

Results of Proficiency Test Metals content in Polymers September 2015

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. L. Dijkstra
Correctors: dr. R.G. Visser & ing. R.J. Starink
Report: iis15P06

November 2015

CONTENTS

1	INTRODUCTION.....	3
2	SET UP.....	3
2.1	ACCREDITATION.....	3
2.2	PROTOCOL.....	3
2.3	CONFIDENTIALITY STATEMENT.....	4
2.4	SAMPLES.....	4
2.5	ANALYSES.....	5
3	RESULTS.....	5
3.1	STATISTICS.....	5
3.2	GRAPHICS.....	6
3.3	Z-SCORES.....	6
4	EVALUATION.....	7
4.1	EVALUATION PER ELEMENT.....	8
4.2	PERFORMANCE OF THE GROUP OF LABORATORIES.....	10
4.3	EVALUATION OF THE METHODES USED.....	10
4.4	COMPARISON WITH PREVIOUS PROFICIENCY TESTS.....	12

Appendices:

1.	Data, statistical results and graphic results.....	14
2.	Analytical details for samples #15150 and #15151.....	46
3	Number of participants per country.....	49
5.	Abbreviations and literature.....	50

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 2002/95/EC maximum concentrations are specified for metals in plastic: the sum of Lead (Pb), Mercury (Hg), Cadmium (Cd) and hexavalent Chromium (CrVI) may not exceed 0.1%M/M, while the maximum concentration for Cadmium may not exceed 100 mg/kg.

The determination of metals in plastics is known to give some times problems with regard to the comparability of laboratory results. However, still only few plastic reference materials are available (ref 16.). As an alternative, participation in a proficiency test may enable the laboratories to check their performance and thus to increase this comparability. 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 (see reference 16). Starting with only total Cadmium, over the years the scope was extended with total Lead, total Chromium, Chromium (VI) content and total Mercury. In this year's proficiency test the scope was extended with Antimony, Cobalt and Copper content. Both metals Antimony and Cobalt are listed on the "Substance of Very High Concern" list and are subject to authorisation under the REACH regulation.

In the interlaboratory study of September 2015, 165 laboratories from 40 different countries participated (See appendix 3). In this report, the results of the proficiency test are presented and discussed.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, The Netherlands, was the organiser of this proficiency test. It was decided to send 2 different samples (approximately 5 gram each), labelled #15150 and #15151, both positive (artificially fortified) on one or more metals. The analyses for fit-for-use and for homogeneity testing were subcontracted to an ISO17025 accredited laboratory. Participants were requested to report also some details of the test methods used.

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 April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis internet site 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 samples, both artificially fortified to be positive on one or more metals, were selected. The materials were divided over plastic bags, approx. 5 grams for each sample and labelled respectively #15150 and #15151. The homogeneity of the subsamples #15150 and #15151 were both checked by determination of Cadmium according to EN1122 on 8 stratified randomly selected subsamples.

	Cadmium in #15150 in mg/kg	Cadmium in #15151 in mg/kg
Sample 1	147	156
Sample 2	144	162
Sample 3	141	157
Sample 4	147	163
Sample 5	139	155
Sample 6	139	158
Sample 7	145	160
Sample 8	143	161

Table 1: homogeneity test results of subsamples #15150 and #15151

From the above test results, the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the target method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Cadmium in #15150 in mg/kg	Cadmium in #15151 in mg/kg
r (observed)	9.0	8.2
reference method	EN1122:01	EN1122:01
0.3 x R (reference method)	10.7	11.9

Table 2: evaluation of repeatabilities of the subsamples #15150 and #15151

Based on the data in table 1 and 2, the homogeneity of all subsamples was assumed. To each of the participating laboratories one set of samples, (1* sample #15150 and 1* sample #15151) was sent on August 12, 2015.

2.5 ANALYSIS

The participants were requested to determine on both samples: total Antimony, total Cadmium, total Chromium, total hexavalent Chromium, total Cobalt, total Copper, total Lead and total Mercury. It was explicitly requested to treat the samples as if it were routine samples and to report the analytical results using the indicated units on the report form. And not to round the 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 results cannot be used for meaningful statistical calculations.

To get comparable results a detailed report form, on which the units were prescribed, was sent together with each set of samples. In addition, a letter of instructions was added to the package. The laboratories were also requested to report some details of the test methods used.

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in the appendix of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder fax was sent to those laboratories that had not reported results at that moment.

Shortly after the deadline, the available results were screened for suspect data. A 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 results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3) For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. 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. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.

According to ISO 5725 (1986 and 1994, lit. 6 and 7) the original results per determination were submitted subsequently to Dixon's, Grubbs' and Rosner 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 General ESD test (See appendix 4, no. 20). 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 General ESD 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 requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

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

3.2 GRAPHICS

In order to visualise 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 under 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 standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 4, no 17 and 18). 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 reproducibilities, the z-scores were calculated using a target standard deviation. 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:

$$Z_{(\text{target})} = (\text{result} - \text{average of PT}) / \text{target standard deviation}$$

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 some problems were encountered with the dispatch of the samples. Nineteen participants reported the results after the final reporting date and four participants did not report any results at all due to several reasons. Not all laboratories were able to report all analyses requested.

Finally, the 161 reporting laboratories submitted 1251 numerical results. Observed were 36 outlying results, which is 3.0% of all reported numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

The participants were also requested to report the analytical details of the methods. The analytical details are listed in Appendix 2.

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 to be the official test method.

For the determination of the metals Hexavalent Chromium, Lead and Mercury in polymers and electronics, the method IEC62321:2008 was considered to be the official test method. However, in 2014, the latest version 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 2014 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-part 5:2014, but to estimate the reproducibility from the Horwitz equation, except for Cadmium for which test method EN1122:01 is available.

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

Sample #15151 was also used in the 2011 and 2013 proficiency tests (iis11P02 and iis13P02 "Metals in Plastic"). Based on the report problems in the 2011 and 2013 PT's it was decided to exclude the very low reported test results manually for Antimony, Cadmium and Lead in sample #15151. A more detailed description is given in paragraph 4.3 of this report.

4.1 EVALUATION PER ELEMENT

In this section, the results are discussed per analyte.

Total Antimony: For sample #15150 almost all laboratories reported test results near or below the detection limit. Therefore no significant conclusions were drawn. One participant reported a false positive test result.

For sample #15151 this determination may be very problematic. Seven statistical outliers were observed and twenty-nine other test results were excluded from the statistical evaluation, see §4.3. The calculated reproducibility, after rejection of suspect data is not at all in agreement with the reproducibility requirement estimated from the Horwitz equation.

Total Cadmium: For sample #15150 this determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility, after rejection of statistical outliers is in good agreement with the reproducibility requirements of EN1122:01.

For sample #15151 this determination was problematic for a large number of laboratories. Four statistical outliers and sixteen (!) false negative test results were observed. Another twenty-seven test results were excluded from the statistical evaluation, see §4.3. However, the calculated reproducibility, after rejection of suspect data is in agreement with the reproducibility requirements of EN1122:01.

Total Chromium: For sample #15150 almost all laboratories reported test results near or below the detection limit. Therefore no significant conclusions were drawn. Two participants reported a false positive test result.

For sample #15151 this determination may be problematic. The calculated reproducibility, after rejection of the suspect test result is not in agreement with the reproducibility requirement estimated from the Horwitz equation.

Chromium VI: For sample #15150 almost all laboratories reported test results near or below the detection limit. This is in line with the absence of chromium in the total chromium determination on this sample.

For sample #15151, the chemical that was used to add Chromium VI to the PP material, was pure Potassium chromate (K_2CrO_4). Therefore, the hexavalent Chromium content should in principle be equal to the total Chromium content. About half (47%) of the reporting laboratories did **not** detect any Chromium VI in sample #15151. Only 39 laboratories reported a numerical test results and they agreed on a result of approx 8.9 mg/kg. Sixteen participants reported a test result between 10.4 – 19.6 mg/kg and two participants reported test results of 30.58 mg/kg and 32.4 mg/kg. The theoretical concentration Chromium VI, estimated from the total chromium determination, will be 46 mg/kg. Still, it was decided to use 8.9 mg/kg as assigned value, because this lower value was supported by 95% of the laboratories that reported the presence of Chromium VI. However, the observed low recovery caused 34 laboratories to report not detected or 'less than'

test results and therefore it was decided not to calculate z-scores for this determination.

Total Cobalt: For sample #15150 this determination may be problematic. Only one statistical outlier was observed. However, the calculated reproducibility, after rejection of the statistical outlier is not in agreement with the reproducibility requirement estimated from the Horwitz equation.
For sample #15151 almost all laboratories reported test results near or below the detection limit. Therefore no significant conclusions were drawn.

Total Copper: For sample #15150 this determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers is in full agreement with the reproducibility requirement estimated from the Horwitz equation.
For sample #15151 almost all reported test results near or below the detection limit. Therefore no significant conclusions were drawn. One participant reported a false positive test result.

Total Lead: For sample #15150 all participants reported test results near or below the detection limit. Therefore no significant conclusions were drawn.
For sample #15151 this determination may be problematic. Four statistical outliers and twenty-three false negative test results were observed. Nineteen other test results were excluded from the statistical evaluation, see §4.3. The calculated reproducibility, after rejection of the suspect test results, is not in agreement with the reproducibility requirement estimated from the Horwitz equation.

Total Mercury: This determination may be (very) problematic.
For sample #15150 nine statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers is not in agreement with the estimated reproducibility limit calculated using the Horwitz equation.
For sample #15151 one statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier is not at all in agreement with the reproducibility requirement estimated from the Horwitz equation.

4.2 PERFORMANCE EVALUATION OF THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard 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.

Parameter	unit	n	Average	2.8 * sd	R (target)
Total Cadmium as Cd	mg/kg	154	138	33	35
Total Cobalt as Co	mg/kg	106	96	28	22
Total Copper as Cu	mg/kg	75	91	18	21
Total Mercury as Hg	mg/kg	119	59	21	14

Table 3: performance overview for sample #15150

Parameter	unit	n	Average	2.8 * sd	R (target)
Total Antimony as Sb	mg/kg	72	39650	10260	3610
Total Cadmium as Cd	mg/kg	102	140	31	36
Total Chromium as Cr	mg/kg	127	46	31	12
Hexavalent Chromium (VI) as Cr	mg/kg	37	9	17	(3)
Total Lead as Pb	mg/kg	102	164	52	34
Total Mercury as Hg	mg/kg	120	61	40	15

Table 4: performance overview for sample #15151

*) Between brackets is near or below the lower detection limit

Without further statistical calculations, it can be concluded that for sample #15150 there is only good compliance for the elements Cadmium and Copper of the group of participating laboratories with the relevant target reproducibility. And for #15151 there is only good compliance for the element Cadmium of the group of participating laboratories with the relevant target reproducibility.

4.3 EVALUATION OF THE METHODS USED

The reported analytical details of the methods for the determinations of Chromium, Copper, Cobalt, Lead, Mercury and Cadmium that were used by the participants are listed in appendix 2.

Although the reported analytical details varied much for particle size of the sample used, the overall average recoveries are good in comparison with the added amounts. Regretfully, no clear correlation between the reported analytical details and the quality of the test results could be found. However, several participants reported details that are in contradiction with each other, e.g. the sample was used "as received", and while at the same time the particle size was reported as ≤ 0.5 mm. One participant reported to have cut the samples to size of approx. 0.1 mm.

A large number of laboratories had problems with the complete digestion of sample #15151. This was not unexpected as the sample was also used in the 2011 and 2013 proficiency tests (iis11P02 and iis13P02 "Metals in Plastic"). The laboratory that performed the homogeneity testing did initially report very low concentrations for cadmium and lead, much lower than expected from the amounts of lead and cadmium that were added to the PP material (approx. 150 mg/kg each).

Only after change of the acid mixture used ($\text{HNO}_3/\text{H}_2\text{O}_2$ instead of HNO_3 only) and also after a drastic change in the microwave program to: from room temp. to 165°C within 12 min, then hold for 5 min., then from 165°C to 210°C within 12 min, then hold for 35 min., the laboratory was able to find the expected amounts of cadmium and lead in the sample #11050/#13151/#15151. Based on the report problems in the 2011 and 2013 PTs, it was decided to exclude the lowest test results for Antimony, Cadmium and Lead in sample #15151.

For the determination of total Cadmium in plastics, the EN1122 test method is considered to be the official EC test method. In this proficiency test 53 participants (34% of all) used a version of EN1122. No clear correlation between the method used and the quality of the results could be found.

For the determination of total Chromium in plastics, test method IEC62321-5 is available. In the new 2014 version of this method, a number of precision data is present. Regretfully, large differences in precision data between the different concentration levels and the quantification methods are visible. In this interlaboratory study, the group used the following methods the IEC62321 or EPA 3050, 3051 or EPA 3052 methods. Two participants reported to have used EN1122, which is in principle only meant for Cadmium. Thirty-three participants used CPSD-CH-E1002-08. No clear correlation between the method used and the quality of the test results could be found.

For the determination of hexavalent Chromium in plastics, test method IEC62321:2008 is available, regretfully without precision data. The method is based on EPA 3060A and EPA 7196. In this interlaboratory study, 56 laboratories used this method and other participants reported to have used EPA 3060A, CPSD-CH-E1002-08, EN1122 or an in house method. The test method for CrVI does contain several parts that may influence the test results strongly, for example the grain size of the plastic particles and the mixture /solution that is used to extract the CrVI ions. Therefore, strict adherence to the test method is advised.

For the determination of total Lead in plastics, test method IEC62321-5 is available. In the new 2014 version of this method a number of precision data is present. Regretfully, large differences in precision data between the different concentration levels and the quantification methods are visible. In this interlaboratory study, the majority of the group used the IEC62321 or CPSD-CH-E1002-08. No clear correlation between the method used and the quality of the test results could be found.

For the determination of total Mercury in plastics, test method IEC62321 is available, regretfully without precision data. In this interlaboratory study, the majority of the group used the IEC62321 CPSD-CH-E1002-08 or EPA 3052 methods. No clear correlation between the method used and the quality of the test results could be found.

For the determination of Antimony, Cobalt and Copper no standard test methods are available.

4.4 COMPARISON WITH PREVIOUS PROFICIENCY TESTS

The number of participants increased from 66 in 2005 to 161 in this round. The percentage of outliers decreased over the years from 10.3% in 2005 to 3.0% of the numerical results in 2015.

The evolution of the reproducibilities for cadmium, lead, chromium, chromium VI and mercury content as observed in this proficiency scheme and the comparison with the findings in previous rounds are visualized in table 5.

	25-250 mg Cd/kg	50-500 mg Pb/kg	25-250 mg Co/kg	25-250 mg Cr/kg	50-250 mg Cr VI/kg	25-250 mg Cu/kg	5-125 mg Hg/kg
2002	18%	29%	--	--	--	--	--
2003	11%	36%	--	--	--	--	--
2004	12%	--	--	--	--	--	--
2005	8%	--	--	12%	--	--	--
2006	7%	9%	--	11%	--	--	--
2007	8%	8-11%	--	15%	--	--	--
2008	9%	9%	--	9%	57-76%	--	--
2009	10%	7-10%	--	10-11%	55-62%	--	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	8-9%	11%	10%	11-24%	66%	7%	13-24%
EN1122:01	7-10%	--	--	--	--	--	--
Horwitz	----	6-9%	7-10%	7-10%	7-9%	7-10%	8-13%

Table 5: comparison of the uncertainties for Cd, Pb, Co, Cr, CrVI and Hg (in %) in the previous rounds and in the present round

Sample #15151 was used in previous PT's as sample #11050 in iis11P02 and as sample #13151 in iis13P02. When the assigned value of both PTs is compared the resemblance is striking. See below table:

	unit	Average			2.8 * sd		
		#11050	#13151	#15151	#11050	#13151	#15151
Total Cadmium as Cd	mg/kg	139.8	138.0	142.1	33.4	29.7	30.7

Table 6: comparison of samples #11050, #13151 and #15151

In general, it can be concluded from the uncertainties of the Lead, Cadmium, Chromium, Cobalt and Copper content determinations that the quality of the testing of Lead, Cadmium, Chromium, Cobalt and Copper in plastics is acceptable. The determinations of Chromium VI and of Mercury content still require significant improvements to reach the desired quality level.

--empty page--

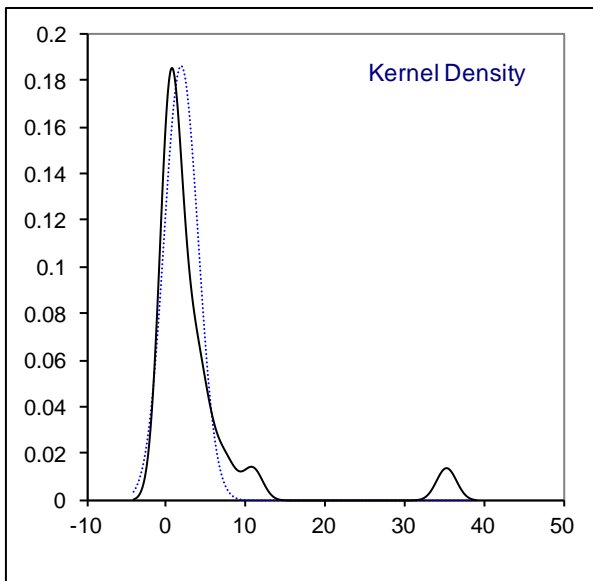
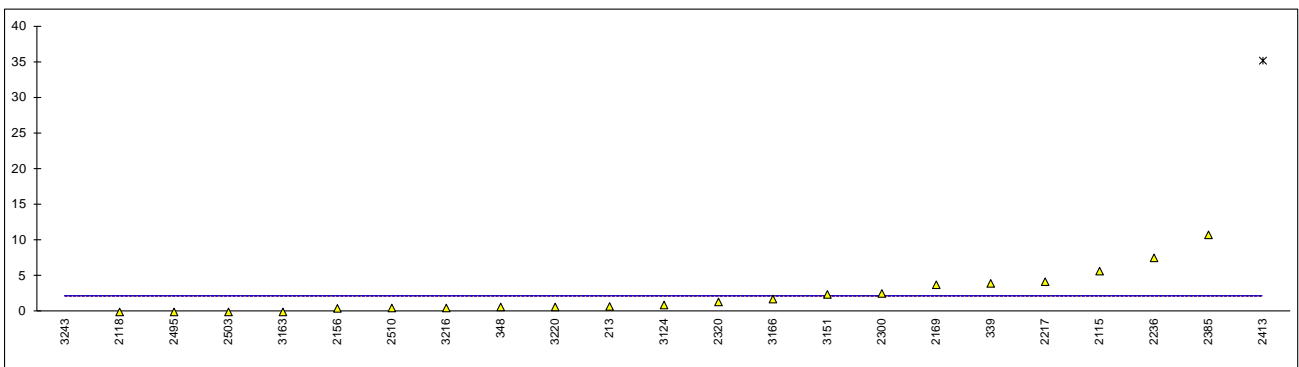
APPENDIX 1

Determination of total Antimony as Sb on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	<2		----	2389		----		----
213	CPSC-CH-E1002-08.1	0.77		----	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406	CPSC-CH-E1002-08	<20		----
324	IEC62321	<2		----	2410	CPSC-CH-E1002-08	<2		----
330		----		----	2413	in house	35.2	R(0.01)	----
339	IEC62321	4.0		----	2415	EPA3051	n.d.		----
348	in house	0.70		----	2425	EPA3051	n.d.		----
362		----		----	2429	IEC62321	n.d.		----
452		----		----	2431		----		----
551	IEC62321	n.d.	C	----	2432		----		----
622	in house	<1		----	2433	EPA3051	n.d.		----
623	in house	n.d.		----	2442		----		----
632		----		----	2444		----		----
840	EPA3052	n.d.		----	2459		----		----
1051		----		----	2460		----		----
1126	in house	n.d.		----	2462		----		----
1861		----		----	2464		----		----
2102		n.d.		----	2477		----		----
2115	DIN54233	5.720		----	2482	CPSC-CH-E1002-08	< 5		----
2118	CPSC-CH-E1002-08	0		----	2489	CPSC-CH-E1002-08	n.d.		----
2120		----		----	2492		----		----
2121	in house	n.d.		----	2495	CPSC-CH-E1002-08	0		----
2129		----		----	2496	EPA3052	<10		----
2132	ASTM F963	<10		----	2500	EPA3051	n.d.		----
2137	EPA3052	<5		----	2503	CPSC-CH-E1002-08	0		----
2139	IEC62321	<10		----	2510		0.555		----
2156	EPA3052	0.5		----	2511		n.d.		----
2165	IEC62321	n.d.		----	2515	EPA3051	n.d.		----
2169	IEC62321	3.81		----	2529		----		----
2172	IEC62321	<10		----	2546	ISO17072-2	<2.0		----
2173		----		----	2563		----		----
2175		----		----	2564		----		----
2176		----		----	2566	CPSC-CH-E1002-08	n.d.		----
2182		----		----	2567	CPSC-CH-E1002-08	n.d.		----
2184	CPSC-CH-E1002-08.3	<10		----	2569	INH-EPA3050B/3051A/3052	<10		----
2190		----		----	2572	CPSC-CH-E1002-08	<20		----
2197		----		----	2581	CPSC-CH-E1002-08	<10		----
2201	IEC62321	<10		----	2590		----		----
2202	IEC62321	n.d.		----	2591		----		----
2212	in house	<30		----	2618	EPA3051	<10		----
2216		----		----	2624		----		----
2217	EPA3052	4.24		----	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	n.d.		----	2643		----		----
2236	EPA3052	7.577		----	2645		----		----
2246	CPSC-CH-E1002-08	n.d.		----	2671		----		----
2247	EPA3050B	n.d.		----	2672	IEC62321	<5		----
2254	CPSC-CH-E1002-08	<2		----	2674	EPA3052	n.d.		----
2255	CPSC-CHE 1002-08.3	n.d.		----	2700	EPA3051	n.d.		----
2256	EPA3051	n.d.		----	2701	EPA3051	<5		----
2264		----		----	2707		----		----
2272	ISO17072/EN1122	<10		----	2708		----		----
2284	IEC62321	n.d.		----	3110	CPSC-CH-E1002-08	<15		----
2289	CPSC-CH-E1002-08	n.d.		----	3111		----		----
2290	CPSC-CH-E1002-08	<20		----	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	<5		----
2296		----		----	3122		----		----
2298	CPSC-CH-E1002-08	<30		----	3124	EPA3052	0.972		----
2300	EN1122	2.59		----	3146	CPSC-CH-E1002-08	<10		----
2301		----		----	3151	CPSC-CH-E1002-08	2.453		----
2310		----		----	3153	IEC62321	n.d.		----
2311	EPA3052	n.d.		----	3154		----		----
2320	EPA3051	1.40		----	3160		----		----
2347	EPA3052	<10		----	3163	IEC62321	0		----
2349	IEC62321	n.d.		----	3166		1.8		----
2350	EPA3052	<10.0		----	3167		----		----
2352	EPA3052	n.d.		----	3172	CPSC-CH-E1002-08	<10		----
2353	EPA3052	n.d.		----	3182	CPSC-CH-E1002-08	<13		----
2355	EPA3052	<10		----	3190	IEC62321	n.d.		----
2358	EPA3052	n.d.		----	3195	in house	<1.0		----
2363	EPA3052	<10		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	QB/T4340	<10		----	3199		----		----

2366	IEC62321	<10	----	3214	EPA3052	<10	----
2369	EPA3052	<10.0	----	3216	in house	0.555	----
2370	EPA3052	n.d.	----	3220	EPA3051	0.7	----
2372	IEC62321	n.d.	----	3225		----	----
2375		----	----	3228	IEC62321	<10	----
2379		----	----	3237		----	----
2380	EPA3052	n.d.	----	3243	INH-126	-0.412	----
2384		----	----	3246	in house	n.d.	----
2385	EPA3052	10.8	----	3248	CPSC-CH-E1002-08	n.d.	----
2387		----	----	8005		----	----
2388		----	----				
	normality	n.a.					
	n	96					
	outliers	1					
	mean (n)	<10					
	st.dev. (n)	n.a.					
	R(calc.)	n.a.					
	R(Horwitz)	n.a.					

