

# Results of Proficiency Test Metals in Plastics September 2013

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## 1 INTRODUCTION

World-wide, many consumer products with plastic parts are produced and transported. These plastic parts are produced under strict regulations. For instant 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.

Products are tested for metals contents in the countries of origin as well in EU- and/or American countries. Sometimes, significantly different results are found, thus causing problems with the import of the products.

The determination of metals in plastics is known to give 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) and total Mercury.

In the interlaboratory study of September 2013, 158 laboratories from 36 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 #13150 and #13151, both positive (artificially fortified) on several metals. The analyses for fit-for-use and for homogeneity testing were subcontracted.

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 accordance with ISO/IEC 17043:2010, (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie, see also [www.RVA.nl](http://www.RVA.nl)). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

### 2.2 PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organization, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2), which can be downloaded from [www.iisnl.com](http://www.iisnl.com).

## 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 positive on one or more metals were selected. The first material was a polypropylene granulate. The batch was divided over 200 plastic bags, with approximately 5 grams per sample. The homogeneity of the subsamples #13150 was checked by determination of Cadmium according EN1122:01 on 8 stratified randomly selected subsamples.

	Cadmium in #13150 in mg/kg
Sample 1	76
Sample 2	76
Sample 3	76
Sample 4	76
Sample 5	77
Sample 6	78
Sample 7	76
Sample 8	76

Table 1: homogeneity test results of subsamples #13150

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 #13150 in mg/kg
r (observed)	2.1
reference method	EN1122:01
0.3 x R (reference method)	5.7

Table 2: evaluation of repeatability of the subsamples #13150

The second material, also polypropylene granulate, was used in a previous proficiency test (iis11P02, sample #11050). From the batch 200 plastic bags were filled with approx. 5 gram each. The homogeneity of this batch was confirmed in proficiency test iis11P02 as the observed reproducibility (of the group of laboratories that used EN1122) was in full agreement with the EN1211:01 target reproducibility (24 vs. 35 mg/kg).

The homogeneity of all subsamples was assumed. To each of the participating laboratories one set of samples, (1\* sample #13150 and 1\* sample #13151) was sent on August 14, 2013.

## 2.5 ANALYSIS

The participants were requested to determine on both samples: total Cadmium, total Chromium, hexavalent Chromium (VI), 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 can not 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 received. The original data are tabulated per sample in the appendix 1 of this report. The laboratories are represented by their code numbers.

Directly after deadline, a reminder was sent to those laboratories that did not report 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 the data analysis and the original results are placed under 'Remarks' in the result tables in appendix 1. A list of abbreviations used in the tables can be found in appendix 4.

### 3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2). 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. After removal of outliers this check was repeated.

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs 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 method is producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 4; nr.14 and 15).

### 3.3 Z-SCORES

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

The literature requirements were taken from EN 1122:2001, "Determination of Cadmium in plastics with the method of the wet decomposition" for Cadmium. For Lead, Chromium, Chromium (VI) and total Mercury no literature requirements were available and requirements were estimated from the Horwitz function. See reference 16 for a justification of this choice.

The target standard deviation was calculated from the target reproducibility by division with 2.8. The z-scores were calculated in accordance with:

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

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

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 is in order to evaluate the fit-for-useness of the reported test results.

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. Twenty-four 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 154 reporting laboratories submitted 1225 numerical results. Observed were 59 outlying results, which is 4.6% of all reported numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal. Gaussian distributions were found for the following test: Chromium 6+ and Lead for sample #13151. For all the other tests the statistical evaluation should be used with due care.

### 4.1 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	144	75.83	18.84	18.96
Total Chromium as Cr	mg/kg	128	80.00	20.74	18.53
Hexavalent Chromium (VI) as Cr	mg/kg	68	36.04	39.51	9.41
Total Lead as Pb	mg/kg	141	473.7	92.5	84.0
Total Mercury as Hg	mg/kg	122	119.7	48.4	26.1

Table 3: performance overview for sample #13150

Parameter	unit	n	Average	2.8 * sd	R (target)
Total Cadmium as Cd	mg/kg	115	138.0	29.7	34.5
Total Chromium as Cr	mg/kg	125	42.75	26.64	10.88
Hexavalent Chromium (VI) as Cr	mg/kg	41	6.95	14.45	(2.33)*
Total Lead as Pb	mg/kg	108	156.5	38.8	32.8
Total Mercury as Hg	mg/kg	122	47.25	41.85	11.85

Table 4: performance overview for sample #13151

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

Without further statistical calculations, it can be concluded that for some parameters there is a good compliance of the group of participating laboratories with the relevant target reproducibilities for sample #13150 and sample #13151.

The analytes that were problematic are discussed in paragraph 4.2.



## 4.2 EVALUATION PER ELEMENT

In this section, the results are discussed per analyte.

**Identification:** The identification of the plastic types used for the samples was reported by a limited number of laboratories, twenty-three in total. The majority of the laboratories used IR or FTIR.

The identification of samples #13150 and #13151 was not problematic. Twenty-three laboratories did identify correctly both materials to be polypropylene (PP).

**Total Cadmium:** This determination was problematic for a number of laboratories. For the two samples, in total eight statistical outliers were observed. For sample #13151 another 30 test results were excluded, see §4.3.

For sample #13150, the calculated reproducibility after rejection of seven statistical outliers is in good agreement with the requirements of EN1122:01.

For sample #13151, the calculated reproducibility after rejection of one statistical outlier is in good agreement with the requirements of EN1122:01.

**Total Chromium:** This determination was problematic. For the two samples, in total thirteen statistical outliers and two false negative test results were observed.

For sample #13150 the calculated reproducibility, after rejection of seven statistical outliers is almost in agreement with the estimated reproducibility limit calculated using the Horwitz equation.

For sample #13151 the calculated reproducibility, after rejection of six statistical outliers is not at all in agreement with the estimated reproducibility limit calculated using the Horwitz equation.

**Chromium VI:** This determination was very problematic.

For sample #13150 the calculated reproducibility, after rejection of one statistical outlier and exclusion of eight test results, is not at all in agreement with the estimated reproducibility limits calculated using the Horwitz equation.

The chemical, that was used to add approx. 80 mg/kg Chromium VI to the polypropylene material, was pure Potassium chromate ( $K_2CrO_4$ ). Therefore, the hexavalent Chromium content should in principle be equal to the total Chromium content. The majority of the reporting laboratories did detect Chromium VI in sample #13150 and they agreed on a result of approx 36.0 mg/kg. However, only two of the participants reported a test result near 80-90mg/kg, being in agreement with the assigned value of total Chromium for sample #13150 (80.0 mg/kg).

Therefore it was decided to use 36.0 mg/kg as assigned value for calculation of the z-scores. This value is supported by the test results of 86% of the reporting laboratories.

For sample #13151 the calculated reproducibility, after rejection of four statistical outliers is not at all in agreement with the estimated reproducibility limits calculated using the Horwitz equation.

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. The majority (93%) of the reporting laboratories did **not** (!) detect (below detection limit of 10 mg/kg) Chromium VI in sample #13151. The 46 laboratories reported a numerical test results and they agreed on a result of approx 6.9 mg/kg. However, five participants reported a result between 23 - 63 mg/kg, being in satisfying agreement with the assigned value of the total Chromium for sample #13151 (42.7 mg/kg) and with the theoretical amount of 50 mg/kg. It was decided to use 6.9 mg/kg as assigned value, because this lower value (near or below the limit of detection) was supported by 93% of the reporting laboratories. However, the observed low recovery caused many laboratories to report 'less than' test results and therefore it was decided not to calculate z-scores for this determination.

Total Lead: This determination was problematic. For the two samples, in total sixteen statistical outliers and twelve false negative test results were observed. For sample #13150 the calculated reproducibility after rejection of seven statistical outliers, is not in agreement with the estimated reproducibility limits calculated using the Horwitz equation. For sample #13151 the calculated reproducibility, after rejection of three statistical outliers and 15 excluded test results (see §4.3), is not in agreement with the estimated reproducibility limits calculated using the Horwitz equation.

Total Mercury: This determination was very problematic. For the two samples, in total sixteen statistical outliers were observed. For sample #13150 the calculated reproducibility, after rejection of eleven statistical outliers, is not at all in agreement with the estimated reproducibility calculated using the Horwitz equation. For sample #13151 the calculated reproducibility, after rejection of five statistical outliers, is not at all in agreement with the estimated reproducibility calculated using the Horwitz equation.

### 4.3 EVALUATION OF THE METHODS USED

The reported details of the methods for the determinations of Mercury and/of ChromiumVI that were used by the participants are listed in appendix 2.

Several laboratories remarked to have had problems with the complete digestion of sample #13151. This was not unexpected as the sample was also used in the 2011 proficiency test (iis11P02 – "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 ( $HNO_3/H_2O_2$  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.

Based on the experience then and the similar report problems in the 2013 PT it was decided to exclude the very low reported test results manually for Cadmium and Lead in sample #13151.

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 56 participants (36% 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 is available, regrettably without precision data. In this interlaboratory study, the majority of the group used the IEC62321 or EPA 3050, 3051 or EPA 3052 methods. Three participants reported to have used EN1122, which is in principle only meant for Cadmium. Thirteen participants used CPSD-CH-E1002-08. No clear correlation between method used and quality of the test results could be found.

For determination of hexavalent Chromium in plastics, test method IEC62321 is available, regrettably without precision data. The method is based on EPA 3060A and EPA 7196. In this interlaboratory study, 52 laboratories used this method and almost all other participants reported to have used EPA 3060A 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, some important details (particle size and extraction solvent) were requested to be reported (see appendix 2).

It is remarkable to see that several laboratories that reported to have used IEC62321 also reported not to reduce the samples to a particle size of 500 µm or less prior to use.

Although not all participating laboratories did provide the grain size, it was tried to determine whether a significant correlation could be detected between the grain size and the CrVI concentration as was done in the previous PT's. Remarkably only a small correlation was observed.

For the determination of total Lead in plastics, test method IEC62321 is available, regrettably without precision data. In this interlaboratory study, the majority of the group used the IEC62321 or EPA 3052/3051A. No clear correlation between method used and quality of the test results could be found.

For the determination of total Mercury in plastics, test method IEC62321 is available, regrettably without precision data.

In this interlaboratory study, the majority of the group used the IEC62321 or EPA 3052 methods. No clear correlation between method used and quality of the test results could be found.

#### 4.4 COMPARISON WITH PREVIOUS PROFICIENCY TESTS

The number of participants increased from 66 in 2005 to 158 in this round. The percentage of outliers decreased over the years from 10.3% in 2005 to 4.6% of the numerical results in 2013.

The evolution of the reproducibilities for cadmium, lead, chromium, chromium VI and mercury as observed in this proficiency scheme and the comparison with the findings in previous rounds are visualized in table 6.

	25-250 mg Cd/kg	50-500 mg Pb/kg	25-250 mg Cr/kg	50-250 mg Cr VI/kg	5-125 mg Hg/kg
2002	51%	81%	--	--	--
2003	31%	100%	--	--	--
2004	33%	--	--	--	--
2005	21%	--	34%	--	--
2006	20%	26%	30%	--	--
2007	23%	22-30%	43%	--	--
2008	25%	24%	25%	159-212%	--
2009	28%	20-28%	27-32%	155-174%	104-129%
2010	21-27%	26%	28%	64%	90%
2011	24%	21-32%	54-65%	180%	55%
2012	20-21%	17-21%	20-45%	134-159%	64-120%
2013	21-25%	20-25%	26-62%	110%	40-89%
EN1122:01	25%	--	--	--	--
Horwitz	----	22-25%	21-25%	20-25%	28-35%

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

Sample #13151 was used in a previous PT iis11P02 as sample #11050. When the assigned value of both PTs are compared the resemblance is striking, see below table

	unit	Average		2.8 * sd	
		#11050	#13151	#11050	#13151
Total Cadmium as Cd	mg/kg	139.8	138.0	33.4	29.7
Total Chromium as Cr	mg/kg	44.5	42.75	29.1	26.64
Chromium VI as Cr	mg/kg	9.1	6.95	16.5	14.45
Total Lead as Pb	mg/kg	163.0	156.5	52.1	38.8
Total Mercury as Hg	mg/kg	59.3	47.25	32.5	41.85

Table 6: comparison of samples #11050 and #13151

Not only the difference between the assigned values of both PTs is very small and statistically not significant, it can also be concluded from the decrease of the lead, cadmium and chromium reproducibilities that the quality of the testing of lead, cadmium, chromium and chromium VI in plastic has improved. The determination of mercury obviously still requires improvements to reach the desired quality level.

**APPENDIX 1**

**Determination of type of plastic on sample #13150 and #13151**

lab	method #13150	type	mark	lab	method #13151	type	mark
110	inh034	PP		110	inh034	PP	
213		----		213		----	
310		PP		310		PP	
324		----		324		----	
330		----		330		----	
339		----		339		----	
362		----		362		----	
551		----		551		----	
601		----		601		----	
605		----		605		----	
607		----		607		----	
622		----		622		----	
632		----		632		----	
826		blue color		826		white color	
840		----		840		----	
1051		----		1051		----	
1126	IR	PE		1126	IR	PE	
2115		----		2115		----	
2129		----		2129		----	
2132	in house	PP		2132	in house	PP	
2135		----		2135		----	
2139		----		2139		----	
2146	IR	PP		2146	IR	PP	
2156	FT-IR	PP		2156	FT-IR	PP	
2165		----		2165		----	
2167		----		2167		----	
2169	FT-IR	PP		2169	FT-IR	PP	
2172	FT-IR	PP		2172	FT-IR	PP	
2175		----		2175		----	
2176		----		2176		----	
2177		----		2177		----	
2179		PP		2179		PP	
2182		----		2182		----	
2184		----		2184		----	
2186	FTIR	Polyisoprene		2186		----	
2190	FT-IR	PP		2190	FT-IR	PP	
2196		----		2196		----	
2197		----		2197		----	
2199		----		2199		----	
2201		----		2201		----	
2202	in house	PP		2202	in house	PP	
2212		----		2212		----	
2213		----		2213		----	
2215		PP		2215		PP	
2216		----		2216		----	
2218		----		2218		----	
2225		unknown		2225		unknown	
2226		----		2226		----	
2228		----		2228		----	
2229		----		2229		----	
2234		----		2234		----	
2236	CPSC-CH-E1002-08	PE		2236		----	
2246		----		2246		----	
2247		----		2247		----	
2251	FT-IR	PP		2251	FT-IR	PP	
2253		----		2253		----	
2254		----		2254		----	
2255		----		2255		----	
2256	FT-IR	PP		2256	FT-IR	PP	
2258		----		2258		----	
2259		----		2259		----	
2264		----		2264		----	
2268		----		2268		----	
2269		----		2269		----	
2279		----		2279		----	
2284		----		2284		----	
2289		----		2289		----	
2290		----		2290		----	
2293		PP		2293		PP	
2296		----		2296		----	
2298		----		2298		----	
2303		----		2303		----	
2309		----		2309		----	
2310		PP		2310		PP	

