Results of Proficiency Test
Metals content in Polymers
September 2018

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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Report: iis18P06

November 2018

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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.
Therefore, a proficiency-testing scheme (laboratory-evaluating interlaboratory study) for the determination of metals in plastics is organised by the Institute for Interlaboratory Studies since 1998. Starting with only total Cadmium, over the years the scope was extended with total Antimony, total Chromium, Chromium (VI), total Cobalt, total Copper, total Lead, total Mercury and total Nickel content.
In this interlaboratory study, 174 laboratories in 39 different countries registered for participation. See appendix 4 for the number of participants per country. In this report, the results of the 2018 Metals content 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 organiser of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory. It was decided to send 2 different polymer samples labelled #18600 and #18601 of approximately 6 grams each which were both artificially fortified on a number of elements. The participants were requested to report rounded and unrounded test results and some details of the test methods used. 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/IEC 17043:2010 (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 organisation 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 samples, 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 #18600 and #18601. Sample #18600 consisted of purple PVC squares and sample #18601 was beige PBT (Polybutylene terephthalate) granulate.

The homogeneity of the subsamples #18600 was checked by determination of total levels of Antimony, Cadmium and Hexavalent Chromium, according to an in-house method on 8 stratified randomly selected subsamples, see table 1:

	Antimony in mg/kg	Cadmium in mg/kg	Chromium 6+ in mg/kg
sample #18600-1	273.0	75.4	89.6
sample #18600-2	269.5	72.1	89.1
sample #18600-3	271.3	74.4	91.1
sample #18600-4	265.8	73.6	88.7
sample #18600-5	270.5	76.3	92.4
sample #18600-6	269.9	77.0	91.3
sample #18600-7	268.3	74.2	92.2
sample #18600-8	273.5	75.5	90.0

Table 1: homogeneity test results of subsamples #18600

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 ISO 13528, Annex B2 in the next table:

	Antimony in mg/kg	Cadmium in mg/kg	Chromium 6+ in mg/kg
r (observed)	7.0	4.4	3.9
reference method	Horwitz	EN1122:01	Horwitz
0.3 x R (ref. method)	15.6	5.6	6.2

Table 2: evaluation of the repeatabilities of subsamples #18600

The homogeneity of the subsamples #18601 was checked by determination of total levels of Cadmium, Chromium and Lead, according to an in-house method on 8 stratified randomly selected subsamples, see table 3:

	Cadmium in mg/kg	Chromium in mg/kg	Lead in mg/kg
sample #18601-1	139.8	50.9	88.6
sample #18601-2	144.8	49.4	92.8
sample #18601-3	143.0	49.2	89.6
sample #18601-4	136.6	49.7	88.7
sample #18601-5	142.6	50.1	89.2
sample #18601-6	138.9	50.5	92.4
sample #18601-7	139.2	48.3	88.3
sample #18601-8	141.4	50.9	87.4

Table 3: homogeneity test results of subsamples #18601

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 ISO 13528, Annex B2 in the next table:

	Cadmium in mg/kg	Chromium in mg/kg	Lead in mg/kg
r (observed)	7.4	2.5	5.5
reference method	EN1122:01	Horwitz	Horwitz
0.3 x R (ref. method)	9.0	3.7	6.1

Table 4: evaluation of the repeatabilities of subsamples #18601

The calculated repeatabilities listed in tables 2 and 4 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 1 * sample, labelled #18600 and 1 * sample, labelled #18601 was sent on August 8, 2018.

2.5 ANALYSES

The participants were requested to determine on both samples: total Antimony, total Cadmium, total Chromium, Hexavalent Chromium, total Cobalt, total Copper, total Lead, total Mercury and total Nickel. Also, some additional questions were asked about the determination of Hexavalent Chromium.

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’ 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 reference test methods 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 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 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 reanalysis). Additional or corrected test results are used for data analysis and original results are placed under 'Remarks' in the 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 organisation 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 analysis 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 "x". 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, e.g. ASTM or ISO reproducibilities, 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.

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 of appendix 1.

Absolute values for z<2 are very common and absolute values for z>3 are very rare.
Therefore, 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, no problems were encountered with the dispatch of the samples. Eleven participants reported results after the final reporting date and eight participants did not report any results at all due to various reasons. Not all laboratories were able to report all elements requested.
Finally, the 166 reporting laboratories submitted 1471 numerical results. Observed were 46 outlying results, which is 3.1% 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.

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 Hexavalent Chromium, Lead and Mercury (and Cadmium) in polymers and electronics, the method IEC62321:2008 was considered the official test method. However, in 2013, for the latest version of part 5 of this test method, the scope was changed and only Lead and Chromium (and Cadmium) were listed in the scope of the method. In the 2013 version of this test method (part 5, again only for Cadmium, Lead and Chromium), precision data are mentioned. Regretfully 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. Therefore, it was decided not to use the precision data mentioned in IEC62321-5:2013, but to estimate the reproducibility from the Horwitz equation.

For the determination of Antimony and Copper, no test methods are available. Therefore, it was decided to estimate the reproducibility requirements from the Horwitz equation.

4.1 EVALUATION PER SAMPLE AND PER ELEMENT

In this section, the results are discussed per sample and per element.

Sample #18600:

Total Antimony: This determination may be problematic. Four statistical outliers were observed and twenty-two other test results were excluded. The samples were made positive for Antimony by fortification with 270 mg Sb/kg. Therefore, the minimal concentration which the laboratories should be able to find was at least 218 mg/kg (270 mg/kg – 52 mg/kg, based on $R_{Horwitz}$). Therefore, the test results lower than 218 mg/kg were excluded from the statistical evaluation. Unfortunately, the calculated reproducibility after rejection of the suspect data is still not in agreement with the reproducibility requirement estimated from the Horwitz equation.

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

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

Total Chromium VI: This determination may be problematic for a number of laboratories. No statistical outliers were observed, but twenty-nine test results were excluded. The samples were made positive for Hexavalent Chromium by fortification with 91 mg Cr6+/kg. Therefore, the minimal concentration which the laboratories should be able to find was at least 70 mg/kg (91 mg/kg – 21 mg/kg, based on $R_{Horwitz}$). Therefore, test results lower than 70 mg/kg were excluded from the statistical evaluation.
The calculated reproducibility after rejection of the suspect data is in agreement with the reproducibility requirement estimated from the Horwitz equation.

Total Mercury: This determination may be very problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of statistical outliers is not at all in agreement with the reproducibility requirement estimated from the Horwitz equation.

Other metals: The majority of participants agreed on a content of <10 mg/kg for Cobalt, Copper, Lead and Nickel.

Sample #18601:

Total Antimony: This determination may be problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the reproducibility requirement estimated from the Horwitz equation.

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

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

Total Copper: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of statistical outliers is in agreement with the reproducibility requirement estimated from the Horwitz equation.

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

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

Other metals: The majority of participants agreed on a content of <10 mg/kg for Hexavalent Chromium, Cobalt and Nickel.

4.2 PERFORMANCE EVALUATION OF THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The average results per sample, the calculated reproducibilities and the reproducibilities derived from EN1122 or from the Horwitz equation are compared in the next tables.

Element	unit	n	average	2.8 * sd	R (target)
Total Antimony as Sb	mg/kg	83	291.0	87.2	55.5
Total Cadmium as Cd	mg/kg	154	87.4	28.2	21.8
Total Chromium as Cr	mg/kg	120	94.2	18.1	21.3
Total Chromium as Cr6+	mg/kg	25	77.4	13.7	18.0
Total Mercury as Hg	mg/kg	120	79.1	43.4	18.3

Table 5: performance overview for sample #18600

Element	unit	n	average	2.8 * sd	R (target)
Total Antimony as Sb	mg/kg	100	31.7	12.4	8.4
Total Cadmium as Cd	mg/kg	158	144.0	30.4	36.0
Total Chromium as Cr	mg/kg	124	47.8	9.7	12.0
Total Copper as Cu	mg/kg	91	140.1	25.4	29.8
Total Lead as Pb	mg/kg	159	89.8	17.8	20.4
Total Mercury as Hg	mg/kg	118	57.0	13.9	13.9

Table 6: performance overview for sample #18601

Without further statistical calculations, it can be concluded that there is good compliance with the relevant target reproducibility for Chromium and Hexavalent Chromium with sample #18600, and for Cadmium, Chromium, Copper, Lead and Mercury for sample #18601.

4.3 COMPARISON OF THE PT OF SEPTEMBER 2018 WITH PREVIOUS PROFICIENCY TESTS

	September 2018	*September 2017*	*September 2016*	*September 2015*	*September 2014*
Number of reporting labs	166	167	142	161	181
Number of test results	1471	960	1041	1250	1078
Statistical outliers	46	24	24	38	56
Percentage outliers	3.1%	2.5%	2.3%	3.0%	4.9%

Table 7: comparison with previous proficiency tests

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

The evolution of the reproducibilities for the elemental content as observed in this proficiency scheme and the comparison with the findings in previous rounds are visualized in table 8:

	50-300 mg Sb/kg	25-300 mg Cd/kg	50-500 mg Pb/kg	25-250 mg Co/kg	25-250 mg Cr/kg	50-250 mg CrVI/kg	25-300 mg Cu/kg	5-250 mg Hg/kg	25-250 mg Ni/kg
2002-2009	--	7-18%	7-36%	--	9-15%	55-76%	--	37-46%	--
2010	--	8-10%	9%	--	10%	23%	--	32%	--
2011	--	9%	8-11%	--	19-23%	64%	--	20%	--
2012	--	7-8%	6-8%	--	7-16%	48-57%	--	23-43%	--
2013	--	8-9%	7-9%	--	9-22%	39%	--	14-32%	--
2014	--	7%	10%	11%	11%	42%	--	18%	--
2015	9%	8-9%	11%	10%	11-24%	66%	7%	13-24%	--
2016	--	9%	10%	8%	10%	52%	8%	8-14%	9%
2017	10%	8%	6%	8%	--	--	--	--	10%
2018	11-14%	8-12%	7%	--	7%	6%	6%	9-20%	--
EN1122	--	9%	--	--	--	--	--	--	--
Horwitz	7-9%	--	6-9%	7-10%	7-10%	7-9%	7-10%	7-13%	7-10%

Table 8: comparison over the years of the uncertainties (%) of current PT with previous PT's

In general, it can be concluded from the uncertainties that the quality of the analysis of total metal content in polymers of this PT is comparable to previous years.

4.4 EVALUATION ANALYTICAL DETAILS

For this PT some analytical details were requested, see appendix 3. Based on the answers given by the participants the following can be summarized:
114 of the 142 reporting participants (= 80%) mentioned that they are accredited for determination of total metals in polymer.
The other questions were about the Hexavalent Chromium determination specific, answered by around fifty participants: thirty-eight participants mentioned that they have further cut/grinded the samples before use, twelve participants used the samples as received. The median extraction time was 180 minutes, and the median extraction temperature was 60°C. As expected most participants used an alkaline solution to extract the Cr6+. This should be more effective than acidic solution as mentioned in IEC 62321-7-2. Regarding the question about the solid liquid ratio we received too widely divergent answers to conduct a meaningful evaluation.
When evaluating the results of the excluded group only, those with a Cr6+ result <70 mg/kg, it is observed that this group has a median extraction time of 105 minutes and a median extraction temperature of 93°C. This is deviating from method IEC62321-7-2 which mention an extraction time of 180 minutes in total at 60°C. Furthermore, relatively less participants in this group have been cutting the sample in smaller pieces and use the sample as received.

5 DISCUSSION

The evaluation of Antimony and Hexavalent Chromium in sample #18600 was problematic. Twenty-two test results for Antimony and twenty-nine test results for Hexavalent Chromium were excluded from the statistical evaluation to get a reliable estimate of the consensus value. Just recently the International Standard organisation IEC has updated their method for the Hexavalent Chromium determination to version IEC62321-7-2, where it states that the presence of Antimony strongly affects the Cr(VI) extraction. Since Antimony was present in sample #18600 this may be a reason why this determination was problematic.
Furthermore, it is striking that the determination of Mercury in sample #18600 (PVC) may be very problematic while the calculated reproducibility for the Mercury determination in sample #18601 (PBT) was spot on with the reproducibility requirement estimated from the Horwitz equation: maybe the type of polymer may be the main cause of the large variation observed. In general, the PBT sample #18601 show better reproducibilities than the PVC sample #18600.

6 CONCLUSION

In this proficiency test the total metals content in two different type of polymers were identified. The large variations observed in this interlaboratory study can be caused by the preparation or the conditioning of the sample and/or by the performance of the analysis by the participating laboratory. Consequently, the reproducibility cannot be improved by only one change in the analysis. Each laboratory has to evaluate its performance in this study and make decisions about necessary corrective actions. 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

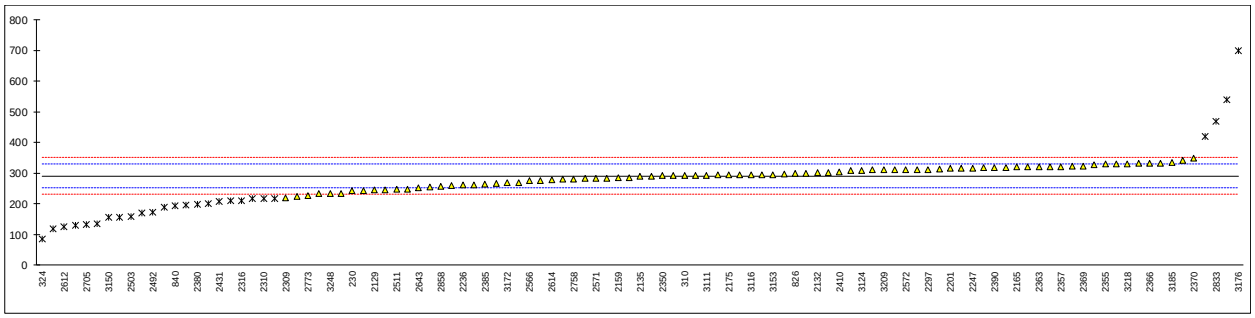
Determination of total Antimony as Sb on sample #18600; results in mg/kg

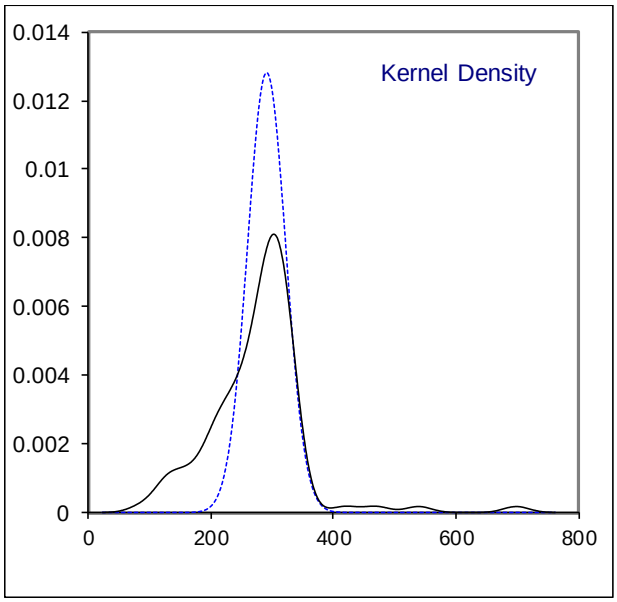
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	314.8772		1.20	2378	In house	317.6		1.34
213		-----		-----	2379		-----		-----
230	In house	242.2		-2.46	2380	EPA3051	197.5	ex	-4.72
310	In house	292.0		0.05	2381		-----		-----
324	IEC62321-5	86.462	ex	-10.32	2382	EPA3052	319.9		1.46
330		-----		-----	2384				-----
339	In house	297.54		0.33	2385	EPA3051	264.5		-1.34
348		-----		-----	2387		-----		-----
523	EPA3052	253.925		-1.87	2389		-----		-----
551	IEC62321-5	200.2	ex	-4.58	2390	CPSC-CH-E1002-08.1	318.71	C	1.40
623	In house	319.24		1.42	2410	EPA3052	305		0.71
826	EPA3052	298.8		0.39	2424	In house	333		2.12
840	EPA3052	194.13	ex	-4.89	2426		285.58		-0.27
841	EPA3052	217	ex	-3.73	2431	In house	208.4456	ex	-4.16
1051		-----		-----	2432		-----		-----
1082		-----		-----	2433		-----		-----
1126		-----		-----	2444		-----		-----
1128	In house	418.8	R(0.01)	6.45	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	232.4		-2.96	2460		-----		-----
2118	EN16711-1	294.82		0.19	2475		-----		-----
2120		-----		-----	2488		-----		-----
2129	* see below table	245		-2.32	2492	In house	173.06	ex	-5.95
2132	CPSC-CH-E1002-08	300.48		0.48	2495		-----		-----
2135	In house	290.20		-0.04	2503	In house	159.3	ex	-6.64
2137	IEC62321-5	292		0.05	2504	IEC62321-5	262.10		-1.46
2138	In house	299.30		0.42	2511	In house	247.8		-2.18
2146		-----		-----	2514		-----		-----
2159	EN16711-1	285.33		-0.29	2529		-----		-----
2165	In house	319.39		1.43	2553	EPA3051	130.11	ex,C	-8.12
2175	EPA3052	294.18		0.16	2561	In house	267		-1.21
2182		-----		-----	2564		-----		-----
2184		-----		-----	2566	EPA3051A/3052mod	275.0		-0.81
2190	In house	189.2	ex	-5.14	2569	In house	216.3	ex	-3.77
2197		-----		-----	2571	IEC62321-3-1	283.50		-0.38
2201	IEC62321-5	314.6		1.19	2572	IEC62321-5	311.5		1.03
2202	IEC62321-5	331.1		2.02	2573		-----		-----
2212	In house	292		0.05	2582	EPA3051	135.1	ex	-7.86
2213	ISO8124-5	259.11		-1.61	2590	CPSC-CH-E1002-08	329.914	C	1.96
2216		-----		-----	2591		-----		-----
2218		-----		-----	2612	In house	124.5	ex,C	-8.40
2236	In house	261.7		-1.48	2614	EPA3051A/3052mod	278.0		-0.66
2247	EPA3051	316.92		1.31	2624		-----		-----
2255	In house	280.2		-0.55	2632	IEC62321-5	242.25		-2.46
2256		-----		-----	2642		-----		-----
2258	In house	170.53	ex	-6.08	2643	EPA3052	252.0		-1.97
2265		-----		-----	2644	EN16711-1	290.7		-0.02
2290	IEC62321-5	312.9		1.10	2674	EPA3052	310.25		0.97
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	131.6	ex	-8.04
2297	IEC62321-5	311.64		1.04	2713		-----		-----
2300	In house	340.6		2.50	2719		196	ex	-4.79
2301		157.0	ex	-6.76	2758	In house	280.8		-0.51
2309	IEC62321-5	220.0		-3.58	2773	In house	227.1		-3.22
2310	EN16711-1	216.9	ex	-3.74	2794	IEC62321-3-1	245	C	-2.32
2311	EPA3051	223.3		-3.42	2796		-----		-----
2314		-----		-----	2804		-----		-----
2316	EPA3052	210	ex	-4.09	2816		-----		-----
2320	EPA3051	118.71	ex	-8.69	2817		-----		-----
2330		-----		-----	2826	EPA3052	294.295		0.17
2347	EPA3052	327		1.82	2829		-----		-----
2350	EPA3052	291.8		0.04	2833	IEC62321-3-1	469.7	R(0.01)	9.01
2352	In house	320.4		1.48	2835		-----		-----
2353	IEC62321-5	NA		-----	2848		-----		-----
2355	EPA3052	329.10		1.92	2851		-----		-----
2357	ISO8124-5	321.4		1.53	2853		-----		-----
2358		N/A		-----	2854	IEC62321-3-1	233.50		-2.90
2363	EPA3052	320		1.46	2856		-----		-----
2365	EN16711	311.6		1.04	2857		-----		-----
2366	IEC62321-5	331.9		2.06	2858	In house	256.32		-1.75
2369	EPA3052	322.52		1.59	3110	In house	282.0		-0.45
2370	IEC62321-5	348		2.88	3111	EPA3052	292		0.05
2372	IEC62321-5	308		0.86	3116	In house	294.34		0.17
2375	In house	275.3		-0.79	3118	EN16711-1	269.286		-1.10