Lab 2413: false positive test result?
 Lab 551: first reported 89.27



Determination of total Cadmium as Cd on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	139		0.06	2389	CPSC-CH-E1002-08	131.90		-0.51
213	CPSC-CH-E1002-08.1	141.58		0.27	2390	CPSC-CH-E1002-08	134.74		-0.28
230		-----		-----	2406	EN1122	147.66		0.76
324	IEC62321	80.2	R(0.01)	-4.70	2410	CPSC-CH-E1002-08	141		0.22
330		144.25		0.49	2413	in house	133.6		-0.38
339	IEC62321	140.0		0.14	2415	EN1122	138.2		0.00
348	in house	141.13		0.23	2425	EN1122	145.00		0.55
362	EN1122	123		-1.23	2429	IEC62321	137.28		-0.08
452		-----		-----	2431	INH-019	156.8156		1.51
551	IEC62321	138.53		0.02	2432	in house	143.575		0.43
622	EN1122	97.36	C	-3.31	2433	EPA3051	122.67		-1.26
623	in house	104.70		-2.72	2442	EN1122	155.08		1.36
632		-----		-----	2444	IEC62321	129.00		-0.75
840	EPA3052	129.6		-0.70	2459		-----		-----
1051	EN1122	135.45		-0.23	2460	EN1122	128.05		-0.83
1126	in house	122.45		-1.28	2462	IEC62321	130.1		-0.66
1861		137		-0.10	2464	CPSC-CH-E1002-08	117		-1.72
2102		139.29		0.09	2477	IEC62321	153.960		1.27
2115	DIN54233	135.524		-0.22	2482	CPSC-CH-E1002-08	144.3		0.49
2118	CPSC-CH-E1002-08	140.93		0.22	2489	EN1122	128.29		-0.81
2120	EN1122	136.8		-0.12	2492		159.43		1.72
2121	EN1122	151.2		1.05	2495	EN1122	138.2		0.00
2129	IEC62321	157.16		1.53	2496	IEC62321	130.7		-0.61
2132	ASTM F963	139.74		0.12	2500	EN1122	145.2		0.56
2137	EPA3052	126.00		-0.99	2503	CPSC-CH-E1002-08	139.8		0.13
2139	INH-0110	134.56		-0.30	2510		154.16		1.29
2156	EN1122	128.1		-0.82	2511	EN1122	124.262		-1.13
2165	IEC62321	144.5		0.51	2515	EPA3051	155.3		1.38
2169	IEC62321	151.7		1.09	2529	CPSC-CH-E1002-08.3	156.4		1.47
2172	IEC62321	133.7		-0.37	2546	EN1122	138.219		0.00
2173	EN1122	134.1		-0.34	2563	IEC62321	153.4		1.23
2175	EPA3052	125.83	C	-1.01	2564	CPSC-CH-E1002-08	147.1		0.72
2176	IEC62321	157.1		1.53	2566	CPSC-CH-E1002-08	134		-0.34
2182	EN1122	133.4		-0.39	2567	CPSC-CH-E1002-08	128.8		-0.76
2184	EN1122	146.6		0.68	2569	INHEPA3050B/3051A/3052	132		-0.51
2190		115.9		-1.81	2572	EN1122	143.1		0.39
2197		143		0.39	2581	CPSC-CH-E1002-08	150.7155		1.01
2201	IEC62321	130.8		-0.60	2590	EN1122	141.1		0.23
2202	IEC62321	155.2		1.37	2591	CPSC-CH-E1002-08	148.92		0.87
2212	in house	156.3		1.46	2618	EN1122	111.30		-2.18
2216	INH-62321	144		0.47	2624	EN1122	130.2		-0.65
2217	EPA3052	151.58		1.08	2629	INH-0350	145.00		0.55
2218	EN1122	125		-1.07	2642		-----		-----
2229	EN1122	120.2		-1.46	2643	EN1122	127		-0.91
2236	EPA3052	137.237		-0.08	2645	CPSC-CH-E1002-09.1	141.71		0.28
2246	EN1122	137.43		-0.07	2671		135.36		-0.23
2247	EPA3050B	138.49		0.02	2672	IEC62321	144.214		0.48
2254	CPSC-CH-E1002-08	145.7		0.60	2674	EN1122	150		0.95
2255	CPSC-CH-E1002-08	146.2		0.65	2700	EPA3051	153.4		1.23
2256	EPA3051	147.9		0.78	2701	EN1122	132.09		-0.50
2264	CPSC-CH-E1002	130.074		-0.66	2707		-----		-----
2272	ISO17072/EN1122	123.0		-1.23	2708		-----		-----
2284	EN1122	135.2		-0.25	3110	EN1122	147.5		0.75
2289	CPSC-CH-E1002-08	147		0.71	3111	EPA3052	152.95		1.19
2290	EN1122	146.1		0.64	3116	ASTM	148.6		0.84
2293	EN1122	134.00		-0.34	3118	CPSC-CH-E1002-08	134.83		-0.28
2296	in house	152.807		1.18	3122	CPSC-CH-E1002-08	142		0.30
2298	CPSC-CH-E1002-08	153.00		1.20	3124	EPA3052	112		-2.13
2300	EN1122	157.33		1.55	3146	CPSC-CH-E1002-08	148		0.79
2301	CPSC-CH-E1002-08	117.29		-1.70	3151	CPSC-CH-E1002-08	151.011		1.03
2310	EN1122	138		-0.02	3153	EN1122	136.6		-0.13
2311	EN1122	133		-0.42	3154	EN1122	135.53		-0.22
2320	EPA3051	130	C	-0.67	3160	CPSC-CH-E1002-08	152.63		1.17
2347	IEC62321	132.3		-0.48	3163	IEC62321	210	R(0.01)	5.81
2349	EN1122	142.508		0.35	3166		137		-0.10
2350	EN1122	112.3		-2.10	3167	EN1122	131.0		-0.59
2352	IEC62321	137.4		-0.07	3172	EN1122	121.9		-1.32
2353	EPA3052	138.8		0.05	3182	EN1122	124		-1.15
2355	IEC62321	135.1		-0.25	3190	IEC62321	129.5		-0.71
2358	EPA3052	139.1		0.07	3195	in house	147		0.71
2363	IEC62321	137		-0.10	3197	CPSC-CH-E1002-08	141.0		0.22
2365	QB/T4340	139.6		0.11	3199		-----		-----
2366	EN1122	143.1		0.39	3214	EN1122	144.0		0.47
2369	IEC62321	132.0		-0.51	3216	in house	160.1		1.77

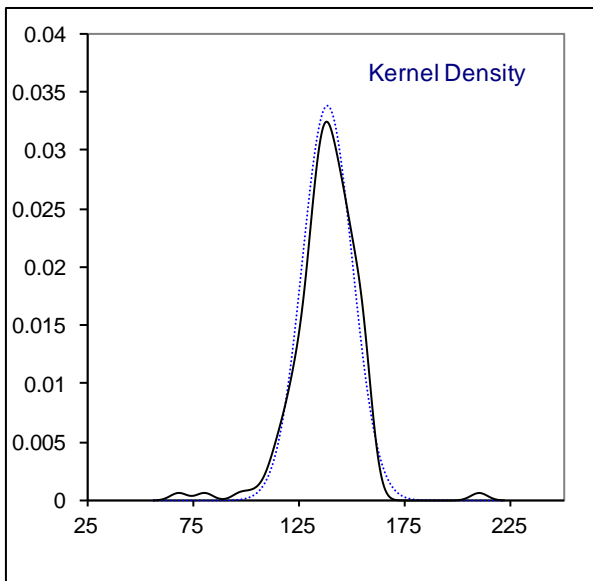
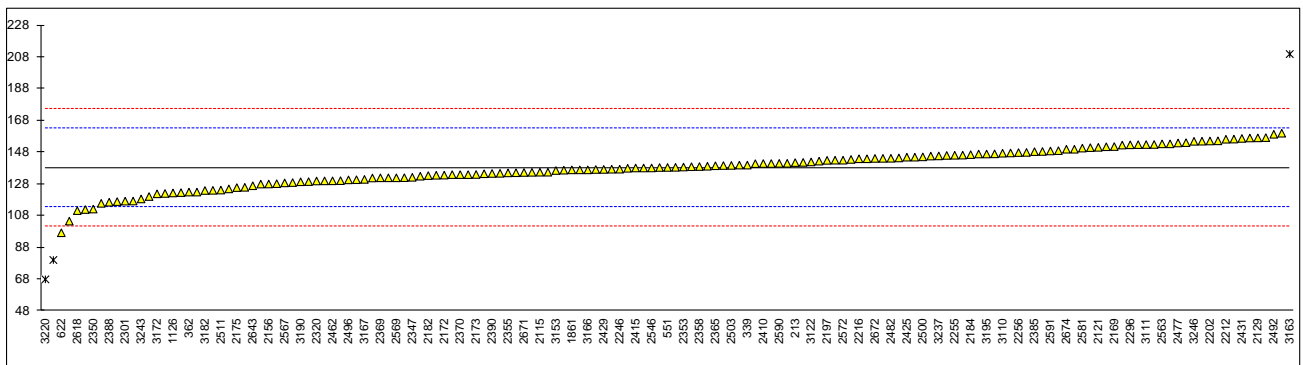
2370	EN1122	134	-0.34	3220	EPA3051	68.0	R(0.01)	-5.69
2372	IEC62321	138.6	0.03	3225	EN1122	152.90		1.19
2375		132.0	-0.51	3228	EN1122	149.1		0.88
2379	EN1122	122.13	-1.31	3237	IEC62321	145.796		0.61
2380	EN1122	140	0.14	3243	EN1122	118.667		-1.59
2384	IEC62321	124.10	-1.15	3246	in house	155.0		1.36
2385	EPA3052	148.5	0.83	3248	EN1122	150		0.95
2387	IEC62321	117.36	-1.69	8005	EN1122	146.3		0.65
2388	IEC62321	116.61	-1.75					

normality OK
 n 154
 outliers 3
 mean (n) 138.239
 st.dev. (n) 11.8271
 R(calc.) 33.116
 R(EN1122:01) 34.560

Only EN1122 data

OK
 53
 0
 135.707
 12.6736
 35.486
 34.560

Lab 622: first reported 70.55
 Lab 2175: first reported 98.34
 Lab 2320: first reported 98.28



Determination of total Chromium as Cr on sample #15150; results in mg/kg

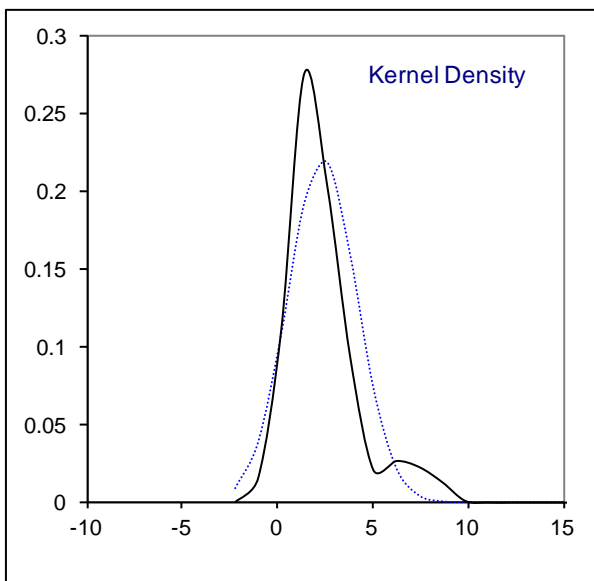
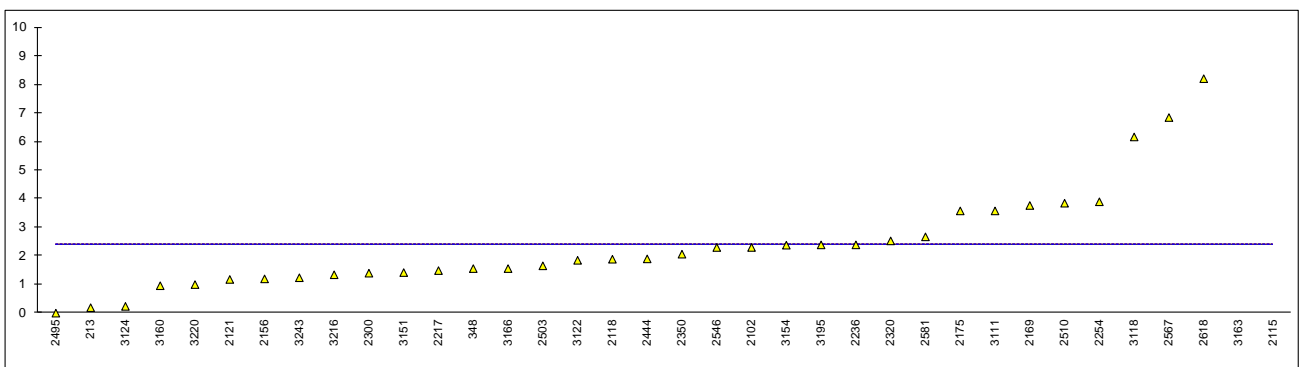
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	<2		----	2389		----		----
213	CPSC-CH-E1002-08.1	0.1914		----	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406	CPSC-CH-E1002-08	<20		----
324	IEC62321	<2		----	2410	CPSC-CH-E1002-08	<2		----
330		----		----	2413	in house	<10		----
339	IEC62321	<1.5		----	2415	EPA3051	n.d.		----
348	in house	1.56		----	2425	EPA3051	n.d.		----
362		----		----	2429	IEC62321	n.d.		----
452		----		----	2431		----		----
551	IEC62321	n.d.	C	----	2432		----		----
622	EN1122	<1		----	2433	EPA3051	n.d.		----
623	in house	n.d.		----	2442		----		----
632		----		----	2444	IEC62321	1.90		----
840	EPA3052	n.d.		----	2459		----		----
1051		----		----	2460		----		----
1126		----		----	2462	IEC62321	<10		----
1861		----		----	2464		----		----
2102		2.30		----	2477		----		----
2115	DIN54233	303.4	C, (R0.01)	----	2482	CPSC-CH-E1002-08	< 5		----
2118	CPSC-CH-E1002-08	1.888		----	2489	CPSC-CH-E1002-08	n.d.		----
2120	CPSC-CH-E1002-08	<33		----	2492		----		----
2121	in house	1.18		----	2495	CPSC-CH-E1002-08	0		----
2129		----		----	2496	IEC62321	<10		----
2132	ASTM F963	<10		----	2500	EPA3051	n.d.		----
2137	EPA3052	<5		----	2503	CPSC-CH-E1002-08	1.657		----
2139	IEC62321	<10		----	2510		3.85		----
2156	IEC62321	1.2		----	2511		n.d.		----
2165	IEC62321	n.d.		----	2515	EPA3051	n.d.		----
2169	IEC62321	3.77		----	2529		----		----
2172	IEC62321	<2		----	2546	ISO17072-2	2.299		----
2173	IEC62321	<10		----	2563		----		----
2175	EPA3052	3.58		----	2564		----		----
2176	IEC62321	n.d.		----	2566	CPSC-CH-E1002-08	n.d.		----
2182		----		----	2567	CPSC-CH-E1002-08	6.85		----
2184	CPSC-CH-E1002-08.3	<10		----	2569	INH-EPA3050B/3051A/3052	<10		----
2190		<10		----	2572	CPSC-CH-E1002-08	<20		----
2197		<10		----	2581	CPSC-CH-E1002-08	2.6717		----
2201	IEC62321	<10		----	2590	EN14602/ISO17294	n.d.		----
2202	IEC62321	n.d.		----	2591		----		----
2212	in house	<10		----	2618	EPA3051	8.21		----
2216	INH-62321	<10		----	2624	in house	n.d.		----
2217	EPA3052	1.49		----	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	n.d.		----	2643		----		----
2236	EPA3052	2.391		----	2645	CPSC-CH-E1002-09.1	<12.5		----
2246	CPSC-CH-E1002-08	n.d.		----	2671		----		----
2247	EPA3050B	n.d.		----	2672	IEC62321	<5		----
2254	CPSC-CH-E1002-08	3.9		----	2674	EPA3052	n.d.		----
2255	CPSC-CH-E1002-08	n.d.		----	2700	EPA3051	n.d.		----
2256	EPA3051	n.d.		----	2701	EPA3051	<5		----
2264		----		----	2707		----		----
2272	ISO17072/EN1122	<10		----	2708		----		----
2284	IEC62321	n.d.		----	3110	CPSC-CH-E1002-08	<15		----
2289	CPSC-CH-E1002-08	n.d.		----	3111	EPA3052	3.58		----
2290	CPSC-CH-E1002-08	<20		----	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	6.17		----
2296		----		----	3122	CPSC-CH-E1002-08	1.85		----
2298	CPSC-CH-E1002-08	<10		----	3124	EPA3052	0.237		----
2300	EN1122	1.4		----	3146	CPSC-CH-E1002-08	<10		----
2301		----		----	3151	CPSC-CH-E1002-08	1.421		----
2310		----		----	3153	IEC62321	n.d.		----
2311	EPA3052	n.d.		----	3154	IEC62321	2.38		----
2320	EPA3051	2.53		----	3160	CPSC-CH-E1002-08	0.96		----
2347	IEC62321	<2		----	3163	IEC62321	35	R(0.01)	----
2349	IEC62321	n.d.		----	3166		1.56		----
2350	IEC62321	2.065		----	3167		----		----
2352	IEC62321	n.d.		----	3172	CPSC-CH-E1002-08	< 10		----
2353	EPA3052	n.d.		----	3182	CPSC-CH-E1002-08	<5		----
2355	IEC62321	<2		----	3190	IEC62321	n.d.		----
2358	EPA3052	n.d.		----	3195	in house	2.39		----
2363	IEC62321	<2		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	QB/T4340	<2		----	3199		----		----
2366	IEC62321	<5		----	3214	EPA3052	<10		----
2369	IEC62321	<2.0		----	3216	in house	1.344		----

2370	EPA3052	n.d.	----	3220	EPA3051	1.0	----
2372	IEC62321	n.d.	----	3225		----	----
2375		----	----	3228	IEC62321	<10	----
2379	IEC62321	n.d.	----	3237		----	----
2380	EPA3052	n.d.	----	3243	IEC62321	1.24	----
2384	IEC62321	n.d.	----	3246	in house	n.d.	----
2385	EPA3052	<5	----	3248	CPSC-CH-E1002-08	n.d.	----
2387	IEC62321	n.d.	----	8005		----	----
2388	IEC62321	n.d.	----				
normality		n.a.					
n		115					
outliers		2					
mean (n)		<10					
st.dev. (n)		n.a.					
R(calc.)		n.a.					
R(Horwitz)		n.a.					

Lab: 2115 and lab 3163: false positive test results?