2311	----	2311	----
2316	----	2316	----
2320	----	2320	----
2350	----	2350	----
2359	----	2359	----
2361	----	2361	----
2363	----	2363	----
2365	----	2365	----
2366	----	2366	----
2370	----	2370	----
2372	----	2372	----
2375	----	2375	----
2379	----	2379	----
2380	----	2380	----
2385	----	2385	----
2390	----	2390	----
2406	----	2406	----
2409	----	2409	----
2410	----	2410	----
2412	----	2412	----
2413	----	2413	----
2415	----	2415	----
2425	----	2425	----
2426	----	2426	----
2429	----	2429	----
2431	----	2431	----
2432	----	2432	----
2441	----	2441	----
2442	----	2442	----
2444	PP	2444	PP
2445	----	2445	----
2451	----	2451	----
2453	----	2453	----
2475	----	2475	----
2482	----	2482	----
2489	----	2489	----
2492	----	2492	----
2493	----	2493	----
2500	PP	2500	PP
2503	----	2503	----
2508	----	2508	----
2511	----	2511	----
2513	----	2513	----
2515	----	2515	----
2529	----	2529	----
2553	----	2553	----
2557	----	2557	----
2563	PP	2563	PVC
2564	----	2564	----
2568	----	2568	----
3100	----	3100	----
3104	----	3104	----
3107	----	3107	----
3110	----	3110	----
3113	----	3113	----
3116	----	3116	----
3122	----	3122	----
3124	----	3124	----
3127	----	3127	----
3146	----	3146	----
3153	----	3153	----
3154	----	3154	----
3160	PP	3160	PP
3163	----	3163	----
3166	----	3166	----
3167	----	3167	----
3169	----	3169	----
3172	----	3172	----
3182	----	3182	----
3185	----	3185	----
3190	----	3190	----
3197	PP	3197	PP
3199	----	3199	----
3210	----	3210	----
3218	----	3218	----
3220	----	3220	----
3225	----	3225	----
3228	----	3228	----

3237  
3242  
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8005

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3237  
3242  
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3248  
8005

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## Determination of total Cadmium as Cd on sample #13150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	71.53		-0.64	2316	EN1122	75.1		-0.11
213	CPSC-CH-E1002-08.1	76.5		0.10	2320		-----		-----
310	IEC62321	80.46		0.68	2350	EN1122	75.07		-0.11
324	IEC62321	70.600		-0.77	2359	EN1122	74.2		-0.24
330	in house	14.3	G(0.01)	-9.09	2361	EN1122	76.1		0.04
339	INH-344	71.7		-0.61	2363	IEC62321	78.64		0.42
362	EN1122	61.9		-2.06	2365	IEC62321	70.7		-0.76
551	IEC62321	64.37		-1.69	2366	EN1122	75.05		-0.12
601	IEC62321	73.0		-0.42	2370	IEC62321	75.6		-0.03
605	IEC62321	67.3		-1.26	2372	IEC62321	75.56		-0.04
607	IEC62321	78.2		0.35	2375	EN1122	71.60		-0.62
622	EN1122	63.0		-1.89	2379	EN1122	77.65		0.27
632	INH-003	79.98	C	0.61	2380	EN1122	79		0.47
826	IEC62321	77		0.17	2385	in house	77.8		0.29
840	IEC62321	76.19		0.05	2390	CPSC-CH-E1002-08	71.475		-0.64
1051	EN1122	78.11		0.34	2406	EN1122	76.430		0.09
1126	in house	46.8	G(0.01)	-4.29	2409	EPA3052	70.3		-0.82
2115	DIN54233	73.800		-0.30	2410	EN1122	76		0.03
2129	EN1122	89.44		2.01	2412	CPSC-CH-E1002	74.9		-0.14
2132	in house	75.46		-0.05	2413	in house	62.23		-2.01
2135	DIN54233	104.5		4.23	2415	IEC62321	66.8		-1.33
2139	IEC62321	101.3		3.76	2425	EN1122	80.1		0.63
2146	EN1122	80.6		0.70	2426	EN1122	75.05		-0.12
2156	EN1122	72.5		-0.49	2429	EPA3052	68.4		-1.10
2165	EN1122	80.2		0.65	2431	INH-019	75.818		0.00
2167	IEC62321	61.55		-2.11	2432	in house	70.63		-0.77
2169	IEC62321	70.3		-0.82	2441	EN1122	78.8		0.44
2172	IEC62321	79.14		0.49	2442	in house	79.07		0.48
2175	EPA3052	63.33		-1.85	2444	IEC62321	75.88		0.01
2176	in house	74.3		-0.23	2445		-----		-----
2177		-----		-----	2451	IEC62321	74.71		-0.17
2179	IEC62321	77.1		0.19	2453	EN1122	63.05		-1.89
2182	EN1122	78.6		0.41	2475		-----		-----
2184	EN1122	76.99		0.17	2482	ASTM E1645	76.20		0.05
2186	in house	58		-2.63	2489	IEC62321	76.70		0.13
2190	EN1122	72.8		-0.45	2492	in house	72.31		-0.52
2196	IEC62321	80		0.62	2493		-----		-----
2197	EN1122	74.9		-0.14	2500	EN1122	81.3465		0.81
2199	EPA3052	68.0		-1.16	2503	CPSC-CH-E1002-08.3	75.00		-0.12
2201	IEC62321	74.3		-0.23	2508	CPSC-CH-E1002-08.1	80.4		0.68
2202	in house	75.8		0.00	2511	in house	79.6		0.56
2212	in house	79.1		0.48	2513	EN1122	115.8	G(0.01)	5.90
2213	EN1122	77		0.17	2515		-----		-----
2215	EN1122	80.6		0.70	2529	CPSC-CH-E1002-08.3	72.2		-0.54
2216	IEC62321	67		-1.30	2553	EN1122	75.42		-0.06
2218	in house	72.27		-0.53	2557	IEC62321	82.5		0.99
2225	EN1122	77.1		0.19	2563	EN1122	76		0.03
2226	EPA3051/6010	67.4		-1.25	2564	EN1122	77.3		0.22
2228	CPSD-AN-00065	126.375	C,G(0.01)	7.47	2568		-----		-----
2229	IEC62321	80.29		0.66	3100	IEC62321	78.5		0.39
2234	EN1122	78.6		0.41	3104	EN1122	80.3		0.66
2236	CPSC-CH-E1002-08	75.78		-0.01	3107	EN1122	76.5		0.10
2246	EN1122	79.50		0.54	3110	CPSC-CH-E1002-08.2	79.21		0.50
2247	IEC62321	82.49		0.98	3113	in house	78.1		0.34
2251	EN1122	65		-1.60	3116	EN1122	79.1		0.48
2253	EPA3052	82.0		0.91	3122	in house	84	C	1.21
2254	in house	74.8		-0.15	3124	EPA3052	69.8		-0.89
2255	EN1122	79.9		0.60	3127	DIN22022	78.44		0.39
2256	EN1122	78.3		0.36	3146	EN11885	75.3		-0.08
2258	CPSD-AN-164	85.563		1.44	3153	EN1122	76.4		0.08
2259	IEC62321	77.46		0.24	3154	EN1122	73.07	C	-0.41
2264	CPSC-CH-E1002Mod	86.23		1.54	3160	CPSC-CH-E1002-08.1	80.13		0.64
2268	in house	77.28		0.21	3163	in house	40	G(0.01)	-5.29
2269	in house	64.272		-1.71	3166	INH-7040	78.2		0.35
2279	CPSC-CH-E1002	76.8		0.14	3167	EN1122	84.55		1.29
2284	EPA3052	75.00		-0.12	3169	EN1122	77.58		0.26
2289	IEC62321	512.6	G(0.01)	64.51	3172	in house	71.5		-0.64
2290	IEC62321	79.7		0.57	3182	EN1122	76.8		0.14
2293	EN1122	82.339		0.96	3185	EN1122	78		0.32
2296	INH-38	79.137		0.49	3190	IEC62321	77.6		0.26
2298	CPSC-CH-E1002-08.3	77.00		0.17	3197	EN1122	78.2		0.35
2303	in house	81.15		0.79	3199	EPA3051	101.40		3.78
2309	IEC62321	73.0		-0.42	3210	EN1122	29	G(0.01)	-6.92
2310	EPA3052	73.6		-0.33	3218	IEC62321	73.7		-0.31
2311	EPA3052	70.1		-0.85	3220	EN1122	58.3		-2.59

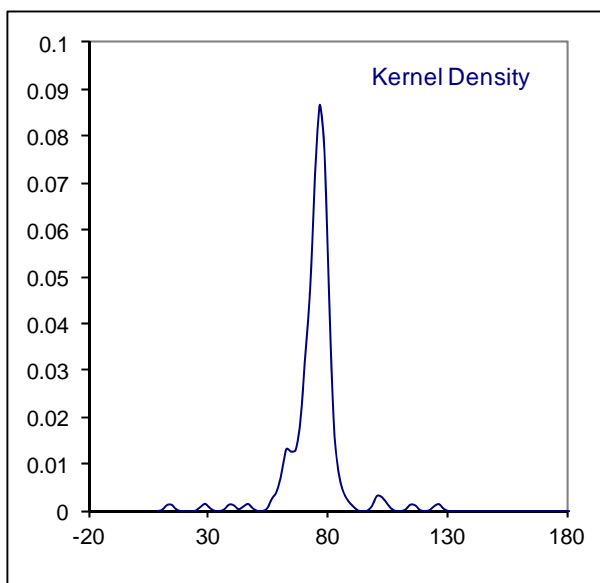
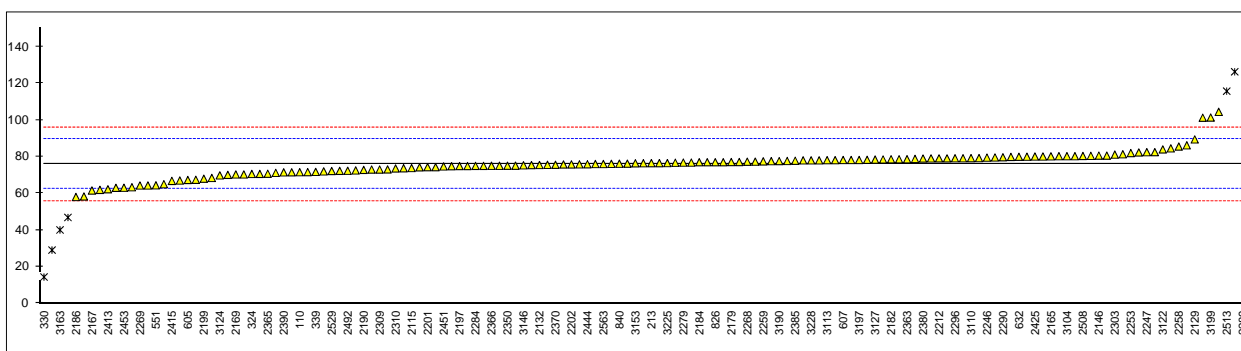


3225	in house	76.51	0.10
3228	EN1122	78	0.32
3237	EN1122	71.18	-0.69
3242	EN1122	79.25	0.51
3243	DIN62321	72	-0.57
3246	EN1122	64.3	-1.70
3248	EN1122	78	0.32
8005	in house	80.3	0.66
normality		not OK	
n		144	
outliers		7	
mean (n)		75.829	
st.dev. (n)		6.7278	
R(calc.)		18.838	
R(EN1122:01)		18.957	

Only EN1122 data:

normality	not OK
n	54
outliers	2
mean (n)	75.929
st.dev. (n)	5.7001
R(calc.)	15.960
R(EN1122:01)	18.982

Lab 632: first reported 1.416  
 Lab 2228: first reported 130.6  
 Lab 3122: first reported 80  
 Lab 3154: first reported 77.49

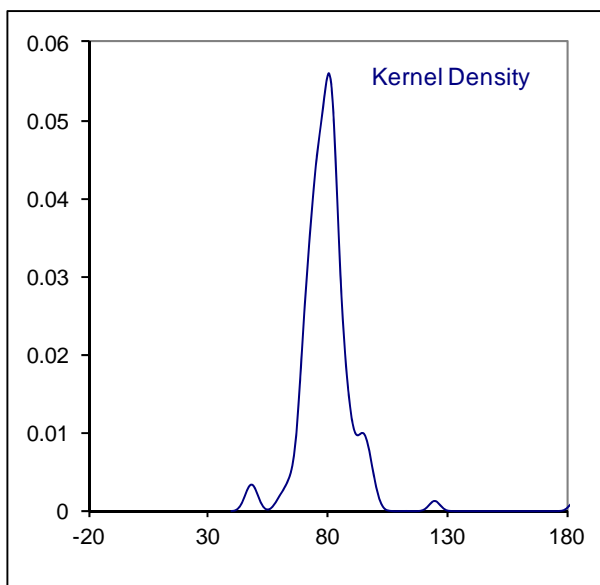
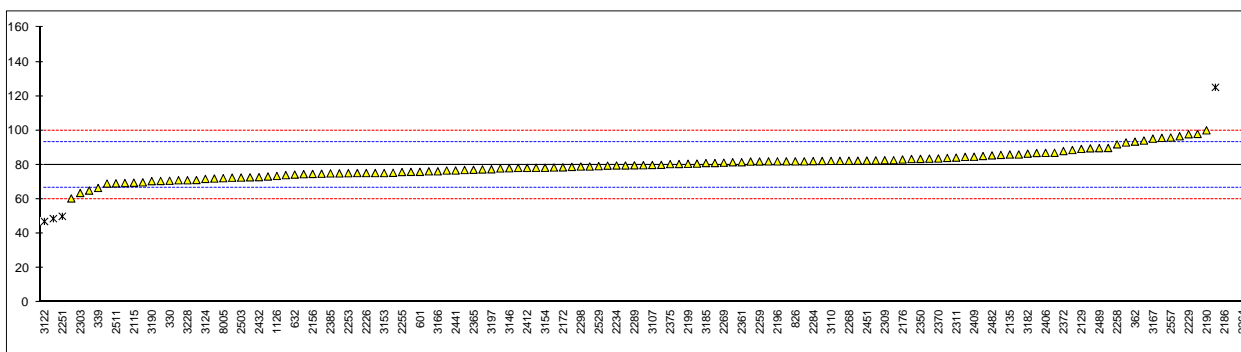