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	322		1.56	3185	In house	335.4		2.24
3124	EPA3052	309.15		0.92	3197	IEC62321-5	248.6		-2.14
3134		-----		-----	3209	IEC62321-5	310.08		0.96
3146	In house	284.0		-0.35	3210		-----		-----
3150	EN16711-1	156.71	ex	-6.77	3213		-----		-----
3153	IEC62321-5	295.4		0.22	3218	EPA3052	330.600		2.00
3154	IEC62321-3-1	208.97	ex	-4.14	3225		-----		-----
3160		-----		-----	3228		-----		-----
3163	In house	539	R(0.01)	12.51	3237		-----		-----
3166	In house	310		0.96	3239		-----		-----
3172	ISO8124-5	268.4		-1.14	3248	CPSC-CH-E1002-08.3	233.17		-2.92
3176	EPA3052	698.43	R(0.01)	20.55	6198		-----		-----
3182	IEC62321-5	301.50		0.53	8005	In house	293.52		0.13

normality	OK
n	83
outliers	4 (+22ex)
mean (n)	291.0065
st.dev. (n)	31.16020
R(calc.)	87.2486
st.dev.(Horwitz)	19.82295
R(Horwitz)	55.5043

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 2390 first reported: 467.44
Lab 2553 first reported: 120.14
Lab 2590 first reported: 124.000
Lab 2612 first reported: 81.68
Lab 2794 first reported: 268
ex= test result excluded, see paragraph 4.1





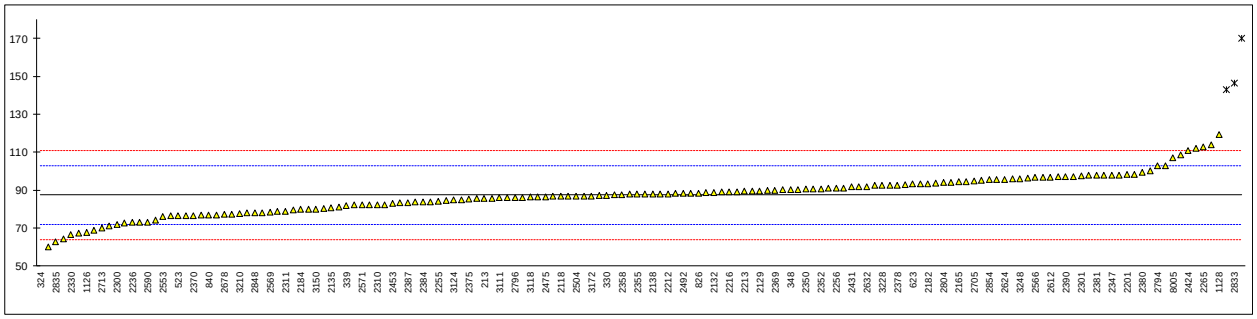
Determination of total Cadmium as Cd on sample #18600; results in mg/kg

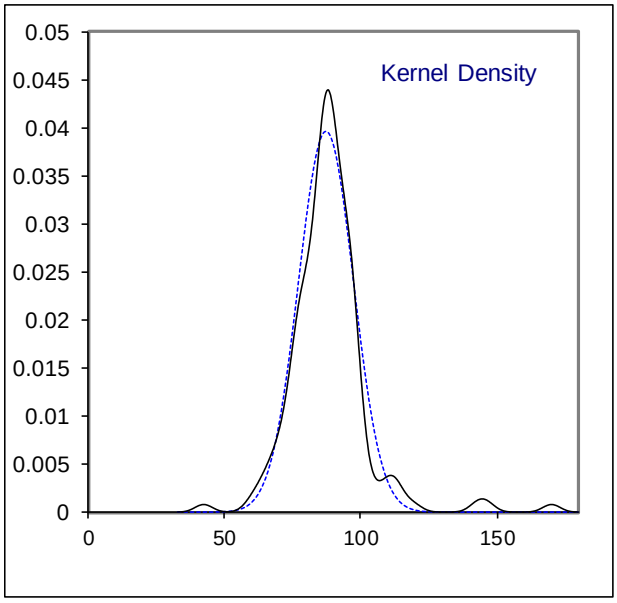
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	85.74303333		-0.21	2378	EN1122	92.7		0.68
213	CPSC-CH-E1002-08	85.8		-0.20	2379	EN1122	60		-3.51
230	EN1122	64.3		-2.96	2380	EN1122	99.237		1.52
310	In house	86.1		-0.17	2381	EN1122	97.72		1.32
324	EN1122	42.593	R(0.01)	-5.74	2382	EN1122	87.9		0.06
330	In house	87.3		-0.01	2384	IEC62321-5	83.66		-0.48
339	In house	82		-0.69	2385	EPA3051	90.1		0.35
348	In house	90.244		0.36	2387	IEC62321-5	83.39		-0.51
523	EPA3052	76.359		-1.41	2389		-----		-----
551	IEC62321-5	72.72		-1.88	2390	CPSC-CH-E1002	97.17		1.25
623	In house	93.40		0.77	2410	EN1122	98		1.36
826	IEC62321-5	88.37		0.12	2424	In house	111	C	3.02
840	IEC62321-5	76.85		-1.35	2426	EN1122	80.07		-0.94
841	EN1122	81		-0.82	2431	In house	91.6191		0.54
1051	EN1122	86.3		-0.14	2432	EN1122	86.63		-0.10
1082	In house	83.8770		-0.45	2433		-----		-----
1126	In house	67.67		-2.53	2444	IEC62321	85.8		-0.20
1128	In house	119.3		4.09	2453	EN1122	82.95		-0.57
1527		-----		-----	2459		-----		-----
2115	EN16711-1	97.7		1.32	2460	EN1122	77.369		-1.29
2118	CPSC-CH-E1002-08	86.68		-0.09	2475	EN1122	86.4		-0.13
2120	EN1122	73.0		-1.85	2488	IEC62321-5	87.8		0.05
2129	* see below table	89.5		0.27	2492	In house	88.19		0.10
2132	EN1122	88.78	C	0.18	2495		-----		-----
2135	In house	80.79		-0.85	2503	In house	108.5		2.70
2137	IEC62321-5	88.6		0.15	2504	EN1122	86.73		-0.09
2138	CPSC-CH-E1002-08	88.00		0.08	2511	EN1122	97.1		1.24
2146	In house	92.5		0.65	2514	In house	82.08		-0.68
2159	EN16711-1	93.79		0.82	2529	CPSC-CH-E1002-08.3	76.8775		-1.35
2165	EN1122	94.60		0.92	2553	EPA3051	75.96		-1.47
2175	IEC62321-5	71.2		-2.08	2561	CPSC-CH-E1002-08	76.8		-1.36
2182	EN1122	93.412		0.77	2564	CPSC-CH-E1002-08	97.2		1.26
2184	EN1122	80.0		-0.95	2566	EN1122	96.7		1.19
2190	EN1122	76.3		-1.42	2569	EN1122	78.3		-1.17
2197	In house	86.7		-0.09	2571	IEC62321-3-1	82.09		-0.68
2201	IEC62321-5	98.30		1.40	2572	IEC62321-5	94.1		0.86
2202	IEC62321-5	92.6		0.67	2573	EN1122	86.2		-0.15
2212	In house	88		0.08	2582		67.3		-2.58
2213	ISO8124-5	89.3		0.24	2590	EN1122	73.028		-1.84
2216	CPSC-CH-E1002-08	89.2		0.23	2591	CPSC-CH-E1002-08	91.0375		0.47
2218		-----		-----	2612	EN1122	96.78	C	1.20
2236	In house	72.86		-1.86	2614	EN1122	95.7		1.06
2247	EN1122	97.98		1.36	2624	EN1122	95.7		1.06
2255	EN1122	84.1		-0.42	2632	IEC62321-5	91.81		0.57
2256	IEC62321-5	91.02		0.46	2642		-----		-----
2258	In house	76.57		-1.39	2643	EPA3052	89.9		0.32
2265	EN1122	112.7		3.24	2644	EN16711-1	74.08		-1.71
2290	IEC62321-5	93.4		0.77	2674	EN1122	96.72		1.19
2293		-----		-----	2678	EN1122	77.28		-1.30
2294		-----		-----	2705	In house	95.00		0.97
2297	EN1122	89.23		0.23	2713	In house	69.83		-2.25
2300	In house	72.03		-1.97	2719		91		0.46
2301		97.4		1.28	2758	In house	95.1		0.99
2309	IEC62321-5	88.0		0.08	2773	EN1122	89.3		0.24
2310	IEC62321-5	82.29		-0.65	2794	IEC62321-3-1	102.74	C	1.97
2311	EN1122	78.7		-1.11	2796	IEC62321	86.1		-0.17
2314	CPSC-CH-E1002-08	80.4		-0.90	2804	EN1122	93.997		0.85
2316	IEC62321-5	85		-0.31	2816		-----		-----
2320	EPA3051	77.9		-1.22	2817		-----		-----
2330	EN1122	66.50		-2.68	2826	CPSC-CH-E1002-08	87.2262		-0.02
2347	EN1122	98		1.36	2829	EN1122	83.57		-0.49
2350	IEC62321-5	90.52		0.40	2833	IEC62321-3-1	146.3	R(0.01)	7.55
2352	IEC62321-5	90.6		0.41	2835	IEC62321-5	62.77		-3.16
2353	IEC62321-5	87.6		0.03	2848	IEC62321-5	78.01		-1.20
2355	QC/T 943	87.90		0.06	2851		-----		-----
2357	EN1122	88.3		0.12	2853		-----		-----
2358	EPA3051	87.6		0.03	2854	IEC62321-3-1	95.53		1.04
2363	EPA3052	84.5		-0.37	2856	KS M6956	90.59		0.41
2365	EN16711	89.2		0.23	2857		-----		-----
2366	EN1122	91.8		0.56	2858	In house	100.31		1.65
2369	IEC62321-5	89.96		0.33	3110	EN1122	90.3		0.37
2370	EN1122	76.6		-1.38	3111	EPA3052	86.0		-0.18
2372	EN1122	86.9		-0.06	3116	In house	113.9		3.40
2375	In house	85.1		-0.29	3118	EN16711-1	86.26		-0.15

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	69		-2.36	3185	EN1122	96.0		1.10
3124	EPA3052	84.985		-0.31	3197	EN1122	82.3		-0.65
3134	In house	79.50		-1.01	3209	EN1122	88.13		0.09
3146	In house	82.2		-0.67	3210	EN1122	77.7		-1.24
3150	EN16711-1	80.08		-0.94	3213	IEC62321-5	98.3		1.40
3153	EN1122	94.6		0.92	3218	CPSC-CH-E1002-08	102.800		1.97
3154	IEC62321-3-1	78.08		-1.19	3225	EN1122	96.29		1.14
3160		-----		-----	3228	EN1122	92.5		0.65
3163		170	R(0.01)	10.59	3237	In house	83.22		-0.54
3166	In house	112		3.15	3239	IEC62321-5	78.636		-1.12
3172	ISO8124-5	86.9		-0.06	3248	EN1122	96		1.10
3176	EN1122	142.90	R(0.01)	7.11	6198		-----		-----
3182	EN1122	92.86		0.70	8005	In house	107.2		2.54

normality	OK
n	154
outliers	4
mean (n)	87.3989
st.dev. (n)	10.06257
R(calc.)	28.1752
st.dev.(EN1122:01)	7.80348
R(EN1122:01)	21.8497

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 2132 first reported: 8.878
Lab 2424 first reported: 54
Lab 2612 first reported: 138.05
Lab 2794 first reported: 111





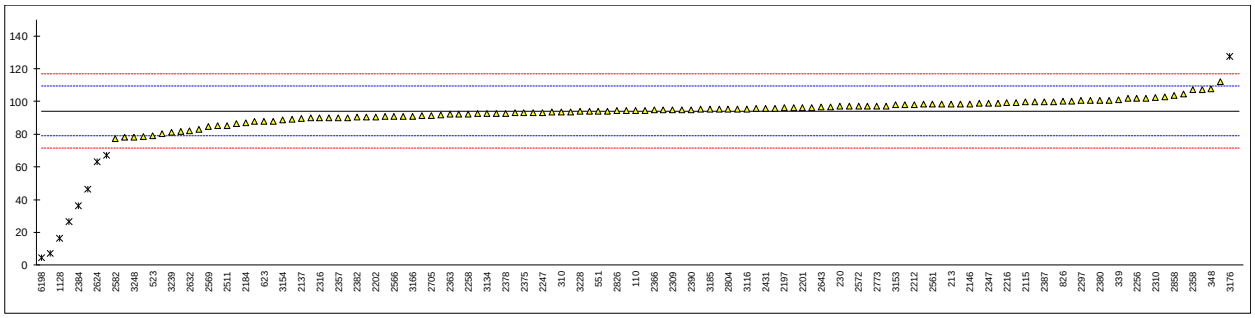
Determination of total Chromium as Cr on sample #18600; results in mg/kg

