Results of Proficiency Test
Metals in Plastics
September 2012

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. R.J. Starink & dr. R.G. Visser
Correctors: ing. N. Boelhouwer

Report: iis12P02

October 2012

- - - empty page - - -

CONTENTS

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 2012, 156 laboratories from 35 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 #12080 and #12081), 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 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on ISO guide 43, ILAC-G13:2007 and ISO/IEC 17043:2010. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant’s data. Also, customer’s satisfaction is measured on a 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.

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 190 plastic bags, with approximately 5 grams per sample. The homogeneity of the subsamples #12080 was checked by determination of Cadmium according EN1122:01 on 8 stratified randomly selected subsamples.

	Cadmium in #12080 in mg/kg
Sample 1	233
Sample 2	224
Sample 3	231
Sample 4	228
Sample 5	226
Sample 6	223
Sample 7	230
Sample 8	229

Table 1: homogeneity test results of subsamples #12080

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 #12080 in mg/kg
r (observed)	9.7
reference method	EN1122:01
0.3 x R (reference method)	17.1

Table 2: relative standard deviations for the subsamples #12080 and #12081

The second material, also polypropylene granulate, was used before in a previous proficiency test (iis09P02, sample #0950).
The homogeneity of this batch was confirmed in proficiency test iis09P02 as the observed reproducibility (of the group of laboratories that used EN1122) was in full agreement with the EN1211:01 target reproducibility (9.6 vs. 9.4 mg/kg).

The homogeneity of all subsamples was assumed. To each of the participating laboratories one set of samples, (1* sample #12080 and 1* sample #12081) was sent on August 15, 2012.

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 fax 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:

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

The $z_{(target)}$ 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:

$\lvert z \rvert < 1$	good
$1 < \lvert z \rvert < 2$	satisfactory
$2 < \lvert z \rvert < 3$	questionable
$3 < \lvert z \rvert$	unsatisfactory

4 EVALUATION

In this interlaboratory study some problems were encountered with the dispatch of the samples. Thirty-one participants reported the results after the final reporting date and seven participants did not report any results at all due to several reasons. Not all laboratories were able to report all analytes requested.
Finally, the 149 reporting laboratories submitted 1170 numerical results. Observed were 45 outlying results, which is 3.7% of all reported numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

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	141	219.9	43.4	55.0
Total Chromium as Cr	mg/kg	122	30.2	13.7	8.1
Hexavalent Chromium (VI) as Cr	mg/kg	75	12.4	16.7	3.8
Total Lead as Pb	mg/kg	139	312.8	64.4	59.0
Total Mercury as Hg	mg/kg	120	66.3	42.4	15.8

Table 3: performance overview for sample #12080

Parameter	unit	n	Average	2.8 * sd	R (target)*
Total Cadmium as Cd	mg/kg	142	37.9	8.0	9.5
Total Chromium as Cr	mg/kg	121	69.6	13.9	16.5
Hexavalent Chromium (VI) as Cr	mg/kg	64	5.2	8.2	(1.8)
Total Lead as Pb	mg/kg	139	266.9	45.3	51.6
Total Mercury as Hg	mg/kg	58	3.4	4.1	(1.3)

Table 4: performance overview for sample #12081

*) For a reproducibility between brackets the evaluation should be used with care as the consensus value is near the detection limit.

Without further statistical calculations, it can be concluded that there is are good compliances of the group of participating laboratories with the relevant target reproducibility for total Cd, total Cr and total Pb for sample #12080 and sample #12081.

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.
Five of the reported seven test results (=71%) reported by laboratory 2115 and six of the eight reported test results (=75%) reported by laboratory 2503 appeared to be statistical outliers and because all test results of one laboratory are correlated, the remaining test results of laboratories 2115 and 2503 were excluded manually prior to the statistical analysis. Also for laboratory 3210 four test results were excluded from statistical evaluation as the other six reported results appeared to be false negative test results.

Identification: The identification of the plastic types used for the samples was reported by a limited number of laboratories, 32 in total. The majority of the laboratories used IR or FTIR.
The identification of samples #12080 and #12081 was not problematic. All 32 laboratories did identify correctly both materials to be polypropylene (PP).

Total Cadmium: This determination was problematic for a number of laboratories. For both samples, in total nine statistical outliers and one false negative test result were observed.
For sample #12080, the calculated reproducibility after rejection of five statistical outliers, is in good agreement with the requirements of EN1122:01.
For sample #12081, the calculated reproducibility after rejection of four statistical outliers, is in good agreement with the requirements of EN1122:01.

Total Chromium: This determination was problematic for a number of participants. For both samples, in total nine statistical outliers and one false negative result were observed.
For sample #12080 the calculated reproducibility, after rejection of four statistical outliers, is not at all in agreement with the estimated reproducibility limit calculated using the Horwitz equation.
For sample #12081 the calculated reproducibility, after rejection of five statistical outliers, is in full agreement with the estimated reproducibility limit calculated using the Horwitz equation.

Chromium VI: This determination was very problematic.
For sample #12080 the calculated reproducibility, after rejection of one statistical outlier and exclusion of one laboratory (see §4.1), is not at all in agreement with the estimated reproducibility limits calculated using the Horwitz equation.
The chemical, that was used to add approx. 35 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 #12080 and they agreed on a result of approx 12.4 mg/kg. However, none of the participants reported a test result near 30-35 mg/kg, being in agreement with the assigned value of total Chromium for sample #12080 (30.2 mg/kg) and

with the theoretical amount of 35 mg/kg. Therefore it was decided to use 12.4 mg/kg as assigned value for calculation of the z-scores. This value is supported by test results of 96% of the reporting laboratories.

For sample #12081 the calculated reproducibility, after rejection of four statistical outliers and exclusion of one laboratory (see §4.1), 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 Lead chromate ($PbCrO_4$). Therefore, the hexavalent Chromium content should in principle be equal to the total Chromium content. The majority (94%) of the reporting laboratories did **not** (**!**) detect Chromium VI in sample #12081. 64 laboratories reported a numerical test results and they agreed on a result of approx 5.2 mg/kg. However, three participants reported a result of approx 66 mg/kg, being in good agreement with the assigned value of the total Chromium for sample #12081 (69.6 mg/kg) and with the theoretical amount of 75 mg/kg. Although 66 mg/kg (n=3) may be a more traceable (more true) value than 5.2 mg/kg (n=64), it was decided to use 5.2 mg/kg as assigned value, because this lower value (near or below the limit of detection) was supported by 94% 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 a number of participants. For both samples, in total seven statistical outliers and two false negative test results were observed.
For sample #12080 the calculated reproducibility after rejection of four statistical outliers, is (almost) in agreement with the estimated reproducibility limits calculated using the Horwitz equation.
For sample #12081 the calculated reproducibility, after rejection of three statistical outliers, is in good agreement with the estimated reproducibility limits calculated using the Horwitz equation.

Total Mercury: This determination was very problematic. For both samples, in total fourteen statistical outliers and one false negative test result were observed.
For sample #12080 the calculated reproducibility, after rejection of eight statistical outliers, is not at all in agreement with the estimated reproducibility calculated using the Horwitz equation.
For sample #12081 the Mercury content was near of below the application range of the method. Therefore no significant conclusions were drawn.

4.3 EVALUATION OF THE METHODS USED

The reported details for the determination of mercury and chromium VI of the methods that were used by the participants are listed in appendix 2.

No digestion problems were observed for each of the polypropylene samples. Several participants mentioned some small black spots to be present on sample #12081. These black spots were caused by local burning of the material during the production (repetitive melting to get a homogeneous material). However, the calculated reproducibilities of Cadmium, Chromium and Lead are all in good agreement with the target reproducibilities. Therefore it can be concluded that the black spots did not influence the quality of the reported test results.

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 60 participants (41% of all) used a version of EN1122. No clear correlation between the method used and the quality of the results could be found. Only two laboratories did use XRF for the determination of cadmium. Thus no significant conclusions could be drawn about the quality of the XRF test results.

For the determination of total Chromium in plastics, test method IEC62321 is available, regretfully without precision data. In this interlaboratory study, the majority of the group used the IEC62321 or EPA 3050, 3051 or EPA 3052 methods. Two participants reported to have used EN1122, which is only applicable for Cadmium. Nine participants used CPSD-CH-E1002-08 and two participants used XRF. 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, regretfully without precision data. The method is based on EPA 3060A and EPA 7196. In this interlaboratory study, 58 laboratories used this method and almost all other participants reported to have used EPA 3060A or an in house method. The test method for Chromium VI 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, extraction technique and extraction conditions) were requested to be reported (see appendix 2).
It is remarkable to see that several laboratories (26) 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 Cr VI concentration as was done in the previous PT iis11P02. Remarkably this time no correlation was observed. The reason for this is not clear.

For the determination of total Lead in plastics, test method IEC62321 is available, regretfully 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, regretfully 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 149 in this round. The percentage of outliers decreased over the years from 10.3% in 2005 to 3.7% of the numerical results in 2012.

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	50-100 mg Pb/kg	50-250 mg Cr/kg	50-250 mg Cr VI/kg	5-25 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%
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 #12081 was used in a previous PT iis09P02 as sample #0950. When the assigned value of both PTs are compared the resemblance is stricking, see below table

	unit	Average		2.8 * sd		R (target)*
		#0950	#12081	#0950	#12081	
Total Cadmium as Cd	mg/kg	37.3	37.9	10.4	8.0	9.5
Total Chromium as Cr	mg/kg	67.5	69.6	18.3	13.9	16.5
Chromium VI as Cr	mg/kg	8.5	5.2	42.6	8.2	(1.8)
Total Lead as Pb	mg/kg	268.2	266.9	74.1	45.3	51.6
Total Mercury as Hg	mg/kg	2.7	3.4	2.8	4.1	(1.3)

Table 6: comparison of samples #0950 and #12081

*) For a reproducibility between brackets the evaluation should be used with care as the consensus value is near the detection limit.

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 and chromium in plastic has improved to a satisfactory level. The determinations of mercury and chromium VI obviously still require improvements to reach the desired quality level.

