Results of Proficiency Test
Total Metals in Polymers
August 2019

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

World-wide, many consumer products with plastic parts are produced and transported. These plastic parts are produced under strict regulations. For instance, in the European Directive 2011/65/EC maximum concentrations are specified for metals in plastic: the content of Lead (Pb), Mercury (Hg),) and Hexavalent Chromium (CrVI) may not exceed 0.1%M/M, while the maximum concentration for Cadmium (Cd) may not exceed 0.01%M/M.
Since 1998 a proficiency scheme for the determination of Metals in plastics is organized by the Institute for Interlaboratory Studies every year. Starting with only total Cadmium, over the years the scope was extended with the total of Antimony, Chromium, Hexavalent Chromium, Cobalt, Copper, Lead, Mercury, Nickel, Manganese and Tin.

In this interlaboratory study, 187 laboratories in 38 different countries registered for participation. See appendix 4 for the number of participants per country. In this report, the results of the 2019 Total Metals in Polymers proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity were subcontracted to an ISO/IEC17025 accredited laboratory. It was decided to send 2 different polymer samples labelled #19600 and #19601 of approximately 6 grams each.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organization was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4 SAMPLES

Two different polymer batches, both artificially fortified to be positive on one or more metals, were selected. The materials were divided over plastic bags, approx. 6 grams for each sample and labelled respectively #19600 and #19601. Sample #19600 consisted of yellow PVC (Polyvinylchloride) blocks and sample #19601 was beige ABS (Acrylonitrile Butadiene Styrene) granulates.

The homogeneity of the subsamples #19600 was checked by determination of the totals of Lead, Cadmium, Chromium and Nickel according to an in house method on 8 stratified randomly selected subsamples.

	Lead in mg/kg	Cadmium in mg/kg	Chromium in mg/kg	Nickel in mg/kg
sample #19600-1	365	229	106	169
sample #19600-2	371	237	105	171
sample #19600-3	378	238	106	174
sample #19600-4	365	230	104	169
sample #19600-5	361	230	102	167
sample #19600-6	372	235	105	173
sample #19600-7	370	236	107	172
sample #19600-8	375	229	104	172

Table 1: homogeneity test results of subsamples #19600

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities using either the reference test method for Cadmium or the estimated reproducibility using the Horwitz equation for the other elements, in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Lead in mg/kg	Cadmium in mg/kg	Chromium in mg/kg	Nickel in mg/kg
r (observed)	15.8	10.8	4.3	6.6
reference method	Horwitz	EN1122:01	Horwitz	Horwitz
0.3 * R (ref. method)	20.4	17.5	7.0	10.6

Table 2: evaluation of the repeatabilities of subsamples #19600

The homogeneity of the subsamples #19601 was checked by determination of the totals of Cadmium, Chromium and Tin according to an in house method on 7 stratified randomly selected subsamples.

	Cadmium in mg/kg	Chromium in mg/kg	Tin in mg/kg
sample #19601-1	184.8	199.9	202.3
sample #19601-2	185.6	195.3	202.5
sample #19601-3	194.7	201.3	210.3
sample #19601-4	193.4	200.6	206.5
sample #19601-5	199.5	205.1	204.4
sample #19601-6	197.2	210.9	210.7
sample #19601-7	194.4	204.6	215.2

Table 3: homogeneity test results of subsamples #19601

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities using either the reference test method for Cadmium or the estimated reproducibility using the Horwitz equation for the other elements, in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Cadmium in mg/kg	Chromium in mg/kg	Tin in mg/kg
r (observed)	15.6	13.8	13.5
reference method	EN1122:01	Horwitz	Horwitz
0.3 * R (ref. method)	14.5	12.2	12.5

Table 4: evaluation of the repeatabilities of subsamples #19601

For both samples, #19600 and #19601, the calculated repeatabilities were in agreement with 0.3 times the corresponding reproducibility of the reference methods. Therefore, homogeneity of the subsamples was assumed.

To each of the participating laboratories one sample, labelled #19600 and one sample, labelled #19601 were sent on August 7, 2019.

2.5 ANALYSES

The participants were requested to determine on both samples the total of: Antimony, Cadmium, Chromium, Hexavalent Chromium, Cobalt, Copper, Lead, Mercury, Nickel, Manganese and Tin.
It was also requested to report if the laboratory was accredited for the requested elements that were determined and to report some analytical details.

It was explicitly requested to treat the samples as if they were routine samples and to report the test results using the indicated units on the report form and not to round the test results, but report as much significant figures as possible. It was also requested not to report ‘less

than' test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

To get comparable test results, a detailed report form and a letter of instructions are prepared. On the report form the reporting units are given as well as the appropriate reference test methods (when applicable) that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis-cts/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis-cts/. The reported test results are tabulated per determination in appendix 1 and 2 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the test result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' (iis-protocol, version 3.5) of June 2018.

For statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. If a dataset does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

According to ISO5725 the original test results per determination were submitted to Dixon's and/or Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirements based on the target reproducibility in accordance with ISO13528. In this PT, the criterion of ISO13528, paragraph 9.2.1 was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

This target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

When a laboratory did use a test method with a reproducibility that is significantly different from the reproducibility of the reference test method used in this report, it is strongly advised to recalculate the z-score, while using the reproducibility of the actual test method used, this in order to evaluate whether the reported test result is fit-for-use.

The z-scores were calculated according to:

$z_{(target)}$ = (test result - average of PT) / target standard deviation

The $z_{(target)}$ scores are listed in the result tables in appendix 1.

Absolute values for z<2 are very common and absolute values for z>3 are very rare. The usual interpretation of z-scores is as follows:

|z| < 1 good
1 < |z| < 2 satisfactory
2 < |z| < 3 questionable
3 < |z| unsatisfactory

4 EVALUATION

In this interlaboratory study, some problems were encountered with the dispatch of the samples. Twelve participants reported results after the final reporting date and ten participants did not report any results at all. Not all laboratories were able to report all elements requested. Finally, the 177 reporting laboratories submitted 1253 numerical results. Observed were 42 outlying results, which is 3.4% of all reported numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

Not all original data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care.

4.1 EVALUATION PER SAMPLE AND PER ELEMENT

In this section, the results are discussed per sample and per element.
The test methods, which were used by the various laboratories, were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are listed in appendix 4.

For the determination of the metal Cadmium in polymers, the method EN1122 is considered the official test method. The precision data mentioned in EN1122 were used to evaluate the Cadmium test results.

For the determination of the metals Cadmium, Lead and Chromium in polymers, the method IEC 62321-5:2013 ‘Determination of certain substances in electrotechnical products - Part 5: Cadmium, Lead and Chromium in polymers and electronics and Cadmium and Lead in metals by AAS, AFS, ICP-OES and ICP-MS’ is considered the official test method. And for the determination of Hexavalent Chromium the method IEC 62321-7-2:2017 ‘Determination of certain substances in electrotechnical products – Part 7-2: Hexavalent Chromium – Determination of hexavalent Chromium (Cr(VI)) in polymers and electronics by the colorimetric method’ is considered the official test method.

In part 5 in the 2013 version of the method IEC 62321 (again only for Cadmium, Lead and Chromium) and in part 7-2 of the 2017 version of the method IEC 62321 (for Hexavalent Chromium only) precision data are mentioned. Regretfully for the 2013 version it is not clear which precision data can be used as reference values, as there is no significant correlation between the concentration of the metal, the quantification method and type of sample. For the 2017 version the Hexavalent Chromium concentration is in almost all trials, with different type of material above the 500 mg/kg (max. 1281.4 mg/kg) while in the 2019 PT the Hexavalent Chromium concentration is below 100 mg/kg.
Therefore, it was decided not to use the precision data mentioned in IEC62321-5:2013 and IEC62321-7-2:2017, but to estimate the reproducibility from the Horwitz equation. The Horwitz equation is also used for the elements Nickel, Manganese and Tin.

Sample #19600

Total Cadmium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of statistical outlier is in agreement with the requirements of EN1122:01.

Total Chromium: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of statistical outliers is in agreement with the estimated reproducibility using the Horwitz equation.

Chromium VI: This determination may be problematic for a number of laboratories. Eleven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility using the Horwitz equation.

Total Lead: This determination may be problematic for a number of laboratories. Seven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility using the Horwitz equation.

Total Nickel: This determination may be problematic for a number of laboratories. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility using the Horwitz equation.

Other metals: The majority of participants agreed on a concentration near or below the limit of detection for Antimony, Cobalt, Copper, Mercury, Manganese and Tin.

Sample #19601

Total Cadmium: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the reproducibility requirements of EN1122:01.

Total Chromium: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the estimated reproducibility using the Horwitz equation.

Chromium VI: This determination was very problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the estimated reproducibility using the Horwitz equation.

Total Manganese: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility using the Horwitz equation.

Total Tin: This determination was very problematic. Eleven statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the estimated reproducibility using the Horwitz equation.

Other metals: The majority of participants agreed on a concentration near or below the limit of detection for Antimony, Cobalt, Copper, Lead, Mercury and Nickel.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility of the relevant reference method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average test result, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from literature reference test methods or the estimated target reproducibility are presented in the next tables.

Element	unit	n	average	2.8 * sd	R (target)
Total Cadmium as Cd	mg/kg	168	232.9	48.0	58.2
Total Chromium as Cr	mg/kg	144	102.2	24.2	22.8
Chromium as Cr6+	mg/kg	61	86.9	21.1	19.9
Total Lead as Pb	mg/kg	166	382.9	76.0	70.1
Total Nickel as Ni	mg/kg	109	175.6	37.6	36.1

Table 5: reproducibilities of elements on sample #19600

Element	unit	n	average	2.8 * sd	R (target)
Total Cadmium as Cd	mg/kg	168	173.7	50.4	43.4
Total Chromium as Cr	mg/kg	149	181.4	56.4	37.1
Chromium as Cr6+	mg/kg	67	70.2	43.8	16.6
Total Manganese as Mn	mg/kg	98	81.1	22.9	18.7
Total Tin as Sn	mg/kg	81	182.1	65.5	37.3

Table 6: reproducibilities of elements on sample #19601

Without further statistical calculations, it can be concluded that for the elements present in sample #19600 there is a good compliance of the group of participating laboratories with the relevant target. It can be concluded that for the elements present in sample #19601 the group has difficulties to meet the target.

4.3 COMPARISON OF THE PROFICIENCY TEST OF AUGUST 2019 WITH PREVIOUS PTS

	August 2019	September 2018	September 2017	September 2016	September 2015
Number of reporting labs	177	166	167	142	161
Number of test results	1253	1471	960	1041	1250
Number of statistical outliers	42	46	24	24	38
Percentage outliers	3.4%	3.1%	2.5%	2.3%	3.0%

Table 7: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

The performance of the determinations of the proficiency tests was compared, expressed as relative standard deviation (RSD) of the PTs, see next table.

Element	Content mg/kg	2019	2018	2017	2016	2015	2002-2014	Target
Sb	50-300	--	11-14%	10%	--	9%	--	7-9%
Cd	25-300	7-10%	8-12%	8%	9%	8-9%	7-18%	9%
Cr	25-250	8-11%	7%	--	10%	11-24%	7-23%	7-10%
Cr6+	50-250	9-22%	6%	--	52%	66%	23-76%	7-9%
Co	25-250	--	--	8%	8%	10%	11%	7-10%
Cu	25-300	--	6%	--	8%	7%	--	7-10%
Pb	50-500	7%	7%	6%	10%	11%	6-36%	6-9%
Hg	5-250	--	9-20%	--	8-14%	13-24%	14-46%	7-13%
Ni	25-250	8%	--	10%	9%	--	--	7-10%
Mn	25-300	10%	--	--	--	--	--	7-10%
Sn	25-300	13%	--	--	--	--	--	7-10%

Table 8: development of the uncertainties over the years

In general it can be concluded that the RSDs observed in this PT are comparable to RSDs observed in previous PTs.

4.4 EVALUATION OF THE ANALYTICAL DETAILS

For this PT also some analytical details were requested, see appendix 3. Based on the answers given by the participants the following can be summarized.

- About 85% of the reporting participants mentioned that they are accredited for one or more of the requested elements.
- About 45% of the reporting participants used the samples as received and about 50% further cut or further grinded the samples prior to analysis.

Some questions were designed for the determination of Hexavalent Chromium only, but it was evident by the answers given that these questions were completed while the determination of Hexavalent Chromium was not executed. Summarized:

- Most of the participants used N-Methyl-Pyrrolidone (NMP) to dissolve or swell the sample.

- As digestion solution an alkaline solution (e.g. Sodium Hydroxide / Sodium Carbonate) was used, but also acids (e.g. Nitric Acid, Hydrochloric Acid) were mentioned here.
- About 60% of the reporting participants used a sample intake between 0.1 – 0.5 grams, about 5% used less than 0.1 grams and about 8% used more than 0.5 grams as sample intake.

When the analytical details were investigated separately, it appeared that the effect on the determination of metals in polymers is negligible.

5 DISCUSSION

In this proficiency test for the determination of total metals in polymers two different type of polymers were used: PVC (Polyvinylchloride) and ABS (Acrylonitrile Butadiene Styrene). The type of sample material used in this PT seems to have a large effect. The observed reproducibilities in the PVC sample (sample #19600) were in agreement with the target reproducibilities. While the observed reproducibilities in the ABS sample (sample #19601) were not in agreement with the target reproducibilities. See also the discussion in § 4.1.
It appeared that in the ABS sample it is more difficult to enclose the requested metals completely when compared to the PVC sample.

6 CONCLUSION

In this proficiency test the total metals content in two different type of polymers were identified. In this PT the group of participating participants have no problem with the determination of metals in PVC, but have some problems with the determination of metals in ABS.

Each participating laboratory will have to evaluate its performance in this study and decide about any corrective actions if necessary. Therefore, participation on a regular basis in this scheme could be helpful to improve the performance and thus increase of the quality of the analytical results.

APPENDIX 1

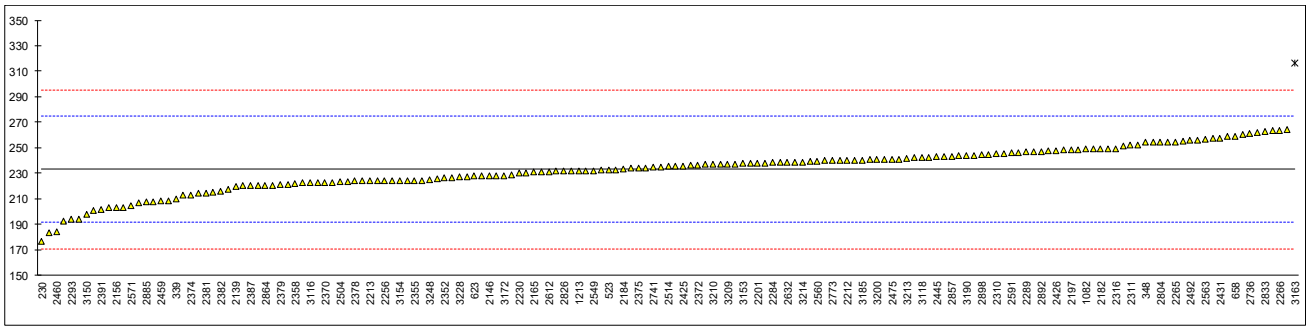
Determination of total Cadmium as Cd on sample #19600; results in mg/kg

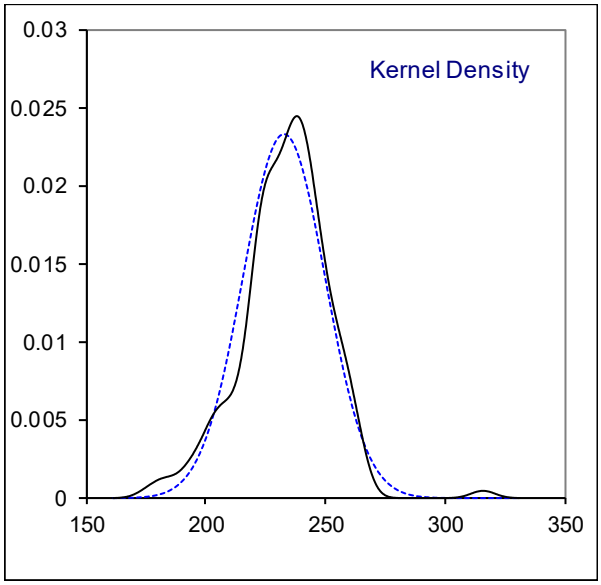
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379	EN1122	221		-0.57
230	EN1122	176.7		-2.70	2380	CPSC-CH-E1002-08	223.95		-0.43
330	In house	247.3		0.69	2381	EN1122	214.20		-0.90
339	In house	210		-1.10	2382	EN16711-1	215.6		-0.83
348	In house	254.202		1.02	2384	IEC62321-5	220.75		-0.59
523	EPA3052	232.224		-0.03	2385	IEC62321-5	231		-0.09
551	EPA3052	183.43		-2.38	2387	IEC62321-5	220.333		-0.61
623	In house	227.80		-0.25	2390		-----		-----
658	EPA3051	259.047		1.26	2391	IEC62321-5	201.5		-1.51
826	IEC62321-5	220.5		-0.60	2410	EN1122	238		0.24
840	IEC62321-5	227.91		-0.24	2415	EN1122	231.8		-0.05
1051	EN1122	245.6		0.61	2425	EN1122	235.5		0.12
1082	In house	248.860		0.77	2426	EN16711-1	247.7		0.71
1126	In house	208.385		-1.18	2431	In house	257.5564		1.18
1213	IEC62321-5	231.9		-0.05	2433		-----		-----
2108	EN16711-1	255.20		1.07	2444	IEC62321-5	237.13		0.20
2115	EN16711-1	233.65		0.03	2445	In house	243.00		0.48
2118	CPSC-CH-E1002-08	240.9393485		0.39	2453	EN1122	256.3		1.12
2129	IEC62321-5	252		0.92	2459	EN1122	208		-1.20
2132	EN1122	240.3		0.35	2460	EN1122	183.85	C	-2.36
2137	IEC62321-5	214.00		-0.91	2475	EN1122	241		0.39
2138	IEC62321-5	221.0		-0.57	2476	EN1122	236.7		0.18
2139	IEC62321-5	220.0		-0.62	2482	ISO17294-2	234.6		0.08
2146	In house	228.0		-0.24	2486	EN1122	202.867		-1.45
2156	IEC62321-5	202.94		-1.44	2488		-----		-----
2165	IEC62321-5	230.8		-0.10	2489	In house	243		0.48
2176	IEC62321-5	254.6		1.04	2492	In house	256		1.11
2182	EN1122	249.042		0.77	2493	EN13805	226		-0.33
2184	EN1122	233.3		0.02	2495	EN1122	239.47		0.31
2190		-----		-----	2497		-----		-----
2197	In house	248.32		0.74	2500		-----		-----
2201	IEC62321-5	238.0		0.24	2504	EN1122	223.61		-0.45
2202	IEC62321-5	247		0.68	2511	CPSC-CH-E1002-08	231.43		-0.07
2212	CPSC-CH-E1002-08	240.3		0.35	2514	EN16711-1	235.18		0.11
2213	EN16711-1	224		-0.43	2529	CPSC-CH-E1002-08	234.2485		0.06
2216	IEC62321-5	264.486		1.52	2532	EN1122	230		-0.14
2218		-----		-----	2549	In house	232		-0.04
2230	EN1122	230		-0.14	2560	EN16711-1	239.57		0.32
2236		-----		-----	2561		-----		-----
2247	EN1122	242.66		0.47	2563	IEC62321-5	257		1.16
2250	EN16711-1	249.26		0.79	2564		-----		-----
2255	EN16711-1	232.2		-0.04	2568		-----		-----
2256	IEC62321-5	224		-0.43	2571	IEC62321-3-1	204.2		-1.38
2258	CPSC-CH-E1002-08	224.54		-0.40	2582	EN1122	246.46	C	0.65
2265	EN1122	254.67		1.05	2590	EN1122	241.074		0.39
2266	In house	263.71		1.48	2591	CPSC-CH-E1002-08	246.2278		0.64
2284	EN16711-1	238.194		0.25	2612	EN1122	231		-0.09
2289	IEC62321-5	246.7		0.66	2624		231.96		-0.05
2290	EN1122	237.3		0.21	2629	EN1122	232.6		-0.02
2293	EN1122	193.6		-1.89	2632	IEC62321-5	238.38		0.26
2294		-----		-----	2637	EPA3051	259		1.25
2295	EN16711-1	243.75		0.52	2642		-----		-----
2301	EN16711-1	201.15		-1.53	2644	EN16711-1	227.52		-0.26
2310	IEC62321-5	245.2		0.59	2668	In house	222.40		-0.51
2311	EPA3052	251.78		0.91	2674	EN1122	228.50		-0.21
2314	CPSC-CH-E1002-08	248.7		0.76	2678	CPSC-CH-E1002-08	260.26	C	1.31
2316	IEC62321-5	249.32		0.79	2705		-----		-----
2339	In house	262		1.40	2734	EN1122	207.80		-1.21
2347	IEC62321-5	240		0.34	2736	In house	261.364		1.37
2350	IEC62321-5	242.1		0.44	2737	CPSC-CH-E1002-08	251.481		0.89
2352	EN1122	226.1		-0.33	2741	In house	234.54		0.08
2353	IEC62321-5	226.6		-0.30	2773	EN1122	240.12		0.35
2355	EPA3052	224.4		-0.41	2791		-----		-----
2357	EN1122	235.33		0.12	2794	IEC62321-3-1	263.42		1.47
2358	EPA3051	221.6		-0.54	2798	EN1122	194.2		-1.86
2363	EPA3052	224		-0.43	2804	EN1122	254.4		1.03
2365	EN16711-1	240.8		0.38	2812	EN16711-1	228.1		-0.23
2366	EN1122	236.1		0.15	2826	IEC62321-5	231.797		-0.05
2369	EN1122	237.8		0.23	2827	In house	222.88		-0.48
2370	EN1122	223		-0.48	2829	EN1122	207.00	C	-1.25
2372	EPA3052	236.1		0.15	2833	IEC62321-3-1	262.5	C	1.42
2374	In house	212.9		-0.96	2835	IEC62321-5	217.359		-0.75
2375	EN16711-1	234.0		0.05	2853		-----		-----
2378	EN16711-1	223.9		-0.43	2857	IEC62321-5	243.41		0.50