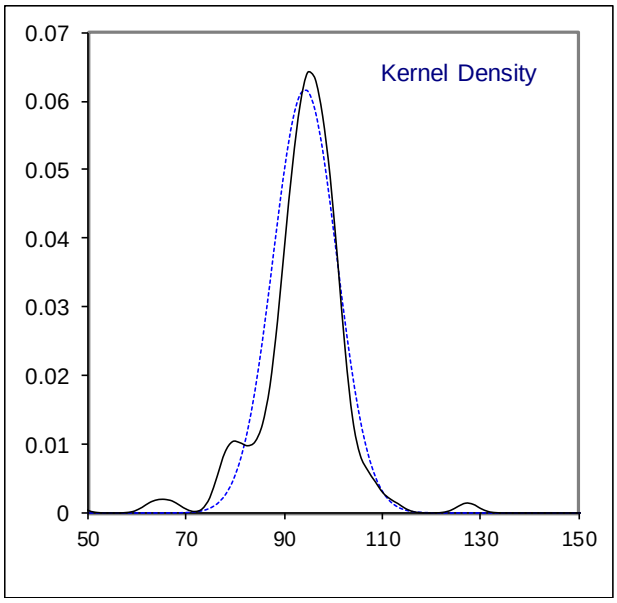
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	94.5954		0.05	2378	In house	92.8		-0.19
213	CPSC-CH-E1002-08	98.5		0.56	2379	EPA3052	90		-0.55
230	In house	97.1		0.38	2380	EPA3051	100.67		0.85
310	In house	93.5		-0.09	2381		-----		-----
324	IEC62321-5	26.575	R(0.01)	-8.89	2382	EPA3052	90.3		-0.51
330		-----		-----	2384	IEC62321-5	36.41	R(0.01)	-7.60
339	In house	101		0.89	2385	EPA3051	85.2		-1.19
348	In house	107.719		1.78	2387	IEC62321-5	99.64	C	0.71
523	EPA3052	78.955		-2.01	2389		-----		-----
551	IEC62321-5	94.07	C	-0.02	2390	CPSC-CH-E1002-08.1	95.07		0.11
623	In house	87.95		-0.82	2410	IEC62321-5	95		0.10
826	EPA3052	100.3		0.80	2424	In house	67	R(0.01)	-3.58
840	IEC62321-5	97.98		0.50	2426		96.42		0.29
841	EPA3052	95		0.10	2431	In house	95.7159		0.20
1051		-----		-----	2432		-----		-----
1082	In house	99.3584		0.68	2433		-----		-----
1126		-----		-----	2444		-----		-----
1128	In house	16.4	R(0.01)	-10.23	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	99.6		0.71	2460		-----		-----
2118	EN16711-1	93.76		-0.06	2475		-----		-----
2120		-----		-----	2488	IEC62321-5	112		2.34
2129	* see below table	98.3		0.54	2492	In house	100.75		0.86
2132	CPSC-CH-E1002-08	97.34		0.41	2495		-----		-----
2135	In house	87.86		-0.84	2503	In house	100.6		0.84
2137	IEC62321-5	89.8		-0.58	2504	IEC62321-5	91.01		-0.42
2138	In house	99.81		0.74	2511	In house	85.3		-1.17
2146	In house	98.6		0.58	2514		-----		-----
2159	EN16711-1	94.59		0.05	2529		-----		-----
2165	IEC62321-5	96.68		0.32	2553	EPA3051	90.14	C	-0.54
2175	EPA3052	91.24		-0.39	2561	In house	98.4		0.55
2182		-----		-----	2564		-----		-----
2184	IEC62321-5	86.8		-0.97	2566	EPA3051A/3052mod	91.0		-0.42
2190	In house	97.1		0.38	2569	In house	84.6		-1.26
2197	In house	96.1		0.25	2571	IEC62321-3-1	94.68		0.06
2201	IEC62321-5	96.40		0.29	2572	IEC62321-5	97.1		0.38
2202	IEC62321-5	90.7		-0.46	2573		-----		-----
2212	In house	98		0.50	2582	EPA3051	77.2		-2.24
2213	ISO8124-5	97.32		0.41	2590	CPSC-CH-E1002-08	90.809	C	-0.45
2216	IEC62321-5	99.2		0.66	2591		-----		-----
2218		-----		-----	2612	In house	104.53		1.36
2236	In house	80.18		-1.85	2614	EPA3051A/3052mod	94.1		-0.02
2247	EPA3051	93.18		-0.14	2624	In house	63.3	R(0.01)	-4.06
2255	In house	95.6		0.18	2632	IEC62321-5	82.21		-1.58
2256	IEC62321-5	101.85		1.00	2642		-----		-----
2258	In house	92.36		-0.24	2643	EPA3052	96.6		0.31
2265		-----		-----	2644	EN16711-1	92.33		-0.25
2290	IEC62321-5	95.5		0.17	2674	IEC62321-5	96.11		0.25
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	91.6		-0.34
2297	IEC62321-5	100.43		0.82	2713		-----		-----
2300	In house	81.47		-1.68	2719		99		0.63
2301		92.5		-0.23	2758	In house	98.5		0.56
2309	IEC62321-5	95.0		0.10	2773	In house	97.32		0.41
2310	IEC62321-5	102.2		1.05	2794	IEC62321-3-1	86.7	C	-0.99
2311	EPA3051	101.8		1.00	2796		-----		-----
2314		-----		-----	2804	In house	95.456		0.16
2316	IEC62321-5	90		-0.55	2816		-----		-----
2320	EPA3051	92.95		-0.17	2817		-----		-----
2330		-----		-----	2826	CPSC-CH-E1002-08.3	94.4564		0.03
2347	IEC62321-5	99		0.63	2829		-----		-----
2350	EPA3052	98.75		0.60	2833	IEC62321-3-1	383	R(0.01)	37.97
2352	IEC62321-5	91.7		-0.33	2835	IEC62321-5	78.48		-2.07
2353	IEC62321-5	107.2		1.71	2848		-----		-----
2355	QC/T 943	90.50		-0.49	2851		-----		-----
2357	ISO8124-5	90.2		-0.53	2853		-----		-----
2358	EPA3051	107.2		1.71	2854	IEC62321-3-1	7.23	R(0.01)	-11.44
2363	EPA3052	92.21		-0.26	2856		-----		-----
2365	EN16711	100.4		0.81	2857		-----		-----
2366	IEC62321-5	94.7		0.06	2858	In house	103.67		1.24
2369	IEC62321-5	88.01		-0.82	3110	In house	93.4		-0.11
2370	IEC62321-5	90.2		-0.53	3111	EPA3052	46.5	R(0.01)	-6.27
2372	IEC62321-5	95.8		0.21	3116	In house	95.57		0.18
2375	In house	93.1		-0.15	3118	EN16711-1	83.06		-1.47

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	102		1.02	3185	IEC62321-5	95.2		0.13
3124		-----		-----	3197	IEC62321-5	95.3		0.14
3134	In house	92.61		-0.21	3209	IEC62321-5	92.76		-0.19
3146	In house	94.0		-0.03	3210		-----		-----
3150	EN16711-1	78.00		-2.13	3213		-----		-----
3153	IEC62321-5	97.8		0.47	3218	EPA3052	99.620		0.71
3154	IEC62321-3-1	88.68		-0.73	3225		-----		-----
3160		-----		-----	3228	IEC62321-5	93.9		-0.04
3163		103		1.16	3237	In house	88.99		-0.69
3166	In house	91.1		-0.41	3239	IEC62321-5	81.083		-1.73
3172	ISO8124-5	93.1		-0.15	3248	CPSC-CH-E1002-08.3	78.21		-2.10
3176	EPA3052	127.37	R(0.01)	4.36	6198	D6247mod	4.4	R(0.01)	-11.81
3182	IEC62321-5	95.15		0.12	8005	In house	98.48		0.56

normality	OK
n	120
outliers	10
mean (n)	94.2141
st.dev. (n)	6.47423
R(calc.)	18.1278
st.dev.(Horwitz)	7.60505
R(Horwitz)	21.2941

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 551 first reported: 66.68
Lab 2387 first reported: 36.88
Lab 2553 first reported: 62.53
Lab 2590 first reported: 70.084
Lab 2794 first reported: 54.4





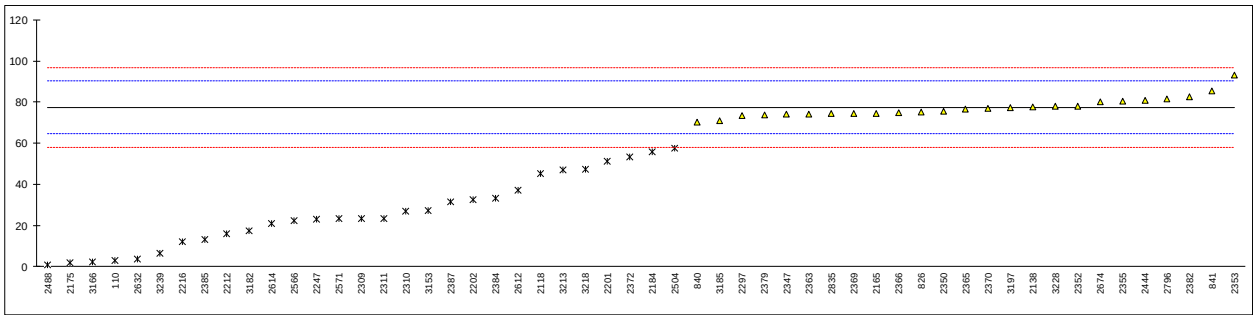
Determination of total Chromium as Cr6+ on sample #18600; results in mg/kg

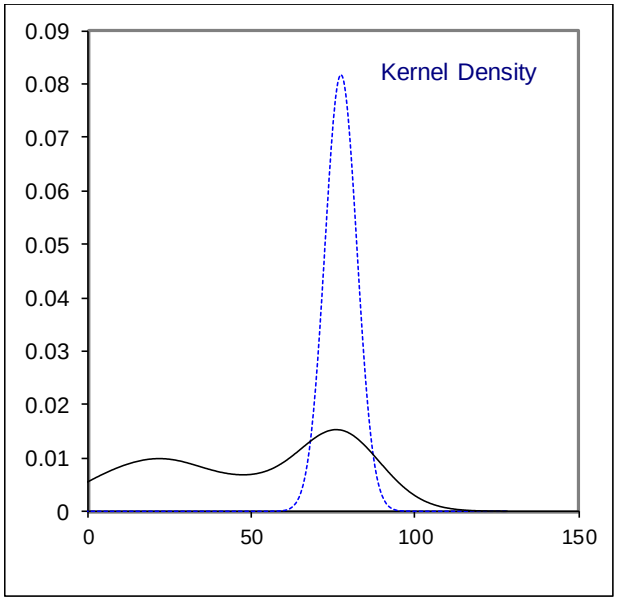
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-7-2	2.806	ex	-11.59	2378		no capacity		-----
213		-----		-----	2379	IEC62321-7-2	73.9		-0.54
230		-----		-----	2380		-----		-----
310		-----		-----	2381		-----		-----
324		-----		-----	2382	IEC62321-7-2	82.6		0.81
330		-----		-----	2384	IEC62321-7-2	33.13	ex	-6.88
339	In house	<10	**-f?**	<-10.47	2385	EPA3060a	13.2	ex	-9.98
348		-----		-----	2387	IEC62321-7-2	31.64	ex	-7.11
523	EPA3060a	nd		-----	2389		-----		-----
551	IEC62321-7-2	ND		-----	2390	CPSC-CH-E1002-08.1	ND		-----
623		-----		-----	2410		-----		-----
826	IEC62321-7-2	75.302		-0.32	2424		-----		-----
840	IEC62321-7-2	70.37		-1.09	2426		ND		-----
841	IEC62321-7-2	85.62		1.28	2431		-----		-----
1051		-----		-----	2432		-----		-----
1082		-----		-----	2433		-----		-----
1126		-----		-----	2444	IEC62321	80.7		0.51
1128		-----		-----	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115		-----		-----	2460		-----		-----
2118	EN16711-1	45.355	ex	-4.98	2475		-----		-----
2120		-----		-----	2488	IEC62321	0.93	ex	-11.88
2129		-----		-----	2492		-----		-----
2132		-----		-----	2495		-----		-----
2135		-----		-----	2503		-----		-----
2137		-----		-----	2504	IEC62321-7-2	57.47	ex	-3.10
2138	IEC62321-7-2	77.72		0.05	2511		-----		-----
2146		-----		-----	2514		-----		-----
2159		-----		-----	2529		-----		-----
2165	IEC62321-7-2	74.66		-0.42	2553		-----		-----
2175	IEC62321-7-2	1.82	ex	-11.74	2561		-----		-----
2182		-----		-----	2564		-----		-----
2184	IEC62321-7-2	55.8	ex	-3.36	2566	IEC62321	22.2	ex	-8.58
2190		-----		-----	2569		-----		-----
2197		-----		-----	2571	IEC62321-7-2	23.40	ex	-8.39
2201	IEC62321-7-2	51.10	ex	-4.09	2572		-----		-----
2202	IEC62321-7-2	32.5	ex	-6.98	2573		-----		-----
2212	In house	16	ex	-9.54	2582	ISO17075-1:2007	n.d.		-----
2213	IEC62321-7-2	<5	**-f?**	<-11.25	2590		-----		-----
2216	In house	12	ex	-10.16	2591		-----		-----
2218		-----		-----	2612	IEC62321-7-2	37.165	ex	-6.25
2236		-----		-----	2614	IEC62321	20.9	ex	-8.78
2247	IEC61321	23.11	ex	-8.44	2624		-----		-----
2255		-----		-----	2632	IEC62321-7-2	3.59	ex	-11.47
2256		-----		-----	2642		-----		-----
2258		-----		-----	2643		-----		-----
2265		-----		-----	2644		-----		-----
2290		-----		-----	2674	IEC62321-7-2	80.01		0.41
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705		-----		-----
2297	IEC62321-7-2	73.34		-0.63	2713		-----		-----
2300	In house	ND		-----	2719		-----		-----
2301		NA		-----	2758		-----		-----
2309	IEC62321-7-2	23.5	ex	-8.37	2773	In house	<1.0	**-f?**	<-11.87
2310	IEC62321-7-2	27.0	ex	-7.83	2794		-----		-----
2311	IEC62321-7-2	23.5	ex	-8.37	2796	IEC62321	81.7		0.67
2314		-----		-----	2804		-----		-----
2316	IEC62321-7-2	ND		-----	2816		-----		-----
2320		-----		-----	2817		-----		-----
2330		-----		-----	2826	EPA3060a	<20	**-f?**	-----
2347	IEC62321-7-2	74		-0.53	2829		-----		-----
2350	IEC62321-7-2	75.461		-0.30	2833		-----		-----
2352	IEC62321-7-2	78.2		0.13	2835	IEC62321-7-2	74.36		-0.47
2353	IEC62321-7-2	93.1		2.44	2848		-----		-----
2355	IEC62321-7-2	80.35		0.46	2851		-----		-----
2357		-----		-----	2853		-----		-----
2358		N/A		-----	2854		-----		-----
2363	IEC62321-7-2	74		-0.53	2856		-----		-----
2365	IEC62321-7-2	76.6		-0.12	2857		-----		-----
2366	IEC62321-7-2	74.72		-0.42	2858		-----		-----
2369	IEC62321-7-2	74.55		-0.44	3110		-----		-----
2370	IEC62321-7-2	77.0		-0.06	3111		-----		-----
2372	IEC62321-7-2	53.5	ex	-3.71	3116		-----		-----
2375		-----		-----	3118		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	< 5	**-f?**	<-11.25	3185	IEC62321-7-2	70.9		-1.01
3124		-----		-----	3197	IEC62321-7-2	77.5		0.02
3134		-----		-----	3209	EPA3060a	<10.0	**-f?**	<-10.47
3146		-----		-----	3210		-----		-----
3150		-----		-----	3213	IEC62321-7-2	47	ex	-4.72
3153		27.1	ex	-7.82	3218	IEC62321-7-2	47.300	ex	-4.68
3154		-----		-----	3225	EPA3060a	ND		-----
3160		-----		-----	3228	IEC62321-7-2	78.1		0.11
3163		-----		-----	3237		-----		-----
3166	EPA3060a	2.38	ex	-11.66	3239	IEC62321	6.574	ex	-11.01
3172		-----		-----	3248	EPA3060a	ND		-----
3176		-----		-----	6198		-----		-----
3182		17.41	ex	-9.32	8005		-----		-----

normality	not OK
n	25
outliers	0(+29ex)
mean (n)	77.3905
st.dev. (n)	4.88097
R(calc.)	13.6667
st.dev.(Horwitz)	6.43475
R(Horwitz)	18.0173

ex= test result excluded, see paragraph 4.1
-f?= possibly a false negative test result





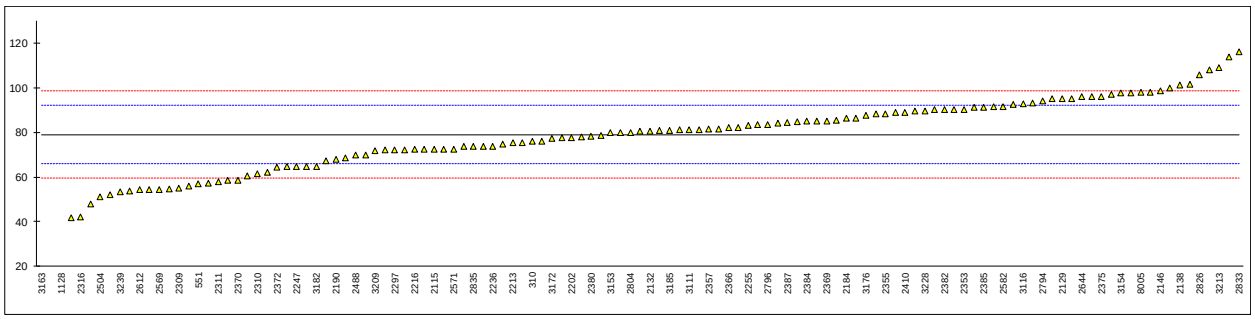
Determination of total Mercury as Hg on sample #18600; results in mg/kg

