arithmetic mean	16.8	27.1	9.75
STDev	1.06	1.58	0.611
CV or Variability	5.8%	6.6%	6.1%

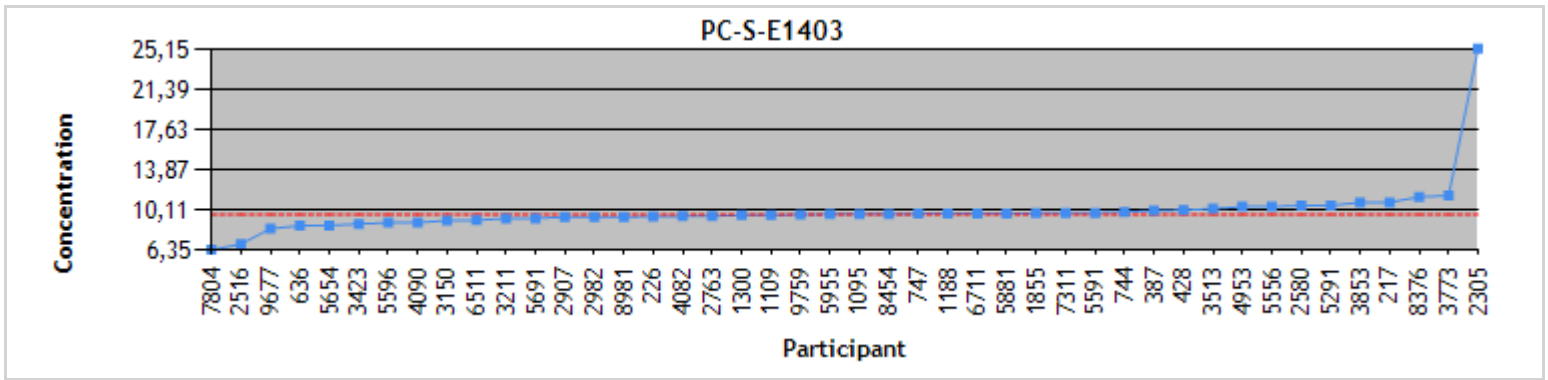
ICP-MS (collision/reaction cell)	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	9	9	9
Robust mean Algo A	16.8	27.2	9.51
Robust STDev	1.38	0.884	0.724
Median	17.0	27.2	9.52
STDev from MAD	1.29	0.700	0.818
Arithmetic mean	16.8	27.3	9.60
STDev	1.33	1.82	0.833
CV or Variability	8.2%	3.2%	7.6%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Serum Copper (µmol/L)







Individual results

Serum Manganese (nmol/L)

Round #2014-01

Participant	PC-S-G1401	z'-score	PC-S-G1402	z'-score	PC-S-G1403	z'-score	Method
217	36.0	1.49	17.0	**2.78**	58.0	0.59	ICP-MS
323	28.0	-0.46	8.00	-1.77	49.0	-0.62	GFAAS
747	29.3	-0.15	13.0	0.76	54.6	0.13	ICP-MS
1109	34.6	1.14	17.3	**2.92**	71.0	**2.34**	ND
1188	31.1	0.29	11.5	0.00	55.5	0.26	ICP-MS (C/R)
2629	19.7	**-2.50**	10.9	-0.29	31.3	**-3.00**	GFAAS
2763	26.7	-0.78	9.94	-0.79	46.1	-1.01	ICP-MS (C/R)
2978	32.2	0.57	11.7	0.09	62.3	1.17	ICP-MS (C/R)
6511	29.7	-0.06	11.5	-0.02	52.4	-0.16	ND
8376	28.0	-0.46	9.10	-1.21	47.3	-0.85	GFAAS
9759	30.9	0.25	10.9	-0.29	56.4	0.38	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-S-G1401	29.9	1.09	3.95	21.7 - 38.1	Accepted	---
PC-S-G1402	11.5	0.912	1.76	7.54 - 15.5	Rejected	---
PC-S-G1403	53.6	3.03	6.78	38.8 - 68.4	Accepted	---

Statistics

Serum Manganese (nmol/L)

All methods	PC-S-G1401	PC-S-G1402	PC-S-G1403
N	11	11	11
Robust mean Algo A	29.9	11.5	53.6
Robust STDev	2.90	2.42	8.03
Median	29.7	11.5	54.6
STDev from MAD	2.48	2.27	8.30
Arithmetic mean	29.7	11.9	53.1
STDev	4.35	2.92	10.1
CV or Variability	9.7%	21.1%	15.0%

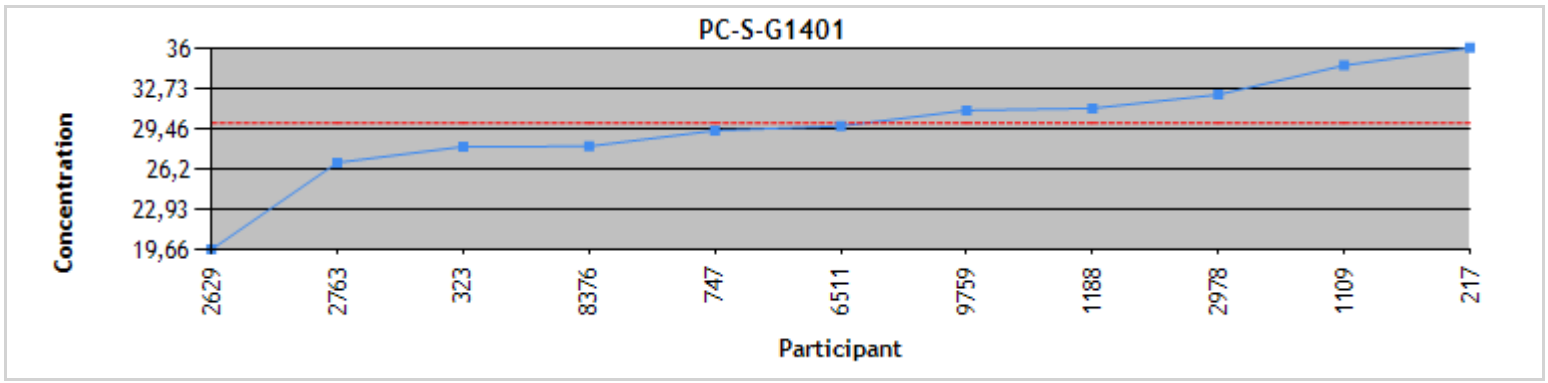
Graphite furnace-AAS	PC-S-G1401	PC-S-G1402	PC-S-G1403
N	4	4	4
Robust mean Algo A	27.9	9.74	47.7
Robust STDev	2.87	1.63	8.57
Median	28.0	10.0	48.2
STDev from MAD	2.18	1.35	6.75
Arithmetic mean	26.7	9.74	46.0
STDev	4.87	1.44	10.6
CV or Variability	10.3%	16.8%	18.0%

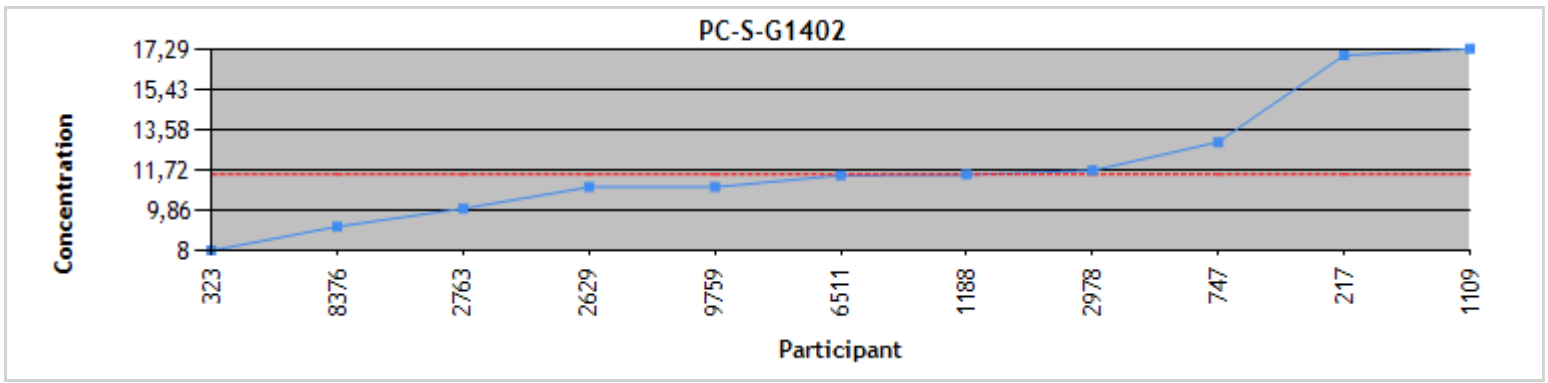
ICP-MS (collision/reaction cell)	PC-S-G1401	PC-S-G1402	PC-S-G1403
N	3	3	3
Robust mean Algo A	30.6	11.4	54.6
Robust STDev	2.09	0.348	9.20
Median	31.1	11.5	55.5
STDev from MAD	1.66	0.276	10.0
Arithmetic mean	30.0	11.0	54.6
STDev	2.92	0.959	8.11
CV or Variability	6.8%	3.0%	16.8%

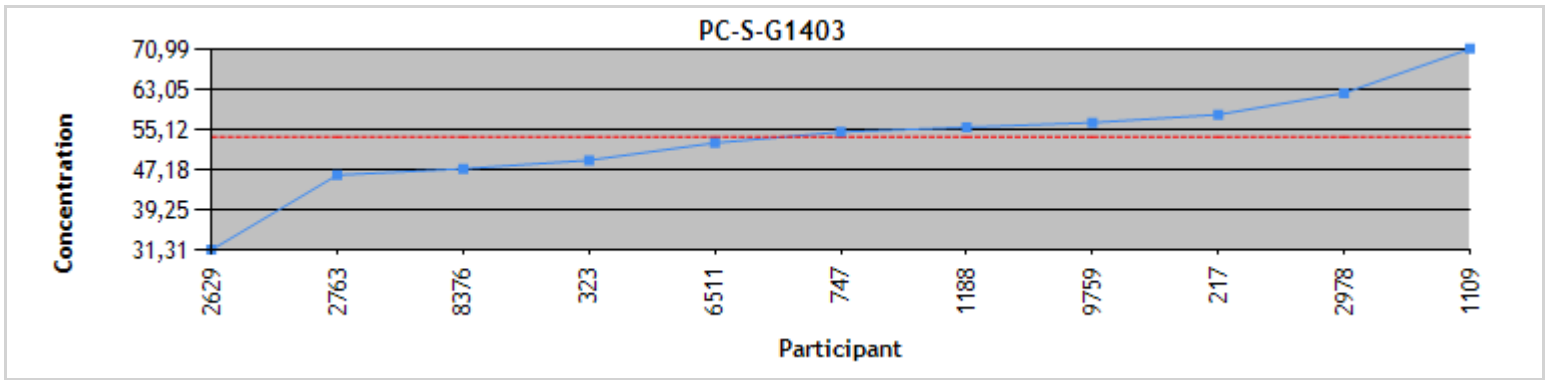
When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution

Serum Manganese (nmol/L)







Individual results

Serum Selenium (µmol/L)

Round #2014-01

Participant	PC-S-E1401	z'-score	PC-S-E1402	z'-score	PC-S-E1403	z'-score	Method
217	1.95	1.71	2.39	0.96	1.50	1.23	ICP-MS
226	1.77	0.55	2.27	0.34	1.34	0.02	ICP-MS (C/R)
428	1.65	-0.21	2.20	0.02	1.32	-0.18	ICP-MS (C/R)
636	1.61	-0.44	2.17	-0.15	1.30	-0.31	ICP-MS
747	1.56	-0.76	2.14	-0.30	1.28	-0.46	ICP-MS
1095	1.58	-0.63	2.09	-0.55	1.40	0.46	GFAAS
1109	1.82	0.88	2.27	0.34	1.61	**2.04**	ND
1188	1.84	1.01	2.43	1.16	1.47	1.00	ICP-MS (C/R)
1300	1.89	1.31	2.20	0.02	1.29	-0.37	HG-AAS
1855	1.62	-0.37	2.28	0.40	1.47	0.99	ICP-MS (C/R)
2305	1.75	0.44	1.90	-1.51	1.33	-0.08	ND
2516	1.87	1.20	2.50	1.51	1.59	1.92	ND
2763	1.59	-0.57	2.08	-0.61	1.23	-0.84	ICP-MS (C/R)
3150	1.58	-0.63	2.11	-0.45	1.40	0.46	GFAAS
3513	1.50	-1.14	1.92	-1.41	1.25	-0.69	ICP-MS (C/R)
3773	1.74	0.36	2.34	0.71	1.35	0.11	ICP-MS (C/R)
3853	1.83	0.95	2.28	0.40	1.41	0.54	ICP-MS (C/R)
4082	1.70	0.13	2.33	0.66	1.33	-0.08	ICP-MS
4590	1.40	-1.79	1.99	-1.06	1.11	-1.78	GFAAS
4953	1.60	-0.53	2.10	-0.49	1.24	-0.80	ICP-MS (C/R)
5291	1.53	-0.95	2.18	-0.10	1.35	0.08	ND
5556	1.38	-1.89	2.05	-0.75	1.24	-0.78	GFAAS
5596	1.75	0.42	2.37	0.84	1.38	0.27	ICP-MS (C/R)
5654	1.86	1.14	2.39	0.98	1.38	0.31	ICP-MS (C/R)
5691	1.53	-0.95	1.92	-1.41	1.18	-1.23	ICP-MS
5881	1.68	0.00	2.22	0.10	1.32	-0.15	ICP-MS (C/R)
5955	1.63	-0.32	2.19	-0.05	1.30	-0.31	ND
6511	1.75	0.43	2.29	0.44	1.32	-0.16	ND
6545	1.74	0.38	2.27	0.35	1.37	0.23	ICP-MS
7311	1.86	1.14	2.43	1.16	1.43	0.69	ICP-MS
7804	1.40	-1.77	1.80	**-2.02**	1.23	-0.84	ND
8376	1.63	-0.33	2.16	-0.22	1.38	0.30	GFAAS
8454	1.59	-0.57	2.05	-0.76	1.32	-0.15	GFAAS
9759	1.84	1.02	2.40	1.01	1.56	1.67	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-S-E1401	1.68	0.0329	0.155	1.36 - 2.00	Accepted	---
PC-S-E1402	2.20	0.0379	0.195	1.80 - 2.60	Accepted	---
PC-S-E1403	1.34	0.0202	0.129	1.08 - 1.60	Accepted	---

Statistics
Serum Selenium (µmol/L)

All methods	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	34	34	34
Robust mean Algo A	1.68	2.20	1.34
Robust STDev	0.153	0.177	0.0942
Median	1.66	2.20	1.34
STDev from MAD	0.141	0.176	0.0890
Arithmetic mean	1.68	2.20	1.35
STDev	0.149	0.170	0.111
CV or Variability	9.1%	8.0%	7.0%

Graphite furnace-AAS	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	7	7	7
Robust mean Algo A	1.57	2.09	1.36
Robust STDev	0.0871	0.0714	0.107
Median	1.58	2.09	1.38
STDev from MAD	0.0703	0.0593	0.0878
Arithmetic mean	1.57	2.12	1.34
STDev	0.155	0.134	0.142
CV or Variability	5.5%	3.4%	7.9%

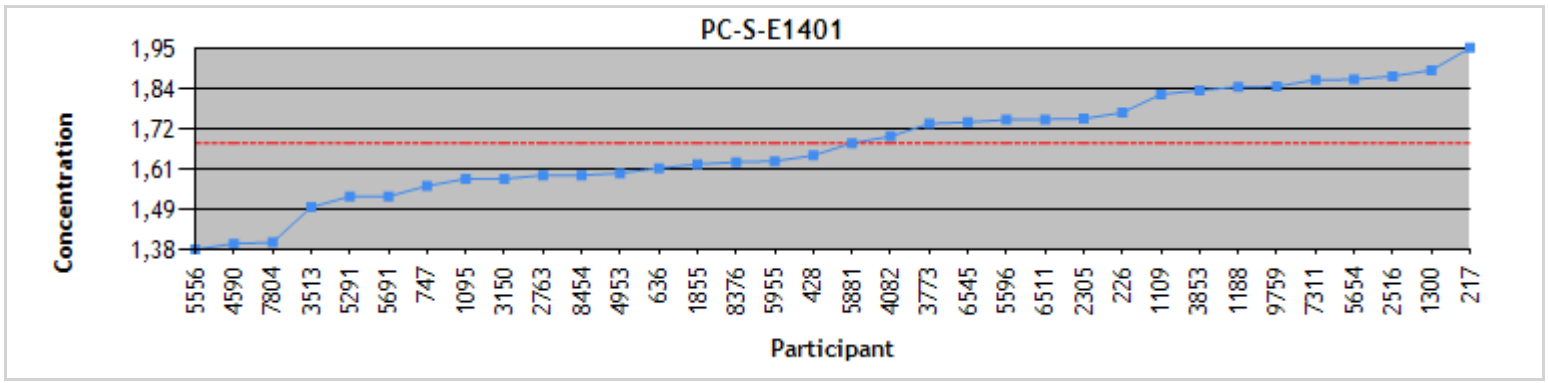
ICP-MS	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	7	7	7
Robust mean Algo A	1.71	2.25	1.34
Robust STDev	0.177	0.172	0.0917
Median	1.70	2.27	1.33
STDev from MAD	0.208	0.178	0.0742
Arithmetic mean	1.71	2.24	1.34
STDev	0.156	0.175	0.104
CV or Variability	10.4%	7.7%	6.9%