APPENDIX 1

Determination of type of plastic on sample #12080 and #12081

lab	method #12080	type	mark	lab	method #12081	type	mark
110		PP		110		PP	
310	FTIR	PP		310	FTIR	PP	
324		-----		324		-----	
330		-----		330		-----	
339		-----		339		-----	
362		-----		362		-----	
551		-----		551		-----	
605		-----		605		-----	
607		-----		607		-----	
622		-----		622		-----	
632		-----		632		-----	
826		-----		826		-----	
840		-----		840		-----	
1051		-----		1051		-----	
1126	IR	PP		1126	IR	PP	
1213		-----		1213		-----	
2115		PP		2115		PP	
2127		-----		2127		-----	
2129		-----		2129		-----	
2132		PP		2132		PP	
2137		-----		2137		-----	
2139		pellet		2139		pellet	
2146	IR	PP		2146	IR	PP	
2152	FTIR	PP		2152	FTIR	PP	
2156		PP		2156		PP	
2165		-----		2165		-----	
2167		-----		2167		-----	
2169	FTIR	PP		2169	FTIR	PP	
2172	Beilstein test	non PVC		2172	Beilstein test	non PVC	
2173		-----		2173		-----	
2175		-----		2175		-----	
2177		-----		2177		-----	
2179		PVC		2179		PP	
2182		-----		2182		-----	
2184	FTIR	PP		2184	FTIR	PP	
2190		-----		2190		-----	
2196		-----		2196		-----	
2197		-----		2197		-----	
2201		-----		2201		-----	
2202		PP		2202		PP	
2212		-----		2212		-----	
2216		-----		2216		-----	
2217		-----		2217		-----	
2218		-----		2218		-----	
2228		-----		2228		-----	
2229		-----		2229		-----	
2236		-----		2236		-----	
2241		-----		2241		-----	
2246		-----		2246		-----	
2247		-----		2247		-----	
2251		-----		2251		-----	
2253		-----		2253		-----	
2254	FTIR	PP		2254	FTIR	PP	
2255		-----		2255		-----	
2256	FTIR	PP		2256	FTIR	PP	
2258		-----		2258		-----	
2259		-----		2259		-----	
2265		-----		2265		-----	
2269		-----		2269		-----	
2271		-----		2271		-----	
2282	Burning Method	POM		2282	Burning Method	POM	
2284		-----		2284		-----	
2289		-----		2289		-----	
2290		-----		2290		-----	
2293		PP		2293		PP	
2294		-----		2294		-----	
2298		-----		2298		-----	
2301		-----		2301		-----	
2303		-----		2303		-----	
2309		-----		2309		-----	
2310		-----		2310		-----	
2311		-----		2311		-----	
2316		-----		2316		-----	
2350		-----		2350		-----	

2353		-----
2359		-----
2361	FTIR	PP
2366		-----
2370		PP
2372	FTIR	PP
2375		-----
2379		-----
2380		-----
2385	IR	PP
2390		-----
2401		-----
2406		-----
2410		PP
2413		-----
2415		-----
2418		-----
2420		-----
2421		PP
2425		-----
2426		-----
2431		-----
2432		-----
2433		-----
2438		PP
2442		-----
2444		PP
2445		-----
2453		-----
2462		-----
2470		-----
2475		-----
2479		-----
2482		-----
2488		-----
2489		-----
2491		PP
2492		-----
2493		-----
2494		-----
2500	FTIR	PP
2502		Pellet
2503		-----
2504		-----
2508		-----
2513		-----
3100		-----
3104		-----
3107		-----
3110		-----
3111		-----
3113		-----
3116		-----
3122		-----
3124		-----
3134		-----
3146		PP
3153		-----
3154		PP
3160		PP
3163		-----
3166		-----
3167		-----
3169		-----
3172		-----
3176		-----
3182		-----
3185		-----
3190		-----
3192	FTIR	PP
3197		PP
3199	FTIR	PP
3210		-----
3214		-----
3218		-----
3220		-----
3225	FTIR	PP
3228		-----

2353		-----
2359		-----
2361	FTIR	PP
2366		-----
2370		PP
2372	FTIR	PP
2375		-----
2379		-----
2380		-----
2385	IR	PP
2390		-----
2401		-----
2406		-----
2410		PP
2413		-----
2415		-----
2418		-----
2420		-----
2421		PP
2425		-----
2426		-----
2431		-----
2432		-----
2433		-----
2438		PP
2442		-----
2444		PP
2445		-----
2453		-----
2462		-----
2470		-----
2475		-----
2479		-----
2482		-----
2488		-----
2489		-----
2491		PP
2492		-----
2493		-----
2494		-----
2500	FTIR	PP
2502		Pellet
2503		-----
2504		-----
2508		-----
2513		-----
3100		-----
3104		-----
3107		-----
3110		-----
3111		-----
3113		-----
3116		-----
3122		-----
3124		-----
3134		-----
3146		PP
3153		-----
3154		PP
3160		PP
3163		-----
3166		-----
3167		-----
3169		-----
3172		-----
3176		-----
3182		-----
3185		-----
3190		-----
3192	FTIR	PP
3197		PP
3199	FTIR	PP
3210		-----
3214		-----
3218		-----
3220		-----
3225	FTIR	PP
3228		-----

3237		-----
3239	FTIR	PP
3248		-----
8005		-----

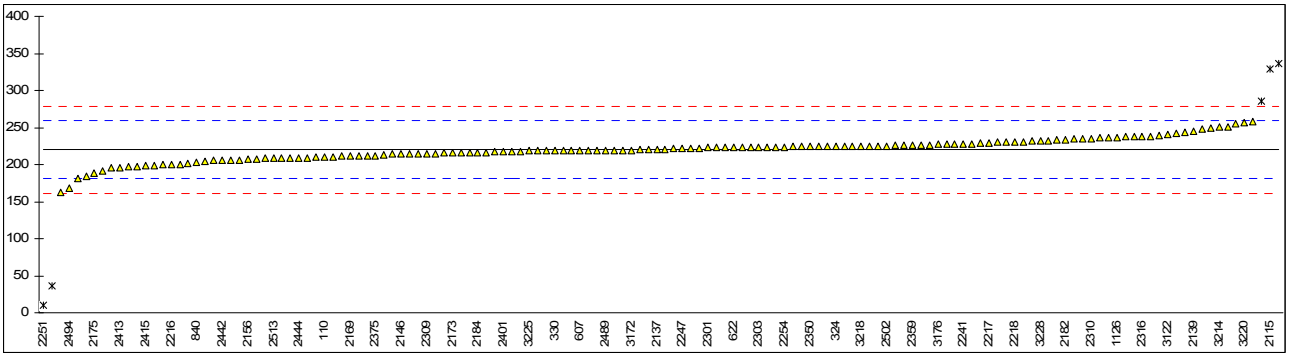
3237		-----
3239	FTIR	PP
3248		-----
8005		-----

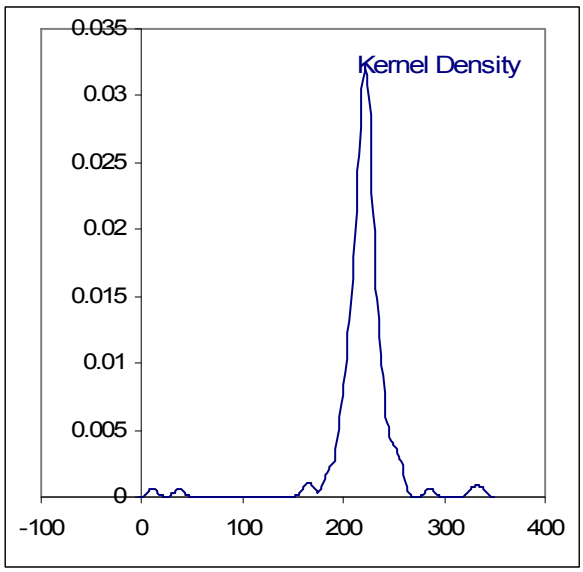
Determination of total Cadmium as Cd on sample #12080; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	209.531		-0.53	2350	EN1122	224.5		0.23
310	in house	220		0.00	2353	EN1122	225.5		0.28
324	EPA3052	224.92		0.25	2359	EN1122	225.6		0.29
330	in house	218.6		-0.07	2361	EN1122	226.2		0.32
339	INH-344	207.86		-0.61	2366	EN1122	228.9		0.46
362	EN1122	205.2		-0.75	2370	IEC62321	213		-0.35
551	IEC62321	194.97		-1.27	2372	IEC62321	236.0		0.82
605	EPA3051A	223.48		0.18	2375	INH-003	212.3		-0.39
607	EPA3052	218.86		-0.05	2379	EN1122	197.37		-1.15
622	EN1122	223	Fr 155.9	0.16	2380	EN1122	197		-1.17
632	INH-003	336.5	G(0.05)	5.94	2385	in house	234.3		0.73
826	IEC62321	237		0.87	2390		-----		-----
840	EN1122	202.4		-0.89	2401	EN1122	217		-0.15
1051	EN1122	237.70		0.91	2406	EN1122	225.53		0.29
1126	in house	236.5		0.84	2410	EN1122	217		-0.15
1213	IEC62321	218.07		-0.09	2413	in house	195.45		-1.25
2115	CPSIA	328.5	G(0.01)	5.53	2415	EN1122	198.4		-1.10
2127	EN1122	237		0.87	2418	EPA3050B/3052	184.531		-1.80
2129	EPA3050B	243.1		1.18	2420	EN1122	162.2		-2.94
2132	in house	201.95		-0.92	2421	EN1122	205	Fr 159	-0.76
2137	EN1122	220.7		0.04	2425	EN1122	206.5		-0.68
2139	IEC62321	245.2		1.29	2426	EN1122	225		0.26
2146	EN1122	214.5		-0.28	2431	CPSC-CH-E1001-08	215.35		-0.23
2152	in house	224.4		0.23	2432	in house	218.74		-0.06
2156	IEC62321	207.7		-0.62	2433	EN1122	222.82		0.15
2165	EN1122	219.5		-0.02	2438	EN1122	257.51		1.91
2167	IEC62321	200.53		-0.99	2442	in house	206.23		-0.70
2169	IEC62321	211.5		-0.43	2444	IEC62321	209.14		-0.55
2172	IEC62321	226.2		0.32	2445	EN1122	230.6		0.54
2173	EN1122	215.7		-0.22	2453		-----		-----
2175	EPA3052	188.08	Fr 175.23	-1.62	2462	EN1122	216.0		-0.20
2177	IEC62321	224		0.21	2470	CPSC-CH-E1002-08.1	223.1		0.16
2179	IEC62321	214.8		-0.26	2475	in house	199		-1.07
2182	EN1122	233.1		0.67	2479	EN1122	209.5		-0.53
2184	EN1122	216.1		-0.19	2482	EN11885	211.072		-0.45
2190	EN1122	211.9		-0.41	2488		-----		-----
2196	IEC62321	221		0.05	2489	IEC62321	219.23		-0.04
2197	EN1122	226.9		0.36	2491	IEC62321	222.148		0.11
2201	IEC62321	223.5		0.18	2492	in house	242.27		1.14
2202	in house	239.8		1.01	2493	EPA3052/6020A	214.7		-0.27
2212	in house	215.0		-0.25	2494	EN1122	167.70		-2.66
2216	IEC62321	200.4		-0.99	2500	EN1122	223		0.16
2217	IEC62321	229.0		0.46	2502	IEC62321	225.3		0.27
2218	EN1122	230.66		0.55	2503	CPSIA F963	36.92	G(0.01)	-9.32
2228		-----		-----	2504	EN1122	231.96		0.61
2229	EN1122	209.3		-0.54	2508	CPSC-CH-E1001-08.1	216.5		-0.17
2236	EPA3051A	208		-0.61	2513	IEC62321	208.7		-0.57
2241	IEC62321	227.83		0.40	3100	IEC62321	224.5		0.23
2246	EN1122	230.4		0.53	3104	EN1122	224.7		0.24
2247	IEC62321	222		0.11	3107		-----		-----
2251	IEC62321	10.6097	G(0.01)	-10.66	3110	CPSC-CH-E1002-08.2	224.98		0.26
2253	CPSC-CH-E1003-09.1	210.390		-0.49	3111	in house	234.9		0.76
2254	in house	223.5		0.18	3113	INH-053	190.588		-1.49
2255	EN1122	222.3		0.12	3116	EN1122	218.9		-0.05
2256	EN1122	221.7		0.09	3122	in house	241		1.07
2258	INH-00164	236.01		0.82	3124	EPA3052	228		0.41
2259	IEC62321	216		-0.20	3134		-----		-----
2265	EN1122	218.53		-0.07	3146	EN11885	223.0		0.16
2269	in house	181.72		-1.95	3153	EN1122	227.1		0.37
2271	EPA3052	219		-0.05	3154	EN1122	206.4		-0.69
2282	IEC62321	218		-0.10	3160	CPSC-CH-E1002-08.1	248.15		1.44
2284	EPA3052	214.0		-0.30	3163	in house	200		-1.01
2289		-----		-----	3166	in house	209		-0.56
2290	IEC62321	219.3		-0.03	3167	EN1122	225.2		0.27
2293	EN1122	255.4		1.81	3169	EN1122	218.745		-0.06
2294		-----		-----	3172	EN1122	219.5		-0.02
2298		-----		-----	3176	EN1122	226.9		0.36
2301	CPSC-CH-E1002-08.1	222.6		0.14	3182	EN1122	251.10		1.59
2303	in house	223.18		0.17	3185	IEC62321	225.2		0.27
2309	IEC62321	215		-0.25	3190	IEC62321	220		0.00
2310	EPA3052	235		0.77	3192	in house	232.4		0.64
2311	EPA3052	233		0.67	3197	EN1122	218.2		-0.09
2316	IEC62321	237		0.87	3199	EPA3051	285.5	G(0.01)	3.34