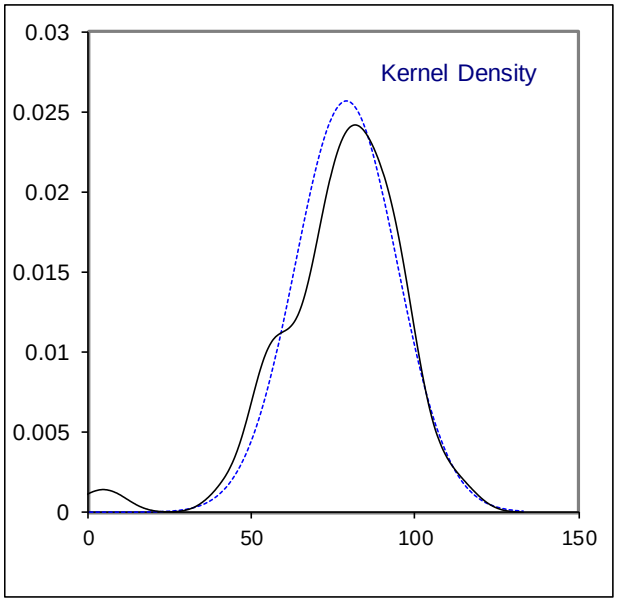
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	In house	75.47756667		-0.55	2378	In house	81.1		0.31
213	CPSC-CH-E1002-08	80		0.14	2379	EPA3052	62		-2.61
230		-----		-----	2380	In house	78.321		-0.11
310	In house	75.9		-0.48	2381		-----		-----
324	IEC62321-4	60.5		-2.83	2382	IEC62321-4	90.2		1.70
330		-----		-----	2384	IEC62321-4	84.96		0.90
339	In house	57.2		-3.34	2385	In house	91.2		1.85
348		-----		-----	2387	IEC62321-4	84.29		0.80
523	EPA3052	113.735		5.29	2389		-----		-----
551	IEC62321-3-1	57.05		-3.36	2390	CPSC-CH-E1002-08.1	77.55		-0.23
623	In house	77.84		-0.19	2410	IEC62321-4	89		1.51
826	IEC62321-4	94.94		2.42	2424	In house	5	C,R(0.01)	-11.30
840	IEC62321-4	73.77		-0.81	2426		-----		-----
841	In house	70		-1.38	2431	In house	97.7889		2.86
1051		-----		-----	2432		-----		-----
1082		-----		-----	2433		-----		-----
1126		-----		-----	2444	IEC62321	81.3		0.34
1128	In house	8.9	R(0.01)	-10.71	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	72.6		-0.99	2460		-----		-----
2118	EN16711-1	47.998	C	-4.74	2475		-----		-----
2120		-----		-----	2488	IEC62321-4	69.9		-1.40
2129	* see table below	95.2		2.46	2492	In house	52.04		-4.13
2132	CPSC-CH-E1002-08	80.44		0.21	2495		-----		-----
2135	In house	83.57		0.69	2503	In house	90.18		1.69
2137		-----		-----	2504	IEC62321-4	51.14		-4.26
2138	In house	101.20		3.38	2511	In house	72.6		-0.99
2146	In house	98.7		2.99	2514		-----		-----
2159	EN16711-1	85.53		0.99	2529		-----		-----
2165	IEC62321-4	91.47		1.89	2553	In house	56.03		-3.52
2175	IEC62321-4	68.73	C	-1.58	2561	In house	89.5		1.59
2182		-----		-----	2564		-----		-----
2184	IEC62321-4	86.3		1.10	2566	EPA3051A/3052mod	72.2		-1.05
2190	In house	68.1		-1.67	2569	In house	54.5		-3.75
2197		-----		-----	2571	IEC62321-3-1	72.61		-0.99
2201	IEC62321-4	80.42		0.21	2572	IEC62321-4	86.5		1.13
2202	IEC62321-4	77.7		-0.21	2573		-----		-----
2212	In house	108		4.41	2582	EPA3051	91.7		1.93
2213	IEC62321-3-1	75.22		-0.59	2590	CPSC-CH-E1002-08	53.723	C	-3.87
2216	IEC62321-4	72.4		-1.02	2591		-----		-----
2218		-----		-----	2612	In house	54.41		-3.76
2236	In house	73.82		-0.80	2614	EPA3051A/3052mod	72.5		-1.00
2247	IEC62321-4	64.65		-2.20	2624		-----		-----
2255	In house	83.16		0.62	2632	IEC62321-4	54.61		-3.73
2256	IEC62321-4	98.15		2.91	2642		-----		-----
2258	In house	101.63		3.44	2643		-----		-----
2265		-----		-----	2644	EN16711-1	95.94		2.57
2290	IEC62321-4	84.7		0.86	2674	IEC62321-4	88.91		1.50
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	92.5		2.05
2297	IEC62321-4	72.02		-1.08	2713		-----		-----
2300	In house	58.67		-3.11	2719		76		-0.47
2301		88.4		1.42	2758	In house	41.9		-5.67
2309	IEC62321-4	55.0		-3.67	2773	In house	82.2		0.48
2310	IEC62321-4	61.5		-2.68	2794	IEC62321-3-1	94.1	C	2.29
2311	EPA3052	57.9		-3.23	2796	IEC62321	83.6		0.69
2314		-----		-----	2804	In house	80.059		0.15
2316	IEC62321-4	42		-5.66	2816		-----		-----
2320	In house	64.8		-2.18	2817		-----		-----
2330		-----		-----	2826	CPSC-CH-E1002-08.3	105.903		4.09
2347	IEC62321-4	93		2.12	2829		-----		-----
2350	IEC62321-4	97.17		2.76	2833	IEC62321-3-1	116.12		5.65
2352	IEC62321-4	81.6		0.39	2835	IEC62321-4	73.72		-0.82
2353	IEC62321-4	90.2		1.70	2848	IEC62321-4	73.69		-0.82
2355	QC/T 941	88.45		1.43	2851		-----		-----
2357	IEC62321-4	81.4		0.35	2853		-----		-----
2358	EPA3051	90.2		1.70	2854	IEC62321-3-1	ND	C	-----
2363	IEC62321-4	78.48		-0.09	2856		-----		-----
2365	EN16711	72.0		-1.08	2857		-----		-----
2366	IEC62321-4	82.1		0.46	2858		-----		-----
2369	IEC62321-4	85.04		0.91	3110	In house	95.2		2.46
2370	IEC62321-4	58.7		-3.11	3111	In house	81.1		0.31
2372	IEC62321-4	64.3		-2.25	3116	In house	92.94		2.12
2375	In house	96.01		2.58	3118	EN16711-1	91.12		1.84

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	100		3.19	3185	IEC62321-4	81.0		0.29
3124		96.000		2.58	3197	IEC62321-4	84.2		0.78
3134		-----		-----	3209	IEC62321-4	71.74		-1.12
3146	In house	64.6		-2.21	3210		-----		-----
3150	EN16711-1	54.43		-3.76	3213	IEC62321-4	108.9		4.55
3153	IEC62321-4	79.8		0.11	3218	IEC62321-4	74.655		-0.67
3154	IEC62321-3-1	97.53		2.82	3225		-----		-----
3160		-----		-----	3228	IEC62321-4	89.7		1.62
3163		0	R(0.01)	-12.07	3237	In house	84.99		0.90
3166	In house	67.4		-1.78	3239	IEC62321-4	53.540		-3.90
3172	In house	77.3		-0.27	3248	CPSC-CH-E1002-08.3	80.75		0.26
3176	In house	87.64		1.31	6198		-----		-----
3182	IEC62321-4	64.80		-2.18	8005	In house	98		2.89

normality	OK
n	120
outliers	3
mean (n)	79.0740
st.dev. (n)	15.51491
R(calc.)	43.4418
st.dev.(Horwitz)	6.55347
R(Horwitz)	18.3497

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 2118 first reported: 294.82
Lab 2175 first reported: 134.38
Lab 2424 first reported: 18
Lab 2590 first reported: 22.750
Lab 2794 first reported: 12.8
Lab 2854 first reported: 0





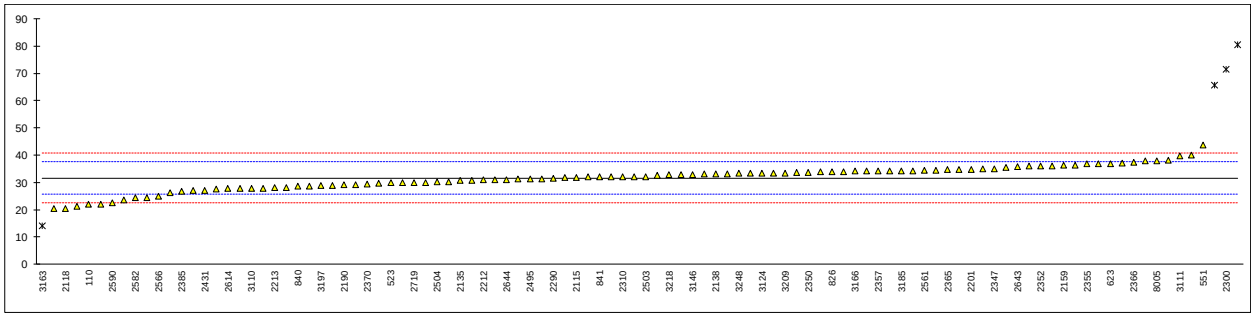
Determination of total Antimony as Sb on sample #18601; results in mg/kg

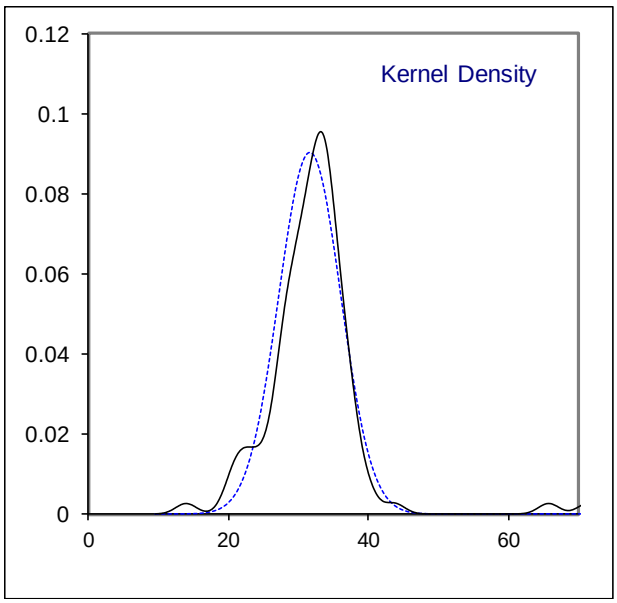
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	22.0691		-3.19	2378	In house	36.3		1.54
213		-----		-----	2379		-----		-----
230		-----		-----	2380	EPA3051	29.254		-0.80
310	In house	26.2		-1.82	2381		-----		-----
324	IEC62321-5	40.01		2.77	2382	EPA3052	34.3		0.87
330		-----		-----	2384		-----		-----
339	In house	31.73		0.02	2385	EPA3051	26.7		-1.65
348		-----		-----	2387		-----		-----
523	EPA3052	29.905		-0.59	2389		-----		-----
551	IEC62321-3-1	43.76		4.01	2390	CPSC-CH-E1002-08.1	32.87	C	0.40
623	In house	36.94		1.75	2410	EPA3052	32		0.11
826	EPA3052	33.93		0.75	2424	In house	37		1.77
840	EPA3052	28.73		-0.98	2426		34.98		1.10
841	EPA3052	32		0.11	2431	In house	27.1757		-1.49
1051		-----		-----	2432		-----		-----
1082		-----		-----	2433		-----		-----
1126		-----		-----	2444		-----		-----
1128	In house	80.6	R(0.01)	16.24	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	31.8		0.04	2460		-----		-----
2118	EN16711-1	20.56		-3.69	2475		-----		-----
2120		-----		-----	2488		-----		-----
2129	* see below table	29.0		-0.89	2492		-----		-----
2132	CPSC-CH-E1002-08	33.33		0.55	2495	CPSC-CH-E1002-08	31.20		-0.16
2135	In house	30.75		-0.31	2503	In house	32.21		0.18
2137		-----		-----	2504	IEC62321-5	30.25		-0.47
2138	In house	33.05		0.46	2511	In house	34.2		0.84
2146		-----		-----	2514		-----		-----
2159	EN16711-1	36.25		1.52	2529		-----		-----
2165	In house	38.06		2.12	2553	EPA3051	27.64		-1.34
2175	EPA3052	20.38	C	-3.75	2561	In house	34.4		0.91
2182		-----		-----	2564		-----		-----
2184		-----		-----	2566	EPA3051A/3052mod	25.0		-2.21
2190	In house	29.1		-0.85	2569	In house	32.1		0.14
2197		-----		-----	2571	IEC62321-3-1	36.00		1.44
2201	IEC62321-5	34.80		1.04	2572	IEC62321-5	33.4		0.57
2202	IEC62321-5	37.8		2.03	2573		-----		-----
2212	In house	31		-0.22	2582	EPA3051	24.4		-2.41
2213	ISO8124-5	28.04		-1.21	2590	CPSC-CH-E1002-08	22.685		-2.98
2216		-----		-----	2591		-----		-----
2218		-----		-----	2612	In house	< 1	**-f?**	<-10.18
2236	In house	33.16		0.49	2614	EPA3051A/3052mod	27.8		-1.28
2247	EPA3051	30.0		-0.55	2624		-----		-----
2255	In house	28.76		-0.97	2632	IEC62321-5	27.95		-1.24
2256		-----		-----	2642		-----		-----
2258	In house	32.59		0.31	2643	EPA3052	35.7		1.34
2265		-----		-----	2644	EN16711	31.14		-0.18
2290	IEC62321-5	31.6		-0.02	2674	EPA3052	36.11		1.47
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	21.33		-3.43
2297	IEC62321-5	34.63		0.98	2713		-----		-----
2300	In house	71.39	C,R(0.01)	13.19	2719		30		-0.55
2301		34.5		0.94	2758	In house	23.5		-2.71
2309	IEC62321-5	34.0		0.77	2773	In house	28.04		-1.21
2310	EN16711-1	32.02		0.12	2794	IEC62321-3-1	<LOD	C	-----
2311	EPA3052	31.2		-0.16	2796		-----		-----
2314		-----		-----	2804		-----		-----
2316	EPA3052	32		0.11	2816		-----		-----
2320	EPA3051	31.4		-0.09	2817		-----		-----
2330		-----		-----	2826	CPSC-CH-E1002-08.3	29.593		-0.69
2347	EPA3052	35		1.11	2829		-----		-----
2350	EPA3052	33.7		0.67	2833	IEC62321-3-1	65.79	R(0.01)	11.33
2352	In house	36.1		1.47	2835		-----		-----
2353	IEC62321-5	NA		-----	2848		-----		-----
2355	EPA3052	36.75		1.69	2851		-----		-----
2357	ISO8124-5	34.2		0.84	2853		-----		-----
2358		N/A		-----	2854	IEC62321-3-1	33.85		0.72
2363	EPA3052	35.6		1.30	2856		-----		-----
2365	EN16711-1	34.6		0.97	2857		-----		-----
2366	IEC62321-5	37.5		1.94	2858	In house	33.03		0.45
2369	EPA3052	36.81		1.71	3110	In house	27.9		-1.25
2370	IEC62321-5	29.5		-0.72	3111	EPA3052	39.7		2.67
2372	IEC62321-5	30.8		-0.29	3116	In house	33.58		0.63
2375	In house	34.2		0.84	3118	EN16711	31.111	C	-0.19

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	30		-0.55	3185	In house	34.2		0.84
3124	EPA3052	33.393		0.57	3197	IEC62321-5	28.9		-0.92
3134		-----		-----	3209	IEC62321-5	33.48		0.60
3146	In house	33.0		0.44	3210		-----		-----
3150	CPSC-CH-E1002-08.3	24.44		-2.40	3213		-----		-----
3153	IEC62321-5	30.3		-0.46	3218	EPA3052	32.820		0.38
3154	IEC62321-3-1	22.10		-3.18	3225		-----		-----
3160		-----		-----	3228		-----		-----
3163	In house	14	R(0.05)	-5.87	3237		-----		-----
3166	In house	34.1		0.81	3239		-----		-----
3172	ISO8124-5	27.11		-1.51	3248	CPSC-CH-E1002-08.3	33.3		0.54
3176		-----		-----	6198		-----		-----
3182	IEC62321-5	27.81		-1.28	8005	In house	37.91		2.07

normality	OK
n	100
outliers	4
mean (n)	31.6708
st.dev. (n)	4.41753
R(calc.)	12.3691
st.dev.(Horwitz)	3.01236
R(Horwitz)	8.4346

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 2175 first reported: 0
Lab 2300 first reported: 58.04
Lab 2390 first reported: 104.12
Lab 2794 first reported: 16.6
Lab 3118 first reported: 52.791
-f?= possibly a false negative test result





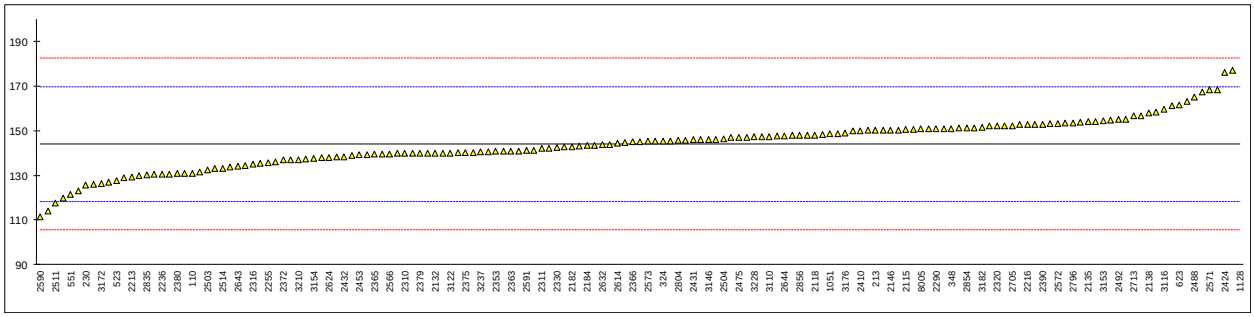
Determination of total Cadmium as Cd on sample #18601; results in mg/kg