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	220.67		-0.59	3163	In house	316	R(0.01)	3.99
2867	IEC62321-5	224.2		-0.42	3166	In house	249		0.77
2877	EN1122	203.1	C	-1.43	3172	ISO8124-5	228.2		-0.23
2883	EN1122	220.1		-0.62	3182	EN1122	238.34		0.26
2885	IEC62321-5	207.4		-1.23	3185	EN1122	240.3		0.35
2892	EN1122	247.22		0.69	3190	IEC62321-5	243.67		0.52
2898	In house	244.85		0.57	3197	EN1122	238.8		0.28
2900	IEC62321-5	223.8		-0.44	3200	CPSC-CH-E1002-08	240.91		0.38
3100	EN1122	243.5		0.51	3209	CPSC-CH-E1002-08	237.21		0.21
3110		224		-0.43	3210	In house	237		0.20
3116	EN1122	222.76		-0.49	3213	IEC62321-5	241.53		0.41
3118	EN1122	242.3507		0.45	3214	EN1122	238.8		0.28
3122	CPSC-CH-E1002-08	223		-0.48	3225	EN1122	254.25		1.03
3124	EPA3052	248.2		0.73	3228	IEC62321-5	227.0		-0.29
3127	DIN22022-3	244.95		0.58	3237	EN16711-1	240.26		0.35
3146	In house	215		-0.86	3239	IEC62321-5	192.670		-1.94
3150	EN16711-1	197.821		-1.69	3248	EN1122	225		-0.38
3153	EN1122	237.5		0.22	8005	CPSC-CH-E1002-08	212.56		-0.98
3154	IEC62321-3-1	224.0		-0.43	8008		-----		-----
3160	CPSC-CH-E1002-08	257.46		1.18					

normality	OK	
n	168	
outliers	1	
mean (n)	232.9309	
st.dev. (n)	17.15484	RSD=7%
R(calc.)	48.0336	
st.dev.(EN1122:01)	20.79740	
R(EN1122:01)	58.2327	

Lab 2460: first reported 134.049
Lab 2582: first reported 65.83
Lab 2678: first reported 200.29
Lab 2829: first reported 292.03
Lab 2833: first reported 384.2
Lab 2877: first reported 129.5437





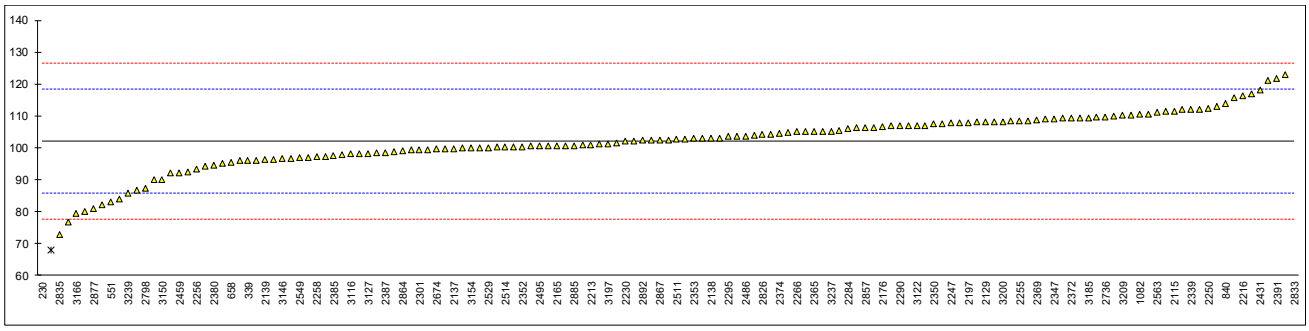
Determination of total Chromium as Cr on sample #19600; results in mg/kg

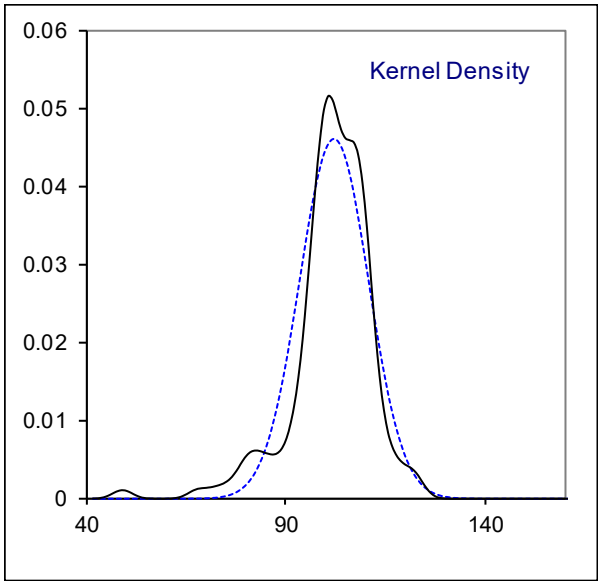
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379	IEC62321-5	84		-2.23
230	CPSC-CH-E1002-08	49.15	C,R(0.01)	-6.51	2380	CPSC-CH-E1002-08	94.56		-0.94
330		-----		-----	2381		-----		-----
339	In house	96		-0.76	2382	EN16711-1	102.7		0.06
348	In house	112.851		1.31	2384	IEC62321-5	100.70		-0.18
523	EPA3052	97.329		-0.60	2385	IEC62321-5	97.5		-0.57
551	EPA3052	82.95		-2.36	2387	IEC62321-5	98.529		-0.45
623	In house	104.77		0.32	2390		-----		-----
658	EPA3051	95.412		-0.83	2391	IEC62321-5	121.8		2.41
826	EPA3052	101.6		-0.07	2410	IEC62321-5	105		0.35
840	IEC62321-5	113.72		1.42	2415	EPA3052	106.4		0.52
1051		-----		-----	2425	EN16711-1	102.3		0.01
1082	In house	110.613		1.03	2426	EN16711-1	102.9		0.09
1126		-----		-----	2431	In house	118.1996		1.97
1213	IEC62321-5	99.97		-0.27	2433		-----		-----
2108	EN16711-1	86.54		-1.92	2444		-----		-----
2115	EN16711-1	111.44		1.14	2445	In house	104.3		0.26
2118	EN16711-1	109.2343177		0.87	2453		-----		-----
2129	IEC62321-5	108		0.71	2459	CPSC-CH-E1002-08	92		-1.25
2132	CPSC-CH-E1002-08	109.4		0.89	2460		-----		-----
2137	IEC62321-5	99.80		-0.29	2475		-----		-----
2138	IEC62321-5	103.0		0.10	2476		No Capability		-----
2139	IEC62321-5	96.2		-0.73	2482	ISO17294-2	103.5		0.16
2146	In house	100.6		-0.19	2486	EN16711-1	103.576		0.17
2156	IEC62321-5	92.51		-1.19	2488		-----		-----
2165	IEC62321-5	100.7		-0.18	2489	In house	103		0.10
2176	IEC62321-5	106.6		0.54	2492	In house	90		-1.49
2182		-----		-----	2493	Other	99.9		-0.28
2184	CPSC-CH-E1002-08	99.2		-0.37	2495	CPSC-CH-E1002-08	100.56		-0.20
2190		-----		-----	2497		-----		-----
2197	In house	107.86		0.70	2500		-----		-----
2201	IEC62321-5	108.06		0.72	2504	EPA3052	95.13		-0.87
2202	IEC62321-5	97.8		-0.54	2511	CPSC-CH-E1002-08	102.64		0.06
2212	CPSC-CH-E1002-08	109.5		0.90	2514	EN16711-1	100.30		-0.23
2213	EN16711-1	101		-0.14	2529	CPSC-CH-E1002-08	99.9914		-0.27
2216	IEC62321-5	116.141		1.71	2532	EN16711-1	99.5		-0.33
2218		-----		-----	2549	In house	97		-0.64
2230	EPA3051	102		-0.02	2560	EN16711-1	111.94		1.20
2236		-----		-----	2561		-----		-----
2247	IEC62321-5	107.72		0.68	2563	IEC62321-5	111.2		1.11
2250	EN16711-1	112.39		1.25	2564		-----		-----
2255	EN16711-1	108.3		0.75	2568		-----		-----
2256	IEC62321-5	93.3		-1.09	2571	IEC62321-3-1	111.4		1.13
2258	CPSC-CH-E1002-08	97.11		-0.62	2582	EPA3051	76.57		-3.14
2265		-----		-----	2590	CPSC-E1002-08	100.347		-0.23
2266	In house	105.00		0.35	2591		-----		-----
2284	EN16711-1	105.856		0.45	2612	In house	110		0.96
2289	IEC62321-5	106.8		0.57	2624		-----		-----
2290	IEC62321-5	107.0		0.59	2629	In house	121.1		2.32
2293		-----		-----	2632	IEC62321-5	99.79		-0.29
2294		-----		-----	2637	EPA3051	112		1.21
2295	EN16711-1	103.45		0.16	2642		-----		-----
2301	EN16711-1	99.47		-0.33	2644	EN16711-1	106.31		0.51
2310	IEC62321-5	108.9		0.82	2668	In house	96.09		-0.75
2311	EPA3052	102.19		0.00	2674	IEC62321-5	99.60		-0.32
2314		-----		-----	2678		-----		-----
2316	IEC62321-5	116.94		1.81	2705		-----		-----
2339	In house	112		1.21	2734	EN16711-1	82.12		-2.46
2347	EPA3052	109		0.84	2736	In house	109.740		0.93
2350	IEC62321-5	107.4		0.64	2737	CPSC-CH-E1002-08	107.964		0.71
2352	IEC62321-5	100.4		-0.22	2741	In house	107.59		0.66
2353	IEC62321-5	102.9		0.09	2773	CPSC-CH-E1002-08	110.24		0.99
2355	EPA3052	105.4		0.40	2791		-----		-----
2357	ISO8124-5	98.65		-0.43	2794	IEC62321-3-1	not detected		-----
2358	EPA3051	100.5		-0.21	2798	EPA3052	87.3		-1.83
2363	EPA3052	92		-1.25	2804	In house	108.3		0.75
2365	EN16711-1	105.0		0.35	2812	EN16711-1	101.3		-0.11
2366	IEC62321-5	108.3		0.75	2826	IEC62321-5	104.176		0.24
2369	EPA3052	108.7		0.80	2827	In house	96.22		-0.73
2370	EPA3052	123		2.56	2829		-----		-----
2372	EPA3052	109.4		0.89	2833	IEC62321-3-1	307.9	C,R(0.01)	25.25
2374	In house	104.4		0.27	2835	IEC62321-5	72.850		-3.60
2375	EN16711-1	101.0		-0.14	2853		-----		-----
2378	EN16711-1	98.4		-0.46	2857	IEC62321-5	106.38		0.52

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	99.05	C	-0.38	3163	In house	68	R(0.05)	-4.20
2867	IEC62321-5	102.3		0.01	3166	In house	79.5		-2.78
2877	In house	80.8003		-2.62	3172	ISO8124-5	95.9		-0.77
2883	CPSC-CH-E1002-08	98.2		-0.49	3182	IEC62321-5	105.05		0.35
2885	IEC62321-5	100.7		-0.18	3185	CPSC-CH-E1002-08	109.4		0.89
2892	IEC62321-5	102.23		0.01	3190	IEC62321-5	110.67		1.04
2898	In house	80.1		-2.71	3197	IEC62321-5	101.3		-0.11
2900	IEC62321-5	102.3		0.01	3200	CPSC-CH-E1002-08	108.08		0.72
3100	IEC62321-5	107		0.59	3209	CPSC-CH-E1002-08	110.09		0.97
3110	In house	97		-0.64	3210	In house	104		0.22
3116	CPSC-CH-E1002-08	97.99		-0.51	3213		-----		-----
3118	EN16711-1	94.0859		-0.99	3214	EPA3052	107.8		0.69
3122	CPSC-CH-E1002-08	107		0.59	3225		NA		-----
3124		-----		-----	3228	IEC62321-5	100.2		-0.24
3127	DIN22022-3	98.29		-0.48	3237	EN16711-1	105.15		0.36
3146	In house	96.6		-0.68	3239	IEC62321-5	85.672		-2.03
3150	EN16711-1	90.080		-1.49	3248		-----		-----
3153	IEC62321-5	107.0		0.59	8005	CPSC-CH-E1002-08	96.67		-0.68
3154	IEC62321-3-1	99.92		-0.28	8008		-----		-----
3160	CPSC-CH-E1002-08	115.75		1.67					

normality	suspect	
n	144	
outliers	3	
mean (n)	102.1810	
st.dev. (n)	8.64273	RSD=8%
R(calc.)	24.1996	
st.dev.(Horwitz)	8.14798	
R(Horwitz)	22.8143	

Lab 230: first reported 65.35
Lab 2833: first reported 262.3
Lab 2864: first reported 51.26





Determination of Chromium as Cr6+ on sample #19600; results in mg/kg

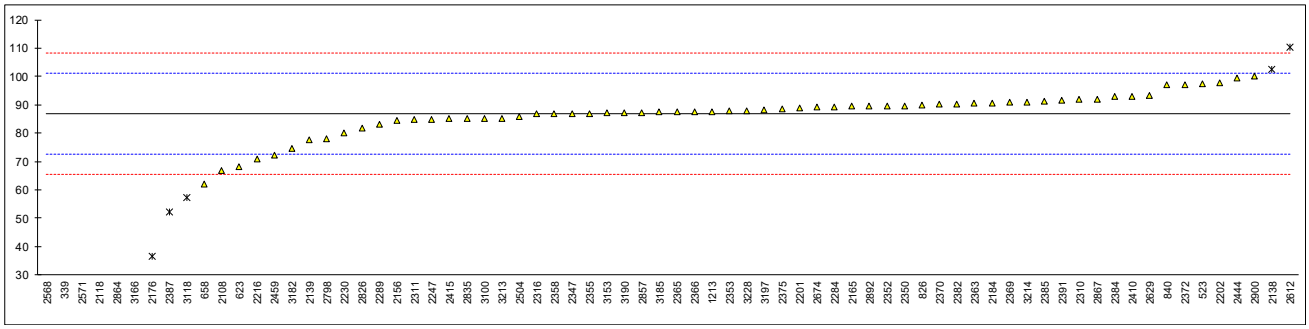
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379		-----		-----
230		-----		-----	2380		-----		-----
330		-----		-----	2381		-----		-----
339	In house	6.9	R(0.01)	-11.27	2382	IEC62321-7-2	90.4		0.49
348		-----		-----	2384	IEC62321-7-2	92.83		0.84
523	IEC62321-7-2	97.492		1.49	2385	IEC62321-7-2	91.1		0.59
551	IEC62321-7-2	nd		-----	2387	IEC62321-7-2	52.251	R(0.05)	-4.88
623	IEC62321-7-2	67.98	C	-2.66	2390		-----		-----
658	IEC62321-7-2	61.982	C	-3.51	2391	IEC62321-7-2	91.6		0.66
826	IEC62321-7-2	90		0.44	2410	IEC62321-7-2	93		0.86
840	IEC62321-7-2	96.95		1.42	2415	IEC62321-7-2	85.0		-0.27
1051		-----		-----	2425		-----		-----
1082		-----		-----	2426		-----		-----
1126		-----		-----	2431		-----		-----
1213	IEC62321-7-2	87.67		0.11	2433		-----		-----
2108	IEC62321-7-2	66.88		-2.82	2444	IEC62321-7-2	99.45		1.77
2115		-----		-----	2445		-----		-----
2118	IEC62321-7-2	19.60	R(0.01)	-9.48	2453		-----		-----
2129		-----		-----	2459	IEC62321-7-2	72.06		-2.09
2132		-----		-----	2460		-----		-----
2137		-----		-----	2475		-----		-----
2138	IEC62321-7-2	102.4	R(0.05)	2.18	2476		No Capability		-----
2139	IEC62321-7-2	77.7		-1.30	2482		-----		-----
2146		-----		-----	2486		Not performed		-----
2156	IEC62321AnnexC	84.43	C	-0.35	2488		-----		-----
2165	IEC62321-7-2	89.4		0.35	2489		-----		-----
2176	In house	36.4	C,R(0.01)	-7.11	2492		-----		-----
2182		-----		-----	2493		-----		-----
2184	IEC62321-7-2	90.6		0.52	2495		-----		-----
2190		-----		-----	2497		-----		-----
2197		-----		-----	2500		-----		-----
2201	IEC62321-7-2	88.80		0.27	2504	IEC62321-7-2	85.90		-0.14
2202	IEC62321-7-2	97.8		1.54	2511		-----		-----
2212		-----		-----	2514		-----		-----
2213		-----		-----	2529		-----		-----
2216	IEC62321-7-2	71		-2.24	2532		Not reported		-----
2218		-----		-----	2549	In house	not tested		-----
2230	IEC62321-7-2	80		-0.97	2560	EN16711-1	<2	f-?	<-11.96
2236		-----		-----	2561		-----		-----
2247	IEC62321-7-2	84.8		-0.30	2563		-----		-----
2250	EPA3060a	<2	C, f-?	<-11.96	2564		-----		-----
2255	EN16711-1	NP		-----	2568	IEC62321-7-2	5.211	C,R(0.01)	-11.50
2256		-----		-----	2571	IEC62321-7-2	10.0	C,R(0.01)	-10.83
2258		No capability		-----	2582	ISO17075-1	N/D		-----
2265		-----		-----	2590		-----		-----
2266		-----		-----	2591		-----		-----
2284	IEC62321-7-2	89.251		0.33	2612	IEC62321-7-2	110.3	R(0.05)	3.30
2289	IEC62321-7-2	83.2		-0.52	2624		-----		-----
2290		-----		-----	2629	IEC62321-7-2	93.2		0.89
2293		-----		-----	2632		-----		-----
2294		-----		-----	2637	In house	<0.5	f-?	<-12.17
2295		-----		-----	2642		-----		-----
2301		-----		-----	2644		-----		-----
2310	IEC62321-7-2	91.78		0.69	2668	In house	ND (LOQ=10)	f-?	<-10.83
2311	IEC62321-7-2	84.67		-0.31	2674	IEC62321-7-2	89.19		0.32
2314		-----		-----	2678		-----		-----
2316	IEC62321-7-2	86.70		-0.03	2705		-----		-----
2339		-----		-----	2734	EN16711-1	nd		-----
2347	IEC62321-7-2	87		0.01	2736		-----		-----
2350	IEC62321-7-2	89.707		0.40	2737		-----		-----
2352	IEC62321-7-2	89.6		0.38	2741		-----		-----
2353	IEC62321-7-2	87.9		0.14	2773		-----	W	-----
2355	IEC62321-7-2	87.0		0.01	2791		-----		-----
2357		-----		-----	2794		n/a		-----
2358	EPA3051	86.8		-0.01	2798	IEC62321-7-2	77.9	C	-1.27
2363	IEC62321-7-2	90.56		0.52	2804		-----		-----
2365	IEC62321-7-2	87.5		0.09	2812		-----		-----
2366	IEC62321-7-2	87.6		0.10	2826	IEC62321-7-2	81.7		-0.73
2369	IEC62321-7-2	91.0		0.58	2827	In house	not analyzed		-----
2370	IEC62321-7-2	90.2		0.47	2829		-----		-----
2372	IEC62321-7-2	97.0		1.42	2833		-----		-----
2374		-----		-----	2835	IEC62321-7-2	85.05	C	-0.26
2375	IEC62321-7-2	88.7		0.25	2853		-----		-----
2378		-----		-----	2857	IEC62321-7-2	87.22		0.05