3210	EN1122	<40	False -?	<-9.16
3214	EN1122	250.2		1.54
3218	IEC62321	225.1		0.26
3220	EN1122	256.1		1.84
3225	EN1122	218.2		-0.09
3228	EN1122	232		0.61
3237	in house	211.85		-0.41
3239	IEC62321	250.0		1.53
3248	EN1122	231		0.56
8005	EN1122	209.1		-0.55

normality	not OK
n	141
outliers	5
mean (n)	219.924
st.dev. (n)	15.4931
R(calc.)	43.381
R(EN1122:01)	54.981

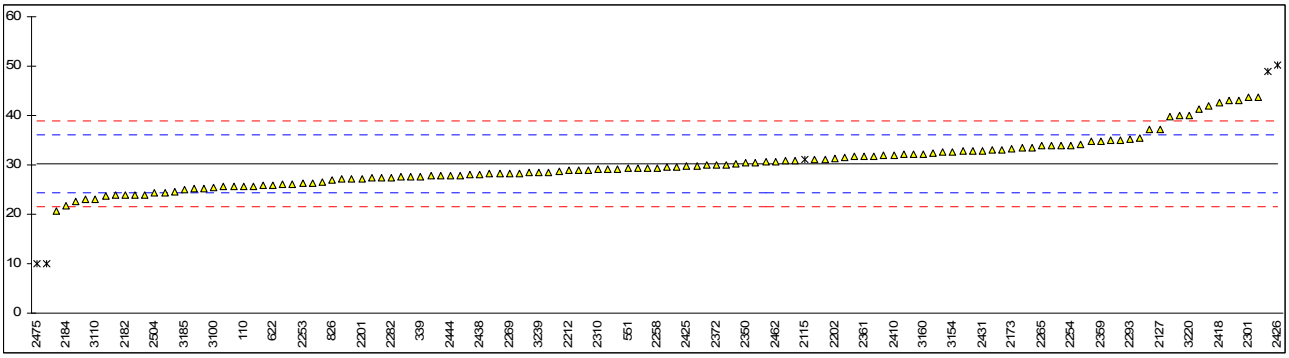


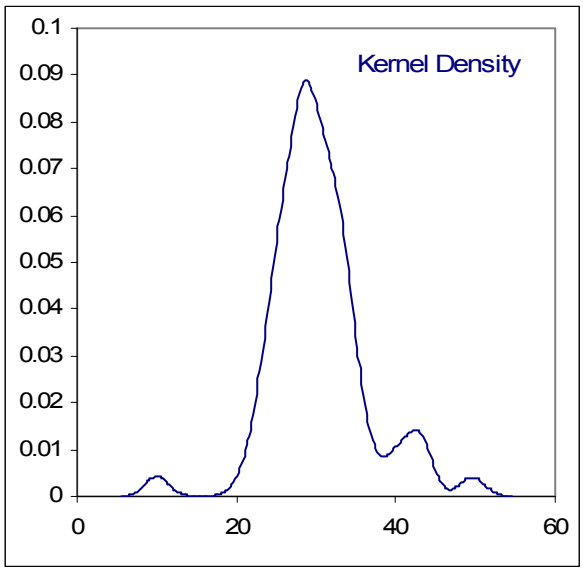


Determination of total Chromium as Cr on sample #12080; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	25.5851		-1.61	2350	IEC62321	30.41		0.06
310	in house	27.6		-0.91	2353	EPA3051	32.1		0.64
324	EPA3052	25.555		-1.62	2359	EPA3052	34.8		1.57
330	in house	35.5		1.82	2361	CPSC	31.8		0.54
339	INH-344	27.6188		-0.91	2366	EPA3052	30.85		0.21
362	EN1122	31.06		0.28	2370	IEC62321	28.4		-0.64
551	IEC62321	29.25		-0.34	2372	IEC62321	30.0		-0.08
605	EPA3051A	31.56		0.45	2375	INH-003	29.5		-0.26
607	EPA3052	32.53		0.79	2379	IEC62321	34.80		1.57
622	in house	25.9		-1.50	2380	EPA3052	33		0.95
632	INH-003	39.76		3.29	2385	in house	26.4		-1.33
826	IEC62321	27		-1.12	2390		-----		-----
840	IEC62321	32.8		0.88	2401		-----		-----
1051		-----		-----	2406	CPSC-CH-E1002-08.2	29.89		-0.12
1126	in house	28.5		-0.60	2410	EPA3052	32		0.61
1213		-----		-----	2413	in house	20.71		-3.29
2115	CPSIA	31.0	ex	0.26	2415	CPSC	27.29		-1.02
2127	IEC62321	37.2		2.40	2418	EPA3050B/3052	42.623		4.27
2129	ISO17294	23.99		-2.16	2420		-----		-----
2132	in house	25.55		-1.62	2421		-----		-----
2137	EPA3052	32.0		0.61	2425	EPA3052	29.8		-0.15
2139	IEC62321	35.0		1.64	2426	EPA3052	50.2	DG(0.05)	6.89
2146		-----		-----	2431	CPSC-CH-E1001-08	32.89		0.91
2152	in house	22.6		-2.64	2432		-----		-----
2156	IEC62321	24.6		-1.95	2433	EPA3051A	33.46		1.11
2165	IEC62321	24.0		-2.16	2438	EPA3052	28.09		-0.74
2167	IEC62321	43.67	Fr 93.29	4.64	2442		-----		-----
2169	IEC62321	27.1		-1.08	2444	IEC62321	27.79		-0.85
2172	IEC62321	30.62		0.13	2445	in house	43.10		4.44
2173	IEC62321	33.3		1.06	2453		-----		-----
2175	EPA3052	32.5		0.78	2462	EPA3052	30.7		0.16
2177	IEC62321	28.7		-0.53	2470	CPSC-CH-E1002-08.1	30.5		0.09
2179	IEC62321	29.1		-0.39	2475	in house	10	DG(0.01)	-6.99
2182	EPA3051A	24.0		-2.16	2479	IEC62321	33.1		0.99
2184	IEC62321	21.7		-2.95	2482	EN11885	31.1576		0.32
2190	in house	25.3		-1.71	2488		-----		-----
2196	IEC62321	26.5		-1.29	2489	IEC62321	37.17		2.39
2197		-----		-----	2491	IEC62321	23.010		-2.50
2201	IEC62321	27.2		-1.05	2492	in house	29.02		-0.42
2202	in house	31.2		0.33	2493	EPA3052/6020A	25.15		-1.76
2212	in house	29.0		-0.43	2494	EPA3052	27.81		-0.84
2216	IEC62321	24.4		-2.02	2500	EPA3051A/6010C	29		-0.43
2217	IEC62321	29.4		-0.29	2502	EPA3052	25.80		-1.53
2218		-----		-----	2503	CPSIA F963	48.94	DG(0.05)	6.46
2228		-----		-----	2504	EPA	24.28		-2.06
2229	IEC62321	28.2		-0.71	2508	CPSC-CH-E1001-08.1	28.28		-0.68
2236	EPA3051A	33.91		1.27	2513	IEC62321	27.97		-0.78
2241	IEC62321	39.91		3.34	3100	IEC62321	25.5		-1.64
2246		-----		-----	3104		-----		-----
2247	IEC62321	35		1.64	3107		-----		-----
2251		-----		-----	3110	CPSC-CH-E1002-08.2	23.04		-2.49
2253	CPSC-CH-E1003-09.1	26.243		-1.38	3111		-----		-----
2254	in house	34		1.30	3113		-----		-----
2255	EPA3052	41.98		4.05	3116		-----		-----
2256		-----		-----	3122	in house	24		-2.16
2258	INH-00164	29.441		-0.28	3124	EPA3052	25.7		-1.57
2259	IEC62321	23.8		-2.22	3134		-----		-----
2265	DIN54233	33.81		1.23	3146	EN11885	34.10		1.33
2269	in house	28.30		-0.67	3153	IEC62321	27.6		-0.91
2271	EPA3052	30.1		-0.05	3154	EN1122	32.55		0.80
2282	IEC62321	27.5		-0.95	3160	CPSC-CH-E1002-08.1	32.24		0.69
2284	EPA3052	33.9		1.26	3163	in house	10	DG(0.01)	-6.99
2289		-----		-----	3166	in house	31.8		0.54
2290	IEC62321	41.3		3.82	3167	IEC62321	27.43		-0.97
2293	CPSC-CH-E1002-08.1	35.3		1.75	3169	EPA3052	27.770		-0.85
2294		-----		-----	3172	in house	31.7		0.50
2298		-----		-----	3176	in house	43.0		4.40
2301	CPSC-CH-E1002-08.1	43.6		4.61	3182	EPA3052	29.13		-0.38
2303	in house	29.34		-0.31	3185	IEC62321	25.00		-1.81
2309	IEC62321	30		-0.08	3190	IEC62321	30.2		-0.01
2310	EPA3052	29.1		-0.39	3192		-----		-----
2311	EPA3052	29.6		-0.22	3197	in house	32.76		0.87
2316	EPA3052	27.12		-1.08	3199	EPA3051	33.55		1.14

3210	EN17072	<25		-----
3214	EPA3052	32.2		0.68
3218	IEC62321	28.33		-0.66
3220	EPA3050B	40		3.37
3225	IEC62321	30.9		0.23
3228	IEC62321	26		-1.46
3237	in house	27.72		-0.87
3239	IEC62321	28.40		-0.64
3248	IEC62321	26		-1.46
8005		-----		-----
	normality	OK		
	n	122		
	outliers	4	+ 1 excluded	
	mean (n)	30.242		
	st.dev. (n)	4.8845		
	R(calc.)	13.677		
	R(Horwitz)	8.110		