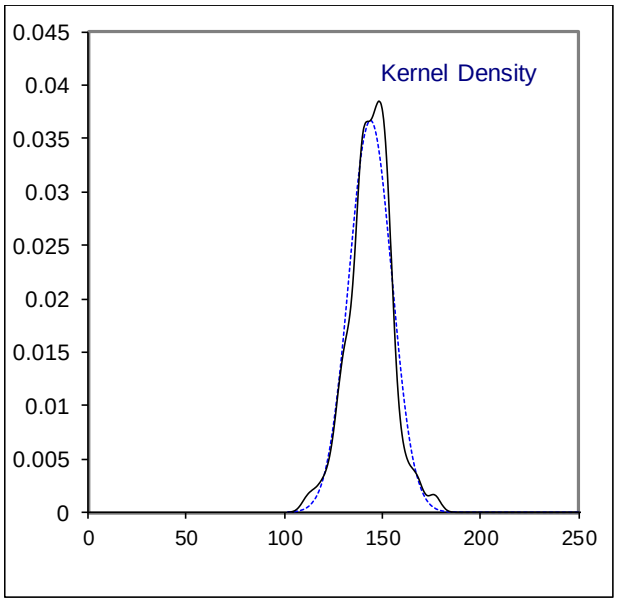
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	130.9881		-1.02	2378	EN1122	140.0		-0.31
213	CPSC-CH-E1002-08.1	150.1		0.47	2379	EN1122	140		-0.31
230	EN1122	125.7		-1.43	2380	EPA3051	130.854		-1.03
310	In house	139.0		-0.39	2381	EN1122	130.943		-1.02
324	EN1122	145.43		0.11	2382	EN1122	135.9		-0.63
330	In house	140.2		-0.30	2384	IEC62321-5	168.38		1.89
339	In house	140		-0.31	2385	EPA3051	150.0		0.46
348	In house	151.003		0.54	2387	IEC62321-5	156.82		0.99
523	EPA3052	127.56		-1.28	2389		-----		-----
551	IEC62321-3-1	121.5		-1.75	2390	CPSC-CH-E1002-08	152.97		0.69
623	In house	161.41		1.35	2410	EN1122	150		0.46
826	IEC62321-5	161.1		1.33	2424	In house	176		2.48
840	IEC62321-5	140.61		-0.27	2426	EN1122	148.74		0.36
841	EN1122	140		-0.31	2431	In house	145.9459		0.15
1051	EN1122	148.5		0.35	2432	EN1122	138.34		-0.44
1082	In house	150.216		0.48	2433		-----		-----
1126	In house	153.8		0.76	2444	IEC62321	150.3		0.49
1128	In house	343.5	R(0.01)	15.51	2453	EN1122	139.25		-0.37
1527		-----		-----	2459		-----		-----
2115	EN16711-1	150.5		0.50	2460	EN1122	119.693		-1.89
2118	CPSC-CH-E1002-08	148.10		0.31	2475	EN1122	147		0.23
2120	EN1122	152.85		0.68	2488	IEC62321-5	165.1		1.64
2129	* see below table	146		0.15	2492	In house	154.92		0.85
2132	EN1122	140.0		-0.31	2495	EN1122	138.20		-0.45
2135	In house	153.95		0.77	2503	In house	132.3		-0.91
2137	IEC62321-5	133		-0.86	2504	EN1122	146.23		0.17
2138	CPSC-CH-E1002-08	158.00		1.08	2511	EN1122	117.6		-2.06
2146	In house	150.3		0.49	2514	In house	133.06		-0.85
2159	EN16711-1	145.11		0.08	2529	CPSC-CH-E1002-08.3	137.44		-0.51
2165	EN1122	152.13		0.63	2553	EPA3051	131.34		-0.99
2175	IEC62321-5	146.11		0.16	2561	CPSC-CH-E1002-08	145.4		0.11
2182	EN1122	142.93		-0.09	2564	CPSC-CH-E1002-08	142.7		-0.10
2184	EN1122	143.6		-0.03	2566	EN1122	139.6		-0.35
2190	EN1122	154.2		0.79	2569	EN1122	145.5		0.11
2197	In house	150.5		0.50	2571	IEC62321-3-1	168.20		1.88
2201	IEC62321-5	148.3		0.33	2572	IEC62321-5	153.1		0.70
2202	IEC62321-5	153.5		0.73	2573	EN1122	145.3		0.10
2212	In house	148		0.31	2582	EPA3051	114.1		-2.33
2213	ISO8124-5	129.07		-1.16	2590	EN1122	111.486		-2.53
2216	CPSC-CH-E1002-08	152.8		0.68	2591	CPSC-CH-E1002-08	141.0483		-0.23
2218		-----		-----	2612	EN1122	134.4		-0.75
2236	In house	130.5		-1.05	2614	EN1122	144.3		0.02
2247	EN1122	154.89		0.84	2624	EN1122	138.1		-0.46
2255	EN1122	135.59		-0.66	2632	IEC62321-5	143.86		-0.01
2256	IEC62321-5	142.21		-0.14	2642		-----		-----
2258	In house	130.63		-1.04	2643	EPA3052	134.0		-0.78
2265	EN1122	138.1		-0.46	2644	EN16711	147.7		0.28
2290	IEC62321-5	150.9		0.53	2674	IEC62321-5	150.08		0.47
2293		-----		-----	2678	EN1122	127.09		-1.32
2294		-----		-----	2705	In house	152.32		0.64
2297	IEC62321-5	139.53		-0.35	2713	In house	156.73		0.99
2300	In house	129.02		-1.17	2719		147		0.23
2301		145.7		0.13	2758	In house	152.3		0.64
2309	IEC62321-5	139.3		-0.37	2773	EN1122	140.07		-0.31
2310	IEC62321-5	140		-0.31	2794	IEC62321-3-1	167.3	C	1.81
2311	EN1122	142.1		-0.15	2796	IEC62321	153.6		0.74
2314	CPSC-CH-E1002-08	130.4		-1.06	2804	EN1122	145.645		0.12
2316	IEC62321-5	135		-0.70	2816		-----		-----
2320	EPA3051	152.19		0.63	2817		-----		-----
2330	EN1122	142.61		-0.11	2826	CPSC-CH-E1002-08	150.871		0.53
2347	EN1122	147		0.23	2829	EN1122	141.00		-0.24
2350	IEC62321-5	151.1		0.55	2833	IEC62321-3-1	125.9		-1.41
2352	IEC62321-5	141.1		-0.23	2835	IEC62321-5	130.32		-1.07
2353	IEC62321-5	141.0		-0.24	2848	IEC62321-5	129.8		-1.11
2355	QC/T 943	147.65		0.28	2851		-----		-----
2357	ISO8124-5	143.9		-0.01	2853		-----		-----
2358	EPA3051	141.0		-0.24	2854	IEC62321-3-1	151.13		0.55
2363	EPA3052	141		-0.24	2856	KS M 6956	147.85		0.30
2365	EN16711-1	139.5		-0.35	2857		-----		-----
2366	EN1122	145.1		0.08	2858	In house	152.76		0.68
2369	IEC62321-5	147.27		0.25	3110	EN1122	147.4		0.26
2370	EN1122	137		-0.55	3111	EPA3052	163.2		1.49
2372	EN1122	137		-0.55	3116	EN1122	159.65		1.21
2375	In house	140.1		-0.31	3118	EN16711	139.81		-0.33

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	CPSC-CH-E1002-08	140		-0.31	3185	EN1122	144.8		0.06
3124	EPA3052	143.6		-0.03	3197	EN1122	143.1		-0.07
3134	In house	151.32		0.57	3209	EN1122	135.35		-0.68
3146	In house	146		0.15	3210	EN1122	137		-0.55
3150	CPSC-CH-E1002-08.3	123.13		-1.63	3213	IEC62321-5	158.4		1.12
3153	EN1122	154.4		0.80	3218	CPSC-CH-E1002-08	155.200		0.87
3154	IEC62321-3-1	137.57		-0.50	3225	EN1122	147.83		0.29
3160		-----		-----	3228	EN1122	147.2		0.24
3163	In house	177		2.56	3237	In house	140.41		-0.28
3166	In house	151		0.54	3239	IEC62321-5	133.633		-0.81
3172	ISO8124-5	126.2		-1.39	3248	EN1122	153		0.70
3176	EN1122	148.79		0.37	6198		-----		-----
3182	EN1122	151.65		0.59	8005	EN1122	150.79		0.52

normality	OK
n	158
outliers	1
mean (n)	144.0492
st.dev. (n)	10.85337
R(calc.)	30.3894
st.dev.(EN1122:01)	12.86154
R(EN1122:01)	36.0123

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 2794 first reported: 136





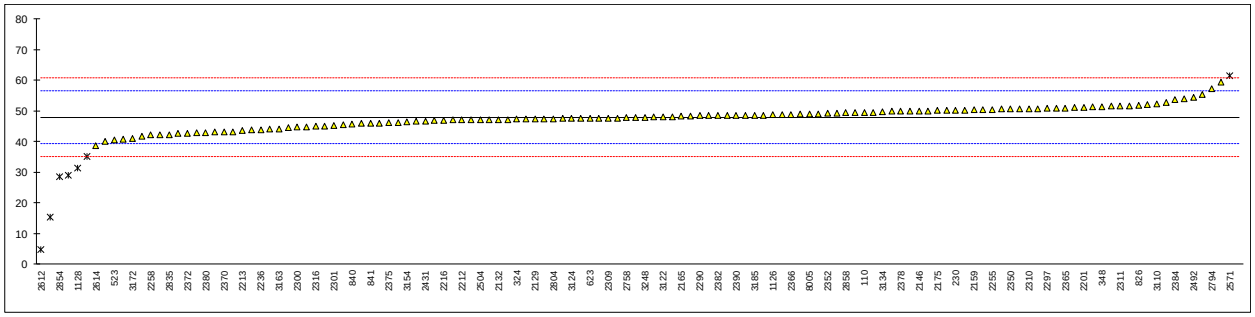
Determination of total Chromium as Cr on sample #18601; results in mg/kg

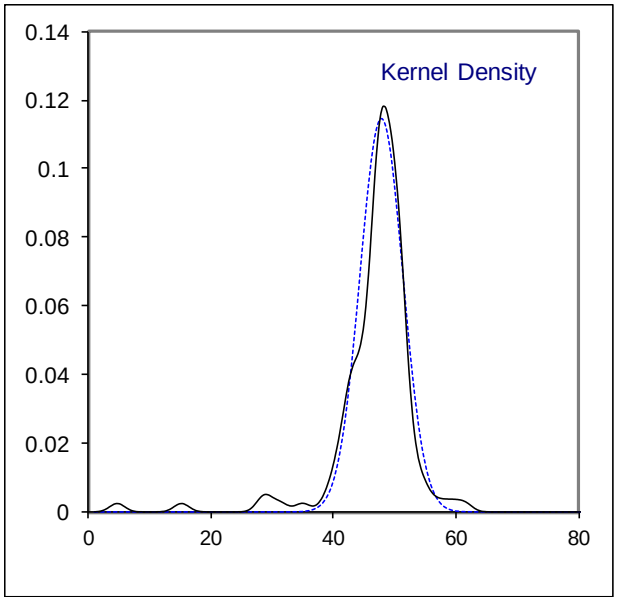
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	49.4691		0.38	2378	In house	49.8		0.46
213	CPSC-CH-E1002-08.1	47.6		-0.05	2379	EPA3052	43		-1.13
230	In house	50.2		0.55	2380	EPA3051	42.949		-1.14
310	In house	40.8		-1.64	2381		-----		-----
324	IEC62321-5	47.224		-0.14	2382	EPA3052	48.4		0.13
330		-----		-----	2384	IEC62321-5	53.72		1.38
339	In house	51		0.74	2385	EPA3051	47.8		-0.01
348	In house	51.442		0.84	2387	IEC62321-5	51.55		0.87
523	EPA3052	40.46		-1.72	2389		-----		-----
551	IEC62321-3-1	43.15		-1.10	2390	CPSC-CH-E1002-08.1	48.56		0.17
623	In house	47.58		-0.06	2410	IEC62321-5	44		-0.90
826	EPA3052	51.68		0.90	2424	In house	35	C,R(0.05)	-3.00
840	IEC62321-5	45.69		-0.50	2426		45.95		-0.44
841	EPA3052	46		-0.43	2431	In house	46.609		-0.29
1051		-----		-----	2432		-----		-----
1082	In house	50.900		0.72	2433		-----		-----
1126	In house	48.7		0.20	2444		-----		-----
1128	In house	31.4	R(0.01)	-3.84	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	47.1		-0.17	2460		-----		-----
2118	EN16711-1	47.23		-0.14	2475		-----		-----
2120		-----		-----	2488	IEC62321-5	55.3		1.75
2129	* see below table	47.3		-0.12	2492	In house	54.50		1.56
2132	CPSC-CH-E1002-08	47.19		-0.15	2495	CPSC-CH-E1002-08	47.20		-0.15
2135	In house	49.44		0.38	2503	In house	45.44		-0.56
2137	IEC62321-5	46.6		-0.29	2504	IEC62321-5	47.07		-0.18
2138	In house	50.39		0.60	2511		-----	W	-----
2146	In house	50.0		0.51	2514		-----		-----
2159	EN16711-1	50.35		0.59	2529		-----		-----
2165	IEC62321-5	48.32		0.11	2553	EPA3051	42.16		-1.33
2175	EPA3052	50.04		0.52	2561	In house	50.6		0.65
2182		-----		-----	2564		-----		-----
2184	IEC62321-5	46.2		-0.38	2566	EPA3051A/3052mod	41.7		-1.43
2190	In house	51.6		0.88	2569	In house	42.8		-1.18
2197	In house	46.8		-0.24	2571	IEC62321-3-1	61.37	R(0.05)	3.17
2201	IEC62321-5	51.10		0.76	2572	IEC62321-5	48.9		0.25
2202	IEC62321-5	48.4		0.13	2573		-----		-----
2212	In house	47		-0.19	2582	EPA3051	29.1	R(0.01)	-4.38
2213	ISO8124-5	43.45		-1.03	2590	CPSC-CH-E1002-08	43.843		-0.93
2216	IEC62321-5	46.9		-0.22	2591		-----		-----
2218		-----		-----	2612	In house	4.84	C,R(0.01)	-10.05
2236	In house	43.86		-0.93	2614	EPA3051A/3052mod	38.7		-2.14
2247	EPA3051	48.0		0.04	2624	In house	42.6		-1.22
2255	In house	50.4		0.60	2632	IEC62321-5	40.01		-1.83
2256	IEC62321-5	59.32		2.69	2642		-----		-----
2258	In house	42.1		-1.34	2643	EPA3052	49.5		0.39
2265		-----		-----	2644	EN16711	49.03		0.28
2290	IEC62321-5	48.4		0.13	2674	IEC62321-5	50.22		0.56
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	50.70		0.67
2297	IEC62321-5	50.87		0.71	2713		-----		-----
2300	In house	44.68		-0.74	2719		50		0.51
2301		45.1		-0.64	2758	In house	47.7		-0.03
2309	IEC62321-5	47.6		-0.05	2773	In house	47.45		-0.09
2310	IEC62321-5	50.65		0.66	2794	IEC62321-3-1	57.3	C	2.21
2311	EPA3052	51.6		0.88	2796		-----		-----
2314		-----		-----	2804	In house	47.443		-0.09
2316	IEC62321-5	45		-0.66	2816		-----		-----
2320	EPA3051	50.52		0.63	2817		-----		-----
2330		-----		-----	2826	CPSC-CH-E1002-08.3	48.0074		0.04
2347	IEC62321-5	47		-0.19	2829		-----		-----
2350	EPA3052	50.59		0.64	2833	IEC62321-3-1	106.25	R(0.01)	13.66
2352	IEC62321-5	49.3		0.34	2835	IEC62321-5	42.22		-1.31
2353	IEC62321-5	49.8		0.46	2848		-----		-----
2355	QC/T 943	48.60		0.18	2851		-----		-----
2357	ISO8124-5	48.5		0.16	2853		-----		-----
2358	EPA3051	49.8		0.46	2854	IEC62321-3-1	28.56	R(0.01)	-4.51
2363	EPA3052	48.61		0.18	2856		-----		-----
2365	EN16711-1	50.9		0.72	2857		-----		-----
2366	IEC62321-5	48.8		0.23	2858	In house	49.40		0.37
2369	IEC62321-5	48.34		0.12	3110	In house	52.2		1.02
2370	IEC62321-5	43.1		-1.11	3111	EPA3052	50.1		0.53
2372	IEC62321-5	42.7		-1.20	3116	In house	51.94		0.96
2375	In house	46.1		-0.41	3118	EN16711	47.62		-0.05

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	48		0.04	3185	IEC62321-5	48.6		0.18
3124	EPA3052	47.453		-0.09	3197	IEC62321-5	46.0		-0.43
3134	In house	49.66		0.43	3209	IEC62321-5	45.05		-0.65
3146	In house	44.8		-0.71	3210		-----		-----
3150	CPSC-CH-E1002-08.3	48.70		0.20	3213		-----		-----
3153	IEC62321-5	53.8		1.40	3218	EPA3052	51.305		0.81
3154	IEC62321-3-1	46.30		-0.36	3225		-----		-----
3160		-----		-----	3228	IEC62321-5	49.3		0.34
3163	In house	44		-0.90	3237	In house	47.48		-0.08
3166	In house	47.0		-0.19	3239	IEC62321-5	44.581		-0.76
3172	ISO8124-5	40.90		-1.62	3248	CPSC-CH-E1002-08.3	47.9		0.02
3176	EPA3052	52.64		1.12	6198	D6247mod	15.3	R(0.01)	-7.61
3182	IEC62321-5	47.39		-0.10	8005	In house	48.95		0.26

normality	OK
n	124
outliers	8
mean (n)	47.8334
st.dev. (n)	3.47480
R(calc.)	9.7294
st.dev.(Horwitz)	4.27589
R(Horwitz)	11.9725

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 2424 first reported: 61
Lab 2511 first reported: 34.1
Lab 2612 first reported: 15.37
Lab 2794 first reported: 72





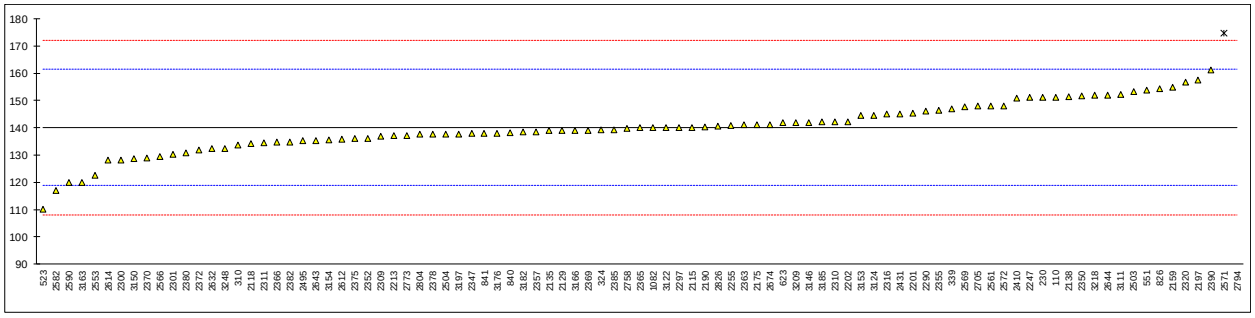
Determination of total Copper as Cu on sample #18601; results in mg/kg