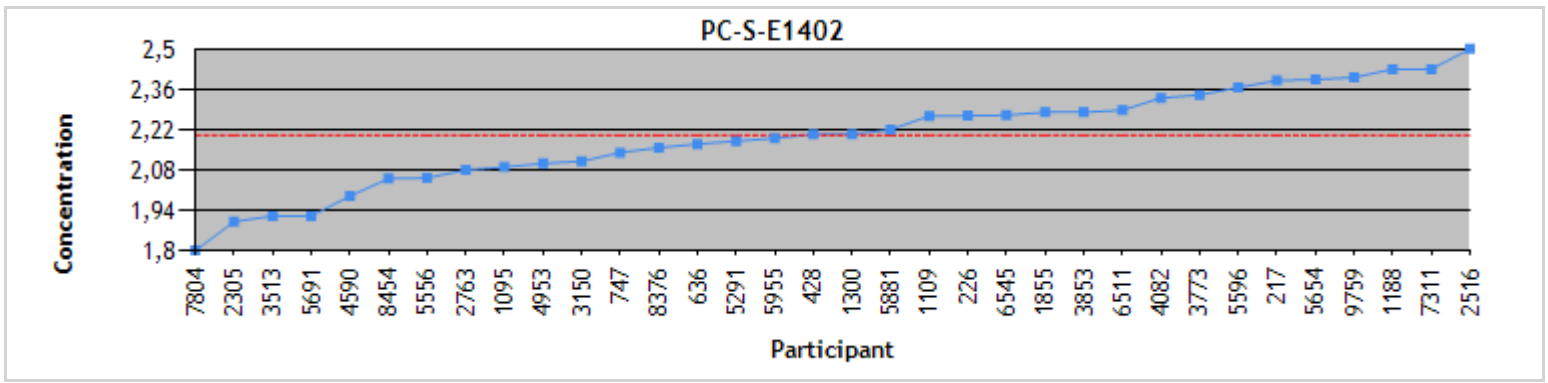
ICP-MS (collision/reaction cell)	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	12	12	12
Robust mean Algo A	1.70	2.26	1.35
Robust STDev	0.128	0.132	0.0845
Median	1.71	2.27	1.35
STDev from MAD	0.148	0.120	0.0701
Arithmetic mean	1.70	2.24	1.35
STDev	0.114	0.147	0.0815
CV or Variability	7.5%	5.9%	6.3%

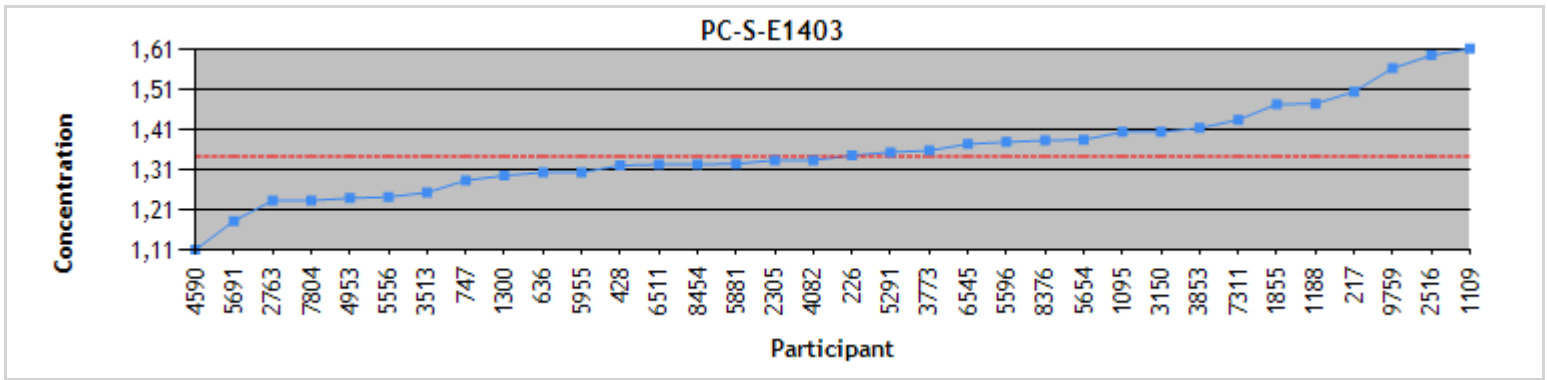
When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution

Serum Selenium (µmol/L)







Individual results

Serum Zinc (µmol/L)

Round #2014-01

Participant	PC-S-E1401	z'-score	PC-S-E1402	z'-score	PC-S-E1403	z'-score	Method
217	21.2	1.14	29.3	0.89	14.4	1.62	FAAS
226	19.7	0.38	25.2	-0.62	13.0	0.48	ICP-MS (C/R)
428	19.6	0.30	28.4	0.54	12.9	0.43	ICP-MS (C/R)
636	17.3	-0.89	26.5	-0.15	12.0	-0.30	ICP-MS
744	17.5	-0.77	26.9	-0.01	11.4	-0.77	ND
747	19.0	0.00	27.1	0.07	12.3	-0.08	ICP-MS
1095	16.8	-1.15	24.2	-1.00	10.9	-1.21	FAAS
1109	21.4	1.26	29.0	0.80	14.1	1.38	ND
1188	19.0	-0.03	26.6	-0.11	12.5	0.08	ICP-MS (C/R)
1300	20.3	0.70	28.1	0.46	13.0	0.48	FAAS
1855	16.9	-1.11	24.1	-1.05	12.6	0.17	ICP-MS
2305	17.4	-0.86	24.8	-0.77	11.8	-0.52	ND
2516	19.6	0.31	28.6	0.63	13.2	0.64	ND
2580	19.2	0.10	27.3	0.15	12.6	0.16	FAAS
2763	18.3	-0.37	25.8	-0.41	11.8	-0.48	ICP-MS (C/R)
2907	20.4	0.73	26.9	-0.01	12.7	0.23	ICP-MS
2982	15.8	-1.66	23.3	-1.35	9.88	**-2.03**	FAAS
3150	18.9	-0.05	26.6	-0.11	12.1	-0.24	FAAS
3211	19.5	0.26	28.0	0.41	12.6	0.16	FAAS
3423	18.1	-0.45	27.0	0.05	11.9	-0.39	FAAS
3513	18.8	-0.10	27.7	0.30	12.2	-0.16	ICP-MS
3773	21.4	1.27	29.6	1.00	14.5	1.72	ICP-MS (C/R)
3853	21.4	1.28	28.5	0.61	13.7	1.01	ICP-MS
4082	19.2	0.10	27.9	0.37	12.3	-0.08	ICP-MS (C/R)
4090	18.0	-0.51	25.5	-0.54	11.1	-1.05	ICP-MS (C/R)
4953	20.5	0.77	28.8	0.71	13.5	0.89	ICP-MS
5291	22.9	**2.04**	32.2	1.97	15.0	**2.10**	ND
5556	18.8	-0.10	25.4	-0.57	11.9	-0.38	FAAS
5591	18.8	-0.10	25.8	-0.41	12.7	0.24	FAAS
5596	18.0	-0.51	25.7	-0.44	12.2	-0.19	ICP-MS (C/R)
5654	17.5	-0.78	25.3	-0.60	11.3	-0.88	ICP-MS (C/R)
5691	17.8	-0.63	24.6	-0.85	11.9	-0.40	ICP-MS
5881	19.2	0.12	27.4	0.19	12.4	0.02	ICP-MS (C/R)
5955	18.6	-0.21	26.7	-0.07	12.2	-0.16	ND
6511	19.2	0.09	27.1	0.07	12.1	-0.25	ND
7311	19.8	0.41	28.1	0.45	12.9	0.42	ICP-MS
7804	16.5	-1.31	21.1	**-2.16**	6.90	**-4.43**	ND
8376	20.0	0.54	28.5	0.61	13.4	0.82	FAAS
8454	17.4	-0.84	25.5	-0.52	12.0	-0.32	FAAS
8981	20.5	0.79	28.1	0.45	13.3	0.73	ND
9677	16.9	-1.10	24.2	-1.02	10.7	-1.40	ICP-OES
9759	21.1	1.07	29.8	1.08	14.3	1.51	FAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-S-E1401	19.0	0.320	1.88	15.2 - 22.8	Accepted	---
PC-S-E1402	26.9	0.379	2.66	21.5 - 32.3	Accepted	---
PC-S-E1403	12.4	0.177	1.23	9.91 - 14.9	Accepted	---

Statistics
Serum Zinc (µmol/L)

All methods	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	42	42	42
Robust mean Algo A	19.0	26.9	12.4
Robust STDev	1.66	1.96	0.918
Median	19.0	27.0	12.4
STDev from MAD	1.65	2.12	0.841
Arithmetic mean	19.0	26.8	12.4
STDev	1.57	2.04	1.37
CV or Variability	8.7%	7.3%	7.4%

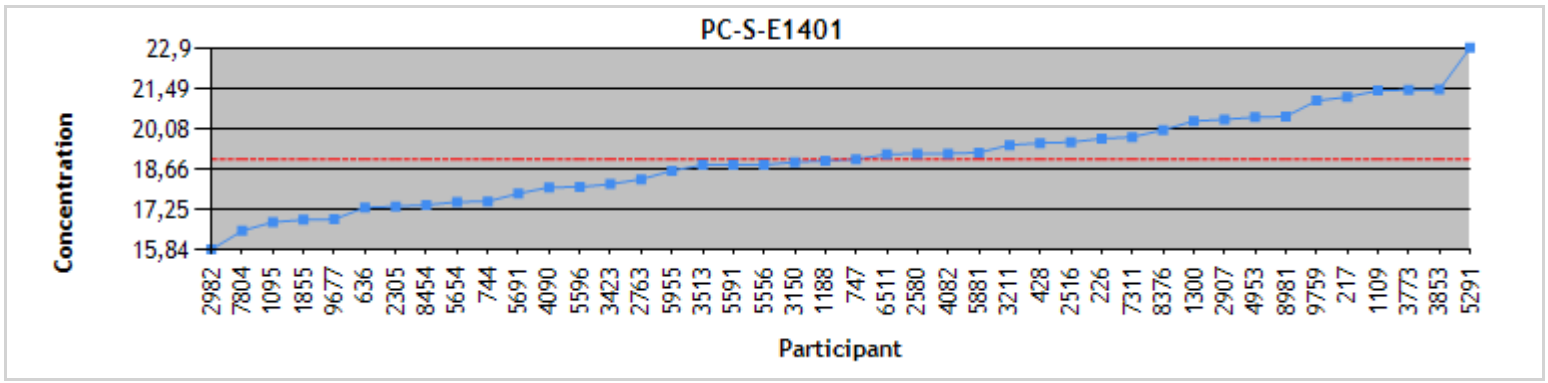
Flame-AAS	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	13	13	13
Robust mean Algo A	19.0	26.9	12.5
Robust STDev	1.70	2.14	1.10
Median	18.9	27.0	12.6
STDev from MAD	1.67	2.21	1.00
Arithmetic mean	18.9	26.8	12.4
STDev	1.59	1.95	1.24
CV or Variability	9.0%	7.9%	8.8%

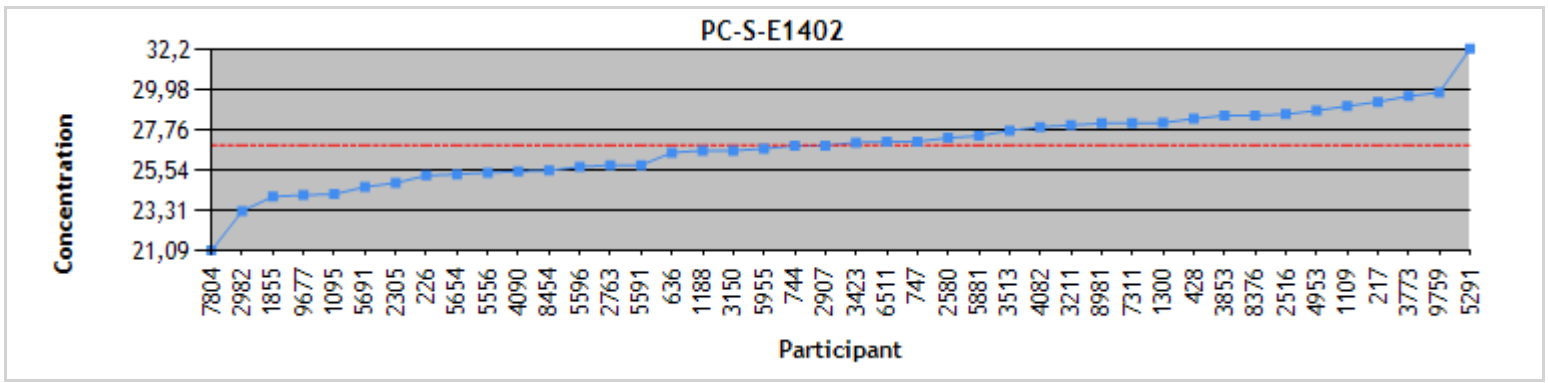
ICP-MS	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	9	9	9
Robust mean Algo A	19.1	27.0	12.6
Robust STDev	1.77	1.64	0.676
Median	19.0	27.1	12.6
STDev from MAD	2.07	1.50	0.612
Arithmetic mean	19.1	26.9	12.6
STDev	1.56	1.66	0.619
CV or Variability	9.3%	6.1%	5.4%

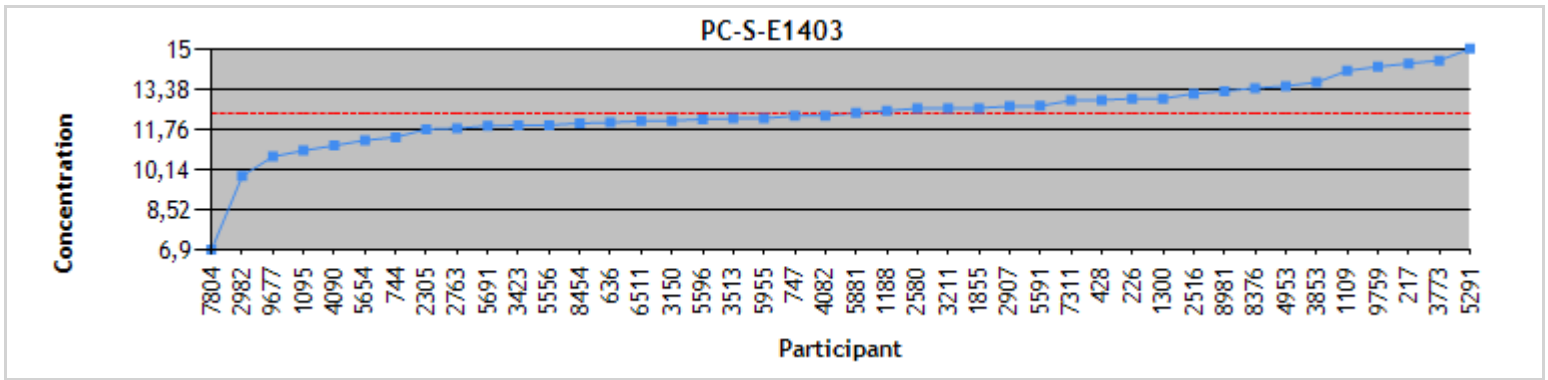
ICP-MS (collision/reaction cell)	PC-S-E1401	PC-S-E1402	PC-S-E1403
N	10	10	10
Robust mean Algo A	18.9	26.6	12.3
Robust STDev	1.06	1.43	0.875
Median	19.1	26.2	12.4
STDev from MAD	1.05	1.39	0.841
Arithmetic mean	19.0	26.7	12.4
STDev	1.13	1.51	0.971
CV or Variability	5.6%	5.4%	7.1%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Serum Zinc (µmol/L)







Individual results

Urine Cadmium (nmol/L)

Round #2014-01

Participant	PC-U-D1401	z'-score	PC-U-D1402	z'-score	PC-U-D1403	z'-score	Method
217	91.6	-0.20	18.7	-0.30	64.1	**2.42**	ICP-MS
744	89.4	-0.51	16.0	-1.55	49.0	-0.84	ND
747	89.1	-0.55	19.3	0.00	46.8	-1.32	ICP-MS
1095	107	1.91	23.0	1.76	60.0	1.54	ICP-MS (C/R)
1109	99.2	0.84	20.1	0.38	60.8	1.70	ND
1418	93.9	0.12	19.7	0.21	53.6	0.16	ICP-MS (C/R)
1865	93.4	0.04	18.9	-0.21	61.3	1.82	ICP-MS (C/R)
2937	73.1	**-2.75**	13.2	**-2.91**	53.6	0.15	ICP-MS
2991	91.2	-0.26	21.5	1.06	50.2	-0.59	ND
3187	92.2	-0.12	18.6	-0.33	46.0	-1.50	ICP-MS
3211	94.6	0.21	17.5	-0.86	50.3	-0.56	GFAAS
3215	>LL	---	19.6	0.14	56.4	0.76	GFAAS
3423	87.9	-0.72	20.0	0.34	51.4	-0.32	GFAAS
3853	91.0	-0.29	16.0	-1.57	44.0	-1.93	ICP-MS
4466	84.9	-1.13	11.4	**-3.78**	41.2	**-2.55**	GFAAS
4708	93.4	0.04	19.3	0.00	52.2	-0.15	ICP-MS
4953	97.9	0.65	19.4	0.04	56.2	0.72	ICP-MS
5591	94.1	0.14	19.2	-0.05	50.4	-0.54	ICP-MS
5654	94.5	0.19	19.9	0.30	60.8	1.70	ICP-MS (C/R)
5691	93.0	-0.01	19.0	-0.14	54.0	0.24	ICP-MS
5881	93.4	0.04	19.7	0.21	53.2	0.06	ICP-MS (C/R)
6511	93.4	0.04	19.1	-0.08	56.9	0.87	ND
6545	50.0	**-5.93**	20.3	0.48	42.1	**-2.34**	ICP-MS
6689	96.2	0.42	19.7	0.17	49.4	-0.77	ND
6794	93.9	0.12	18.7	-0.29	54.0	0.24	GFAAS
6858	86.1	-0.96	17.4	-0.92	48.4	-0.98	ICP-MS
6920	99.0	0.81	21.4	1.00	53.5	0.13	ND
7760	101	1.14	20.5	0.57	61.2	1.80	ICP-MS
8701	101	1.02	19.4	0.06	52.5	-0.08	ND
9759	89.0	-0.57	22.2	1.40	48.9	-0.86	GFAAS
9777	***638***	**74.95**	***4220***	**2002.08**	***845***	**171.79**	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-D1401	93.1	1.06	7.18	78.6 - 108	Accepted	---
PC-U-D1402	19.3	0.254	2.09	15.1 - 23.5	Accepted	---
PC-U-D1403	52.9	1.35	4.40	43.7 - 62.1	Accepted	---