Lab 551: first reported 17.79

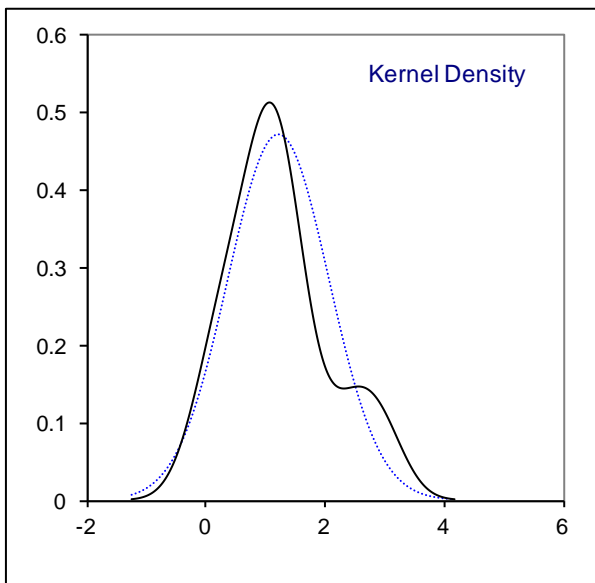
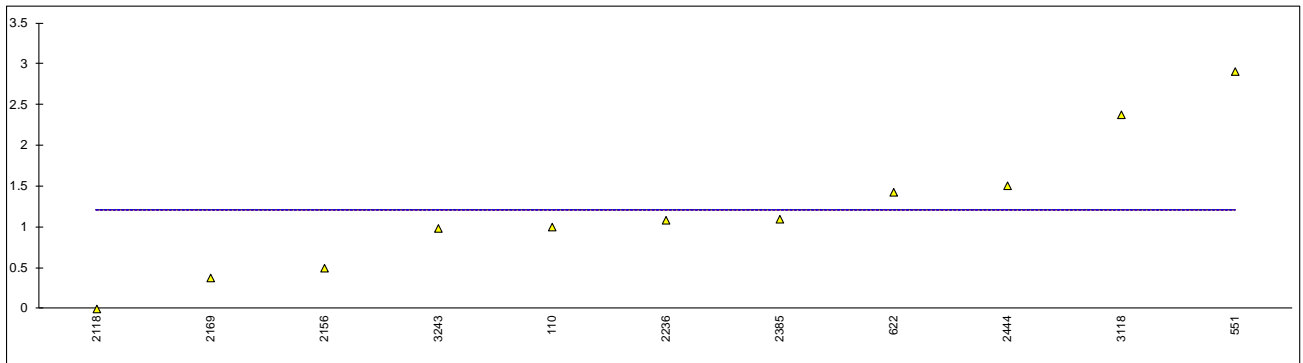
Lab 2115: first reported 29.401



Determination of Hexavalent Chromium as Cr⁶⁺ on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321	1.004		----	2389		----		----
213		----		----	2390		----		----
230		----		----	2406		----		----
324		----		----	2410		----		----
330		----		----	2413		----		----
339	IEC62321	<2.5		----	2415	IEC62321	n.d.		----
348		----		----	2425	IEC62321	n.d.		----
362		----		----	2429	IEC62321	n.d.		----
452		----		----	2431		----		----
551	IEC62321	2.91		----	2432		----		----
622	in house	1.43		----	2433	IEC62321	n.d.		----
623	in house	n.d.		----	2442		----		----
632		----		----	2444	IEC62321	1.51		----
840	IEC62321	n.d.		----	2459		----		----
1051		----		----	2460		----		----
1126		----		----	2462	IEC62321	<10		----
1861		----		----	2464		----		----
2102		----		----	2477		----		----
2115		----		----	2482		----		----
2118		0		----	2489	IEC62321	n.d.		----
2120		----		----	2492		----		----
2121		----		----	2495		----		----
2129		----		----	2496		----		----
2132	IEC62321	n.d.		----	2500		----		----
2137	EPA3060A	<5		----	2503		----		----
2139	IEC62321	<2		----	2510		----		----
2156	IEC62321	0.5		----	2511		----		----
2165	IEC62321	n.d.		----	2515	EPA3060A	n.d.		----
2169	IEC62321	0.38		----	2529		----		----
2172	IEC62321	<2		----	2546		----		----
2173	IEC62321	<10		----	2563		----		----
2175		----		----	2564		----		----
2176	IEC62321	n.d.		----	2566	IEC62321	n.d.		----
2182		----		----	2567		----		----
2184	IEC62321	<1		----	2569		----		----
2190		<20		----	2572	IEC62321	<1.0		----
2197		----		----	2581		----		----
2201		----		----	2590		----		----
2202	IEC62321	n.d.		----	2591		----		----
2212	in house	<2		----	2618	IEC62321	<1.0		----
2216		----		----	2624		----		----
2217	EPA3060a	n.d.		----	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	n.d.		----	2643		----		----
2236	in house	1.0873		----	2645		----		----
2246		----		----	2671		----		----
2247	IEC62321	n.d.		----	2672	IEC62321	<2		----
2254		----		----	2674	IEC62321	n.d.		----
2255	CPSC-CH-E1002-08	n.d.		----	2700	EPA3060A	n.d.		----
2256		----		----	2701	EPA3060A	<2		----
2264		----		----	2707		----		----
2272		----		----	2708		----		----
2284	IEC62321	n.d.		----	3110		----		----
2289		----		----	3111		----		----
2290	IEC62321	<1.0		----	3116		----		----
2293		----		----	3118	IEC62321	2.38		----
2296		----		----	3122		----		----
2298		----		----	3124		----		----
2300		----		----	3146	IEC62321	<1		----
2301		----		----	3151		----		----
2310		----		----	3153	IEC62321	n.d.		----
2311		----		----	3154		----		----
2320		----		----	3160		----		----
2347	IEC62321	<2		----	3163		----		----
2349	IEC62321	n.d.		----	3166	EPA3060A	<0.03		----
2350	IEC62321	<1.0		----	3167		----		----
2352	IEC62321	n.d.		----	3172		----		----
2353	EPA3060A	n.d.		----	3182	IEC62321	<1		----
2355	IEC62321	<2		----	3190		----		----
2358	EPA3060A	n.d.		----	3195		----		----
2363	IEC62321	<2		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	IEC62321	<2		----	3199		----		----
2366	IEC62321	<2		----	3214	IEC62321	<1		----
2369	IEC62321	<2.0		----	3216		----		----

2370	IEC62321	n.d.	----	3220	IEC62321	n.d.	----
2372	IEC62321	n.d.	----	3225	IEC62321	<2	----
2375		----	----	3228	IEC62321	<2	----
2379	IEC62321	n.d.	----	3237		----	----
2380	EPA3060A	n.d.	----	3243	INH-121	0.987	----
2384	IEC62321	n.d.	----	3246	in house	n.d.	----
2385	EPA3060A	1.1	----	3248	EPA3060A	n.d.	----
2387	IEC62321	n.d.	----	8005		----	----
2388	IEC62321	n.d.	----				
normality		n.a.					
n		73					
outliers		0					
mean (n)		<10					
st.dev. (n)		n.a.					
R(calc.)		n.a.					
R(Horwitz)		n.a.					

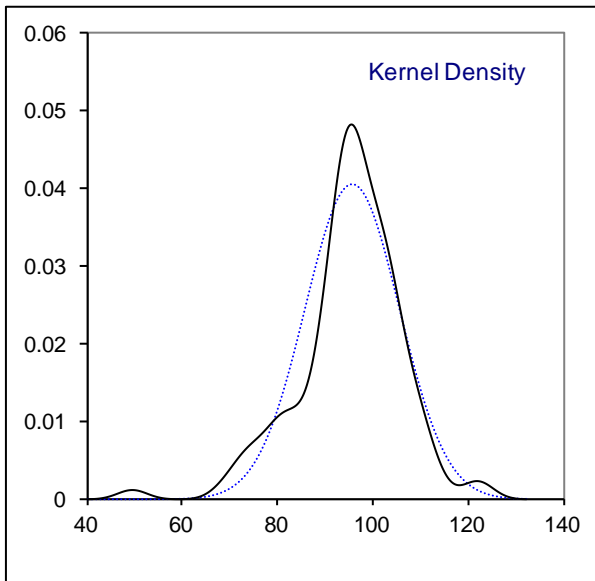
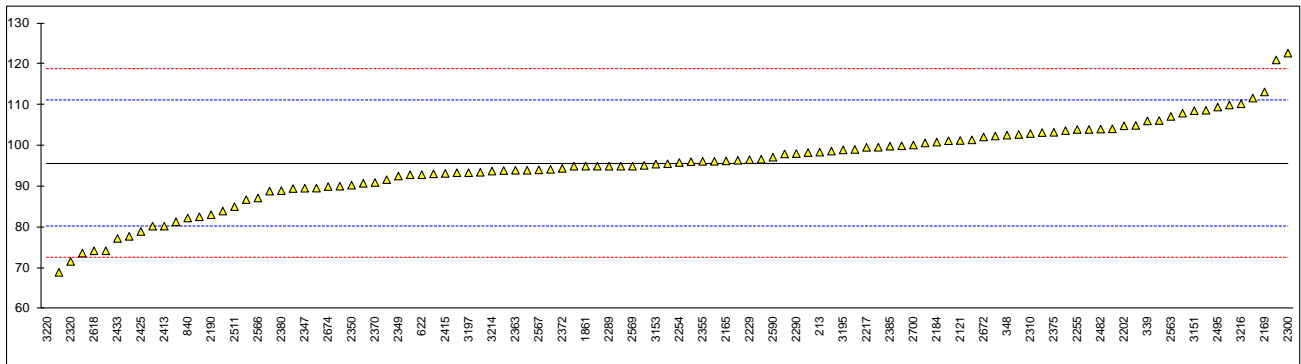


Determination of total Cobalt as Co on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	96.1		0.06	2389		----		----
213	CPSC-CH-E1002-08.1	98.44		0.37	2390	CPSC-CH-E1002-08	94.22		-0.18
230		----		----	2406		----		----
324	IEC62321	77.8		-2.31	2410	CPSC-CH-E1002-08	94		-0.21
330		----		----	2413	in house	80.3		-1.99
339	IEC62321	106.1		1.36	2415	EPA3051	93.23		-0.31
348	in house	102.60		0.91	2425	EPA3051	79.00		-2.16
362		----		----	2429	IEC62321	93.12		-0.32
452		----		----	2431	INH-019	108.7135		1.70
551	IEC62321	101.46		0.76	2432		----		----
622	in house	92.91		-0.35	2433	EPA3051	77.29		-2.38
623	in house	68.98		-3.46	2442		----		----
632		----		----	2444		----		----
840	EPA3052	82.3		-1.73	2459		----		----
1051		----		----	2460		----		----
1126	in house	111.7		2.09	2462		----		----
1861		95		-0.08	2464	CPSC-CH-E1002-08	95		-0.08
2102		98.33		0.35	2477		----		----
2115	DIN54233	103.719		1.05	2482	CPSC-CH-E1002-08	104.1		1.10
2118	CPSC-CH-E1002-08	106.19		1.37	2489	CPSC-CH-E1002-08	86.8		-1.14
2120	CPSC-CH-E1002-08	80.3		-1.99	2492		----		----
2121	in house	101.3		0.74	2495	CPSC-CH-E1002-08	109.5		1.80
2129		----		----	2496	EPA3052	<10		----
2132	ASTM F963	90.09		-0.72	2500		----		----
2137	EPA3052	102.77		0.93	2503		----		----
2139	IEC62321	104.17		1.11	2510		121.05		3.30
2156	EPA3052	95.2		-0.05	2511		85.079		-1.37
2165	IEC62321	96.3		0.09	2515	EPA3051	102.4		0.88
2169	IEC62321	113.2		2.28	2529		----		----
2172	IEC62321	89.52		-0.79	2546	ISO17072-2	93.933		-0.22
2173		----		----	2563	IEC62321	107.2		1.50
2175		----		----	2564		----		----
2176		----		----	2566	CPSC-CH-E1002-08	87.2		-1.09
2182		----		----	2567	CPSC-CH-E1002-08	94.1		-0.20
2184	CPSC-CH-E1002-08.3	100.9		0.69	2569	INH-EPA3050B/3051/3052	95		-0.08
2190		83.1		-1.63	2572	CPSC-CH-E1002-08	96.2		0.08
2197		----		----	2581	CPSC-CH-E1002-08	103.2415		0.99
2201	IEC62321	89.62		-0.78	2590	EN14602/ISO17294	97.2		0.21
2202	IEC62321	104.9		1.21	2591		----		----
2212		----		----	2618	EPA3051	74.26		-2.77
2216		----		----	2624		----		----
2217	EPA3052	99.62		0.52	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	96.6		0.13	2643	EPA3052	98.7		0.40
2236	EPA3052	99.644		0.52	2645	CPSC-CH-E1002-09.1	81.36		-1.85
2246		----		----	2671		----		----
2247	EPA3050B	91.7		-0.51	2672	IEC62321	102.17		0.85
2254	CPSC-CH-E1002-08	95.9		0.04	2674	EPA3052	90		-0.73
2255	CPSC-CH-E1002-08	104.0		1.09	2700	EPA3051	100.2		0.60
2256		----		----	2701	EPA3051	96.45		0.11
2264		----		----	2707		----		----
2272	ISO17072/EN1122	84.0		-1.51	2708		----		----
2284	IEC62321	90.8		-0.63	3110		----		----
2289	CPSC-CH-E1002-08	95		-0.08	3111		----		----
2290	CPSC-CH-E1002-08	98.1		0.32	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	88.89		-0.87
2296		----		----	3122		----		----
2298		----		----	3124	EPA3052	105		1.22
2300	EN1122	122.71		3.52	3146	CPSC-CH-E1002-08	104		1.09
2301		----		----	3151	CPSC-CH-E1002-08	108.609		1.69
2310	EPA3052	103		0.96	3153	IEC62321	95.5		-0.02
2311	EPA3052	108		1.61	3154	IEC62321	93.51		-0.27
2320	EPA3051	71.65		-3.11	3160	CPSC-CH-E1002-08	101.24		0.73
2347	EPA3052	89.6		-0.78	3163		----		----
2349	IEC62321	92.584		-0.39	3166		100.7		0.66
2350	EPA3052	90.35		-0.68	3167		----		----
2352	EPA3052	93.4		-0.29	3172	CPSC-CH-E1002-08	73.7		-2.85
2353	EPA3052	95.0		-0.08	3182	CPSC-CH-E1002-08	82.6		-1.69
2355	EPA3052	96.2		0.08	3190	IEC62321	98		0.31
2358	EPA3052	95.6		0.00	3195	in house	99.0		0.44
2363	EPA3052	94		-0.21	3197	CPSC-CH-E1002-08	93.4		-0.29
2365	QB/T4340	96.7		0.14	3199		----		----
2366	IEC62321	92.9		-0.35	3214	EPA3052	93.8		-0.24
2369	EPA3052	95.0		-0.08	3216	in house	110.3		1.91

2370	EPA3052	91.0	-0.60	3220	EPA3051	49.6	R(0.01)	-5.98
2372	IEC62321	94.46	-0.15	3225		----		----
2375		103.3	1.00	3228	IEC62321	99.1		0.45
2379		----	----	3237		----		----
2380	EPA3052	89	-0.86	3243	INH-126	74.26		-2.77
2384		----	----	3246	in house	110.0		1.87
2385	EPA3052	99.9	0.56	3248	CPSC-CH-E1002-08	100		0.57
2387		----	----	8005		----		----
2388		----	----					

normality OK
n 106
outliers 1
mean (n) 95.616
st.dev. (n) 9.8577
R(calc.) 27.602
R(Horwitz) 21.563



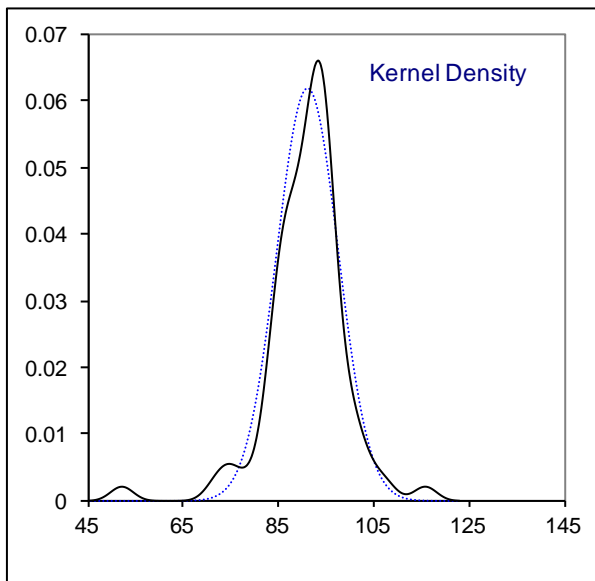
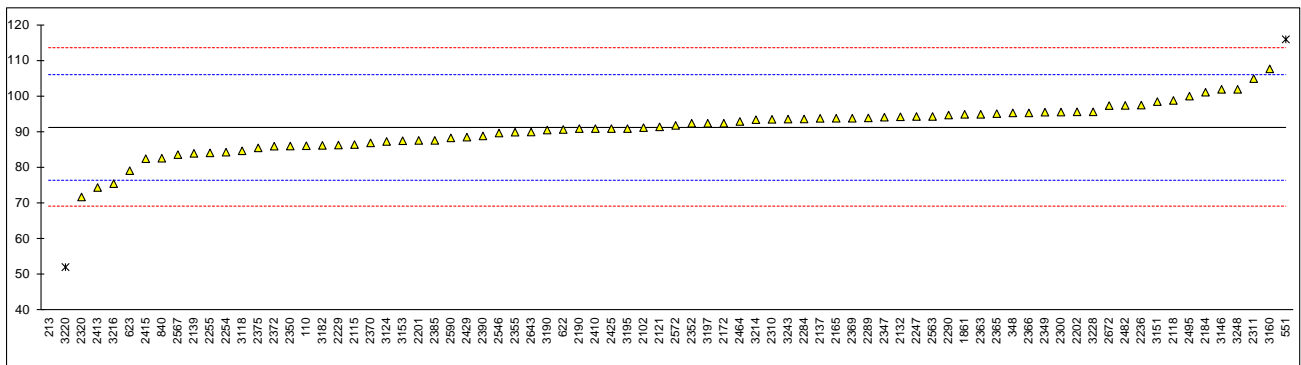
Determination of total Copper as Cu on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-3352	86.2		-0.68	2389		----		----
213	CPSC-CH-E1002-08.1	0	R(0.01)	-12.33	2390	CPSC-CH-E1002-08	88.95		-0.31
230		----		----	2406		----		----
324		----		----	2410		91		-0.03
330		----		----	2413	in house	74.5		-2.26
339		----		----	2415	EPA3051	82.57		-1.17
348	in house	95.4		0.56	2425	in house	91.00		-0.03
362		----		----	2429	IEC62321	88.61		-0.36
452		----		----	2431		----		----
551	EPA3052	116	C,R(0.05)	3.34	2432		----		----
622	in house	90.75		-0.07	2433		----		----
623	in house	79.22		-1.62	2442		----		----
632		----		----	2444		----		----
840		82.7		-1.15	2459		----		----
1051		----		----	2460		----		----
1126		----		----	2462		----		----
1861		95		0.51	2464		93		0.24
2102		91.27		0.00	2477		----		----
2115	DIN54233	86.534		-0.64	2482		97.5		0.85
2118		98.89		1.03	2489		----		----
2120		----		----	2492		----		----
2121	in house	91.5		0.03	2495	CPSC-CH-E1002-08	100.1		1.20
2129		----		----	2496		----		----
2132	ASTM F963	94.31		0.41	2500		----		----
2137	EPA3052	93.87		0.35	2503		----		----
2139	INH-0110	84.07		-0.97	2510		----		----
2156		----		----	2511		n.d.		----
2165	EPA3052	93.9		0.36	2515		----		----
2169		----		----	2529		----		----
2172	IEC62321	92.51		0.17	2546	ISO17072-2	89.766		-0.20
2173		----		----	2563	IEC62321	94.4		0.43
2175		----		----	2564		----		----
2176		----		----	2566		----		----
2182		----		----	2567		83.71		-1.02
2184	CPSC-CH-E1002-08.3	101.2		1.34	2569		----		----
2190		91.0		-0.03	2572		91.9		0.09
2197		----		----	2581		----		----
2201		87.69		-0.48	2590	EN14602/ISO17294	88.4		-0.38
2202		95.7		0.60	2591		----		----
2212		----		----	2618		----		----
2216		----		----	2624		----		----
2217		----		----	2629		----		----
2218		----		----	2642		----		----
2229		86.4		-0.65	2643	EPA3052	90.05		-0.16
2236	EPA3052	97.586		0.86	2645		----		----
2246		----		----	2671		----		----
2247	EPA3050B	94.4		0.43	2672	IEC62321	97.452		0.84
2254	in house	84.4		-0.92	2674		----		----
2255	CPSC-CH-E1002-08	84.2		-0.95	2700		----		----
2256		----		----	2701		----		----
2264		----		----	2707		----		----
2272		----		----	2708		----		----
2284		93.7		0.33	3110		----		----
2289	CPSC-CH-E1002-08	94		0.37	3111		----		----
2290		94.8		0.48	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	84.78		-0.87
2296		----		----	3122		----		----
2298		----		----	3124	EPA3052	87.4		-0.52
2300	EN1122	95.63		0.59	3146	CPSC-CH-E1002-08	102		1.45
2301		----		----	3151		98.565		0.99
2310	EPA3052	93.6		0.32	3153	IEC62321	87.6		-0.49
2311	EPA3052	105		1.86	3154		----		----
2320	EPA3051	71.85		-2.62	3160	CPSC-CH-E1002-08	107.74		2.23
2347	EPA3052	94.2		0.40	3163		----		----
2349		95.607		0.59	3166		----		----
2350	EPA3052	86.12		-0.69	3167		----		----
2352	EPA3052	92.5		0.17	3172		----		----
2353		----		----	3182	CPSC-CH-E1002-08	86.3		-0.67
2355	EPA3052	90.0		-0.17	3190	IEC62321	90.6		-0.09
2358		----		----	3195	in house	91.0		-0.03
2363	EPA3052	95		0.51	3197	CPSC-CH-E1002-08	92.5		0.17
2365	QB/T4340	95.2		0.53	3199		----		----
2366		95.4		0.56	3214	EPA3052	93.5		0.30
2369		93.9		0.36	3216	in house	75.58		-2.12