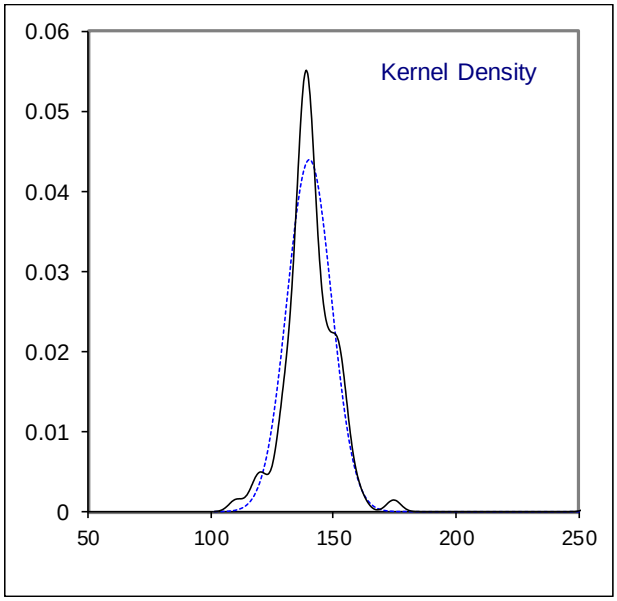
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	151.3110667		1.05	2378	In house	137.7		-0.23
213		-----		-----	2379		-----		-----
230	In house	151.2	C	1.04	2380	EPA3051	130.854		-0.87
310	In house	133.6		-0.61	2381		-----		-----
324	IEC62321-5	139.15		-0.09	2382	EPA3052	134.9		-0.49
330		-----		-----	2384		-----		-----
339	In house	146.95		0.64	2385	EPA3051	139.2		-0.09
348		-----		-----	2387		-----		-----
523	EPA3052	110.2		-2.81	2389		-----		-----
551	IEC62321-3-1	153.8		1.28	2390	CPSC-CH-E1002-08.1	161.21		1.98
623	In house	141.88		0.16	2410	EPA3052	151		1.02
826	EPA3052	154.4		1.34	2424		-----		-----
840	EPA3052	138.23		-0.18	2426		-----		-----
841	EPA3052	138		-0.20	2431	In house	145.0727		0.46
1051		-----		-----	2432		-----		-----
1082	In house	140.00		-0.01	2433		-----		-----
1126		-----		-----	2444		-----		-----
1128		-----		-----	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	140.1		0.00	2460		-----		-----
2118	EN16711-1	134.30		-0.55	2475		-----		-----
2120		-----		-----	2488		-----		-----
2129	* see below table	139		-0.11	2492		-----		-----
2132		-----		-----	2495	CPSC-CH-E1002-08	135.25		-0.46
2135	In house	139.00		-0.11	2503	In house	153.3		1.23
2137		-----		-----	2504	IEC62321-5	137.77		-0.22
2138	In house	151.50		1.07	2511		-----		-----
2146		-----		-----	2514		-----		-----
2159	EN16711-1	154.91		1.39	2529		-----		-----
2165	In house	n.a.		-----	2553	EPA3051	122.52		-1.65
2175	EPA3052	141.13	C	0.09	2561	In house	148		0.74
2182		-----		-----	2564		-----		-----
2184		-----		-----	2566	EPA3051A/3052mod	129.6		-0.99
2190	In house	140.3		0.01	2569	In house	147.7		0.71
2197	In house	157.5		1.63	2571	IEC62321-3-1	174.60	R(0.05)	3.23
2201	IEC62321-5	145.3		0.48	2572	IEC62321-5	148.0		0.74
2202	IEC62321-5	142.3	C	0.20	2573		-----		-----
2212		-----		-----	2582	EPA3051	117.14		-2.16
2213	ISO8124-5	137.28		-0.27	2590	CPSC-CH-E1002-08	119.967		-1.89
2216		-----		-----	2591		-----		-----
2218		-----		-----	2612	In house	135.8		-0.41
2236		-----		-----	2614	EPA3051A/3052mod	128.1		-1.13
2247	EPA3051	151.11		1.03	2624		-----		-----
2255	In house	140.8		0.06	2632	IEC62321-5	132.38		-0.73
2256		-----		-----	2642		-----		-----
2258		-----		-----	2643	EPA3052	135.3		-0.45
2265		-----		-----	2644	EN16711	152.1		1.12
2290	IEC62321-5	146.1		0.56	2674	EPA3052	141.24		0.10
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	147.93		0.73
2297	IEC62321-5	140.01		-0.01	2713		-----		-----
2300	In house	128.29		-1.11	2719		-----		-----
2301		130.3		-0.92	2758	In house	139.9		-0.02
2309	IEC62321-5	136.9		-0.30	2773	In house	137.28		-0.27
2310	Other (mention below)	142.12		0.19	2794	IEC62321-3-1	257.26	C,R(0.01)	10.99
2311	EPA3052	134.6		-0.52	2796		-----		-----
2314		-----		-----	2804	In house	137.587		-0.24
2316	EPA3052	145		0.46	2816		-----		-----
2320	EPA3051	156.86		1.57	2817		-----		-----
2330		-----		-----	2826	CPSC-CH-E1002-08.3	140.539		0.04
2347	EPA3052	138		-0.20	2829		-----		-----
2350	EPA3052	151.7		1.08	2833		-----		-----
2352	In house	136.2		-0.37	2835		-----		-----
2353	IEC62321-5	NA		-----	2848		-----		-----
2355	EPA3052	146.30		0.58	2851		-----		-----
2357	ISO8124-5	138.6		-0.15	2853		-----		-----
2358		N/A		-----	2854		-----		-----
2363	EPA3052	141		0.08	2856		-----		-----
2365	EN16711-1	140.0		-0.01	2857		-----		-----
2366	IEC62321-5	134.8		-0.50	2858		-----		-----
2369	EPA3052	139.09		-0.10	3110		-----		-----
2370	IEC62321-5	129		-1.05	3111	EPA3052	152.3		1.14
2372	IEC62321-5	132		-0.76	3116		-----		-----
2375	In house	136.2		-0.37	3118		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	In house	140		-0.01	3185	In house	142.1		0.18
3124	EPA3052	144.7		0.43	3197	IEC62321-5	137.8		-0.22
3134		-----		-----	3209	IEC62321-5	141.88		0.16
3146	In house	142		0.17	3210		-----		-----
3150	CPSC-CH-E1002-08.3	128.67		-1.08	3213		-----		-----
3153	IEC62321-5	144.6		0.42	3218	EPA3052	152.000		1.11
3154	IEC62321-3-1	135.70		-0.42	3225		-----		-----
3160		-----		-----	3228		-----		-----
3163	In house	120		-1.89	3237		-----		-----
3166	In house	139		-0.11	3239		-----		-----
3172		-----		-----	3248	CPSC-CH-E1002-08.3	132.5		-0.72
3176	EPA3052	138.00		-0.20	6198		-----		-----
3182	IEC62321-5	138.50		-0.15	8005		-----		-----

normality	OK
n	91
outliers	2
mean (n)	140.1474
st.dev. (n)	9.07782
R(calc.)	25.4179
st.dev.(Horwitz)	10.65643
R(Horwitz)	29.8380

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 230 first reported: 204.3
Lab 2175 first reported: 219.45
Lab 2202 first reported: 412.3
Lab 2794 first reported: 202





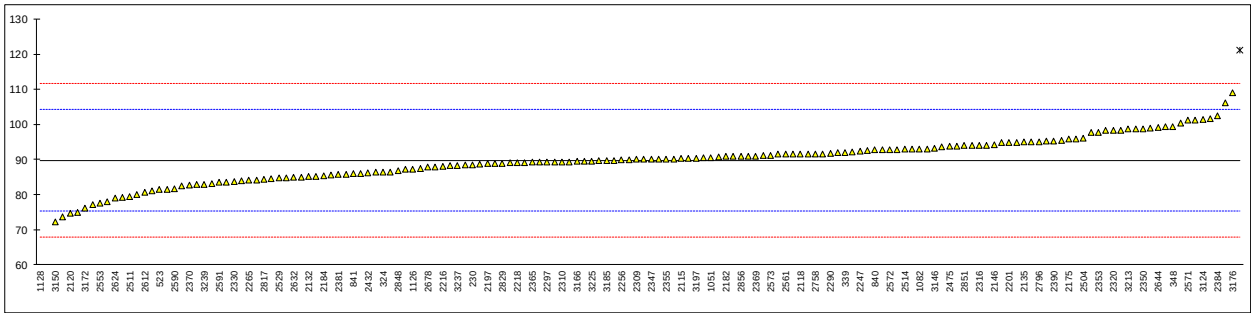
Determination of total Lead as Pb on sample #18601; results in mg/kg

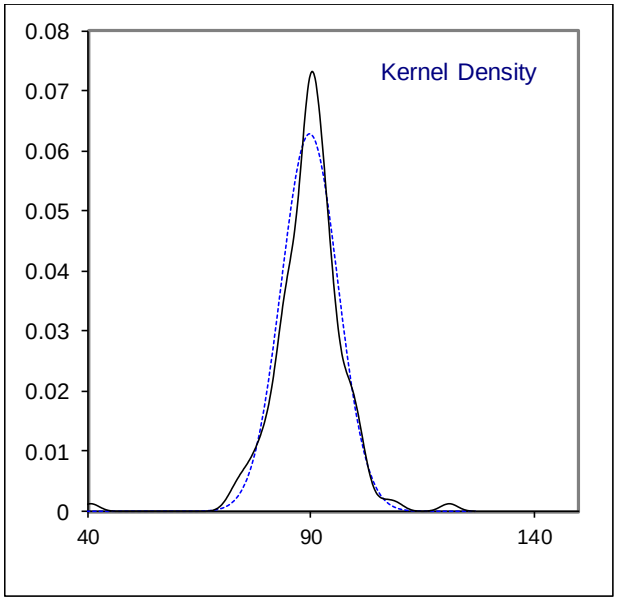
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321-5	99.3641		1.31	2378	CPSC-CH-E1002-08.3	89.6		-0.03
213	CPSC-CH-E1002-08.1	92.9		0.43	2379	EPA3052	81		-1.20
230	CPSC-CH-E1002-08.1	88.5		-0.18	2380	EPA3051	88.306		-0.20
310	In house	81.5		-1.13	2381	CPSC-CH-E1002-08.2	85.7		-0.56
324	IEC62321-5	86.328		-0.47	2382	EPA3052	85.6		-0.57
330	In house	84.7		-0.70	2384	IEC62321-5	102.39		1.73
339	In house	92		0.30	2385	EPA3051	93.0		0.44
348	CPSC-CH-E1002-08.2	99.402		1.32	2387	IEC62321-5	98.74		1.23
523	CPSC-CH-E1002-08.3	81.39		-1.15	2389		-----		-----
551	IEC62321-3-1	77.16		-1.73	2390	CPSC-CH-E1002-08.1	95.32		0.76
623	In house	98.92		1.25	2410	CPSC-CH-E1002-08.3	91		0.17
826	IEC62321-5	101.3		1.58	2424	In house	85		-0.66
840	IEC62321-5	92.70		0.40	2426	CPSC-CH-E1002-08.3	82.54		-0.99
841	EPA3052	86		-0.52	2431	In house	85.7908		-0.55
1051	CPSC-CH-E1002-08.3	90.5		0.10	2432	In house	86.16		-0.50
1082	In house	93	C	0.44	2433		-----		-----
1126	In house	87.2		-0.35	2444	IEC62321	98.4		1.18
1128	In house	26.9	R(0.01)	-8.61	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	90.2		0.06	2460	CPSC-CH-E1002-08.3	86.489		-0.45
2118	EN16711-1	91.58		0.25	2475	In house	93.8		0.55
2120	CPSC-CH-E1002-08.2	74.75		-2.06	2488	IEC62321-5	90.8		0.14
2129	* see below table	91.5		0.24	2492	In house	94.90		0.70
2132	CPSC-CH-E1002-08	85.09		-0.64	2495	CPSC-CH-E1002-08	92.70		0.40
2135	In house	94.97		0.71	2503	In house	93.8		0.55
2137	IEC62321-5	90.3		0.07	2504	IEC62321-5	96.09		0.86
2138	CPSC-CH-E1002-08.3	98.28		1.16	2511	CPSC-CH-E1002-08.3	79.4		-1.42
2146	In house	94.2		0.61	2514	In house	92.89		0.43
2159	EN16711-1	94.81		0.69	2529	CPSC-CH-E1002-08.3	84.67		-0.70
2165	IEC62321-5	93.96		0.57	2553	EPA3051	77.54		-1.68
2175	IEC62321-5	95.83		0.83	2561	CPSC-CH-E1002-08.3	91.5		0.24
2182	CPSC-CH-E1002-08.3	90.8606		0.15	2564	CPSC-CH-E1002-08	91.9		0.29
2184	IEC62321-5	85.3		-0.61	2566	EPA3051A/3052mod	85.1		-0.64
2190	In house	87.2		-0.35	2569	In house	92.2		0.33
2197	In house	88.8		-0.13	2571	IEC62321-3-1	101.20		1.56
2201	IEC62321-5	94.90		0.70	2572	IEC62321-5	92.7		0.40
2202	IEC62321-5	92.6		0.39	2573	CPSC-CH-E1002-08.2	91.2		0.19
2212	CPSC-CH-E1002-08.3	90		0.03	2582	EPA3051	74.8		-2.05
2213	ISO8124-5	79.27		-1.44	2590	CPSC-CH-E1002-08	81.721	C	-1.10
2216	CPSC-CH-E1002-08.3	88.0		-0.24	2591	CPSC-CH-E1002-08.3	83.5275		-0.86
2218	In house	89.0517		-0.10	2612	In house	80.6		-1.26
2236	In house	83.20		-0.90	2614	EPA3051A/3052mod	84.1		-0.78
2247	EPA3051	92.44		0.36	2624	In house	78.9		-1.49
2255	CPSC-CH-E1002-08.3	95.3		0.76	2632	IEC62321-5	84.99		-0.66
2256	IEC62321-5	89.82		0.01	2642	CPSC-CH-E1002-08.3	88.9		-0.12
2258		-----		-----	2643	CPSC-CH-E1002-08.3	91.5		0.24
2265	EN1122	84.1		-0.78	2644	EN16711	99.17		1.29
2290	IEC62321-5	91.8		0.28	2674	IEC62321-5	90.96		0.16
2293		-----		-----	2678	CPSC-CH-E1002-08.1	87.75		-0.28
2294	CPSC-CH-E1002-08.3	93.6429		0.53	2705	In house	89.2		-0.08
2297	IEC62321-5	89.22		-0.08	2713	In house	106.11		2.24
2300	In house	73.6		-2.22	2719		95		0.71
2301		86.3		-0.48	2758	In house	91.6		0.25
2309	IEC62321-5	90.0		0.03	2773	In house	87.47		-0.32
2310	IEC62321-5	89.31		-0.06	2794	IEC62321-3-1	121.07	C,R(0.01)	4.29
2311	EPA3052	90.5		0.10	2796	IEC62321	95.0		0.71
2314	CPSC-CH-E1002-08	100.3		1.44	2804	CPSC-CH-E1002-08.3	89.4857		-0.04
2316	IEC62321-5	94		0.58	2816		-----		-----
2320	CPSC-CH-E1002-08.3	98.4		1.18	2817	CPSC-CH-E1002-08.3	84.417		-0.74
2330	CPSC-CH-E1002-08.2	83.69		-0.83	2826	CPSC-CH-E1002-08.3	92.7756		0.41
2347	CPSC-CH-E1002-08.3	90		0.03	2829	CPSC-CH-E1002-08.3	88.96		-0.11
2350	IEC62321-5	98.75		1.23	2833	IEC62321-3-1	79.94		-1.35
2352	IEC62321-5	89.7		-0.01	2835	IEC62321-5	88.38		-0.19
2353	IEC62321-5	97.7		1.08	2848	IEC62321-5	86.75		-0.42
2355	QC/T 943	90.10		0.04	2851	CPSC-CH-E1002-08.3	93.9487		0.57
2357	ISO8124-5	89.3		-0.07	2853	CPSC-CH-E1002-08.3	86		-0.52
2358	EPA3051	97.7		1.08	2854	IEC62321-3-1	40.70	R(0.01)	-6.72
2363	IEC62321-5	89.87		0.01	2856	KS M 6956	90.98		0.16
2365	EN16711-1	89.2		-0.08	2857		-----		-----
2366	IEC62321-5	91.6		0.25	2858	CPSC-CH-E1002-08.1	91.09		0.18
2369	IEC62321-5	91.02		0.17	3110	In house	83.6		-0.85
2370	IEC62321-5	82.6		-0.98	3111	EPA3052	101.6		1.62
2372	IEC62321-5	87.9		-0.26	3116	In house	89.09		-0.09
2375	In house	90.1		0.04	3118	EN16711	88.74		-0.14