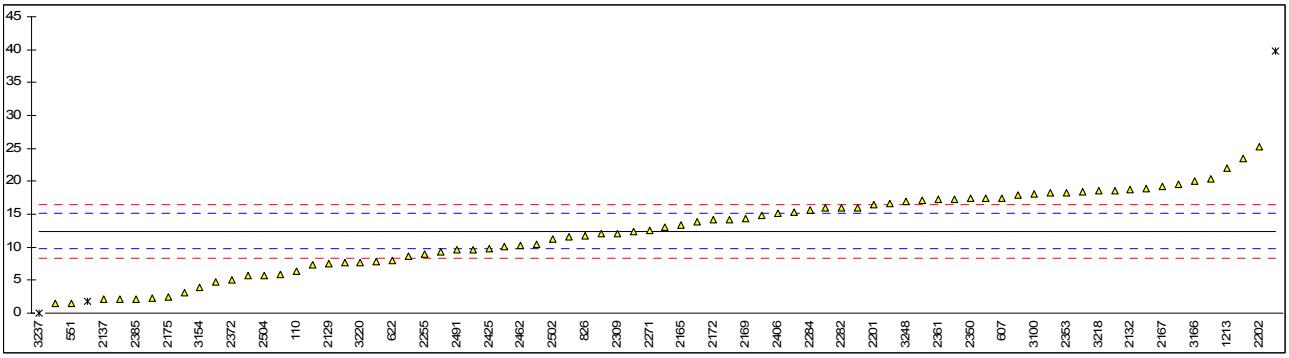


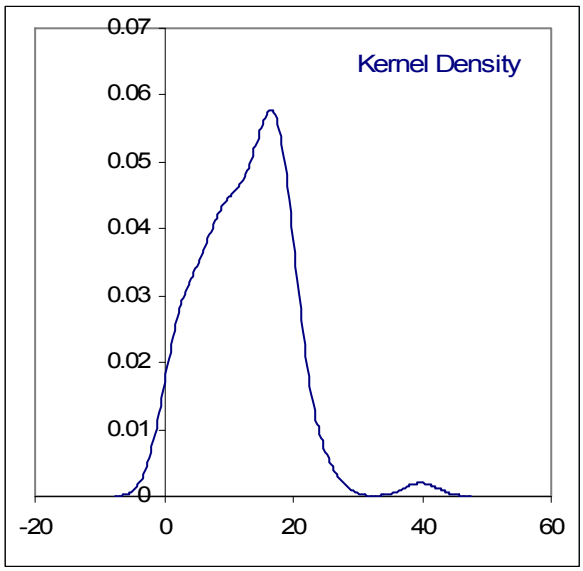
Determination of Hexavalent Chromium as Cr^{6+} on sample #12080; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	EPA3060A	6.285		-4.52	2350	IEC62321	17.499		3.72
310		-----		-----	2353	IEC62321	18.3		4.31
324		-----		-----	2359	EPA3060A	n.d.		-----
330		-----		-----	2361	IEC62321	17.3		3.57
339	INH-341	16		2.62	2366	IEC62321	18.96		4.79
362		-----		-----	2370	IEC62321	13.8		1.00
551	IEC62321	1.51		-8.02	2372	IEC62321	5.1		-5.39
605	IEC62321	18.39		4.37	2375	IEC62321	7.31		-3.76
607	IEC62321	17.51		3.73	2379	IEC62321	9.36		-2.26
622	in house	8.0		-3.26	2380	EPA3060A	n.d.		-----
632	INH-003	9.67		-2.03	2385	EPA3060A	2.2		-7.52
826	IEC62321	11.776		-0.48	2390		-----		-----
840	IEC62321	17.1		3.43	2401		-----		-----
1051		-----		-----	2406	IEC62321	15.22		2.05
1126		-----		-----	2410		-----		-----
1213	IEC62321	22.04		7.05	2413		-----		-----
2115		-----		-----	2415	IEC62321	10.36		-1.52
2127		-----		-----	2418	EPA3060A/7196A	<7		-----
2129	ISO17294	7.5		-3.62	2420		-----		-----
2132	IEC62321	18.741		4.63	2421		-----		-----
2137	EPA3060A	2.1		-7.59	2425	EPA3060A	9.8		-1.94
2139	IEC62321	3.1		-6.86	2426	EPA3060A	8.613		-2.81
2146		-----		-----	2431		-----		-----
2152		-----		-----	2432		-----		-----
2156	IEC62321	23.5		8.13	2433	EPA3060A	n.d.		-----
2165	IEC62321	13.4		0.71	2438		-----		-----
2167	IEC62321	19.29		5.04	2442		-----		-----
2169	IEC62321	14.4		1.44	2444		-----		-----
2172	IEC62321	14.11		1.23	2445		-----		-----
2173	IEC62321	17.3		3.57	2453		-----		-----
2175	EPA3060A/7196A	2.46		-7.33	2462	EPA3060A	10.25		-1.60
2177	IEC62321	18.3		4.31	2470		-----		-----
2179	IEC62321	15.3		2.10	2475		-----		-----
2182	IEC62321	n.d.		-----	2479	IEC62321	17.5		3.72
2184	IEC62321	16.55		3.02	2482		-----		-----
2190		-----		-----	2488		-----		-----
2196	IEC62321	15.9		2.55	2489	IEC62321	5.9		-4.80
2197		-----		-----	2491	IEC62321	9.548		-2.12
2201	IEC62321	16.4		2.91	2492		-----	W	-----
2202	in house	25.3		9.45	2493	in house	5.68		-4.96
2212	in house	<5		-----	2494	EN71-3	n.d.		-----
2216	IEC62321	<5		-----	2500	IEC62321	13		0.42
2217	IEC62321	1.5		-8.03	2502	EPA3060A/7196A	11.23		-0.89
2218		-----		-----	2503		-----		-----
2228		-----		-----	2504	IEC62321	5.68		-4.96
2229		-----		-----	2508		-----		-----
2236		-----		-----	2513	IEC62321	39.82	G(0.01)	20.11
2241		-----		-----	3100	IEC62321	18.1		4.16
2246		-----		-----	3104		-----		-----
2247	IEC62321	7.9		-3.33	3107		-----		-----
2251		-----		-----	3110		-----		-----
2253		-----		-----	3111		-----		-----
2254		-----		-----	3113		-----		-----
2255	EPA3060A	8.95		-2.56	3116		-----		-----
2256		-----		-----	3122		-----		-----
2258		-----		-----	3124		-----		-----
2259		-----		-----	3134		-----		-----
2265	ISO17075	n.d.		-----	3146	EN62321	20.45		5.89
2269		-----		-----	3153	IEC62321	18.6		4.53
2271	EPA3052	12.6		0.12	3154	IEC62321	3.98		-6.21
2282	IEC62321	15.9		2.55	3160		-----		-----
2284	EPA3052	15.6		2.32	3163		-----		-----
2289		-----		-----	3166	in house	20		5.56
2290	IEC62321	12.4		-0.03	3167		-----		-----
2293		-----		-----	3169	IEC62321	<5		-----
2294		-----		-----	3172		-----		-----
2298		-----		-----	3176	ISO11083	2.13		-7.57
2301		-----		-----	3182	IEC62321	14.23		1.32
2303		-----		-----	3185	IEC62321	17.91		4.02
2309	IEC62321	12		-0.32	3190	IEC62321	12.0		-0.32
2310		-----		-----	3192		-----		-----
2311		-----		-----	3197	IEC62321	7.6		-3.55
2316	IEC62321	19.57		5.24	3199	in house	2.25		-7.48

3210	EN17072	1.76	ex	-7.84
3214	IEC62321	4.7		-5.68
3218	IEC62321	18.53		4.48
3220	EPA3060B	7.65		-3.51
3225	IEC62321	11.5		-0.69
3228	IEC62321	14.9		1.81
3237	in house	0.02	G(0.01)	-9.12
3239	IEC62321	10.13		-1.69
3248	IEC62321	17		3.35
8005		-----		-----

normality	OK	
n	75	
outliers	3	+1 excluded
mean (n)	12.435	added 35 mg/kg; recovery approx. 36%
st.dev. (n)	5.9532	
R(calc.)	16.669	
R(Horwitz)	3.812	