2370	EPA3052	87.0	-0.57	3220		52.2	R(0.01)	-5.28
2372	IEC62321	86.08	-0.70	3225		-----		-----
2375		85.6	-0.76	3228	IEC62321	95.7		0.60
2379		-----	-----	3237		-----		-----
2380		-----	-----	3243	INH-126	93.667		0.33
2384		-----	-----	3246	in house	n.d.		-----
2385		87.7	-0.48	3248		102		1.45
2387		-----	-----	8005		-----		-----
2388		-----	-----					

normality	suspect
n	75
outliers	3
mean (n)	91.246
st.dev. (n)	6.4576
R(calc.)	18.081
R(Horwitz)	20.723

Lab 551: first reported 132.66

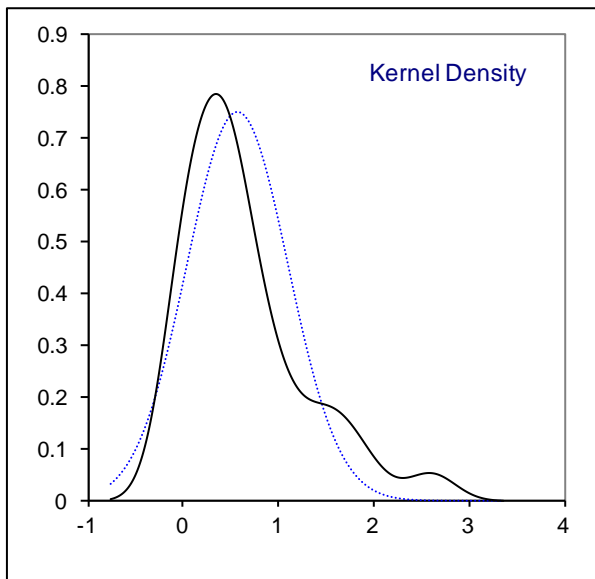
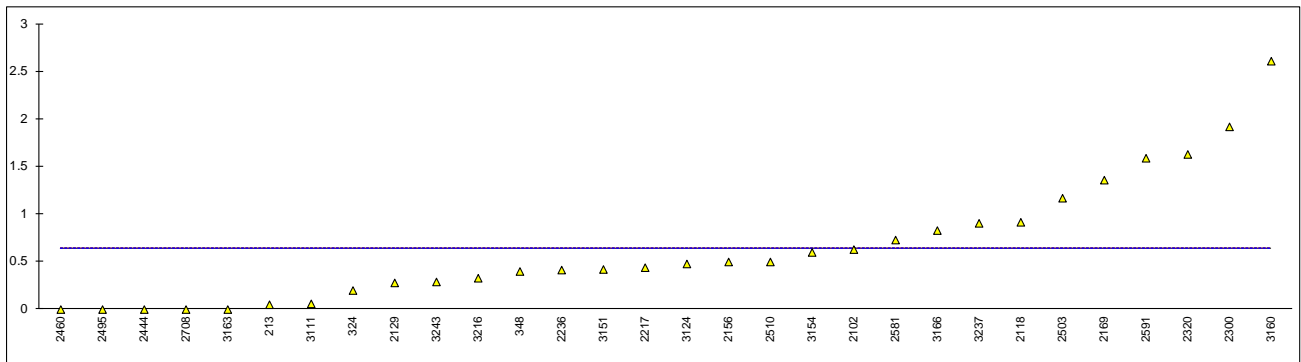


Determination of total Lead as Pb on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	<2		----	2389	CPSC-CH-E1002-08	n.d.	C	----
213	CPSC-CH-E1002-08.1	0.0508		----	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406	CPSC-CH-E1002-08	<20		----
324	IEC62321	0.2		----	2410	CPSC-CH-E1002-08	<2		----
330		<20		----	2413	in house	<10		----
339	IEC62321	<3.0		----	2415	EPA3051	n.d.		----
348	CPSC-CH-E1002-08	0.40		----	2425	EPA3051	n.d.		----
362		----		----	2429	IEC62321	n.d.		----
452		----		----	2431		----		----
551	IEC62321	n.d.		----	2432		----		----
622	in house	<1		----	2433	EPA3051	n.d.		----
623	in house	n.d.		----	2442		----		----
632		----		----	2444	IEC62321	0.00		----
840	EPA3052	n.d.		----	2459		----		----
1051	CPSC-CH-E1002-08	<10		----	2460	CPSC-CH-E1002-08	0		----
1126		----		----	2462	IEC62321	<10		----
1861		----		----	2464		----		----
2102		0.63		----	2477	IEC62321	n.d.		----
2115	DIN54233	n.d.		----	2482	CPSC-CH-E1002-08	<5		----
2118	CPSC-CH-E1002-08	0.917		----	2489	CPSC-CH-E1002-08	n.d.		----
2120	CPSC-CH-E1002-08	<33		----	2492		----		----
2121	in house	n.d.		----	2495	CPSC-CH-E1002-08	0		----
2129	IEC62321	0.28		----	2496	IEC62321	<10		----
2132	ASTM F963	<10		----	2500	EPA3051	n.d.		----
2137	EPA3052	<5		----	2503	CPSC-CH-E1002-08	1.17		----
2139	INH-0110	<10		----	2510		0.500		----
2156	IEC62321	0.5		----	2511	CPSC-CH-E1002-08	n.d.		----
2165	IEC62321	n.d.		----	2515	EPA3051	n.d.		----
2169	IEC62321	1.36		----	2529		----		----
2172	IEC62321	<2		----	2546	CPSC-CH-E-1002	<10.0		----
2173	IEC62321	<10		----	2563		----		----
2175	EPA3052	<1		----	2564	CPSC-CH-E1002-08	<20		----
2176		n.d.		----	2566	CPSC-CH-E1002-08	n.d.		----
2182	CPSC-CH-E1002-08	n.d.		----	2567	CPSC-CH-E1002-08	n.d.		----
2184	CPSC-CH-E1002-08.3	<10		----	2569	INH-EPA3050B/3051A/3052	<10		----
2190		<10		----	2572	CPSC-CH-E1002-08	<20		----
2197		----		----	2581	CPSC-CH-E1002-08	0.7305		----
2201	IEC62321	<10		----	2590	EN14602/ISO17294	n.d.		----
2202	IEC62321	n.d.		----	2591	CPSC-CH-E1002-08	1.59		----
2212	CPSC-CH-E1002-08	<10		----	2618	CPSC-CH-E1002-08	<10		----
2216	CPSC-CH-E1002-08	<10		----	2624		n.d.		----
2217	EPA3052	0.44		----	2629	INH-0350	n.d.		----
2218	CPSC-CH-E1002-08	<20		----	2642	CPSC-CH-E1002-08	<25		----
2229	IEC62321	n.d.		----	2643		----		----
2236	EPA3052	0.415		----	2645	CPSC-CH-E1002-09.1	<12.5		----
2246	CPSC-CH-E1002-08	n.d.		----	2671		----		----
2247	EPA3050B	n.d.		----	2672	IEC62321	<5		----
2254	CPSC-CH-E1002-08	<2		----	2674	EPA3052	n.d.		----
2255	CPSC-CH-E1002-08	n.d.		----	2700	EPA3051	n.d.		----
2256	EPA3051	n.d.		----	2701	EPA3051	<5		----
2264	CPSC-CH-E1002	<7.7		----	2707		----		----
2272	ISO17072/EN1122	<10		----	2708	IEC62321	0.0		----
2284	IEC62321	n.d.		----	3110	CPSC-CH-E1002-08	<15		----
2289	CPSC-CH-E1002-08	n.d.		----	3111	EPA3052	0.06		----
2290	CPSC-CH-E1002-08	<20		----	3116		----		----
2293	CPSC-CH-E1002-08	n.d.		----	3118	CPSC-CH-E1002-08	<5		----
2296	in house	<0.001		----	3122	CPSC-CH-E1002-08	<5		----
2298	CPSC-CH-E1002-08	<10		----	3124	EPA3052	0.479		----
2300	EN1122	1.92		----	3146	CPSC-CH-E1002-08	<10		----
2301		----		----	3151	CPSC-CH-E1002-08	0.421		----
2310		----		----	3153	IEC62321	n.d.		----
2311	EPA3052	n.d.		----	3154	IEC62321	0.60		----
2320	EPA3051	1.63		----	3160	CPSC-CH-E1002-08	2.61		----
2347	IEC62321	<2		----	3163	IEC62321	0		----
2349	IEC62321	n.d.		----	3166		0.83		----
2350	IEC62321	<5.0		----	3167		----		----
2352	IEC62321	n.d.		----	3172	CPSC-CH-E1002-08	<10		----
2353	EPA3052	n.d.		----	3182	CPSC-CH-E1002-08	<13		----
2355	IEC62321	<2		----	3190	IEC62321	n.d.		----
2358	EPA3052	n.d.		----	3195	in house	<1.0		----
2363	IEC62321	<2		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	QB/T4340	<2		----	3199	EPA3051	<2.00		----
2366	IEC62321	<10		----	3214	EPA3052	<10		----
2369	IEC62321	<2.0		----	3216	in house	0.329		----

2370	EPA3052	n.d.	----	3220	EPA3051	n.d.	----
2372	IEC62321	n.d.	----	3225	CPSC-CH-E1002-08	<15	----
2375		----	----	3228	IEC62321	<10	----
2379	IEC62321	n.d.	----	3237	IEC62321	0.906	----
2380	EPA3052	n.d.	----	3243	IEC62321	0.29	C
2384	IEC62321	n.d.	----	3246	in house	n.d.	----
2385	EPA3052	<5	----	3248	CPSC-CH-E1002-08	n.d.	----
2387	IEC62321	n.d.	----	8005		----	----
2388	IEC62321	n.d.	----				
normality		n.a.					
n		129					
outliers		0					
mean (n)		<10					
st.dev. (n)		n.a.					
R(calc.)		n.a.					
R(Horwitz)		n.a.					

Lab 2389: first reported 21.05
 Lab 3243: first reported -0.356

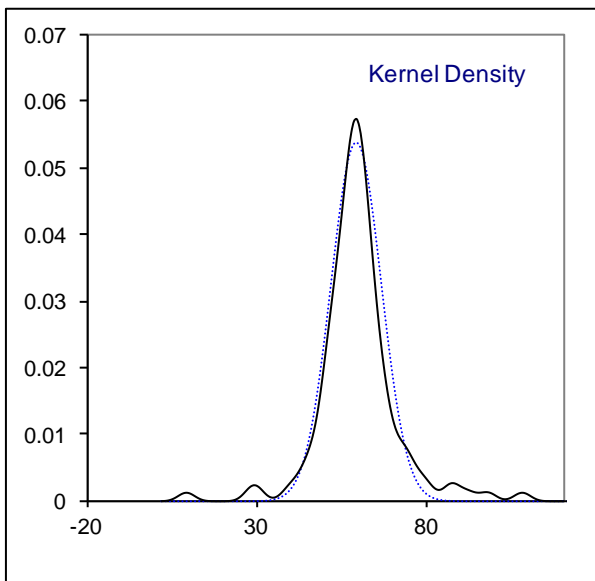
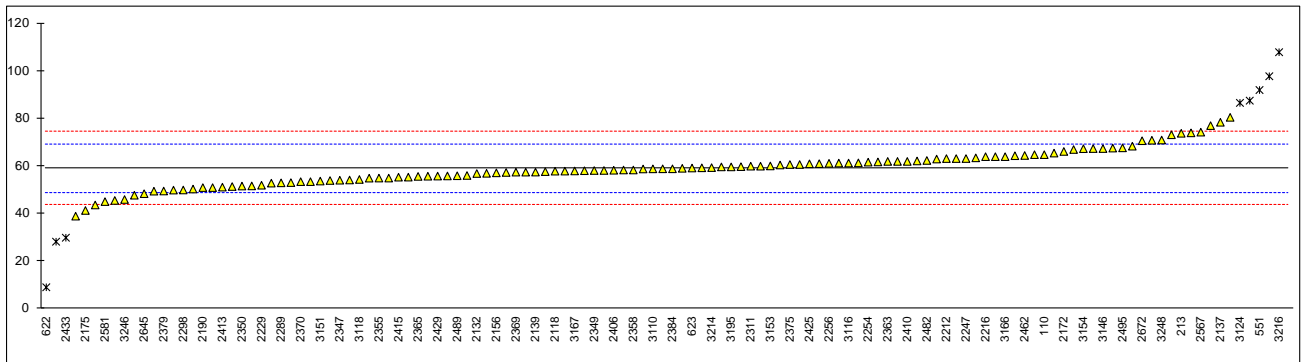


Determination of Mercury as Hg on sample #15150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	64.84		1.13	2389		----		----
213	CPSC-CH-E1002-08.1	73.82		2.89	2390	CPSC-CH-E1002-08	97.79	R(0.05)	7.58
230		----		----	2406	CPSC-CH-E1002-08	58.29		-0.15
324	IEC62321	73.2		2.77	2410	CPSC-CH-E1002-08	62		0.58
330		----		----	2413	in house	51.2		-1.53
339	IEC62321	47.8		-2.20	2415	EPA3051	55.38		-0.72
348	in house	63.00		0.77	2425	EPA3051	61.00		0.38
362		----		----	2429	IEC62321	55.84		-0.63
452		----		----	2431	INH-019	64.8395		1.13
551	IEC62321	92.0	R(0.05)	6.44	2432		----		----
622	in house	9.12	C,R(0.01)	-9.76	2433	EPA3051	29.94	R(0.05)	-5.69
623	in house	59.23		0.04	2442		----		----
632		----		----	2444	IEC62321	61.06		0.39
840	EPA3052	45.6		-2.63	2459		----		----
1051		----		----	2460		----		----
1126	in house	67.6		1.67	2462	IEC62321	64.5		1.07
1861		----		----	2464	CPSC-CH-E1002-08	74		2.92
2102		80.52		4.20	2477	IEC62321	59.80		0.15
2115	DIN54233	57.931		-0.22	2482	CPSC-CH-E1002-08	62.4		0.66
2118	CPSC-CH-E1002-08	57.91		-0.22	2489	CPSC-CH-E1002-08	55.98		-0.60
2120		----		----	2492		49.50		-1.87
2121	in house	77.04		3.52	2495	CPSC-CH-E1002-08	67.7		1.69
2129		----		----	2496		----		----
2132	ASTM F963	56.92		-0.42	2500	EPA3051	59.1		0.01
2137	IEC62321	78.45		3.79	2503	CPSC-CH-E1002-08	61.79		0.54
2139	IEC62321	57.52		-0.30	2510		----		----
2156	IEC62321	57.2		-0.36	2511		50.399		-1.69
2165	IEC62321	59.7		0.13	2515	EPA3051	65.5		1.26
2169	IEC62321	64.4		1.05	2529		----		----
2172	IEC62321	66.19		1.40	2546	ISO17072-2	59.316		0.05
2173	IEC62321	49.95		-1.78	2563		----		----
2175	EPA3052	41.39		-3.45	2564		----		----
2176	IEC62321	63.5		0.87	2566	CPSC-CH-E1002-08	55		-0.79
2182		----		----	2567	CPSC-CH-E1002-08	74.3		2.98
2184	CPSC-CH-E1002-08.3	58.2		-0.17	2569	INH-EPA3050B/3051A/3052	57		-0.40
2190		51.0		-1.57	2572	CPSC-CH-E1002-08	53.1		-1.16
2197		----		----	2581	CPSC-CH-E1002-08	45.1188		-2.72
2201	IEC62321	60.71		0.33	2590	EN14602/ISO17294	67.4		1.63
2202	IEC62321	62.2		0.62	2591		----		----
2212	in house	63.2		0.81	2618		----		----
2216	INH-62321	64		0.97	2624		----		----
2217	EPA3052	61.31		0.44	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	52.0		-1.38	2643	EPA3052	57.5		-0.30
2236	EPA3052	67.007		1.56	2645	CPSC-CH-E1002-09.1	48.44		-2.07
2246	CPSC-CH-E1002-08	51.45		-1.49	2671		53.98		-0.99
2247	EPA3050B	63.21		0.81	2672	IEC62321	70.70		2.28
2254	CPSC-CH-E1002-08	61.7		0.52	2674	EPA3052	64		0.97
2255	CPSC-CH-E1002-08	60.5		0.28	2700	EPA3051	63.2		0.81
2256	EPA3051	61.2		0.42	2701	EPA3051	58.83		-0.04
2264		----		----	2707		----		----
2272	ISO17072/EN1122	54.2		-0.95	2708		----		----
2284	IEC62321	68.4		1.83	3110	CPSC-CH-E1002-08	58.88		-0.03
2289	CPSC-CH-E1002-08	53		-1.18	3111	EPA3052	57.36		-0.33
2290	CPSC-CH-E1002-08	55.4		-0.71	3116	ASTM	61.32		0.44
2293		----		----	3118	CPSC-CH-E1002-08	54.42		-0.90
2296		----		----	3122		----		----
2298	CPSC-CH-E1002-08	50.00		-1.77	3124	EPA3052	86.6	R(0.05)	5.39
2300	EN1122	51.71		-1.43	3146	CPSC-CH-E1002-08	67.4		1.63
2301	CPSC-CH-E1002-08	57.714		-0.26	3151	CPSC-CH-E1002-08	53.749		-1.04
2310	EPA3052	58.4		-0.13	3153	IEC62321	60.1		0.21
2311	EPA3052	60		0.19	3154	IEC62321	67.35		1.62
2320	EPA3051	56.09		-0.58	3160		----		----
2347	IEC62321	54.1		-0.97	3163	IEC62321	195	R(0.01)	26.59
2349	IEC62321	58.182		-0.17	3166		64		0.97
2350	IEC62321	51.65		-1.45	3167	IEC62321	58.0		-0.20
2352	IEC62321	55.9		-0.62	3172	CPSC-CH-E1002-08	43.7		-3.00
2353	EPA3052	58.9		-0.03	3182	CPSC-CH-E1002-08	51		-1.57
2355	IEC62321	55.0		-0.79	3190	IEC62321	53.5		-1.08
2358	EPA3052	58.4		-0.13	3195	EPA7473	59.7		0.13
2363	IEC62321	62		0.58	3197	IEC62321	60.0		0.19
2365	QB/T4340	55.7		-0.65	3199		----		----
2366	IEC62321	58.1		-0.18	3214	EPA3052	59.4		0.07
2369	IEC62321	57.5		-0.30	3216	in house	107.9	R(0.01)	9.55

2370	EPA3052	53.5	-1.08	3220	EPA3051	39.0	-3.92
2372	IEC62321	54.97	-0.80	3225		-----	-----
2375		60.7	0.32	3228	IEC62321	61.4	0.46
2379	IEC62321	49.57	-1.85	3237	IEC62321	87.538	R(0.05)
2380	EPA3052	62	0.58	3243	IEC62321	28.27	R(0.05)
2384	IEC62321	58.90	-0.03	3246	in house	46.0	-2.55
2385	EPA3052	70.9	2.32	3248	CPSC-CH-E1002-08	71	2.34
2387	IEC62321	55.78	-0.64	8005		-----	-----
2388	IEC62321	52.88	-1.21				

normality OK
 n 119
 outliers 9
 mean (n) 59.045
 st.dev. (n) 7.4031
 R(calc.) 20.729
 R(Horwitz) 14.318

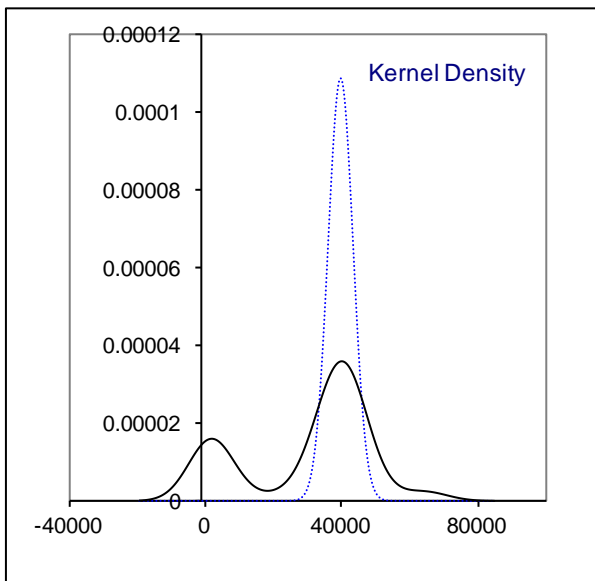
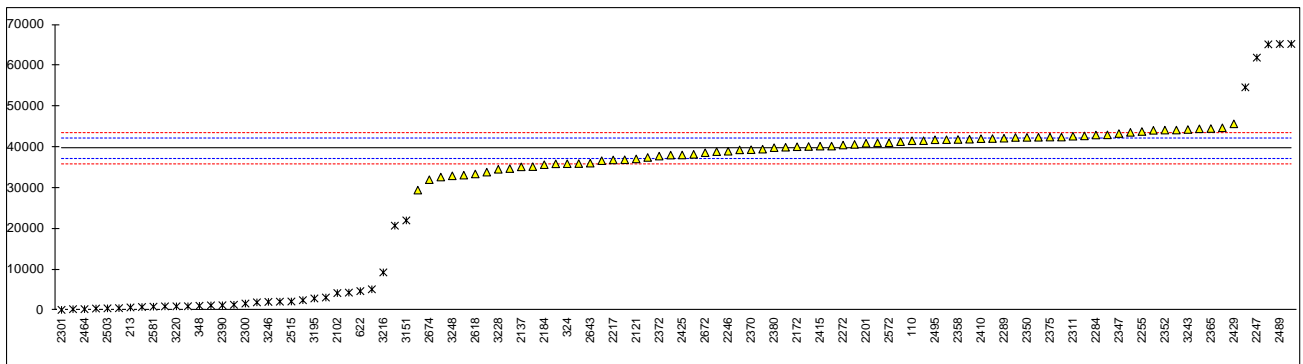