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	CPSC-CH-E1002-08.3	94		0.58	3185	CPSC-CH-E1002-08.3	89.6		-0.03
3124	EPA3052	101.32		1.58	3197	IEC62321-5	90.3		0.07
3134	In house	78.05		-1.61	3209	IEC62321-5	82.88		-0.95
3146	In house	93.2		0.47	3210		-----		-----
3150	CPSC-CH-E1002-08.3	72.13		-2.42	3213	IEC62321-5	98.7		1.22
3153	IEC62321-5	90.1		0.04	3218	EPA3052	95.910		0.84
3154	IEC62321-3-1	84.54		-0.72	3225	CPSC-CH-E1002-08.3	89.52		-0.04
3160		-----		-----	3228	IEC62321-5	91.6		0.25
3163	In house	84		-0.79	3237	In house	88.32		-0.20
3166	In house	89.4		-0.05	3239	IEC62321-5	82.976		-0.93
3172	ISO8124-5	76.2		-1.86	3248	CPSC-CH-E1002-08.3	89		-0.11
3176	EPA3052	109.06		2.64	6198		-----		-----
3182	IEC62321-5	89.36		-0.06	8005	In house	95.38		0.77

normality	OK
n	159
outliers	3
mean (n)	89.7831
st.dev. (n)	6.34034
R(calc.)	17.7530
st.dev.(Horwitz)	7.30011
R(Horwitz)	20.4403

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 1082 first reported: 0.493
Lab 2590 first reported: 113.785
Lab 2794 first reported: 93.4





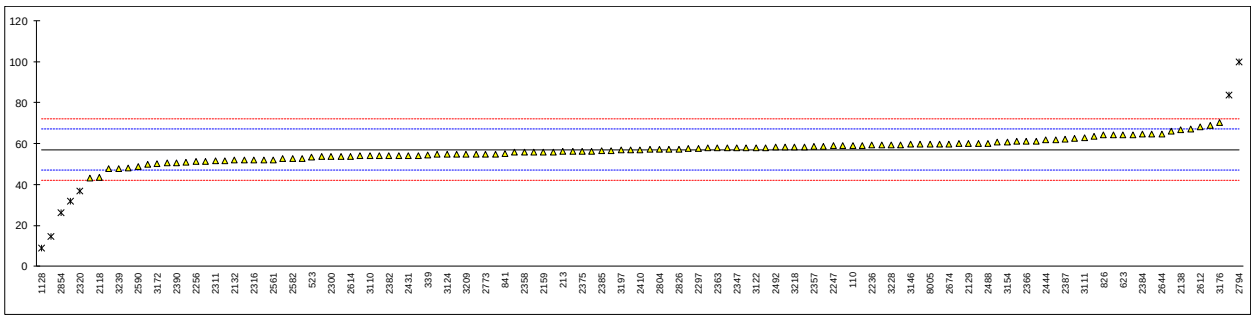
Determination of total Mercury as Hg on sample #18601; results in mg/kg

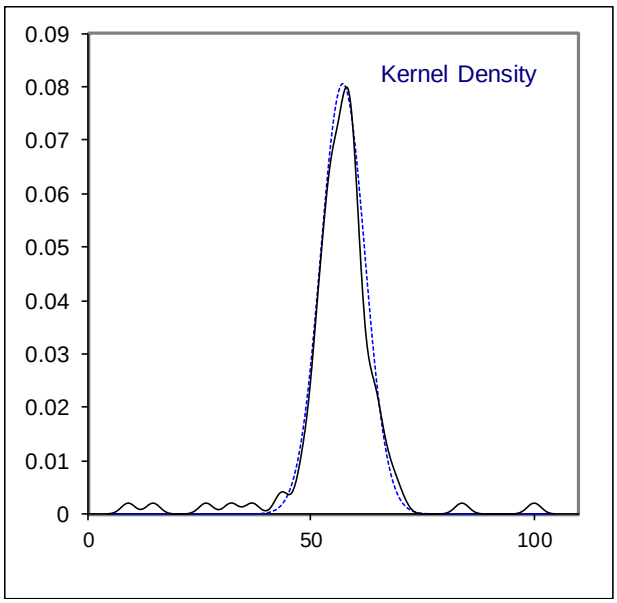
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	In house	58.92323333		0.38	2378	In house	59.9		0.57
213	CPSC-CH-E1002-08.1	56.2		-0.17	2379	EPA3052	52		-1.02
230		-----		-----	2380	In house	58.06		0.20
310	In house	54.0		-0.61	2381		-----		-----
324	IEC62321-4	53.7		-0.67	2382	IEC62321-4	54.2		-0.57
330		-----		-----	2384	IEC62321-4	64.5		1.50
339	In house	54.4		-0.53	2385	In house	56.4		-0.13
348		-----		-----	2387	IEC62321-4	62.03		1.00
523	EPA3052	53.372		-0.74	2389		-----		-----
551	IEC62321-3-1	14.47	C,R(0.01)	-8.57	2390	CPSC-CH-E1002-08.1	50.53	C	-1.31
623	In house	64.38		1.48	2410	IEC62321-4	57		-0.01
826	IEC62321-4	64.15		1.43	2424	In house	67		2.00
840	IEC62321-4	54.24		-0.57	2426		-----		-----
841	In house	55		-0.41	2431	In house	54.2226		-0.57
1051		-----		-----	2432		-----		-----
1082		-----		-----	2433		-----		-----
1126	In house	60.7		0.74	2444	IEC62321	61.7		0.94
1128	In house	8.9	R(0.01)	-9.70	2453		-----		-----
1527		-----		-----	2459		-----		-----
2115	EN16711-1	54.6		-0.49	2460		-----		-----
2118	EN16711-1	43.55		-2.72	2475		-----		-----
2120		-----		-----	2488	IEC62321-4	60		0.59
2129	* see below table	60.0		0.59	2492	In house	58.15		0.22
2132	CPSC-CH-E1002-08	51.97		-1.02	2495	CPSC-CH-E1002-08	51.05		-1.21
2135	In house	61.97		0.99	2503	In house	62.38		1.07
2137		-----		-----	2504	IEC62321-4	51.59		-1.10
2138	In house	66.64		1.93	2511	In house	50.4		-1.34
2146	In house	64.4		1.48	2514		-----		-----
2159	EN16711-1	55.97		-0.22	2529		-----		-----
2165	IEC62321-4	61.08		0.81	2553	In house	53.6	C	-0.69
2175	IEC62321-4	66		1.80	2561	In house	52.1		-1.00
2182		-----		-----	2564		-----		-----
2184	IEC62321-4	58.9		0.37	2566	EPA3051A/3052mod	54.2		-0.57
2190	In house	48.1		-1.80	2569	In house	52.5		-0.92
2197		-----		-----	2571	IEC62321-3-1	83.79	R(0.01)	5.38
2201	IEC62321-4	57.70		0.13	2572	IEC62321-4	57.4		0.07
2202	IEC62321-4	52.8		-0.86	2573		-----		-----
2212	In house	57		-0.01	2582	EPA3051	52.5		-0.92
2213	IEC62321-4	54.74		-0.46	2590	CPSC-CH-E1002-08	48.79	C	-1.66
2216	IEC62321-4	58.3		0.25	2591		-----		-----
2218		-----		-----	2612	In house	68.02		2.21
2236	In house	59.25		0.44	2614	EPA3051A/3052mod	53.7		-0.67
2247	IEC62321-4	58.89		0.37	2624		-----		-----
2255	In house	54.9		-0.43	2632	IEC62321-4	56.61		-0.09
2256	IEC62321-4	51.19		-1.18	2642		-----		-----
2258	In house	51.25		-1.17	2643		-----		-----
2265		-----		-----	2644	EN16711	64.57		1.51
2290	IEC62321-4	55.8		-0.25	2674	IEC62321-4	59.84		0.56
2293		-----		-----	2678		-----		-----
2294		-----		-----	2705	In house	55.99		-0.21
2297	IEC62321-4	57.76		0.14	2713		-----		-----
2300	In house	53.61		-0.69	2719		58		0.19
2301		52.0		-1.02	2758	In house	43.2		-2.79
2309	IEC62321-4	50.0		-1.42	2773	In house	54.74		-0.46
2310	IEC62321-4	47.8		-1.86	2794	IEC62321-3-1	100	C,R(0.01)	8.65
2311	EPA3052	51.5		-1.12	2796	IEC62321	59.8		0.55
2314		-----		-----	2804	In house	57.1302		0.02
2316	IEC62321-4	52		-1.02	2816		-----		-----
2320	In house	36.7	R(0.01)	-4.10	2817		-----		-----
2330		-----		-----	2826	CPSC-CH-E1002-08.3	57.4089		0.07
2347	IEC62321-4	58		0.19	2829		-----		-----
2350	IEC62321-4	64.36		1.47	2833	IEC62321-3-1	54.63		-0.49
2352	IEC62321-4	61.2		0.84	2835	IEC62321-4	56.26		-0.16
2353	IEC62321-4	55.9		-0.23	2848	IEC62321-4	63.59		1.32
2355	QC/T 941	59.00		0.39	2851		-----		-----
2357	IEC62321-4	58.5		0.29	2853		-----		-----
2358	EPA3051	55.9		-0.23	2854	IEC62321-3-1	26.36	R(0.01)	-6.18
2363	IEC62321-4	57.8		0.15	2856		-----		-----
2365	EN16711-1	57.8		0.15	2857		-----		-----
2366	IEC62321-4	61.1		0.82	2858		-----		-----
2369	IEC62321-4	57.89		0.17	3110	In house	54.0		-0.61
2370	IEC62321-4	60.0		0.59	3111	In house	62.8		1.16
2372	IEC62321-4	54.1		-0.59	3116	In house	58.39		0.27
2375	In house	56.3		-0.15	3118	EN16711	68.73		2.35

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
3122	CPSC-CH-E1002	58		0.19	3185	IEC62321-4	59.4		0.47
3124	In house	54.626		-0.49	3197	IEC62321-4	56.9		-0.03
3134		-----		-----	3209	IEC62321-4	54.70		-0.47
3146	In house	59.6		0.51	3210		-----		-----
3150	CPSC-CH-E1002-08.3	64.56		1.51	3213		-----	W	-----
3153	IEC62321-4	57.1		0.01	3218	IEC62321-4	58.355		0.26
3154	IEC62321-3-1	60.90		0.78	3225		-----		-----
3160		-----		-----	3228	IEC62321-4	59.4		0.47
3163	In house	32	R(0.01)	-5.04	3237	In house	58.51		0.29
3166	In house	59.5		0.49	3239	IEC62321-4	47.854		-1.85
3172	In house	50.13		-1.39	3248	CPSC-CH-E1002-08.3	59.65		0.52
3176	In house	70.20		2.65	6198		-----		-----
3182	IEC62321-4	56.30		-0.15	8005	In house	59.77		0.55

normality	OK
n	118
outliers	7
mean (n)	57.0479
st.dev. (n)	4.94712
R(calc.)	13.8519
st.dev.(Horwitz)	4.96614
R(Horwitz)	13.9052

* Lab 2129 method used: EPA3051A/EN-ISO17294/EN16711
Lab 551 first reported: 37.26
Lab 2390 first reported: 29.14
Lab 2553 first reported: 32.63
Lab 2590 first reported: 33.524
Lab 2794 first reported: 69.4
Lab 3213 first reported: 72.5





APPENDIX 2: Reported test results on other metals

All reported test results of Cobalt, Copper, Lead and Nickel on sample #18600; results in mg/kg

Lab	Co	Cu	Pb	Ni
110	0.069366667	0.61466667	1.435966667	0.501366667
213	n	n	n	n
230	n	n	n	n
310	<5	<5	<5	<5
324	< 2	< 2	< 2	< 2
330	n	n	< LOQ	n
339	<1.5	3.06	<3	<1.5
348	n	n	<10	n
523	nd	nd	nd	nd
551	ND	ND	ND	ND
623	n.d.	n.d.	n.d.	n.d.
826	N.D	N.D	N.D	N.D
840	<2	<2	<2	<2
841	ND	ND	ND	ND
1051	n	n	<20	n
1082	0.0420	0.2900	0.4930	2.0105
1126	n	n	n	n
1128	n	n	9.6	n
1527	n	n	n	n
2115	n	n	n	n
2118	0.039	0.22	0.08	0.44
2120	n	n	< 2,5	n
2129	<5	<25	<5	<5
2132	n	n	<10	n
2135	n	n	n	0.27
2137	n	n	n	n
2138	ND	ND	ND	ND
2146	n	n	n	n
2159	<10	<10	<10	<10
2165	n.d.	NA	n.d.	n.d.
2175	0	20.56	0	4.4
2182	n	n	n	n
2184	n	n	<10	n
2190	<2	3	<2	<2
2197	n	0	3.03	n
2201	<10	<10	<10	<10
2202	N.D.	N.D.	N.D.	N.D.
2212	n	n	<10	n
2213	<5	<5	<5	<5
2216	n	n	n	n
2218	n	n	n	n
2236	n	n	<20.0	n
2247	ND	ND	ND	ND
2255	n.d	n.d	n.d	n.d
2256	n	n	<10	n
2258	n	n	n	n
2265	n	n	n.d.	n
2290	<20	<20	<20	<20
2293	n	n	n	n
2294	n	n	<8	n
2297	<10	<10	<10	<10
2300	ND	ND	ND	ND
2301	ND	ND	ND	ND
2309	ND[DL-10mg/kg]	ND[DL-10mg/kg]	ND[DL-10mg/kg]	ND[DL-10mg/kg]
2310	NOT DETECTED	NOT DETECTED	NOT DETECTED	NOT DETECTED
2311	Not Detected	Not Detected	Not Detected	Not Detected
2314	n	n	NOT DETECTED	n
2316	ND	ND	ND	ND
2320	0.060	4.72	0.875	0.925
2330	n	n	ND	n
2347	<5	<5	<2	<5
2350	< 5	< 5	< 5	< 5
2352	nd	nd	nd	nd
2353	NA	NA	<5	NA
2355	0	0	0	0
2357	n	n	n	n
2358	N/A	N/A	<5	N/A
2363	ND	ND	ND	ND
2365	<10	<10	<10	<10
2366	<10	<10	<10	<10
2369	<5	<5	<2	<5
2370	n.d.	n.d.	n.d.	n.d.

Lab	Co	Cu	Pb	Ni
2372	n.d.	n.d.	n.d.	n.d.
2375	n	n	n	n
2378	nd	nd	nd	nd
2379	n	n	Not detected	n
2380	n	n	n	n
2381	n	n	ND	n
2382	n	n	n	n
2384	n	n	Not Detected [<2]	n
2385	<1	<1	<1	<1
2387	n	n	Not Detected<2	n
2389	n	n	n	n
2390	ND	ND	ND	ND
2410	<5	<5	<5	<5
2424	n	n	n	n
2426	ND	n	ND	ND
2431	n	n	n	n
2432	n	n	ND	n
2433	n	n	n	n
2444	n	n	0.0	n
2453	n	n	n	n
2459	n	n	n	n
2460	n	n	<25	n
2475	n	n	n	n
2488	n	n	n	n
2492	n	n	n	n
2495	n	n	n	n
2503	n	10.21	1.1	n
2504	<2	<2	<2	<2
2511	n	n	n	n
2514	n	n	n	n
2529	n	n	n	n
2553	<5	<5	<5	<5
2561	<1	<2	<1	<6
2564	n	n	22.2	n
2566	ND	ND	ND	ND
2569	ND	ND	ND	ND
2571	<1.00	<2.00	<1.00	<2.00
2572	<20	<20	<20	<20
2573	n	n	ND	n
2582	n.d.	47.9	n.d.	4.6
2590	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.
2591	n	n	<50.0	n
2612	< 1	1.63	< 1	< 1
2614	ND	ND	ND	ND
2624	n	n	23.2	n
2632	N.D. [<2.0]	N.D. [<2.0]	N.D. [<2.0]	N.D. [<2.0]
2642	n	n	<25	n
2643	n	n	n	n
2644	n	n	n	n
2674	n.d.	n.d.	n.d.	n.d.
2678	n	n	n.d	n
2705	0.09595	0.378	0.470	0.275
2713	n	n	<10	n
2719	n	n	n	n
2758	0	0	0	0
2773	<1.0	<1.0	<1.0	<1.0
2794	NA	<LOD	<LOD	<LOD
2796	n	n	0.0	n
2804	<10	<10	<10	<10
2816	n	n	n	n
2817	n	n	5.900	n
2826	<20	<20	<20	<20
2829	n	n	n	n
2833	n	n	50.79	n
2835	n	n	Not Detected	n
2848	n	n	n	n
2851	n	n	Not Detected	n
2853	n	n	ND	n
2854	n	n	12.80	n
2856	n	n	0.00	n
2857	n	n	n	n
2858	n.d	n	n.d	n.d
3110	n	n	<15	n
3111	0.27	0.49	0.74	0.34
3116	n	n	n	n
3118	ND	n	ND	5.62
3122	< 5	< 5	< 5	< 5
3124	< 0.2	< 1	n	< 1

Lab	Co	Cu	Pb	Ni
3134	n	n	<1.5	n
3146	n.d.	n.d.	n.d.	n.d.
3150	0.05	3.66	0.62	0.46
3153	ND	ND	ND	ND
3154	n	n	n	n
3160	n	n	n	n
3163	6	11	0	10
3166	0.048	0.30	0.51	0.138
3172	n	n	n	n
3176	1.63	4.19	41.51	7.33
3182	<5	<5	<13	<5
3185	<10	<10	<10	<10
3197	<10	<10	<10	<10
3209	<10.0	<10.0	<10.0	<10.0
3210	n	n	n	n
3213	n	n	1.3	n
3218	<10.000	<10.000	<10.000	<10.000
3225	n	n	ND	n
3228	n	n	<10	n
3237	n	n	n	n
3239	n	n	Not Detected	n
3248	ND	ND	ND	ND
6198	n	n	n	n
8005	n	n	n	n

All reported test results of total Hexavalent Chromium, Cobalt, and Nickel on sample #18601; results in mg/kg