Statistics
Urine Cadmium (nmol/L)

All methods	PC-U-D1401	PC-U-D1402	PC-U-D1403
N	29	30	30
Robust mean Algo A	93.1	19.3	52.9
Robust STDev	4.58	1.11	5.93
Median	93.4	19.3	52.9
STDev from MAD	4.09	0.991	5.47
Arithmetic mean	91.5	19.0	52.7
STDev	10.0	2.37	5.83
CV or Variability	4.9%	5.8%	11.2%

Graphite furnace-AAS	PC-U-D1401	PC-U-D1402	PC-U-D1403
N	5	6	6
Robust mean Algo A	90.1	19.0	51.0
Robust STDev	4.68	2.24	4.44
Median	89.0	19.1	50.9
STDev from MAD	5.99	1.87	3.76
Arithmetic mean	90.1	18.2	50.4
STDev	4.12	3.72	5.25
CV or Variability	5.2%	11.8%	8.7%

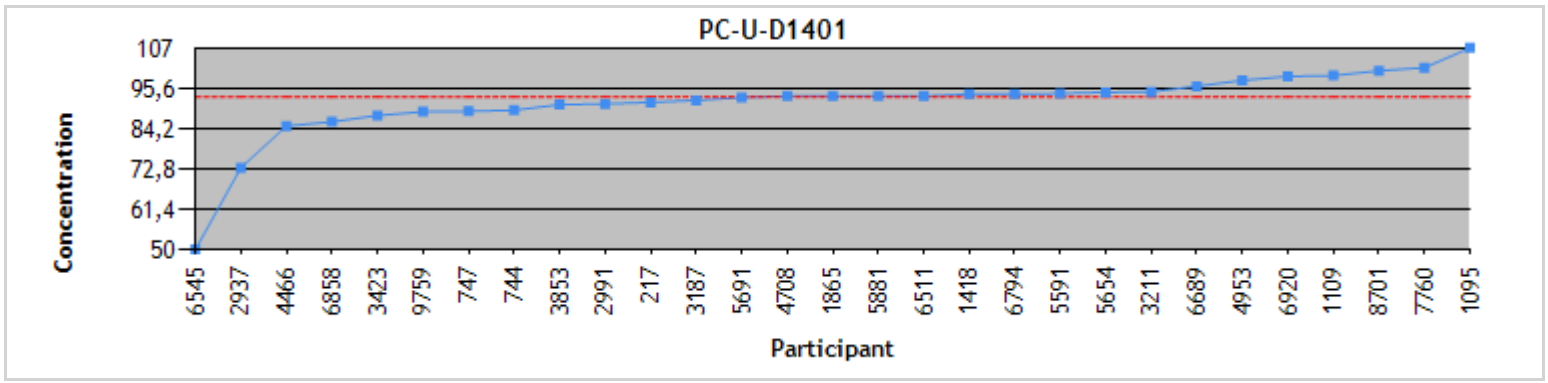
ICP-MS	PC-U-D1401	PC-U-D1402	PC-U-D1403
N	12	12	12
Robust mean Algo A	91.5	19.0	51.4
Robust STDev	4.46	0.818	7.18
Median	91.9	19.1	51.3
STDev from MAD	3.71	0.682	6.99
Arithmetic mean	87.7	18.4	51.6
STDev	13.7	2.04	6.69
CV or Variability	4.9%	4.3%	14.0%

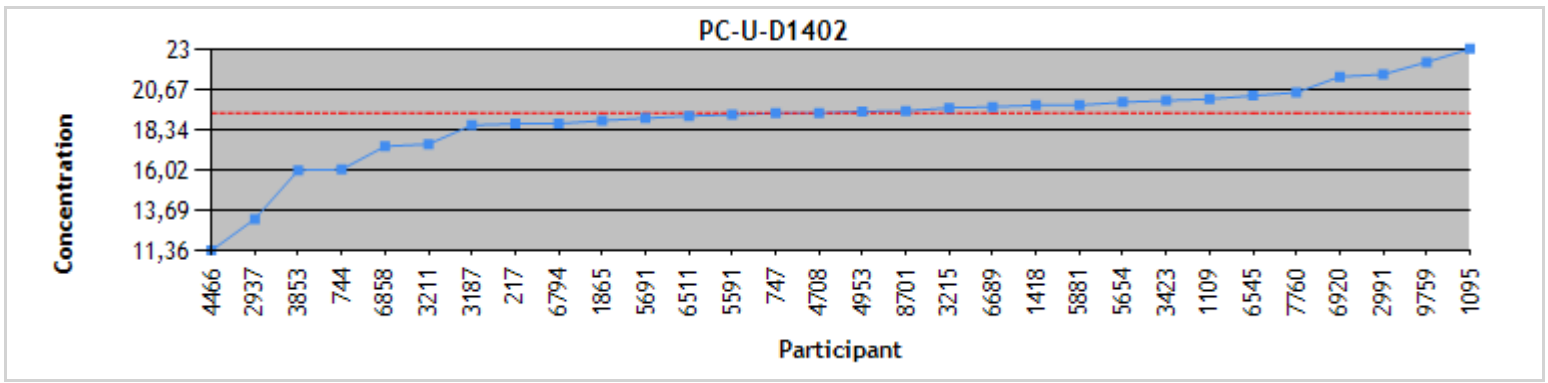
ICP-MS (collision/reaction cell)	PC-U-D1401	PC-U-D1402	PC-U-D1403
N	5	5	5
Robust mean Algo A	94.1	19.8	59.3
Robust STDev	0.837	0.330	2.27
Median	93.9	19.7	60.0
STDev from MAD	0.792	0.264	1.92
Arithmetic mean	96.4	20.3	57.8
STDev	5.92	1.59	4.01
CV or Variability	0.9%	1.7%	3.8%

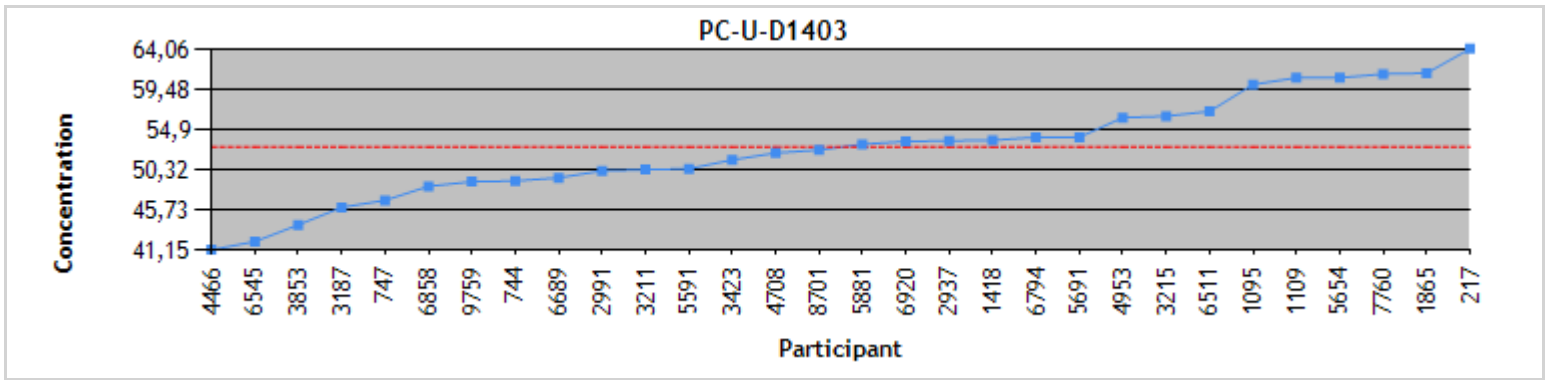
When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution

Urine Cadmium (nmol/L)







Individual results

Urine Chromium (nmol/L)

Round #2014-01

Participant	PC-U-B1401	z'-score	PC-U-B1402	z'-score	PC-U-B1403	z'-score	Method
176	23.1	0.17	235	-0.25	30.8	-0.51	ICP-MS (C/R)
744	17.1	-0.85	247	0.34	38.1	0.58	ND
747	21.7	-0.07	242	0.09	36.7	0.38	ICP-MS (C/R)
1095	28.0	1.01	245	0.23	36.0	0.27	GFAAS
1109	23.5	0.23	255	0.67	38.7	0.67	ND
1418	19.0	-0.52	223	-0.78	31.2	-0.46	ICP-MS (C/R)
1865	31.2	1.55	256	0.73	48.5	**2.14**	ICP-MS (C/R)
2982	<LQ	---	198	-1.93	27.7	-0.98	GFAAS
3187	22.0	-0.02	235	-0.23	34.9	0.11	ICP-MS (C/R)
3853	20.0	-0.36	249	0.41	33.0	-0.18	ICP-MS
4604	21.5	-0.10	245	0.23	30.4	-0.57	ND
4708	23.3	0.21	237	-0.14	33.3	-0.14	ICP-MS
4837	22.1	0.00	233	-0.30	35.0	0.12	GFAAS
5491	25.4	0.56	233	-0.34	36.0	0.26	GFAAS
5691	17.0	-0.87	197	-1.98	33.0	-0.18	ICP-MS (C/R)
5881	25.4	0.56	246	0.27	38.3	0.61	ICP-MS (C/R)
6511	24.6	0.43	246	0.28	37.7	0.52	ND
6545	20.6	-0.26	250	0.46	31.1	-0.47	ICP-MS (C/R)
8701	12.3	-1.68	230	-0.46	30.8	-0.51	ND
9759	28.8	1.15	221	-0.87	30.8	-0.51	GFAAS
9777	5.77	**-2.79**	269	1.33	34.8	0.09	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-B1401	22.1	1.23	5.71	10.4 - 33.8	Accepted	---
PC-U-B1402	240	3.42	21.5	196 - 284	Accepted	---
PC-U-B1403	34.2	1.01	6.59	20.9 - 47.5	Accepted	---

Statistics
Urine Chromium (nmol/L)

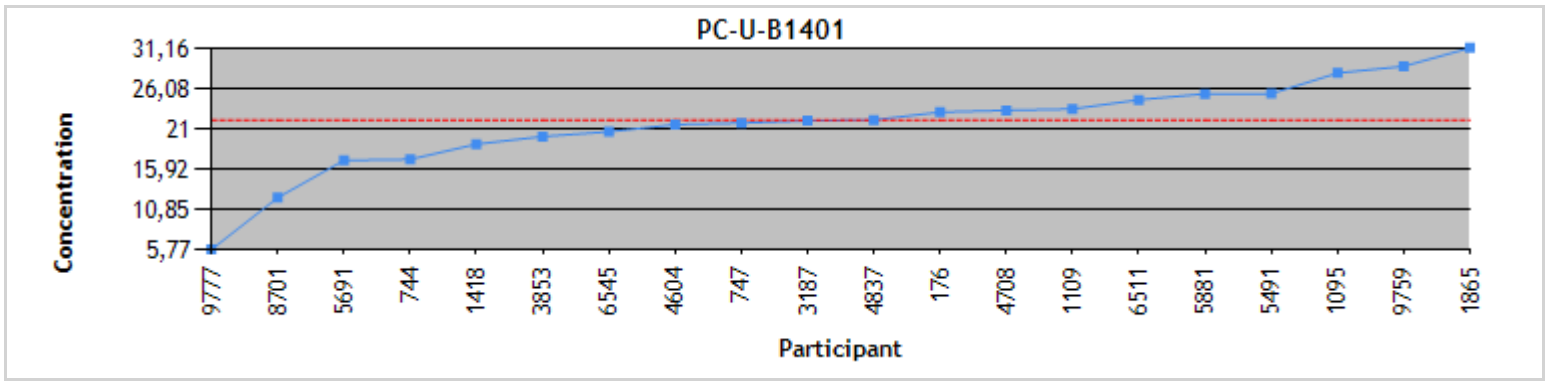
All methods	PC-U-B1401	PC-U-B1402	PC-U-B1403
N	20	21	21
Robust mean Algo A	22.1	240	34.2
Robust STDev	4.42	12.5	3.69
Median	22.1	242	34.8
STDev from MAD	4.14	11.9	4.85
Arithmetic mean	21.6	238	34.6
STDev	5.71	17.4	4.43
CV or Variability	20.0%	5.2%	10.8%

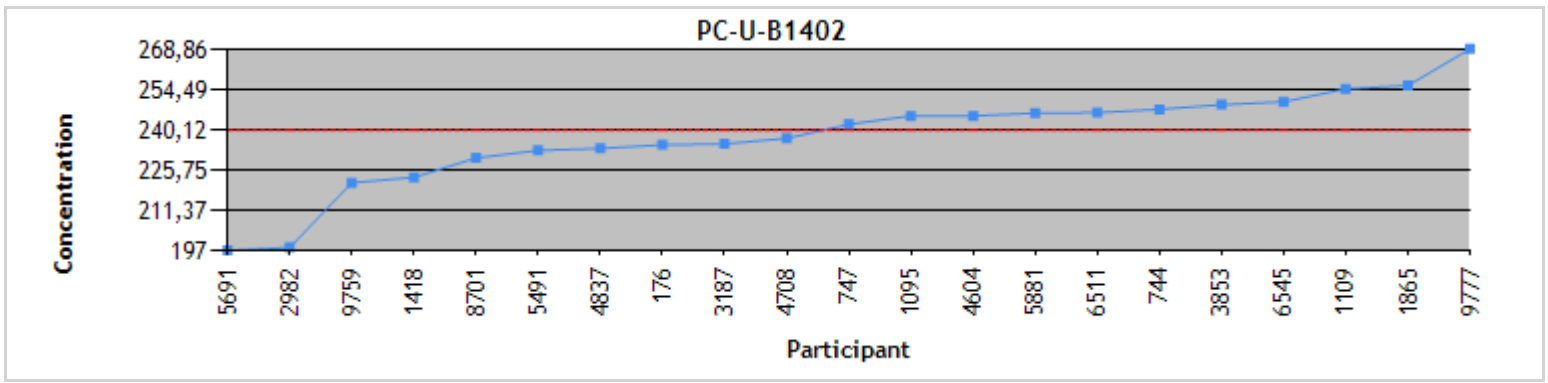
Graphite furnace-AAS	PC-U-B1401	PC-U-B1402	PC-U-B1403
N	5	6	6
Robust mean Algo A	24.5	233	34.5
Robust STDev	5.05	20.8	1.80
Median	25.4	233	34.9
STDev from MAD	4.89	17.7	1.59
Arithmetic mean	22.0	233	33.4
STDev	9.46	23.6	3.39
CV or Variability	20.6%	8.9%	5.2%

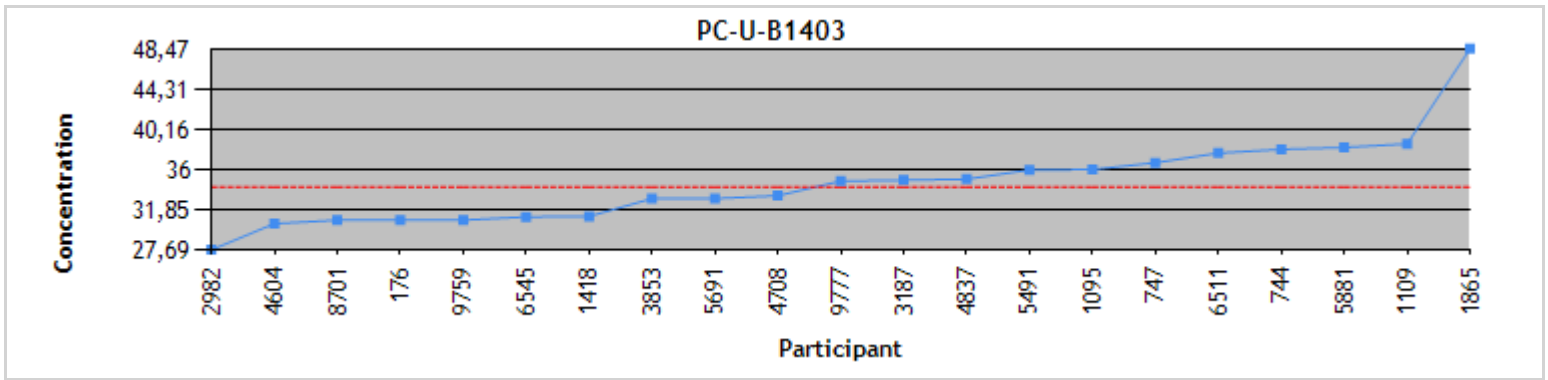
ICP-MS (collision/reaction cell)	PC-U-B1401	PC-U-B1402	PC-U-B1403
N	8	8	8
Robust mean Algo A	21.9	238	34.5
Robust STDev	3.44	14.9	4.09
Median	21.9	239	34.0
STDev from MAD	3.01	14.1	4.18
Arithmetic mean	22.5	235	35.5
STDev	4.31	18.6	5.91
CV or Variability	15.7%	6.3%	11.8%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Chromium (nmol/L)







Individual results

Urine Copper (µmol/L)