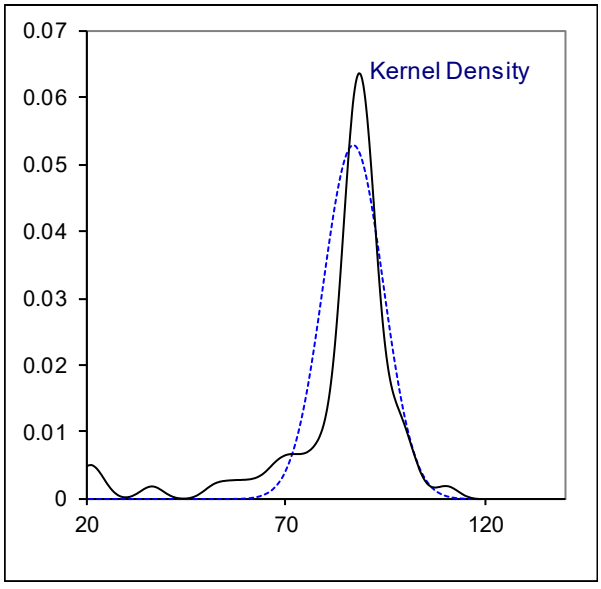
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-7-2	20.76	C,R(0.01)	-9.31	3163		-----		-----
2867	IEC62321-7-2	92.1		0.73	3166	EPA3060a	23.0	R(0.01)	-9.00
2877	EPA3060a	BDL (DL=2)	f-?	<-11.96	3172		-----		-----
2883	CPSC-CH-E1002-08	Not Attend		-----	3182	IEC62321-7-2	74.44	C	-1.75
2885		-----		-----	3185	IEC62321-7-2	87.4		0.07
2892	IEC62321-7-2	89.50		0.37	3190	IEC62321-7-2	87.13		0.03
2898		-----		-----	3197	IEC62321-7-2	88.1		0.17
2900	IEC62321-7-2	100.2		1.87	3200		NA		-----
3100	IEC62321-7-2	85.20		-0.24	3209		-----		-----
3110		-----		-----	3210		-----		-----
3116		-----		-----	3213	IEC62321-7-2	85.252		-0.23
3118	IEC62321-7-2	57.1836	C,R(0.05)	-4.18	3214	IEC62321-7-2	91.0		0.58
3122	In house	< 0.4	f-?	<-12.17	3225		NA		-----
3124		-----		-----	3228	IEC62321-7-2	88.0		0.16
3127		-----		-----	3237		-----		-----
3146		no analysis		-----	3239	IEC62321	ND (DL=50)	f-?	<-5.20
3150		-----		-----	3248		-----		-----
3153	IEC62321	87.1		0.03	8005		-----		-----
3154		-----		-----	8008		-----		-----
3160		-----		-----					

normality	not OK	
n	61	
outliers	11	
mean (n)	86.8963	
st.dev. (n)	7.53545	RSD=9%
R(calc.)	21.0993	
st.dev.(Horwitz)	7.10023	
R(Horwitz)	19.8806	

Lab 623: first reported n.d.
Lab 658: first reported 45.455
Lab 2156: first reported 1
Lab 2176: first reported 31.3
Lab 2250: first reported 1.644
Lab 2568: first reported 52.216
Lab 2571: first reported 12.1
Lab 2773: first reported <2
Lab 2798: first reported ND
Lab 2835: first reported 46.022
Lab 2864: first reported ND
Lab 3118: first reported 37.1094
Lab 3182: first reported 67.63

f-? = possibly a false negative test result?





Determination of total Lead as Pb on sample #19600; results in mg/kg

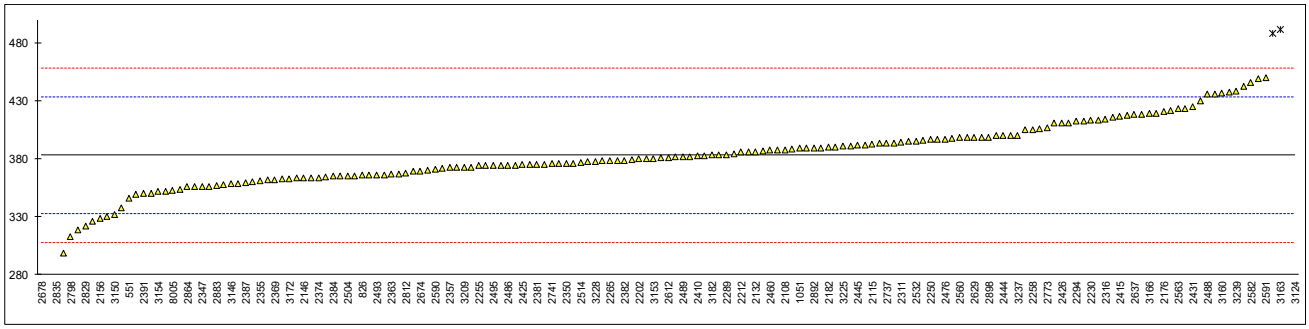
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379	IEC62321-5	384		0.04
230	CPSC-CH-E1002-08	207.95	C,R(0.01)	-6.99	2380	CPSC-CH-E1002-08	377.09		-0.23
330	In house	391.4		0.34	2381	CPSC-CH-E1002-08.1	375.10		-0.31
339	In house	367		-0.64	2382	EN16711-1	378.4		-0.18
348	CPSC-CH-E1002-08.2	412.553		1.18	2384	IEC62321-5	364.57		-0.73
523	EPA3052	421.708		1.55	2385	IEC62321-5	357.5		-1.02
551	EPA3052	345.6	C	-1.49	2387	IEC62321-5	359.141		-0.95
623	In house	351.73		-1.25	2390		-----		-----
658	EPA3051	502.805	C,R(0.05)	4.79	2391	IEC62321-5	350.2		-1.31
826	IEC62321-5	365.4		-0.70	2410	IEC62321-5	382		-0.04
840	IEC62321-5	364.32		-0.74	2415	CPSC-CH-E1002-08.3	416.8		1.35
1051	CPSC-CH-E1002-08.3	388.7		0.23	2425	EN16711-1	375		-0.32
1082	In house	394.689		0.47	2426	EN16711-1	411.0		1.12
1126		-----		-----	2431	In house	424.4302		1.66
1213	IEC62321-5	353.1		-1.19	2433		-----		-----
2108	CPSC-CH-E1002-08.3	387.75		0.19	2444	IEC62321-5	399.7		0.67
2115	EN16711-1	392.34		0.38	2445	In house	391.3		0.33
2118	EN16711-1	415.873034		1.32	2453		-----		-----
2129	IEC62321-5	411		1.12	2459	CPSC-CH-E1002-08	318		-2.59
2132	CPSC-CH-E1002-08.3	386.1		0.13	2460	CPSC-CH-E1002-08.3	386.97		0.16
2137	IEC62321-5	372.00		-0.44	2475	In house	378		-0.20
2138	IEC62321-5	379.2		-0.15	2476	CPSC-CH-E1002-08.3	396.8		0.55
2139	IEC62321-5	349.0		-1.36	2482	ISO17294-2	393.4		0.42
2146	In house	363.1		-0.79	2486	EN16711-1	374.245		-0.35
2156	IEC62321-5	328.15		-2.19	2488	CPSC-CH-E1002-08.3	435.8		2.11
2165	IEC62321-5	363.1		-0.79	2489	In house	381.65		-0.05
2176	IEC62321-5	421.0		1.52	2492	In house	413		1.20
2182	CPSC-CH-E1002-08.3	389.504		0.26	2493	EN13805	366		-0.68
2184	CPSC-CH-E1002-08.3	378.3		-0.18	2495	CPSC-CH-E1002-08	373.95		-0.36
2190		-----		-----	2497		-----		-----
2197	In house	374.44		-0.34	2500	IEC62321-5	375.545		-0.29
2201	IEC62321-5	398.35		0.62	2504	EPA3052	364.87		-0.72
2202	IEC62321-5	379.7		-0.13	2511	CPSC-CH-E1002-08.3	374.0		-0.36
2212	CPSC-CH-E1002-08.3	386.0		0.12	2514	EN16711-1	376.67		-0.25
2213	EN16711-1	366		-0.68	2529	CPSC-CH-E1002-08.3	382.3265		-0.02
2216	CPSC-CH-E1002-08.3	449.089		2.64	2532	EN16711-1	395		0.48
2218	CPSC-CH-E1002-08.1	375.223		-0.31	2549	In house	363		-0.80
2230	EPA3051	413		1.20	2560	EN16711-1	398.01		0.60
2236		-----		-----	2561		-----		-----
2247	CPSC-CH-E1002-08.2	381.16		-0.07	2563	IEC62321-5	423.1		1.61
2250	EN16711-1	396.23		0.53	2564		-----		-----
2255	EN16711-1	373.8		-0.36	2568		-----		-----
2256	IEC62321-5	362		-0.84	2571	IEC62321-3-1	368.9		-0.56
2258	CPSC-CH-E1002-08	405.10		0.89	2582	EPA3051	445.51		2.50
2265	EN16711-1	378.15	C	-0.19	2590	CPSC-E1002-08	370.550		-0.49
2266	In house	429.71		1.87	2591	CPSC-CH-E1002-08.3	449.34013		2.65
2284	EN16711-1	375.081		-0.31	2612	In house	381		-0.08
2289	IEC62321-5	383.6		0.03	2624		437.6		2.18
2290	IEC62321-5	391.1		0.33	2629	In house	398.5		0.62
2293	CPSC-CH-E1002-08.3	423.5		1.62	2632	IEC62321-5	398.53		0.62
2294	CPSC-CH-E1002-08.1	412.305447		1.17	2637	EPA3051	418		1.40
2295	EN16711-1	389.35		0.26	2642	CPSC-CH-E1002-08.3	366		-0.68
2301	EN16711-1	350.39		-1.30	2644	EN16711-1	380.53		-0.10
2310	IEC62321-5	416.9		1.36	2668	In house	369.95		-0.52
2311	EPA3052	393.66		0.43	2674	CPSC-CH-E1002-08.2	369.26		-0.55
2314	CPSC-CH-E1002-08	442.64		2.39	2678	CPSC-CH-E1002-08.3	128.62	C,R(0.01)	-10.16
2316	IEC62321-5	413.95		1.24	2705		-----		-----
2339	In house	436		2.12	2734	EN16711-1	298.60		-3.37
2347	IEC62321-5	356		-1.08	2736	In house	397.727		0.59
2350	IEC62321-5	375.7		-0.29	2737	CPSC-CH-E1002-08.3	392.971		0.40
2352	IEC62321-5	372.3		-0.42	2741	In house	375.46		-0.30
2353	IEC62321-5	359.9		-0.92	2773	CPSC-CH-E1002-08.3	406.24		0.93
2355	EPA3052	360.4		-0.90	2791		-----		-----
2357	IEC62321-5	372.02		-0.44	2794	IEC62321-3-1	487.6	R(0.05)	4.18
2358	EPA3051	358.5		-0.98	2798	CPSC-CH-E1002-08.3	312.8		-2.80
2363	EPA3052	367		-0.64	2804	In house	418.0		1.40
2365	EN16711-1	373.8		-0.36	2812	EN16711-1	367.1		-0.63
2366	IEC62321-5	381.7		-0.05	2826	IEC62321-5	364.598		-0.73
2369	EPA3052	362.0		-0.84	2827	In house	372.50		-0.42
2370	EPA3052	326		-2.27	2829	CPSC-CH-E1002-08.3	321.67	C	-2.45
2372	EPA3052	386.1		0.13	2833	IEC62321-3-1	399.5	C	0.66
2374	In house	363.4		-0.78	2835	IEC62321-5	214.45	C,R(0.01)	-6.73
2375	EN16711-1	405.0		0.88	2853	CPSC-CH-E1002-08.3	383.59		0.03
2378	EN16711-1	362.1		-0.83	2857	IEC62321-5	392.83		0.40

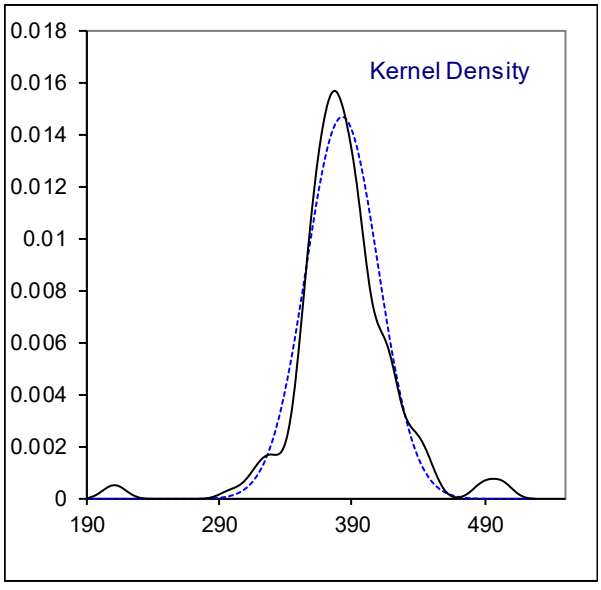
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	355.60	C	-1.09	3163	In house	491	R(0.05)	4.32
2867	IEC62321-5	375.7		-0.29	3166	In house	419		1.44
2877	In house	330.4	C	-2.10	3172	ISO8124-5	362.6		-0.81
2883	CPSC-CH-E1002-08	356.8		-1.04	3182	IEC62321-5	382.83		0.00
2885	IEC62321-5	337.3		-1.82	3185	CPSC-CH-E1002-08.3	388.0		0.20
2892	CPSC-CH-E1002-08.3	389.02		0.24	3190	IEC62321-5	405.67		0.91
2898	In house	398.6		0.63	3197	IEC62321-5	399.7		0.67
2900	IEC62321-5	379.7		-0.13	3200	CPSC-CH-E1002-08.3	396.25		0.53
3100	IEC62321-5	389		0.24	3209	CPSC-CH-E1002-08.3	372.44		-0.42
3110	CPSC-CH-E1002-08.3	356		-1.08	3210	In house	387		0.16
3116	CPSC-CH-E1002-08.3	355.76		-1.09	3213	IEC62321-5	419.28		1.45
3118	EN16711-1	386.2482		0.13	3214	EPA3052	396.1		0.53
3122	CPSC-CH-E1002-08	390		0.28	3225	CPSC-CH-E1002-08.3	390.41		0.30
3124	EPA3052	504.3167	R(0.05)	4.85	3228	IEC62321-5	377.1		-0.23
3127	DIN22022-3	410.35		1.10	3237	EN16711-1	400.15		0.69
3146	In house	358		-1.00	3239	IEC62321-5	438.399		2.22
3150	EN16711-1	331.709		-2.05	3248	CPSC-CH-E1002-08	365		-0.72
3153	IEC62321-5	379.8		-0.12	8005	CPSC-CH-E1002-08.3	352.38		-1.22
3154	IEC62321-3-1	351.7		-1.25	8008		-----		-----
3160	CPSC-CH-E1002-08.3	436.53		2.14					

normality	OK	
n	166	
outliers	7	
mean (n)	382.9237	
st.dev. (n)	27.14420	RSD=7%
R(calc.)	76.0038	
st.dev.(Horwitz)	25.02851	
R(Horwitz)	70.0798	

Lab 230: first reported 266.2
Lab 551: first reported 292.64
Lab 658: first reported 468.904
Lab 2265: first reported 478.94
Lab 2678: first reported <8.00

Lab 2829: first reported 39.53
Lab 2833: first reported 515.7
Lab 2835: first reported 262.061
Lab 2864: first reported 235.84
Lab 2877: first reported 103.4323