## Determination of total Chromium as Cr on sample #13150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	79.7567		-0.04	2316	IEC62321	86.9		1.04
213		----		----	2320				----
310	IEC62321	70.59		-1.42	2350	IEC62321	83.46		0.52
324	IEC62321	78.274		-0.26	2359	EPA3052	89.8		1.48
330	in house	70.7		-1.41	2361	EPA3051	81.5		0.23
339	INH-344	66.5		-2.04	2363	IEC62321	77.88		-0.32
362	EN1122	93.5		2.04	2365	IEC62321	77.1		-0.44
551	IEC62321	79.52		-0.07	2366	IEC62321	85.10		0.77
601	IEC62321	75.9		-0.62	2370	IEC62321	83.7		0.56
605	IEC62321	69.8		-1.54	2372	IEC62321	88.02		1.21
607	IEC62321	78.8		-0.18	2375	IEC62321	80.40		0.06
622	in house	72.7		-1.10	2379	IEC62321	96.65		2.52
632	INH-003	74.30	C	-0.86	2380	EPA3052	87		1.06
826	IEC62321	82		0.30	2385	in house	75.0		-0.76
840	IEC62321	85.77		0.87	2390	CPSC-CH-E1002-08	82.286		0.35
1051		----		----	2406	ASTM F963	86.960		1.05
1126	in house	73.5		-0.98	2409	EPA3052	84.7		0.71
2115	DIN54233	69.567		-1.58	2410	IEC62321	80		0.00
2129	EN1122	89.25		1.40	2412	CPSC-CH-E1002	78.2		-0.27
2132	in house	74.56		-0.82	2413	in house	72.49		-1.13
2135	DIN54233	86		0.91	2415	IEC62321	69.1		-1.65
2139	IEC62321	82.2		0.33	2425	EPA3052	83.6		0.54
2146		----		----	2426				----
2156	IEC62321	74.7		-0.80	2429	EPA3052	82.7		0.41
2165	EN62321	74.8		-0.79	2431	INH-019	81.0268		0.16
2167	IEC62321	80.46		0.07	2432	in house	72.80		-1.09
2169	IEC62321	80.7		0.11	2441	IEC62321	76.7		-0.50
2172	IEC62321	78.52		-0.22	2442				----
2175	EPA3052	60.41		-2.96	2444				----
2176	in house	83.1		0.47	2445				----
2177		----		----	2451	IEC62321	82.46		0.37
2179	IEC62321	82.0		0.30	2453				----
2182	CPSC-CH-E1002-08.3	82.0		0.30	2475				----
2184	EN62321	69.38		-1.60	2482	ASTM E1645	85.50		0.83
2186	in house	184	G(0.01)	15.71	2489	IEC62321	89.70		1.47
2190	in house	100.1		3.04	2492	in house	79.62		-0.06
2196	IEC62321	82		0.30	2493				----
2197		89.6		1.45	2500	EPA3051A	75.1696		-0.73
2199	EPA3052	80.6	C	0.09	2503	CPSC-CH-E1002-08.3	72.56		-1.12
2201	IEC62321	76.2		-0.57	2508	CPSC-CH-E1002-08.1	84.6		0.69
2202	in house	93.0		1.96	2511	in house	69.2		-1.63
2212	in house	88.6		1.30	2513	EN62321	48.63	G(0.05)	-4.74
2213	IEC62321	98		2.72	2515				----
2215	EPA3051	81.9		0.29	2529	CPSC-CH-E1002-08.3	79.2		-0.12
2216	IEC62321	65		-2.27	2553				----
2218		----		----	2557	IEC62321	95.9		2.40
2225	CPSC-CH-E1002	79.0		-0.15	2563	EN1122	84		0.60
2226	EPA3051/6010	75.2		-0.73	2564				----
2228	CPSD-AN-00065	125.125	C,G(0.01)	6.82	2568				----
2229	IEC62321	97.81		2.69	3100	IEC62321	75.2		-0.73
2234	IEC62321	79.6		-0.06	3104				----
2236	CPSC-CH-E1002-08	75.34		-0.70	3107	in house	79.9		-0.02
2246		----		----	3110	CPSC-CH-E1002-08.2	82.27		0.34
2247	IEC62321	95.69		2.37	3113				----
2251	IEC62321	50	G(0.05)	-4.53	3116				----
2253	EPA3052	75.1		-0.74	3122	in house	47	C,G(0.05)	-4.99
2254	in house	77.3		-0.41	3124	EPA3052	71.8		-1.24
2255	EPA3052	75.8		-0.63	3127	DIN22022	71.12		-1.34
2256	EPA3051	76.7		-0.50	3146	EN11885	78.0		-0.30
2258	CPSD-AN-164	91.910		1.80	3153	IEC62321	75.2		-0.73
2259	IEC62321	81.93		0.29	3154		78.28	C	-0.26
2264	CPSC-CH-E1002Mod	254.21	G(0.01)	26.32	3160	CPSC-CH-E1002-08.1	78.45		-0.23
2268	in house	82.37		0.36	3163	in house	195	G(0.01)	17.38
2269	in house	81.233		0.19	3166	INH-7040	76.2		-0.57
2279	CPSC-CH-E1002	78.2		-0.27	3167	IEC62321	95.23		2.30
2284	EPA3052	82.15		0.32	3169	EPA3052	82.56		0.39
2289	IEC62321	79.7		-0.05	3172	in house	73.2	C	-1.03
2290	IEC62321	81.5		0.23	3182	IEC62321	86.5		0.98
2293		----		----	3185	IEC62321	81		0.15
2296	INH-38	76.961		-0.46	3190	IEC62321	70.5		-1.44
2298	CPSC-CH-E1002-08.3	79.00		-0.15	3197	in house	77.4		-0.39
2303	in house	63.57		-2.48	3199	EPA3051	94.14		2.14
2309	IEC62321	82.7		0.41	3210	ISO17072	<25	False -?	<-2.97
2310	EPA3052	82.0		0.30	3218	IEC62321	83.4		0.51
2311	EPA3052	84.2		0.63	3220	EPA3050B	71.0	C	-1.36

3225	in house	82.41	0.36
3228	IEC62321	71	-1.36
3237	in house	75.87	-0.62
3242	in house	86.02	0.91
3243	DIN62321	74	-0.91
3246	IEC62321	75.0	-0.76
3248	IEC62321	72	-1.21
8005	in house	72.2	-1.18
normality		not OK	
n		128	
outliers		7	
mean (n)		80.000	
st.dev. (n)		7.4054	
R(calc.)		20.735	
R(Horwitz)		18.532	

Lab 632: first reported 1.194  
 Lab 2199: first reported 58.3  
 Lab 2228: first reported 46.7  
 Lab 3122: first reported 56  
 Lab 3154: first reported 89.13  
 Lab 3172: first reported 58.2  
 Lab 3220: first reported 58.3



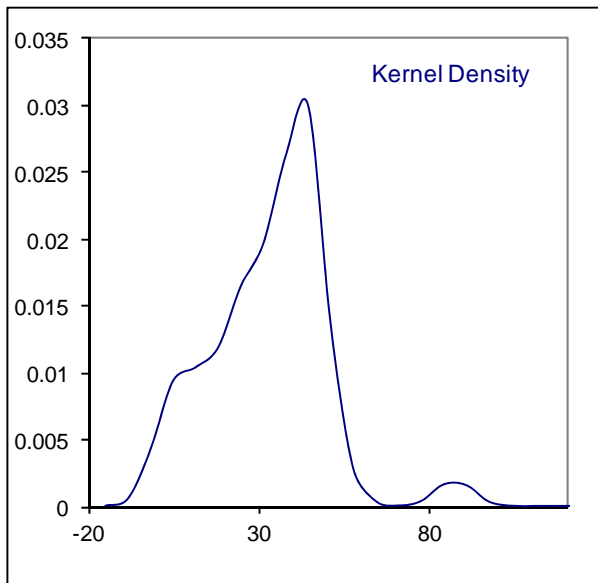
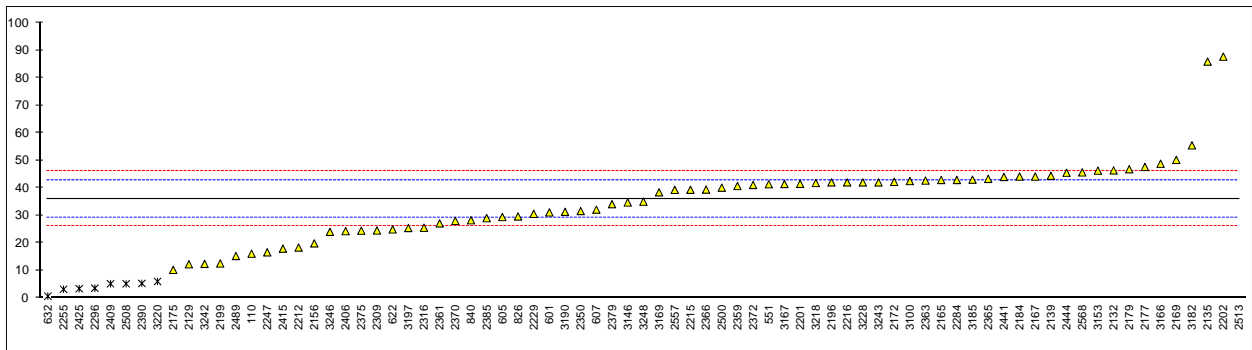
Determination of Hexavalent Chromium as Cr<sup>6+</sup> on sample #13150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-005	16.0665		-5.94	2316	IEC62321	25.5		-3.14
213		----		----	2320		----		----
310		----		----	2350	IEC62321	31.57		-1.33
324		----		----	2359	EPA3060	40.7		1.38
330		----		----	2361	IEC62321	27.1		-2.66
339	INH-341	<15	False -?	<-6.26	2363	IEC62321	42.68		1.97
362		----		----	2365	IEC62321	43.3		2.16
551	IEC62321	41.33		1.57	2366	IEC62321	39.4		1.00
601	IEC62321	31.1		-1.47	2370	IEC62321	28.0		-2.39
605	IEC62321	29.4		-1.98	2372	IEC62321	41.08		1.50
607	IEC62321	32.1		-1.17	2375	IEC62321	24.44		-3.45
622	in house	24.9		-3.31	2379	IEC62321	34.09		-0.58
632	INH-105	0.596	ex	-10.54	2380		----		----
826	IEC62321	29.61		-1.91	2385	EPA3060A	29		-2.10
840	IEC62321	28.22		-2.33	2390	INH-108	5.230	ex	-9.16
1051		----		----	2406	EN62321	24.268		-3.50
1126		----		----	2409	EPA3060A/7196A	5.1	ex	-9.20
2115		----		----	2410		----		----
2129	EN1122	12.20		-7.09	2412		----		----
2132	IEC62321	46.39		3.08	2413		----		----
2135		86		14.86	2415	IEC62321	17.90		-5.40
2139	IEC62321	44.4		2.49	2425	EPA3060A	3.3	ex	-9.74
2146		----		----	2426		----		----
2156	IEC62321	19.8		-4.83	2429		----		----
2165	EN62321	42.9		2.04	2431		----		----
2167	IEC62321	44.15		2.41	2432		----		----
2169	IEC62321	50.2		4.21	2441	IEC62321	44		2.37
2172	IEC62321	42.21		1.83	2442		----		----
2175	EPA3060A/7196A	10.17		-7.70	2444	IEC62321	45.53		2.82
2176		----		----	2445		----		----
2177	IEC62321	47.65		3.45	2451		----		----
2179	IEC62321	46.8		3.20	2453		----		----
2182		----		----	2475		----		----
2184	EN62321	44.15		2.41	2482		----		----
2186		----		----	2489	IEC62321	15.20		-6.20
2190	in house	<20	False -?	<-4.77	2492		----		----
2196	IEC62321	42		1.77	2493		----		----
2197		----		----	2500	EPA3060A	40.097		1.21
2199	EPA3060A	12.5		-7.00	2503		----		----
2201	IEC62321	41.5		1.62	2508	DIN38405	5.10	ex	-9.20
2202	in house	87.8		15.39	2511		----		----
2212	in house	18.3		-5.28	2513	EN62321	1651.76	G(0.01)	480.55
2213		----		----	2515		----		----
2215	IEC62321	39.33		0.98	2529		----		----
2216	IEC62321	42		1.77	2553		----		----
2218		----		----	2557	IEC62321	39.3		0.97
2225		----		----	2563		----		----
2226		----		----	2564		----		----
2228		----		----	2568	IEC62321	45.66		2.86
2229	in house	30.57		-1.63	3100	IEC62321	42.5		1.92
2234		----		----	3104		----		----
2236		----		----	3107		----		----
2246		----		----	3110		----		----
2247	IEC62321	16.56		-5.79	3113		----		----
2251		----		----	3116		----		----
2253		----		----	3122		----		----
2254		----		----	3124		----		----
2255	EPA3060	3.1	ex	-9.80	3127		----		----
2256		----		----	3146	IEC62321	34.7		-0.40
2258		----		----	3153	IEC62321	46.3		3.05
2259		----		----	3154		----		----
2264		----		----	3160		----		----
2268		----		----	3163		----		----
2269		----		----	3166	EPA3060A	48.8		3.79
2279		----		----	3167	IEC62321	41.42		1.60
2284	EPA3060A	42.90		2.04	3169	IEC62321	38.4		0.70
2289		----		----	3172		----		----
2290		----		----	3182	IEC62321	55.5		5.79
2293		----		----	3185	IEC62321	43		2.07
2296	EPA3060	3.48	ex	-9.69	3190	IEC62321	31.3		-1.41
2298		----		----	3197	IEC62321	25.4		-3.17
2303		----		----	3199		----		----
2309	IEC62321	24.5		-3.43	3210		----		----
2310		----		----	3218	IEC62321	41.8		1.71
2311		----		----	3220	EPA3060A	5.94	ex	-8.95

3225		----		----
3228	IEC62321	42		1.77
3237		----		----
3242	in house	12.35		-7.05
3243	DIN62321	42		1.77
3246	IEC62321	24.0		-3.58
3248	IEC62321	35		-0.31
8005		----		----
normality		not OK		
n		68		
outliers		1 + 8 excl		
mean (n)		36.044		
st.dev. (n)		14.1121		
R(calc.)		39.514		
R(Horwitz)		9.414		

Only <500µm data: (see appendix 2)

normality	not OK
n	39
outliers	0
mean (n)	38.560
st.dev. (n)	11.8366
R(calc.)	33.142
R(Horwitz)	9.970

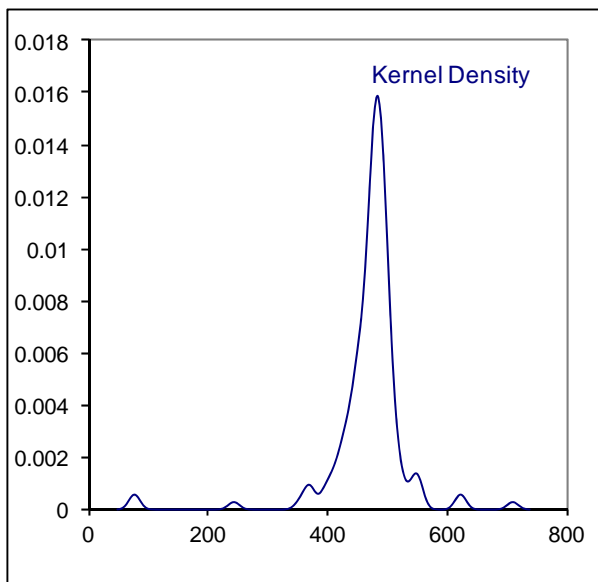
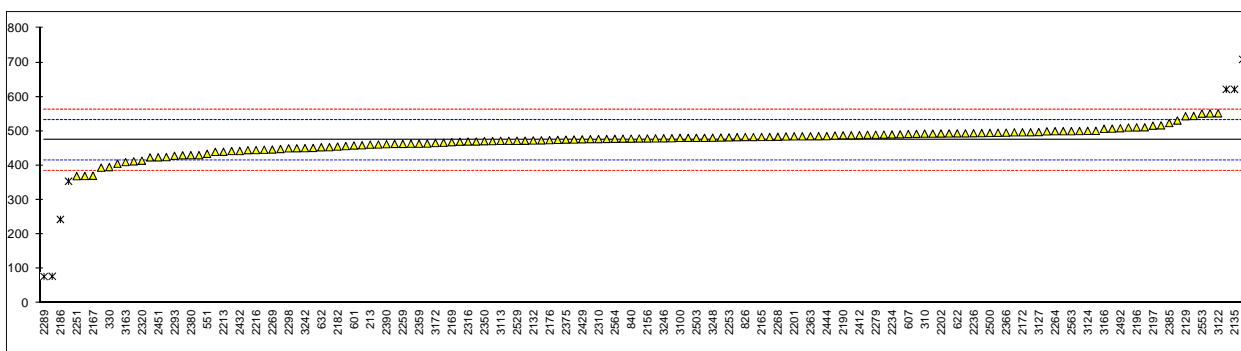