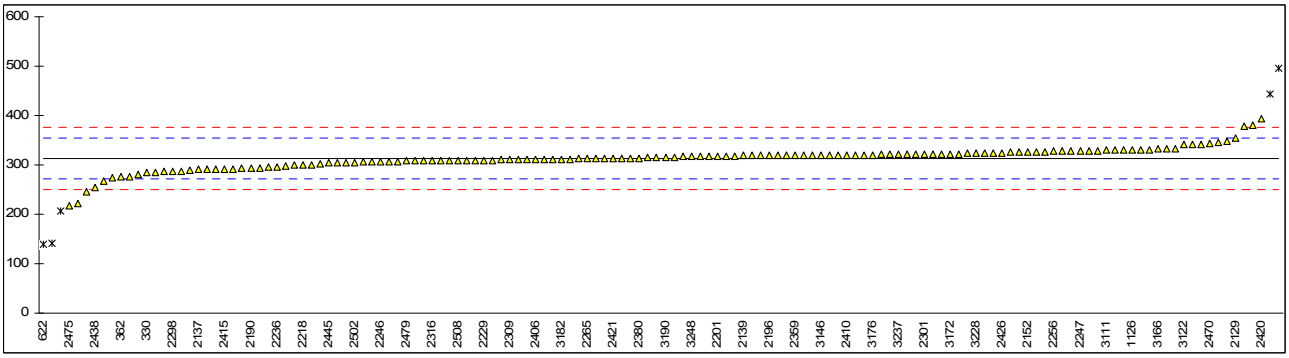


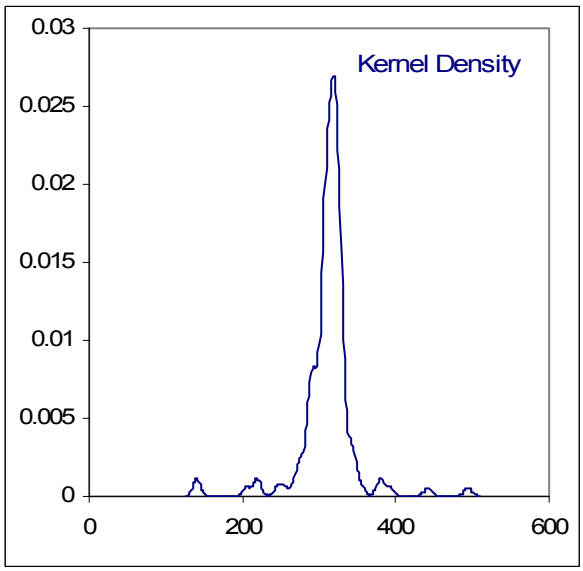


Determination of total Lead as Pb on sample #12080; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	304.0924		-0.41	2350	IEC62321	307.0		-0.28
310	in house	311		-0.09	2353	EPA3051	318.7		0.28
324	EPA3052	324.66		0.56	2359	CPSC-CH-E1002-08.1	319.2		0.30
330	in house	284.9		-1.32	2361	CPSC	317.7		0.23
339	INH-344	313.385		0.03	2366	EPA3052	321.6		0.42
362	EN1122	275.3		-1.78	2370	IEC62321	299		-0.66
551	IEC62321	300.60		-0.58	2372	IEC62321	326.5		0.65
605	EPA3051A	318.35		0.26	2375	INH-003	312.5		-0.02
607	EPA3052	308.01		-0.23	2379	IEC62321	308.09		-0.22
622	in house	140	G(0.01)	-8.20	2380	EPA3052	314		0.06
632	INH-003	381.0		3.23	2385	in house	330.8		0.85
826	IEC62321	333		0.96	2390		-----		-----
840	IEC62321	285.2		-1.31	2401	CPSC-CH-E1002-08.1	307		-0.28
1051	CPSC-CH-E1002-08.1	318.06		0.25	2406	CPSC-CH-E1002-08.2	310.52		-0.11
1126	in house	330.5		0.84	2410	IEC62321	320		0.34
1213	IEC62321	319.2		0.30	2413	in house	273.79		-1.85
2115	CPSIA	495.0	G(0.01)	8.64	2415	CPSC	291.6	Fr 270.5	-1.01
2127	IEC62321	331		0.86	2418	EPA3050B/3052	245.852		-3.18
2129	ISO105E04	355.1		2.01	2420	EN1122	392.5		3.78
2132	in house	297.30		-0.74	2421		313	Fr 294	0.01
2137	IEC62321	290.3		-1.07	2425	EPA3052	290.3		-1.07
2139	IEC62321	318.5		0.27	2426	CPSC-CH-E1002-08.1	325.0		0.58
2146		-----		-----	2431	in house	322.50		0.46
2152	in house	325.5		0.60	2432		-----		-----
2156	IEC62321	292.4		-0.97	2433	EPA3051A	309.20		-0.17
2165	IEC62321	318.0		0.25	2438	EN1122	254.8	Fr 179.87	-2.75
2167	IEC62321	295.99		-0.80	2442		-----		-----
2169	IEC62321	309.9		-0.14	2444	IEC62321	304.33		-0.40
2172	IEC62321	320.3		0.35	2445	in house	303.5		-0.44
2173	IEC62321	310.4		-0.12	2453	CPSC-CH-E1002-08.2	290		-1.08
2175	EPA3052	279.99		-1.56	2462	EPA3052	307.8		-0.24
2177	IEC62321	315		0.10	2470	CPSC-CH-E1002-08.1	342.5		1.41
2179	IEC62321	290.9		-1.04	2475	in house	218		-4.50
2182	EPA3051A	310.2		-0.12	2479	IEC62321	307.7		-0.24
2184	IEC62321	329.1		0.77	2482	E1613	316.096		0.16
2190	in house	293.1		-0.94	2488		-----		-----
2196	IEC62321	319		0.29	2489	IEC62321	293.7		-0.91
2197		302.7		-0.48	2491	IEC62321	319.863		0.33
2201	IEC62321	318.0		0.25	2492	in house	319.06		0.30
2202	in house	342.1		1.39	2493	EPA3052/6020A	311.0		-0.09
2212	CPSC-CH-E1002-08.1	306		-0.32	2494	EPA3052	328.96		0.77
2216	IEC62321	275.3		-1.78	2500	CPSC-CH-E1002-08	321		0.39
2217	IEC62321	287.3		-1.21	2502	IEC62321	305.2		-0.36
2218	CPSC-CH-E1002-08.1	299.02		-0.65	2503	CPSIA F963	205.7	ex	-5.08
2228		-----		-----	2504	EPA	341.16		1.34
2229	IEC62321	309.2		-0.17	2508	CPSC-CH-E1001-08.1	308.5		-0.21
2236	EPA3051A	296		-0.80	2513	IEC62321	287.6		-1.20
2241	IEC62321	323.67		0.51	3100	IEC62321	312.3		-0.02
2246	CPSC-CH-E1002-08	306.1		-0.32	3104		-----		-----
2247	IEC62321	328		0.72	3107		-----		-----
2251	IEC62321	141.2850	G(0.01)	-8.14	3110	CPSC-CH-E1002-08.2	327.92		0.72
2253	CPSC-CH-E1003-09.1	312.336		-0.02	3111	in house	329.55		0.79
2254	in house	321.5		0.41	3113	INH-053	309.090		-0.18
2255	EPA3052	325.3		0.59	3116	CPSC-CH-E1002-08.2	315.5		0.13
2256	CPSC-CH-E1002-08.1	327.5		0.70	3122	in house	341		1.34
2258	INH-00164	319.67		0.32	3124	EPA3052	330		0.81
2259	IEC62321	309		-0.18	3134		-----		-----
2265	EN1122	312.31		-0.02	3146	EN11885	319.7		0.33
2269	in house	267.08		-2.17	3153	IEC62321	318.5		0.27
2271	EPA3052	313		0.01	3154	EN1122	292.3		-0.97
2282	IEC62321	322.8		0.47	3160	CPSC-CH-E1002-08.1	324.01	Fr 376.87	0.53
2284	EPA3052	325.8		0.62	3163	in house	221		-4.36
2289		-----		-----	3166	in house	332		0.91
2290	IEC62321	325.1		0.58	3167	IEC62321	327.7		0.71
2293	CPSC-CH-E1002-08.1	379.2		3.15	3169	CPSC-CH-E1002-08.1	305.743		-0.34
2294		-----		-----	3172	CPSC-CH-E1002-08.1	322.5		0.46
2298	CPSC-CH-E1002-08.2	287.50		-1.20	3176	INH-1303	320.65		0.37
2301	CPSC-CH-E1002-08.1	322.3		0.45	3182	EPA3052	311.63		-0.06
2303		322.41		0.45	3185	IEC62321	320.1		0.35
2309	IEC62321	310		-0.13	3190	IEC62321	316		0.15
2310	EPA3052	308		-0.23	3192	in house	316.6		0.18
2311	EPA3052	320		0.34	3197	in house	332.1		0.91
2316	IEC62321	308		-0.23	3199	EPA3051	442.5	G(0.01)	6.15

3210	EN17072	<25	False -?	<-13.65
3214	EPA3052	347.4		1.64
3218	IEC62321	319.7		0.33
3220	EPA3050B	329.8	Fr 260.5	0.81
3225	IEC62321	320.8		0.38
3228	IEC62321	324		0.53
3237	in house	321.45		0.41
3239	IEC62321	346.4		1.59
3248	IEC62321	317		0.20
8005	in house	311.8		-0.05
	normality	not OK		
	n	139		
	outliers	4		
	mean (n)	312.826		
	st.dev. (n)	22.9985		
	R(calc.)	64.396		
	R(Horwitz)	59.020		

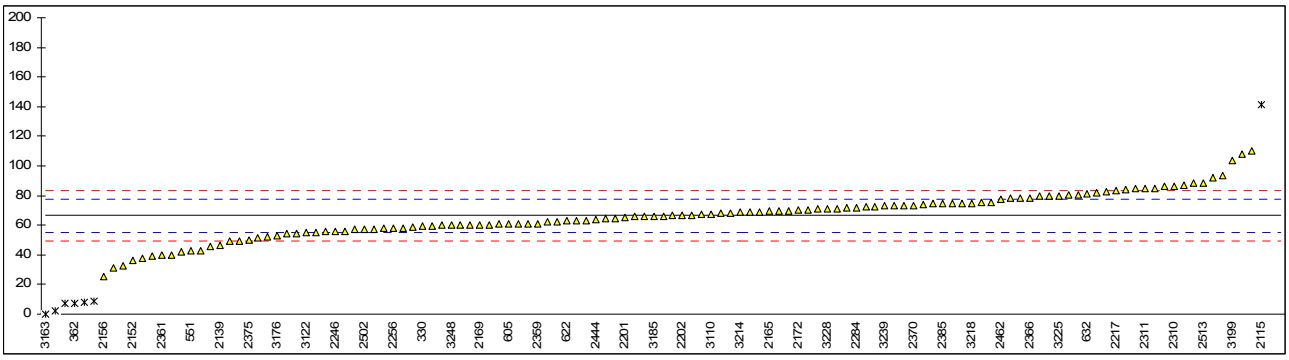


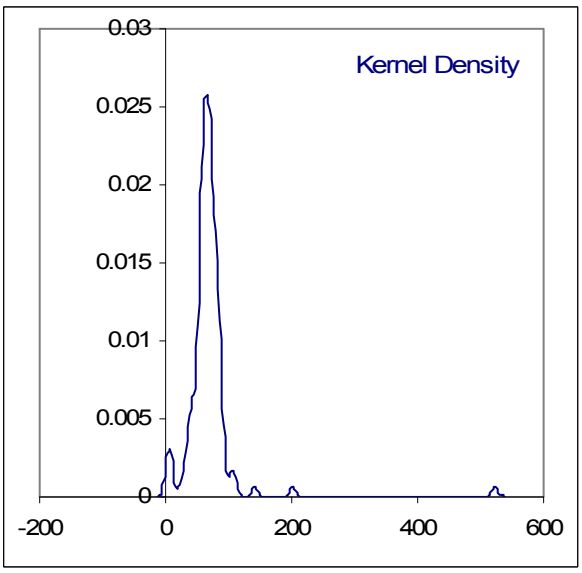


Determination of Mercury as Hg on sample #12080; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	54.6408		-2.07	2350	IEC62321	67.09		0.14
310	in house	73		1.19	2353	EPA3051	60.1		-1.10
324	EPA3052	84.143		3.16	2359	EPA3052	61.1		-0.92
330	in house	59.2		-1.26	2361	CPSC	39.5		-4.75
339	INH-344	59.8		-1.15	2366	EPA3052	78.6		2.18
362	EN1122	7.48	DG(0.05)	-10.43	2370	IEC62321	73.4		1.26
551	IEC62321	42.68		-4.19	2372	IEC62321	69.9		0.64
605	EPA3051A	60.75		-0.99	2375	INH-003	50.0		-2.89
607	EPA3052	65.91		-0.07	2379	IEC62321	68.86		0.45
622	in house	63.0		-0.59	2380	EPA3052	42		-4.31
632	INH-003	81.48		2.69	2385	in house	74.7		1.49
826	IEC62321	55		-2.00	2390		-----		-----
840	IEC62321	66.4		0.02	2401		-----		-----
1051		-----		-----	2406	CPSC-CH-E1002-08.2	93.15		4.76
1126	in house	61.0		-0.94	2410	IEC62321	66		-0.06
1213	IEC62321	60.87		-0.96	2413	in house	39.88		-4.68
2115	CPSIA	141.0	G(0.05)	13.23	2415	CPSC	85.88		3.47
2127	IEC62321	80.4		2.50	2418	EPA3050B/3052	<7	False -?	<-10.51
2129	ISO11083	85.1		3.33	2420		-----		-----
2132	in house	51.50		-2.62	2421		-----		-----
2137	IEC62321	31.3		-6.20	2425	EPA3052	86.8		3.63
2139	IEC62321	46.4		-3.53	2426	EPA3052	39.0		-4.84
2146		-----		-----	2431	CPSC-CH-E1001-08	92.35		4.61
2152	in house	35.9		-5.39	2432		-----		-----
2156	IEC62321	25.2		-7.29	2433		-----		-----
2165	IEC62321	69.5		0.56	2438	EPA3052	68.00		0.30
2167	IEC62321	62.10		-0.75	2442		-----		-----
2169	IEC62321	60.2		-1.08	2444	IEC62321	63.80	Fr 108.42	-0.45
2172	IEC62321	70.12		0.67	2445	in house	52.05		-2.53
2173	IEC62321	73.2		1.22	2453		-----		-----
2175	EPA3052	64.24		-0.37	2462	EPA3052	77.8		2.04
2177	IEC62321	71.2		0.87	2470	CPSC-CH-E1002-08.1	75.7		1.66
2179	IEC62321	57.2		-1.61	2475	in house	6.9	DG(0.05)	-10.53
2182	EPA3051A	81.8		2.74	2479	IEC62321	74.5		1.45
2184	IEC62321	69.8		0.62	2482	E1483	54.466		-2.10
2190	in house	8	DG(0.01)	-10.33	2488		-----		-----
2196	IEC62321	58.5		-1.38	2489	IEC62321	49.05		-3.06
2197		-----		-----	2491	IEC62321	82.417		2.85
2201	IEC62321	65.5		-0.14	2492	in house	37.76		-5.06
2202	in house	66.4		0.02	2493	EPA3052/6020A	62.02		-0.76
2212	CPSC-CH-E1002-08.1	43		-4.13	2494	EPA3052	109.79		7.70
2216	IEC62321	45.9		-3.62	2500	IEC62321	58		-1.47
2217	IEC62321	83.2		2.99	2502	IEC62321	57.19		-1.62
2218		-----		-----	2503	CPSIA F963	2.00	DG(0.05)	-11.40
2228		-----		-----	2504	EPA	66.29		0.00
2229	IEC62321	70.8		0.80	2508	CPSC-CH-E1001-08.1	63.1	Fr 6.31	-0.57
2236	EPA3051A	88.33		3.90	2513	IEC62321	88.7		3.97
2241	IEC62321	70.16		0.68	3100	IEC62321	63.0		-0.59
2246	CPSC-CH-E1002-08	56.1		-1.81	3104		-----		-----
2247	IEC62321	58		-1.47	3107		-----		-----
2251	IEC62321	523.0062	G(0.01)	80.93	3110	CPSC-CH-E1002-08.2	67.27		0.17
2253	CPSC-CH-E1003-09.1	72.174		1.04	3111	in house	60.31		-1.06
2254	in house	78		2.07	3113		-----		-----
2255	EPA3052	49.6		-2.96	3116		-----		-----
2256	EPA3051	58.0		-1.47	3122	in house	55		-2.00
2258	CPSD-AN-00164	84.627		3.25	3124	EPA3052	73.9		1.34
2259	IEC62321	75.3		1.59	3134		-----		-----
2265	DIN54233	80.74		2.56	3146	EN1483	71.56		0.93
2269	in house	57.10		-1.63	3153	IEC62321	64.3		-0.36
2271	EPA3052	79.5		2.34	3154	EN1122	72.2		1.04
2282	IEC62321	56.1		-1.81	3160		-----		-----
2284	EPA3052	72.1		1.03	3163	in house	0	DG(0.05)	-11.75
2289		-----		-----	3166	in house	79.6		2.35
2290	IEC62321	68.6		0.41	3167	IEC62321	66.79		0.08
2293		-----		-----	3169	EPA3052	56.032		-1.82
2294		-----		-----	3172		60.7		-0.99
2298		-----		-----	3176	in house	53.17		-2.33
2301	CPSC-CH-E1002-08.1	107.8		7.35	3182	EPA3052	74.78		1.50
2303		201.73	G(0.01)	24.00	3185	IEC62321	66.23		-0.01
2309	IEC62321	68.1		0.32	3190	IEC62321	74.8		1.50
2310	EPA3052	85.9		3.47	3192		-----		-----
2311	EPA3052	85		3.31	3197	in house	60.16		-1.09
2316	IEC62321	78.24		2.11	3199	EPA3051	103.7		6.63