Determination of total Nickel as Ni on sample #19600; results in mg/kg

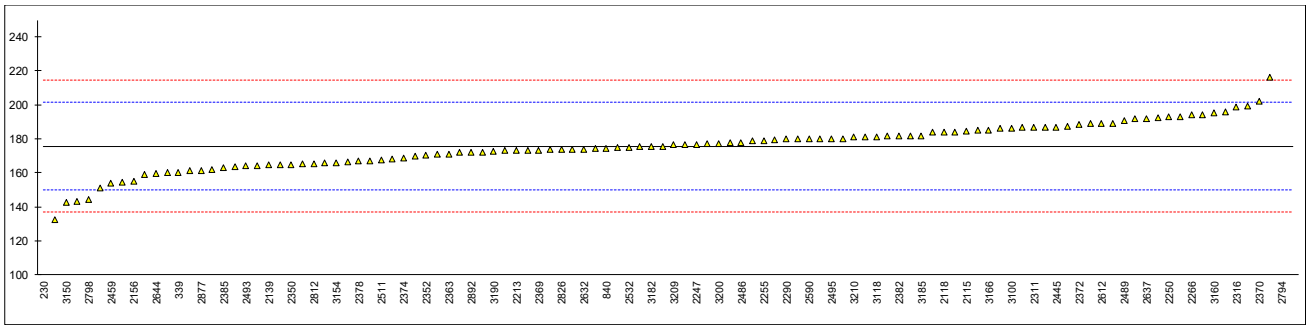
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379		-----		-----
230	CPSC-CH-E1002-08	77.61	C,R(0.01)	-7.59	2380	CPSC-CH-E1002-08	154.35		-1.65
330		-----		-----	2381		-----		-----
339	In house	160.45		-1.18	2382	EN16711-1	181.5		0.45
348		-----		-----	2384		-----		-----
523	In house	179.273		0.28	2385	IEC62321-5	163		-0.98
551	In house	161.31	C	-1.11	2387		-----		-----
623	In house	173.65		-0.15	2390		-----		-----
658	EPA3051	192.555		1.31	2391	IEC62321-5	193.3		1.37
826		N/A		-----	2410	In house	178		0.18
840	EN16711-1	174.55		-0.09	2415		-----		-----
1051		-----		-----	2425	EN16711-1	165.1		-0.82
1082	In house	199.292		1.83	2426	EN16711-1	186.6		0.85
1126		-----		-----	2431	In house	216.3381		3.15
1213	IEC62321-5	159.9		-1.22	2433		-----		-----
2108	EN16711-1	164.5		-0.86	2444		-----		-----
2115	EN16711-1	184.56		0.69	2445	In house	187.0		0.88
2118	EN16711-1	183.8035963		0.63	2453		-----		-----
2129	IEC62321-5	192		1.27	2459	CPSC-CH-E1002-08	154		-1.68
2132		-----		-----	2460		-----		-----
2137	IEC62321-5	186.50		0.84	2475		-----		-----
2138	In house	NA		-----	2476		No Capability		-----
2139	IEC62321-5	164.5		-0.86	2482	ISO17294-2	180.1		0.34
2146		-----		-----	2486	EN16711-1	178		0.18
2156	IEC62321-5	155.26		-1.58	2488		-----		-----
2165		-----		-----	2489	In house	191		1.19
2176		-----		-----	2492	In house	189		1.03
2182		-----		-----	2493	EN13805	164		-0.90
2184		-----		-----	2495	CPSC-CH-E1002-08	180.06		0.34
2190		-----		-----	2497		-----		-----
2197		-----		-----	2500		-----		-----
2201	IEC62321-5	181.26		0.43	2504	IEC62321-5	174.39		-0.10
2202	IEC62321-5	173		-0.21	2511	CPSC-CH-E1002-08	167.37		-0.64
2212		-----		-----	2514	EN16711-1	181.79		0.48
2213	EN16711-1	173		-0.21	2529		-----		-----
2216		-----		-----	2532	EN16711-1	175		-0.05
2218		-----		-----	2549	In house	164		-0.90
2230	In house	171		-0.36	2560	EN16711-1	189.34		1.06
2236		-----		-----	2561		-----		-----
2247	In house	176.85		0.09	2563	IEC62321-5	195.7		1.55
2250	EN16711-1	193.195		1.36	2564		-----		-----
2255	EN16711-1	178.7		0.24	2568		-----		-----
2256		-----		-----	2571	IEC62321-3-1	151.0		-1.91
2258		No capability		-----	2582	EPA3051	166.23		-0.73
2265		-----		-----	2590	CPSC-E1002-08	179.946		0.33
2266	In house	193.93		1.42	2591		-----		-----
2284	EN16711-1	184.173		0.66	2612	In house	189		1.03
2289	IEC62321-5	176.7		0.08	2624		-----		-----
2290	IEC62321-5	179.8		0.32	2629	In house	159.2		-1.27
2293		-----		-----	2632	IEC62321-5	174.06		-0.12
2294		-----		-----	2637	In house	192		1.27
2295	EN16711-1	175.72		0.01	2642		-----		-----
2301	EN16711-1	173.01		-0.20	2644	EN16711-1	159.46		-1.25
2310	IEC62321-5	186.9		0.87	2668	In house	165.72		-0.77
2311	EN16711-1	186.8		0.86	2674		-----		-----
2314		-----		-----	2678		-----		-----
2316	In house	198.73		1.79	2705		-----		-----
2339	In house	194		1.42	2734	EN16711-1	132.53		-3.34
2347	In house	175		-0.05	2736	In house	181.494		0.45
2350	In house	164.9		-0.83	2737		-----		-----
2352	In house	170.1		-0.43	2741	In house	183.76		0.63
2353	IEC62321-5	177.0		0.10	2773	CPSC-CH-E1002-08	168.06		-0.59
2355	EPA3052	170.0		-0.44	2791		-----		-----
2357	In house	171.80		-0.30	2794	IEC62321-3-1	264.6	R(0.01)	6.89
2358	EPA3051	174.0		-0.13	2798	In house	144.2		-2.44
2363	In house	171		-0.36	2804		-----		-----
2365	EN16711-1	175.4		-0.02	2812	EN16711-1	165.1		-0.82
2366	IEC62321-5	178.6		0.23	2826	IEC62321-5	173.883		-0.14
2369	In house	173.3		-0.18	2827	In house	161.85		-1.07
2370	EPA3052	202		2.04	2829		-----		-----
2372	EPA3052	188.5		1.00	2833		-----		-----
2374	In house	168.6		-0.55	2835		-----		-----
2375	EN16711-1	185.0		0.72	2853		-----		-----
2378	EN16711-1	166.8		-0.69	2857	IEC62321-5	1345	C,R(0.01)	90.58

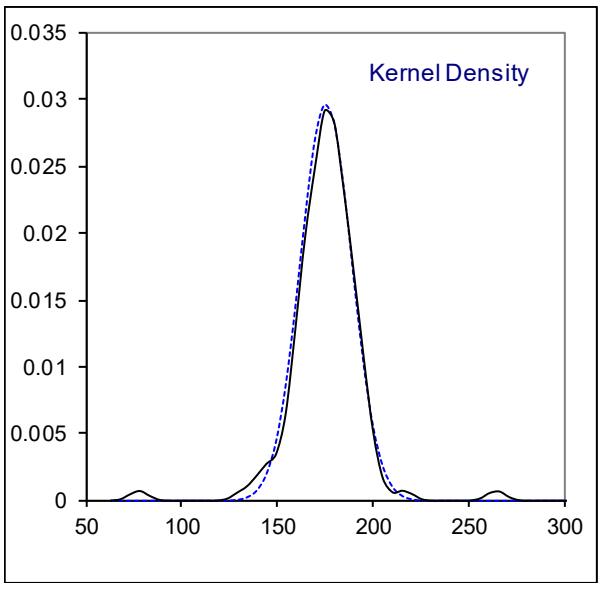
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	143.34		-2.50	3163	In house	180		0.34
2867		-----		-----	3166	In house	185		0.72
2877	In house	161.4	C	-1.10	3172		-----		-----
2883	CPSC-CH-E1002-08	163.8		-0.92	3182	IEC62321-5	175.62		0.00
2885		-----		-----	3185	CPSC-CH-E1002-08	181.9		0.48
2892	IEC62321-5	171.99		-0.28	3190	IEC62321-5	172.72		-0.23
2898		-----		-----	3197	IEC62321-5	187.6		0.93
2900	In house	NA		-----	3200	CPSC-CH-E1002-08	177.28		0.13
3100	EPA3052	186.5		0.84	3209	CPSC-CH-E1002-08	176.36		0.06
3110		-----		-----	3210	In house	181		0.41
3116		-----		-----	3213		-----		-----
3118	EN16711-1	181.2793		0.44	3214	EPA3052	179.8		0.32
3122		-----		-----	3225		NA		-----
3124		-----		-----	3228		-----		-----
3127		-----		-----	3237		-----		-----
3146	In house	167		-0.67	3239		-----		-----
3150	EN16711-1	142.703		-2.55	3248		-----		-----
3153	IEC62321-5	172.0		-0.28	8005		-----		-----
3154	IEC62321-3-1	166.1		-0.74	8008		-----		-----
3160	CPSC-CH-E1002-08	195.09		1.51					

normality	OK
n	109
outliers	3
mean (n)	175.6494
st.dev. (n)	13.44086
R(calc.)	37.6344
st.dev.(Horwitz)	12.90963
R(Horwitz)	36.1470

RSD=8%

Lab 230: first reported 89.54
Lab 551: first reported 130.33
Lab 2857: first reported 1935
Lab 2877: first reported 117.5807





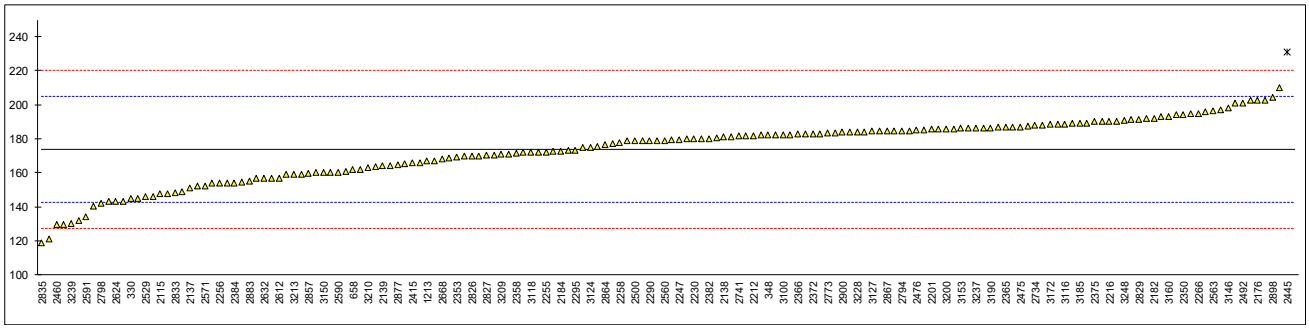
Determination of total Cadmium as Cd on sample #19601; results in mg/kg

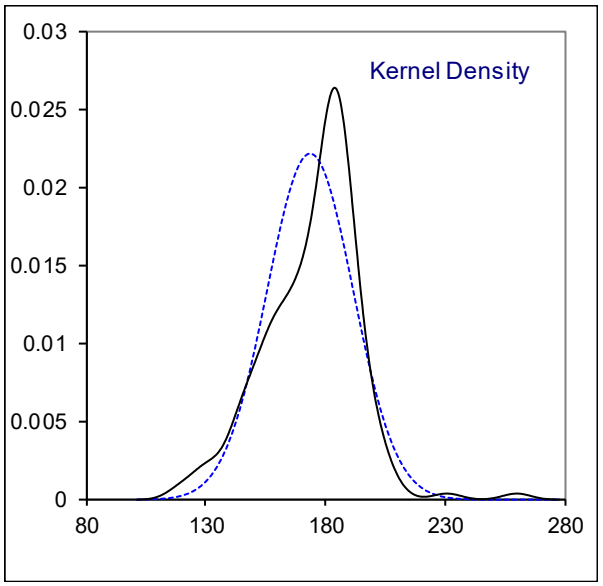
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379	EN1122	157		-1.08
230	EN1122	154.5		-1.24	2380	CPSC-CH-E1002-08	148.86		-1.60
330	In house	145.0		-1.85	2381	EN1122	143.20		-1.97
339	In house	121		-3.40	2382	EN16711-1	180.2		0.42
348	In house	182.048		0.54	2384	IEC62321-5	154.01		-1.27
523	EPA3052	158.773		-0.96	2385	IEC62321-5	156.5		-1.11
551	EPA3052	131.67		-2.71	2387	IEC62321-5	140.189		-2.16
623	In house	147.64		-1.68	2390		-----		-----
658	EPA3052	161.692		-0.77	2391	IEC62321-5	172.2		-0.10
826	IEC62321-5	145.1		-1.84	2410	EN1122	183		0.60
840	IEC62321-5	165.23		-0.55	2415	EN1122	166.0		-0.50
1051	EN1122	159.9		-0.89	2425	EN1122	167.2		-0.42
1082		-----		-----	2426	EN16711-1	190.0		1.05
1126	In house	143		-1.98	2431	In house	181.6522		0.51
1213	IEC62321-5	166.7		-0.45	2433		-----		-----
2108	EN16711-1	172.75		-0.06	2444	IEC62321-5	173.10		-0.04
2115	EN16711-1	147.52		-1.69	2445	In house	231.0	R(0.05)	3.69
2118	CPSC-CH-E1002-08	153.7702125		-1.29	2453	EN1122	184.4		0.69
2129	IEC62321-5	201		1.76	2459	EN1122	166		-0.50
2132	EN1122	180.1		0.41	2460	EN1122	129.35	C	-2.86
2137	IEC62321-5	151.00		-1.46	2475	EN1122	187		0.86
2138	IEC62321-5	181.2		0.48	2476	EN1122	184.9		0.72
2139	IEC62321-5	164.0		-0.63	2482	ISO17294-2	170.9		-0.18
2146	In house	161.8		-0.77	2486	EN1122	170.558		-0.20
2156	IEC62321-5	152.39		-1.37	2488		-----		-----
2165	IEC62321-5	188.4		0.95	2489	In house	185.70		0.77
2176	IEC62321-5	202.5		1.86	2492	In house	201		1.76
2182	EN1122	192.145		1.19	2493	EN13805	154		-1.27
2184	EN1122	172.9		-0.05	2495	EN1122	190.14		1.06
2190		-----		-----	2497		-----		-----
2197	In house	185.63		0.77	2500	EN1122	178.863		0.33
2201	IEC62321-5	185.47		0.76	2504	EN1122	178.82		0.33
2202	IEC62321-5	196		1.44	2511	CPSC-CH-E1002-08	168.95		-0.31
2212	CPSC-CH-E1002-08	181.7		0.52	2514	EN16711-1	183.69		0.64
2213	EN16711-1	182		0.54	2529	CPSC-CH-E1002-08	146.015		-1.79
2216	IEC62321-5	190.095		1.06	2532	EN1122	191.07		1.12
2218		-----		-----	2549	In house	161		-0.82
2230	EPA3051	180		0.41	2560	EN16711-1	179.01		0.34
2236	CPSC-CH-E1002-08	169.6		-0.26	2561		-----		-----
2247	CPSC-CH-E1002-08	179.65		0.38	2563	IEC62321-5	196.2		1.45
2250	EN16711-1	194.90		1.37	2564		-----		-----
2255	EN16711-1	172.2		-0.10	2568		-----		-----
2256	IEC62321-5	154		-1.27	2571	IEC62321-3-1	152.5		-1.37
2258	CPSC-CH-E1002-08	177.80		0.26	2582	EN1122	146.24		-1.77
2265	EN1122	191.78		1.17	2590	EN1122	160.334		-0.86
2266	In house	194.96		1.37	2591	CPSC-CH-E1002-08	134.17245		-2.55
2284	EN16711-1	184.579		0.70	2612	EN1122	157		-1.08
2289	IEC62321-5	188.9		0.98	2624		143.121		-1.97
2290	EN1122	179.0		0.34	2629	EN1122	159.3		-0.93
2293	EN1122	179.4		0.37	2632	IEC62321-5	156.97		-1.08
2294		-----		-----	2637	EPA3051	164		-0.63
2295	EN16711-1	173.48		-0.01	2642		-----		-----
2301	EN16711-1	163.37		-0.67	2644	EN16711-1	129.64		-2.84
2310	IEC62321-5	187.4		0.88	2668	In house	168.3		-0.35
2311	EPA3052	180.59		0.44	2674	EN1122	186.06		0.80
2314	CPSC-CH-E1002-08	181.2		0.48	2678	CPSC-CH-E1002-08	260.26	R(0.01)	5.58
2316	IEC62321-5	184.5		0.70	2705		-----		-----
2339	In house	179		0.34	2734	EN1122	188.00		0.92
2347	IEC62321-5	183		0.60	2736	In house	196.891		1.50
2350	IEC62321-5	194.3		1.33	2737	CPSC-CH-E1002-08	202.453		1.85
2352	EN1122	175.5		0.12	2741	In house	181.51		0.50
2353	IEC62321-5	169.4		-0.28	2773	EN1122	183.32		0.62
2355	EPA3052	189.1		0.99	2791		-----		-----
2357	EN1122	185.0		0.73	2794		184.54		0.70
2358	EPA3051	171.6		-0.14	2798	EN1122	142	C	-2.04
2363	EPA3052	187		0.86	2804	EN1122	160.2		-0.87
2365	EN16711-1	187.0		0.86	2812	EN16711-1	177.1		0.22
2366	EN1122	183.0		0.60	2826	IEC62321-5	169.814		-0.25
2369	EN1122	186.7		0.84	2827	In house	170.25		-0.22
2370	EN1122	184		0.66	2829	EN1122	191.57		1.15
2372	EPA3052	183		0.60	2833	IEC62321-3-1	148.5		-1.62
2374	In house	184.1		0.67	2835	IEC62321-5	119.02	C	-3.53
2375	EN16711-1	190.0		1.05	2853		-----		-----
2378	EN16711-1	179.9		0.40	2857	IEC62321-5	159.40		-0.92

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	176.70		0.19	3163	In house	210		2.34
2867	IEC62321-5	184.4		0.69	3166	In house	194		1.31
2877	EN1122	164.7	C	-0.58	3172	ISO8124-5	188.3		0.94
2883	EN1122	154.9		-1.21	3182	EN1122	186.30		0.81
2885	IEC62321-5	182.1		0.54	3185	EN1122	189.0		0.99
2892	EN1122	202.62		1.86	3190	IEC62321-5	186.33		0.81
2898	In house	204.1		1.96	3197	EN1122	188.0		0.92
2900	IEC62321-5	183.8		0.65	3200	CPSC-CH-E1002-08	185.63		0.77
3100	IEC62321-5	182.5		0.57	3209	CPSC-CH-E1002-08	170.72		-0.19
3110	EN1122	172		-0.11	3210	In house	163		-0.69
3116	EN1122	188.72		0.97	3213	IEC62321-5	158.84		-0.96
3118	EN1122	172.0332		-0.11	3214	EN1122	182.5		0.57
3122	CPSC-CH-E1002-08	170		-0.24	3225	EN1122	178.88		0.33
3124	EPA3052	175.1		0.09	3228	IEC62321-5	184.0		0.66
3127	DIN22022-3	184.30		0.68	3237	EN16711-1	186.15		0.80
3146	In house	198		1.57	3239	IEC62321-5	129.916		-2.82
3150	CPSC-CH-E1002-08	159.931		-0.89	3248	EN1122	191		1.12
3153	EN1122	186.0		0.79	8005		174.86		0.07
3154	IEC62321-3-1	192.8		1.23	8008		-----		-----
3160	CPSC-CH-E1002-08	193.26		1.26					

normality	OK	
n	168	
outliers	2	
mean (n)	173.7013	
st.dev. (n)	17.98414	RSD=10%
R(calc.)	50.3556	
st.dev.(EN1122:01)	15.50904	
R(EN1122:01)	43.4253	

Lab 2460: first reported 109.546
Lab 2798: first reported 114.7
Lab 2835: first reported 121.685
Lab 2877: first reported 114.5147





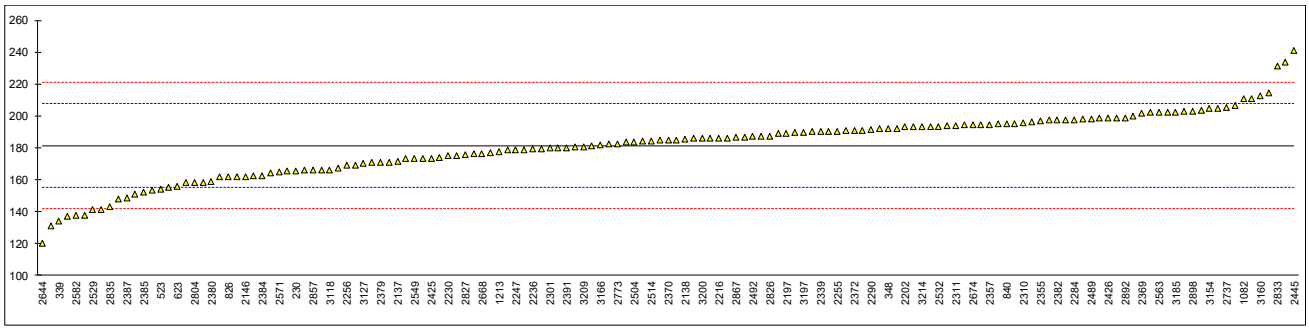
Determination of total Chromium as Cr on sample #19601; results in mg/kg