## Determination of total Lead as Pb on sample #13150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	445.934		-0.93	2316	IEC62321	469.8		-0.13
213	CPSC-CH-E1002-08.1	460.8		-0.43	2320	IEC-CH-E1002-08.2	414		-1.99
310	IEC62321	492.9		0.64	2350	IEC62321	470.9		-0.09
324	IEC62321	453.42		-0.68	2359	EPA3052	463.7		-0.33
330	in house	395.4		-2.61	2361	EPA3051	456.5		-0.57
339	INH-344	464		-0.32	2363	IEC62321	485.29		0.39
362	EN1122	354	G(0.05)	-3.99	2365	IEC62321	487.3		0.45
551	IEC62321	434.1		-1.32	2366	IEC62321	495.7		0.73
601	IEC62321	458.3		-0.51	2370	IEC62321	479		0.18
605	IEC62321	442.1		-1.05	2372	IEC62321	451.2		-0.75
607	IEC62321	491.7		0.60	2375	IEC62321	475.50		0.06
622	in house	493.6		0.66	2379	IEC62321	482.57		0.30
632	INH-003	453.23	C	-0.68	2380	EPA3052	430		-1.46
826	IEC62321	483		0.31	2385	in house	523.8		1.67
840	IEC62321	478.35		0.15	2390	CPSC-CH-1002.08	462.131		-0.39
1051	CPSC-CH-E1002-08.3	479.49		0.19	2406	ASTM F963	473.250		-0.02
1126	in house	481.5		0.26	2409	EPA3052	544.2		2.35
2115	DIN54233	485.333		0.39	2410	IEC62321	490		0.54
2129	EN1122	543.59	C	2.33	2412	CPSC-CH-E1002	488.6		0.50
2132	in house	472.98		-0.02	2413	in house	393.75		-2.67
2135	DIN54233	622	G(0.05)	4.95	2415	IEC62321	472.2		-0.05
2139	IEC62321	511.3		1.25	2425	EPA3052	412.2		-2.05
2146	-----	-----		-----	2426	CPSC-CH-E1002-08.3	450.29		-0.78
2156	IEC62321	478.8		0.17	2429	EPA3052	476.4		0.09
2165	EN62321	483.1		0.31	2431	INH-019	466.3264		-0.25
2167	IEC62321	370.22		-3.45	2432	in house	442.17		-1.05
2169	IEC62321	468		-0.19	2441	IEC62321	484.7		0.37
2172	IEC62321	496.8		0.77	2442	-----	-----		-----
2175	EPA3052	423.70		-1.67	2444	IEC62321	485.45		0.39
2176	in house	473.8		0.00	2445	-----	-----		-----
2177	-----	-----		-----	2451	IEC62321	423.83		-1.66
2179	IEC62321	461.2		-0.42	2453	CPSC-CH-E1002-08.1	369.54		-3.47
2182	CPSC-CH-E1002-08.3	455.1		-0.62	2475	-----	-----		-----
2184	EN62321	483.15		0.31	2482	ASTM E1645	500.0		0.88
2186	in house	243	G(0.01)	-7.69	2489	IEC62321	430.00		-1.46
2190	in house	488		0.48	2492	in house	508.57		1.16
2196	IEC62321	511		1.24	2493	-----	-----		-----
2197	-----	516.1		1.41	2500	EPA3051A	494.844		0.70
2199	EPA3052	424.5		-1.64	2503	CPSC-CH-E1002-08.3	480.7		0.23
2201	IEC62321	485.0		0.38	2508	CPSC-CH-E1002-08.1	510.8		1.24
2202	in house	493.3		0.65	2511	CPSC-CH-E1002-08	444.7		-0.97
2212	CPSC-SC-E1002-08.1	489.6		0.53	2513	EN62321	77.09	G(0.01)	-13.23
2213	IEC62321	440		-1.12	2515	-----	-----		-----
2215	EPA3051	493.5		0.66	2529	CPSC-CH-E1002-08.3	472.1		-0.05
2216	IEC62321	445		-0.96	2553	CPSD-AN-0164	551.06		2.58
2218	CPSC-SC-E1002-08.1	469.89		-0.13	2557	IEC62321	507.5		1.13
2225	CPSC-CH-E1002	490.8		0.57	2563	EN1122	500		0.88
2226	EPA3051/6010	458.9		-0.49	2564	CPSC-CH-E1002-08.1	477.8		0.14
2228	CPSD-AN-00065	709.125	C,G(0.05)	7.85	2568	-----	-----		-----
2229	IEC62321	531.05		1.91	3100	IEC62321	480.4		0.22
2234	CPSC-CH-E1002	490.4		0.56	3104	-----	-----		-----
2236	CPSC-CH-E1002-08	494.1		0.68	3107	in house	485.0		0.38
2246	CPSC-SH-E1002-08	475.75		0.07	3110	CPSC-CH-E1002-08.2	499.54		0.86
2247	IEC62321	429.70		-1.47	3113	in house	471.9		-0.06
2251	IEC62321	369		-3.49	3116	CPSC-CH-E1002-08.1	492.2		0.62
2253	EPA3052	482.0		0.28	3122	in house	552	C	2.61
2254	in house	477.3		0.12	3124	EPA3052	501		0.91
2255	EPA3052	439.9		-1.13	3127	DIN22022	497.29		0.79
2256	CPSC-CH-E1002-08.3	496.9		0.77	3146	EN11885	472		-0.06
2258	CPSD-AN-164	516.90		1.44	3153	IEC62321	480.7		0.23
2259	IEC62321	463.0		-0.36	3154	-----	478.2	C	0.15
2264	CPSC-CH-E1002Mod	499.9		0.87	3160	CPSC-CH-E1002-08.1	500.47		0.89
2268	in house	483.8		0.34	3163	in house	410		-2.12
2269	in house	446.564		-0.91	3166	INH-7040	507		1.11
2279	CPSC-CH-E1002	489.6		0.53	3167	IEC62321	551.8		2.60
2284	EPA3052	478.7		0.17	3169	CPSC-CH-E1002-08.1	494.48		0.69
2289	IEC62321	76.6	G(0.01)	-13.24	3172	in house	465.5		-0.27
2290	IEC62321	469.4		-0.14	3182	IEC62321	501.0		0.91
2293	CPSC-CH-E1001-08.3	428.350		-1.51	3185	IEC62321	483		0.31
2296	INH-38	496.675		0.77	3190	IEC62321	493.7		0.67
2298	CPSC-CH-E1002-08.3	450.00		-0.79	3197	in house	474.7		0.03
2303	in house	463.61		-0.34	3199	EPA3051	621.90	G(0.01)	4.94
2309	IEC62321	471.0		-0.09	3210	ISO17072	<25	False -	<14.96
2310	EPA3052	477		0.11	3218	IEC62321	476.8		0.10
2311	EPA3052	463		-0.36	3220	EPA3050B	405.3		-2.28

3225	in house	480.59	0.23
3228	IEC62321	488	0.48
3237	in house	448.09	-0.85
3242	in house	450.60	-0.77
3243	DIN62321	493	0.64
3246	IEC62321	479.3	0.19
3248	CPSC	481	0.24
8005	in house	495.4	0.72
normality		not OK	
n		141	
outliers		7	
mean (n)		473.705	
st.dev. (n)		33.0488	
R(calc.)		92.537	
R(Horwitz)		83.962	

Lab 632: first reported 1.577  
 Lab 2129: first reported 565.95  
 Lab 2228: first reported 178.2  
 Lab 3122: first reported 375  
 Lab 3154: first reported 472.8



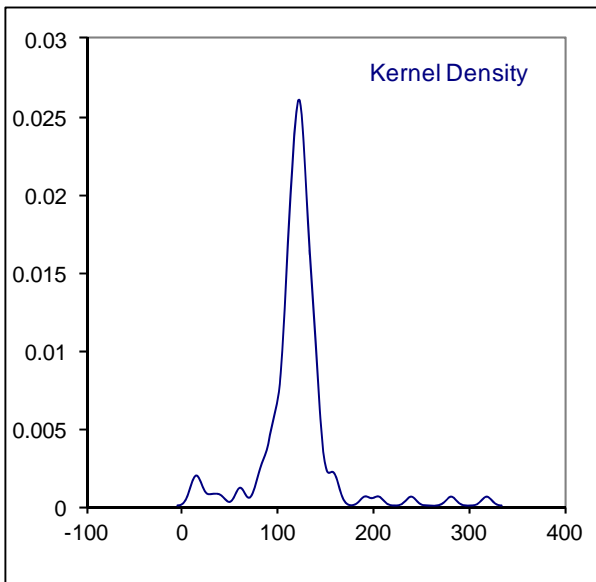
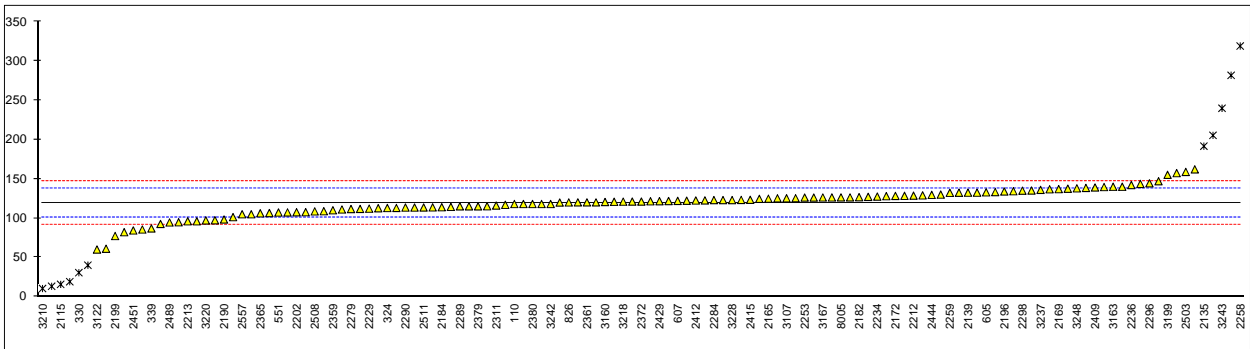
## Determination of Mercury as Hg on sample #13150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	117.967		-0.19	2316	IEC62321	107.3		-1.33
213		----		----	2320		----		----
310	IEC62321	136.8		1.83	2350	IEC62321	139.6		2.13
324	IEC62321	112.89		-0.73	2359	EPA3052	110.0		-1.04
330	in house	30.5	G(0.01)	-9.57	2361	EPA3051	120.1		0.04
339	INH-344	86.84		-3.53	2363	IEC62321	132.41		1.36
362		----		----	2365	IEC62321	106.2		-1.45
551	IEC62321	107.22		-1.34	2366	IEC62321	121.5		0.19
601	IEC62321	113.7		-0.64	2370	IEC62321	118		-0.18
605	IEC62321	132.9		1.42	2372	IEC62321	121.1		0.15
607	IEC62321	122.0		0.25	2375	IEC62321	112.98		-0.72
622	in house	19.0	G(0.01)	-10.80	2379	IEC62321	115	C	-0.50
632	INH-003	114.35	C	-0.57	2380	EPA3052	118		-0.18
826	IEC62321	120		0.03	2385	in house	138.5		2.02
840	IEC62321	119.92		0.02	2390	CPSC-CH-1002.08	96.000		-2.54
1051		----		----	2406	ASTM F963	134.300		1.57
1126	in house	132.5		1.37	2409	EPA3052	139.1		2.08
2115	DIN54233	15.6	C,G(0.01)	-11.17	2410	IEC62321	147		2.93
2129	EN1122	162.17		4.56	2412	CPSC-CH-E1002	122.5		0.30
2132	in house	120.87		0.13	2413	in house	94.71		-2.68
2135	DIN54233	191.7	G(0.05)	7.72	2415	IEC62321	123.4		0.40
2139	IEC62321	132.5		1.37	2425	EPA3052	122.2		0.27
2146		----		----	2426		----		----
2156	IEC62321	101.3		-1.97	2429	EPA3052	121.6		0.20
2165	EN62321	124.8		0.55	2431	INH-019	126.3249		0.71
2167	IEC62321	85.53		-3.67	2432	in house	92.6	C	-2.91
2169	IEC62321	137		1.86	2441	IEC62321	133.2		1.45
2172	IEC62321	128.3		0.92	2442		----		----
2175	EPA3052	108.82		-1.17	2444	IEC62321	129.61		1.06
2176	in house	124.6		0.53	2445		----		----
2177		----		----	2451	IEC62321	84.29		-3.80
2179	IEC62321	111.0		-0.93	2453		----		----
2182	CPSC-CH-E1002-08.3	126.7		0.75	2475		----		----
2184	EN62321	113.86		-0.63	2482	ASTM E1645	128.0		0.89
2186	in house	40	G(0.01)	-8.55	2489	IEC62321	94.50		-2.70
2190	in house	98.3		-2.30	2492	in house	126.43		0.72
2196	IEC62321	134		1.53	2493		----		----
2197		----		----	2500	EPA3051A	115.156		-0.49
2199	EPA3052	77.2		-4.56	2503	CPSC-CH-E1002-08.3	158.9		4.21
2201	IEC62321	121.1		0.15	2508	CPSC-CH-E1002-08.1	108.603		-1.19
2202	in house	107.5		-1.31	2511	in house	113.6		-0.65
2212	in house	128.7	C	0.97	2513	EN62321	82.09		-4.04
2213	IEC62321	96		-2.54	2515		----		----
2215	EPA3051	120.1		0.04	2529	CPSC-CH-E1002-08.3	106.5		-1.42
2216	IEC62321	129		1.00	2553		----		----
2218		----		----	2557	IEC62321	104.9	C	-1.59
2225	INH-022	123.2		0.38	2563		----		----
2226	EPA3051/6010	135.2		1.66	2564		----		----
2228	CPSD-AN-00065	205.50	C,G(0.05)	9.21	2568		----		----
2229	IEC62321	112.07		-0.82	3100	IEC62321	126.2		0.70
2234	IEC62321	127.5		0.84	3104		----		----
2236	CPSC-CH-E1002-08	142.2		2.41	3107	in house	125.3		0.60
2246		----		----	3110	CPSC-CH-E1002-08.2	157.34		4.04
2247	IEC62321	107.61		-1.30	3113		----		----
2251	IEC62321	61		-6.30	3116		----		----
2253	EPA3052	126.2		0.70	3122	in house	60	C	-6.41
2254	in house	127.1		0.79	3124	EPA3052	118		-0.18
2255	EPA3052	97.3		-2.40	3127		----		----
2256	EPA3051	128.4		0.93	3146	EN1483	130		1.10
2258	CPSD-AN-164	319.32	G(0.01)	21.42	3153	IEC62321	125.4		0.61
2259	IEC62321	132.3		1.35	3154		282.0	C,G(0.01)	17.41
2264	CPSC-CH-E1002Mod	122.59		0.31	3160	CPSC-CH-E1002-08.1	120.58		0.09
2268	in house	121.8		0.23	3163	in house	140		2.18
2269	in house	111.769		-0.85	3166	INH-7040	140		2.18
2279	CPSC-CH-E1002	111.6		-0.87	3167	IEC62321	126.3		0.71
2284	EPA3052	123.0		0.35	3169	EPA3052	112.62		-0.76
2289	IEC62321	115.0		-0.50	3172	in house	120.1		0.04
2290	IEC62321	113.5		-0.67	3182	IEC62321	137.5		1.91
2293		----		----	3185	IEC62321	123		0.35
2296	INH-38	144.395		2.65	3190	IEC62321	143.6		2.56
2298	CPSC-CH-E1002-08.3	135.00		1.64	3197	in house	104.9		-1.59
2303	in house	13.17	G(0.05)	-11.43	3199	EPA3051	155.20		3.81
2309	IEC62321	115.0		-0.50	3210	ISO17072	10.3	G(0.05)	-11.74
2310	EPA3052	117		-0.29	3218	IEC62321	121.0		0.14
2311	EPA3052	116		-0.40	3220	EPA3050B	97.1		-2.43