Round #2014-01

Participant	PC-U-R1401	z'-score	PC-U-R1402	z'-score	PC-U-R1403	z'-score	Method
176	3.82	-0.58	2.09	-0.27	13.9	-0.57	ICP-MS
387	2.97	**-3.23**	1.39	**-4.33**	13.1	-1.34	GFAAS
744	4.14	0.39	2.09	-0.31	15.6	0.87	ND
747	4.11	0.31	2.23	0.52	14.8	0.17	ICP-MS
1095	4.59	1.79	2.25	0.64	15.1	0.43	ICP-MS (C/R)
1109	3.65	-1.11	2.00	-0.80	15.9	1.14	ND
1188	4.16	0.46	2.24	0.58	15.0	0.30	ICP-MS (C/R)
1418	3.64	-1.16	2.01	-0.77	15.2	0.54	ICP-MS (C/R)
1855	3.65	-1.11	1.92	-1.27	13.8	-0.65	ICP-MS
2629	3.38	-1.95	1.76	**-2.20**	12.7	-1.63	ICP-OES
2763	3.79	-0.68	2.05	-0.52	14.7	0.09	ICP-MS (C/R)
3187	4.09	0.25	2.20	0.35	14.7	0.09	ICP-MS
3423	5.29	**3.95**	2.06	-0.45	13.3	-1.12	FAAS
3513	3.78	-0.71	2.26	0.69	14.4	-0.17	ICP-MS
3853	4.15	0.43	2.30	0.92	14.4	-0.18	ICP-MS
4090	3.98	-0.09	2.16	0.12	14.7	0.10	ICP-MS (C/R)
4708	3.94	-0.22	2.14	0.00	14.5	-0.09	ICP-MS
4953	3.97	-0.14	2.23	0.55	14.9	0.24	ICP-MS
5556	4.01	0.01	2.25	0.64	16.7	1.87	GFAAS
5591	4.07	0.19	2.20	0.35	14.2	-0.35	ICP-MS
5654	3.61	-1.23	2.07	-0.39	13.5	-0.99	ICP-MS (C/R)
5691	4.00	-0.03	2.20	0.35	14.2	-0.35	ICP-MS
5881	4.12	0.33	2.27	0.77	14.4	-0.16	ICP-MS (C/R)
6511	4.20	0.59	2.20	0.36	15.2	0.48	ND
7804	4.35	1.05	1.97	-0.98	18.3	**3.20**	ND
8376	4.54	1.64	2.36	1.25	17.3	**2.31**	GFAAS
8981	4.60	1.83	2.04	-0.58	13.4	-1.04	ND
9759	>LL	---	2.13	-0.04	>LL	---	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-R1401	4.01	0.0757	0.314	3.36 - 4.66	Accepted	---
PC-U-R1402	2.14	0.0320	0.170	1.79 - 2.49	Accepted	---
PC-U-R1403	14.6	0.205	1.13	12.3 - 16.9	Accepted	---

Statistics
Urine Copper (µmol/L)

All methods	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	27	28	27
Robust mean Algo A	4.01	2.14	14.6
Robust STDev	0.315	0.135	0.851
Median	4.01	2.15	14.7
STDev from MAD	0.280	0.141	0.742
Arithmetic mean	4.02	2.11	14.7
STDev	0.440	0.193	1.25
CV or Variability	7.9%	6.3%	5.8%

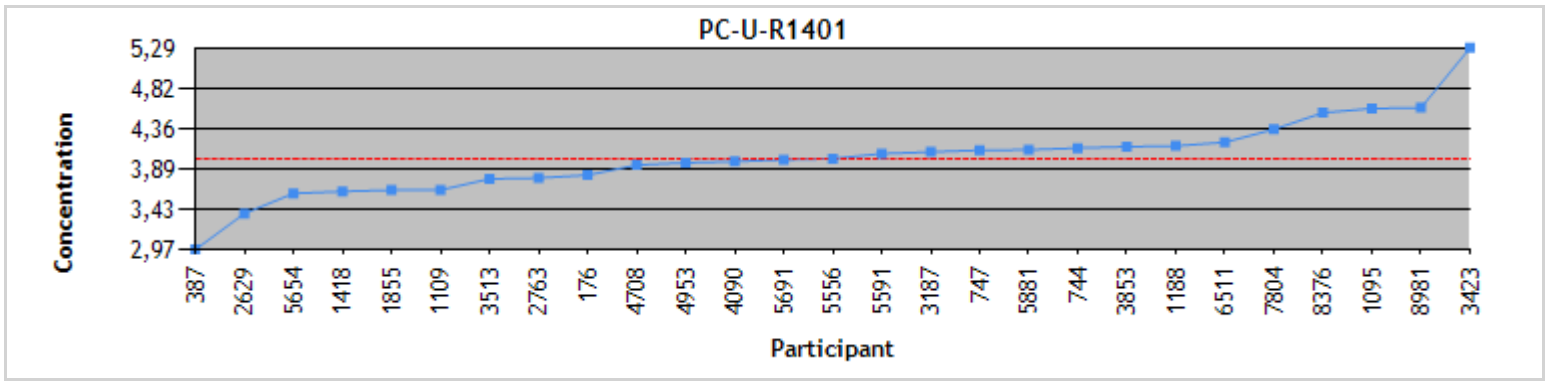
Graphite furnace-AAS	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	3	4	3
Robust mean Algo A	3.84	2.17	16.5
Robust STDev	0.909	0.199	0.959
Median	4.01	2.19	16.7
STDev from MAD	0.784	0.165	0.760
Arithmetic mean	3.84	2.03	15.7
STDev	0.802	0.438	2.29
CV or Variability	23.7%	9.2%	5.8%

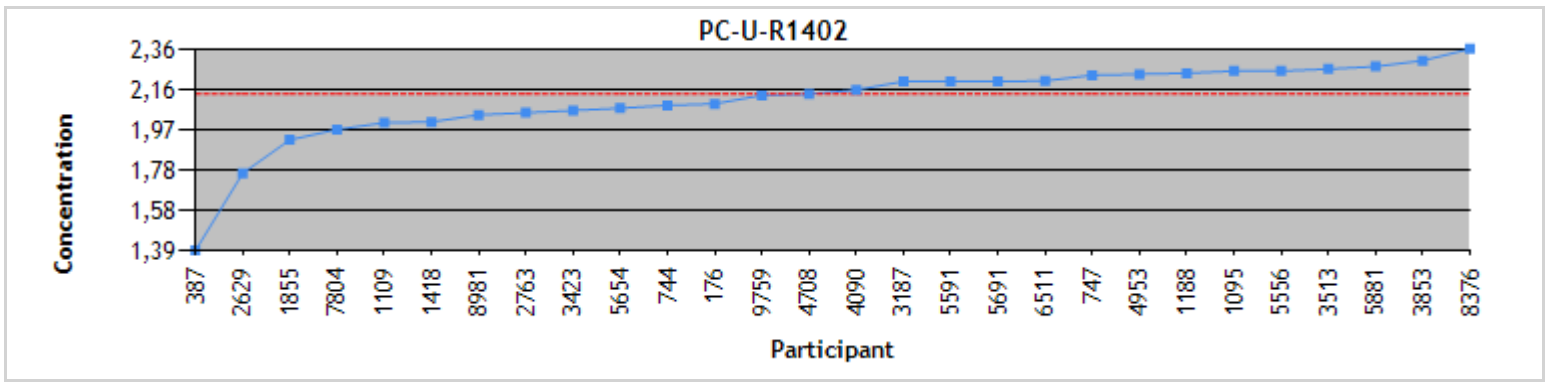
ICP-MS	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	10	10	10
Robust mean Algo A	3.97	2.20	14.4
Robust STDev	0.168	0.0768	0.392
Median	3.98	2.20	14.4
STDev from MAD	0.174	0.0701	0.371
Arithmetic mean	3.96	2.18	14.4
STDev	0.162	0.108	0.345
CV or Variability	4.2%	3.5%	2.7%

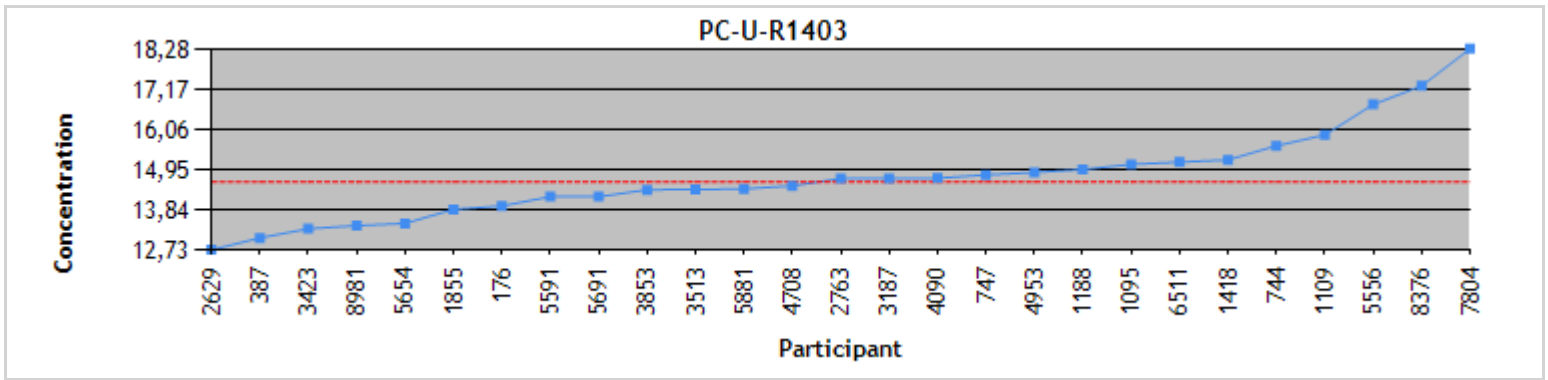
ICP-MS (collision/reaction cell)	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	7	7	7
Robust mean Algo A	3.96	2.15	14.7
Robust STDev	0.333	0.122	0.457
Median	3.98	2.16	14.7
STDev from MAD	0.282	0.133	0.438
Arithmetic mean	3.98	2.15	14.6
STDev	0.345	0.108	0.588
CV or Variability	8.4%	5.7%	3.1%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Copper (µmol/L)







Individual results

Urine Fluoride (µmol/L)

Round #2014-01

Participant	PC-U-F1401	z'-score	PC-U-F1402	z'-score	PC-U-F1403	z'-score	Method
176	26.9	-0.23	57.4	0.01	253	-0.18	FSE
1095	28.0	0.09	58.0	0.14	259	0.19	FSE
1418	28.4	0.21	57.4	0.01	257	0.06	ND
1476	26.0	-0.49	58.0	0.14	258	0.13	FSE
2629	27.1	-0.18	54.1	-0.64	226	-1.95	FSE
4604	30.4	0.77	57.1	-0.04	244	-0.76	ND
5132	28.1	0.10	57.3	-0.01	249	-0.45	ND
5881	27.4	-0.09	58.4	0.22	274	1.19	FSE
6200	27.4	-0.09	56.3	-0.19	243	-0.83	FSE
6234	26.4	-0.37	55.3	-0.40	254	-0.16	ND
6545	30.6	0.83	59.5	0.44	261	0.31	FSE
6702	29.4	0.49	60.1	0.56	270	0.90	FSE
7269	28.0	0.09	60.0	0.54	259	0.19	FSE
8701	15.4	**-3.53**	13.2	**-8.75**	***16.3***	**-15.49**	ND
9759	5.26	**-6.42**	10.0	**-9.39**	***44.7***	**-13.65**	FSE
9908	30.3	0.75	60.5	0.64	263	0.46	FSE

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-F1401	27.7	0.550	3.45	20.7 - 34.7	Rejected	---
PC-U-F1402	57.3	0.773	4.98	47.2 - 67.4	Rejected	---
PC-U-F1403	256	2.89	15.2	225 - 287	Accepted	---

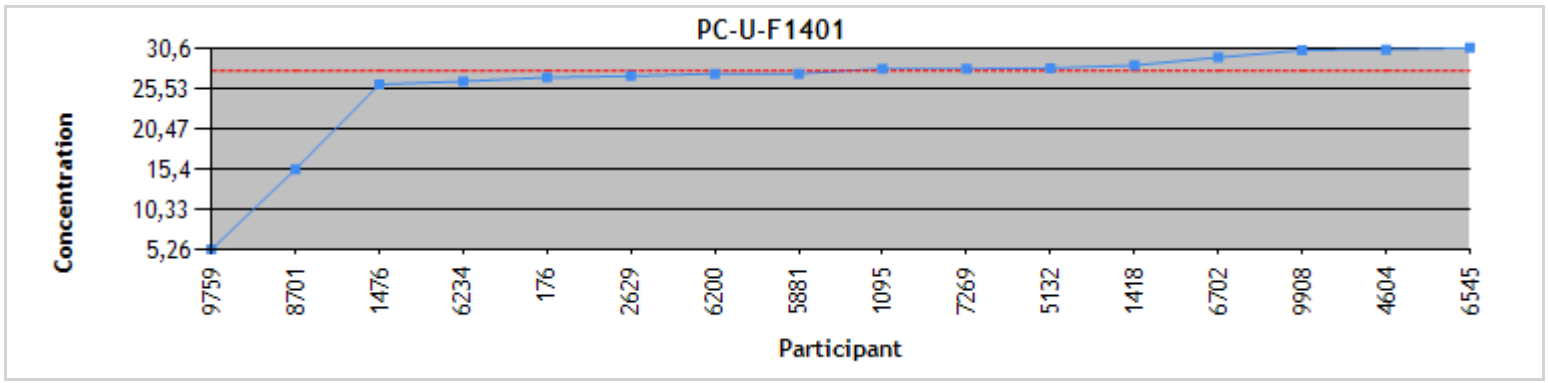
Statistics
Urine Fluoride (µmol/L)

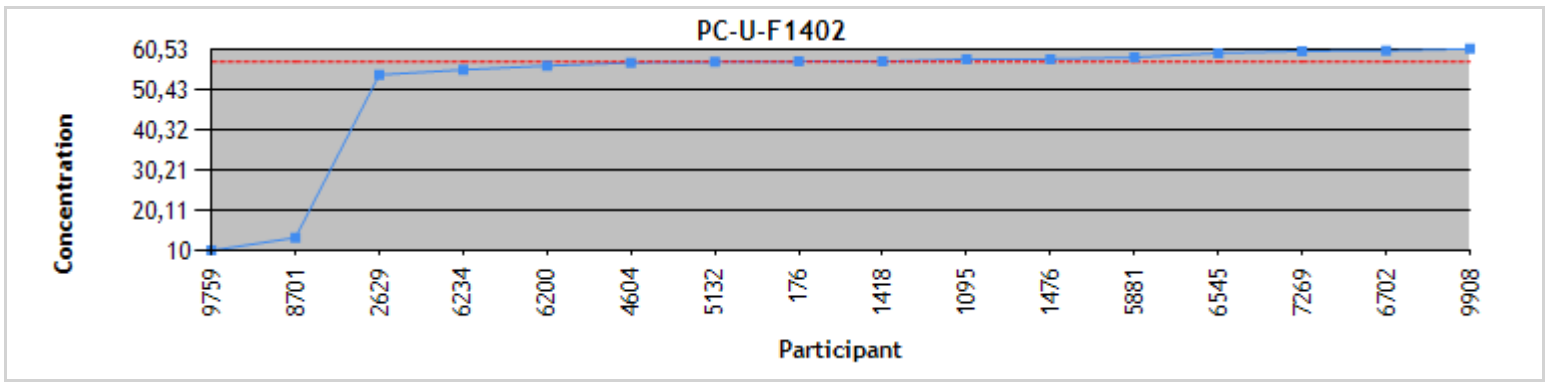
All methods	PC-U-F1401	PC-U-F1402	PC-U-F1403
N	16	16	14
Robust mean Algo A	27.7	57.3	256
Robust STDev	1.76	2.47	8.65
Median	27.7	57.4	257
STDev from MAD	1.54	2.32	7.42
Arithmetic mean	25.9	52.0	255
STDev	6.52	15.9	12.1
CV or Variability	6.3%	4.3%	3.4%

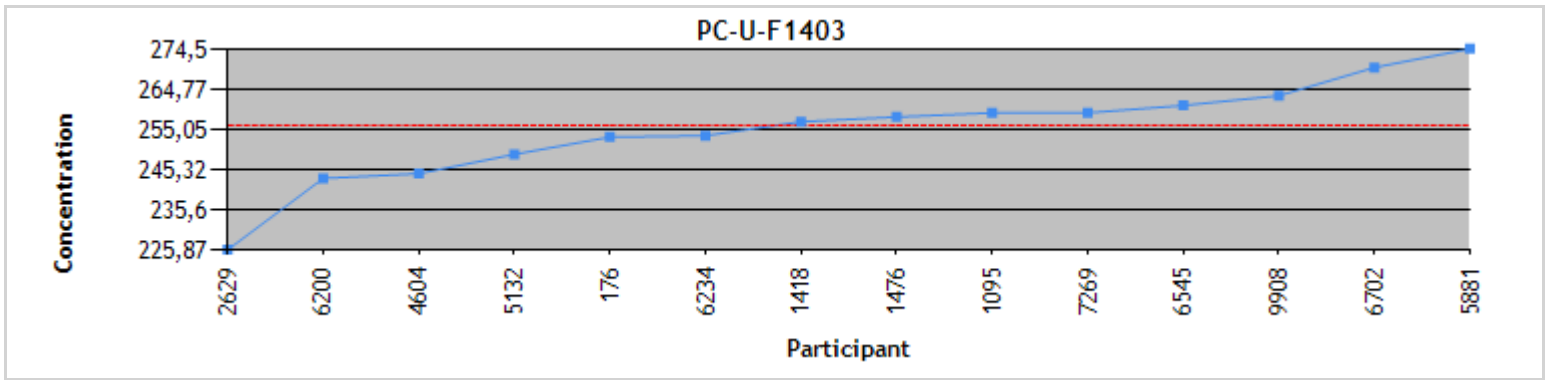
Fluoride specific electrode	PC-U-F1401	PC-U-F1402	PC-U-F1403
N	11	11	10
Robust mean Algo A	27.5	57.9	259
Robust STDev	1.16	2.49	8.85
Median	27.4	58.0	259
STDev from MAD	0.933	2.49	7.42
Arithmetic mean	26.0	53.8	257
STDev	7.04	14.7	13.8
CV or Variability	4.2%	4.3%	3.4%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Fluoride (µmol/L)







Individual results

Urine Inorganic arsenic (µmol/L)