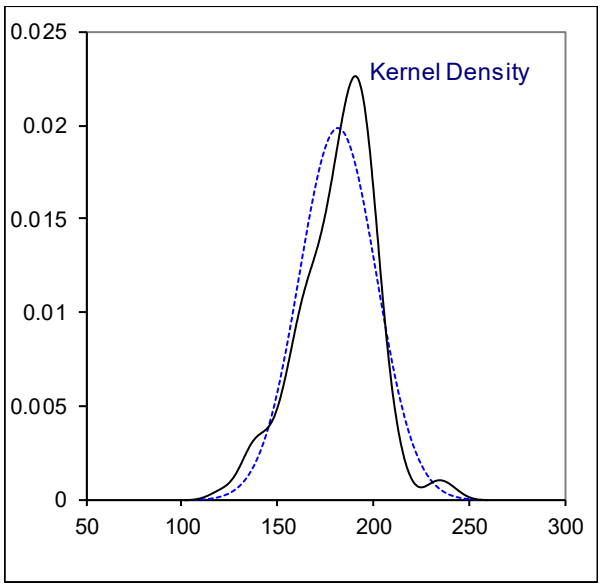
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379	IEC62321-5	171		-0.78
230	CPSC-CH-E1002-08	165.5		-1.20	2380	CPSC-CH-E1002-08	158.98		-1.69
330		-----		-----	2381		-----		-----
339	In house	134		-3.57	2382	EN16711-1	197.4		1.21
348	In house	191.916		0.79	2384	IEC62321-5	162.38		-1.43
523	EPA3052	154.172		-2.05	2385	IEC62321-5	152		-2.22
551	EPA3052	137.65		-3.30	2387	IEC62321-5	148.531		-2.48
623	In house	155.66		-1.94	2390		-----		-----
658	EPA3052	174.129		-0.55	2391	IEC62321-5	180.2		-0.09
826	EPA3052	161.5		-1.50	2410	IEC62321-5	186		0.35
840	IEC62321-5	194.91		1.02	2415	EPA3052	190.5		0.69
1051		-----		-----	2425	EN16711-1	173.5		-0.60
1082	In house	211		2.23	2426	EN16711-1	198.8		1.31
1126		-----		-----	2431	In house	187.1227		0.43
1213	IEC62321-5	177.2		-0.32	2433		-----		-----
2108	EN16711-1	130.75		-3.82	2444		-----		-----
2115	EN16711-1	161.58		-1.49	2445	In house	240.7		4.47
2118	EN16711-1	161.4749602		-1.50	2453		-----		-----
2129	IEC62321-5	203		1.63	2459	CPSC-CH-E1002-08	173		-0.63
2132	CPSC-CH-E1002-08	179.3		-0.16	2460		-----		-----
2137	IEC62321-5	171.50		-0.75	2475		-----		-----
2138	IEC62321-5	185.3		0.29	2476		No Capability		-----
2139	IEC62321-5	180.0		-0.11	2482	ISO17294-2	177.0		-0.33
2146	In house	161.9		-1.47	2486	EN16711-1	170.555		-0.82
2156	IEC62321-5	162.18		-1.45	2488		-----		-----
2165	IEC62321-5	193.1		0.88	2489	In house	198		1.25
2176	IEC62321-5	206.7		1.91	2492	In house	187		0.42
2182		-----		-----	2493	EN13805	148		-2.52
2184	CPSC-CH-E1002-08	183.4		0.15	2495	CPSC-CH-E1002-08	194.25		0.97
2190		-----		-----	2497		-----		-----
2197	In house	189.09		0.58	2500		-----		-----
2201	IEC62321-5	198.80		1.31	2504	EPA3052	183.62		0.17
2202	IEC62321-5	193		0.87	2511	CPSC-CH-E1002-08	165.87		-1.17
2212	CPSC-CH-E1002-08	194.5		0.99	2514	EN16711-1	184.07		0.20
2213	EN16711-1	189		0.57	2529	CPSC-CH-E1002-08	141.147		-3.03
2216	IEC62321-5	186.137		0.36	2532	EN16711-1	193.42		0.91
2218		-----		-----	2549	In house	173		-0.63
2230	EPA3051	175		-0.48	2560	EN16711-1	183.98		0.19
2236	CPSC-CH-E1002-08	179.3		-0.16	2561		-----		-----
2247	IEC62321-5	178.57		-0.21	2563	IEC62321-5	202.2		1.57
2250	EN16711-1	178.65		-0.21	2564		-----		-----
2255	EN16711-1	190.1		0.66	2568		-----		-----
2256	IEC62321-5	169		-0.93	2571	IEC62321-3-1	164.8		-1.25
2258	CPSC-CH-E1002-08	158.41		-1.73	2582	EPA3051	137.50		-3.31
2265		-----		-----	2590	CPSC-E1002-08	158.365		-1.74
2266	In house	191.83		0.79	2591		-----		-----
2284	EN16711-1	197.690		1.23	2612	In house	171		-0.78
2289	IEC62321-5	194.9		1.02	2624		-----		-----
2290	IEC62321-5	191.3		0.75	2629	In house	178.4		-0.23
2293		-----		-----	2632	IEC62321-5	153.18		-2.13
2294		-----		-----	2637	EPA3051	167		-1.09
2295	EN16711-1	165.41		-1.20	2642		-----		-----
2301	EN16711-1	179.86		-0.12	2644	EN16711-1	120.31		-4.60
2310	IEC62321-5	195.6		1.07	2668	In house	176.38		-0.38
2311	EPA3052	193.84		0.94	2674	IEC62321-5	194.44		0.98
2314		-----		-----	2678		-----		-----
2316	IEC62321-5	193.77		0.93	2705		-----		-----
2339	In house	190		0.65	2734	EN16711-1	203.20		1.64
2347	EPA3052	198		1.25	2736	In house	186.205		0.36
2350	IEC62321-5	169		-0.93	2737	CPSC-CH-E1002-08	204.997		1.78
2352	IEC62321-5	204.8		1.76	2741	In house	184.78		0.25
2353	IEC62321-5	180.7		-0.05	2773	CPSC-CH-E1002-08	182.41		0.08
2355	EPA3052	196.7		1.15	2791		-----		-----
2357	ISO8124-5	194.50		0.99	2794		214.6		2.50
2358	EPA3051	181.2		-0.01	2798	EPA3052	151	C	-2.29
2363	EPA3052	202		1.55	2804	In house	158.4		-1.73
2365	EN16711-1	193.4		0.90	2812	EN16711-1	189.3		0.60
2366	IEC62321-5	197.6		1.22	2826	IEC62321-5	187.412		0.45
2369	EPA3052	201.4		1.51	2827	In house	175.59		-0.44
2370	EPA3052	185		0.27	2829		-----		-----
2372	EPA3052	190.8		0.71	2833	IEC62321-3-1	231.3		3.76
2374	In house	198.5		1.29	2835	IEC62321-5	142.75	C	-2.91
2375	EN16711-1	190.0		0.65	2853		-----		-----
2378	EN16711-1	202.4		1.58	2857	IEC62321-5	165.87		-1.17

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	176.23		-0.39	3163	In house	164		-1.31
2867	IEC62321-5	186.6		0.39	3166	In house	182		0.05
2877	In house	137.0046		-3.35	3172	ISO8124-5	186.7		0.40
2883	CPSC-CH-E1002-08	175.1		-0.47	3182	IEC62321-5	190.96		0.72
2885	IEC62321-5	234.0		3.96	3185	CPSC-CH-E1002-08	202.4		1.58
2892	IEC62321-5	198.93		1.32	3190	IEC62321-5	200.00		1.40
2898	In house	203.1	C	1.64	3197	IEC62321-5	189.4		0.60
2900	IEC62321-5	182.1		0.05	3200	CPSC-CH-E1002-08	185.96		0.34
3100	IEC62321-5	196		1.10	3209	CPSC-CH-E1002-08	180.76		-0.05
3110	In house	173		-0.63	3210	In house	166		-1.16
3116	CPSC-CH-E1002-08	197.18		1.19	3213		-----		-----
3118	EN16711-1	166.0171		-1.16	3214	EPA3052	193.2		0.89
3122	CPSC-CH-E1002-08	185		0.27	3225		NA		-----
3124		-----		-----	3228	IEC62321-5	195.0		1.03
3127	DIN22022-3	169.96		-0.86	3237	EN16711-1	190.05		0.65
3146	In house	211		2.23	3239	IEC62321-5	141.470		-3.01
3150	CPSC-CH-E1002-08	155.246		-1.97	3248		-----		-----
3153	IEC62321-5	192.0		0.80	8005		185.86		0.34
3154	IEC62321-3-1	204.7		1.76	8008		-----		-----
3160	CPSC-CH-E1002-08	212.30		2.33					

normality	OK	
n	149	
outliers	0	
mean (n)	181.3975	
st.dev. (n)	20.13929	RSD=11%
R(calc.)	56.3900	
st.dev.(Horwitz)	13.26763	
R(Horwitz)	37.1494	

Lab 2798: first reported 120
Lab 2835: first reported 123.243
Lab 2898: first reported 123.3





Determination of Chromium as Cr6+ on sample #19601; results in mg/kg

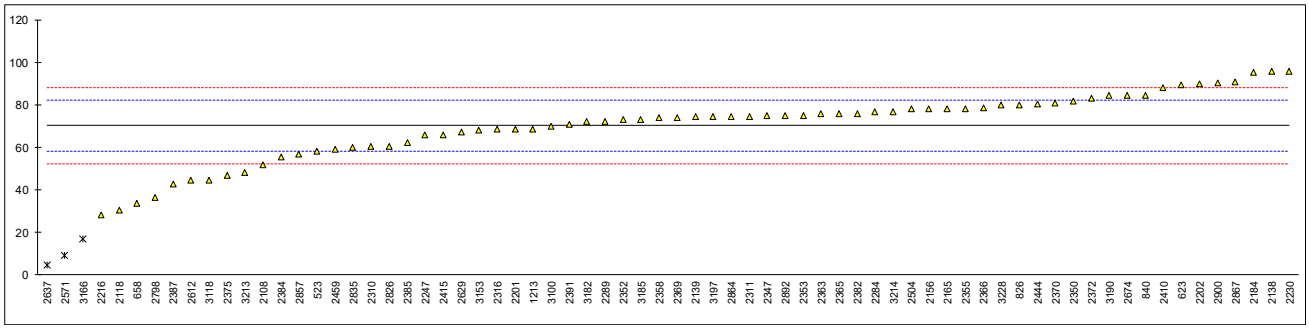
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379		-----		-----
230		-----		-----	2380		-----		-----
330		-----		-----	2381		-----		-----
339	In house	<2	f-:?	<-11.51	2382	IEC62321-7-2	76.0		0.99
348		-----		-----	2384	IEC62321-7-2	55.56		-2.46
523	IEC62321-7-2	58.202		-2.02	2385	IEC62321-7-2	62.2		-1.34
551	IEC62321-7-2	nd		-----	2387	IEC62321-7-2	42.520		-4.67
623	IEC62321-7-2	89.46	C	3.26	2390		-----		-----
658	IEC62321-7-2	33.645	C	-6.17	2391	IEC62321-7-2	70.7		0.09
826	IEC62321-7-2	80		1.66	2410	IEC62321-7-2	88		3.02
840	IEC62321-7-2	84.45		2.42	2415	IEC62321-7-2	66.0		-0.70
1051		-----		-----	2425		-----		-----
1082		-----		-----	2426		-----		-----
1126		-----		-----	2431		-----		-----
1213	IEC62321-7-2	68.61		-0.26	2433		-----		-----
2108	IEC62321-7-2	51.90		-3.08	2444	IEC62321-7-2	80.26		1.71
2115		-----		-----	2445		-----		-----
2118	IEC62321-7-2	30.66		-6.67	2453		-----		-----
2129		-----		-----	2459	IEC62321-7-2	59.06		-1.87
2132		-----		-----	2460		-----		-----
2137		-----		-----	2475		-----		-----
2138	IEC62321-7-2	95.8		4.33	2476		No Capability		-----
2139	IEC62321-7-2	74.3		0.70	2482		-----		-----
2146		-----		-----	2486		Not performed		-----
2156	IEC62321AnnexC	77.90	C	1.31	2488		-----		-----
2165	IEC62321-7-2	78.0		1.33	2489		-----		-----
2176		-----		-----	2492		-----		-----
2182		-----		-----	2493		-----		-----
2184	IEC62321-7-2	95.3		4.25	2495		-----		-----
2190		-----		-----	2497		-----		-----
2197		-----		-----	2500		-----		-----
2201	IEC62321-7-2	68.60		-0.26	2504	IEC62321-7-2	77.85		1.30
2202	IEC62321-7-2	89.7		3.30	2511		-----		-----
2212		-----		-----	2514		-----		-----
2213		-----		-----	2529		-----		-----
2216	IEC62321-7-2	28		-7.12	2532	EN16711-1	Not Reported		-----
2218		-----		-----	2549	In house	not tested		-----
2230	IEC62321-7-2	95.9		4.35	2560	EN16711-1	<2	f-:?	<-11.51
2236		-----		-----	2561		-----		-----
2247	IEC62321-7-2	65.9		-0.72	2563		-----		-----
2250	In house	<2	C,f-?	<-11.51	2564		-----		-----
2255	EN16711-1	NP		-----	2568		-----		-----
2256		-----		-----	2571	IEC62321-7-2	9.3	C,R(0.05)	-10.28
2258	Other	No capability		-----	2582	ISO17075-1	N/D		-----
2265		-----		-----	2590		-----		-----
2266		-----		-----	2591		-----		-----
2284	IEC62321-7-2	76.551		1.08	2612	IEC62321-7-2	44.4	C	-4.35
2289	IEC62321-7-2	72.2		0.35	2624		-----		-----
2290		-----		-----	2629	IEC62321-7-2	67.0		-0.53
2293		-----		-----	2632		-----		-----
2294		-----		-----	2637	In house	4.5	R(0.05)	-11.09
2295		-----		-----	2642		-----		-----
2301		-----		-----	2644		-----		-----
2310	IEC62321-7-2	60.4		-1.65	2668	In house	ND (LOQ=10)	f-?	<-10.16
2311	IEC62321-7-2	74.49		0.73	2674	IEC62321-7-2	84.28		2.39
2314		-----		-----	2678		-----		-----
2316	IEC62321-7-2	68.6		-0.26	2705		-----		-----
2339		-----		-----	2734	EN16711-1	nd		-----
2347	IEC62321-7-2	75		0.82	2736		-----		-----
2350	IEC62321-7-2	81.688		1.95	2737		-----		-----
2352	IEC62321-7-2	73.2		0.51	2741		-----		-----
2353	IEC62321-7-2	75.1		0.84	2773		-----	W	-----
2355	IEC62321-7-2	78.2		1.36	2791		-----		-----
2357		-----		-----	2794		n/a		-----
2358	EPA3051	74.0		0.65	2798	IEC62321-7-2	36.4	C	-5.70
2363	IEC62321-7-2	75.61		0.92	2804		-----		-----
2365	IEC62321-7-2	75.7		0.94	2812		-----		-----
2366	IEC62321-7-2	78.6		1.43	2826	IEC62321-7-2	60.6		-1.61
2369	IEC62321-7-2	74.1		0.67	2827	In house	not analyzed		-----
2370	IEC62321-7-2	81.0		1.83	2829		-----		-----
2372	IEC62321-7-2	83		2.17	2833		-----		-----
2374		-----		-----	2835	IEC62321-7-2	60.100		-1.70
2375	IEC62321-7-2	47.0		-3.91	2853		-----		-----
2378		-----		-----	2857	IEC62321-7-2	56.73		-2.27

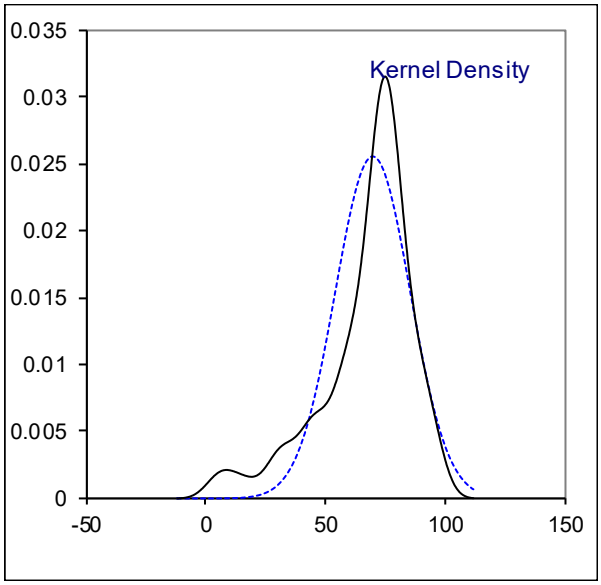
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-7-2	74.40	C	0.72	3163		-----		-----
2867	IEC62321-7-2	90.7		3.47	3166	EPA3060a	17.0	R(0.05)	-8.98
2877	EPA3060a	BDL (DL=2)	f-?	<-11.51	3172		-----		-----
2883	CPSC-CH-E1002-08	Not Attend		-----	3182	IEC62321-7-2	71.99		0.31
2885		-----		-----	3185	IEC62321-7-2	73.2		0.51
2892	IEC62321-7-2	75.00		0.82	3190	IEC62321-7-2	84.26		2.38
2898		-----		-----	3197	IEC62321-7-2	74.3		0.70
2900	IEC62321-7-2	90.3		3.40	3200		NA		-----
3100	IEC62321-7-2	70.04		-0.02	3209		-----		-----
3110		-----		-----	3210		-----		-----
3116		-----		-----	3213	IEC62321-7-2	48.321		-3.69
3118	IEC62321-7-2	44.439		-4.34	3214	IEC62321-7-2	76.8		1.12
3122	In house	< 0.4	f-?	<-11.78	3225		NA		-----
3124		-----		-----	3228	IEC62321-7-2	79.8		1.63
3127		-----		-----	3237		-----		-----
3146		no analysis		-----	3239	IEC62321	ND (DL=50)	f-?	<-3.40
3150		-----		-----	3248		-----		-----
3153	IEC62321	68.2		-0.33	8005		-----		-----
3154		-----		-----	8008		-----		-----
3160		-----		-----					

normality	OK	
n	67	
outliers	3	
mean (n)	70.1519	
st.dev. (n)	15.65261	RSD=22%
R(calc.)	43.8273	
st.dev.(Horwitz)	5.91974	
R(Horwitz)	16.5753	

Lab 623: first reported n.d.
Lab 658: first reported 13.771
Lab 2156: first reported 2
Lab 2250: first reported 1.873
Lab 2571: first reported 11.3
Lab 2612: first reported 39.6
Lab 2773: first reported <2
Lab 2798: first reported ND
Lab 2864: first reported ND

f-? = possibly a false negative test result?