3225	in house	125.24		0.59
3228	IEC62321	123		0.35
3237	in house	136.00	C	1.75
3242	in house	118		-0.18
3243	DIN62321	240	C,G(0.01)	12.91
3246	IEC62321	113.5		-0.67
3248	IEC62321	138		1.96
8005	in house	126.4		0.72
normality		not OK		
n		122		
outliers		11		
mean (n)		119.702		
st.dev. (n)		17.2979		
R(calc.)		48.434		
R(Horwitz)		26.097		

Lab 632: first reported 0.341  
 Lab 2115: first reported 69.100  
 Lab 2212: first reported 189.6  
 Lab 2228: first reported 60.1  
 Lab 2379: first reported 178.68  
 Lab 2432: first reported 92.6  
 Lab 2557: first reported 150.6  
 Lab 3122: first reported 74  
 Lab 3154: first reported 265.0  
 Lab 3237: first reported 247.0  
 Lab 3243: first reported 172



## Determination of total Cadmium as Cd on sample #13151; results in mg/kg

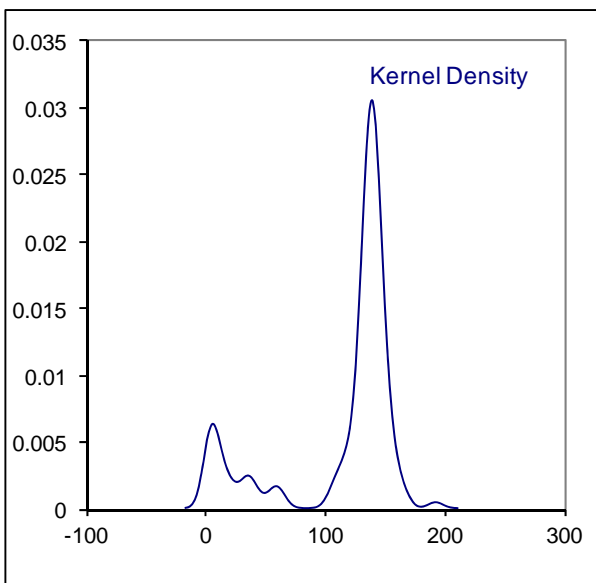
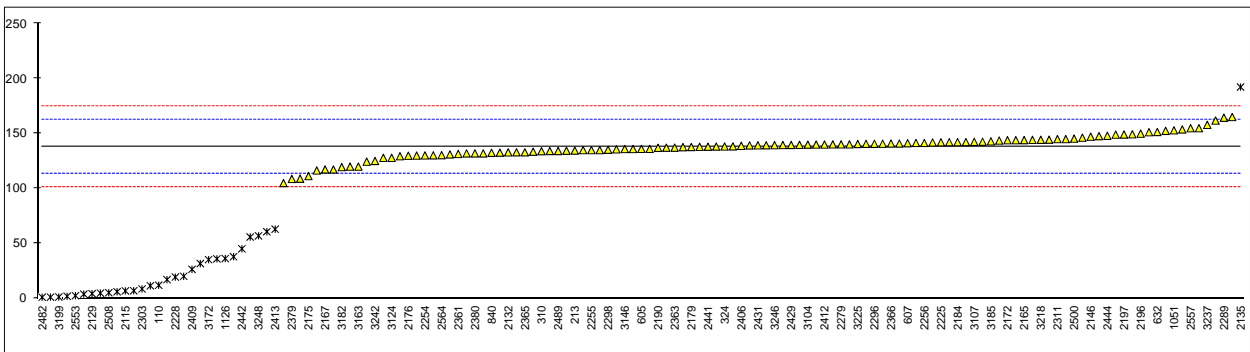
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	12.0036	ex	-10.23	2316	EN1122	140.1		0.17
213	EN1122	134.6	C	-0.28	2320		-----		-----
310	IEC62321	134.00	C	-0.33	2350	EN1122	132.7		-0.43
324	IEC62321	138.30		0.02	2359	EN1122	137.7		-0.03
330	in house	<10	False -?	<-10.39	2361	EN1122	131.5		-0.53
339	INH-344	20.15	ex	-9.57	2363	IEC62321	137.25		-0.06
362	EN1122	120		-1.46	2365	IEC62321	133.0		-0.41
551	IEC62321	31.74	C,ex	-8.62	2366	EN1122	141.0		0.24
601	IEC62321	139.4		0.11	2370	IEC62321	130		-0.65
605	IEC62321	136.1		-0.16	2372	IEC62321	135.7		-0.19
607	IEC62321	141.3		0.26	2375	EN1122	133.59		-0.36
622	EN1122	161.9		1.94	2379	EN1122	108.77		-2.37
632	INH-003	151.50	C	1.09	2380	EN1122	132		-0.49
826	IEC62321	135		-0.25	2385	in house	6.1	ex	-10.71
840	IEC62321	132.58		-0.44	2390	CPSC-CH-E1002-08	37.976	ex	-8.12
1051	EN1122	153.01		1.22	2406	EN1122	138.915		0.07
1126	in house	36.3	ex	-8.25	2409	EPA3052	26.5	C,ex	-9.05
2115	DIN54233	6.8905	ex	-10.64	2410	EN1122	138		0.00
2129	EN1122	4.33	C,ex	-10.85	2412	CPSC-CH-E1002	140.1		0.17
2132	in house	132.92		-0.42	2413	in house	63.03	C,ex	-6.09
2135	DIN54233	192.4	G(0.01)	4.41	2415	IEC62321	132.0		-0.49
2139	IEC62321	165.1		2.20	2425	EN1122	147.7		0.78
2146	EN1122	147.2		0.74	2426	EN1122	130.26		-0.63
2156	EN1122	117.4		-1.67	2429	EPA3052	139.7		0.14
2165	EN1122	144.1		0.49	2431	INH-019	139.34		0.11
2167	IEC62321	117.40		-1.67	2432	in house	128.00		-0.81
2169	IEC62321	142		0.32	2441	EN1122	138.1		0.01
2172	IEC62321	144.0		0.48	2442	in house	45.2	ex	-7.53
2175	EPA3052	111.35		-2.17	2444	IEC62321	148.02		0.81
2176	in house	129.9		-0.66	2445		-----		-----
2177		-----		-----	2451	IEC62321	n.d.		-----
2179	IEC62321	137.8		-0.02	2453	EN1122	116.46		-1.75
2182	EN1122	140.2		0.18	2475		-----		-----
2184	EN1122	142.29		0.35	2482	ASTM E1645	1.11	ex	-11.11
2186		-----		-----	2489	IEC62321	134.20		-0.31
2190	EN1122	137.1		-0.08	2492	in house	134.17		-0.31
2196	IEC62321	150		0.97	2493		-----		-----
2197	EN1122	149.2		0.91	2500	EN1122	145.4424		0.60
2199	EPA3052	124.5		-1.10	2503	CPSC-CH-E1002-08.3	1.979	C,ex	-11.04
2201	IEC62321	144.3		0.51	2508	CPSC-CH-E1002-08.1	5.15	ex	-10.78
2202	in house	153.8		1.28	2511	in house	<10	False -?	<-10.39
2212	in house	133.0		-0.41	2513	EN1122	60.73	ex	-6.27
2213	EN1122	105		-2.68	2515		-----		-----
2215	EN1122	140.8		0.22	2529	CPSC-CH-E1002-08.3	3.9	ex	-10.88
2216	IEC62321	109		-2.36	2553	EN1122	2.48	ex	-11.00
2218	in house	134.44		-0.29	2557	IEC62321	154.9		1.37
2225	EN1122	142.1		0.33	2563	EN1122	11.5	ex	-10.27
2226	EPA3051/6010	129.4		-0.70	2564	EN1122	130.4		-0.62
2228	CPSD-AN-00065	19.45	C,ex	-9.62	2568		-----		-----
2229	IEC62321	142.63		0.37	3100	IEC62321	142.3		0.35
2234	EN1122	138.4		0.03	3104	EN1122	140.0		0.16
2236		-----		-----	3107	EN1122	142.5		0.36
2246	EN1122	152.56		1.18	3110	CPSC-CH-E1002-08.2	149.36		0.92
2247	IEC62321	151.29		1.08	3113	in house	137.2		-0.07
2251	EN1122	36	ex	-8.28	3116	EN1122	143.7		0.46
2253	EPA3052	146.3		0.67	3122	in house	7	C,ex	-10.63
2254	in house	130.2		-0.64	3124	EPA3052	128		-0.81
2255	EN1122	135.0		-0.25	3127	DIN22022	1.17	C,ex	-11.11
2256	EN1122	141.5		0.28	3146	EN11885	136		-0.17
2258	CPSD-AN-164	4.8505	ex	-10.81	3153	EN1122	136.1		-0.16
2259	IEC62321	141.5		0.28	3154	EN1122	17.11	C,ex	-9.81
2264	CPSC-CH-E1002Mod	140.71		0.22	3160	CPSC-CH-E1002-08.1	138.22		0.02
2268	in house	139.6		0.13	3163	in house	120		-1.46
2269	in house	55.904	ex	-6.66	3166	INH-7040	145		0.57
2279	CPSC-CH-E1002	140.2		0.18	3167	EN1122	149.1		0.90
2284	EPA3052	142.2		0.34	3169	EN1122	139.29		0.10
2289	IEC62321	164.5		2.15	3172	in house	35.3	C,ex	-8.34
2290	IEC62321	139.8		0.14	3182	EN1122	119.5		-1.50
2293	EN1122	144.522		0.53	3185	EN1122	143		0.40
2296	INH-38	140.740		0.22	3190	IEC62321	154.9		1.37
2298	CPSC-CH-E1002-08.3	135.33		-0.22	3197	EN1122	131.1		-0.56
2303	in house	8.64	ex	-10.50	3199	EPA3051	1.31	ex	-11.09
2309	IEC62321	132.0		-0.49	3210	EN1122	135		-0.25
2310	EPA3052	144		0.48	3218	IEC62321	144.4		0.52
2311	EPA3052	145		0.57	3220	EN1122	n.d.		-----

3225	in house	140.56		0.20
3228	EN1122	141		0.24
3237	EN1122	158.00	C	1.62
3242	EN1122	125.12		-1.05
3243	DIN62321	136		-0.17
3246	EN1122	139.5		0.12
3248	EN1122	57	C,ex	-6.58
8005	in house	140.2		0.18
normality		not OK		
n		115		
outliers		1	+ 30 excl	
mean (n)		138.035		
st.dev. (n)		10.5957		
R(calc.)		29.668		
R(EN1122:01)		34.509		

Only EN1122 data:

OK	
49	
0	+7 excl
137.397	
11.2836	
31.594	
34.349	

- Lab 213: first reported <10
- Lab 310: first reported 9.60
- Lab 551: first reported 4.63
- Lab 632: first reported 0.645
- Lab 2129: first reported 3.99
- Lab 2228: first reported 31.75
- Lab 2409: first reported 1.4
- Lab 2413: first reported 16.68
- Lab 2503: first reported 2.0
- Lab 3122: first reported <5
- Lab 3127: first reported <0.25
- Lab 3154: first reported 0.635
- Lab 3172: first reported <10
- Lab 3237: first reported 2.71
- Lab 3248: first reported 80

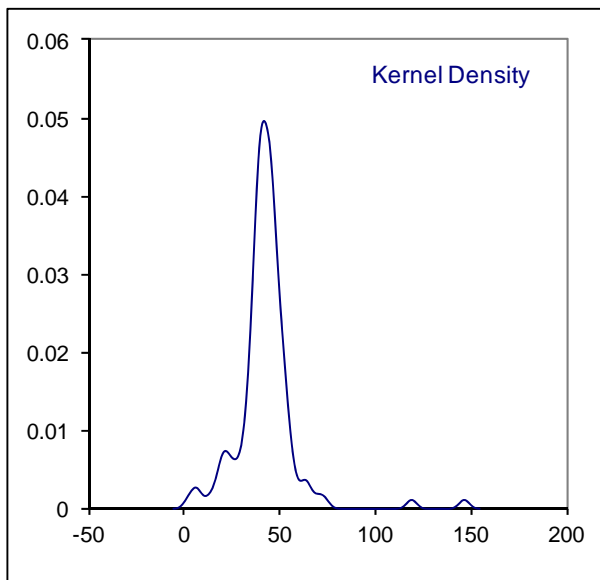
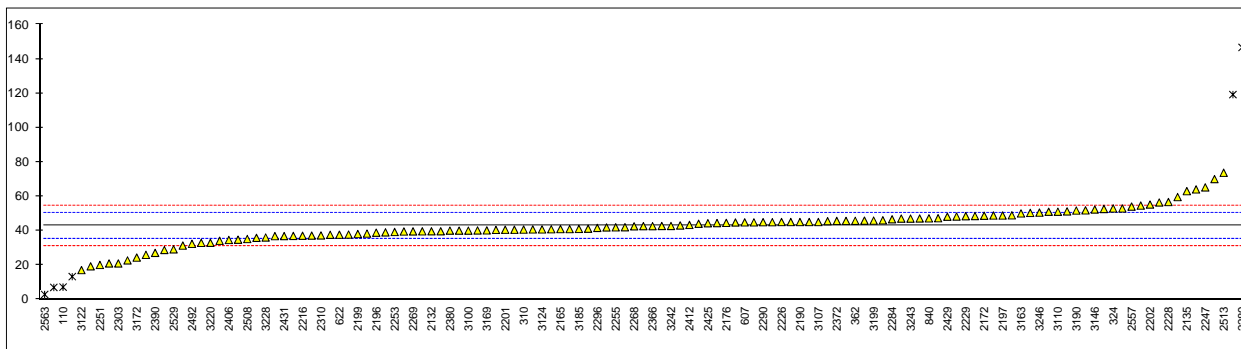