Determination of total Antimony as Sb on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	41600		1.51	2389		----		----
213	CPSC-CH-E1002-08.1	737.12	ex	-30.19	2390	CPSC-CH-E1002-08	1265.60	ex	-29.78
230		----		----	2406	CPSC-CH-E1002-08	40186		0.42
324	IEC62321	35966		-2.86	2410	CPSC-CH-E1002-08	42100		1.90
330		----		----	2413	in house	560.7	ex	-30.32
339	IEC62321	42495.6		2.21	2415	EPA3051	40270		0.48
348	in house	1133.80	ex	-29.88	2425	EPA3051	38108.00		-1.20
362		----		----	2429	IEC62321	45740		4.73
452		----		----	2431	INH-019	33168.3538		-5.03
551	IEC62321	1388.66	ex	-29.68	2432		----		----
622	in house	4734.42	ex	-27.09	2433	EPA3051	996.41	ex	-29.99
623	in house	842.07	ex	-30.11	2442		----		----
632		----		----	2444		----		----
840	EPA3052	36943		-2.10	2459		----		----
1051		----		----	2460		----		----
1126	in house	44770.7		3.97	2462		----		----
1861		----		----	2464	CPSC-CH-E1002-08	318	ex	-30.51
2102		4256.09	ex	-27.46	2477		----		----
2115	DIN54233	33900.6		-4.46	2482	CPSC-CH-E1002-08	40008		0.28
2118	CPSC-CH-E1002-08	44219.62		3.55	2489	CPSC-CH-E1002-08	65306	R(0.01)	19.90
2120		----		----	2492		----		----
2121	in house	37144.8		-1.94	2495	CPSC-CH-E1002-08	41836.2		1.70
2129		----		----	2496	EPA3052	43650.8		3.10
2132	ASTM F963	35938.5		-2.88	2500	EPA3052	37500.3		-1.67
2137	EPA3052	35200.00		-3.45	2503	CPSC-CH-E1002-08	515.8	ex	-30.36
2139	IEC62321	41372.54		1.34	2510		4371.60	ex	-27.37
2156	EPA3052	43040		2.63	2511		465.612	ex	-30.40
2165	IEC62321	34771.0		-3.78	2515	EPA3051	2193.1	ex	-29.06
2169	IEC62321	42400		2.13	2529		----		----
2172	IEC62321	40130		0.37	2546		----		----
2173		----		----	2563		----		----
2175		----		----	2564		----		----
2176		----		----	2566	CPSC-CH-E1002-08	65221.5	R(0.01)	19.84
2182		----		----	2567	CPSC-CH-E1002-08	1021	ex	-29.97
2184	CPSC-CH-E1002-08	35727		-3.04	2569	INHEPA3050B/3051A/3052	54687	R(0.01)	11.67
2190		----		----	2572	CPSC-CH-E1002-08	41100.3		1.13
2197		----		----	2581	CPSC-CH-E1002-08	921.0275	ex	-30.05
2201	IEC62321	40990		1.04	2590		----		----
2202	IEC62321	44150		3.49	2591		----		----
2212		----		----	2618		33453.78		-4.81
2216		----		----	2624		----		----
2217	EPA3052	36896.28		-2.14	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	5182	ex	-26.74	2643	EPA3052	36100		-2.75
2236	EPA3052	3166.398	ex	-28.30	2645		----		----
2246	CPSC-CH-E1002-08	39023		-0.49	2671		65320.32	R(0.01)	19.92
2247	EPA3050B	61967.70	R(0.01)	17.32	2672	IEC62321	38665		-0.76
2254	CPSC-CH-E1002-08	36711.4		-2.28	2674	EPA3052	32051		-5.89
2255	CPSC-CH-E1002-08	43862.2		3.27	2700	EPA3051	2150.0	ex	-29.09
2256	EPA3052	36000		-2.83	2701	EPA3051	38075		-1.22
2264		----		----	2707		----		----
2272	ISO17072/EN1122	40545.3		0.70	2708		----		----
2284	IEC62321	43000		2.60	3110	CPSC-CH-E1002-08	39361.46		-0.22
2289	CPSC-CH-E1002-08	42220		1.99	3111		----		----
2290	CPSC-CH-E1002-08	41611.6		1.52	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	1236	ex	-29.80
2296		----		----	3122		----		----
2298		----		----	3124	EPA3052	35250		-3.41
2300	EN1122	1694.55	ex	-29.45	3146		----		----
2301	CPSC-CH-E1002-08	139.01	ex	-30.65	3151	CPSC-CH-E1002-08	22064.834	R(0.01)	-13.64
2310	EPA3052	40700		0.82	3153	IEC62321	38267		-1.07
2311	EPA3052	42704		2.37	3154	IEC62321	1980.50	ex	-29.22
2320	EPA3051	2511.0	ex	-28.81	3160		----		----
2347	EPA3052	43359.1		2.88	3163	IEC62321	29495		-7.88
2349	IEC62321	39531.4		-0.09	3166		32700		-5.39
2350	EPA3052	42420		2.15	3167		----		----
2352	EPA3052	44209		3.54	3172	CPSC-CH-E1002-08	313.3	ex	-30.52
2353	EPA3052	42782.7		2.43	3182	CPSC-CH-E1002-08	44527.0		3.78
2355	EPA3052	41086.0		1.11	3190	IEC62321	40280		0.49
2358	EPA3052	41908.1		1.75	3195	in house	2940	ex	-28.48
2363	EPA3052	41852		1.71	3197	CPSC-CH-E1002-08	42446		2.17
2365	QB/T4340	44589.2		3.83	3199		----		----
2366	IEC62321	42134		1.93	3214	EPA3052	41973.4		1.80
2369	EPA3052	38923.5		-0.56	3216	in house	9324.6	ex	-23.53

2370	EPA3052	39400		-0.19	3220	EPA3051	1007	ex	-29.98
2372	IEC62321	37834		-1.41	3225		-----		-----
2375		42492.7		2.21	3228	IEC62321	34600		-3.92
2379		-----		-----	3237		-----		-----
2380	EN1122	39897		0.19	3243	INH-126	44350		3.65
2384		-----		-----	3246	in house	2094.0	ex	-29.14
2385	EPA3052	20777	R(0.01)	-14.64	3248	CPSC-CH-E1002-08	33000		-5.16
2387		-----		-----	8005		-----		-----
2388		-----		-----					

normality OK
 n 72
 outliers 7+29 excl
 mean (n) 39648.80
 st.dev. (n) 3664.663
 R(calc.) 10261.06
 R(Horwitz) 3609.16



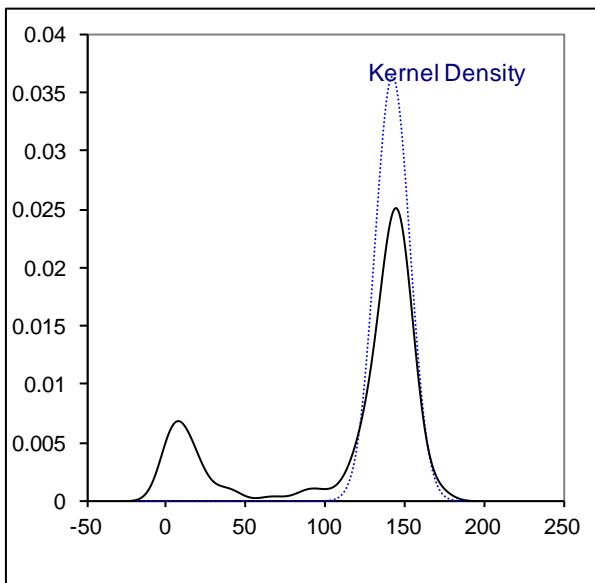
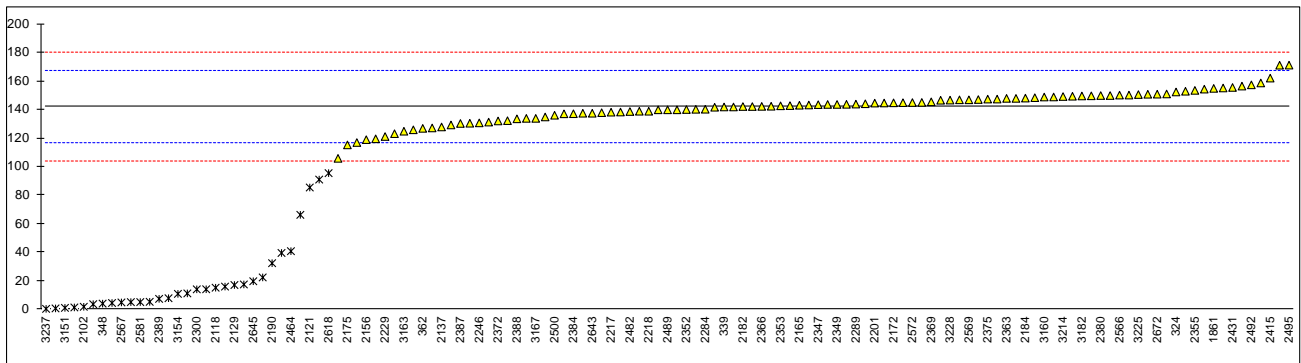
Determination of total Cadmium as Cd on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	137.2		-0.39	2389	CPSC-CH-E1002-08	7.6	ex	-10.60
213	CPSC-CH-E1002-08.1	1.6	ex	-11.07	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406	EN1122	143.84		0.14
324	IEC62321	152.5		0.82	2410	CPSC-CH-E1002-08	150		0.62
330		<20		<-9.62	2413	in house	<10		<-10.41
339	IEC62321	142		-0.01	2415	EN1122	162.2		1.58
348	in house	4.29	ex	-10.86	2425	EN1122	153.00		0.86
362	EN1122	127		-1.19	2429	IEC62321	145.18		0.24
452		----		----	2431	INH-019	155.6603		1.07
551	IEC62321	11.43	ex	-10.30	2432	in house	144.240		0.17
622	EN1122	138.45		-0.29	2433	EPA3051	n.d.		----
623	in house	n.d.		----	2442	EN1122	66.45	R(0.01)	-5.96
632		----		----	2444	IEC62321	91.15	R(0.01)	-4.02
840	EPA3052	119.7		-1.77	2459		----		----
1051	EN1122	123.29		-1.48	2460	EN1122	143.75		0.13
1126	in house	n.d.		----	2462	IEC62321	130.6		-0.91
1861		155		1.02	2464	CPSC-CH-E1002-08	41	ex	-7.97
2102		2.06	ex	-11.04	2477	IEC62321	171.229		2.30
2115	DIN54233	144.773		0.21	2482	CPSC-CH-E1002-08	138.8		-0.26
2118	CPSC-CH-E1002-08	15.42	ex	-9.98	2489	EN1122	140.0		-0.17
2120	EN1122	137.6		-0.35	2492		157.49		1.21
2121	EN1122	85.6	R(0.01)	-4.45	2495	EN1122	171.3		2.30
2129	IEC62321	17.31	ex	-9.84	2496	IEC62321	126.0		-1.27
2132	ASTM F963	140.35		-0.14	2500	EN1122	136.2		-0.46
2137	EPA3052	128.00		-1.11	2503	CPSC-CH-E1002-08	3.880	ex	-10.89
2139	INH-0110	155.29		1.04	2510		14.33	ex	-10.07
2156	EN1122	119.1		-1.81	2511	EN1122	n.d.		----
2165	IEC62321	143.2		0.09	2515	EPA3051	n.d.		----
2169	IEC62321	147		0.39	2529	CPSC-CH-E1002-08.3	131.4		-0.84
2172	IEC62321	144.9		0.22	2546	EN1122	143.375		0.10
2173	EN1122	<10		<-10.41	2563	IEC62321	127.3		-1.17
2175	EPA3052	115.43		-2.10	2564	CPSC-CH-E1002-08	<20		<-9.62
2176		149.8		0.61	2566	CPSC-CH-E1002-08	150.3		0.65
2182	EN1122	142.3		0.02	2567	CPSC-CH-E1002-08	5.1	ex	-10.80
2184	EN1122	148.2		0.48	2569	INH-EPA3050B/3051A/3052	147		0.39
2190		32.6	ex	-8.63	2572	EN1122	145.1		0.24
2197		139		-0.24	2581	CPSC-CH-E1002-08	5.3573	ex	-10.78
2201	IEC62321	144.7		0.21	2590	EN1122	16.2	ex	-9.92
2202	IEC62321	158.8		1.32	2591	CPSC-CH-E1002-08	5.53	ex	-10.76
2212		----		----	2618	EN1122	95.66	R(0.01)	-3.66
2216		----		----	2624		----		----
2217	EPA3052	138.34		-0.30	2629	INH-0350	8.060	ex	-10.56
2218	EN1122	139		-0.24	2642		----		----
2229	EN1122	121.3		-1.64	2643	EN1122	137.6		-0.35
2236	EPA3052	5.325	ex	-10.78	2645	CPSC-CH-E1002-09.1	19.94	ex	-9.63
2246	EN1122	130.85		-0.89	2671		147.52		0.43
2247	EPA3050B	156.61		1.14	2672	IEC62321	150.95		0.70
2254	CPSC-CH-E1002-08	129.4		-1.00	2674	EN1122	149		0.54
2255	CPSC-CH-E1002-08	151.1		0.71	2700	EPA3051	n.d.		----
2256	EPA3052	140		-0.17	2701	EN1122	150.89		0.69
2264	CPSC-CH-E1002	<1.0		<-11.12	2707		----		----
2272	ISO17072/EN1122	132.4		-0.76	2708		----		----
2284	EN1122	140.4		-0.13	3110	EN1122	142.94		0.07
2289	CPSC-CH-E1002-08	144		0.15	3111	EPA3052	154.48		0.98
2290	EN1122	146.7		0.36	3116		----		----
2293	EN1122	150.32		0.65	3118	CPSC-CH-E1002-08	<5		<-10.81
2296	in house	22.622	ex	-9.42	3122	CPSC-CH-E1002-08	<5		<-10.81
2298		----		----	3124	EPA3052	106		-2.85
2300	EN1122	14.28	ex	-10.07	3146		----		----
2301		----		----	3151	CPSC-CH-E1002-08	1.294	ex	-11.10
2310	EN1122	142		-0.01	3153	IEC62321	142.3		0.02
2311	EN1122	135		-0.56	3154	IEC62321	11.11	ex	-10.32
2320	EPA3051	4.71	ex	-10.83	3160	CPSC-CH-E1002-08	148.96		0.54
2347	IEC62321	143.6		0.12	3163	IEC62321	125		-1.35
2349	EN1122	143.762		0.13	3166		134		-0.64
2350	EN1122	141.8		-0.02	3167	EN1122	134.0		-0.64
2352	IEC62321	140.2		-0.15	3172	EN1122	<10		<-10.41
2353	EPA3052	142.8		0.06	3182	EN1122	149.7		0.60
2355	IEC62321	153.6		0.91	3190	IEC62321	138		-0.32
2358	EPA3052	142.5		0.03	3195	in house	17.7	ex	-9.80
2363	IEC62321	148		0.47	3197	CPSC-CH-E1002-08	147.2		0.40
2365	QB/T4340	149.5		0.58	3199		----		----
2366	EN1122	142.4		0.02	3214	EN1122	149.3		0.57
2369	IEC62321	145.6		0.28	3216	in house	39.75	ex	-8.07

2370	EN1122	145	0.23	3220	EPA3051	0.92	ex	-11.13
2372	IEC62321	132.2	-0.78	3225	EN1122	150.68		0.68
2375		147.5	0.43	3228	EN1122	146.8		0.37
2379	EN1122	117.09	-1.97	3237	IEC62321	0.603	ex	-11.15
2380	EN1122	150	0.62	3243	EN1122	140.0		-0.17
2384	IEC62321	137.27	-0.38	3246	in house	n.d.		----
2385	EPA3052	148.5	0.50	3248	EN1122	148		0.47
2387	IEC62321	130.44	-0.92	8005		----		----
2388	IEC62321	133.69	-0.66					

normality		suspect	
n	102	suspect	41
outliers	4+27excl	3 + 2 excl.	
mean (n)	142.095	141.933	
st.dev. (n)	10.9697	10.5802	
R(calc.)	30.715	29.625	
R(EN1122:01)	35.524	35.483	

Labs 330, 623, 1126, 2173, 2264,2390, 2413, 2433, 2511, 2515, 2564,2700, 3118, 3122, 3172 and 3246 reported false negative test results?



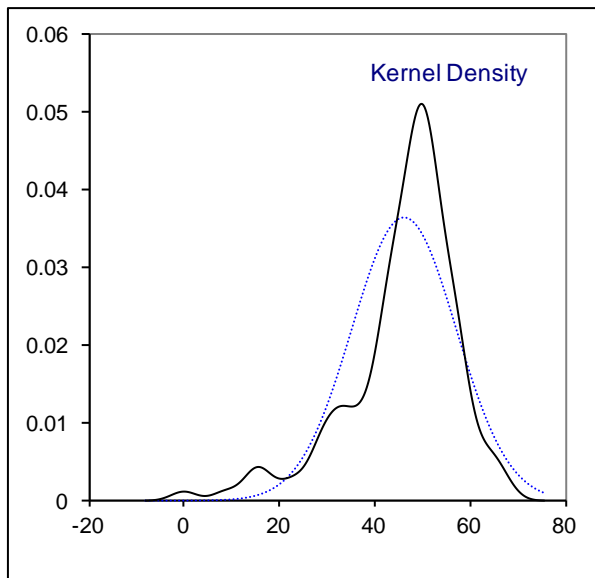
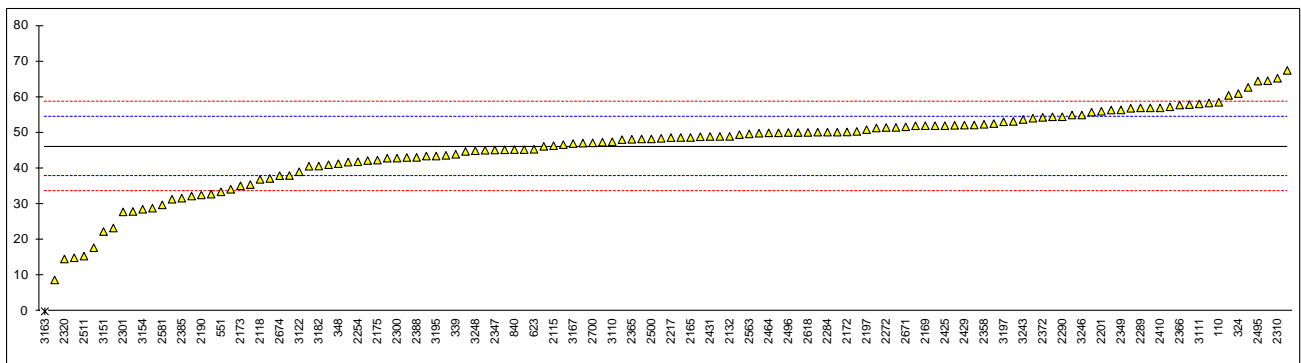
Determination of total Chromium as Cr on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	58.57		3.00	2389		----		----
213	CPSC-CH-E1002-08.1	38.05		-1.95	2390	CPSC-CH-E1002-08	37.22		-2.15
230		----		----	2406	CPSC-CH-E1002-08	51.53		1.30
324	IEC62321	61		3.58	2410	CPSC-CH-E1002-08	57		2.62
330		----		----	2413	in house	28.9		-4.16
339	IEC62321	44		-0.52	2415	EPA3051	46.22		0.02
348	in house	41.36		-1.15	2425	EPA3051	52.00		1.41
362		----		----	2429	IEC62321	52.16		1.45
452		----		----	2431	INH-019	48.9788		0.68
551	IEC62321	33.48		-3.05	2432		----		----
622	EN1122	41.07		-1.22	2433	EPA3051	35.51		-2.56
623	in house	45.40		-0.18	2442		----		----
632		----		----	2444	IEC62321	45.25		-0.21
840	EPA3052	45.3		-0.20	2459		----		----
1051		----		----	2460		----		----
1126	in house	n.d.		----	2462	IEC62321	52.6		1.56
1861		----		----	2464	CPSC-CH-E1002-08	50		0.93
2102		45.13		-0.24	2477		----		----
2115	DIN54233	46.405		0.06	2482	CPSC-CH-E1002-08	48.1		0.47
2118	CPSC-CH-E1002-08	36.97		-2.21	2489	CPSC-CH-E1002-08	47.12		0.24
2120	CPSC-CH-E1002-08	41.8		-1.05	2492		49.50		0.81
2121	in house	48.9		0.67	2495	CPSC-CH-E1002-08	64.5		4.43
2129		----		----	2496	IEC62321	50.1		0.96
2132	ASTM F963	49.01		0.69	2500	EPA3052	48.3		0.52
2137	EPA3052	42.25		-0.94	2503	CPSC-CH-E1002-08	23.34		-5.50
2139	IEC62321	52.11		1.44	2510		32.83		-3.21
2156	IEC62321	42.9		-0.78	2511		15.471		-7.40
2165	IEC62321	48.7		0.62	2515	EPA3051	45.3		-0.20
2169	IEC62321	52.0		1.41	2529	CPSC-CH-E1002-08.3	43.5		-0.64
2172	IEC62321	50.25		0.99	2546	ISO17072-2	51.363		1.26
2173	IEC62321	35.15		-2.65	2563	IEC62321	49.7		0.86
2175	EPA3052	42.37		-0.91	2564		----		----
2176		55.8		2.33	2566	CPSC-CH-E1002-08	50.2		0.98
2182		----		----	2567	CPSC-CH-E1002-08	31.4		-3.55
2184	CPSC-CH-E1002-08	50.2		0.98	2569	INH-EPA3050B/3051A/3052	50		0.93
2190		32.6		-3.26	2572	CPSC-CH-E1002-08	53.2		1.70
2197		50.9		1.15	2581	CPSC-CH-E1002-08	29.8233		-3.93
2201	IEC62321	56.05		2.39	2590	EN14602/ISO17294	8.8		-9.00
2202	IEC62321	48.7		0.62	2591		----		----
2212		----		----	2618		50.12		0.96
2216		----		----	2624		----		----
2217	EPA3052	48.66		0.61	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	32.3		-3.34	2643	EPA3052	50.1		0.96
2236	EPA3052	34.194		-2.88	2645	CPSC-CH-E1002-09.1	62.74		4.00
2246	CPSC-CH-E1002-08	47.40		0.30	2671		51.7		1.34
2247	EPA3050B	43.70		-0.59	2672	IEC62321	48.294		0.52
2254	CPSC-CH-E1002-08	41.9		-1.02	2674	EPA3052	38		-1.96
2255	CPSC-CH-E1002-08	56.4		2.47	2700	EPA3051	47.2		0.26
2256	EPA3052	46.7		0.14	2701	EPA3051	56.88		2.59
2264		----		----	2707		----		----
2272	ISO17072/EN1122	51.5		1.29	2708		----		----
2284	IEC62321	50.2		0.98	3110	CPSC-CH-E1002-08	47.52		0.33
2289	CPSC-CH-E1002-08	57		2.62	3111	EPA3052	58.11		2.89
2290	CPSC-CH-E1002-08	54.51		2.02	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	17.81		-6.83
2296		----		----	3122	CPSC-CH-E1002-08	39.10		-1.70
2298		----		----	3124	EPA3052	67.5		5.15
2300	EN1122	42.92		-0.78	3146		----		----
2301	CPSC-CH-E1002-08	27.863		-4.41	3151	CPSC-CH-E1002-08	22.359		-5.73
2310	EPA3052	65.3		4.62	3153	IEC62321	50.4		1.03
2311	EPA3052	57		2.62	3154	IEC62321	28.60		-4.23
2320	EPA3051	14.66		-7.59	3160	CPSC-CH-E1002-08	58.36		2.95
2347	IEC62321	45.2		-0.23	3163	IEC62321	0	ex	-11.13
2349	IEC62321	56.428		2.48	3166		----		----
2350	IEC62321	51.99		1.41	3167	IEC62321	47.0		0.21
2352	IEC62321	54.1		1.92	3172	CPSC-CH-E1002-08	15.0		-7.51
2353	EPA3052	64.6		4.45	3182	CPSC-CH-E1002-08	40.7		-1.31
2355	IEC62321	52.2		1.46	3190	IEC62321	54.5		2.02
2358	EPA3052	52.4		1.51	3195	in house	43.5		-0.64
2363	IEC62321	52		1.41	3197	CPSC-CH-E1002-08	53.1		1.68
2365	QB/T4340	48.2		0.50	3199		----		----
2366	IEC62321	57.8		2.81	3214	EPA3052	57.9		2.84
2369	IEC62321	49.9		0.91	3216	in house	48.46		0.56