Determination of total Manganese as Mn on sample #19601; results in mg/kg

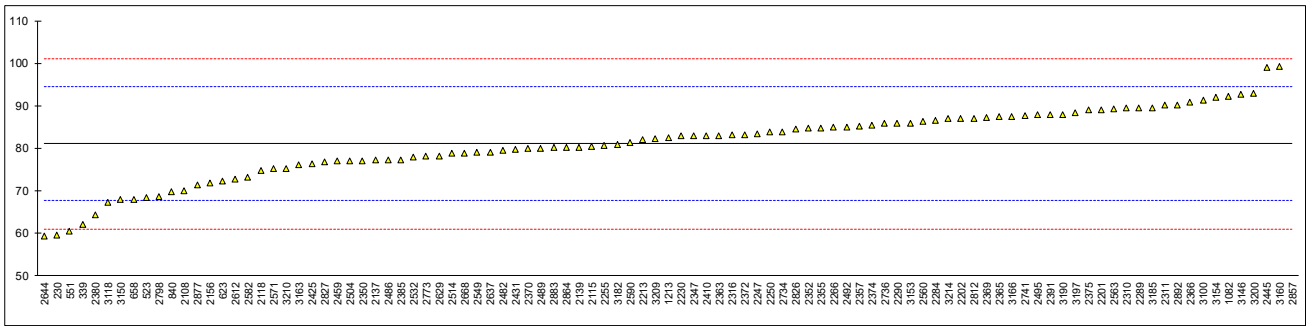
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379		-----		-----
230	CPSC-CH-E1002-08	59.52		-3.22	2380	CPSC-CH-E1002-08	64.29		-2.51
330		-----		-----	2381		-----		-----
339	In house	62.14		-2.83	2382		-----		-----
348		-----		-----	2384		-----		-----
523	EPA3052	68.323		-1.90	2385	IEC62321-5	77.2		-0.58
551	EPA3052	60.39		-3.09	2387		-----		-----
623	In house	72.16		-1.33	2390		-----		-----
658	EPA3052	67.910		-1.97	2391	IEC62321-5	87.8		1.01
826		N/A		-----	2410	In house	83		0.29
840	EN16711-1	69.67		-1.70	2415		-----		-----
1051		-----		-----	2425	EN16711-1	76.4		-0.70
1082	In house	92.3		1.68	2426		-----		-----
1126		-----		-----	2431	In house	79.6619		-0.21
1213	IEC62321-5	82.5	C	0.21	2433		-----		-----
2108	EN16711-1	70.05		-1.65	2444		-----		-----
2115	EN16711-1	80.36		-0.11	2445	In house	98.90		2.66
2118	EN16711-1	74.76316337		-0.94	2453		-----		-----
2129		-----		-----	2459	CPSC-CH-E1002-08	77		-0.61
2132		-----		-----	2460		-----		-----
2137	IEC62321-5	77.15		-0.59	2475		-----		-----
2138	EPA3052	NA		-----	2476		No Capability		-----
2139	IEC62321-5	80.3		-0.12	2482	ISO17294-2	79.47		-0.24
2146		-----		-----	2486	EN16711-1	77.169		-0.58
2156	IEC62321-5	71.77		-1.39	2488		-----		-----
2165		-----		-----	2489	In house	79.90		-0.18
2176		-----		-----	2492	In house	85		0.59
2182		-----		-----	2493		-----		-----
2184		-----		-----	2495	CPSC-CH-E1002-08	87.79		1.00
2190		-----		-----	2497		-----		-----
2197		-----		-----	2500		-----		-----
2201	IEC62321-5	89.10		1.20	2504	EPA3052	77.02		-0.61
2202	IEC62321-5	87		0.89	2511		-----		-----
2212		-----		-----	2514	EN16711-1	78.79		-0.34
2213	EN16711-1	82		0.14	2529		-----		-----
2216		-----		-----	2532	EN16711-1	77.83		-0.48
2218		-----		-----	2549	In house	79		-0.31
2230	EPA3051	82.8		0.26	2560	EN16711-1	86.27		0.78
2236		-----		-----	2561		-----		-----
2247	In house	83.33		0.34	2563	IEC62321-5	89.2		1.21
2250	EN16711-1	83.825		0.41	2564		-----		-----
2255	EN16711-1	80.7		-0.06	2568		-----		-----
2256		-----		-----	2571	IEC62321-3-1	75.1		-0.89
2258		No capability		-----	2582	EPA3051	73.14		-1.18
2265		-----		-----	2590	CPSC-E1002-08	81.367		0.04
2266	In house	84.92		0.57	2591		-----		-----
2284	EN16711-1	86.453		0.80	2612	In house	72.8		-1.24
2289	IEC62321-5	89.4		1.24	2624		-----		-----
2290	IEC62321-5	85.9		0.72	2629	In house	78.2		-0.43
2293		-----		-----	2632		-----		-----
2294		-----		-----	2637	EPA3051	79		-0.31
2295		-----		-----	2642		-----		-----
2301		-----		-----	2644	EN16711-1	59.42		-3.23
2310	IEC62321-5	89.39		1.24	2668	In house	78.86		-0.33
2311	EPA3052	90.06		1.34	2674		-----		-----
2314		-----		-----	2678		-----		-----
2316	In house	83.05		0.30	2705		-----		-----
2339		-----		-----	2734	EN16711-1	83.92		0.43
2347	In house	83		0.29	2736	In house	85.816		0.71
2350	EPA3052	77.09		-0.59	2737		-----		-----
2352	In house	84.7		0.54	2741	In house	87.59		0.97
2353	IEC62321-5	NA		-----	2773	CPSC-CH-E1002-08	78.12		-0.44
2355	EPA3052	84.8		0.56	2791		-----		-----
2357	ISO8124-5	85.21		0.62	2794		n/a		-----
2358	EPA3051	N/A		-----	2798	EPA3052	68.6	C	-1.86
2363	EPA3052	83		0.29	2804		-----		-----
2365	EN16711-1	87.4		0.95	2812	EN16711-1	87.1	C	0.90
2366	IEC62321-5	90.9		1.47	2826	IEC62321-5	84.4838		0.51
2369	EPA3052	87.2		0.92	2827	In house	76.73		-0.65
2370	EPA3052	79.9		-0.18	2829		-----		-----
2372	EPA3052	83.1		0.30	2833		-----		-----
2374	In house	85.4		0.65	2835		-----		-----
2375	EN16711-1	89.0		1.18	2853		-----		-----
2378		-----		-----	2857	IEC62321-5	681.74	C,R(0.01)	89.73

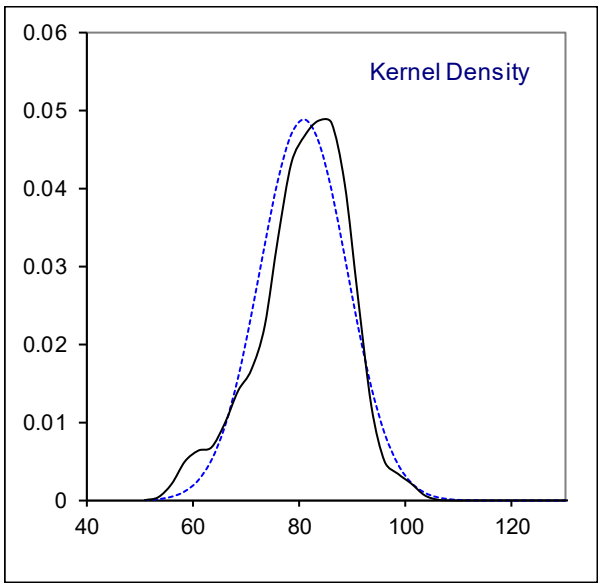
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	80.14		-0.14	3163	In house	76		-0.76
2867		-----		-----	3166	In house	87.4		0.95
2877	In house	71.3	C	-1.46	3172		-----		-----
2883	CPSC-CH-E1002-08	80.1		-0.15	3182	IEC62321-5	80.86		-0.03
2885		-----		-----	3185	CPSC-CH-E1002-08	89.5		1.26
2892	IEC62321-5	90.08		1.35	3190	IEC62321-5	88.00		1.04
2898		-----		-----	3197	IEC62321-5	88.3		1.08
2900	EPA3052	NA		-----	3200	CPSC-CH-E1002-08	92.78		1.75
3100	EPA3052	91.25		1.52	3209	CPSC-CH-E1002-08	82.31		0.19
3110		-----		-----	3210	In house	75.3		-0.86
3116		-----		-----	3213		-----		-----
3118	EN16711-1	67.1826		-2.07	3214	EPA3052	86.9		0.87
3122		-----		-----	3225		NA		-----
3124		-----		-----	3228		-----		-----
3127		-----		-----	3237		-----		-----
3146	In house	92.6		1.72	3239		-----		-----
3150	CPSC-CH-E1002-08	67.904		-1.97	3248		-----		-----
3153	IEC62321-5	85.9		0.72	8005		-----		-----
3154	IEC62321-3-1	92.02		1.64	8008		-----		-----
3160	CPSC-CH-E1002-08	99.31		2.72					

normality	OK
n	98
outliers	1
mean (n)	81.0715
st.dev. (n)	8.18233
R(calc.)	22.9105
st.dev.(Horwitz)	6.69383
R(Horwitz)	18.7427

RSD=10%

Lab 1213: first reported not detected
Lab 2798: first reported 57.1
Lab 2812: first reported 197.2
Lab 2857: first reported 760.69
Lab 2877: first reported 52.5862





Determination of total Tin as Sn on sample #19601; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
210		-----		-----	2379		-----		-----
230	CPSC-CH-E1002-08	78.3	C,R(0.01)	-7.80	2380	CPSC-CH-E1002-08	139.53		-3.20
330		-----		-----	2381		-----		-----
339	In house	159.48		-1.70	2382		-----		-----
348		-----		-----	2384		-----		-----
523	EPA3052	144.582		-2.82	2385	IEC62321-5	<5	f-?	<-13.31
551	EPA3052	149.51		-2.45	2387		-----		-----
623	In house	119.62	C	-4.70	2390		-----		-----
658	EPA3052	168.308		-1.04	2391	IEC62321-5	150.7		-2.36
826		N/A		-----	2410	In house	198		1.19
840	EN16711-1	185.84		0.28	2415		-----		-----
1051		-----		-----	2425	EN16711-1	154.5		-2.08
1082	In house	5.58	R(0.01)	-13.26	2426		-----		-----
1126		-----		-----	2431	In house	193.0055		0.82
1213		-----		-----	2433		-----		-----
2108	EN16711-1	176.00		-0.46	2444		-----		-----
2115	EN16711-1	8.35	R(0.01)	-13.05	2445	In house	242.7		4.55
2118	EN16711-1	21.99793047	R(0.01)	-12.03	2453		-----		-----
2129		-----		-----	2459	CPSC-CH-E1002-08	180	C	-0.16
2132		-----		-----	2460		-----		-----
2137		-----		-----	2475		-----		-----
2138	EPA3052	NA		-----	2476		No Capability		-----
2139	IEC62321-5	200.0		1.34	2482	ISO17294-2	153.0		-2.19
2146		-----		-----	2486		Not performed		-----
2156	IEC62321-5	24.63	C,R(0.01)	-11.83	2488		-----		-----
2165		-----		-----	2489	In house	216.2		2.56
2176		-----		-----	2492	In house	164		-1.36
2182		-----		-----	2493		-----		-----
2184		-----		-----	2495	CPSC-CH-E1002-08	195.57		1.01
2190		-----		-----	2497		-----		-----
2197		-----		-----	2500		-----		-----
2201	IEC62321-5	195.46		1.00	2504		n.a.		-----
2202	IEC62321-5	187.6		0.41	2511		-----		-----
2212		-----		-----	2514		-----		-----
2213	EN16711-1	202		1.49	2529		-----		-----
2216		-----		-----	2532	EN16711-1	187.53		0.40
2218		-----		-----	2549	In house	167		-1.14
2230	EPA3051	120		-4.67	2560	EN16711-1	138.49		-3.28
2236		-----		-----	2561		-----		-----
2247	In house	194.37		0.92	2563		-----		-----
2250	EN16711-1	191.02		0.67	2564		-----		-----
2255	EN16711-1	185.1		0.22	2568		-----		-----
2256		-----		-----	2571	IEC62321-3-1	2.7	C,R(0.01)	-13.48
2258		No capability		-----	2582	EPA3051	154.07		-2.11
2265		-----		-----	2590		-----		-----
2266	In house	15.65	R(0.01)	-12.51	2591		-----		-----
2284	EN16711-1	192.623		0.79	2612	In house	175		-0.54
2289	IEC62321-5	206.2		1.81	2624		-----		-----
2290	IEC62321-5	192.2		0.75	2629	In house	167.1		-1.13
2293		-----		-----	2632		-----		-----
2294		-----		-----	2637	EPA3051	165		-1.29
2295		-----		-----	2642		-----		-----
2301	EN16711-1	ND		-----	2644	EN16711-1	153.21		-2.17
2310	IEC62321-5	208.01		1.94	2668	In house	166.23		-1.20
2311	EPA3052	182.36		0.02	2674		-----		-----
2314		-----		-----	2678		-----		-----
2316	In house	209.82		2.08	2705		-----		-----
2339		-----		-----	2734	EN16711-1	195.43		1.00
2347	In house	208		1.94	2736	In house	182.319		0.01
2350	EPA3052	172.4		-0.73	2737		-----		-----
2352	In house	210.1		2.10	2741	In house	181.88		-0.02
2353	IEC62321-5	NA		-----	2773	CPSC-CH-E1002-08	185	C	0.21
2355	EPA3052	198.8		1.25	2791		-----		-----
2357	ISO8124-5	193.67		0.87	2794		179.2		-0.22
2358	EPA3051	N/A		-----	2798	EPA3052	14.3	C,R(0.01)	-12.61
2363	EPA3052	205		1.72	2804		-----		-----
2365	EN16711-1	197.9		1.18	2812		-----		-----
2366	IEC62321-5	192.8		0.80	2826	IEC62321-5	191.573		0.71
2369	EPA3052	194.7		0.94	2827	In house	164.76		-1.31
2370	EPA3052	190		0.59	2829		-----		-----
2372	EPA3052	191.9		0.73	2833		-----		-----
2374		-----		-----	2835	IEC62321-5	2.28	C,R(0.01)	-13.51
2375	EN16711-1	220.0		2.84	2853		-----		-----
2378		-----		-----	2857	IEC62321-5	187.85		0.43

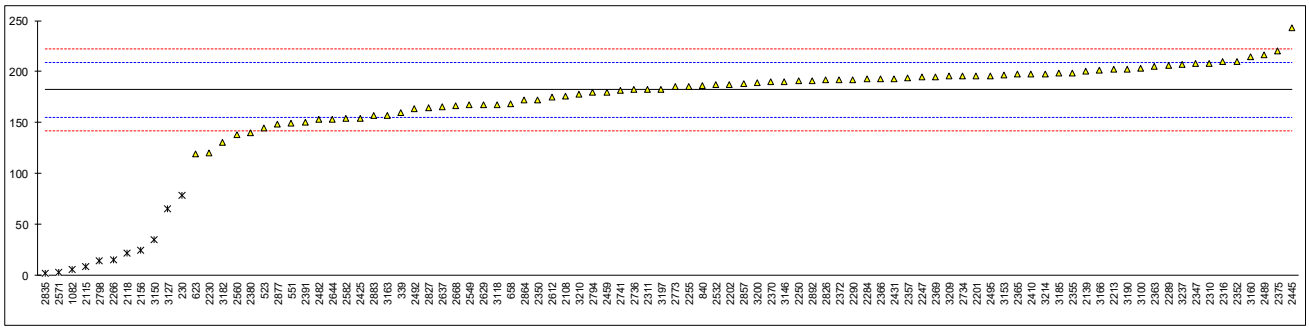
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2864	IEC62321-5	172.15		-0.75	3163	In house	157		-1.89
2867		-----		-----	3166	In house	201		1.42
2877	In house	148.0198		-2.56	3172		-----		-----
2883	CPSC-CH-E1002-08	156.7		-1.91	3182	IEC62321-5	130.80		-3.86
2885		-----		-----	3185	CPSC-CH-E1002-08	198.6		1.24
2892	IEC62321-5	191.40		0.69	3190	IEC62321-5	202.33		1.52
2898		-----		-----	3197	IEC62321-5	182.8		0.05
2900	EPA3052	NA		-----	3200	CPSC-CH-E1002-08	188.93		0.51
3100	EPA3052	203		1.57	3209	CPSC-CH-E1002-08	195.23		0.98
3110		-----		-----	3210	In house	178		-0.31
3116		-----		-----	3213		-----		-----
3118	EN16711-1	167.4867		-1.10	3214	EPA3052	198.0		1.19
3122		-----		-----	3225		NA		-----
3124		-----		-----	3228		-----		-----
3127	DIN22022-3	65.13	R(0.01)	-8.79	3237	EN16711-1	207.19		1.88
3146	In house	190		0.59	3239		-----		-----
3150	CPSC-CH-E1002-08	34.9	C,R(0.01)	-11.06	3248		-----		-----
3153	IEC62321-5	196.2		1.06	8005		-----		-----
3154		-----	W	-----	8008		-----		-----
3160	CPSC-CH-E1002-08	214.93		2.46					

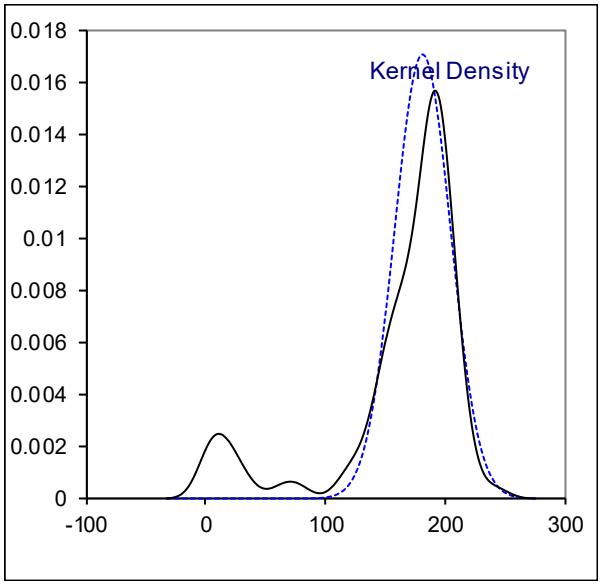
normality	OK	
n	81	
outliers	11	
mean (n)	182.1480	
st.dev. (n)	23.37982	RSD=13%
R(calc.)	65.4635	
st.dev.(Horwitz)	13.31425	
R(Horwitz)	37.2799	

Lab 230: first reported 91.22
Lab 623: first reported 14.23
Lab 2156: first reported 8.32
Lab 2459: first reported 21
Lab 2571: first reported 5.8

Lab 2773: first reported 76.23
Lab 2798: first reported ND
Lab 2835: first reported 7.397
Lab 3150: first reported 77.364
Lab 3154: first reported 13.77

f-? = possibly a false negative test result?





APPENDIX 2

Other reported Metals in sample #19600; results in mg/kg

Lab	Sb	Co	Cu	Hg	Mn	Sn
210	-----	-----	-----	-----	-----	-----
230	-----	-----	-----	-----	-----	-----
330	-----	-----	-----	-----	-----	-----
339	<12.5	<1.5	<1.5	<3	3.84	<12.5
348	-----	-----	-----	-----	-----	-----
523	<1.0	<0.5	<2.0	<1.0	4.265	<1.0
551	nd	nd	nd	nd	nd	nd
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
658	5.389	n.d.	n.d.	n.d.	4.054	n.d.
826	N.D	N.D	N.D	N.D	N/A	N/A
840	<2	<2	<2	<2	<2	<2
1051	-----	-----	-----	-----	-----	-----
1082	-----	0.062	1.326	-----	2.006	0.022
1126	-----	-----	-----	-----	-----	-----
1213	N.D. [LOQ=20]	N.D. [LOQ=20]	N.D. [LOQ=20]	N.D. [LOQ=10]	N.D. [LOQ=20]	-----
2108	n.d. [<2.5]	n.d. [<2.5]	n.d. [<2.5]	n.d. [<0.25]	3.79	n.d. [<2.5]
2115	-----	-----	-----	0.16	4.73	-----
2118	0.05874198	0.023686841	20.65689415	0.209810332	4.472893485	183.8035963
2129	<5,0	<5,0	<25	<5,0	-----	-----
2132	<10.0	-----	-----	<10.0	-----	-----
2137	-----	-----	-----	-----	-----	-----
2138	NA	NA	NA	ND	NA	NA
2139	<10	<10	<10	<10	<10	<10
2146	-----	-----	-----	-----	-----	-----
2156	< 10.00	< 5.00	8.48	< 10.00	5.95	< 10.00
2165	-----	-----	-----	n.d.	-----	-----
2176	-----	-----	-----	ND	-----	-----
2182	-----	-----	-----	-----	-----	-----
2184	-----	-----	-----	<10	-----	-----
2190	-----	-----	-----	-----	-----	-----
2197	-----	-----	0	-----	-----	-----
2201	<10	<10	<10	<10	<10	<10
2202	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2212	<30	-----	-----	<7	-----	-----
2213	<10	<10	<10	<10	<10	<10
2216	-----	-----	-----	<1	-----	-----
2218	-----	-----	-----	-----	-----	-----
2230	<10	<10	<10	<10	<10	<10
2236	-----	-----	-----	-----	-----	-----
2247	ND	ND	ND	ND	ND	ND
2250	not detected	not detected	not detected	0.155	4.748	not detected
2255	nd	nd	nd	nd	nd	nd
2256	-----	-----	-----	ND	-----	-----
2258	<10	No capability	No capability	<10	No capability	No capability
2265	-----	-----	-----	-----	-----	-----
2266	-----	-----	-----	-----	-----	-----
2284	<5	<5	<5	<5	<5	<5
2289	<10	<10	<10	<10	<10	<10
2290	<20	<20	<20	<20	<20	<20
2293	-----	-----	-----	-----	-----	-----
2294	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----
2301	ND	ND	-----	ND	-----	-----
2310	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED
2311	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2314	-----	-----	-----	-----	-----	-----
2316	-----	-----	ND	ND	ND	ND
2339	<5	<5	<5	<1	-----	-----
2347	<10	<5	<5	<2	<5	<5
2350	<10	<5	<5	<2	<5	<10
2352	-----	-----	-----	-----	-----	-----
2353	<10	<10	<10	<5	NA	NA
2355	0	0	0	0	0	0
2357	<10	<10	<10	<5	<10	<10
2358	n.d.	n.d.	n.d.	n.d.	N/A	N/A
2363	<10	<5	<5	<2	<5	<5
2365	＜10	＜10	＜10	＜10	＜10	＜10
2366	<10	<10	<10	<10	<10	<10
2369	<10	<5	<5	<2	<5	<5
2370	<2	<2	<2	<2	<2	<2
2372	<2	<2	<2	<2	2.95	<2
2374	ND	ND	ND	ND	ND	-----
2375	<10	<10	<10	<10	<10	<10
2378	-----	-----	-----	-----	-----	-----