Round #2014-01

Participant	PC-U-S1401	z'-score	PC-U-S1402	z'-score	PC-U-S1403	z'-score	Method
217	0.540	1.25	1.31	-0.86	0.620	-0.44	GFAAS
317	0.427	-0.63	1.35	-0.60	0.668	0.18	GFAAS
428	0.483	0.30	1.36	-0.52	0.625	-0.38	ICP-MS (C/R)
747	0.451	-0.23	1.48	0.26	0.692	0.50	ICP-MS (C/R)
1095	0.450	-0.25	1.44	0.00	0.660	0.08	GFAAS
1418	0.426	-0.65	1.47	0.19	0.780	1.64	HG-AAS
1476	0.410	-0.92	1.01	**-2.85**	0.520	-1.75	ICP-MS
1820	0.474	0.15	1.39	-0.33	0.679	0.33	GFAAS
1827	0.536	1.18	1.55	0.73	0.670	0.21	ICP-MS (C/R)
1865	0.416	-0.81	1.57	0.86	0.727	0.96	HG-AAS
2580	0.398	-1.12	1.45	0.07	0.716	0.81	GFAAS
2978	0.490	0.41	1.47	0.19	0.654	0.00	ICP-MS
3215	0.450	-0.25	1.48	0.26	0.670	0.21	GFAAS
3423	0.414	-0.85	1.28	-1.05	0.601	-0.70	HG-AAS
3853	0.505	0.67	1.49	0.33	0.650	-0.05	ICP-MS (C/R)
4953	0.522	0.95	1.95	**3.37**	0.715	0.80	ICP-MS (C/R)
5375	0.491	0.43	1.47	0.20	0.671	0.22	ICP-MS
5495	0.574	1.81	1.43	-0.10	0.576	-1.01	ICP-MS (C/R)
5691	0.450	-0.25	1.38	-0.40	0.590	-0.83	ND
5881	0.379	-1.43	1.19	-1.63	0.626	-0.37	HG-AAS
6511	0.529	1.06	1.53	0.63	0.622	-0.42	ND
7162	0.414	-0.85	1.44	-0.01	0.641	-0.17	ND
8701	0.502	0.62	1.45	0.09	0.647	-0.09	ND

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-S1401	0.465	0.0146	0.0581	0.345 - 0.585	Accepted	DMAA added
PC-U-S1402	1.44	0.0242	0.149	1.14 - 1.74	Rejected	Workers Profile
PC-U-S1403	0.654	0.0124	0.0757	0.501 - 0.807	Accepted	As+3 added

Statistics

Urine Inorganic arsenic (µmol/L)

All methods	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	23	23	23
Robust mean Algo A	0.465	1.44	0.654
Robust STDev	0.0559	0.0928	0.0476
Median	0.451	1.45	0.654
STDev from MAD	0.0576	0.0905	0.0435
Arithmetic mean	0.467	1.43	0.653
STDev	0.0525	0.167	0.0551
CV or Variability	12.0%	6.5%	7.3%

Graphite furnace-AAS	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	6	6	6
Robust mean Algo A	0.450	1.40	0.669
Robust STDev	0.0410	0.0739	0.0166
Median	0.450	1.42	0.669
STDev from MAD	0.0349	0.0749	0.0141
Arithmetic mean	0.457	1.40	0.669
STDev	0.0483	0.0652	0.0310
CV or Variability	9.1%	5.3%	2.5%

Hydride generation-AAS	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	4	4	4
Robust mean Algo A	0.414	1.38	0.683
Robust STDev	0.0115	0.194	0.0958
Median	0.415	1.37	0.677
STDev from MAD	0.00911	0.203	0.0940
Arithmetic mean	0.409	1.38	0.683
STDev	0.0205	0.171	0.0845
CV or Variability	2.8%	14.1%	14.0%

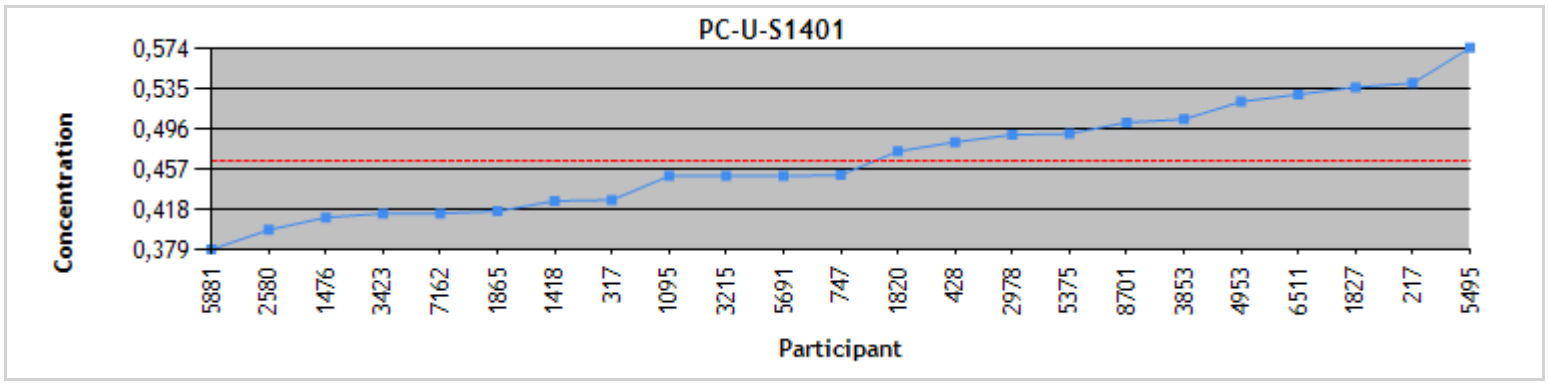
ICP-MS	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	3	3	3
Robust mean Algo A	0.489	1.47	0.647
Robust STDev	0.00216	0.00337	0.0318
Median	0.490	1.47	0.654
STDev from MAD	0.00171	0.00267	0.0252
Arithmetic mean	0.464	1.32	0.615
STDev	0.0464	0.265	0.0827
CV or Variability	0.4%	0.2%	4.9%

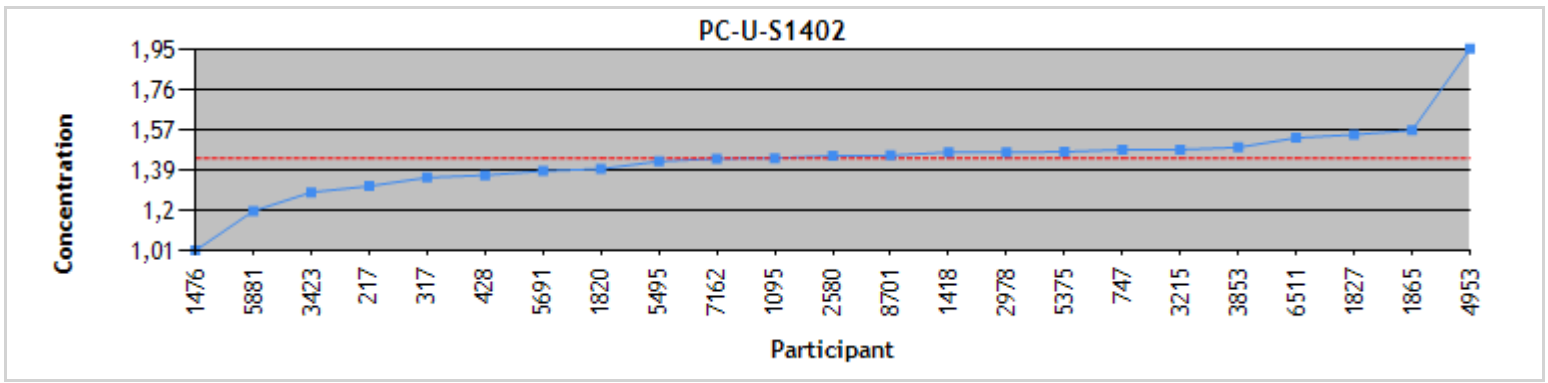
ICP-MS (collision/reaction cell)	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	6	6	6
Robust mean Algo A	0.512	1.49	0.656
Robust STDev	0.0467	0.104	0.0534
Median	0.513	1.49	0.660
STDev from MAD	0.0392	0.0924	0.0499
Arithmetic mean	0.512	1.54	0.655
STDev	0.0426	0.209	0.0497
CV or Variability	9.1%	7.0%	8.1%

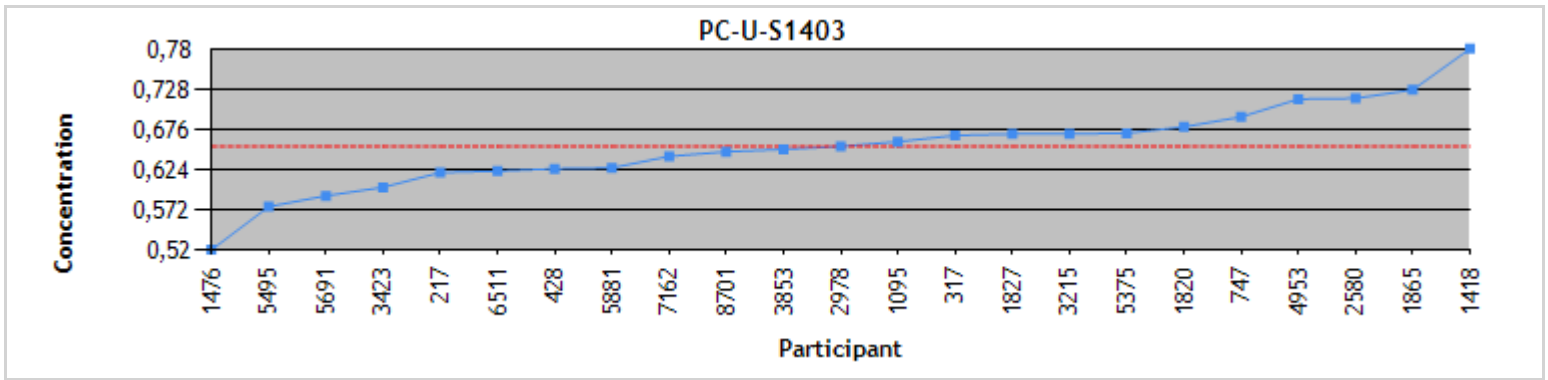
When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution

Urine Inorganic arsenic (µmol/L)







Individual results

Urine Iodide (µmol/L)

Round #2014-01

Participant	PC-U-I1401	z'-score	PC-U-I1402	z'-score	PC-U-I1403	z'-score	Method
217	0.650	0.68	1.71	0.06	2.20	0.09	ICP-MS
428	0.545	-1.03	1.57	-0.76	2.01	-0.77	ICP-MS (C/R)
747	0.595	-0.21	1.69	-0.06	2.17	-0.05	ICP-MS
1095	0.620	0.19	1.78	0.46	2.32	0.63	ICP-MS (C/R)
1855	0.599	-0.15	1.69	-0.03	2.30	0.55	ICP-MS
2763	0.667	0.96	1.84	0.81	2.28	0.45	ICP-MS
3187	0.597	-0.18	1.59	-0.64	2.13	-0.23	ICP-MS
3513	0.600	-0.13	1.70	0.00	2.15	-0.14	ICP-MS
4708	0.607	-0.02	1.71	0.06	2.20	0.09	ICP-MS
5881	0.655	0.76	1.76	0.37	2.24	0.29	ICP-MS (C/R)
6200	0.655	0.76	1.87	0.97	2.29	0.51	ICP-MS
6511	0.587	-0.34	1.66	-0.23	2.07	-0.50	ND
6545	0.610	0.03	1.69	-0.06	2.15	-0.14	ICP-MS
8981	0.550	-0.94	1.47	-1.33	1.92	-1.17	ND

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-I1401	0.608	0.00971	0.0608	0.485 - 0.731	Accepted	---
PC-U-I1402	1.70	0.0295	0.170	1.36 - 2.04	Accepted	---
PC-U-I1403	2.18	0.0384	0.218	1.74 - 2.62	Accepted	---

Statistics
Urine Iodide (µmol/L)

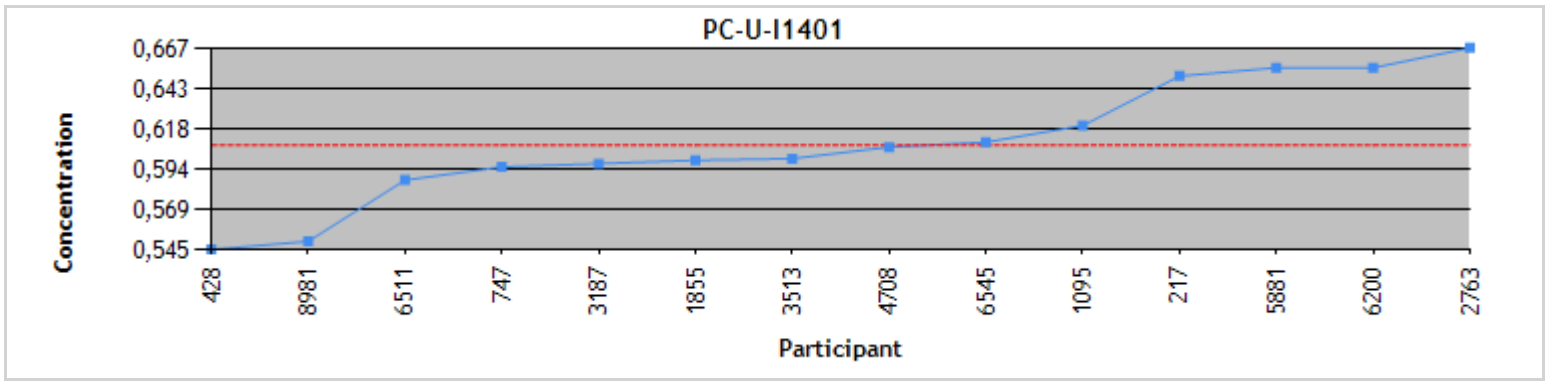
All methods	PC-U-I1401	PC-U-I1402	PC-U-I1403
N	14	14	14
Robust mean Algo A	0.608	1.70	2.18
Robust STDev	0.0291	0.0884	0.115
Median	0.604	1.70	2.19
STDev from MAD	0.0244	0.0777	0.114
Arithmetic mean	0.610	1.70	2.17
STDev	0.0372	0.105	0.116
CV or Variability	4.8%	5.2%	5.3%

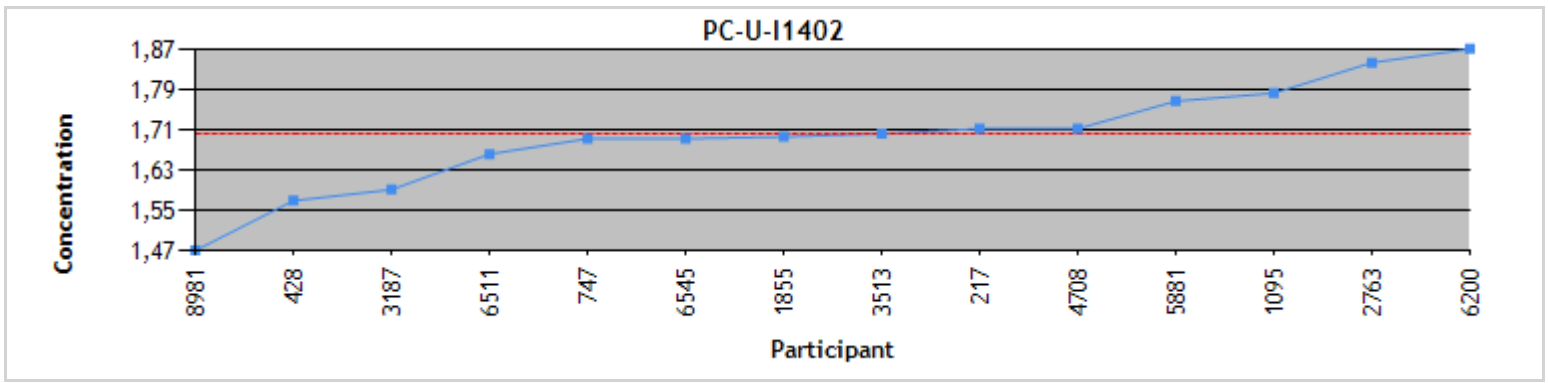
ICP-MS	PC-U-I1401	PC-U-I1402	PC-U-I1403
N	9	9	9
Robust mean Algo A	0.611	1.70	2.21
Robust STDev	0.0167	0.0174	0.0756
Median	0.607	1.70	2.20
STDev from MAD	0.0148	0.0148	0.0742
Arithmetic mean	0.620	1.72	2.21
STDev	0.0287	0.0836	0.0667
CV or Variability	2.7%	1.0%	3.4%

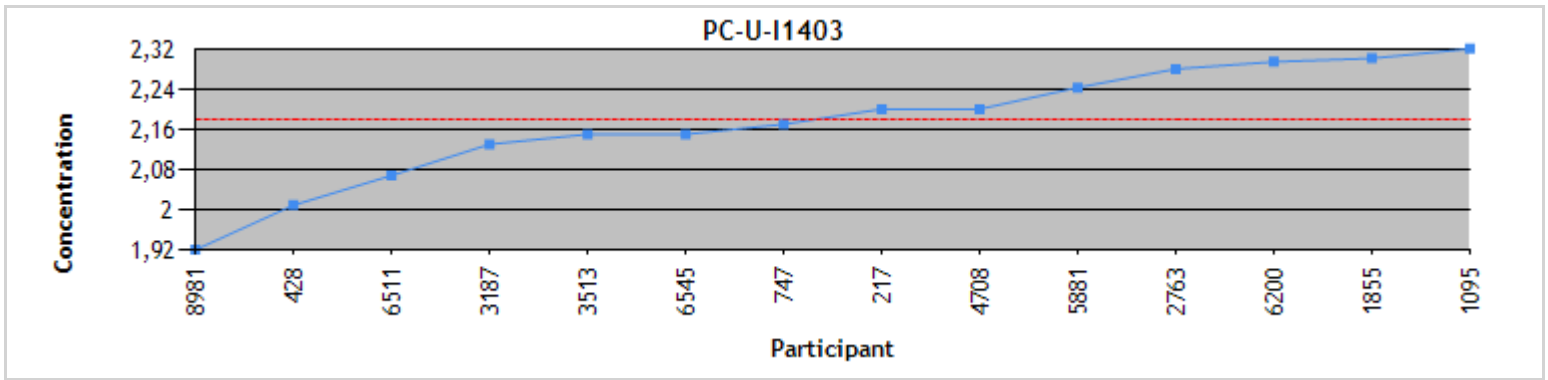
ICP-MS (collision/reaction cell)	PC-U-I1401	PC-U-I1402	PC-U-I1403
N	3	3	3
Robust mean Algo A	0.606	1.76	2.21
Robust STDev	0.0640	0.0294	0.143
Median	0.620	1.76	2.24
STDev from MAD	0.0516	0.0233	0.114
Arithmetic mean	0.606	1.70	2.19
STDev	0.0564	0.118	0.162
CV or Variability	10.5%	1.7%	6.5%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Iodide (µmol/L)







Individual results

Urine Lead (µmol/L)