## Determination of Chromium as Cr on sample #13151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	7.08367	DG(0.05)	-9.18	2316	IEC62321	45		0.58
213		----		----	2320		----		----
310	IEC62321	40.6	C	-0.55	2350	IEC62321	41.97		-0.20
324	IEC62321	52.902		2.61	2359	EPA3052	43.0		0.07
330	in house	13.2	DG(0.05)	-7.60	2361	EPA3051	39.5		-0.84
339	INH-344	40.8		-0.50	2363	IEC62321	47.08		1.11
362	EN1122	45.7		0.76	2365	IEC62321	44.8		0.53
551	IEC62321	37.09		-1.46	2366	IEC62321	42.6		-0.04
601	IEC62321	44.9		0.55	2370	IEC62321	45.5		0.71
605	IEC62321	44.4		0.43	2372	IEC62321	45.63		0.74
607	IEC62321	44.8		0.53	2375	IEC62321	41.10		-0.42
622	EN1122	37.6		-1.32	2379	IEC62321	45.66		0.75
632	INH-003	48.22		1.41	2380	EPA3052	40		-0.71
826	IEC62321	47		1.09	2385	in house	6.9	DG(0.05)	-9.22
840	IEC62321	47.14		1.13	2390	CPSC-CH-E1002-08	27.024		-4.05
1051		----		----	2406	ASTM F963	34.557		-2.11
1126		----		----	2409	EPA3052	28.7		-3.61
2115	DIN54233	19.200		-6.06	2410	IEC62321	46		0.84
2129	EN1122	22.66	C	-5.17	2412	CPSC-CH-E1002	43.3		0.14
2132	in house	39.61		-0.81	2413	in house	n.d.	C	----
2135	DIN54233	63.0		5.21	2415	IEC62321	40.0		-0.71
2139	IEC62321	51.2		2.18	2425	EPA3052	44.3		0.40
2146		----		----	2426		----		----
2156	IEC62321	48.8		1.56	2429	EPA3052	48.1		1.38
2165	EN62321	40.9		-0.48	2431	INH-019	36.8232		-1.52
2167	IEC62321	59.55		4.32	2432	in house	37.58		-1.33
2169	IEC62321	56.4		3.51	2441	IEC62321	47.2		1.15
2172	IEC62321	48.65		1.52	2442		----		----
2175	EPA3052	48.46		1.47	2444		----		----
2176	in house	44.5		0.45	2445		----		----
2177		----		----	2451	IEC62321	35.80		-1.79
2179	IEC62321	52.6		2.54	2453		----		----
2182	in house	39.6		-0.81	2475		----		----
2184	EN62321	38.98		-0.97	2482	ASTM E1645	34.70		-2.07
2186	in house	<det.lim		----	2489	IEC62321	64.00		5.47
2190	in house	45.0		0.58	2492	in house	32.31		-2.69
2196	IEC62321	38.8		-1.02	2493		----		----
2197		48.8		1.56	2500	EPA3052	44.7376		0.51
2199	EPA3052	38.0		-1.22	2503	CPSC-CH-E1002-08.3	20.87	C	-5.63
2201	IEC62321	40.5		-0.58	2508	CPSC-CH-E1002-08.1	35.1		-1.97
2202	in house	55.2		3.20	2511	in house	36.9	C	-1.50
2212	in house	50.3		1.94	2513	EN62321	73.69		7.96
2213	IEC62321	70		7.01	2515		----		----
2215	EPA3051	48.9		1.58	2529	CPSC-CH-E1002-08.3	29.1		-3.51
2216	IEC62321	37		-1.48	2553		----		----
2218		----		----	2557	IEC62321	54.0		2.90
2225	CPSC-CH-E1002	40.4		-0.60	2563	EN1122	2.8	DG(0.05)	-10.28
2226	EPA3051/6010	45.0		0.58	2564		----		----
2228	CPSD-AN-00065	56.65		3.58	2568		----		----
2229	IEC62321	48.41		1.46	3100	IEC62321	40.0		-0.71
2234	IEC62321	40.7		-0.53	3104		----		----
2236		----		----	3107	in house	45.0		0.58
2246		----		----	3110	CPSC-CH-E1002-08.2	51.01		2.13
2247	IEC62321	65.18		5.77	3113		----		----
2251	IEC62321	20		-5.85	3116		----		----
2253	EPA3052	39.2		-0.91	3122	in house	17	C	-6.62
2254	in house	40.9		-0.48	3124	EPA3052	40.7		-0.53
2255	EPA3052	41.9		-0.22	3127	DIN22022	34.07		-2.23
2256	EPA3052	51.0		2.12	3146	EN11885	52.3		2.46
2258	CPSD-AN-164	54.580		3.04	3153	IEC62321	40.1		-0.68
2259	IEC62321	38.26		-1.15	3154		25.88	C	-4.34
2264	CPSC-CH-E1002Mod	119.23	G(0.01)	19.68	3160	CPSC-CH-E1002-08.1	39.62		-0.80
2268	in house	42.52		-0.06	3163	in house	50		1.87
2269	in house	39.550		-0.82	3166	INH-7040	42.7		-0.01
2279	CPSC-CH-E1002	42.6		-0.04	3167	IEC62321	52.91		2.62
2284	EPA3052	46.60		0.99	3169	EPA3052	40.12		-0.68
2289	IEC62321	146.7	G(0.01)	26.75	3172	in house	24.3	C	-4.75
2290	IEC62321	44.9		0.55	3182	IEC62321	31.3		-2.95
2293		----		----	3185	IEC62321	41		-0.45
2296	INH-38	41.564		-0.30	3190	IEC62321	51.7		2.30
2298	CPSC-CH-E1002-08.3	45.00		0.58	3197	in house	37.7		-1.30
2303	in house	20.89		-5.62	3199	EPA3051	45.83		0.79
2309	IEC62321	40.50		-0.58	3210	ISO17072	<25	False -?	<-4.57
2310	EPA3052	37.2		-1.43	3218	IEC62321	45.8		0.79
2311	EPA3052	36.8		-1.53	3220	EPA3050B	32.9		-2.53

3225	in house	41.84	-0.23
3228	IEC62321	36	-1.74
3237	in house	32.88	-2.54
3242	in house	42.70	-0.01
3243	DIN62321	47	1.09
3246	IEC62321	50.5	1.99
3248	IEC62321	44	0.32
8005	in house	51.8	2.33
normality		not OK	
n		125	
outliers		6	
mean (n)		42.747	
st.dev. (n)		9.5144	
R(calc.)		26.640	
R(Horwitz)		10.882	

Lab 310: first reported 23.25  
 Lab 632: first reported 1.058  
 Lab 2129: first reported 15.24  
 Lab 2213: first reported 70  
 Lab 2413: first reported 19.57  
 Lab 2503: first reported 20.9  
 Lab 2511: first reported 40.7  
 Lab 3122: first reported 21  
 Lab 3154: first reported 70.65  
 Lab 3172: first reported 17.0

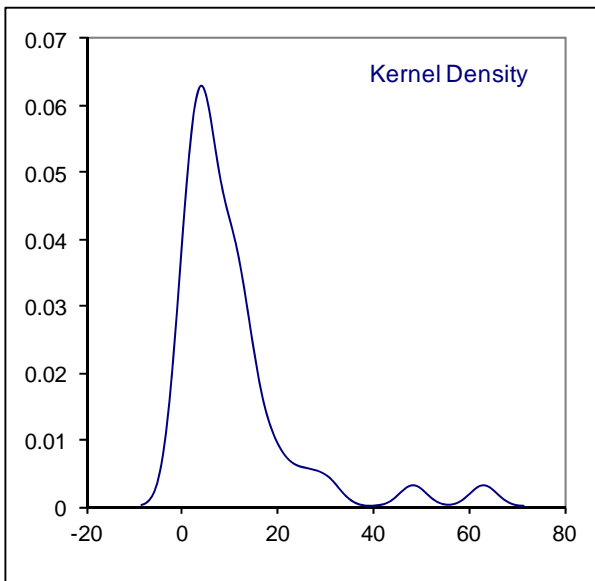
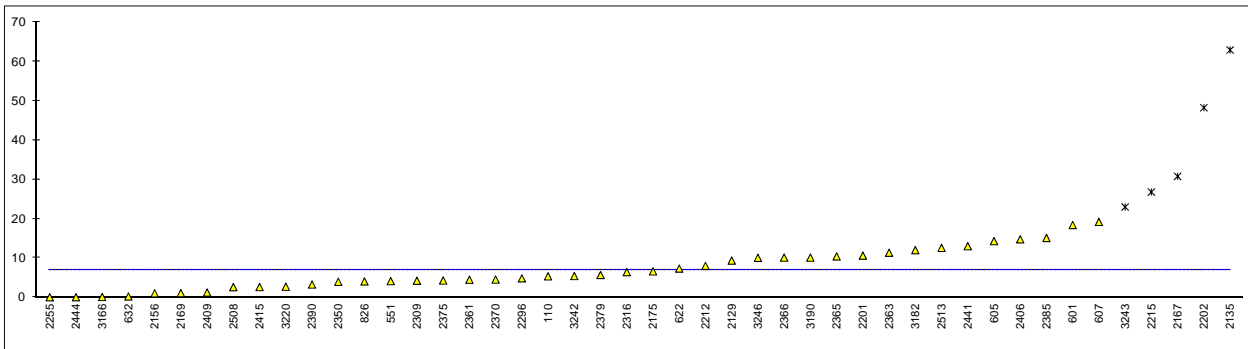


Determination of Hexavalent Chromium as Cr<sup>6+</sup> on sample #13151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-005	5.314		----	2316	IEC62321	6.4		----
213		----		----	2320		----		----
310		----		----	2350	IEC62321	3.9371		----
324		----		----	2359	EPA3060	<5.0		----
330		----		----	2361	IEC62321	4.46		----
339	INH-341	<10		----	2363	IEC62321	11.33		----
362		----		----	2365	IEC62321	10.4		----
551	IEC62321	4.11		----	2366	IEC62321	10.1		----
601	IEC62321	18.4		----	2370	IEC62321	4.50		----
605	IEC62321	14.3		----	2372	IEC62321	n.d		----
607	IEC62321	19.2		----	2375	IEC62321	4.27		----
622	in house	7.3		----	2379	IEC62321	5.67		----
632	INH-105	0.198		----	2380		----		----
826	IEC62321	4.03		----	2385	EPA3060A	15.1		----
840	IEC62321	n.d.		----	2390	INH-108	3.240		----
1051		----		----	2406	EN62321	14.762		----
1126		----		----	2409	EPA3060A/7196A	1.2		----
2115		----		----	2410		----		----
2129	EN1122	9.35		----	2412		----		----
2132	IEC62321	<2.00		----	2413		----		----
2135		63.0	G(0.01)	----	2415	IEC62321	2.6		----
2139	IEC62321	<10		----	2425	EPA3060A	n.d.		----
2146		----		----	2426		----		----
2156	IEC62321	1.0		----	2429		----		----
2165	EN62321	n.d		----	2431		----		----
2167	IEC62321	30.80	G(0.05)	----	2432		----		----
2169	IEC62321	1.05		----	2441	IEC62321	13		----
2172	IEC62321	<5	C	----	2442		----		----
2175	EPA3060A/7196A	6.59		----	2444	IEC62321	0.00		----
2176		----		----	2445		----		----
2177		----		----	2451		----		----
2179	IEC62321	n.d.		----	2453		----		----
2182		----		----	2475		----		----
2184	EN62321	<1		----	2482		----		----
2186		----		----	2489	IEC62321	<2		----
2190		----		----	2492		----		----
2196		----		----	2493		----		----
2197		----		----	2500	EPA3060A	n.d.	C	----
2199	EPA3060A	<5		----	2503		----		----
2201	IEC62321	10.6		----	2508	DIN38405	2.58		----
2202	in house	48.3	G(0.01)	----	2511		----		----
2212	in house	8.0		----	2513	EN62321	12.58		----
2213		----		----	2515		----		----
2215	IEC62321	26.80	DG(0.05)	----	2529		----		----
2216	IEC62321	<5		----	2553		----		----
2218		----		----	2557	IEC62321	n.d		----
2225		----		----	2563		----		----
2226		----		----	2564		----		----
2228		----		----	2568	IEC62321	<5		----
2229	in house	<2.0		----	3100	IEC62321	<1.0		----
2234		----		----	3104		----		----
2236		----		----	3107		----		----
2246		----		----	3110		----		----
2247	IEC62321	<2		----	3113		----		----
2251		----		----	3116		----		----
2253		----		----	3122		----		----
2254		----		----	3124		----		----
2255	EPA3060	0.0		----	3127		----		----
2256		----		----	3146	IEC62321	<1		----
2258		----		----	3153	IEC62321	n.d		----
2259		----		----	3154		----		----
2264		----		----	3160		----		----
2268		----		----	3163		----		----
2269		----		----	3166	EPA3060A/7199	0.06		----
2279		----		----	3167	IEC62321	n.d		----
2284	EPA3060A	<5.00		----	3169	IEC62321	<5		----
2289		----		----	3172		----		----
2290		----		----	3182	IEC62321	12.0		----
2293		----		----	3185	IEC62321	<5		----
2296	EPA3060	4.81		----	3190	IEC62321	10.1		----
2298		----		----	3197	IEC62321	<3		----
2303		----		----	3199		----		----
2309	IEC62321	4.20		----	3210		----		----
2310		----		----	3218	IEC62321	<5		----
2311		----		----	3220	EPA3060A	2.68		----

3225		-----		-----
3228	IEC62321	<10		-----
3237		-----		-----
3242	in house	5.40		-----
3243	DIN62321	23	DG(0.05)	-----
3246	IEC62321	10.04		-----
3248	IEC62321	<0.5		-----
8005		-----		-----
normality		OK		
n		41		
outliers		5		
mean (n)		6.948		
st.dev. (n)		5.1588		
R(calc.)		14.445		
R(lit)		(2.325)		