3210	EN17072	8.85	ex	-10.18
3214	EPA3052	68.6		0.41
3218	IEC62321	74.83		1.51
3220	EPA3050B	59.5		-1.21
3225	IEC62321	79.9		2.41
3228	IEC62321	71		0.83
3237	in house	32.45		-6.00
3239	IEC62321	72.90		1.17
3248	IEC62321	60		-1.12
8005		-----		-----
	normality	OK		
	n	120		
	outliers	8	+ 1 excluded	
	mean (n)	66.312		
	st.dev. (n)	15.1583		
	R(calc.)	42.443		
	R(Horwitz)	15.801		

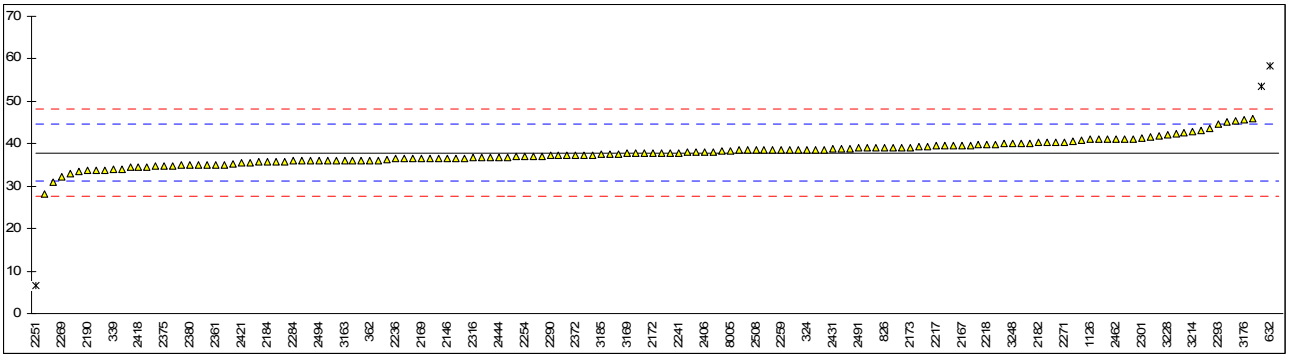


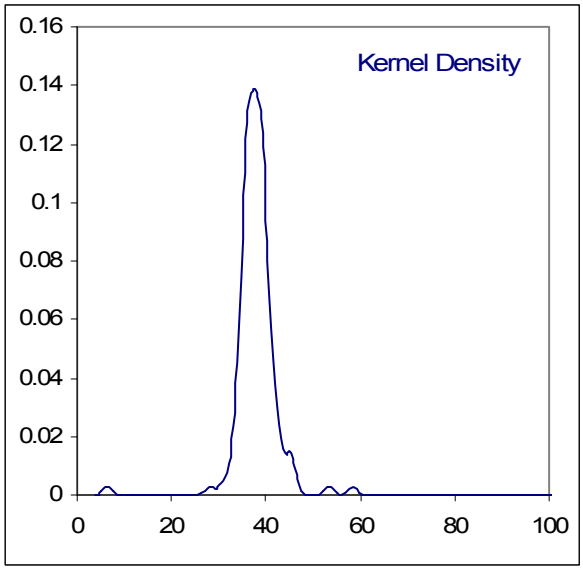


Determination of total Cadmium as Cd on sample #12081; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	36.0621		-0.55	2350	EN1122	39.68		0.52
310	in house	36.6		-0.39	2353	EN1122	35.2		-0.80
324	EPA3052	38.63		0.21	2359	EN1122	39.0		0.32
330	in house	34.4		-1.04	2361	EN1122	35.1		-0.83
339	INH-344	34.0638		-1.14	2366	EN1122	39.0		0.32
362	EN1122	36.09		-0.54	2370	IEC62321	39.7		0.53
551	IEC62321	34.51		-1.01	2372	IEC62321	37.3		-0.18
605	EPA3051A	38.69		0.23	2375	INH-003	34.7		-0.95
607	EPA3052	37.62		-0.09	2379	EN1122	30.84		-2.09
622	EN1122	40.7		0.82	2380	EN1122	35		-0.86
632	INH-003	58.39	G(0.01)	6.05	2385	in house	41.5		1.06
826	IEC62321	39		0.32	2390		-----		-----
840	EN1122	35.1		-0.83	2401	EN1122	35		-0.86
1051	EN1122	38.17	Fr 50.07	0.08	2406	EN1122	38.14		0.07
1126	in house	41		0.91	2410	EN1122	41		0.91
1213	IEC62321	38.70		0.23	2413	in house	28.13		-2.89
2115	CPSIA	53.4	G(0.01)	4.58	2415	EN1122	36.04		-0.55
2127	EN1122	38.6		0.20	2418	EPA3050B/3052	34.415		-1.03
2129	EPA3050B	39.3		0.41	2420	EN1122	36.6		-0.39
2132	in house	33.85		-1.20	2421	EN1122	35.5		-0.71
2137	EN1122	36.5		-0.42	2425	EN1122	37.1		-0.24
2139	IEC62321	43.6	Fr 50.8	1.68	2426	EN1122	36.0		-0.57
2146	EN1122	36.6		-0.39	2431	CPSC-CH-E1001-08	38.69	Fr 68.28	0.23
2152	in house	35.5		-0.71	2432	in house	37.03		-0.26
2156	IEC62321	35.7		-0.65	2433	EN1122	34.71		-0.95
2165	EN1122	41.2		0.97	2438	EN1122	39.19		0.38
2167	IEC62321	39.64		0.51	2442	in house	37.69		-0.07
2169	IEC62321	36.5		-0.42	2444	IEC62321	36.86		-0.31
2172	IEC62321	37.72		-0.06	2445	EN1122	38.47		0.16
2173	EN1122	39.1		0.35	2453		-----		-----
2175	EPA3052	36.84		-0.32	2462	EN1122	41.0		0.91
2177	IEC62321	35.8		-0.62	2470	CPSC-CH-E1002-08.1	38.6		0.20
2179	IEC62321	36.5		-0.42	2475	in house	33		-1.45
2182	EN1122	40.2		0.68	2479	EN1122	39.6		0.50
2184	EN1122	35.7		-0.65	2482	EN11885	36.5478		-0.40
2190	EN1122	33.8		-1.22	2488		-----		-----
2196	IEC62321	36.6		-0.39	2489	IEC62321	40.04		0.63
2197	EN1122	41.9		1.18	2491	IEC62321	38.972		0.31
2201	IEC62321	37.3		-0.18	2492	in house	34.98		-0.87
2202	in house	41.1		0.94	2493	EPA3052/6020A	40.33		0.71
2212	in house	39		0.32	2494	EN1122	35.96		-0.58
2216	IEC62321	34.7		-0.95	2500	EN1122	38		0.03
2217	IEC62321	39.5		0.47	2502	IEC62321	40.04		0.63
2218	EN1122	39.76		0.55	2503	CPSIA F963	200.09	G(0.01)	47.91
2228		-----		-----	2504	EN1122	36.93		-0.29
2229	EN1122	36.9		-0.30	2508	CPSC-CH-E1001-08.1	38.5		0.17
2236	EPA3051A	36.5		-0.42	2513	IEC62321	38.63		0.21
2241	IEC62321	37.90		0.00	3100	IEC62321	37.9		0.00
2246	EN1122	39.0		0.32	3104	EN1122	37.2		-0.21
2247	IEC62321	38		0.03	3107		-----		-----
2251	IEC62321	6.4709	G(0.01)	-9.29	3110	CPSC-CH-E1002-08.2	38.57		0.19
2253	CPSC-CH-E1003-09.1	38.645		0.22	3111	in house	40.28		0.70
2254	in house	37		-0.27	3113	INH-053	35.794		-0.63
2255	EN1122	33.6		-1.27	3116	EN1122	37.8		-0.03
2256	EN1122	39.5		0.47	3122	in house	43		1.50
2258	CPSD-AN-00164	45.794		2.33	3124	EPA3052	36.0		-0.57
2259	IEC62321	38.6		0.20	3134		-----		-----
2265	EN1122	45.38		2.21	3146	EN11885	37.30		-0.18
2269	in house	32.13		-1.71	3153	EN1122	36.3		-0.48
2271	EPA3052	40.4		0.73	3154	EN1122	35.95		-0.58
2282	IEC62321	37.4		-0.15	3160	CPSC-CH-E1002-08.1	39.78		0.55
2284	EPA3052	35.9		-0.59	3163	in house	36		-0.57
2289		-----		-----	3166	in house	34.1		-1.13
2290	IEC62321	37.2		-0.21	3167	EN1122	36.83		-0.32
2293	EN1122	44.7		2.00	3169	EN1122	37.685		-0.07
2294		-----		-----	3172	EN1122	40.0		0.62
2298		-----		-----	3176	EN1122	45.55		2.26
2301	CPSC-CH-E1002-08.1	41.4		1.03	3182	EN1122	45.24		2.16
2303	EN1122	40.81		0.86	3185	IEC62321	37.51		-0.12
2309	IEC62321	35.07		-0.84	3190	IEC62321	37.6		-0.09
2310	EPA3052	37.7		-0.06	3192	in house	42.38		1.32
2311	EPA3052	38.3		0.11	3197	EN1122	38.6		0.20
2316	IEC62321	36.69		-0.36	3199	EPA3051	42.6		1.38