Round #2014-01

Participant	PC-U-P1401	z'-score	PC-U-P1402	z'-score	PC-U-P1403	z'-score	Method
176	0.0483	-1.55	0.767	-0.12	0.420	0.36	ICP-MS
194	0.0630	0.98	0.777	0.03	0.428	0.60	ND
217	0.0700	**2.18**	0.860	1.37	0.430	0.66	ICP-MS
744	0.0864	**4.99**	0.760	-0.24	0.395	-0.37	ND
747	0.0563	-0.17	0.783	0.13	0.405	-0.09	ICP-MS
1095	0.0600	0.46	0.860	1.37	0.450	1.26	ICP-MS (C/R)
1109	0.0538	-0.60	0.749	-0.42	0.386	-0.67	ND
1855	0.0579	0.11	0.734	-0.67	0.376	-0.94	ICP-MS
2182	0.111	**9.30**	0.927	**2.44**	0.516	**3.24**	GFAAS
3167	0.0400	**-2.97**	0.780	0.08	0.420	0.36	GFAAS
3187	0.0587	0.24	0.804	0.47	0.428	0.60	ICP-MS
3211	0.0540	-0.57	0.780	0.08	0.411	0.09	GFAAS
3423	0.0700	**2.18**	0.796	0.34	0.421	0.40	GFAAS
3853	0.0570	-0.05	0.769	-0.10	0.393	-0.45	ICP-MS
3970	0.0531	-0.72	0.820	0.73	0.401	-0.22	GFAAS
4090	***0.837***	**133.88**	0.420	**-5.71**	0.0530	**-10.61**	ICP-MS (C/R)
4708	0.0580	0.12	0.791	0.26	0.430	0.66	ICP-MS
4953	0.0550	-0.39	0.806	0.50	0.416	0.23	ICP-MS
5591	0.0500	-1.25	0.730	-0.72	0.390	-0.54	ICP-MS
5654	0.0509	-1.10	0.726	-0.78	0.369	-1.18	ICP-MS (C/R)
5691	0.0600	0.46	0.770	-0.08	0.400	-0.24	ICP-MS
5881	0.0533	-0.69	0.754	-0.34	0.389	-0.58	ICP-MS (C/R)
6511	0.0560	-0.23	0.787	0.19	0.411	0.10	ND
6545	0.0600	0.46	0.760	-0.24	0.410	0.06	ICP-MS
7111	0.0570	-0.05	0.811	0.58	0.407	-0.03	ICP-MS
7804	0.0307	**-4.57**	0.408	**-5.90**	0.310	**-2.92**	ND
9674	0.0864	**4.99**	0.426	**-5.62**	0.763	**10.60**	GFAAS
9759	0.0994	**7.23**	>LL	---	>LL	---	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-P1401	0.0573	0.00154	0.00561	0.0457 - 0.0689	Rejected	---
PC-U-P1402	0.775	0.0101	0.0613	0.651 - 0.899	Rejected	---
PC-U-P1403	0.408	0.00638	0.0329	0.341 - 0.475	Rejected	---

Statistics
Urine Lead (µmol/L)

All methods	PC-U-P1401	PC-U-P1402	PC-U-P1403
N	28	27	27
Robust mean Algo A	0.0573	0.775	0.408
Robust STDev	0.00652	0.0420	0.0265
Median	0.0570	0.777	0.410
STDev from MAD	0.00566	0.0400	0.0267
Arithmetic mean	0.0610	0.746	0.408
STDev	0.0169	0.126	0.104
CV or Variability	11.4%	5.4%	6.5%

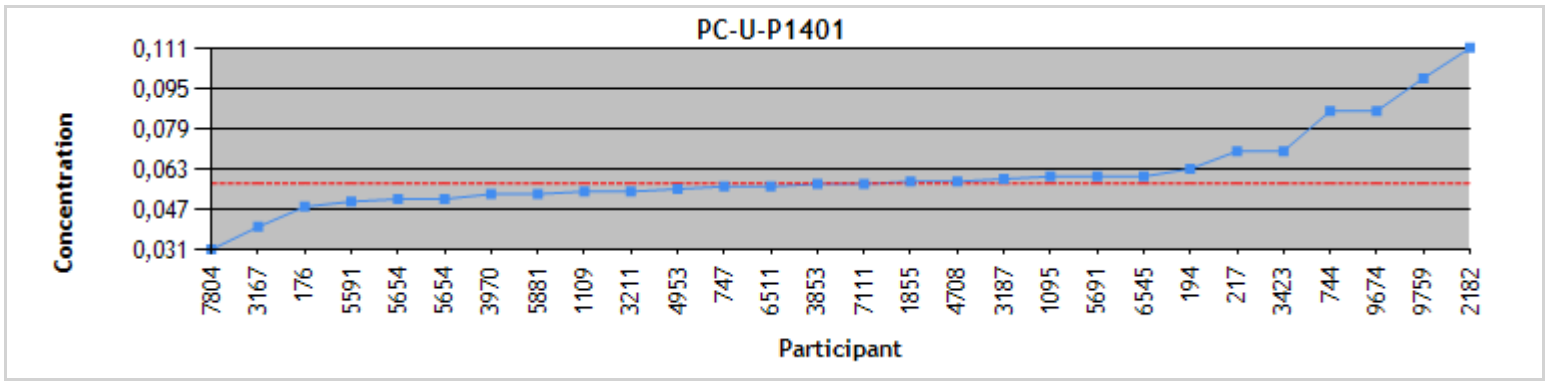
Graphite furnace-AAS	PC-U-P1401	PC-U-P1402	PC-U-P1403
N	7	6	6
Robust mean Algo A	0.0729	0.792	0.427
Robust STDev	0.0290	0.0366	0.0252
Median	0.0700	0.788	0.421
STDev from MAD	0.0251	0.0300	0.0221
Arithmetic mean	0.0735	0.755	0.489
STDev	0.0265	0.170	0.141
CV or Variability	39.8%	4.6%	5.9%

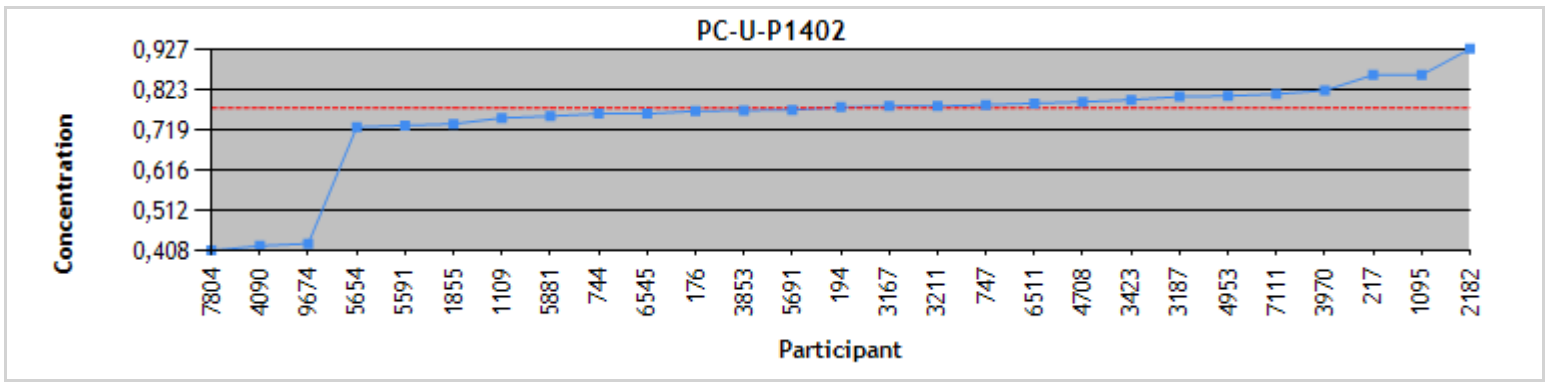
ICP-MS	PC-U-P1401	PC-U-P1402	PC-U-P1403
N	12	12	12
Robust mean Algo A	0.0574	0.779	0.409
Robust STDev	0.00292	0.0339	0.0185
Median	0.0575	0.777	0.409
STDev from MAD	0.00273	0.0326	0.0199
Arithmetic mean	0.0573	0.782	0.409
STDev	0.00539	0.0358	0.0170
CV or Variability	5.1%	4.4%	4.5%

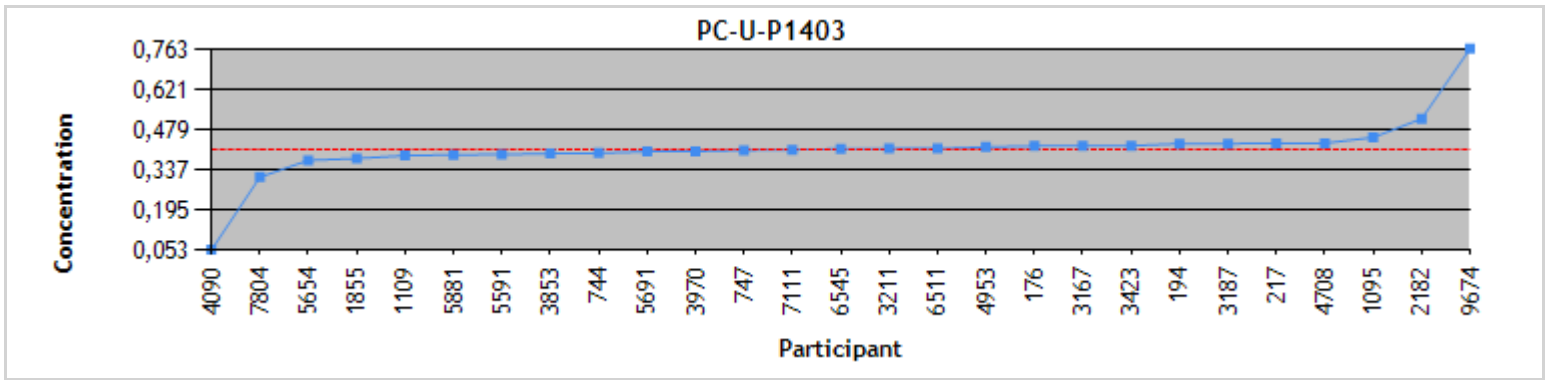
ICP-MS (collision/reaction cell)	PC-U-P1401	PC-U-P1402	PC-U-P1403
N	4	4	4
Robust mean Algo A	0.0524	0.733	0.374
Robust STDev	0.00217	0.125	0.0758
Median	0.0521	0.740	0.379
STDev from MAD	0.00179	0.0990	0.0603
Arithmetic mean	0.0538	0.690	0.315
STDev	0.00432	0.189	0.178
CV or Variability	4.1%	17.1%	20.3%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Lead (µmol/L)







Individual results

Urine Mercury (nmol/L)

Round #2014-01

Participant	PC-U-H1401	z'-score	PC-U-H1402	z'-score	PC-U-H1403	z'-score	Method
176	84.8	0.02	115	0.04	533	0.09	ICP-MS
217	80.0	-0.34	109	-0.30	514	-0.22	ICP-MS
428	97.2	0.95	111	-0.20	553	0.40	ICP-MS (C/R)
720	59.8	-1.84	94.7	-1.15	528	0.01	CV
744	93.0	0.63	133	1.13	609	1.28	ND
1095	90.0	0.41	123	0.54	638	1.74	CV
1109	22.8	**-4.60**	13.7	**-6.00**	407	-1.92	ND
1156	82.3	-0.16	97.0	-1.02	550	0.36	ND
1418	79.7	-0.36	108	-0.35	485	-0.68	ND
1865	90.7	0.47	126	0.73	533	0.09	CV
2629	60.3	-1.80	83.3	-1.84	265	**-4.15**	ICP-MS (C/R)
2982	82.8	-0.13	119	0.28	577	0.78	CV
3468	86.5	0.15	115	0.03	540	0.19	GA-AAS
3513	87.0	0.19	120	0.36	593	1.03	ICP-MS
3853	89.0	0.34	122	0.48	542	0.22	ICP-MS
4708	87.7	0.24	122	0.48	559	0.49	ICP-MS
4953	94.2	0.73	129	0.87	568	0.64	ICP-MS
5029	9.03	**-5.63**	24.4	**-5.36**	144	**-6.07**	ND
5491	80.0	-0.34	104	-0.60	532	0.06	CV
5591	82.8	-0.13	115	0.07	557	0.45	ICP-MS
5654	92.7	0.61	111	-0.21	460	-1.08	ICP-MS (C/R)
5691	48.0	**-2.72**	52.0	**-3.71**	205	**-5.10**	ICP-MS
5881	62.8	-1.62	110	-0.26	494	-0.54	ICP-MS (C/R)
5980	14.9	**-5.19**	20.8	**-5.58**	95.6	**-6.83**	ND
6200	87.5	0.22	113	-0.04	533	0.07	ICP-MS
6210	83.3	-0.09	117	0.16	536	0.13	ND
6511	69.3	-1.13	83.3	-1.84	263	**-4.19**	ND
6545	85.9	0.10	119	0.28	564	0.57	ICP-MS
6702	83.3	-0.09	112	-0.12	505	-0.36	CV
6794	87.7	0.24	123	0.52	600	1.13	GA-AAS
6892	83.6	-0.07	117	0.18	538	0.16	ND
6920	79.3	-0.39	106	-0.51	421	-1.69	ND
7184	98.3	1.03	135	1.24	597	1.09	CV
7190	78.8	-0.43	108	-0.38	467	-0.96	ND
7269	84.0	-0.04	119	0.30	540	0.19	CV
7804	132	**3.55**	122	0.48	177	**-5.55**	ND
7864	98.0	1.01	123	0.54	541	0.21	ND
8701	85.6	0.08	123	0.53	531	0.05	ND
9674	90.7	0.47	124	0.61	568	0.64	CV
9759	111	1.99	152	**2.25**	649	1.91	GA-AAS
9777	86.1	0.12	114	0.02	516	-0.18	GA-AAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-H1401	84.5	1.68	13.3	57.7 - 111	Rejected	---
PC-U-H1402	114	2.28	16.6	80.6 - 147	Rejected	---
PC-U-H1403	528	11.0	62.3	401 - 655	Rejected	---

Statistics
Urine Mercury (nmol/L)

All methods	PC-U-H1401	PC-U-H1402	PC-U-H1403
N	41	41	41
Robust mean Algo A	84.5	114	528
Robust STDev	8.60	11.7	56.5
Median	84.8	115	533
STDev from MAD	7.79	10.9	51.8
Arithmetic mean	80.1	107	489
STDev	22.8	29.5	136
CV or Variability	10.2%	10.2%	10.7%

Cold vapor	PC-U-H1401	PC-U-H1402	PC-U-H1403
N	9	9	9
Robust mean Algo A	85.7	118	554
Robust STDev	8.35	11.7	38.4
Median	84.0	119	540
STDev from MAD	8.90	10.4	42.0
Arithmetic mean	84.4	117	558
STDev	10.8	12.2	41.4
CV or Variability	9.7%	9.9%	6.9%

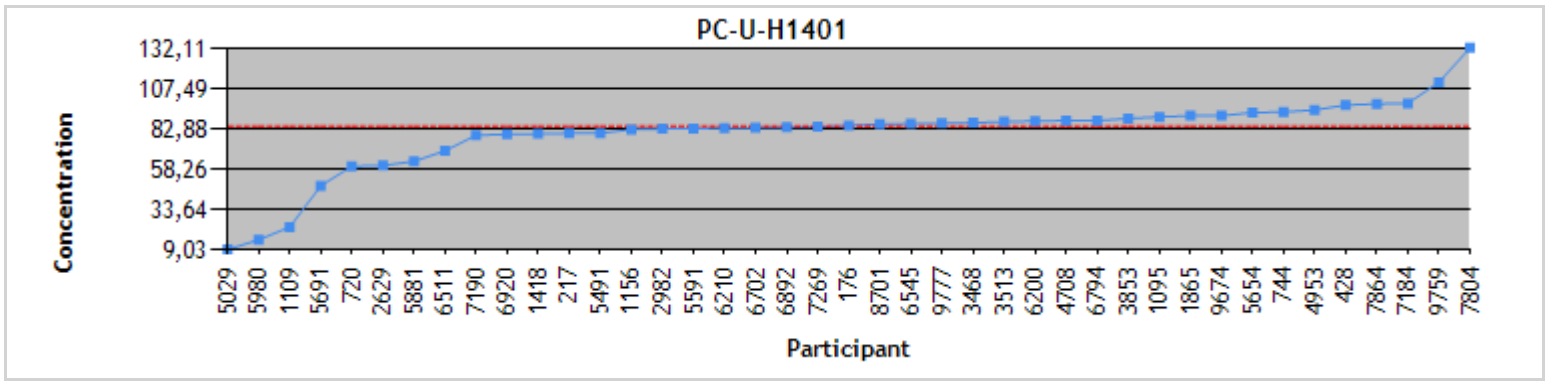
Gold amalgamation-AAS	PC-U-H1401	PC-U-H1402	PC-U-H1403
N	4	4	4
Robust mean Algo A	87.3	120	576
Robust STDev	1.44	7.53	67.7
Median	87.1	119	570
STDev from MAD	1.20	6.21	61.9
Arithmetic mean	92.9	126	576
STDev	12.2	17.6	59.7
CV or Variability	1.6%	6.3%	11.7%