Lab 2172: first reported 27.49  
 Lab 2500: first reported 26.768



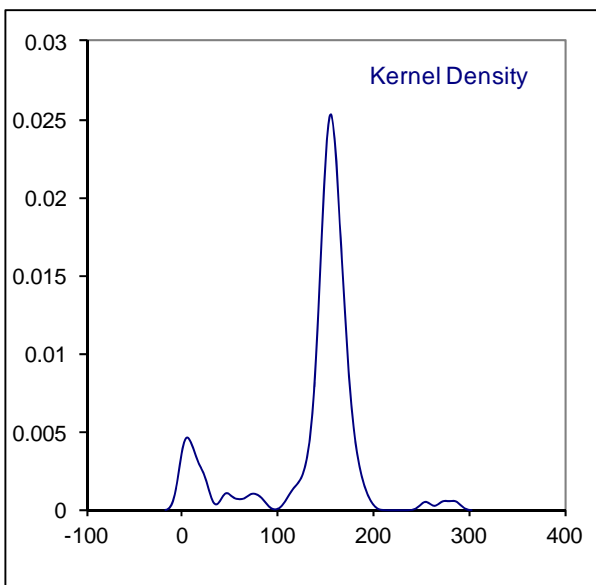
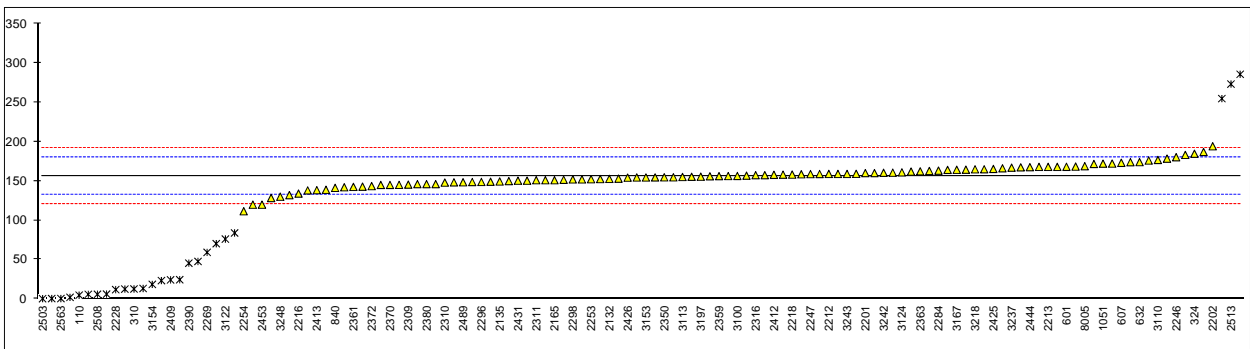
## Determination of total Lead as Pb in sample #13151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	4.47586	ex	-12.99	2316	IEC62321	157.4		0.08
213	CPSC-CH-E1002-08.1	<10	False -?	<-12.52	2320	IEC-CH-E1002-08.2	5.85	ex	-12.87
310	IEC62321	175	C	1.58	2350	IEC62321	154.7		-0.15
324	IEC62321	184.79		2.42	2359	EPA3052	156.2		-0.02
330	in house	<10	False -?	<-12.52	2361	EPA3051	142.5		-1.19
339	INH-344	24.2	ex	-11.30	2363	IEC62321	162.32		0.50
362	EN1122	132		-2.09	2365	IEC62321	160.1		0.31
551	IEC62321	12.27	C,ex	-12.32	2366	IEC62321	165.0		0.73
601	IEC62321	168.1		0.99	2370	IEC62321	145		-0.98
605	IEC62321	162.0		0.47	2372	IEC62321	143.5		-1.11
607	IEC62321	173.2		1.43	2375	IEC62321	145.08		-0.97
622	in house	70.1	G(0.01)	-7.38	2379	IEC62321	119.83		-3.13
632	INH-003	174.1		1.51	2380	EPA3052	146		-0.90
826	IEC62321	145		-0.98	2385	in house	<1	False -?	<-13.29
840	IEC62321	141.24		-1.30	2390	CPSC-CH-E1002-08	45.326	G(0.05)	-9.50
1051	CPSC-CH-E1002-08.3	172.10		1.33	2406	ASTM F963	138.084		-1.57
1126	in house	159		0.22	2409	EPA3052	24.0	C,ex	-11.32
2115		-----		-----	2410	IEC62321	153		-0.30
2129	EN1122	5.57	C,ex	-12.90	2412	CPSC-CH-E1002	157.9		0.12
2132	in house	152.66		-0.33	2413	in house	138.33	C	-1.55
2135	DIN54233	149.4		-0.61	2415	IEC62321	146.0		-0.90
2139	IEC62321	172.2		1.34	2425	EPA3052	165.4		0.76
2146		-----		-----	2426	CPSC-CH-1002-8.3	154.26		-0.19
2156	IEC62321	138.8		-1.51	2429	EPA3052	155.4		-0.09
2165	EN62321	151.0		-0.47	2431	INH-019	150.3983		-0.52
2167	IEC62321	83.79	G(0.01)	-6.21	2432	in house	142.80		-1.17
2169	IEC62321	168		0.98	2441	IEC62321	162.8		0.54
2172	IEC62321	166.2		0.83	2442		-----		-----
2175	EPA3052	128.32	C	-2.41	2444	IEC62321	167.64		0.95
2176	in house	149.1		-0.63	2445		-----		-----
2177		-----		-----	2451	IEC62321	n.d.	False -?	-----
2179	IEC62321	154.5		-0.17	2453	CPSC-CH-E1002-08.1	119.84		-3.13
2182	in house	149.9		-0.56	2475		-----		-----
2184	EN62321	151.58		-0.42	2482	ASTM E1645	0.16	ex	-13.36
2186	in house	146		-0.90	2489	IEC62321	148.4		-0.69
2190	in house	150.4		-0.52	2492	in house	157.46		0.08
2196	IEC62321	151		-0.47	2493		-----		-----
2197		-----		-----	2500	EPA3052	168.375		1.02
2199	EPA3052	152.5		-0.34	2503	CPSC-CH-E1002-08.3	0.022	C,ex	-13.37
2201	IEC62321	160.1		0.31	2508	CPSC-CH-E1002-08.1	5.64	ex	-12.89
2202	in house	194.3		3.23	2511	CPSC-CH-E1002-08	<10	False -?	<-12.52
2212	in house	159.0		0.22	2513	in house	273.5	G(0.01)	10.00
2213	IEC62321	168		0.98	2515		-----		-----
2215	EPA3051	176.1		1.68	2529		-----		-----
2216	IEC62321	134		-1.92	2553	in house	n.d.	False -?	-----
2218	CPSC-CH-E1002-08.1	158.21		0.15	2557	IEC62321	171.7		1.30
2225	CPSC-CH-E1002	158.9		0.21	2563	EN1122	0.2	ex	-13.35
2226	EPA3051/6010	158.6		0.18	2564	CPSC-CH-E1002-08.1	<20	False -?	<-11.66
2228	CPSD-AN-00065	11.5625	C,ex	-12.38	2568		-----		-----
2229	IEC62321	164.42		0.68	3100	IEC62321	156.4		-0.01
2234	CPSC-CH-E1002	160.6		0.35	3104		-----		-----
2236		-----		-----	3107	in house	1.7	ex	-13.23
2246	in house	180.33		2.04	3110	CPSC-CH-E1002-08.2	176.83		1.74
2247	IEC62321	158.8		0.20	3113	in house	155.1		-0.12
2251	IEC62321	286	G(0.01)	11.07	3116	CPSC-CH-E1002-08.1	167.4		0.93
2253	EPA3052	152.3		-0.36	3122	in house	76	C,G(0.01)	-6.88
2254	in house	111.5		-3.84	3124	EPA3052	161		0.39
2255	EPA3052	148.7		-0.66	3127	DIN22022	<1.60	False -?	<-13.23
2256	CPSC-CH-E1002-08.3	178.5		1.88	3146	EN11885	187		2.61
2258		-----		-----	3153	IEC62321	154.5		-0.17
2259	IEC62321	148.3		-0.70	3154		18.23	C,ex	-11.81
2264	CPSC-CH-E1002Mod	164.19		0.66	3160	CPSC-CH-E1002-08.1	142.02		-1.24
2268	in house	156.8		0.03	3163	in house	255	G(0.01)	8.42
2269	in house	59.019	G(0.01)	-8.33	3166	INH-7040	168		0.98
2279	CPSC-CH-E1002	156.3		-0.02	3167	IEC62321	164.3		0.67
2284	EPA3052	163.2		0.57	3169	CPSC-CH-E1002-08.1	159.14		0.23
2289	IEC62321	47.5	G(0.01)	-9.31	3172	in house	23.1	C,ex	-11.40
2290	IEC62321	154.6		-0.16	3182	IEC62321	154.7	C	-0.15
2293	CPSC-CH-E1001-08.3	13.040	ex	-12.26	3185	IEC62321	156		-0.04
2296	INH-38	148.761		-0.66	3190	IEC62321	183.2		2.28
2298	CPSC-CH-E1002-08.3	152.00		-0.38	3197	in house	155.5		-0.08
2303		-----		-----	3199	EPA3051	<2.00	False -?	<-13.20
2309	IEC62321	145.40		-0.95	3210	ISO17072	<25	False -?	<-11.24
2310	EPA3052	148		-0.72	3218	IEC62321	164.9		0.72
2311	EPA3052	151		-0.47	3220	EPA3050B	n.d.	False -?	-----



3225	in house	158.08		0.14
3228	IEC62321	152		-0.38
3237	in house	167.00	C	0.90
3242	in house	160.50		0.34
3243	DIN62321	159		0.22
3246	IEC62321	174.0		1.50
3248	CPSC	130	C	-2.26
8005	in house	168.9		1.06
normality		OK		
n		108		
outliers		9	+ 15 excl	
mean (n)		156.480		
st.dev. (n)		13.8658		
R(calc.)		38.824		
R(Horwitz)		32.767		

- Lab 310: first reported 12.41
- Lab 551: first reported 4.24
- Lab 632: first reported 6.728
- Lab 2129: first reported 4.48
- Lab 2175: first reported 7.93
- Lab 2228: first reported 5.0125
- Lab 2409: first reported 5.8
- Lab 2413: first reported 12.05
- Lab 2503: first reported 0.02
- Lab 3122: first reported 65
- Lab 3154: first reported 1.24
- Lab 3172: first reported <10
- Lab 3182: first reported <2
- Lab 3237: first reported 18.77
- Lab 3248: first reported <10

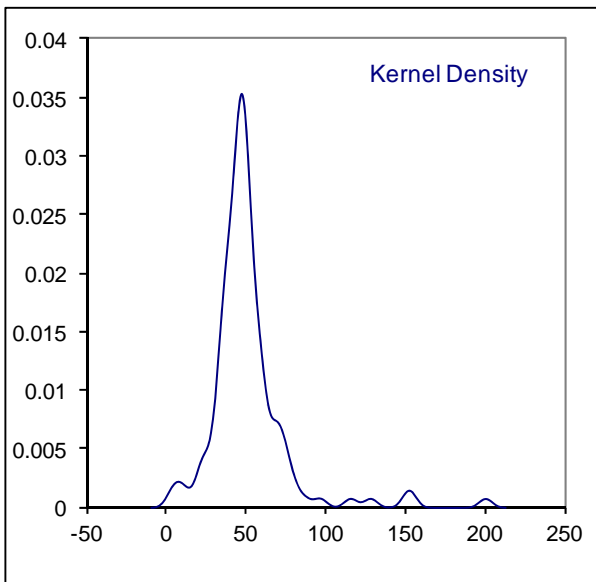
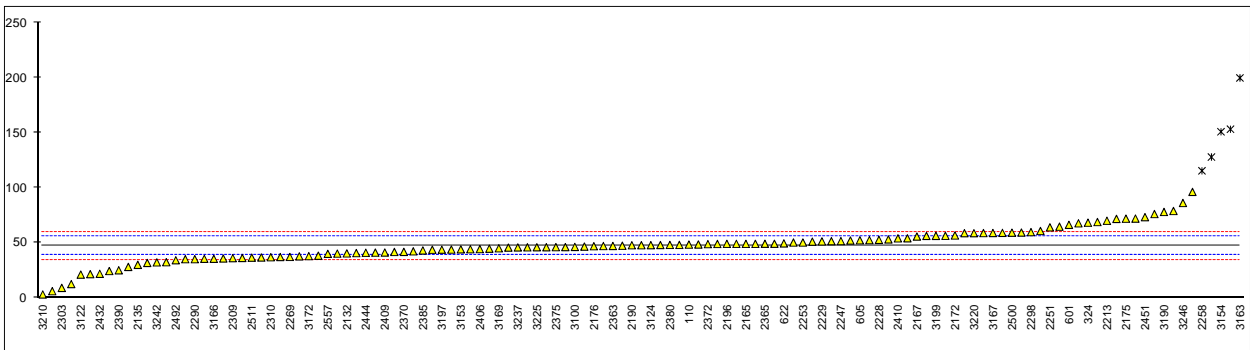


## Determination of Mercury as Hg on sample #13151; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	48.3034		0.25	2316	IEC62321	47.9		0.15
213		----		----	2320		----		----
310	IEC62321	56.0		2.07	2350	IEC62321	54.02		1.60
324	IEC62321	68.243		4.96	2359	EPA3052	43.8		-0.82
330	in house	35.4		-2.80	2361	EPA3051	40.1		-1.69
339	INH-344	35.68		-2.73	2363	IEC62321	47.07		-0.04
362		----		----	2365	IEC62321	49.1		0.44
551	IEC62321	21.42	C	-6.10	2366	IEC62321	49.1		0.44
601	IEC62321	66.3		4.50	2370	IEC62321	41.7		-1.31
605	IEC62321	52.2		1.17	2372	IEC62321	48.72		0.35
607	IEC62321	67.7		4.83	2375	IEC62321	45.99		-0.30
622	in house	49.4		0.51	2379	IEC62321	36.98		-2.43
632	INH-003	56.33		2.15	2380	EPA3052	48		0.18
826	IEC62321	59		2.78	2385	in house	43		-1.00
840	IEC62321	43.62		-0.86	2390	CPSC-CH-E1002-08	24.923		-5.28
1051		----		----	2406	ASTM F963	44.188		-0.72
1126		----		----	2409	EPA3052	41.1		-1.45
2115	DIN54233	37.600		-2.28	2410	IEC62321	54		1.59
2129	EN1122	72.00		5.85	2412	CPSC-CH-E1002	41.6		-1.34
2132	in house	40.31		-1.64	2413	in house	n.d		----
2135	DIN54233	29.9		-4.10	2415	IEC62321	58.79		2.73
2139	IEC62321	58.7		2.71	2425	EPA3052	31.6		-3.70
2146		----		----	2426		----		----
2156	IEC62321	5.9	C	-9.77	2429	EPA3052	48.4		0.27
2165	EN62321	49.0		0.41	2431	INH-019	40.5691		-1.58
2167	IEC62321	55.63		1.98	2432	in house	21.73		-6.03
2169	IEC62321	78.9		7.48	2441	IEC62321	46.5		-0.18
2172	IEC62321	56.62		2.21	2442		----		----
2175	EPA3052	71.90		5.83	2444	IEC62321	40.88		-1.51
2176	in house	46.8		-0.11	2445		----		----
2177		----		----	2451	IEC62321	73.30		6.16
2179	IEC62321	44.6		-0.63	2453		----		----
2182	in house	38.2		-2.14	2475		----		----
2184	EN62321	47.74		0.12	2482	ASTM E1645	36.10		-2.64
2186	in house	<det.lim		----	2489	IEC62321	45.60		-0.39
2190	in house	47.7		0.11	2492	in house	34.09		-3.11
2196	IEC62321	49		0.41	2493		----		----
2197		----		----	2500	EPA3052	59.1674		2.82
2199	EPA3052	<5		----	2503	CPSC-CH-E1002-08.3	24.22		-5.44
2201	IEC62321	50.2		0.70	2508	CPSC-CH-E1002-08.1	52.380		1.21
2202		----		----	2511	in house	36.4	C	-2.56
2212	in house	60.7		3.18	2513	CPSC-CH-E1002-08	153.3	G(0.01)	25.06
2213	IEC62321	70		5.38	2515		----		----
2215	EPA3051	56.2		2.11	2529	CPSC-CH-E1002-08.3	96.3		11.59
2216	IEC62321	53		1.36	2553		----		----
2218		----		----	2557	IEC62321	39.9	C	-1.74
2225	INH-022	44.1		-0.74	2563		----		----
2226	EPA3051/6010	36.6		-2.52	2564		----		----
2228	CPSD-AN-00065	52.6125		1.27	2568		----		----
2229	IEC62321	51.24		0.94	3100	IEC62321	46.2		-0.25
2234	IEC62321	49.0		0.41	3104		----		----
2236		----		----	3107	in house	45.9		-0.32
2246		----		----	3110	CPSC-CH-E1002-08.2	76.10		6.82
2247	IEC62321	51.50		1.00	3113		----		----
2251	IEC62321	64		3.96	3116		----		----
2253	EPA3052	50.2		0.70	3122	in house	21	C	-6.20
2254	in house	32.3		-3.53	3124	EPA3052	47.8		0.13
2255	EPA3052	35.0		-2.90	3127		----		----
2256	EPA3052	59.3		2.85	3146	EN1483	71.7		5.78
2258	CPSD-AN-164	115.46	G(0.01)	16.12	3153	IEC62321	44.0		-0.77
2259	IEC62321	48.87		0.38	3154		151.0	C,G(0.01)	24.52
2264	CPSC-CH-E1002Mod	12.37		-8.24	3160	CPSC-CH-E1002-08.1	68.83		5.10
2268	in house	42.16		-1.20	3163	in house	200	G(0.01)	36.10
2269	in house	37.046		-2.41	3166	INH-7040	35.4		-2.80
2279	CPSC-CH-E1002	45.8		-0.34	3167	IEC62321	58.87		2.75
2284	EPA3052	52.01		1.12	3169	EPA3052	44.95		-0.54
2289	IEC62321	47.0		-0.06	3172	in house	37.8		-2.23
2290	IEC62321	35.01		-2.89	3182	IEC62321	49.0		0.41
2293		----		----	3185	IEC62321	46		-0.30
2296	INH-38	47.256		0.00	3190	IEC62321	78.0		7.27
2298	CPSC-CH-E1002-08.3	59.66		2.93	3197	in house	43.7		-0.84
2303	in house	8.92		-9.06	3199	EPA3051	56.26		2.13
2309	IEC62321	36.0		-2.66	3210	ISO17072	2.93		-10.47
2310	EPA3052	36.8		-2.47	3218	IEC62321	51.0		0.89
2311	EPA3052	41		-1.48	3220	EPA3050B	58.7		2.71