Lab	Sb	Co	Cu	Hg	Mn	Sn
2379	-----	-----	-----	-----	-----	-----
2380	-----	-----	-----	-----	-----	-----
2381	-----	-----	-----	-----	-----	-----
2382	<20	<10	<10	<5	-----	-----
2384	-----	-----	-----	Not Detected	-----	-----
2385	<5	<1	<5	<0,5	4.0	<5
2387	-----	-----	-----	N.D. [<2]	-----	-----
2390	-----	-----	-----	-----	-----	-----
2391	<3	<3	<3	<3	<3	<3
2410	<5	<5	<5	<5	<5	<5
2415	-----	-----	-----	-----	-----	-----
2425	ND	ND	ND	ND	ND	ND
2426	<20	<20	<20	<20	-----	-----
2431	-----	-----	-----	-----	-----	-----
2433	-----	-----	-----	-----	-----	-----
2444	-----	-----	-----	0	-----	-----
2445	0.064667	0.02253	0.3240	0.1430	4.240	0.07767
2453	-----	-----	-----	-----	-----	-----
2459	ND	ND	ND	ND	ND	ND
2460	-----	-----	-----	-----	-----	-----
2475	-----	-----	-----	-----	-----	-----
2476	No Capability	No Capability	No Capability	No Capability	No Capability	No Capability
2482	-----	-----	-----	-----	-----	-----
2486	ND	ND	ND	ND	ND	Not performed
2488	-----	-----	-----	-----	-----	-----
2489	ND	ND	ND	ND	ND	ND
2492	-----	-----	-----	-----	-----	-----
2493	0.057	0.021	-----	0.120	-----	-----
2495	<2.5	<2.5	<2.5	<2.5	4.176	<2.5
2497	-----	-----	-----	-----	-----	-----
2500	-----	-----	-----	-----	-----	-----
2504	<10	<10	<10	<10	<10	<10
2511	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----
2529	-----	-----	-----	-----	-----	-----
2532	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]
2549	ND	ND	ND	ND	ND	ND
2560	<10	<10	<10	<10	<10	<10
2561	-----	-----	-----	-----	-----	-----
2563	-----	n.d.	n.d.	-----	< 5	-----
2564	-----	-----	-----	-----	-----	-----
2568	-----	-----	-----	-----	-----	-----
2571	N.D.	N.D.	N.D.	N.D.	4.0	N.D.
2582	N/D	N/D	1.54	N/D	4.38	0.68
2590	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	2.183
2591	-----	-----	-----	-----	-----	-----
2612	< 1	< 1	< 1	0.1487	3.9	< 1
2624	-----	-----	-----	-----	-----	-----
2629	ND	ND	ND	ND	ND	ND
2632	N.D.[<2.0]	N.D.[<2.0]	N.D.[<2.0]	N.D.[<1.0]	-----	-----
2637	<1	<0.5	<1	0.1	5	<5
2642	-----	-----	-----	-----	-----	-----
2644	-----	-----	-----	-----	-----	-----
2668	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]
2674	-----	-----	-----	<10	-----	-----
2678	-----	-----	-----	-----	-----	-----
2705	-----	-----	-----	-----	-----	-----
2734	nd	nd	nd	nd	nd	nd
2736	<3.247	<3.247	<3.247	-----	4.545	12.013
2737	-----	-----	-----	-----	-----	-----
2741	ND	ND	ND	ND	ND	ND
2773	ND	ND	ND	ND	ND	ND
2791	-----	-----	-----	-----	-----	-----
2794	not detected	n/a	81.95	not detected	n/a	not detected
2798	ND	ND	ND	ND	ND	ND
2804	-----	-----	-----	n.d.	-----	-----
2812	-----	-----	-----	-----	-----	-----
2826	<20	<20	<20	<20	<20	<20
2827	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2829	-----	-----	-----	-----	-----	-----
2833	-----	-----	-----	16.17	-----	-----
2835	<10	-----	-----	<10	-----	<10
2853	-----	-----	-----	-----	-----	-----
2857	ND	ND	ND	ND	27.23 C	ND
2864	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2867	-----	-----	-----	<10	-----	-----
2877	5.4053	10.6721	5.4837	BDL [<5.0]	2.3884	34.5 C
2883	<10	<10	<10	<10	<10	<10

Lab	Sb	Co	Cu	Hg	Mn	Sn
2885	N.D.	-----	N.D.	N.D.	-----	-----
2892	n.d	n.d	n.d	n.d	n.d	n.d
2898	-----	-----	-----	-----	-----	-----
2900	NA	NA	NA	ND[<1]	NA	NA
3100	<10	<10	<10	<10	<10	<10
3110	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----
3118	<5	<5	<5	<5	<5	<5
3122	< 5	-----	-----	< 5	-----	-----
3124	-----	-----	-----	-----	-----	-----
3127	-----	-----	-----	-----	-----	0.729
3146	n.d. [<10]	n.d. [<10]	n.d. [<10]	n.d. [<1]	n.d. [<10]	n.d. [<10]
3150	<0,5	<0,5	3.318	0.153	4.596	24.733
3153	ND	ND	ND	ND	ND	ND
3154	6.24	--	--	--	4.43	2.42
3160	<16	<16	<16	-----	<16	<16
3163	0	6	5	0	17	0
3166	<0.2	<0.1	0.46	0.18	4.27	<0.1
3172	< 10	< 10	-----	< 10	-----	< 10
3182	<13	<13	<13	<13	<13	<13
3185	<10	<10	<10	<10	<10	<10
3190	<10	<10	<10	<10	<10	<10
3197	<10	<10	<10	<10	<10	<10
3200	<10	<10	<10	<10	<10	<10
3209	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
3210	<25	<10	<10	0.133	<10	<10
3213	-----	-----	-----	1.3213	-----	-----
3214	<10	<10	<10	<10	<10	<10
3225	NA	NA	NA	NA	NA	NA
3228	-----	-----	-----	<10	-----	-----
3237	-----	-----	-----	-----	-----	-----
3239	-----	-----	-----	Not Detected	-----	-----
3248	-----	-----	-----	<10	-----	-----
8005	-----	-----	-----	-----	-----	-----
8008	-----	-----	-----	-----	-----	-----

Lab 2857: first reported 52.76
Lab 2877: first reported 56.0971

Other reported Metals in sample #19601; results in mg/kg

Lab	Sb	Co	Cu	Pb	Hg	Ni	
210	-----	-----	-----	-----	-----	-----	
230	-----	-----	-----	-----	-----	-----	
330	-----	-----	-----	< 50	-----	-----	
339	<12.5	<1.5	<1.5	<3	<3	<1.5	
348	-----	-----	-----	<10	-----	-----	
523	<1.0	<0.5	<2.0	<0.5	<1.0	<0.5	
551	nd	nd	nd	nd	nd	nd	
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
658	n.d.	6.965	n.d.	37.363	n.d.	<2	C
826	N.D	N.D	N.D	N.D	N.D	N/A	
840	<2	<2	<2	<2	<2	<2	
1051	-----	-----	-----	<20	-----	-----	
1082	-----	0	0	0	-----	0	
1126	-----	-----	-----	-----	-----	-----	
1213	N.D. [LOQ=20]	N.D. [LOQ=20]	N.D. [LOQ=20]	N.D. [LOQ=20]	N.D. [LOQ=10]	N.D. [LOQ=20]	
2108	n.d. [<2.5]	n.d. [<2.5]	n.d. [<2.5]	n.d. [<2.5]	n.d. [<0.25]	n.d. [<2.5]	
2115	-----	-----	-----	-----	-----	-----	
2118	0.013340211	0.181565846	0	4.355620171	0	0.503637108	
2129	<5,0	<5,0	<25	<5,0	<5,0	<5,0	
2132	<10.0	-----	-----	<10.0	<10.0	-----	
2137	-----	-----	-----	-----	-----	-----	
2138	NA	NA	NA	ND	ND	NA	
2139	<10	<10	<10	<10	<10	<10	
2146	-----	-----	-----	-----	-----	-----	
2156	23.11	0.60	6.33	< 5.00	< 10.00	0.24	
2165	-----	-----	-----	n.d.	n.d.	-----	
2176	-----	-----	-----	ND	ND	-----	
2182	-----	-----	-----	-----	-----	-----	
2184	-----	-----	-----	<10	<10	-----	
2190	-----	-----	-----	-----	-----	-----	
2197	-----	-----	10.63	0	-----	-----	
2201	<10	<10	<10	<10	<10	<10	
2202	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	
2212	<30	-----	-----	<10	<7	-----	
2213	<10	<10	<10	<10	<10	<10	
2216	-----	-----	-----	<1	<1	-----	
2218	-----	-----	-----	-----	-----	-----	
2230	<10	<10	<10	<10	<10	<10	
2236	-----	-----	-----	-----	-----	-----	
2247	ND	ND	ND	ND	ND	ND	
2250	not detected	not detected	not detected	not detected	not detected	not detected	
2255	nd	nd	nd	nd	nd	nd	
2256	-----	-----	-----	ND	ND	-----	
2258	<10	No capability	No capability	<10	<10	No capability	
2265	-----	-----	-----	-----	-----	-----	
2266	-----	-----	-----	-----	-----	-----	
2284	<5	<5	<5	<5	<5	<5	
2289	<10	<10	<10	<10	<10	<10	
2290	<20	<20	<20	<20	<20	<20	
2293	-----	-----	-----	0.0	-----	-----	
2294	-----	-----	-----	ND	-----	-----	
2295	-----	-----	-----	-----	-----	-----	
2301	ND	ND	-----	ND	ND	ND	
2310	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED	
2311	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	
2314	-----	-----	-----	nd	-----	-----	
2316	-----	-----	ND	ND	ND	ND	
2339	<5	<5	<5	<5	<1	<5	
2347	<10	<5	<5	<2	<2	<5	
2350	<10	<5	<5	<5	<2	<5	
2352	-----	-----	-----	-----	-----	-----	
2353	<10	<10	<10	<5	<5	<10	
2355	0	0	0	0	0	0	
2357	<10	<10	<10	<10	<5	<10	
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
2363	<10	<5	<5	<2	<2	<5	
2365	＜10	＜10	＜10	＜10	＜10	＜10	
2366	<10	<10	<10	<10	<10	<10	
2369	<10	<5	<5	<2	<2	<5	
2370	<2	<2	<2	<2	<2	<2	
2372	<2	<2	<2	<2	<2	<2	
2374	ND	ND	ND	ND	ND	ND	
2375	<10	<10	<10	<10	<10	<10	
2378	-----	-----	-----	-----	-----	-----	
2379	-----	-----	-----	-----	-----	-----	
2380	-----	-----	-----	-----	-----	-----	

Lab	Sb	Co	Cu	Pb	Hg	Ni
2381	-----	-----	-----	n.d	-----	-----
2382	<20	<10	<10	<5	<5	<10
2384	-----	-----	-----	Not Detected	Not Detected	-----
2385	<5	<1	<5	<1	<0,5	<1
2387	-----	-----	-----	N.D. [<2]	N.D. [<2]	-----
2390	-----	-----	-----	-----	-----	-----
2391	7	7	<3	<3	<3	<3
2410	<5	<5	<5	<5	<5	<5
2415	-----	-----	-----	-----	-----	-----
2425	ND	ND	ND	ND	ND	ND
2426	<20	<20	<20	<20	<20	<20
2431	-----	-----	-----	-----	-----	-----
2433	-----	-----	-----	-----	-----	-----
2444	-----	-----	-----	0	0	-----
2445	0.373 C	0.1820	<0.1	0.2017	<0.02	<0.1
2453	-----	-----	-----	-----	-----	-----
2459	ND	ND	ND	ND	ND	ND
2460	-----	-----	-----	<25	-----	-----
2475	-----	-----	-----	-----	-----	-----
2476	No Capability	No Capability	No Capability	<10	No Capability	No Capability
2482	-----	-----	-----	-----	-----	-----
2486	ND	ND	ND	ND	ND	ND
2488	-----	-----	-----	<10	-----	-----
2489	ND	ND	ND	ND	ND	ND
2492	-----	-----	-----	-----	-----	-----
2493	0.005	0.095	-----	0.158	0.012	-----
2495	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
2497	-----	-----	-----	-----	-----	-----
2500	-----	-----	-----	-----	-----	-----
2504	<10	<10	<10	<10	<10	<10
2511	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----
2529	-----	-----	-----	-----	-----	-----
2532	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]
2549	ND	ND	ND	ND	ND	ND
2560	<10	<10	<10	<10	<10	<10
2561	-----	-----	-----	-----	-----	-----
2563	-----	n.d.	n.d.	n.d.	-----	n.d.
2564	-----	-----	-----	-----	-----	-----
2568	-----	-----	-----	-----	-----	-----
2571	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2582	N/D	N/D	N/D	0.63	N/D	N/D
2590	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.
2591	-----	-----	-----	<50.0	-----	-----
2612	2.0	3.3	< 1	< 1	0.0169	2.4
2624	-----	-----	-----	-----	-----	-----
2629	ND	ND	ND	ND	ND	ND
2632	N.D.[<2.0]	N.D.[<2.0]	N.D.[<2.0]	N.D.[<2.0]	N.D.[<1.0]	N.D.[<2.0]
2637	<1	<1	<1	<0.5	<0.1	<1
2642	-----	-----	-----	<25	-----	-----
2644	-----	-----	-----	-----	-----	-----
2668	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]	N.D.[<10.0]
2674	-----	-----	-----	<10	<10	-----
2678	-----	-----	-----	<8 C	-----	-----
2705	-----	-----	-----	-----	-----	-----
2734	nd	nd	nd	nd	nd	nd
2736	<3.238	<3.238	<3.238	<3.238	-----	<3.238
2737	-----	-----	-----	-----	-----	-----
2741	ND	ND	ND	ND	ND	ND
2773	ND	ND	ND	ND	ND	ND
2791	-----	-----	-----	-----	-----	-----
2794	not detected	n/a	not detected	not detected	not detected	20.54
2798	ND	ND	ND	ND	ND	ND
2804	-----	-----	-----	n.d.	n.d.	-----
2812	-----	-----	-----	-----	-----	-----
2826	<20	<20	<20	<20	<20	<20
2827	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2829	-----	-----	-----	-----	-----	-----
2833	-----	-----	-----	N.d	N.d	-----
2835	<10	-----	-----	<10	<10	-----
2853	-----	-----	-----	ND	-----	-----
2857	ND	ND C	ND	ND	ND	ND
2864	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2867	-----	-----	-----	<10	<10	-----
2877	5.9585	14.3683	7.2877	25.6617	BDL [<5.0]	11.3386
2883	<10	<10	<10	<10	<10	<10
2885	N.D.	-----	N.D.	N.D.	N.D.	-----
2892	n.d	n.d	n.d	n.d	n.d	n.d

Lab	Sb	Co	Cu	Pb	Hg	Ni
2898	-----	-----	-----	ND	-----	-----
2900	NA	NA	NA	ND[<5]	ND[<1]	NA
3100	<10	<10	<10	<10	<10	<10
3110	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----
3118	<5	<5	-----	<5	<5	<5
3122	< 5	-----	-----	< 5	< 5	-----
3124	-----	<0,2	-----	<1	-----	-----
3127	-----	-----	-----	<15	-----	-----
3146	n.d. [<10]	n.d. [<10]	n.d. [<10]	n.d. [<10]	n.d. [<1]	n.d. [<10]
3150	<0,5	<0,5	4.648	<0,5	<0,1	<0,5
3153	ND	ND	ND	ND	ND	ND
3154	--	--	23.46	--	--	--
3160	<16	<16	<16	<16	-----	<16
3163	0	0	5	0	0	4
3166	0.41	0.13	<0.3	<1	<0.1	<0.5
3172	< 10	< 10	-----	< 10	< 10	-----
3182	<13	<13	<13	<13	<13	<13
3185	<10	<10	<10	<10	<10	<10
3190	<10	<10	<10	<10	<10	<10
3197	<10	<10	<10	<10	<10	<10
3200	<10	<10	<10	<10	<10	<10
3209	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
3210	<25	<10	<10	<25	<0.02	<10
3213	-----	-----	-----	-----	-----	-----
3214	<10	<10	<10	<10	<10	<10
3225	NA	NA	NA	<15	NA	NA
3228	-----	-----	-----	<10	<10	-----
3237	-----	-----	-----	-----	-----	-----
3239	-----	-----	-----	Not Detected	Not Detected	-----
3248	-----	-----	-----	<10	<10	-----
8005	-----	-----	-----	-----	-----	-----
8008	-----	-----	-----	-----	-----	-----

Lab 658: first reported 38.905
Lab 2445: first reported 242.7
Lab 2678: first reported 128.62
Lab 2857: first reported 79.71

APPENDIX 3 Analytical details

Lab	ISO 17025 accred	sample grinded or cut	Cr6+: dissolve/swell solvent	Cr6+: digestion solution	Cr6+: sample intake (g)	Cr6+: extraction time (min)	Cr6+: extraction temp (°C)
210	---	---					
230	Yes	Used as received					
330	No	Used as received		HNO3 acid	0,1		µ-wave digestion
339	Yes	Used as received		20g NaOH and 30g Na2CO3 in 1L Water	2.5	180	92.5
348	Yes	Used as received					
523	No	Further Cut	DMP	Na2CO3/ NaOH	0.1	2 hours	65
551	Yes	Further Cut	Alkaline Digestion Solution.	20g NaOH + 30g Na2CO3.	2,5036 g 2,0046 g 2,5066 g 2,0032 g	3h.	90
623	No	Further Cut	NaOH + Na2CO3	Mixture of NaOH 2% and Na2CO3 3%	2.5	180	90 - 95
658	Yes	Further Grinded	N-Methyl-Pyrrolidone (NMP)	Sodium carbonate (Na2CO3)and Sodium hydroxide (NaOH)	#19600: 0.5060 g #19601: 0.5083 g	Total 180mins	60 degree Celsius
826	---	---					
840	Yes	Further Grinded	N-methyl-2-pyrrolidone	NaOH (20g) and Na2CO3 (30g) in 1000mL H2O	0.1	2 hours and 30 minutes	60
1051	Yes	Further Cut					
1082	No	Used as received		1 st digestion: 3ml H2O + 8 ml HNO3 (65%) 2 st digestion: add 2 ml H2O Sample 19601 same procedure, exepts 5 ml HNO3	Sample 19600: 0,2 & 0,4 g Sample 19601: 0,1 & 0,1 g	2x45 min-> 90 min total + cool down	25-260°C 0-35 min: 25 -> 250°C; 35-45 min: 250-260°C
1126	Yes:Cd in PVC	Used as received					
1213	Yes	Further Cut	N-mythyl purrolidone (NMP)	HNO3 and H2O2	5 g to digested for sample	45 minutes	200
2108	Yes	Further Cut	N-Methyl-pyrrolidone	NaOH 20g + Na2CO3 30 g per liter	0,1	1h	60°C, ultrasonic
2115	Yes	Used as received		5 ml HNO3	0.1	55 min	220
2118	No	Used as received	NaOH/Na2CO3	10ml NaOH/Na2CO3 - 5ml Tolueen- 0.5ml KH2PO4 - 400mg MgCl2	0.5	90 minutes	160
2129	Yes	Used as received		HNO3			
2132	Yes	Further Grinded	NA	HNO3 + H2O2	CPSC-CH-E1002-8.3: 0.15g EN1122: 0.5g	CPSC-CH-E1002-8: 30mins	CPSC-CH-E1002-8: 210°C
2137	Yes	Used as received					
2138	Yes	Used as received	NMP	NaoH, Na2CO3	0.1	3Hours	60
2139	Yes	Further Cut	NMP (N-Methyl-2-pyrrolidone)	NaOH(sodium hydroxide), Na2CO3(sodium carbonate)	about 0.1	180	60
2146	No	Used as received					
2156	Yes	Further Cut	Nitric Acid	Sodium Hydroxide and Sodium Carbonate	0.5	3 hours	90 - 95
2165	Yes	Further Cut	NMP	20.0g NaOH and 30.0g Na2CO3 in 1 L D.I. water	0.1	180	60
2176	Yes	Further Cut	NaOH + Na2CO3	NaOH + Na2CO3	2.5	180 minutes	90-95
2182	Yes	Further Cut					
2184	Yes	Used as received	NMP	NaOH + Na2CO3	0.1	180 minutes	60
2190	---	---					
2197	---	---					
2201	Yes	Further Cut	N-Methyl-pyrrolidone (NMP)	20g NaOH+30gNa2CO3, make up 1 L with DI water	0.1	60 minutes	60
2202	Yes	Used as received	NMP	100	0.5	180	Room temperature
2212	Yes	Further Grinded					
2213	Yes	Further Cut		5 ml HNO3+3 ml HCL+ 2 ml H2O2	0.3	45 min	220 OC
2216	Yes	Further Grinded	Ref IEC 62321-7-2 - followed directly	Ref IEC 62321-7-2 - followed directly	0.15	Ref IEC 62321-7-2 - followed directly	Ref IEC 62321-7-2 - followed directly
2218	Yes	Further Cut		Nitric acid	0.15	35	200
2230	Yes	Used as received	NMP dissolved, digest with NaOH+Sodium Carbonate.	10ml HNO3	IEC62321-7-2 Cr(VI) 0.1g EPA3051 0.2g	NMP 2hrs	NMP 60
2236	Yes	Further Cut		#19600: did not fully digest, no results reported			