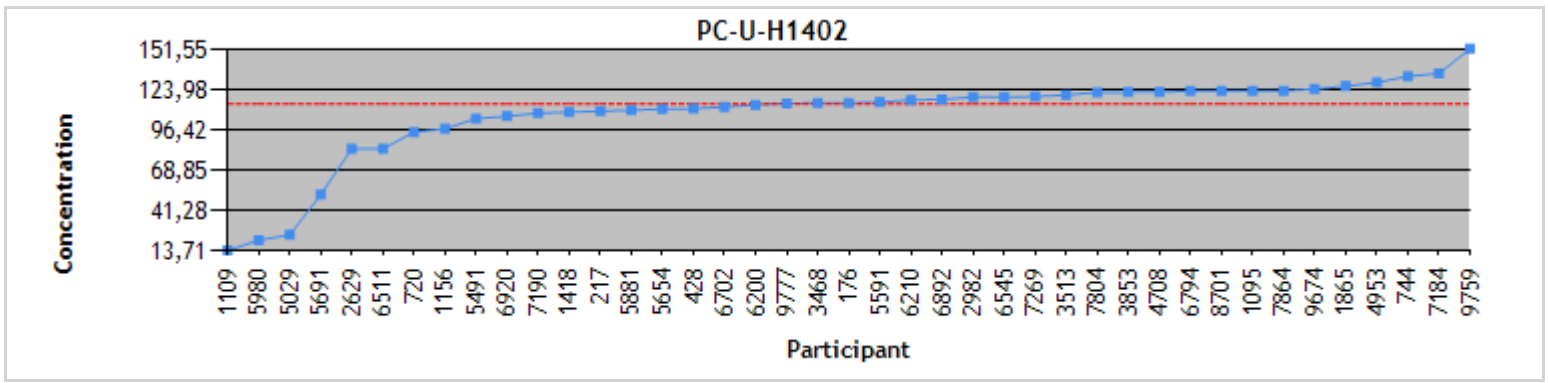
ICP-MS	PC-U-H1401	PC-U-H1402	PC-U-H1403
N	10	10	10
Robust mean Algo A	85.9	117	547
Robust STDev	3.59	6.92	27.0
Median	86.5	117	549
STDev from MAD	3.15	6.44	24.1
Arithmetic mean	82.7	112	517
STDev	12.8	21.6	112
CV or Variability	4.2%	5.9%	4.9%

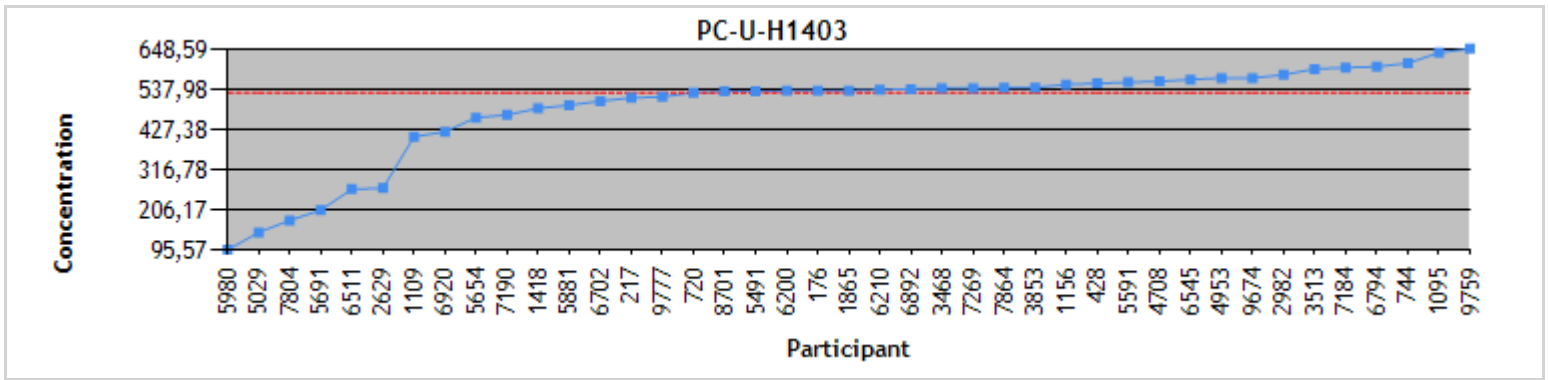
ICP-MS (collision/reaction cell)	PC-U-H1401	PC-U-H1402	PC-U-H1403
N	4	4	4
Robust mean Algo A	78.3	110	470
Robust STDev	22.0	0.890	85.8
Median	77.7	110	477
STDev from MAD	24.0	0.739	69.6
Arithmetic mean	78.3	104	443
STDev	19.4	13.5	125
CV or Variability	28.1%	0.8%	18.3%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Mercury (nmol/L)







Individual results

Urine Selenium (µmol/L)

Round #2014-01

Participant	PC-U-N1401	z'-score	PC-U-N1402	z'-score	PC-U-N1403	z'-score	Method
747	0.966	-0.19	2.24	-0.09	1.90	-0.20	ICP-MS
3187	1.06	0.22	2.39	0.35	2.01	0.16	ICP-MS
3423	1.03	0.07	1.79	-1.42	1.96	0.01	HG-AAS
3853	1.06	0.22	2.44	0.50	2.10	0.46	ICP-MS (C/R)
4090	0.980	-0.13	2.25	-0.06	1.93	-0.10	ICP-MS (C/R)
5691	0.910	-0.44	2.12	-0.44	1.82	-0.46	ICP-MS
5881	0.950	-0.26	2.23	-0.11	1.89	-0.23	ICP-MS (C/R)
6511	1.39	1.65	2.81	1.57	2.35	1.29	ND

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-N1401	1.01	0.0354	0.224	0.556 - 1.46	Rejected	Spiked with TMSe
PC-U-N1402	2.27	0.0943	0.328	1.59 - 2.95	Accepted	Workers Profile
PC-U-N1403	1.96	0.0463	0.303	1.35 - 2.57	Accepted	Selenomethionine added

Statistics
Urine Selenium (µmol/L)

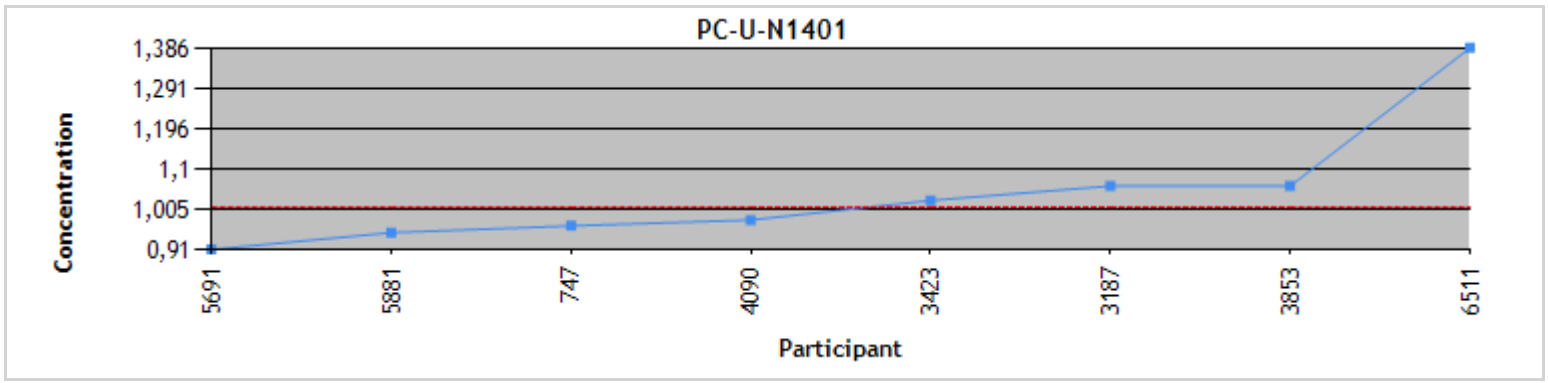
All methods	PC-U-N1401	PC-U-N1402	PC-U-N1403
N	8	8	8
Robust mean Algo A	1.01	2.27	1.96
Robust STDev	0.0801	0.213	0.105
Median	1.00	2.25	1.95
STDev from MAD	0.0814	0.200	0.0884
Arithmetic mean	1.04	2.28	2.00
STDev	0.149	0.291	0.167
CV or Variability	7.9%	9.4%	5.3%

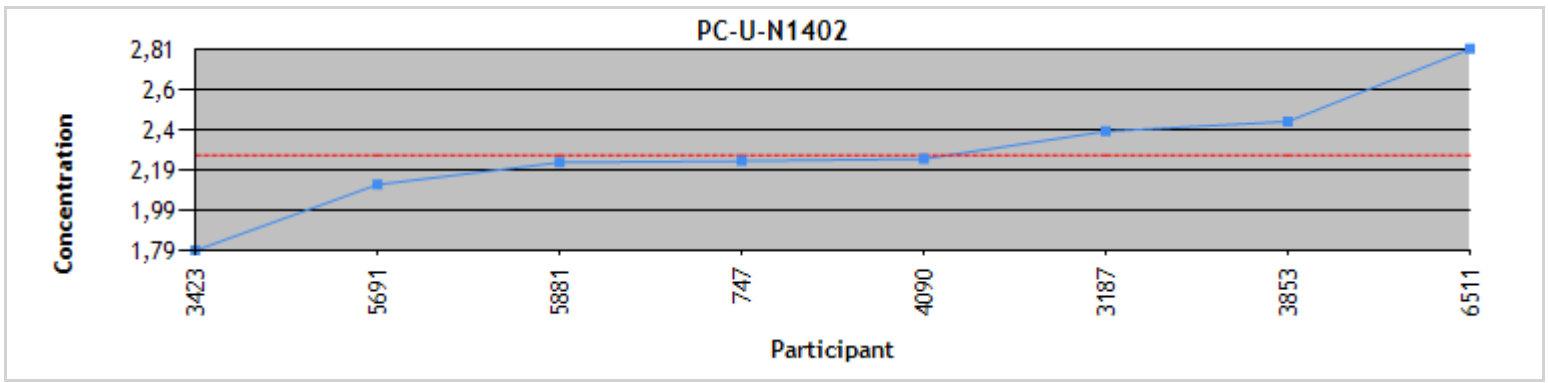
ICP-MS	PC-U-N1401	PC-U-N1402	PC-U-N1403
N	3	3	3
Robust mean Algo A	0.979	2.25	1.91
Robust STDev	0.0860	0.153	0.108
Median	0.966	2.24	1.90
STDev from MAD	0.0830	0.178	0.119
Arithmetic mean	0.979	2.25	1.91
STDev	0.0758	0.135	0.0954
CV or Variability	8.8%	6.8%	5.7%

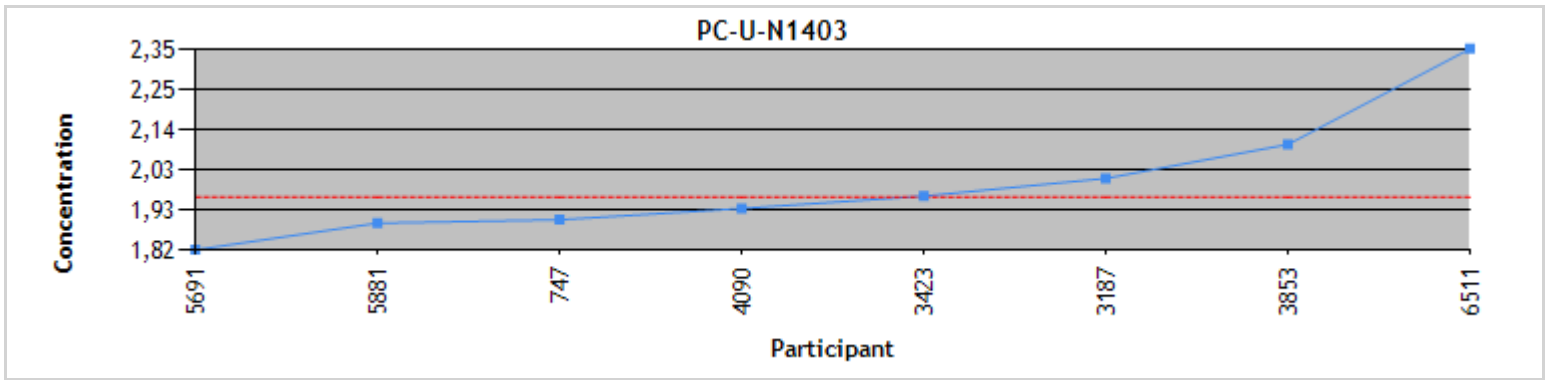
ICP-MS (collision/reaction cell)	PC-U-N1401	PC-U-N1402	PC-U-N1403
N	3	3	3
Robust mean Algo A	0.992	2.26	1.95
Robust STDev	0.0557	0.0346	0.0733
Median	0.980	2.25	1.93
STDev from MAD	0.0442	0.0274	0.0581
Arithmetic mean	0.997	2.31	1.97
STDev	0.0568	0.115	0.111
CV or Variability	5.6%	1.5%	3.8%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Selenium (µmol/L)







Individual results

Urine Total arsenic (µmol/L)

Round #2014-01

Participant	PC-U-S1401	z'-score	PC-U-S1402	z'-score	PC-U-S1403	z'-score	Method
176	0.641	1.07	2.00	0.64	0.787	0.92	ICP-MS
744	0.231	**-5.91**	0.921	**-6.17**	0.474	**-3.61**	ND
747	0.567	-0.19	1.77	-0.82	0.707	-0.25	ICP-MS
1109	0.706	**2.18**	2.04	0.87	0.793	0.99	ND
1476	0.560	-0.31	1.94	0.25	0.720	-0.06	ICP-MS
1827	0.577	-0.02	1.79	-0.69	0.682	-0.61	ICP-MS (C/R)
1865	0.579	0.02	2.02	0.74	0.727	0.05	ICP-MS (C/R)
2182	0.464	-1.93	1.82	-0.53	0.685	-0.57	GFAAS
2937	0.653	1.28	1.81	-0.57	0.784	0.87	ICP-MS
2978	0.490	-1.50	1.76	-0.87	0.654	-1.01	ICP-MS
3187	0.558	-0.34	1.86	-0.25	0.703	-0.30	ICP-MS
3423	0.534	-0.75	1.92	0.14	0.734	0.15	HG-AAS
3513	0.610	0.55	2.15	1.58	0.870	**2.11**	ICP-MS
3853	0.634	0.95	2.13	1.44	0.787	0.91	ICP-MS (C/R)
4708	0.567	-0.19	1.93	0.19	0.740	0.23	ICP-MS
5375	0.532	-0.78	1.85	-0.32	0.733	0.13	ICP-MS
5495	0.634	0.95	1.73	-1.10	0.628	-1.38	ICP-MS (C/R)
5591	0.558	-0.34	1.92	0.10	0.726	0.03	ICP-MS
5654	0.688	1.88	1.92	0.10	0.782	0.83	ICP-MS (C/R)
5691	0.530	-0.82	1.77	-0.82	0.680	-0.63	ND
5881	0.590	0.21	1.97	0.42	0.760	0.52	ICP-MS (C/R)
6511	0.571	-0.11	1.90	0.00	0.745	0.30	ND
6892	0.718	**2.39**	2.09	1.20	0.820	1.38	ND
7864	0.614	0.61	2.02	0.76	0.654	-1.01	ND
9674	0.505	-1.25	1.79	-0.70	0.626	-1.41	GFAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-S1401	0.578	0.0164	0.0564	0.461 - 0.695	Accepted	DMAA added
PC-U-S1402	1.90	0.0347	0.155	1.58 - 2.22	Accepted	Workers Profile
PC-U-S1403	0.724	0.0170	0.0672	0.585 - 0.863	Accepted	As+3 added

Statistics

Urine Total arsenic (µmol/L)

All methods	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	25	25	25
Robust mean Algo A	0.578	1.90	0.724
Robust STDev	0.0656	0.139	0.0681
Median	0.571	1.92	0.727
STDev from MAD	0.0612	0.155	0.0703
Arithmetic mean	0.572	1.87	0.720
STDev	0.0956	0.231	0.0789
CV or Variability	11.3%	7.3%	9.4%

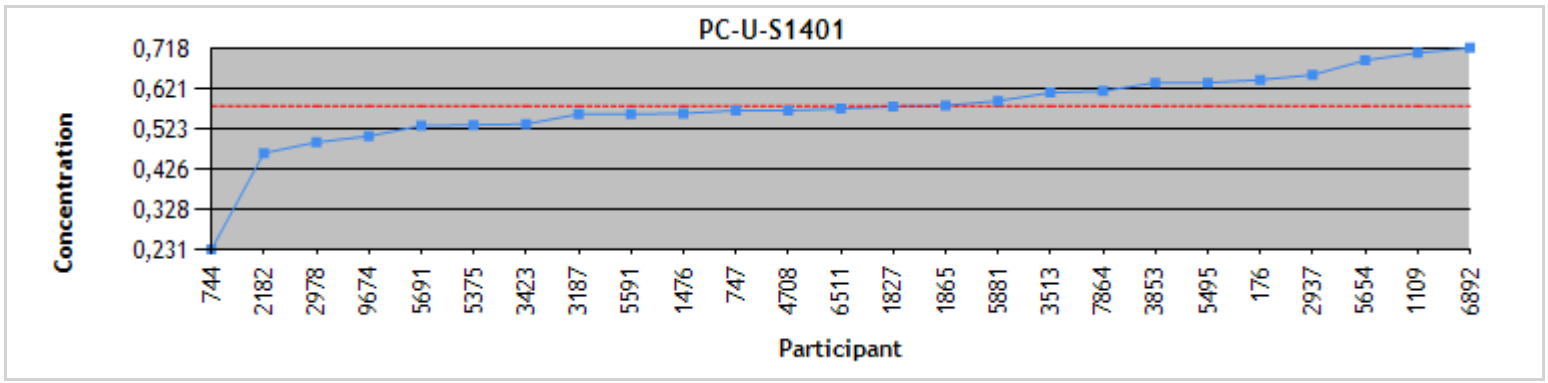
ICP-MS	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	10	10	10
Robust mean Algo A	0.568	1.89	0.736
Robust STDev	0.0331	0.105	0.0430
Median	0.564	1.89	0.730
STDev from MAD	0.0274	0.0971	0.0363
Arithmetic mean	0.574	1.90	0.742
STDev	0.0490	0.117	0.0592
CV or Variability	5.8%	5.6%	5.8%