Lab	Cr6+	Co	Ni
110	0.107	0.046566667	0.120966667
213	n	n	n
230	n	n	n
310	n	<5	<5
324	n	< 2	< 2
330	n	n	n
339	<10	<1.5	<1.5
348	n	n	n
523	nd	nd	nd
551	ND	ND	ND
623	n	n.d.	n.d.
826	N.D	N.D	N.D
840	<8	<2	<2
841	ND	ND	ND
1051	n	n	n
1082	n	0	0
1126	n	n	n
1128	n	n	n
1527	n	n	n
2115	n	n	n
2118	0	0	0
2120	n	n	n
2129	n	<5	<5
2132	n	n	n
2135	n	n	0.20
2137	n	n	n
2138	5.21	ND	ND
2146	n	n	n
2159	n	<10	<10
2165	n.d.	n.d.	n.d.
2175	0	0	0
2182	n	n	n
2184	<10	n	n
2190	n	<2	<2
2197	n	n	n
2201	<10	<10	<10
2202	49.2	N.D.	N.D.
2212	2.1	n	n
2213	<5	<5	<5
2216	<10	n	n
2218	n	n	n
2236	n	n	n
2247	7.08	ND	ND
2255	...	n.d	n.d
2256	n	n	n
2258	n	n	n

Lab	Cr6+	Co	Ni
2265	n	n	n
2290	n	<20	<20
2293	n	n	n
2294	n	n	n
2297	<10	<10	<10
2300	ND	ND	ND
2301	NA	ND	ND
2309	ND[DL-8mg/kg]	ND[DL-10mg/kg]	ND[DL-10mg/kg]
2310	NOT DETECTED	NOT DETECTED	NOT DETECTED
2311	Not Detected	Not Detected	Not Detected
2314	n	n	n
2316	ND	ND	ND
2320	n	2.56	17.33
2330	n	n	n
2347	<8	<5	<5
2350	< 8	< 5	< 5
2352	nd	nd	nd
2353	31.8	NA	NA
2355	0	0	0
2357	n	n	n
2358	N/A	N/A	N/A
2363	ND	ND	ND
2365	<8	<10	<10
2366	<8	<10	<10
2369	<8	<5	<5
2370	n.d.	n.d.	n.d.
2372	n.d.	n.d.	n.d.
2375	n	n	n
2378	no capacity	ND	ND
2379	4.6	n	n
2380	n	n	n
2381	n	n	n
2382	n	n	n
2384	Not Detected [<8]	n	n
2385	3.51	<1	<1
2387	Not Detected<8	n	n
2389	n	n	n
2390	ND	ND	ND
2410	n	<5	<5
2424	n	n	n
2426	ND	ND	ND
2431	n	n	n
2432	n	n	n
2433	n	n	n
2444	0.0	n	n
2453	n	n	n
2459	n	n	n
2460	n	n	n
2475	n	n	n
2488	n	n	n
2492	n	n	n
2495	n	<2.5	<2.5
2503	n	n	n
2504	<5	<2	<2
2511	n	n	n
2514	n	n	n
2529	n	n	n
2553	n	<5	<5
2561	n	<1	<6
2564	n	n	n
2566	7.99	ND	ND
2569	n	ND	ND
2571	9.81	<1.00	<1.00
2572	n	<20	<20
2573	n	n	n
2582	n.d.	n.d.	4.0
2590	n	<L.O.Q.	<L.O.Q.
2591	n	n	n
2612	< 20	< 1	< 1
2614	8.3	ND	ND
2624	n	n	n
2632	N.D. [<1]	N.D. [<2.0]	N.D. [<2.0]
2642	n	n	n
2643	n	n	n
2644	n	n	n
2674	n	n.d.	n.d.
2678	n	n	n
2705	n	0.27	0.14

Lab	Cr6+	Co	Ni
2713	n	n	n
2719	n	n	n
2758	n	0	0
2773	<1.0	<1.0	<1.0
2794	n	NA	<LOD
2796	0.0	n	n
2804	n	<10	<10
2816	n	n	n
2817	n	n	n
2826	<20	<20	<20
2829	n	n	n
2833	n	n	n
2835	Not Detected	n	n
2848	n	n	n
2851	n	n	n
2853	n	n	n
2854	n	n	n
2856	n	n	n
2857	n	n	n
2858	n	n.d	n.d
3110	n	n	n
3111	n	0.25	0.09
3116	n	n	n
3118	n	ND	ND
3122	< 5	< 5	< 5
3124	n	< 0.2	< 1
3134	n	n	n
3146	n	n.d.	n.d.
3150	n	0.04	1.25
3153	9.9	ND	ND
3154	n	n	n
3160	n	n	n
3163	n	0	5
3166	0.081	0.041	0.024
3172	n	n	n
3176	n	1.14	6.21
3182	6.55	<5	<5
3185	<10	<10	<10
3197	<10	<10	<10
3209	<10.0	<10.0	<10.0
3210	n	n	n
3213	25.3	n	n
3218	<10.000	<10.000	<10.000
3225	ND	n	n
3228	<10	n	n
3237	n	n	n
3239	Not Detected	n	n
3248	ND	ND	18
6198	n	n	n
8005	n	n	n

APPENDIX 3: Analytical details

Lab	ISO / IEC 17025 accredited	Sample preparation Cr6+	Extraction solvent Cr6+	Solid/liquid ratio Cr6+ (g/ml)	Extract Time Cr6+ (min)	Extract Temp Cr6+ (°C)
110	Yes	Cut	alkaline solvent	mg/kg	3h	95 +/- 5
213	No	---				
230	Yes	As received				
310	No	---				
324	Yes	---				
330	No	As received				
339	No	As received	NaOH+Na2CO3	0.0125	180	92.5
348	Yes	---				
523	Yes	Cut	Digestion	2.5 g/50 mL	180	95
551	---	Grinded	Digestion Alkaline	1.25/25	180	90
623	No	---				
826	Yes	Grinded	NMP,NaOH+Na2CO3 digestion/Toluene, NaOH+Na2CO3 digestion	Cr6+ : 0.1g/100mL, 0.15g/50mL	120 / 90	60-65 / 150~160
840	Yes	Grinded	PVC:Tetrahydrofuran+1-Methyl-2-pyrrolidone; PBT:Hexafluoroisopropanol+I	1/100	120	150
841	No	Cut	18600: NMP+(NaOH+Na2CO3), 18601:Toluen+(NaOH+Na2CO3)	18600:0.1g/(10ml NMP +20ml NaOH-Na2CO3), 18601:0.15g/(10ml NaOH-Na2CO3+5ml Toluen)	18600: 210, 18601: 90	18600: 60, 18601: 150-160
1051	Yes	---				
1082	No	As received	HNO3 5ml+H2O2 2ml in microwaveoven (UltraWave)	0,3g / 25ml	45	gradiant but up to 220
1126	No	---				
1128	No	---				
1527	---	---				
2115	Yes	As received				
2118	No	As received	NaOH/Na2CO3	4gNaOH - 6gNa2CO3 /200ml	90	160
2120	Yes	---				
2129	Yes	---				
2132	Yes	Grinded				
2135	---	---				
2137	Yes	---				
2138	No	Cut	NMP	about 0.1g / 10 ml	1h	60
2146	No	---				
2159	Yes	---				
2165	Yes	Grinded	NMP	Total digest: 0.1/10 (0.1g/10ml acid)	180	60
2175	Yes	As received	Water		60	90
2182	Yes	Cut				
2184	Yes	As received	Toluene alkaline solution/NMP+ alkaline solution	0.1g/100ml	90	150
2190	Yes	As received				
2197	Yes	---				
2201	Yes	Cut	Alkaline digestion solution and toluene	0.15g sample/10ml alkaline digestion solution and 5ml toluene	90	160
2202	Yes	As received	PVC NMP,PBT HFIP	About 100	180	Room
2212	Yes	Cut				
2213	Yes	Cut				
2216	Yes	Grinded	NaCO3/NaOH aq.	1/50	240	
2218	---	---				
2236	Yes	---				
2247	---	---				
2255	---	---				
2256	Yes	As received				
2258	Yes	---				
2265	Yes	As received		0,1g / 25ml	45	200
2290	---	---				
2293	---	---				
2294	Yes	---				
2297	Yes	As received	NMP	0.01	60	60
2300	Yes	---				

Lab	ISO / IEC 17025 accredited	Sample preparation Cr6+	Extraction solvent Cr6+	Solid/liquid ratio Cr6+ (g/ml)	Extract Time Cr6+ (min)	Extract Temp Cr6+ (°C)
2301	Yes	As received				
2309	Yes	Grinded	NMP	0.1g/10ml	60	60
2310	Yes	As received	1-methyl-2-pyrrolidone	1g/10ml	120	60
2311	Yes	Grinded	NMP	0.1/10	60	60
2314	Yes	As received				
2316	Yes	---				
2320	Yes	---				
2330	Yes	---				
2347	---	---				
2350	Yes	Grinded	18600=>NMP+(Na2CO3+NaOH) 18601=>Toluene+(Na2CO3+NaOH)	18600=>0.1 g/100mL 18601=>0.15 g/ 50mL	18600: 180 18601: 90	Room
2352	Yes	Grinded	Toluene	3:200	90	190
2353	Yes	Grinded	NMP N-methylpyrrolidone	18600:0.1g/10ml;18601:0.15g/10ml	18600 :2h; 18601 :1.5h	18600: 60; 18601:50-160
2355	Yes	Cut	0.5mol/LNaOH+0.5mol/LNa2CO3	10	60	150
2357	---	---				
2358	Yes	---	N/A	N/A	N/A	N/A
2363	Yes	Grinded	PVC:NMP and NaOH/Na2CO3 PBT: methylbenzene and NaOH/Na2CO3	PVC: 0.1:30 ; PBT: 0.15:15	PVC:3h PBT: 90	PVC:60 PBT:155
2365	Yes	Grinded	18600:NMP and NaoH-Na2CO3; 18601:Toluene and Naoh-Na2CO3	18600:0.1g/50mL;18601:0.15g/50mL	18600:180; 18601:90	18600:60; 18601:160
2366	Yes	Cut	18600 NMP, 18601 toluene and NaoH	18600,0.1g to 10ml 0.15 /18601, 0.15g to 15ml	18600; 60, 18601; 90	18600; 60 18601; 160
2369	---	---				
2370	Yes	Grinded	18600:NMP 18601:toluene /both use digestion	18600: 0.1/20g/ml 18601 : 0.15/10g/ml	18600: 120 18601: 90	18600: 60 18601: 155
2372	Yes	Grinded	NMP+alkaline	0.15g/50mL	1h	60
2375	Yes	---				
2378	Yes	Grinded	Toluene	3:200	90	200
2379	Yes	Cut	1-METHYL-2-PYPROLIDINONE	0.15g/100ml	180	60-65
2380	Yes	Cut	NaOH & Na2CO3	1.25g / 25ml	180	90-95
2381	Yes	---				
2382	No	Cut	Toluene	50	180	60
2384	Yes	Grinded	toluene	0.15g:15ml	90	155
2385	Yes	Grinded	Alkaline extraction solution acc. EPA 3060a	1g in 20 ml	60	95
2387	Yes	Grinded	NMP,Toluene	0.1/30, 0.15/15	180,90	60,150
2389	---	---				
2390	Yes	As received	NaOH and Na2CO3	2.5gm / 50ml	180	90-95
2410	---	---				
2424	Yes	As received				
2426	Yes	As received	Perspiration Solution	0.5:100	-	Room
2431	Yes	Cut				
2432	No	Cut		nitric acid 9ml/0.2g;hydrochloride acid 3ml /0.2g		
2433	---	---				
2444	---	As received	Digestion NaOH+Na2 CO3	0.1g/NMP10ml+Digestion20ml	180	60
2453	No	---				
2459	---	---				
2460	Yes	---				
2475	Yes	---				
2488	---	As received	NaOH/NaCO3	2.5g/100mL	3h	95
2492	Yes	Cut		500		
2495	Yes	As received				
2503	---	---				
2504	Yes	Cut	NMP, Toluene	NMP=100, Toluene=33.3	3h, 1.5h	60,150
2511	---	---				
2514	Yes	---				
2529	No	---				
2553	No	---				
2561	Yes	---				
2564	---	---				
2566	---	---	phosphate buffer, NaOH digestion, DNPH&Sulphuric acid	sample weight-0.5g & final volume 100ml NaOH	3h	60
2569	Yes	Cut				
2571	Yes	Grinded	NaOH,Na2CO3,MgCl2,phosphate buffer	5%	180	90~95

Lab	ISO / IEC 17025 accredited	Sample preparation Cr6+	Extraction solvent Cr6+	Solid/liquid ratio Cr6+ (g/ml)	Extract Time Cr6+ (min)	Extract Temp Cr6+ (°C)
2572	---	---				
2573	Yes	---				
2582	Yes	Cut	Dipotassium Hydrogen Phosphate Solution	1:50	180	Room
2590	Yes	---				
2591	Yes	---				
2612	Yes	Cut	NaOH+Na2CO3-acc DIN EN 62321-7-2	0.15g/10ml	1h	150 to 160
2614	Yes	As received	phosphate buffer, Na2CO3 digestion, DPC&Sulphuric acid	sample weight-0.5g & final volume 100ml NaOH	3h	60
2624	No	---				
2632	Yes	As received	0.5M NaOH/0.283M Na2CO3	2.5g/100ml	180	90~95
2642	Yes	---				
2643	Yes	As received				
2644	No	As received		1:50	45	180
2674	Yes	As received	NMP+Alkaline	10ml NMP and 20ml alkaline for 0.1g samples	180	60
2678	Yes	---				
2705	---	---				
2713	Yes	As received				
2719	---	---				
2758	No	---				
2773	---	---				
2794	Yes	---				
2796	---	As received	Digestion NaOH+Na2 CO3	sample 0.1 g/ NMP10 ml+Digestion 20ml	180	60
2804	No	---				
2816	---	---				
2817	Yes	---				
2826	No	As received	Digestion: NaOH+Na2CO3	0.5g sample with 50ml digestion	180	90-95
2829	Yes	---				
2833	No	As received	n.a.	n.a.	n.a.	n.a.
2835	Yes	Cut	N-Methyl-pyrrolidone (NMP)	0.1/10	240	60
2848	No	As received		0.2 5g / 25 mL	72	190
2851	Yes	As received	n.a.	0.2107g/50mL	20 for Ramp time, 60 for Hold time	210
2853	No	Cut		0.1g/25ml	30	200
2854	No	Grinded				
2856	Yes	---				
2857	---	---				
2858	Yes	---				
3110	Yes	---				
3111	---	---				
3116	Yes	---				
3118	No	---				
3122	Yes	Cut	Na2CO3 NaOH	0.5 gr / 5 ml	60	95
3124	Yes	As received				
3134	No	---				
3146	Yes	As received				
3150	Yes	---				
3153	Yes	Grinded	20.0g NaOH and 30.0g Na2CO3 in 1000ml water	20	180	95
3154	---	---				
3160	---	---				
3163	Yes	---				
3166	Yes	Grinded	aqueous NaOH/Na2CO3	1.0 g/50mL	60	70
3172	---	---				
3176	Yes	---				
3182	Yes	Grinded	Na2CO3 30g and NaOH 20g in Water 1L	1:20	180	93
3185	Yes	Grinded	18600:N-methyl-pyrrolidone(NMP) 18601:Toluene and digestion	18600: 0.1g, NMP:10mL; 18601: 0.15g, Toluene: 5mL,digestion:10mL	18600:180; 18601: 90	18600:60; 18601:150

Lab	ISO / IEC 17025 accredited	Sample preparation Cr6+	Extraction solvent Cr6+	Solid/liquid ratio Cr6+ (g/ml)	Extract Time Cr6+ (min)	Extract Temp Cr6+ (°C)
3197	Yes	Cut	NMP and phosph. buffer K2HPO4+KH2PO4 digestion Na2CO3+NaOH	0,1g/10 mL NMP+20mL digestion	60*3	60
3209	Yes	As received	2% sodium hydroxide and 3% sodium carbonate extract	1:20	1h	92
3210	Yes	---				
3213	Yes	Grinded	phosphate buffer	0.15g solid/15mL liquid	1.5h	150
3218	Yes	Grinded	digestion, oluene, magnesium chloride,phosphate buffer	0.15g sample,10ml digestion,5ml toluene,400mg magnesium chloride and 0.5ml phosphate buffer	90	160
3225	Yes	Cut	Alkaline digestion	1.25g, 50ml digestion, mark up to 100ml	180	95
3228	Yes	Cut	18600:NMP/NaOH+Na2CO3 solution, 18601:Toluene/NaOH+Na2CO3 solution	18600: 0.1g/20ml, 18601:0.15g/10ml	18600: 180, 18601:1.5h	18600: 60, 18601:150
3237	Yes	As received				
3239	Yes	Cut	nil	0.025	180	85-95
3248	Yes	As received				
6198	Yes	---				
8005	Yes	---				

APPENDIX 4:

Number of participants per country

5 labs in BANGLADESH
2 labs in BELGIUM
2 labs in BRAZIL
1 lab in CAMBODIA
1 lab in CANADA
3 labs in DENMARK
2 labs in FINLAND
6 labs in FRANCE
9 labs in GERMANY
1 lab in GREECE
2 labs in GUATEMALA
21 labs in HONG KONG
12 labs in INDIA
3 labs in INDONESIA
7 labs in ITALY
8 labs in KOREA
1 lab in LUXEMBOURG
3 labs in MALAYSIA
1 lab in MAURITIUS
4 labs in MEXICO
1 lab in MOROCCO
22 labs in P.R. of CHINA
4 labs in PAKISTAN
1 lab in PHILIPPINES
2 labs in PORTUGAL
1 lab in ROMANIA
3 labs in SINGAPORE
2 labs in SOUTH KOREA
4 labs in SPAIN
3 labs in SRI LANKA
1 lab in SWITZERLAND
5 labs in TAIWAN R.O.C.
5 labs in THAILAND
4 labs in THE NETHERLANDS
2 labs in TUNISIA
7 labs in TURKEY
7 labs in U.S.A.
1 lab in UNITED KINGDOM
5 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

Literature:

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