2370	EPA3052	60.5	3.46	3220	EPA3051	43.1	-0.73
2372	IEC62321	54.34	1.98	3225		----	----
2375		57.3	2.69	3228	IEC62321	49.0	0.69
2379	IEC62321	27.98	-4.38	3237		----	----
2380	EPA3052	55	2.14	3243	IEC62321	53.75	1.84
2384	IEC62321	44.80	-0.32	3246	in house	55.0	2.14
2385	EPA3052	31.7	-3.48	3248	CPSC-CH-E1002-08	45	-0.27
2387	IEC62321	40.65	-1.32	8005		----	----
2388	IEC62321	43.13	-0.73				

normality suspect
 n 127
 outliers 0 + 1 excl.
 mean (n) 46.138
 st.dev. (n) 10.9382
 R(calc.) 30.627
 R(Horwitz) 11.611

Lab 3163: test result excluded, zero is not a real value.



Determination of Hexavalent Chromium as Cr⁶⁺ on sample #15151; results in mg/kg

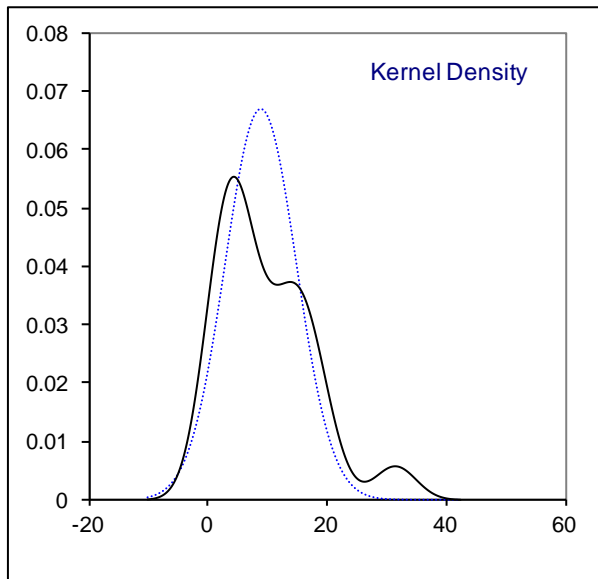
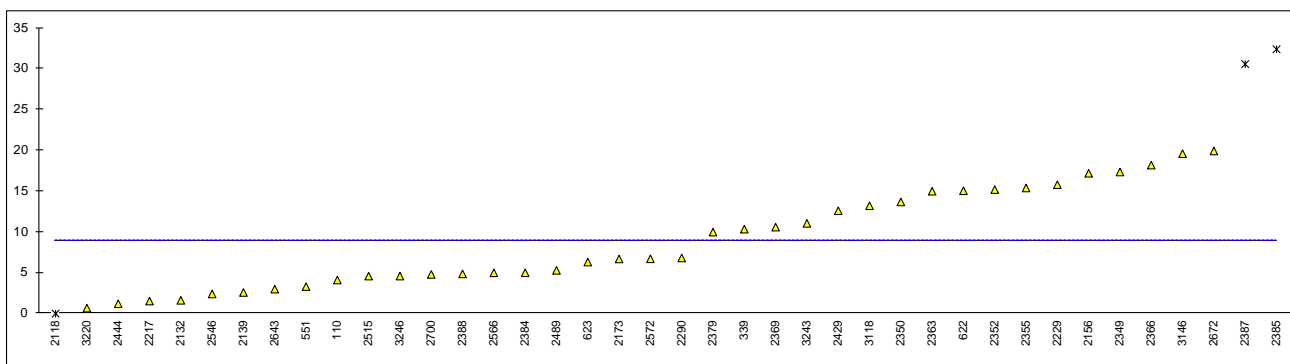
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	IEC62321	4.12		----	2389		----		----
213		----		----	2390	IEC62321	n.d.		----
230		----		----	2406		----		----
324		----		----	2410		----		----
330		----		----	2413		----		----
339	IEC62321	10.35		----	2415		----		----
348		----		----	2425	IEC62321	n.d.		----
362		----		----	2429	IEC62321	12.61		----
452		----		----	2431		----		----
551	IEC62321	3.31		----	2432		----		----
622	in house	15.06		----	2433	IEC62321	n.d.		----
623	in house	6.32		----	2442		----		----
632		----		----	2444	IEC62321	1.21		----
840	IEC62321	n.d.		----	2459		----		----
1051		----		----	2460		----		----
1126		----		----	2462	IEC62321	<10		----
1861		----		----	2464		----		----
2102		----		----	2477		----		----
2115		----		----	2482		----		----
2118		0	ex	----	2489	IEC62321	5.30		----
2120		----		----	2492		----		----
2121		----		----	2495		----		----
2129		----		----	2496		----		----
2132	IEC62321	1.63		----	2500		----		----
2137	EPA3060A	<5		----	2503		----		----
2139	IEC62321	2.59		----	2510		----		----
2156	IEC62321	17.2		----	2511		----		----
2165	IEC62321	n.d.		----	2515	EPA3060A	4.6		----
2169	IEC62321	---		----	2529		----		----
2172	IEC62321	<2		----	2546	INH-2004-3	2.405		----
2173	IEC62321	6.7		----	2563		----		----
2175		----		----	2564		----		----
2176	IEC62321	n.d.		----	2566	IEC62321	5.0		----
2182		----		----	2567		----		----
2184	IEC62321	<1		----	2569		----		----
2190		<20		----	2572	IEC62321	6.72		----
2197		----		----	2581		----		----
2201		----		----	2590		----		----
2202		----		----	2591		----		----
2212		----		----	2618	IEC62321	<1		----
2216		----		----	2624		----		----
2217	EPA3060A	1.54		----	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	15.8		----	2643	EPA3060A	3.0		----
2236	in house	<5		----	2645		----		----
2246		----		----	2671		----		----
2247	IEC62321	n.d.		----	2672	IEC62321	19.933		----
2254		----		----	2674	IEC62321	n.d.		----
2255	CPSC-CH-E1002-08	n.d.		----	2700	EPA3060A	4.8		----
2256		----		----	2701	EPA3060A	<2		----
2264		----		----	2707		----		----
2272		----		----	2708		----		----
2284	IEC62321	n.d.		----	3110		----		----
2289		----		----	3111		----		----
2290	IEC62321	6.82		----	3116		----		----
2293		----		----	3118	IEC62321	13.22		----
2296		----		----	3122		----		----
2298		----		----	3124		----		----
2300		----		----	3146	IEC62321	19.6		----
2301		----		----	3151		----		----
2310		----		----	3153	IEC62321	n.d.		----
2311		----		----	3154		----		----
2320		----		----	3160		----		----
2347	IEC62321	<2		----	3163		----		----
2349	IEC62321	17.358		----	3166	EPA3060A	<0.04		----
2350	IEC62321	13.69		----	3167		----		----
2352	IEC62321	15.2		----	3172		----		----
2353	EPA3060A	n.d.		----	3182	IEC62321	<1		----
2355	IEC62321	15.4		----	3190		----		----
2358	EPA3060A	n.d.		----	3195		----		----
2363	IEC62321	15		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	IEC62321	<2		----	3199		----		----
2366	IEC62321	18.2		----	3214	IEC62321	<1		----
2369	IEC62321	10.6		----	3216		----		----

2370	IEC62321	n.d.	----	3220		0.67	----
2372	IEC62321	n.d.	----	3225	IEC62321	<2	----
2375		<n.d.	----	3228	IEC62321	<2	----
2379	IEC62321	9.99	----	3237		----	----
2380	EPA3060A	n.d.	----	3243	INH-121	11.061	----
2384	IEC62321	5.01	----	3246	in house	4.6	----
2385	EPA3060A	32.4	R(0.05)	3248	EPA3060A	n.d.	----
2387	IEC62321	30.58	R(0.05)	8005		----	----
2388	IEC62321	4.87	----				

normality OK
 n 37
 outliers 2 + 1 excl.
 mean (n) 8.959
 st.dev. (n) 5.9457
 R(calc.) 16.648
 R(Horwitz) (2.885)

Lab 2118: test result excluded, zero is not a real value.

Labs 840, 2137, 2165, 2172, 2176, 2184, 2236, 2247, 2255, 2284, 2347, 2353, 2358, 2365, 2370, 2372, 2375, 2380, 2390, 2425, 2433, 2618, 2674, 2701, 3153, 3166, 3182, 3197, 3214, 3225, 3228 and 3248 reported false negative test results?

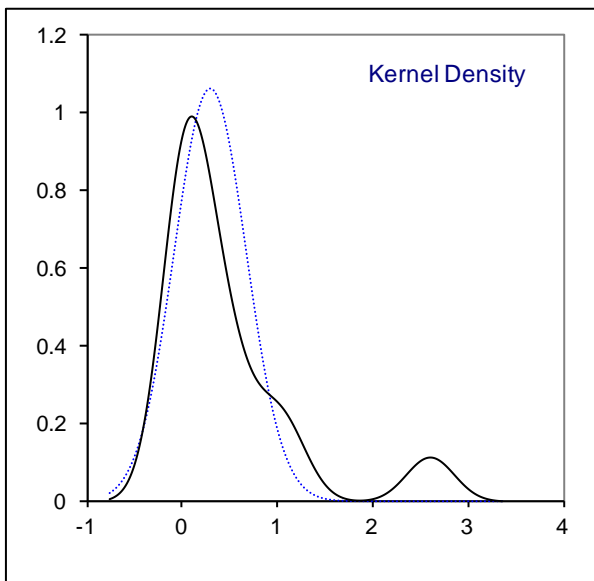
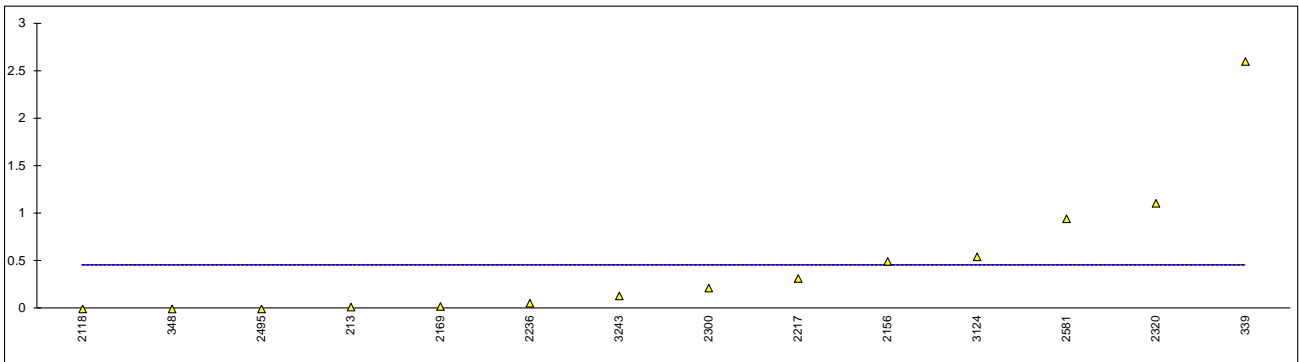


Determination of total Cobalt as Co on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	<10		----	2389		----		----
213	CPSC-CH-E1002-08.1	0.02		----	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406		----		----
324	IEC62321	<2		----	2410	CPSC-CH-E1002-08	<2		----
330		----		----	2413	in house	<10		----
339	IEC62321	2.6		----	2415	EPA3051	n.d.		----
348	in house	0.0		----	2425	EPA3051	n.d.		----
362		----		----	2429	IEC62321	n.d.		----
452		----		----	2431		----		----
551	IEC62321	n.d.		----	2432		----		----
622	in house	<1		----	2433	EPA3051	n.d.		----
623	in house	n.d.		----	2442		----		----
632		----		----	2444		----		----
840	EPA3052	n.d.		----	2459		----		----
1051		----		----	2460		----		----
1126		----		----	2462		----		----
1861		----		----	2464		----		----
2102		n.d.		----	2477		----		----
2115	DIN54233	n.d.		----	2482	CPSC-CH-E1002-08	< 5		----
2118	CPSC-CH-E1002-08	0		----	2489	CPSC-CH-E1002-08	n.d.		----
2120	CPSC-CH-E1002-08	<33		----	2492		----		----
2121	in house	n.d.		----	2495	CPSC-CH-E1002-08	0		----
2129		----		----	2496	EPA3052	<10		----
2132	ASTM F963	<10		----	2500		----		----
2137	EPA3052	<5		----	2503		----		----
2139	IEC62321	<10		----	2510		<0.50		----
2156	EPA3052	0.5		----	2511		n.d.		----
2165	IEC62321	n.d.		----	2515	EPA3051	n.d.		----
2169	IEC62321	0.0261		----	2529		----		----
2172	IEC62321	<10		----	2546	ISO17072-2	<2.0		----
2173		----		----	2563		----		----
2175		----		----	2564		----		----
2176		----		----	2566	CPSC-CH-E1002-08	n.d.		----
2182		----		----	2567	CPSC-CH-E1002-08	n.d.		----
2184	CPSC-CH-E1002-08	<10		----	2569	INH-EPA3050B/3051A/3052	<10		----
2190		<10		----	2572	CPSC-CH-E1002-08	<20		----
2197		----		----	2581	CPSC-CH-E1002-08	0.9475		----
2201	IEC62321	<10		----	2590	EN14602/ISO17294	n.d.		----
2202	IEC62321	n.d.		----	2591		----		----
2212		----		----	2618	EPA3051	<10		----
2216		----		----	2624		----		----
2217	EPA3052	0.32		----	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	n.d.		----	2643		----		----
2236	EPA3052	0.060		----	2645	CPSC-CH-E1002-09.1	<25		----
2246		----		----	2671		----		----
2247	EPA3050B	n.d.		----	2672	IEC62321	<5		----
2254	CPSC-CH-E1002-08	<2		----	2674	EPA3052	n.d.		----
2255	CPSC-CH-E1002-08	n.d.		----	2700	EPA3051	n.d.		----
2256		----		----	2701	EPA3051	<5		----
2264		----		----	2707		----		----
2272	ISO17072/EN1122	<10		----	2708		----		----
2284	IEC62321	n.d.		----	3110		----		----
2289	CPSC-CH-E1002-08	n.d.		----	3111		----		----
2290	CPSC-CH-E1002-08	<20		----	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	<5		----
2296		----		----	3122		----		----
2298		----		----	3124	EPA3052	0.548		----
2300	EN1122	0.22		----	3146		----		----
2301		----		----	3151	CPSC-CH-E1002-08	<0.1		----
2310		----		----	3153	IEC62321	n.d.		----
2311	EPA3052	n.d.		----	3154		----		----
2320	EPA3051	1.11		----	3160	CPSC-CH-E1002-08	n.d.		----
2347	EPA3052	<5		----	3163		----		----
2349	IEC62321	n.d.		----	3166		<0.05		----
2350	EPA3052	<2.0		----	3167		----		----
2352	EPA3052	n.d.		----	3172	CPSC-CH-E1002-08	<10		----
2353	EPA3052	n.d.		----	3182	CPSC-CH-E1002-08	<5		----
2355	EPA3052	<5		----	3190	IEC62321	n.d.		----
2358	EPA3052	n.d.		----	3195	in house	<1,0		----
2363	EPA3052	<5		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	QB/T4340	<5		----	3199		----		----
2366	IEC62321	<10		----	3214	EPA3052	<10		----
2369	EPA3052	<5.0		----	3216	in house	<0.1		----

2370	EPA3052	n.d.	----	3220	EPA3051	n.d.	----
2372	IEC62321	n.d.	----	3225		----	----
2375		----	----	3228	IEC62321	<10	----
2379		----	----	3237		----	----
2380	EPA3052	n.d.	----	3243	INH-126	0.137	----
2384		----	----	3246	in house	n.d.	----
2385	EPA3052	<5	----	3248	CPSC-CH-E1002-08	n.d.	----
2387		----	----	8005		----	----
2388		----	----				

normality	n.a.
n	94
outliers	0
mean (n)	<10
st.dev. (n)	n.a.
R(calc.)	n.a.
R(Horwitz)	n.a.