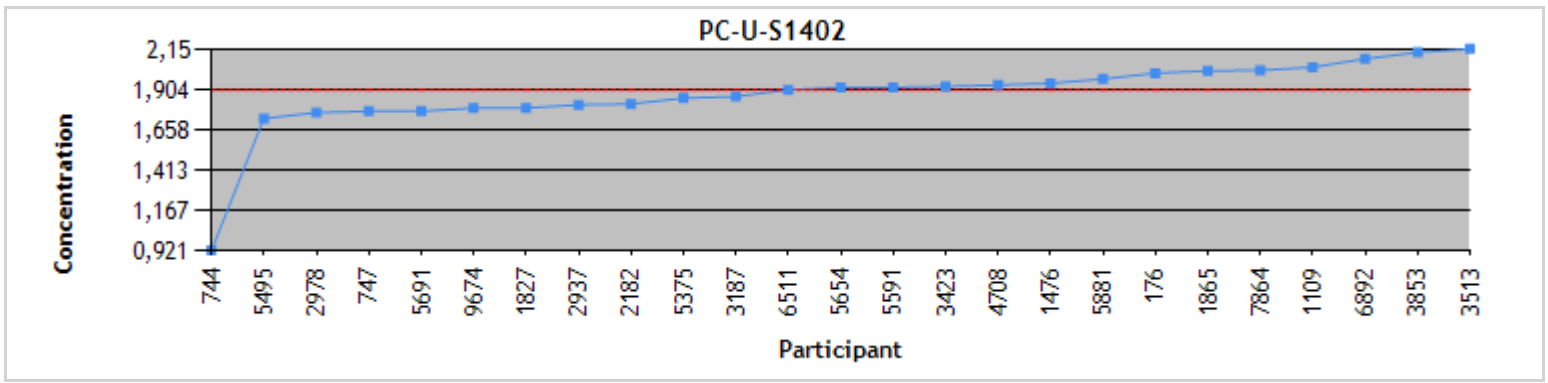
ICP-MS (collision/reaction cell)	PC-U-S1401	PC-U-S1402	PC-U-S1403
N	6	6	6
Robust mean Algo A	0.615	1.92	0.732
Robust STDev	0.0436	0.168	0.0620
Median	0.612	1.94	0.744
STDev from MAD	0.0406	0.168	0.0602
Arithmetic mean	0.617	1.92	0.728
STDev	0.0432	0.148	0.0624
CV or Variability	7.1%	8.7%	8.5%

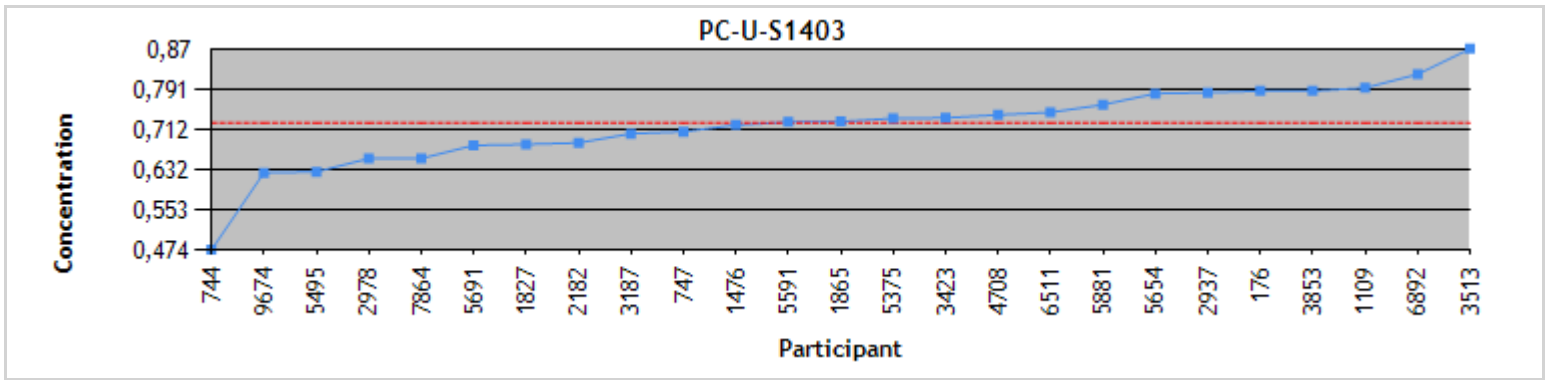
When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution

Urine Total arsenic (µmol/L)







Individual results

Urine Zinc (µmol/L)

Round #2014-01

Participant	PC-U-R1401	z'-score	PC-U-R1402	z'-score	PC-U-R1403	z'-score	Method
176	11.0	0.20	8.44	0.00	14.7	0.07	ICP-MS
747	11.2	0.42	8.32	-0.16	14.8	0.16	ICP-MS
1095	10.3	-0.51	7.83	-0.82	13.6	-0.79	FAAS
1109	12.6	1.86	10.3	**2.57**	16.3	1.34	ND
1188	14.3	**3.64**	10.3	**2.51**	15.4	0.59	ICP-MS (C/R)
1418	9.78	-1.06	7.85	-0.79	14.0	-0.51	ICP-MS (C/R)
2629	9.10	-1.77	7.12	-1.78	12.4	-1.72	ICP-OES
2763	10.4	-0.42	8.29	-0.20	14.2	-0.31	ICP-MS (C/R)
3187	10.2	-0.62	8.11	-0.44	15.0	0.31	ICP-MS
3211	11.0	0.21	9.00	0.75	14.8	0.16	FAAS
3423	13.1	**2.36**	8.79	0.47	16.4	1.41	FAAS
3513	11.5	0.73	8.90	0.62	15.2	0.47	ICP-MS
3853	9.65	-1.19	7.60	-1.13	12.8	-1.46	ICP-MS
4090	10.5	-0.30	8.10	-0.46	14.4	-0.14	ICP-MS (C/R)
4708	10.7	-0.10	8.55	0.15	14.3	-0.24	ICP-MS
4953	10.6	-0.18	8.30	-0.19	14.2	-0.29	ICP-MS
5591	11.0	0.21	8.40	-0.05	14.1	-0.39	FAAS
5691	10.0	-0.83	7.90	-0.73	13.5	-0.87	ICP-MS
5881	10.7	-0.14	8.18	-0.35	14.2	-0.34	ICP-MS (C/R)
6511	11.7	0.96	9.42	1.32	15.3	0.59	ND
7804	7.61	**-3.32**	8.25	-0.26	15.8	0.98	ND
8376	11.6	0.79	8.67	0.32	14.6	-0.01	FAAS
8454	8.51	**-2.38**	6.59	**-2.49**	12.2	-1.89	FAAS
8981	11.0	0.21	10.1	**2.24**	16.2	1.26	ND
9759	19.8	**9.34**	9.65	1.63	14.6	0.03	FAAS

	Assigned value	Standard uncertainty	σ pt	Acceptable range	K-S (Lilliefors)	Species
PC-U-R1401	10.8	0.277	0.919	8.88 - 12.7	Rejected	---
PC-U-R1402	8.44	0.177	0.721	6.96 - 9.92	Accepted	---
PC-U-R1403	14.6	0.244	1.24	12.1 - 17.1	Accepted	---

Statistics
Urine Zinc (µmol/L)

All methods	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	25	25	25
Robust mean Algo A	10.8	8.44	14.6
Robust STDev	1.11	0.707	0.975
Median	10.7	8.32	14.6
STDev from MAD	1.04	0.696	0.903
Arithmetic mean	11.1	8.52	14.5
STDev	2.27	0.915	1.10
CV or Variability	10.3%	8.4%	6.7%

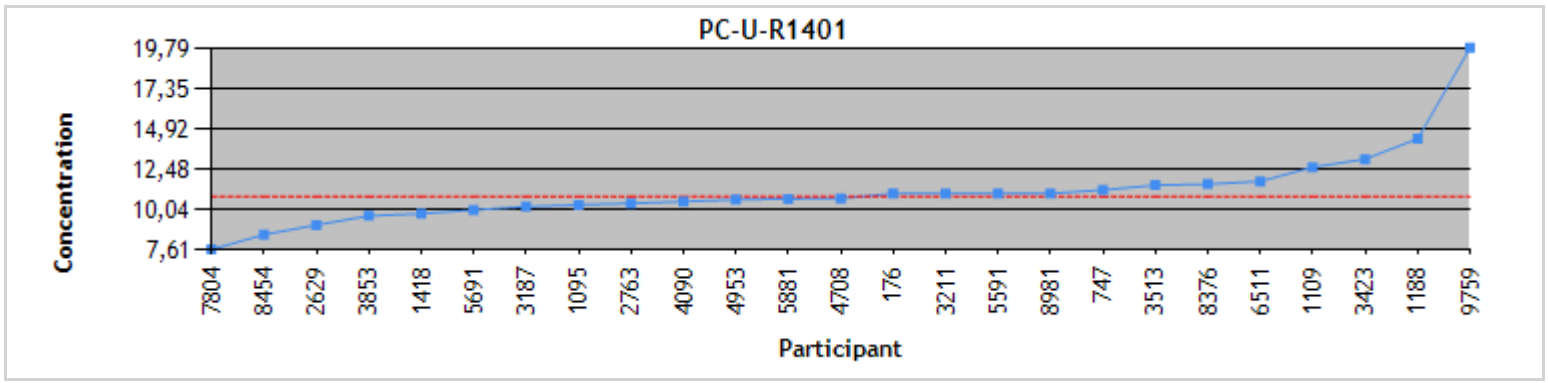
Flame-AAS	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	7	7	7
Robust mean Algo A	11.2	8.60	14.4
Robust STDev	1.27	0.607	0.859
Median	11.0	8.67	14.6
STDev from MAD	1.02	0.482	0.729
Arithmetic mean	12.2	8.42	14.3
STDev	3.62	0.979	1.27
CV or Variability	11.4%	7.1%	6.0%

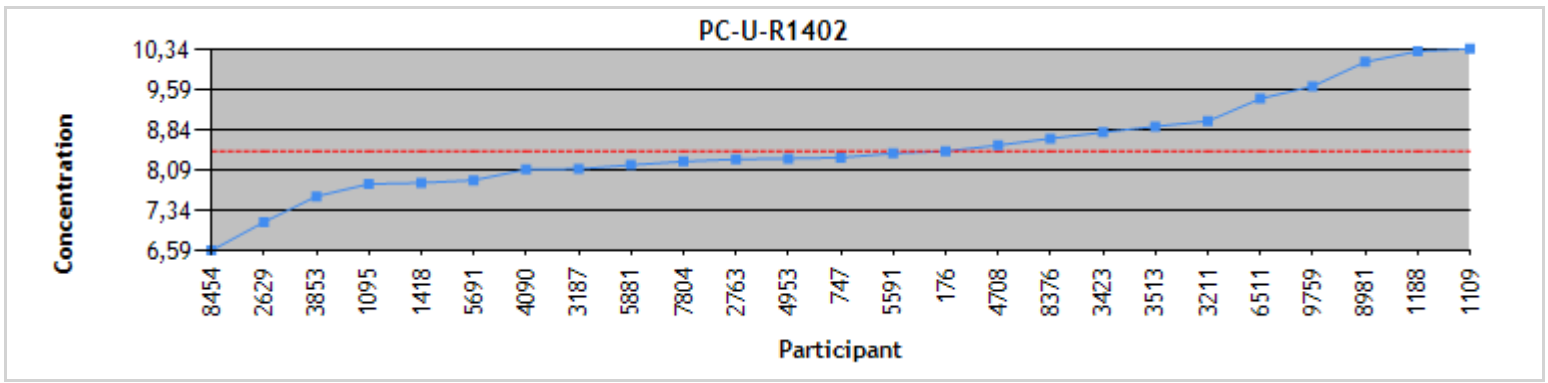
ICP-MS	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	8	8	8
Robust mean Algo A	10.6	8.28	14.4
Robust STDev	0.712	0.372	0.686
Median	10.7	8.31	14.5
STDev from MAD	0.742	0.326	0.599
Arithmetic mean	10.6	8.27	14.3
STDev	0.628	0.400	0.824
CV or Variability	6.7%	4.5%	4.8%

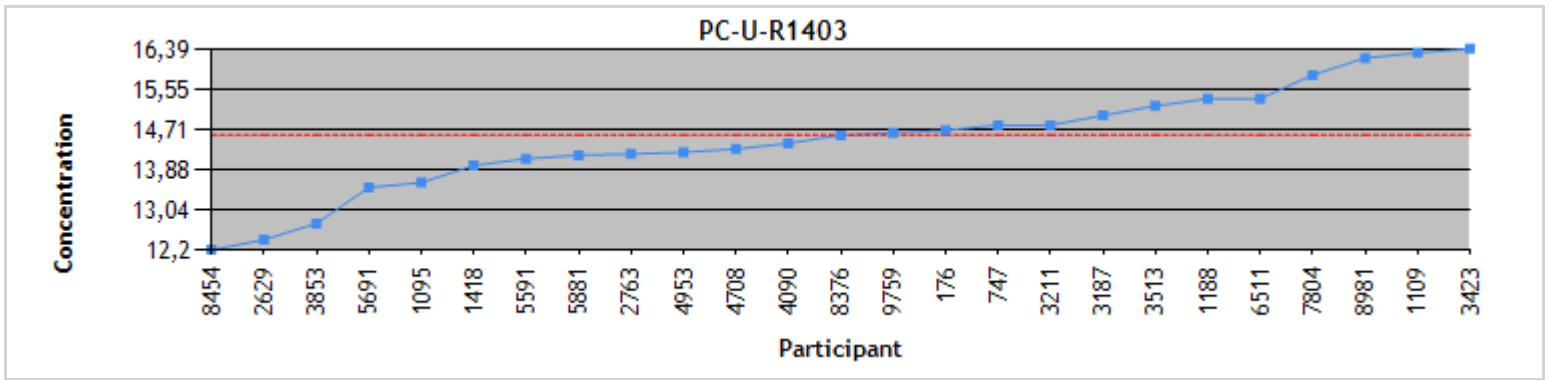
ICP-MS (collision/reaction cell)	PC-U-R1401	PC-U-R1402	PC-U-R1403
N	5	5	5
Robust mean Algo A	10.5	8.19	14.3
Robust STDev	0.305	0.207	0.315
Median	10.5	8.18	14.2
STDev from MAD	0.237	0.160	0.326
Arithmetic mean	11.1	8.54	14.4
STDev	1.80	0.995	0.545
CV or Variability	2.9%	2.5%	2.2%

When fewer than 20 results were considered for statistical treatment of all or a sub-sample of results, the accuracy of statistical data may be questionable.

Distribution
Urine Zinc (µmol/L)







ASSIGNED VALUES

ROUND: 2014-01
SHIPPED ON: 2014-01-20
DEADLINE: 2014-02-28

MATRIX	ANALYTE	UNIT	PTM	ASSIGNED VALUE	PTM	ASSIGNED VALUE	PTM	ASSIGNED VALUE
Blood	Cadmium	nmol/L	PC-B-C1401	8.88	PC-B-C1402	104	PC-B-C1403	23.2
	Lead	µmol/L	PC-B-L1401	1.32	PC-B-L1402	0.295	PC-B-L1403	3.87
	Mercury	nmol/L	PC-B-M1401	20.8	PC-B-M1402	9.09	PC-B-M1403	363
Serum	Aluminium	µmol/L	PC-S-A1401	1.46	PC-S-A1402	0.643	PC-S-A1403	6.27
	Copper	µmol/L	PC-S-E1401	16.7	PC-S-E1402	27.1	PC-S-E1403	9.67
	Manganese	nmol/L	PC-S-G1401	29.9	PC-S-G1402	11.5	PC-S-G1403	53.6
	Selenium	µmol/L	PC-S-E1401	1.68	PC-S-E1402	2.20	PC-S-E1403	1.34
	Zinc	µmol/L	PC-S-E1401	19.0	PC-S-E1402	26.9	PC-S-E1403	12.4
Urine	Cadmium	nmol/L	PC-U-D1401	93.1	PC-U-D1402	19.3	PC-U-D1403	52.9
	Chromium	nmol/L	PC-U-B1401	22.1	PC-U-B1402	240	PC-U-B1403	34.2
	Copper	µmol/L	PC-U-R1401	4.01	PC-U-R1402	2.14	PC-U-R1403	14.6
	Fluoride	µmol/L	PC-U-F1401	27.7	PC-U-F1402	57.3	PC-U-F1403	256
	Inorganic arsenic	µmol/L	PC-U-S1401	0.465	PC-U-S1402	1.44	PC-U-S1403	0.654
	Iodide	µmol/L	PC-U-I1401	0.608	PC-U-I1402	1.70	PC-U-I1403	2.18
	Lead	µmol/L	PC-U-P1401	0.0573	PC-U-P1402	0.775	PC-U-P1403	0.408
	Mercury	nmol/L	PC-U-H1401	84.5	PC-U-H1402	114	PC-U-H1403	528
	Selenium	µmol/L	PC-U-N1401	1.01	PC-U-N1402	2.27	PC-U-N1403	1.96
	Total arsenic	µmol/L	PC-U-S1401	0.578	PC-U-S1402	1.90	PC-U-S1403	0.724
	Zinc	µmol/L	PC-U-R1401	10.8	PC-U-R1402	8.44	PC-U-R1403	14.6

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GROUPING OF ANALYTICAL METHODS FOR STATISTICS

METHODS GROUPING CODE	METHODS GROUPING	METHODS INCLUDED	METHODS CODE
AFS	Atomic fluorescence	Atomic fluorescence	AFS
		Cold vapor-atomic fluorescence	CV-AFS
COLOR	Colorimetry	Colorimetry	Color
CV	Cold vapor	Cold vapor	CV
		Cold vapor-AAS	CV-AAS
ESA	ESA Lead Care TM system	ESA Lead Care TM system	ESA Lead
FAAS	Flame-AAS	Flame-AAS	FAAS
FSE	Fluoride specific electrode	Fluoride specific electrode	FSE
GA-AAS	Gold amalgamation-AAS	Gold amalgamation-AAS	AA-Gold A
GFAAS	Graphite furnace-AAS	Deuterium and other-Graphite furnace-AAS	D2-GFAAS
		Zeeman-Graphite furnace-AAS	Z-GFAAS
HG-AAS	Hydride generation-AAS	Hydride generation-AAS	HG-AAS
HR-ICP-MS	ICP-MS (high resolution)	ICP-MS (high resolution)	HR-ICP-MS
ICP-MS	ICP-MS	ICP-MS	ICP-MS
		ICP-MS (isotopic dilution)	ID-ICP-MS
		ICP-MS (laser ablation/furnace)	ICP-MS (LA)
ICP-MS (C/R)	ICP-MS (collision/reaction cell)	ICP-MS (collision/reaction cell)	ICP-MS(C/R)
ICP-OES	ICP-OES (optical emission)	ICP-OES (optical emission)	ICP-OES
POL	Polarography	Polarography	Polaro

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