3225	in house	45.86		-0.33
3228	IEC62321	48		0.18
3237	in house	45.71		-0.36
3242	in house	32.10		-3.58
3243	DIN62321	128	C,G(0.01)	19.08
3246	IEC62321	86.2		9.20
3248	IEC62321	28	C	-4.55
8005	in house	51.4		0.98
normality		not OK		
n		122		
outliers		5		
mean (n)		47.251		
st.dev. (n)		14.9470		
R(calc.)		41.852		
R(Horwitz)		11.848		

Lab 310: first reported 64.64  
 Lab 551: first reported 5.1  
 Lab 632: first reported 1.55  
 Lab 2156: first reported 15.9  
 Lab 2511: first reported 14.9  
 Lab 2557: first reported 96.2  
 Lab 3122: first reported 30  
 Lab 3154: first reported 123.0  
 Lab 3243: first reported 87  
 Lab 3248: first reported 100



**APPENDIX 2;****Analytical details regarding Mercury determination**

lab	milled	Particle size	Analysis Techniques	Reducing agent
110	no	<3mm	ICP-OES	
213	no		ICP-MS	
310	no	none	ICP-MS	
324	yes	<500 µm	CV-AAS/ICP-OES	SnCl <sub>2</sub>
330	no	no pretreatment	ICP-OES	
339	no	around 1mm	CV-AAS	SnCl <sub>2</sub>
362				
551	yes		ICP-OES/ICP-MS	
601	no	<1mm	ICP-OES	
605	no	<1mm	ICP-OES	
607	no	<1mm	ICP-OES	
622	no	<1mm	CV-AAS	H <sub>2</sub> SO <sub>4</sub> +HNO <sub>3</sub>
632	no	<1mm	ICP-OES	
826	no	no		
840				
1051				
1126	no		ICP-OES	
2115	no	<1mm	ICP-OES	
2129	no		ICP-MS	
2132	no		ICP-OES	
2135	no	<500 µm	ICP-OES	
2139	yes	<1mm	ICP-OES	
2146				
2156	yes	<1mm	ICP-OES	
2165	yes	<500 µm	ICP-OES/AAS	
2167	yes		CV-AAS	25% v/v SnCl <sub>2</sub> in 20% v/v HCL
2169	no		ICP-OES	
2172	no		ICP-OES	
2175	no	<2mm	ICP-OES	Sodium Borohydrite+NaOH
2176	no	1-2mm	ICP-OES	
2177				
2179	yes	<500 µm	ICP-OES	
2182	yes		ICP-OES	
2184	no		ICP-OES	
2186				
2190	no		ICP-OES	
2196	no		ICP-OES	
2197				
2199				
2201	no	1mm	ICP-OES	
2202	no		ICP-OES	
2212	no		ICP-OES	
2213	no	<2mm	ICP-MS	
2215	yes	<1mm	ICP-OES	
2216	yes	<250 µm	ICP-MS	
2218				
2225	no	±2mm	ICP-OES	
2226			ICP-OES	
2228				
2229		<1mm	ICP-OES	
2234	no	as received	ICP-OES	
2236		cut in smaller pieces	ICP-OES	
2246				
2247	yes	<500 µm	ICP-OES	
2251	no		CV-AAS (AVG detector)	3% (m/v) NaBH <sub>4</sub> in 1% (m/v) NaOH
2253	no	<500 µm	ICP-OES	
2254	yes	<1mm	ICP-OES	
2255	no	approx. 1mm	ICP-OES	
2256	no		ICP-OES	
2258	no		ICP-OES	
2259	no		ICP-MS	
2264	yes	<1mm	EAA	
2268	no	<2mm	ICP-OES	
2269	no	1mm	ICP-OES	
2279	no	<2mm	ICP-OES	
2284	no	<1mm	ICP-OES	
2289	no		ICP-OES	
2290				
2293				
2296	no	as received	ICP-OES	
2298	yes		ICP-OES	
2303	no	<1mm	ICP-MS	
2309	yes	<500µm	ICP-OES	

2310	no	5mm	ICP-MS	
2311	no	<5mm	ICP-MS	
2316	yes	<250µm	ICP-OES	
2320				
2350	no		ICP-OES	
2359	no		ICP-OES	
2361	yes	<500µm	ICP-OES	
2363	no	<2mm*2mm*2mm	ICP-OES	
2365	no	<1000µm	CV-AAS/ICP-OES	none
2366	no	<500µm	DMA	
2370	yes	<500µm	ICP-OES	
2372	yes	<250µm	ICP-OES	
2375	yes	<500 µm	ICP-MS	
2379	no	<500µm	Mercury analyzer	
2380	no		ICP-OES	
2385	yes	<500µm	CV-AAS	SnCl2
2390	no	crushed	ICP-OES	
2406	no		ICP-OES	
2409		2mm*2mm	ICP-MS	
2410	no		ICP-OES	
2412	no	around 2mm	ICP-OES	
2413	no		ICP-OES	
2415	no	<1mm	ICP-OES	
2425	no		ICP-OES	
2426				
2429	yes	<1mm	ICP-OES	
2431	no		ICP-MS	
2432	no		ICP-MS	
2441	yes	<500µm	ICP-MS	
2442				
2444	no		ICP-OES	
2445				
2451	no	<2mm	ICP-OES	
2453				
2475				
2482	no	as received	CV-AAS	SnCl2
2489	yes	<500 µm	ICP-MS	
2492	no		CV-AAS	Sodium Borohydride
2493				
2500	yes	<1mm	ICP-OES	
2503	no	<3mm	ICP-OES	
2508	no	as received	ICP-OES	
2511				
2513				
2515				
2529	no		ICP-OES	
2553				
2557	yes	<1mm	CV-AAS	SnCl2
2563				
2564				
2568				
3100	yes	<250µm	ICP-OES	
3104				
3107	no		ICP-OES	
3110	no	<2 mm	ICP-OES	
3113				
3116				
3122	no	<1 mm	ICP-OES	
3124	no	not reduced	ICP-MS	
3127				
3146	no		CV-AAS	SnCl2
3153	yes	<250µm	ICP-OES	
3154				
3160	no		ICP-OES + VGA	SnCl2 25%
3163			XRF	
3166	yes	not determined	ICP-MS	
3167	yes	<500µm	ICP-OES	
3169				
3172	no		ICP-OES	
3182	yes	<500µm	ICP-OES	
3185	no			
3190	no		ICP-OES	
3197	no		ICP-OES	
3199	no		ICP-OES	
3210	no		CV-AFS	SnCl2
3218	yes	<500µm	ICP-OES	
3220	no	<1mm	ICP-MS	
3225	no	<2mm	ICP-OES	

3228	yes	<1mm	ICP-OES	
3237	no		ICP-MS	
3242	no	as received	ICP-OES	
3243	yes	<2mm	CV-AAS	NaBH4
3246	no	<1 mm	ICP-OES	
3248	yes	<500µm	ICP-OES/ICP-MS	
8005	no	as received	ICP-OES	

## Analytical details regarding Hexavalent Chromium determination

lab	milled	Particle size	Extraction solution
110	no	<1mm	sodium carbonaat mix
213			
310	no		
324			
330			
339	no	2mm	NaOH + Na <sub>2</sub> CO <sub>3</sub>
362			
551			alkaline solution
601	no	<250 µm	alkaline solution
605	no	250 µm	alkaline solution
607	no	<250 µm	alkaline solution
622	no	<1mm	alkaline solution (NaOH+Na <sub>2</sub> CO <sub>3</sub> )
632	no	<1mm	NaOH+Na <sub>2</sub> CO <sub>3</sub>
826	yes	<1mm	alkaline solution (NaOH+Na <sub>2</sub> CO <sub>3</sub> )
840			
1051			
1126	no		5 ml HNO <sub>3</sub> + 1 ml HCl + 1 ml H <sub>2</sub> O <sub>2</sub>
2115			
2129	yes	<1mm	K <sub>2</sub> HPO <sub>4</sub> buffer
2132	yes	<500 µm	0.28 M Na <sub>2</sub> CO <sub>3</sub> / 0.5 M NaOH
2135	no	< 500 µm	
2139	yes	<1mm	NaOH, Na <sub>2</sub> CO <sub>3</sub> , MgCl <sub>2</sub> , Phosphate buffer
2146			
2156	yes	<1mm	alkaline
2165	yes	<500 µm	NaOH+Na <sub>2</sub> CO <sub>3</sub> mixture
2167	yes		NaOH+Na <sub>2</sub> CO <sub>3</sub>
2169	yes	<250 µm	NaOH+Na <sub>2</sub> CO <sub>3</sub>
2172	yes	<250 µm	NaOH+Na <sub>2</sub> CO <sub>3</sub> in water
2175	no	<2mm	alkaline solution
2176			
2177	yes	no	alkaline solution
2179	yes	<500 µm	NaOH, Na <sub>2</sub> CO <sub>3</sub> , MgCl <sub>2</sub>
2182			
2184	yes		NaOH+Na <sub>2</sub> CO <sub>3</sub>
2186			
2190	no		NaOH+Na <sub>2</sub> CO <sub>3</sub>
2196	yes		NaOH+Na <sub>2</sub> CO <sub>3</sub>
2197			
2199			
2201	yes	<500 µm	NaOH+Na <sub>2</sub> CO <sub>3</sub>
2202	no		chlorobenzene, toluene, NMP, alkaline digestion.
2212	no		20 g NaOH+ 30 g Na <sub>2</sub> CO <sub>3</sub> in 1 L
2213			
2215	yes	<500 µm	NaOH+Na <sub>2</sub> CO <sub>3</sub>
2216	yes	<250 µm	NaOH+Na <sub>2</sub> CO <sub>3</sub>
2218			
2225			
2226			
2228			
2229		<1mm	
2234			
2236			
2246			
2247	yes	<500 µm	50 ml digestion solution , 0.5 ml phosphate buffer
2251			
2253			
2254			
2255	no	approx. 1mm	phosphate buffer, digestion solution, 5 M HNO <sub>3</sub>
2256			
2258	no		
2259			
2264		-	
2268			
2269			
2279			
2284	yes	<1mm	0.28 mol/l Na <sub>2</sub> CO <sub>3</sub> / 0.5 mol/l NaOH
2289	no		
2290	no	<1mm	NaOH + Na <sub>2</sub> CO <sub>3</sub>
2293			
2296	no	as received	0.28 M Na <sub>2</sub> CO <sub>3</sub> + 0.5 M NaOH
2298			
2303			
2309	yes	<500µm	K <sub>2</sub> HPO <sub>4</sub> +KH <sub>2</sub> PO <sub>4</sub>
2310			

2311			
2316	yes	<250µm	20.0 gr NaOH+30 gr Na2CO3 in 1 L + 0.4 g MgCl2 + 0.5 ml phosphatebuffer
2320			
2350	yes	<1mm	NaOH + Na2CO3
2359	yes	<500µm	20.0 g/L NaOH+30 g/L Na2CO3+400 mg MgCl2+ 0.5 ml 1.0 M phoshate buffer
2361	yes	<500µm	NaOH + Na2CO3
2363	yes	<250µm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
2365	no	<500µm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
2366	yes	500µm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
2370	yes	<500µm	NaOH + Na2CO3
2372	yes	<250µm	NaOH + NaCO3 + MgCL2
2375	yes	<500 µm	digestion solution
2379	no	<500µm	alkaline digestion solution
2380			
2385	yes	<500µm	according 3060A
2390		crushed	alkaline solution of 0.4 gram MgCl2+50 ml digestion sol.+ 0,5 phosphate buffer
2406	no	<2mm	alkaline digestion solution with phosphate buffer
2409	-	2mm*2mm	NaOH + Na2CO3
2410			
2412			
2413	no		
2415	no	<1mm	20.0 gr NaOH+30 gr Na2CO3 in 1L water
2425	no		NaOH + Na2CO3
2426			
2429			
2431			
2432	no		
2441	yes	<500µm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
2442			
2444	yes	<500µm	NaOH + Na2CO3
2445			
2451			
2453			
2475			
2482			
2489	yes	<500 µm	50ml digestion solution + 0.5 ml phosphate buffer
2492			
2493			
2500	yes	<1mm	NaOH + Na2CO3 solution, pH>11.5
2503			
2508	no		sweat solution
2511			
2513			
2515			
2529			
2553			
2557	yes	<500µm	alkaline extraction
2563			
2564			
2568	yes	<1mm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
3100	yes	<250µm	IEC62321:2008
3104			
3107			
3110			
3113			
3116			
3122			
3124			
3127			
3146	yes	<500µm	NaOH + Na2CO3 + K2HPO4+ KH2PO4
3153	yes	<250µm	NaOH + Na2CO3, MgCl2, Phosphate buffer
3154			
3160			
3163			
3166	yes	not determined	20.0 gr NaOH+30 gr Na2CO3 in 1 L water
3167	yes	<500µm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
3169			
3172			
3182	yes	<500µm	According to IEC62321 Annex C
3185	yes	<250µm	alkaline extraction solution
3190	yes	<500µm	0.5 mol/l NaOH + 0.28 mol/l Na2CO3
3197	no		alkaline digestion solution
3199			
3210			
3218	yes	<500µm	NaOH + Na2CO3
3220	no	<1mm	NaOH + Na2CO3
3225			
3228	yes	<500µm	20.0 g/L NaOH+30 g/L Na2CO3



3237	no		
3242	no	as received	alkaline digestion
3243	yes	<2mm	NaOH/Na <sub>2</sub> CO <sub>3</sub> pH 11.5
3246	no	<1 mm	NaOH + Na <sub>2</sub> CO <sub>3</sub> , pH>11.5
3248	yes	<500µm	0.5M K <sub>2</sub> HPO <sub>4</sub> /0.5 M KH <sub>2</sub> PO <sub>4</sub> @ pH 7.0
8005			

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

5 labs in BANGLADESH  
1 lab in BELGIUM  
2 labs in BRAZIL  
1 lab in BULGARIA  
1 lab in DENMARK  
1 lab in FINLAND  
5 labs in FRANCE  
12 labs in GERMANY  
2 labs in GUATEMALA  
21 labs in HONG KONG  
1 lab in HUNGARY  
9 labs in INDIA  
2 labs in INDONESIA  
2 labs in ITALY  
5 labs in JAPAN  
5 labs in KOREA  
4 labs in MALAYSIA  
1 lab in MEXICO  
1 lab in MOROCCO  
30 labs in P.R. of CHINA  
2 labs in PAKISTAN  
1 lab in PERU  
1 lab in PHILIPPINES  
1 lab in PORTUGAL  
3 labs in SINGAPORE  
2 labs in SPAIN  
2 labs in SRI LANKA  
1 lab in SWEDEN  
2 labs in TAIWAN R.O.C.  
6 labs in THAILAND  
3 labs in THE NETHERLANDS  
1 lab in TUNESIA  
3 labs in TURKEY  
11 labs in U.S.A.  
3 labs in UNITED KINGDOM  
5 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
n.a.	= not applicable
n.d.	= not detected
W	= withdrawn
Fr.	= first reported result

### Literature:

- 1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, January 2010
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