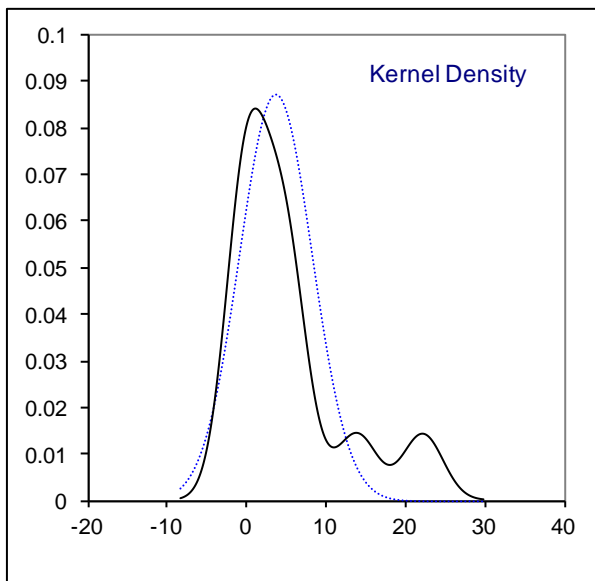
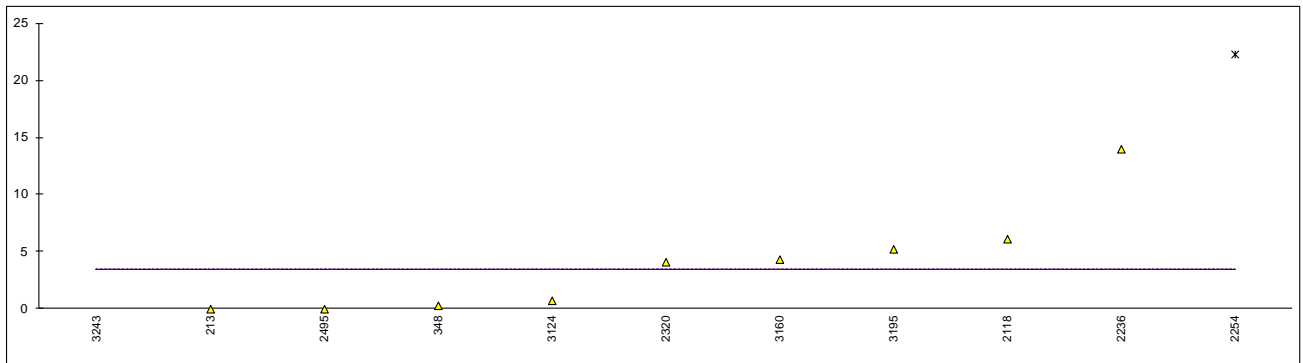
Determination of total Copper as Cu on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-3352	<10		----	2389		----		----
213	CPSC-CH-E1002-08.1	0		----	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406		----		----
324		----		----	2410		<2		----
330		----		----	2413	in house	<10		----
339		----		----	2415	EPA3051	n.d.		----
348	in house	0.3		----	2425	in house	n.d.		----
362		----		----	2429	IEC62321	n.d.		----
452		----		----	2431		----		----
551	EPA3052	n.d.		----	2432		----		----
622	in house	<1		----	2433		----		----
623	in house	n.d.		----	2442		----		----
632		----		----	2444		----		----
840		n.d.		----	2459		----		----
1051		----		----	2460		----		----
1126		----		----	2462		----		----
1861		----		----	2464		----		----
2102		n.d.		----	2477		----		----
2115	DIN54233	n.d.		----	2482		<5		----
2118		6.13		----	2489		----		----
2120		----		----	2492		----		----
2121	in house	n.d.		----	2495	CPSC-CH-E1002-08	0		----
2129		----		----	2496		----		----
2132	ASTM F963	<10		----	2500		----		----
2137	EPA3052	<5		----	2503		----		----
2139	INH-0110	<10		----	2510		----		----
2156		----		----	2511		n.d.		----
2165	EPA3052	n.d.		----	2515		----		----
2169		----		----	2529		----		----
2172	IEC62321	<10		----	2546		----		----
2173		----		----	2563		----		----
2175		----		----	2564		----		----
2176		----		----	2566		----		----
2182		----		----	2567		n.d.		----
2184		<10		----	2569		----		----
2190		<10		----	2572		<20		----
2197		----		----	2581		----		----
2201		<10		----	2590	EN14602/ISO17294	n.d.		----
2202		n.d.		----	2591		----		----
2212		----		----	2618		----		----
2216		----		----	2624		----		----
2217		----		----	2629		----		----
2218		----		----	2642		----		----
2229		n.d.		----	2643		----		----
2236	EPA3052	14.002		----	2645		----		----
2246		----		----	2671		----		----
2247	EPA3050B	n.d.		----	2672	IEC62321	<5		----
2254	in house	22.3	G(0.05)	----	2674		----		----
2255	CPSC-CH-E1002-08	n.d.		----	2700		----		----
2256		----		----	2701		----		----
2264		----		----	2707		----		----
2272		----		----	2708		----		----
2284		n.d.		----	3110		----		----
2289	CPSC-CH-E1002-08	n.d.		----	3111		----		----
2290		<20		----	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	<5		----
2296		----		----	3122		----		----
2298		----		----	3124	EPA3052	0.733		----
2300	EN1122	n.d.		----	3146		----		----
2301		----		----	3151		<1		----
2310		----		----	3153	IEC62321	n.d.		----
2311	EPA3052	n.d.		----	3154		----		----
2320	EPA3051	4.11		----	3160	CPSC-CH-E1002-08	4.34		----
2347	EPA3052	<5		----	3163		----		----
2349		n.d.		----	3166		----		----
2350	EPA3052	<1.0		----	3167		----		----
2352	EPA3052	n.d.		----	3172		----		----
2353		----		----	3182	CPSC-CH-E1002-08	<5		----
2355	EPA3052	<5		----	3190	IEC62321	n.d.		----
2358		----		----	3195	in house	5.24		----
2363	EPA3052	<5		----	3197	CPSC-CH-E1002-08	n.d.		----
2365	QB/T4340	<5		----	3199		----		----
2366		<50		----	3214	EPA3052	<10		----
2369		<5.0		----	3216	in house	<0.1		----

2370	EPA3052	n.d.	----	3220		n.d.	----
2372	IEC62321	n.d.	----	3225		----	----
2375		----	----	3228	IEC62321	<10	----
2379		----	----	3237		----	----
2380		----	----	3243	INH-126	-0.574	----
2384		----	----	3246	in house	n.d.	----
2385		<5	----	3248		n.d.	----
2387		----	----	8005		----	----
2388		----	----				

normality n.a.
n 67
outliers 1
mean (n) <10
st.dev. (n) n.a.
R(calc.) n.a.
R(Horwitz) n.a.

Lab 2254: false positive test result?



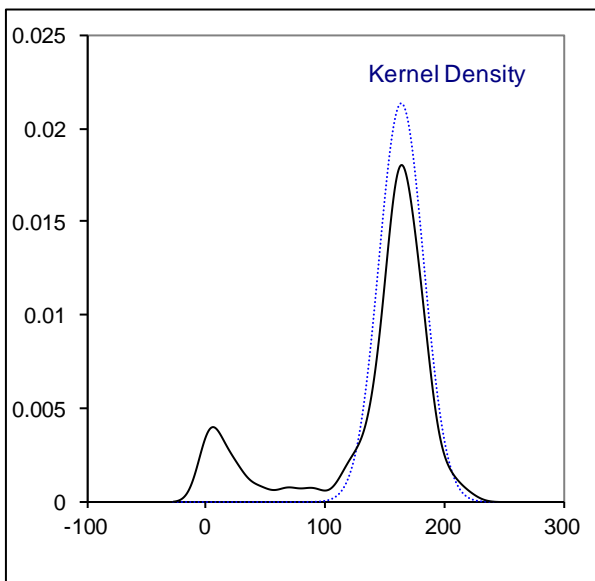
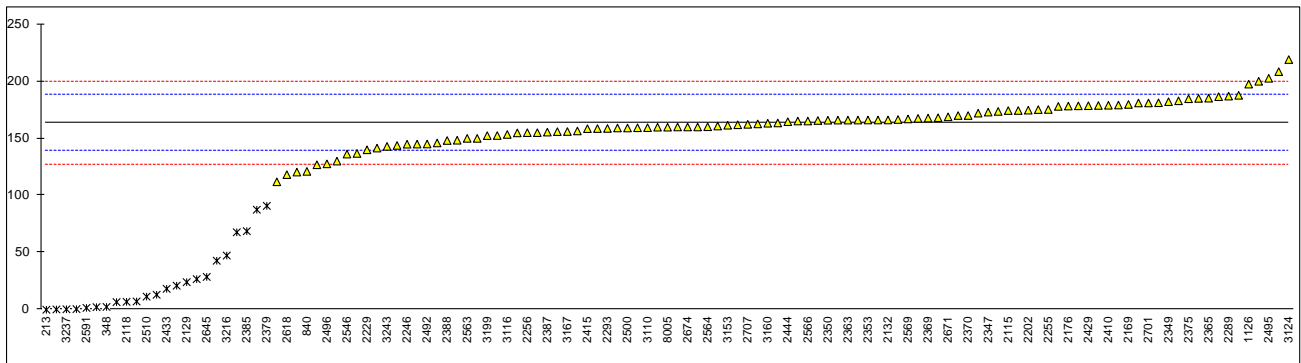
Determination of total Lead as Pb on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	163.5		0.00	2389	CPSC-CH-E1002-08	n.d		----
213	CPSC-CH-E1002-08.1	0	ex	-13.46	2390	CPSC-CH-E1002-08	n.d.		----
230		----		----	2406	CPSC-CH-E1002-08	161.91		-0.13
324	IEC62321	178.8		1.26	2410	CPSC-CH-E1002-08	179		1.28
330		<20		<-11.81	2413	in house	<10		<-12.64
339	IEC62321	166		0.21	2415	EPA3051	158.5		-0.41
348	CPSC-CH-E1002-08	2.44	ex	-13.26	2425	EPA3051	155.00		-0.70
362		----		----	2429	IEC62321	178.60		1.25
452		----		----	2431	INH-019	165.6411		0.18
551	IEC62321	n.d.		----	2432		----		----
622	in house	<1		<-13.38	2433	EPA3051	18.32	ex	-11.95
623	in house	n.d.		----	2442		----		----
632		----		----	2444	IEC62321	164.62		0.09
840	EPA3052	121.1		-3.49	2459		----		----
1051	CPSC-CH-E1002-08	148.38		-1.24	2460	CPSC-CH-E1002-08	156.5		-0.57
1126	in house	197.5		2.80	2462	IEC62321	155.9		-0.62
1861		200		3.01	2464	CPSC-CH-E1002-08	112		-4.24
2102		n.d.		----	2477	IEC62321	n.d.		----
2115	DIN54233	174.352		0.90	2482	CPSC-CH-E1002-08	187.7		1.99
2118	CPSC-CH-E1002-08	6.94	ex	-12.89	2489	CPSC-CH-E1002-08	146.0		-1.44
2120	CPSC-CH-E1002-08	181.0		1.44	2492		145.09		-1.51
2121	in house	120.5		-3.54	2495	CPSC-CH-E1002-08	202.6		3.22
2129	IEC62321	24.15	ex	-11.47	2496	IEC62321	127.7		-2.95
2132	ASTM F963	166.13		0.22	2500	EPA3052	159.1		-0.36
2137	EPA3052	162.67		-0.07	2503	CPSC-CH-E1002-08	0.253	ex	-13.44
2139	INH-0110	186.49		1.90	2510		11.49	ex	-12.51
2156	IEC62321	126.9		-3.01	2511	CPSC-CH-E1002-08	n.d.		----
2165	IEC62321	166.5		0.25	2515	EPA3051	n.d.		----
2169	IEC62321	179.7		1.34	2529	CPSC-CH-E1002-08.3	154.8		-0.71
2172	IEC62321	158.6		-0.40	2546	CPSC-CH-E1002	136.246		-2.24
2173	IEC62321	<10		<-12.64	2563	IEC62321	150		-1.11
2175	EPA3052	136.81		-2.20	2564	CPSC-CH-E1002-08	160.2		-0.27
2176		178.3		1.22	2566	CPSC-CH-E1002-08	165.2		0.14
2182	CPSC-CH-E1002-08	n.d.		----	2567	CPSC-CH-E1002-08	n.d.		----
2184	CPSC-CH-E1002-08	160.8		-0.22	2569	INH-EPA3050B/3051A/3052	167		0.29
2190		26.8	ex	-11.25	2572	CPSC-CH-E1002-08	172.1		0.71
2197		----		----	2581	CPSC-CH-E1002-08	2.2662	ex	-13.27
2201	IEC62321	168.1		0.38	2590	EN14602/ISO17294	42.9	ex	-9.93
2202	IEC62321	174.7		0.92	2591	CPSC-CH-E1002-08	1.60	ex	-13.33
2212		----		----	2618	CPSC-CH-E1002-08	118.25		-3.72
2216		----		----	2624		----		----
2217	EPA3052	87.57	R(0.05)	-6.25	2629	INH-0350	n.d.		----
2218	CPSC-CH-E1002-08	<20		<-11.81	2642	CPSC-CH-E1002-08	160		-0.29
2229	IEC62321	140		-1.93	2643	CPSC-CH-E1002-08	152.5		-0.90
2236	EPA3052	0.541	ex	-13.42	2645	CPSC-CH-E1002-09.1	28.73	ex	-11.09
2246	CPSC-CH-E1002-08	144.91		-1.53	2671		168.87		0.44
2247	EPA3050B	166.04		0.21	2672	IEC62321	166.1		0.22
2254	CPSC-CH-E1002-08	67.8	R(0.01)	-7.88	2674	EPA3052	160		-0.29
2255	CPSC-CH-E1002-08	175.3		0.97	2700	EPA3051	n.d.		----
2256	EPA3052	155		-0.70	2701	EPA3051	181.01		1.44
2264	CPSC-CH-E1002	<7.7		<-12.83	2707	SJ/T11365	162.3		-0.10
2272	ISO17072/EN1122	141.5		-1.81	2708	IEC62321	143.8		-1.62
2284	IEC62321	159.1		-0.36	3110	CPSC-CH-E1002-08	159.39		-0.34
2289	CPSC-CH-E1002-08	187		1.94	3111	EPA3052	208.43		3.70
2290	CPSC-CH-E1002-08	173.6		0.83	3116	CPSC-CH-E1002-08	153.45		-0.83
2293	CPSC-CH-E1002-08	158.7		-0.39	3118	CPSC-CH-E1002-08	<5		<-13.05
2296	in house	6.698	ex	-12.91	3122	CPSC-CH-E1002-08	<5		<-13.05
2298		----		----	3124	EPA3052	219		4.57
2300	EN1122	n.d.		----	3146		----		----
2301		----		----	3151	CPSC-CH-E1002-08	<0.1		<-13.05
2310	EPA3052	178		1.20	3153	IEC62321	161.5		-0.16
2311	EPA3052	170		0.54	3154	IEC62321	7.23	ex	-12.86
2320	EPA3051	21.04	ex	-11.73	3160	CPSC-CH-E1002-08	163.26		-0.02
2347	IEC62321	173.0		0.78	3163	IEC62321	145		-1.52
2349	IEC62321	182.124		1.54	3166		----		----
2350	IEC62321	165.9		0.20	3167	IEC62321	156.0		-0.62
2352	IEC62321	178.5		1.24	3172	CPSC-CH-E1002-08	<10		<-12.64
2353	EPA3052	166.1		0.22	3182	CPSC-CH-E1002-08	130.1		-2.75
2355	IEC62321	174.4		0.90	3190	IEC62321	167.5		0.33
2358	EPA3052	159.8		-0.30	3195	in house	13.1	ex	-12.38
2363	IEC62321	166		0.21	3197	CPSC-CH-E1002-08	182.9		1.60
2365	QB/T4340	185.2		1.79	3199	EPA3052	152.43		-0.91
2366	IEC62321	181.2		1.46	3214	EPA3052	179.2		1.29
2369	IEC62321	167.8		0.36	3216	in house	47.44	ex	-9.55

2370	EPA3052	170		0.54	3220	EPA3051	n.d.	----
2372	IEC62321	165.2		0.14	3225	CPSC-CH-E1002-08	175.19	0.96
2375		184.7		1.75	3228	IEC62321	160.0	-0.29
2379	IEC62321	90.91	R(0.05)	-5.97	3237	IEC62321	0.413	ex -13.43
2380	EN1122	185		1.77	3243	IEC62321	143	-1.69
2384	IEC62321	159.30		-0.34	3246	in house	n.d.	----
2385	EPA3052	68.8	R(0.01)	-7.80	3248	CPSC-CH-E1002-08	150	-1.11
2387	IEC62321	155.48		-0.66	8005	in house	159.8	-0.30
2388	IEC62321	148.15		-1.26				

normality OK
 n 102
 outliers 4+19 excl
 mean (n) 163.473
 st.dev. (n) 18.7226
 R(calc.) 52.423
 R(Horwitz) 34.007

Labs 330, 622, 623, 2102, 2173, 2218, 2264, 2300, 2389, 2390, 2413, 2477, 2511, 2515, 2567, 2629, 2700, 3118, 3122, 3151, 3172, 3220 and 3246 reported false negative test results?



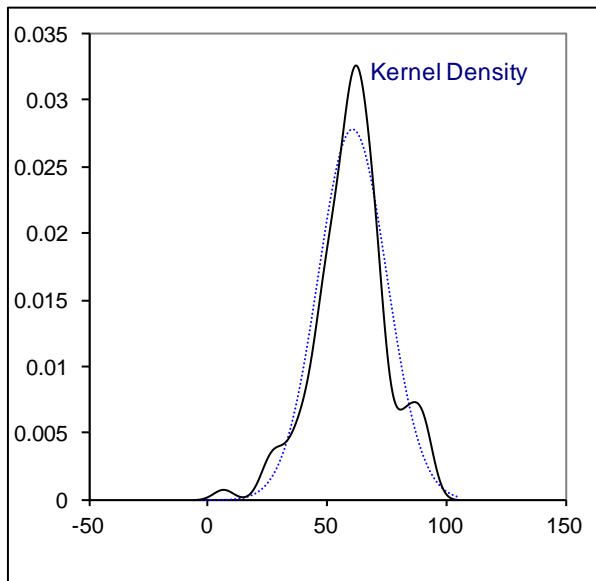
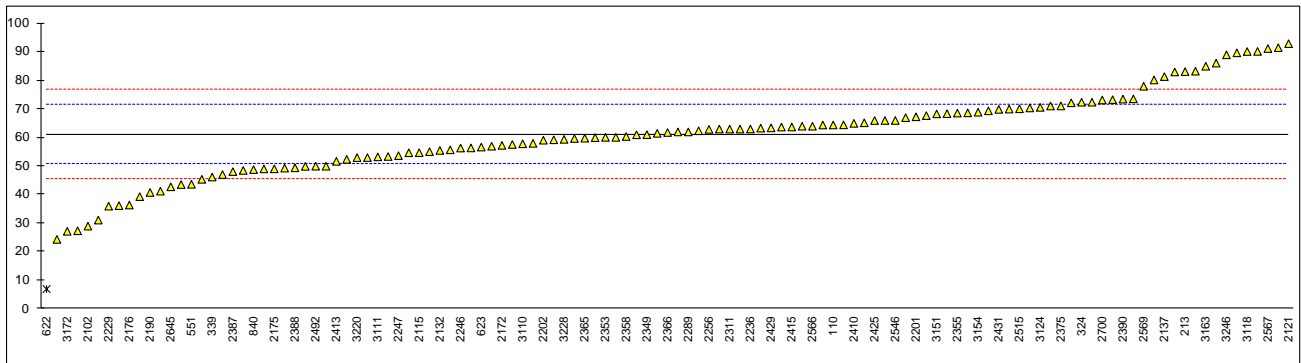
Determination of Mercury as Hg on sample #15151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	CPSC-CH-E1002-08	64.44		0.63	2389		----		----
213	CPSC-CH-E1002-08.1	83.12		4.18	2390	CPSC-CH-E1002-08	73.50		2.35
230		----		----	2406	CPSC-CH-E1002-08	52.40		-1.66
324	IEC62321	72.4		2.14	2410	CPSC-CH-E1002-08	65		0.74
330		----		----	2413	in house	51.7		-1.79
339	IEC62321	46.2		-2.83	2415	EPA3051	63.73		0.50
348	in house	83.27		4.21	2425	EPA3051	66.00		0.93
362		----		----	2429	IEC62321	63.42		0.44
452		----		----	2431	INH-019	69.8995		1.67
551	IEC62321	43.66		-3.32	2432		----		----
622	in house	9.12	C,G(0.05)	-9.88	2433	EPA3051	31.13		-5.70
623	in house	56.70		-0.84	2442		----		----
632		----		----	2444	IEC62321	43.58		-3.33
840	EPA3052	48.8		-2.34	2459		----		----
1051		----		----	2460		----		----
1126	in house	n.d.		----	2462	IEC62321	65.2		0.77
1861		----		----	2464	CPSC-CH-E1002-08	64		0.55
2102		29.01		-6.10	2477	IEC62321	n.d.		----
2115	DIN54233	54.739		-1.21	2482	CPSC-CH-E1002-08	61.5		0.07
2118	CPSC-CH-E1002-08	53.02		-1.54	2489	CPSC-CH-E1002-08	80.2		3.62
2120		----		----	2492		50.00		-2.11
2121	in house	92.9		6.03	2495	CPSC-CH-E1002-08	72.2		2.10
2129		----		----	2496		----		----
2132	ASTM F963	55.52		-1.06	2500	EPA3052	60.1		-0.19
2137	IES62321	81.38		3.85	2503	CPSC-CH-E1002-08	47.07		-2.67
2139	IEC62321	55.74		-1.02	2510		----		----
2156	IEC62321	70.4		1.76	2511		24.369		-6.98
2165	IEC62321	57.0		-0.78	2515	EPA3051	70.1		1.71
2169	IEC62321	86.1		4.74	2529		----		----
2172	IEC62321	57.29		-0.73	2546	ISO17072-2	66.015		0.93
2173	IEC62321	39.34		-4.14	2563		----		----
2175	EPA3052	49.08		-2.29	2564		----		----
2176		36.4		-4.69	2566	CPSC-CH-E1002-08	64		0.55
2182		----		----	2567	CPSC-CH-E1002-08	91.2		5.71
2184	CPSC-CH-E1002-08	56.4		-0.90	2569	INH-EPA3050B/3051A/3052	78		3.21
2190		40.8		-3.86	2572	CPSC-CH-E1002-08	63.32		0.42
2197		----		----	2581	CPSC-CH-E1002-08	49.9452		-2.12
2201	IEC62321	67.3		1.17	2590	EN14602/ISO17294	73.3		2.31
2202	IEC62321	59.1		-0.38	2591		----		----
2212		----		----	2618		----		----
2216		----		----	2624		----		----
2217	EPA3052	67.71		1.25	2629		----		----
2218		----		----	2642		----		----
2229	IEC62321	36		-4.77	2643	EPA3052	71.09		1.89
2236	EPA3052	63.025		0.36	2645	CPSC-CH-E1002-09.1	42.78		-3.48
2246	CPSC-CH-E1002-08	56.36		-0.90	2671		63.71		0.49
2247	EPA3050B	53.7		-1.41	2672	IEC62321	59.25		-0.36
2254	CPSC-CH-E1002-08	90.2		5.52	2674	EPA3052	83		4.15
2255	CPSC-CH-E1002-08	59.7		-0.27	2700	EPA3051	73.2		2.29
2256	EPA3052	62.9		0.34	2701	EPA3051	49.05		-2.29
2264		----		----	2707		----		----
2272	ISO17072/EN1122	53.4		-1.47	2708		----		----
2284	IEC62321	62.4		0.24	3110	CPSC-CH-E1002-08	57.85		-0.62
2289	CPSC-CH-E1002-08	62		0.17	3111	EPA3052	53.27		-1.49
2290	CPSC-CH-E1002-08	64.42		0.63	3116		----		----
2293		----		----	3118	CPSC-CH-E1002-08	90.16		5.51
2296		----		----	3122	CPSC-CH-E1002-08	36.19		-4.73
2298		----		----	3124	EPA3052	70.6		1.80
2300	EN1122	64.48		0.64	3146		----		----
2301		----		----	3151	CPSC-CH-E1002-08	68.32		1.37
2310	EPA3052	69.4		1.57	3153	IEC62321	54.7		-1.22
2311	EPA3052	63		0.36	3154	IEC62321	68.90		1.48
2320	EPA3051	48.51		-2.39	3160		----		----
2347	IEC62321	73.6		2.37	3163	IEC62321	85		4.53
2349	IEC62321	61.037		-0.02	3166		58		-0.59
2350	IEC62321	68.68		1.44	3167	IEC62321	50.0		-2.11
2352	IEC62321	61.0		-0.02	3172	CPSC-CH-E1002-08	27.2		-6.44
2353	EPA3052	60.1		-0.19	3182	CPSC-CH-E1002-08	63.0		0.36
2355	IEC62321	68.6		1.42	3190	IEC62321	66		0.93
2358	EPA3052	60.4		-0.14	3195	EPA7473	45.4		-2.99
2363	IEC62321	62		0.17	3197	IEC62321	68.4		1.38
2365	QB/T4340	59.8		-0.25	3199		----		----
2366	IEC62321	61.8		0.13	3214	EPA3052	57.6		-0.67
2369	IEC62321	67.0		1.12	3216	in house	91.50		5.77