3210	EN1122	<40		-----
3214	EN1122	42.9		1.47
3218	IEC62321	33.81		-1.21
3220	EN1122	35.9	Fr 48.9	-0.59
3225	EN1122	36.1		-0.54
3228	EN1122	42		1.21
3237	in house	38.50		0.17
3239	IEC62321	41.00		0.91
3248	EN1122	40		0.62
8005	EN1122	38.4		0.14
	normality	OK		
	n	142		
	outliers	4		
	mean (n)	37.913		
	st.dev. (n)	2.8501		
	R(calc.)	7.980		
	R(EN1122:01)	9.478		

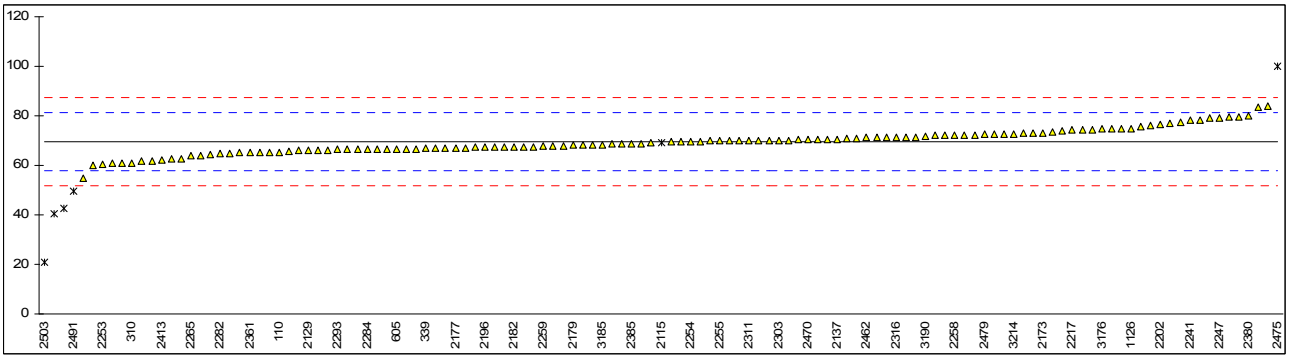


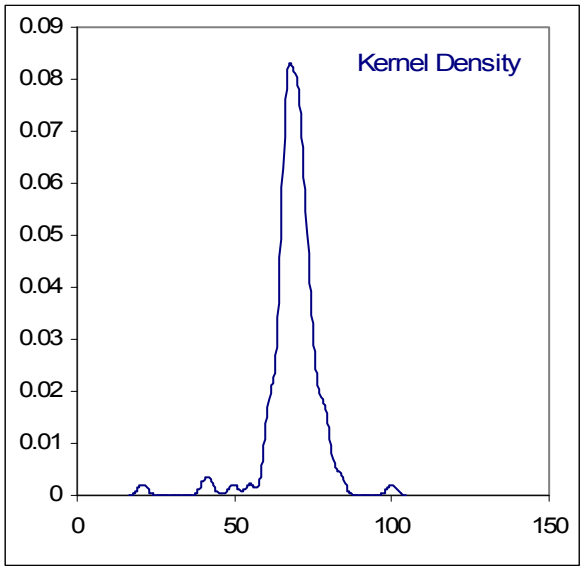


Determination of Chromium as Cr on sample #12081; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	65.4246		-0.70	2350	IEC62321	68.52		-0.18
310	in house	61.0		-1.46	2353	EPA3051	65.3		-0.73
324	EPA3052	65.729		-0.65	2359	EPA3052	64.1		-0.93
330	in house	60.9		-1.47	2361	CPSC	65.3		-0.73
339	INH-344	66.7505		-0.48	2366	EPA3052	70.8		0.21
362	EN1122	67.57		-0.34	2370	IEC62321	75.8		1.06
551	IEC62321	72.83		0.56	2372	IEC62321	72.7		0.53
605	EPA3051A	66.64		-0.50	2375	INH-003	66.7		-0.49
607	EPA3052	67.38		-0.37	2379	IEC62321	77.26		1.31
622	EN1122	73.3		0.64	2380	EPA3052	80		1.78
632	INH-003	83.72		2.41	2385	in house	68.9		-0.11
826	IEC62321	74		0.75	2390		-----		-----
840	IEC62321	67.9		-0.28	2401		-----		-----
1051		-----		-----	2406	CPSC-CH-E1002-08.2	66.45		-0.53
1126	in house	75		0.92	2410	EPA3052	71		0.24
1213		-----		-----	2413	in house	62.21		-1.25
2115	CPSIA	69.1	ex	-0.08	2415	CPSC	66.67		-0.49
2127	IEC62321	72		0.41	2418	EPA3050B/3052	66.497		-0.52
2129	ISO17294	66.0		-0.61	2420	EN1122	40.5	G(0.01)	-4.95
2132	in house	74.40		0.82	2421		-----		-----
2137	EPA3052	70.6		0.18	2425	EPA3052	72.7		0.53
2139	IEC62321	79.7		1.72	2426	EPA3052	68.9		-0.11
2146		-----		-----	2431	CPSC-CH-E1001-08	68.28	Fr 38.69	-0.22
2152	in house	62.6		-1.19	2432		-----		-----
2156	IEC62321	67.3		-0.39	2433	EPA3051A	79		1.61
2165	IEC62321	67.6		-0.33	2438	EPA3052	65.88		-0.63
2167	IEC62321	83.29	Fr 114.20	2.33	2442		-----		-----
2169	IEC62321	65.1		-0.76	2444	IEC62321	69.08		-0.08
2172	IEC62321	69.85		0.05	2445	in house	71.20		0.28
2173	IEC62321	73.0		0.58	2453		-----		-----
2175	EPA3052	68.32		-0.21	2462	EPA3052	71.1		0.26
2177	IEC62321	66.8		-0.47	2470	CPSC-CH-E1002-08.1	70.4		0.14
2179	IEC62321	68.1		-0.25	2475	in house	100	G(0.01)	5.18
2182	EPA3051A	67.4		-0.37	2479	IEC62321	72.5		0.50
2184	IEC62321	66.6		-0.50	2482	EN11885	66.7552		-0.48
2190	in house	42.4	G(0.01)	-4.62	2488		-----		-----
2196	IEC62321	67.3		-0.39	2489	IEC62321	79.52		1.69
2197		-----		-----	2491	IEC62321	49.715	G(0.05)	-3.38
2201	IEC62321	68.9		-0.11	2492		-----	W	-----
2202	in house	76.5		1.18	2493	EPA3052/6020A	72.29		0.46
2212	in house	70		0.07	2494	EPA3052	69.40		-0.03
2216	IEC62321	61.7		-1.34	2500	EPA3051A/6010C	68		-0.27
2217	IEC62321	74.3		0.81	2502	EPA3052	76.75		1.22
2218		-----		-----	2503	CPSIA F963	20.95	G(0.01)	-8.27
2228		-----		-----	2504	EPA	62.74		-1.16
2229	IEC62321	72.0		0.41	2508	CPSC-CH-E1001-08.1	71.375		0.31
2236	EPA3051A	71.45		0.32	2513	IEC62321	74.84		0.90
2241	IEC62321	78.29		1.48	3100	IEC62321	66.1		-0.59
2246		-----		-----	3104		-----		-----
2247	IEC62321	79		1.61	3107		-----		-----
2251		-----		-----	3110	CPSC-CH-E1002-08.2	70.09		0.09
2253	CPSC-CH-E1003-09.1	60.506		-1.54	3111		-----		-----
2254	in house	69.5		-0.01	3113		-----		-----
2255	EPA3052	69.8		0.04	3116		-----		-----
2256		-----		-----	3122	in house	65		-0.78
2258	INH-00164	72.085		0.43	3124	EPA3052	69.8		0.04
2259	IEC62321	67.9		-0.28	3134		-----		-----
2265	DIN54233	64.04		-0.94	3146	EN11885	67.20		-0.40
2269	in house	60.93		-1.47	3153	IEC62321	66.8		-0.47
2271	EPA3052	70.5		0.16	3154	EN1122	66.63		-0.50
2282	IEC62321	64.7		-0.83	3160	CPSC-CH-E1002-08.1	69.77		0.03
2284	EPA3052	66.5		-0.52	3163	in house	55		-2.48
2289		-----		-----	3166	in house	64.5		-0.86
2290	IEC62321	74.9		0.91	3167	IEC62321	69.38		-0.03
2293	CPSC-CH-E1002-08.1	66.4		-0.54	3169	EPA3052	69.804		0.04
2294		-----		-----	3172		66.8		-0.47
2298		-----		-----	3176	in house	74.6		0.86
2301	CPSC-CH-E1002-08.1	76.1		1.11	3182	EPA3052	70.51		0.16
2303		70.07		0.09	3185	IEC62321	68.32		-0.21
2309	IEC62321	72.14		0.44	3190	IEC62321	71.7		0.36
2310	EPA3052	65.3		-0.73	3192		-----		-----
2311	EPA3052	70		0.07	3197	in house	71.17		0.27
2316	EPA3052	71.25		0.29	3199	EPA3051	74.3		0.81

3210	EN17072	<25	False -?	<-7.58
3214	EPA3052	72.8		0.55
3218	IEC62321	72.92		0.57
3220	EPA3050B	78.4		1.50
3225	IEC62321	70.4		0.14
3228	IEC62321	70		0.07
3237	in house	61.76		-1.33
3239	IEC62321	66.0	Fr 94.68	-0.61
3248	IEC62321	60		-1.63
8005		-----		-----
	normality	OK		
	n	121		
	outliers	5	+1 excluded	
	mean (n)	69.566		
	st.dev. (n)	4.967		
	R(calc.)	13.907		
	R(Horwitz)	16.457		