Lab	ISO 17025 accred	sample grinded or cut	Cr6+: dissolve/swell solvent	Cr6+: digestion solution	Cr6+: sample intake (g)	Cr6+: extraction time (min)	Cr6+: extraction temp (°C)
2247	Yes	Further Grinded	1-methyl-2-pyrrolidone (NMP)	2% of Sodium hydroxide & 3% Sodium carbonate aqueous solution.	0.1	120 minutes	60
2250	Yes	Used as received	----	20 g NaOH + 0,05 g Na2CO3 dissolved in deionized Water in 1 L, pH 11,5 max.	0,5	60	90 - 95
2255	Yes	Further Cut	Cr VI was not performed (NP)	HNO3+HF	0.2001/0.2002	45	200
2256	---	---					
2258	Yes	Further Cut	Not applicable.	Nitric Acid → HNO3 = 70% Hydrogen Peroxide → H2O2 = 30%	0.2 grams, per instrument and method, that is the maximum weight.	2 hours = 120 minutes	190
2265	Yes	Further Cut		HNO3	0,1-0,3g	60min	200
2266	No	Used as received		Nitric acid 68%	0.6	55	180
2284	Yes	Further Cut	10ml NMP; 200mg MgCl2; 0.5ml of 0.5mol/L phosphate buffer;20 ml digestion solution	NaOH and Na2CO3	0.1	1h	60
2289	Yes	Further Cut	NMP	Dissolve NaOH:20g and Na2CO3 30g in water in a 1L volumetric flask and dilute to mark.	0.1	60	60
2290	Yes	---					
2293	Yes	Used as received					
2294	Yes	Further Cut		Transparent	0.0514gr (#19600) 0.0759gr (#19601)	15min.	200
2295	Yes	Used as received	-	nitric acid and hydrochloric acid.	0.15	depends on microwave digestion program.	210
2301	Yes	Used as received		HNO3:H2O2 10:1	0.2		
2310	Yes	Used as received	1-Methyl- 2-Pyrrolidone	HNO3 + H2O2	0.25	120 min	200
2311	Yes	Further Grinded	N-Methyl-Pyrrolidone	20.0g Sodium hydroxide and 30.0g Sodium carbonate in 1L water	0.1	120	60
2314	Yes	Further Cut		HNO3	0.5	2hrs	200
2316	Yes	Further Grinded	Toluene	1) Sodium Hydroxide (NaOH) 2) Sodium Carbonate (NA2CO3)	0.5	110 min.	160
2339	No	Used as received		HNO3/HF	0.2	30 min	200
2347	Yes	Further Cut					
2350	Yes	Further Grinded	NMP	NaOH + Na2CO3 with water	0.1	60 mins	Ultrasonication at 60 °C
2352	Yes	Further Grinded					
2353	Yes	Further Cut	NMP	HNO3	0.25	40 minutes	210
2355	Yes	Further Cut	NMP	20gNaOH+30gNa2CO3 in 1L water	0.1	60min	60
2357	Yes	Used as received					
2358	Yes	Further Cut	NMP	HNO3	0.25	40 mins	210
2363	Yes	Further Grinded	N-Methyl-pyrrolidone	Cr6+: 0.5mol/L NaOH, 0.28mol/L Na2CO3 others:HCl+HNO3+HF	Cr6+: 0.1g others:0.1~0.2g	Cr6+: 3h	Cr6+: 60°C
2365	Yes	Further Grinded	NMP	NaOH+NaCO3	0.1	2h+1h	60
2366	Yes	Further Cut	10ml NMP solution followed by 20ml NaOH and Na2CO3 digestion solution	20g NaOH and 30g Na2CO3 dissolve in DI water, and make up to 1L	0.1	3hours	60
2369	Yes	total heavy metal: further cut Cr6+: further grinded					
2370	Yes	Further Grinded	NMP	sodium carbonate & sodium hydroxide	0.1	60 minutes	60
2372	Yes	Further Cut	N-methylpyrrolidone (NMP) solvent	Na2CO3+NaOH	0.1	60 mins	60
2374	No	Used as received	have no capability	HNO3:HCl:HF = 8:2:1	0.1	NA	NA
2375	Yes	Further Cut					
2378	Yes	Further Grinded		10 ml of concentrated nitric acid and 4 ml of hydrogen peroxide	0.15	15min	190

Lab	ISO 17025 accred	sample grinded or cut	Cr6+: dissolve/swell solvent	Cr6+: digestion solution	Cr6+: sample intake (g)	Cr6+: extraction time (min)	Cr6+: extraction temp (°C)
2379	Yes	Further Cut					
2380	Yes	Further Cut		7 ml HNO3, 1 ml H2o2,1ml HBF4,0.5 ml HCLO4	6	70 mins	210
2381	Yes	Further Cut					
2382	Yes	Further Cut	DMP	EN 16711-1 HCl, HNO3,HF IEC 62321-7-2 NaOH,Na2CO3	EN 16711-1 0.1 IEC 62321-7-2 0.1	IEC 62321-7-2 180	EN 16711-1 200 IEC 62321-7-2 60
2384	Yes	Further Cut	Alkaline Digestion Solution.	Sodium Hydroxide, Sodium Carbonate and Water	0.2	180	60
2385	Yes	Further Grinded	NaOH + Na2CO3	20 g NaOH + 30 g Na2CO3 per liter	0,15 to 0,25	1 h for dissolution in NMP 1 h for the alkaline extraction	60
2387	Yes	Further Grinded	N-Methyl-Pyrrolidone (NMP)	NaOH and Na2CO3	0.5	180	60
2390	---	---					
2391	Yes	Further Cut	N-methyl-2-pyrrolidone	5ml Nitric Acid + 5ml Sulphuric Acid	0.10	60min	60
2410	Yes	Used as received		NaOH, Na2CO3	0.1	60 min	60
2415	Yes	Further Cut		K2CO3 + Na2CO3	0.15	40min	90
2425	Yes	Further Cut		Nitric acid and hydrogen peroxide solution	0.1	90 minutes	150-190
2426	Yes	Used as received	N-mythyl purrolidone (NMP)	Nitric Acid (HNO3) and Hydrogen PerOxide (H2O2)	0.1	60 min	210
2431	Yes	Used as received	N-Methyl-pyrrolidone	HNO3, HCl	0.1	30mins	200
2433	---	---					
2444	Yes	Used as received	NaOH/Na2CO3				
2445	Yes	Used as received					
2453	No	Used as received	NA				
2459	Yes	Further Cut		20gm NaOH and 30gm Na2CO3	0.1	60 minutes	60
2460	Yes	Used as received	NMP				
2475	Yes	Used as received	NMP (N-Methyl-2-pyrrolidone)				
2476	Yes	Further Cut		10 ml concentrated Nitric Acid	0.2	60 mins (with digestion solution)	Microwave temp. ramping program
2482	Yes	Used as received	Nitric Acid	DIN EN 62321-7-2:2017-12	0.1	Microwave digestion (26 mins)	Up to 160°C
2486	Yes	Used as received	NMP	For 16711-1: 10 mL of concentrated HNO3 and 1 mL of 30% H2O2. For EN1122: 10 ml of the H2SO4 and then 25 ml H202.	16711-1: 0.2 g EN 1122: 0.5 g	16711-1: 120 min EN 1122: 150 min	For 16711-1: The extraction temperature was 210°C. For EN 1122: The extraction temperature was 300°C.
2488	Yes	Used as received	NaOH + Na2CO3				
2489	Yes	Further Cut					
2492	Yes	Further Cut	NMP				
2493	Yes	Used as received		5ml nitric acid and 2ml hydrogen peroxide	0.5	50 min	230
2495	Yes	Used as received		HNO3 / HCl / H2O2 7.5/2.5/1	0.1		
2497	---	---	N-Methyl-pyrrolidone (NMP)				
2500	Yes	Further Cut	NMP	Sample#19600: con. HNO3; Sample#19601: EN1122 H2SO4 + H2O2	about 0.2 grams	60 minutes	210
2504	Yes	Further Cut		NaOH + Na2CO3	0.1	180 min	60
2511	Yes	Used as received					
2514	Yes	Further Cut	Ref IEC 62321-7-2 - followed directly	HNO3+H2O2	0.165gm/0.2115gm	45 minutes	200
2529	Yes	Used as received		5mL of HNO3	0.150	30 minutes (microwave)	240

Lab	ISO 17025 accred	sample grinded or cut	Cr6+: dissolve/swell solvent	Cr6+: digestion solution	Cr6+: sample intake (g)	Cr6+: extraction time (min)	Cr6+: extraction temp (°C)
2532	Yes	Further Cut	NMP dissolved, and digest with NaOH+Sodium Carbonate.	9ml HNO3 + 3 ml HCL+ 1ml H2o2	0.1	1 hr	as per microwave digestion @ 200°C , Hold time - 25 mints ,Ramp -15 mints
2549	Yes	Further Cut		Sulphuric acid, Nitric acid and Peroxide	0.2	3 hrs	220 in microwave
2560	Yes	Further Cut	1-methyl-2-pyrrolidone (NMP)	HNO3+H2O2	19600: 6.015 19601: 6.011	65	190
2561	---	---	----				
2563	Yes	Used as received	Cr VI was not performed (NP)	nitric acid + HF	~0,2	60	255
2564	---	---					
2568	Yes	Further Grinded	Not applicable.	With alkali digestion by microwave	0.15	1.5hr	160
2571	Yes	Further Grinded		NaOH, Na2CO3, MgCl2, Phosthate buffer	2	180 min	90~95
2582	Yes	Used as received Cr6+: further grinded		3051A -9 mL of conc.HNO3+ 3.00mL of conc.HCl EN1122- conc.H2SO4 + H2O2	0.5000	3051A - 20 mm(microwave digestion) EN1122 - When no more organic matter remains	3051-A -175°C EN1122 - higher temperature
2590	Yes	---	10ml NMP; 200mg MgCl2; 0.5ml of 0.5mol/L phosphate buffer;20 ml digestion solution				
2591	Yes	Further Cut	NMP				
2612	Yes	Further Cut		20 g NaOH + 30 g Na2CO3 in 1 L H2O	0,15	90 min	155
2624	No	Used as received					
2629	Yes	Used as received		Alkaline digestion solution: 0.5M Sodium hydroxide and 0.5M Sodium carbonate	1.0	60 minutes after addition of alkaline solution	90
2632	Yes	Used as received	-	10% HNO3	0.2±0.01g	50 minutes	180°C~200
2637	Yes	Used as received					
2642	Yes	Further Cut	1-Methyl- 2-Pyrrolidone		0.1		
2644	Yes	Used as received	N-Methyl-Pyrrolidone	HNO3 70% + HCl 37%	0.5	45	120
2668	Yes	Further Cut		Nitric acid,Sulphuric acid and peroxide	0.2 to 0.5	2 Hrs	220 on Microwave
2674	Yes	Used as received	Toluene	10mL NMP+20ml alkaline for 0.1g samples	about 0.1	180 min	60
2678	No	Further Cut		HNO3/HF	0.15	6 hours	200
2705	---	---					
2734	Yes	Used as received	NMP				
2736	Yes: Pb+Cd	Used as received		Nitric and Hydrochloric acids 10:1	0.15	35 minutes	250
2737	Yes	Further Cut	NMP	HNO3	0.1	60min	200
2741	Yes	Further Cut	NMP				
2773	Yes	Further Cut		NaOH/Na2CO3	2.5	180 minutes	90
2791	---	---	NMP				
2794	Yes	Used as received	N-Methyl-pyrrolidone				
2798	Yes	Used as received	NMP	HNO3/HCL	~0.1	45mins	200
2804	No	Used as received	10ml NMP solution followed by 20ml NaOH and Na2CO3 digestion solution				
2812	Yes	Further Cut		HNO3	-	-	-
2826	Yes	Used as received	NMP	20g NaOH + 30g Na2CO3 in 1L water	0.1	60	60
2827	Yes	Further Cut	N-methylpyrrolidone (NMP) solvent	10ml HNO3, 2ml H2SO4 and 4ml H2O2	0.5	80	150 to 200 (Gradient)
2829	Yes	Further Cut	have no capability				
2833	No	Used as received					

Lab	ISO 17025 accred	sample grinded or cut	Cr6+: dissolve/swell solvent	Cr6+: digestion solution	Cr6+: sample intake (g)	Cr6+: extraction time (min)	Cr6+: extraction temp (°C)
2835	Yes	Further Cut		20g sodium hydroxide + 30g sodium carbonate	0.5	3hrs sonication	60
2853	Yes	Used as received		Nitric acid	0.1	60	200
2857	Yes	Further Cut	Digestion solution (Sodium hydroxide & sodium carbonate)	20 g/L NaOH + 30 g/L Na2CO3	0.1	60 for Dissolution in NMP and another 60 for digestion in NaOH/Na2CO3 digestion solution	60
2864	Yes	Used as received		HCL HNO2 H20 HF	0.2	60	210
2867	Yes	Further Cut	NMP,MgCl2,H3PO3 buffer	8mLHNO3+2mLHCl	0.1	35min	210
2877	No	Used as received	N-Methyl-Pyrrolidone	20 g of sodium hydroxide and 30.0 g of sodium carbonate in one liter milli Q water.pH-13.7	0.5	60 minutes	92.0
2883	Yes	Used as received	NMP	10:1 Nitric Acid:hydrogen peroxide	0.2	50	220
2885	No	Used as received	NMP				
2892	Yes	Used as received		NaOH and Na2CO3	0.1	60 mins	60-65
2898	Yes	Used as received	N-Methyl-Pyrrolidone (NMP)	nitric acid	0.2	60	200
2900	Yes	Used as received	NMP	Sodium hydroxide (NaOH) + Sodium carbonate (Na2CO3) + water	About 0.1 g	About 3 hours	About 65 degree
3100	Yes	Further Grinded	THF	20g/L NaOH,30g/L Na2CO3	0.1	180minutes	60
3110	Yes	Used as received	Not applicable	EN1122: Sulphuric acid In-house: Nitric acid and hydrochloric acid CPSC: Nitric acid	0.1		
3116	Yes	Used as received	-	H2SO4 + H2O2 HNO3			
3118	---	---					
3122	---	---					
3124	Yes	Used as received		HNO3+HCl+HF	0,15-0,2	65% HNO3 37% HCl 40% HF	
3127	Yes	Further Cut		Nitric acid digestion	#19600: about 0.4 #19601: about 0.3		
3146	Yes	Used as received		4,5 ml HNO3 + 1,5 ml HCl => after digestion + 44 ml demin. H2O => 50 ml Volume	0,25 g sample in 50 ml	Digestion 30:00 min => 30:00 min cooling	250
3150	Yes	Used as received	NMP	HNO3	0,1		
3153	Yes	Further Grinded		20g NaOH and 30g Na2CO3 in 1000ml water	0.1	180 mins	60
3154	Yes	Used as received					
3160	Yes	Used as received	not Applicable	HNO3/HCl/H2O2/HF	0,15	35 min	210
3163	No	Used as received		x			
3166	Yes	Further Grinded	Test not performed.	NaOH/Na2CO3	0.5	60	70
3172	Yes	Used as received		Nitric Acid	0.1	60	210
3182	Yes	Further Grinded		Na2CO3 and NaOH	0.1	180 minutes	60
3185	Yes	Further Cut		Dissolve 20.0g±0.05g NaOH and 30.0g±0.05g Na2CO3 in water in all volumetric flask and dilute to the mark.	0.1	180min	60
3190	Yes	Further Grinded		Digestion solution: Dissolve 20.0g±0.05g NaOH and 30.0g±0.05g Na2CO3 in water in 1L volumetric flask and dilute to the mark. Store the solution in a tightly capped polyethylene bottle at 20℃ to 25℃	0.1000	120	60
3197	Yes	Further Cut		30 g Na2CO3 20 g NaOH Dissolved in 1000 mL distilled water	0,1	120 minutes (with NMP) 60 minutes (with	60

Lab	ISO 17025 accred	sample grinded or cut	Cr6+: dissolve/swell solvent	Cr6+: digestion solution	Cr6+: sample intake (g)	Cr6+: extraction time (min)	Cr6+: extraction temp (°C)
						digestion solution)	
3200	Yes	Used as received		no			
3209	Yes	Used as received	No				
3210	Yes	Used as received	N-Methyl-pyrolidone (NMP)	5ml HNO3 1ml HCl	0.1	45	240
3213	Yes	Further Grinded		IEC 62321-4, 5 :70% HNO3 IEC 62321-7-2 : NaOH+Na2CO3	0.1 g for each test	IEC 62321-4, 5: 76 min IEC 62321-7-2 : 60 min	IEC 62321-4, 5: 210 Celsius IEC 62321-7-2 : 60 Celsius
3214	Yes	Further Grinded		NaOH+Na2CO3	0.15	120	60
3225	Yes	Further Cut	N/A	EN 1122:H2SO4 CPSC-CH-E1002-08.3:HNO3	EN 1122: 0.5g CPSC-CH-E1002-08.3:0.1g	60	>100
3228	Yes	Further Cut	Chromium VI is not reported	20g NaOH +30g Na2CO3 in water make up to 1L	0.1	120min NMP and 60min digestion	60
3237	No	Used as received		Nitric acid, HCl	0,2		
3239	Yes	Further Grinded	Digestion Solution prepared with Sodium Hydroxide & Sodium Carbonate	NaOH & Na2CO3	1.25	180	90
3248	Yes	Used as received			0.15 g (CPSC/CPSIA,) 0.5 g (EN 1122)		
8005	Yes	Used as received		HNO3			
8008	---	---					

APPENDIX 4

Number of participants per country

7 labs in	BANGLADESH
1 lab in	BELGIUM
1 lab in	BRAZIL
1 lab in	CANADA
1 lab in	DENMARK
1 lab in	EGYPT
2 labs in	FINLAND
8 labs in	FRANCE
14 labs in	GERMANY
2 labs in	GUATEMALA
22 labs in	HONG KONG
1 lab in	HUNGARY
15 labs in	INDIA
3 labs in	INDONESIA
9 labs in	ITALY
1 lab in	JAPAN
1 lab in	LUXEMBOURG
4 labs in	MALAYSIA
1 lab in	MAURITIUS
3 labs in	MEXICO
1 lab in	MOROCCO
27 labs in	P.R. of CHINA
3 labs in	PAKISTAN
1 lab in	PHILIPPINES
1 lab in	PORTUGAL
3 labs in	SINGAPORE
10 labs in	SOUTH KOREA
4 labs in	SPAIN
1 lab in	SRI LANKA
1 lab in	SWEDEN
8 labs in	TAIWAN R.O.C.
5 labs in	THAILAND
2 labs in	THE NETHERLANDS
2 labs in	TUNISIA
6 labs in	TURKEY
5 labs in	U.S.A.
1 lab in	UNITED KINGDOM
8 labs in	VIETNAM

APPENDIX 5

Abbreviations:

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported

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