2370	EPA3052	63.0	0.36	3220	EPA3051	53.0	-1.54
2372	IEC62321	55.09	-1.15	3225		----	----
2375		71.1	1.89	3228	IEC62321	59.4	-0.33
2379	IEC62321	27.39	-6.41	3237	IEC62321	72.413	2.14
2380	EPA3052	70	1.69	3243	IEC62321	41.26	-3.77
2384	IEC62321	49.32	-2.24	3246	in house	89.0	5.29
2385	EPA3052	89.7	5.43	3248	CPSC-CH-E1002-08	60	-0.21
2387	IEC62321	48.10	-2.47	8005		----	----
2388	IEC62321	49.43	-2.22				

normality OK
n 120
outliers 1
mean (n) 61.122
st.dev. (n) 14.3864
R(calc.) 40.282
R(Horwitz) 14.744

Lab 622: first reported 6.99
Lab 3243: first reported 129.75



APPENDIX 2

Analytical details for samples #15150 and #15151

Lab	Type of plastic	Reduce the sample or used as received	Reduced to particle size	How was the final particle size checked?	Destruction method	acid mixture used	Analysis technique to quantify the metals
110	15150: PVC, 1515:PP+PE	As received		not checked- tested as-is	Microwave	HNO ₃ ,HCl	ICP-MS
213							
230							
324		As received			Microwave	HNO ₃ ,HF,H ₃ BO ₃	ICP-MS
330		As received			Microwave	HNO ₃	ICP-AES
339	Not identified	Cut	>1 mm	not	Microwave	HNO ₃ , H ₂ O ₂ , HF	IEC62321
348		As received			Microwave	HNO ₃ , H ₂ O ₂	ICP-MS
362		As received			Acid digestion	H ₂ SO ₄ , H ₂ O ₂	ICP-OES
452							
551	PP	Grinded	=< 0.5 mm		Microwave	HNO ₃ , H ₂ O ₂	ICP-OES
622		Cut			Acid digestion		
623		Cut	>1mm	Caliper	Microwave	HNO ₃ ,H ₂ O ₂	ICP-OES
632							
840		Grinded	=<1 mm		Microwave	HNO ₃	ICP-OES
1051		Cut	=<1 mm	By ruler	Microwave	HNO ₃	ICP
1126	# 15150 PVC #15151PP	Cut	=<1 mm		Microwave	HNO ₃	XRF (Sb, Cd); ICP: (Hg,Co)
1861		As received			Microwave	HNO ₃ , H ₂ O ₂ , HF	ICP-AES
2102	PVC #15150; Fortilene #15151	Cut	>1 mm	Yes	Microwave	HNO ₃ ,H ₂ O ₂ ,H ₂ O ₂ (5:1:1.5)	ICP-MS
2115	PVC(#15150) PP(#15151)	Cut	>1 mm		Microwave	HNO ₃ ,HCl, 205/1	ICP-MS
2118	PVC(#15150) PP(#15151)	As received	>1 mm	Digital caliper	Microwave	HNO ₃ ,H ₂ O ₂	ICP-MS
2120	PVC # 15150 PP #15151	As received			Microwave	HNO ₃ , H ₂ O ₂ , HF; Cd: (H ₂ SO ₄ , HNO ₃)	AAS
2121	PVC	As received			Microwave	HNO ₃ ,HCl	ICP-MS
2129	PVC	As received	>1 mm	Visually	Acid digestion	HNO ₃	ICP-MS
2132	#15150 Polyester #15151 PP	Cut	=<1 mm		Microwave	HNO ₃ ,HCl	ICPOES
2137		Cut	>1 mm	sieve 1 mm	Microwave	H ₂ SO ₄ , HNO ₃ ,HCL	ICP-OES, CV-AAS(Hg)
2139		Milled (cryo)	=< 0.5 mm		Microwave	HNO ₃ ,HF	ICP-OES,UV-VIS
2156		Cut	=< 0.5 mm		Microwave	HNO ₃ , H ₂ O ₂	ICP-OES
2165		Grinded	=< 0.5 mm	0.5mm sieve.	Microwave	HNO ₃ , HF	ICP-OES, AAS
2169		Milled (cryo)	=< 0.5 mm		Microwave	HNO ₃ , HF, H ₂ O ₂	ICP-MS
2172		Milled (cryo)	=< 0.5 mm	through sieve	Microwave	HNO ₃ , HF	ICP-AES
2173		As received	>1 mm		Microwave	HNO ₃	ICP-OES,AAS
2175		Cut	>1 mm	Estimated	Microwave	HNO ₃ ,HCl	ICP-OES
2176		Cut	>1 mm	Ruler	Microwave	HNO ₃ ,H ₂ O ₂ ,HF, H ₃ BO ₃	ICPS-AES
2182	PVC	Milled (cryo)	=< 0.5 mm	Sieve	Microwave	HNO ₃	ICPOES
2184		As received			Microwave	HNO ₃ , HF	ICP-OES
2190	#15150: PVC #15151 PP	As received		No check	Microwave	HNO ₃	ICP-ES
2197		---	---		---		
2201		Cut	=< 0.5 mm		Microwave	HNO ₃ ,HF	ICP-MS
2202	#15150 PVC #15151 PP	As received		none	Microwave	HNO ₃ ,HCL, HF	ICP-OES
2212		Milled (cryo)	=<1 mm		Microwave	HNO ₃	ICP-OES
2216		Milled (cryo)	=<1 mm	Sieve	Microwave	HNO ₃	ICP-MS/DMA-80
2217		As received			Microwave	HNO ₃ ,H ₂ O ₂ ,HCl	ICP-MS
2218		As received			Acid digestion	H ₂ SO ₄ , H ₂ O ₂	ICP-OES
2229		As received	>1 mm		Microwave	HNO ₃ ,H ₂ SO ₄ , H ₂ O ₂	CRM recov.
2236		As received			Microwave	HNO ₃ , H ₂ O ₂	ICP-MS
2246		Milled (cryo)	>1 mm		Microwave	HNO ₃ ,HF,H ₂ O ₂	ICP-OES
2247	GRANULES	Milled (cryo)	=< 0.5 mm	250 µm Sieve	Microwave	HNO, HF,H ₂ O ₂	ICP-OES/MS Cr VI ;UV VIS
2254	Unknown	Cut	=<1 mm		Microwave	HNO ₃ , HCl, H ₂ O ₂	ICP-MS
2255	n.a.	Cut	≤1 mm	n.a.	Microwave	#15150 ,HNO ₃ ,H ₂ O ₂ #15151:HNO ₃ , HF	ICP-MS

2256		As received	>1 mm		Microwave	HNO ₃ ,HF	ICP-OES
2264	polimeric	Cut	≤1 mm		Microwave	HNO ₃	AAS
2272		Cut	≤< 0.5 mm	about 0.1mm	MW+Hotplate	HNO ₃ ,H ₂ SO ₄ , H ₂ O ₂	ICP-OES
2284		As received	>1 mm		Microwave	HNO ₃ ,HF,H ₂ O ₂	ICP-OES
2289		Cut	>1 mm		Microwave	15150:HNO ₃ 15151:HNO ₃ ,HF	ICP
2290		Cut	≤<1 mm		Microwave	HNO ₃ +H ₂ O ₂	ICP-OES
2293	PP	As received	>1 mm	1.803 mm	Microwave	Pb: HNO ₃ by MW Cd: H ₂ SO ₄ , H ₂ O ₂ by hot plate	ICP-OES
2296	Unknown	As received	>1 mm	As received	Microwave	HNO ₃ :H ₂ O ₁₃ /1	ICP-OES
2298		Cut	≤<1 mm		Microwave	Aqua Regia	ICP-OES
2300		Cut	≤<1 mm		Microwave		ICP-OES
2301		As received	>1 mm		Microwave	HNO ₃ , HCL	CPSC Mod
2310		Cut	≤<1 mm	Vernier caliper	Microwave	HNO ₃ ,H ₂ O ₂	ICP-MS
2311		Cut	≤<1 mm	Vernier Caliper	Microwave	HNO ₃ , H ₂ O ₂	ICP-MS
2320		As received			Microwave	HNO ₃	ICP-OES
2347		Cut	≤<1 mm		Microwave	HNO ₃ ,HCL,HF	ICP-OES, AAS, UV-Vis
2349		Cut	≤<1 mm		Microwave	HNO ₃ , H ₂ O ₂ , HF	ICP
2350		As received			Microwave	HNO ₃ , HF	PP CRM
2352		Cut	≤<1 mm	1mm*1mm*1mm	Microwave	HNO ₃ ,HCL,HF	ICP-OES
2353		As received	>1 mm	compl. digested	Microwave	HNO ₃ + HF	ICP-OES
2355		Cut	≤< 0.5 mm		Microwave	HNO ₃ ,HCL,HF	ICP-OES
2358		As received			Microwave	HNO ₃ , HF	ICP-OES
2363		Cut	≤<1 mm		Microwave	HNO ₃ ,HCL, HF,Na ₂ CO ₃	ICP-OES/UV
2365		Cut	≤< 0.5 mm		Microwave	HNO ₃ ,HCL,H ₂ O ₂ ,HF	ICP-OES & UV-Vis
2366		Cut	≤< 0.5 mm		Microwave		ICP-OES,UV-Vis
2369	Polymer	Cut	≤< 0.5 mm	0.5mm*0.5mm	Microwave	HNO ₃ ,HF,HCL	ICP-OES
2370	unknown	As received	>1 mm	calipers	Microwave	HNO ₃ , HF	ICP-OES
2372		Cut	≤<1 mm	Visual	Acid digestion	HNO ₃	ICP-AES
2375		Cut	≤< 0.5 mm		Microwave	HNO ₃	ICP-MS
2379		Cut	≤< 0.5 mm		Microwave	HNO ₃	Microwave
2380		As received			Microwave	EN 1122 H ₂ SO ₄ , H ₂ O ₂ / EPA 3052 HNO ₃ , H ₂ O ₂	ICP-OES
2384		Grinded	≤<1 mm		Microwave	HNO ₃ ,HF,HCL,H ₂ O ₂	ICP-OES
2385	not determined	As received			Microwave	HNO ₃ ,HCL,H ₂ O ₂	ICP-OES for Pb, Cd, Cr: CV-AAS for Hg
2387		Grinded	≤<1 mm		Microwave	HNO ₃ , HF , HCL, H ₂ O ₂	ICP-OES
2388		Grinded	≤<1 mm		Microwave	HNO ₃ , HF , HCL, H ₂ O ₂	ICP-OES
2389	Hard Plastic	Cut		as received	Microwave	HNO ₃	AAS
2390	PVC	As received	>1 mm	vernier caliper	Microwave	HNO ₃ , H ₂ O ₂ , HBF ₄	ICP-MS
2406	NA	Cut		By size reference board & calipers		CPSC :HNO ₃ , HF EN1122:H ₂ SO ₄ , H ₂ O ₂	ICP-OES
2410		Grinded	≤< 0.5 mm	mesh	Microwave	HNO ₃	ICP-OES
2413							
2415	PVC	Cut	≤< 0.5 mm	slide caliper	Acid digestion	H ₂ SO ₄	ICP-OES
2425		As received			Microwave	(HNO ₃ ,HCL), (H ₂ SO ₄ ,H ₂ O ₂)	ICP-OES
2429	---	Cut	>1 mm	None	Microwave	HNO ₃ ,HCL	ICP-OES
2431		As received	>1 mm		Microwave	HCL,HNO ₃	ICP-MS
2432		Cut	≤< 0.5 mm		Acid digestion	H ₂ SO ₄ ,HNO ₃	ICP-MS
2433		Grinded	≤< 0.5 mm		Microwave	HNO ₃	ICP-OES
2442		Cut	>1 mm	Digimatic Calipers	Microwave	HNO ₃	ICP-MS
2444	15150 = PVC 15151 = PP	Milled (cryo)	≤0.5 mm	sieve analysis	Microwave	HNO ₃ :H ₂ SO ₄ =5:1	ICP-OES
2459		---	---		---		
2460	Not identified.	As received		as received.	Microwave	Pb: HNO ₃ Cd: H ₂ SO ₄ , H ₂ O ₂	Flame-AAS
2462	Unknown	Cut	≤<1 mm	Visual	Microwave	HNO ₃ ,HF	ICP-OES
2464		As received			Microwave	HCL, HNO ₃	ICP-OES
2477		---	---		---		
2482		As received			Microwave	HNO ₃ , HCL	ICP-MS
2489	POLYMER	Cut	>1 mm		Microwave	HNO ₃	ICP-MS
2492		As received	≤< 0.5 mm		Microwave	HNO ₃	ICP-MS
2495	not performed	As received		no reduction	Microwave	HNO ₃ :HF 9:2	ICP/OES
2496		Cut	≤<1 mm		Microwave	HNO ₃ ,HF,H ₂ O ₂	ICP

2500		As received	=<1 mm		Microwave	HNO3, HF	ICP-OES
2503		As received			Microwave	5% HNO3	ICP-OES
2510		As received			Microwave	HNO3	ICP-MS
2511		As received	=< 0.5 mm		Microwave	HNO3	ICP-MS
2515		---	---		---		
2529	PVC	As received			Microwave	HCl, HNO3	ICP-OES
2546		As received	>1 mm		Microwave	HNO3, HCl	ICP-OES
2563	Polypropylen	As received			Microwave	HNO3, HF	ICP-MS
2564		Cut	=<1 mm		Microwave	HNO3, H2O2	Flame AAS
2566		As received			Microwave	HNO3, H2O2	ICP-OES
2567		Cut	=<1 mm		Microwave	HNO3	ICP-MS
2569		---	---		---		
2572		Cut	=<1 mm		Microwave	HNO3	ICP-MS
2581		Cut		3mm	Microwave	HNO3	ICP-OES
2590		As received		no	Microwave	HNO3	ICP-MS
2591	Polypropylene	Cut	>1 mm	Caliper	Microwave	HNO3	ICP-MS
2618		Cut	>1 mm		Microwave		
2624		As received		no	Microwave	HNO3, HCl, oxygenat. water	Flame-AAS
2629	hard plastic	Cut	=<1 mm		Microwave	HNO3	ICP OES
2642		Cut	>1 mm	visual check	Microwave	HNO3, H2O2	ICP-AES
2643		As received	>1 mm		Microwave	HNO3, HF	ICP-OES
2645		Cut		not checked	Acid digestion	HNO3	ICP-OES
2671		As received	>1 mm		Microwave	HNO3, H2O2	ICP OES
2672		Cut	=<1 mm		Microwave	HNO3, H2O2 and HNO3, HCl	ICP-MS
2674		As received	>1 mm		Microwave	HNO3, HCl, HF	FAAS, ICP-OES
2700		---	---		---		
2701		Cut	=<1 mm		Microwave	HNO3, HF	
2707		Milled (cryo)	=<1 mm		Microwave	HNO3, H2O2, HF	AAS
2708	Disk	mollingpress disk			WD-XRF		WD-XRF
3110		Cut	>1 mm		Microwave	HNO3, HCl, HF/ EN1122 H2SO4	ICP-OES, AAS
3111	Not examined	As received			Microwave	HNO3-HF mixture	ICP-OES
3116		As received	>1 mm		Microwave	ASTM:HNO3, H2O2; CPSC:HNO3	ICP-OES
3118		Cut	>1 mm	Caliper	Microwave	HNO3	ICP-OES
3122		---	---		---		
3124	Was not tested	As received		not checked	Microwave	HNO3, HCl, HF	ICP-MS
3146	PVC	Milled (cryo)	250 µm	Sieved	Microwave	HNO3 / H2O2	ICP-OES / Hg; AFS
3151	#15150 PVC; #15151 PP mix	As received			Microwave	HNO3, Sb: HNO3, HCL	ICPMS
3153		Milled (cryo)	=< 0.5 mm		Microwave	HNO3, HF	ICP-OES, Cr6:UV
3154		As received	>1 mm		Microwave	HNO3, H2O2	ICP-OES
3160	#15150:PVC #15151: PP	Cut	=<1 mm		Microwave	HNO3, H2O2, HCl, HF	ICP-OES
3163	not analysed	As received		Not			XRF
3166		Milled (cryo)	>1 mm		Microwave	HNO3, HCl	ICPMS
3167		Milled (cryo)	=< 0.5 mm		Microwave	HNO3, HF	ICP-OES
3172		Milled (cryo)	=< 0.5 mm		Microwave	HNO3	ICP-MS
3182	#15150 Polyester #15151 PP	Milled (cryo)	=< 0.5 mm	by sieve	Microwave	HNO3, HF	ICP- OES
3190		Cut	=< 0.5 mm		Microwave	HNO3, HF, HCl	ICP-OES
3195		As received	=< 0.5 mm	visually	Acid digestion	HNO3	ICP-MS except Hg
3197		As received	---		Acid digestion	HNO3	ICP-OES
3199	unknown	As received		No	Microwave	HNO3, Boric, HF	ICP-OES
3214	plastic	Milled (cryo)	=< 0.5 mm	0.5 mm sieve	Microwave	HNO3, HCl, HF	internal standard
3216		---	---		---		
3220		Cut	>1 mm		Microwave	HNO3	ICP-OES
3225		Cut	=<1 mm		Microwave	CPSC: HNO3; EN1122: H2SO4, H2O2; IEC62321	CPSC: ICP-OES; EN: AAS; IEC: UV-VIS
3228	#15151 PP	Milled (cryo)	=<0.5 mm	0.5 mm sieve	Microwave	HNO3, HCl	ICP-OES
3237		As received			Microwave	HNO3, %65	ICP -MS
3243		Milled (cryo)	>1 mm		Microwave	HNO3, HF	ICP-OES
3246		---	---		---		
3248		As received			Microwave	HNO3	AAS
8005		As received	>1 mm		Microwave	EN1122:H2SO4, H2O2:CCPSA:HNO3	ICP-OES

APPENDIX 3**Number of participating laboratories per country**

6 labs in BANGLADESH
2 labs in BELGIUM
1 lab in BRAZIL
1 lab in BULGARIA
1 lab in CAMBODIA
1 lab in CANADA
2 labs in DENMARK
4 labs in FRANCE
10 labs in GERMANY
1 lab in GUATEMALA
21 labs in HONG KONG
1 lab in HUNGARY
9 labs in INDIA
5 labs in INDONESIA
1 lab in IRELAND
6 labs in ITALY
1 lab in JAPAN
9 labs in KOREA
4 labs in MALAYSIA
1 lab in MAURITIUS
2 labs in MEXICO
1 lab in MOROCCO
27 labs in P.R. of CHINA
3 labs in PAKISTAN
1 lab in PERU
2 labs in PHILIPPINES
1 lab in PORTUGAL
1 lab in SINGAPORE
1 lab in SLOVENIA
5 labs in SPAIN
1 lab in SRI LANKA
3 labs in TAIWAN R.O.C.
4 labs in THAILAND
3 labs in THE NETHERLANDS
1 lab in TUNISIA
3 labs in TURKEY
9 labs in U.S.A.
2 labs in UNITED KINGDOM
8 labs in VIETNAM

APPENDIX 4

Abbreviations:

C	= final result after checking of first reported suspect 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' outlier test
R(0.05)	= straggler in Rosner' outlier test
n.a.	= not applicable
n.d.	= not detected
W	= result withdrawn on request of participant
ex	= excluded from calculations
fr.	= first reported result

Literature:

- 1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, April 2014
- 2 EN 1122:2001, "Determination of Cadmium in plastics with the method of the wet decomposition".
- 3 ASTM D4004:98, "Determination of Metal Content by Flame Atomic Absorption (AAS) analysis"
- 4 ASTM E178-02
- 5 ASTM E1301-03
- 6 ISO 5725-86
- 7 ISO 5725, parts 1-6, 1994
- 8 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
- 9 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
- 10 Horwitz. Journal of AOAC International Vol. 79 No.3. 1996
- 11 IP 367/96
- 12 DIN 38402 T41/42
- 13 ISO13528:2005 Statistical methods for use in proficiency testing by interlaboratory comparisons
- 14 W.J. Conover. Practical; Nonparametric Statistics. J. Wiley&Sons. NY. p.302. (1971)
- 15 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
- 16 J.N. Miller, Analyst, 118, 455, (1993)
- 17 Analytical Methods Committee Technical Brief, No4 January 2001
- 18 The Royal Society of Chemistry 2002, Analyst 2002, 127 page1359-1364, P.J. Lowthian and M. Thompson.
- 19 R.G. Visser, Reliability of proficiency test results for metals and phthalates in plastics, Accred Qual Assur, 14:29-34 (2009)
- 20 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, *Technometrics*, 25(2), pp. 165-172, (1983)