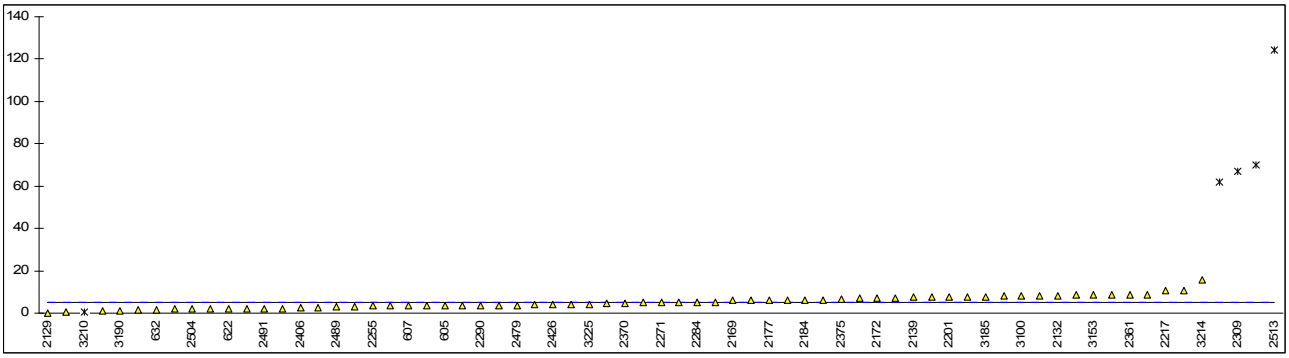


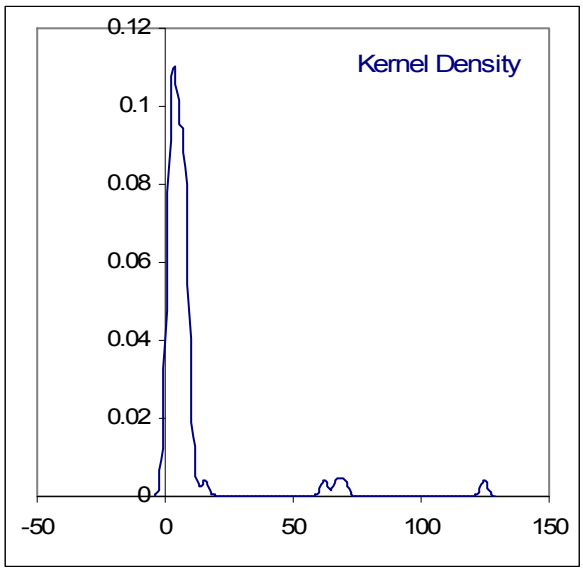


Determination of Hexavalent Chromium as Cr^{6+} on sample #12081; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	EPA3060A	n.d.		-----	2350	IEC62321	2.0264		-----
310		-----		-----	2353	IEC62321	8.4		-----
324		-----		-----	2359	EPA3060A	n.d.		-----
330		-----		-----	2361	IEC62321	8.7		-----
339	INH-341	<5		-----	2366	IEC62321	3.77		-----
362		-----		-----	2370	IEC62321	4.78		-----
551	IEC62321	0.39		-----	2372	IEC62321	3.4		-----
605	IEC62321	3.64		-----	2375	IEC62321	6.63		-----
607	IEC62321	3.47		-----	2379	IEC62321	2.26		-----
622	in house	1.9		-----	2380	EPA3060A	n.d.		-----
632	INH-004	1.76		-----	2385	EPA3060A	<1		-----
826	IEC62321	6.025		-----	2390		-----		-----
840	IEC62321	4.6		-----	2401		-----		-----
1051		-----		-----	2406	IEC62321	2.51		-----
1126		-----		-----	2410		-----		-----
1213	IEC62321	7.005		-----	2413		-----		-----
2115		-----		-----	2415	IEC62321	n.d.		-----
2127		-----		-----	2418	EPA3060A/7196A	<7		-----
2129	ISO17294	0.13		-----	2420		-----		-----
2132	IEC62321	8.238		-----	2421		-----		-----
2137	EPA3060A	<0.1		-----	2425	EPA3060A	7.7		-----
2139	IEC62321	7.5	Fr 0.5	-----	2426	EPA3060A	3.90		-----
2146		-----		-----	2431		-----		-----
2152		-----		-----	2432		-----		-----
2156	IEC62321	8.6		-----	2433	EPA3060A	n.d.		-----
2165	IEC62321	5.3		-----	2438		-----		-----
2167	IEC62321	6.29		-----	2442		-----		-----
2169	IEC62321	5.93		-----	2444		-----		-----
2172	IEC62321	7.040		-----	2445		-----		-----
2173	IEC62321	3.7		-----	2453		-----		-----
2175	EPA3060A/7196A	1.83		-----	2462	EPA3060A	1.89		-----
2177	IEC62321	6.18		-----	2470		-----		-----
2179	IEC62321	7.2		-----	2475		-----		-----
2182	IEC62321	n.d.		-----	2479	IEC62321	3.8		-----
2184	IEC62321	6.25		-----	2482		-----		-----
2190		-----		-----	2488		-----		-----
2196	IEC62321	n.d.		-----	2489	IEC62321	2.9		-----
2197		-----		-----	2491	IEC62321	2.233		-----
2201	IEC62321	7.62		-----	2492		-----		-----
2202	in house	70.1	G(0.01)	-----	2493	in house	10.8		-----
2212	in house	<5		-----	2494	EN71-3	n.d.		-----
2216	IEC62321	<5		-----	2500	IEC62321	3		-----
2217	IEC62321	10.4	Fr 0.4	-----	2502	EPA3060A/7196A	8.835		-----
2218		-----		-----	2503		-----		-----
2228		-----		-----	2504	IEC62321	1.84		-----
2229		-----		-----	2508		-----		-----
2236		-----		-----	2513	IEC62321	124.42	G(0.01)	-----
2241		-----		-----	3100	IEC62321	8.1		-----
2246		-----		-----	3104		-----		-----
2247	IEC62321	3.9		-----	3107		-----		-----
2251		-----		-----	3110		-----		-----
2253		-----		-----	3111		-----		-----
2254		-----		-----	3113		-----		-----
2255	EPA3060A	3.33		-----	3116		-----		-----
2256		-----		-----	3122		-----		-----
2258		-----		-----	3124		-----		-----
2259		-----		-----	3134		-----		-----
2265	ISO17075	n.d.		-----	3146	EN62321	6.20		-----
2269		-----		-----	3153	IEC62321	8.5		-----
2271	IEC62321	5.10		-----	3154	IEC62321	1.28		-----
2282	IEC62321	<5		-----	3160		-----		-----
2284	IEC62321	5.3		-----	3163		-----		-----
2289		-----		-----	3166	in house	4.83		-----
2290	IEC62321	3.76		-----	3167		-----		-----
2293		-----		-----	3169	IEC62321	<5		-----
2294		-----		-----	3172		-----		-----
2298		-----		-----	3176	ISO11083	n.d.		-----
2301		-----		-----	3182	IEC62321	3.63		-----
2303		-----		-----	3185	IEC62321	7.85		-----
2309	IEC62321	67.0	G(0.01)	-----	3190	IEC62321	1.2		-----
2310		-----		-----	3192		-----		-----
2311		-----		-----	3197	IEC62321	4.02		-----
2316	IEC62321	62.10	G(0.01)	-----	3199	in house	<1.98		-----

3210	in house	0.75	ex	-----
3214	IEC62321	15.6		-----
3218	IEC62321	7.57		-----
3220	EPA3060B	2.55		-----
3225	IEC62321	4.3		-----
3228	IEC62321	5.2		-----
3237	in house	1.10	Fr 0.01	-----
3239	IEC62321	8.195		-----
3248	IEC62321	8		-----
8005		-----		-----
	normality	OK		
	n	64		
	outliers	4	+1 excluded	
	mean (n)	5.154	added 75 mg/kg; recovery approx. 7%	
	st.dev. (n)	2.9323		
	R(calc.)	8.211		
	R(Horwitz)	(1.804)		

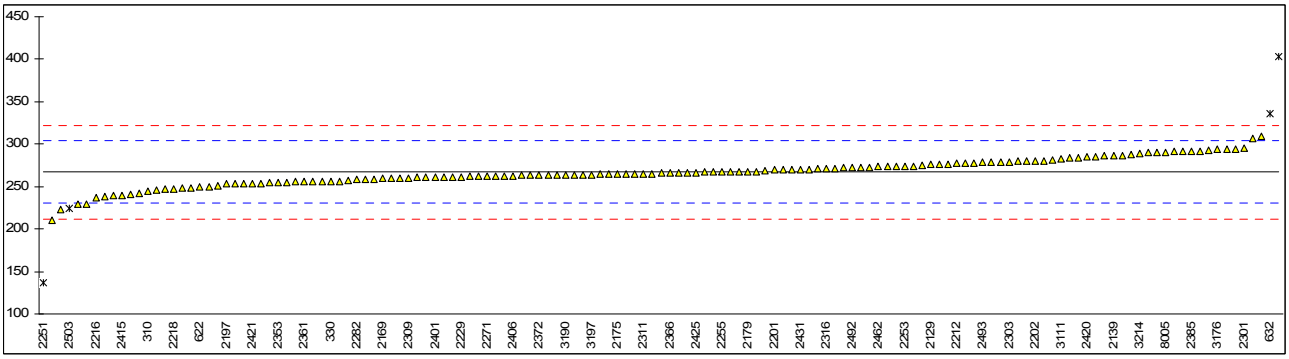


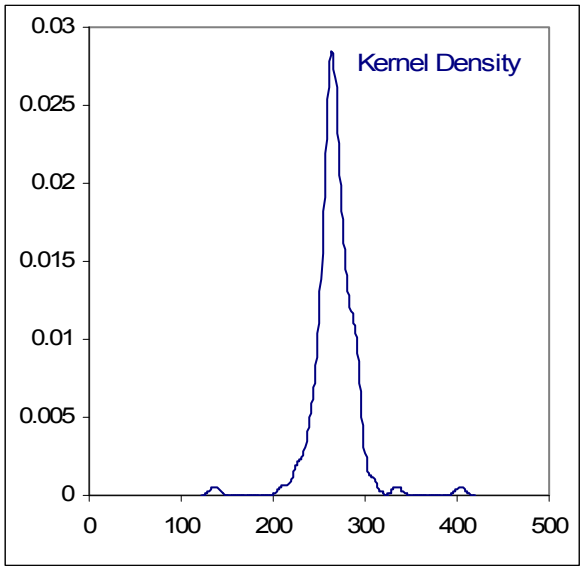


Determination of total Lead as Pb in sample #12081; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	253.5057		-0.73	2350	IEC62321	254.0		-0.70
310	in house	244		-1.24	2353	EPA3051	255.1		-0.64
324	EPA3052	265.11		-0.10	2359	CPSC-CH-E1002-08.1	261.5		-0.29
330	in house	256.4		-0.57	2361	CPSC	255.4		-0.62
339	INH-344	265.731		-0.06	2366	EPA3052	265.9		-0.05
362	EN1122	259.1		-0.42	2370	IEC62321	294		1.47
551	IEC62321	266.89		0.00	2372	IEC62321	263.7		-0.17
605	EPA3051A	269.36		0.14	2375	INH-003	255.0		-0.64
607	EPA3052	256.05		-0.59	2379	IEC62321	239.70		-1.48
622	in house	249.4		-0.95	2380	EPA3052	275	Fr 322	0.44
632	INH-003	335.3	G(0.01)	3.72	2385	in house	292		1.36
826	IEC62321	287		1.09	2390		-----		-----
840	IEC62321	263.9		-0.16	2401	CPSC-CH-E1002-08.1	261		-0.32
1051	CPSH-CH-E1002-08.1	288.25		1.16	2406	CPSC-CH-E1002-08.2	262.80		-0.22
1126	in house	292		1.36	2410	IEC62321	280		0.71
1213	IEC62321	280.6		0.75	2413	in house	240.93		-1.41
2115	CPSIA	403.7	G(0.01)	7.43	2415	CPSC	240.1		-1.45
2127	IEC62321	229		-2.06	2418	EPA3050B/3052	210.308		-3.07
2129	ISO105E04	275.8		0.48	2420	EN1122	285		0.98
2132	in house	261.75		-0.28	2421		254		-0.70
2137	IEC62321	266.3		-0.03	2425	EPA3052	266.4		-0.03
2139	IEC62321	286.4		1.06	2426	CPSC-CH-E1002-08.1	262.1		-0.26
2146		-----		-----	2431	in house	269.97		0.17
2152	in house	293.0		1.42	2432		-----		-----
2156	IEC62321	248.0		-1.02	2433	EPA3051A	272.24		0.29
2165	IEC62321	270.0		0.17	2438	EN1122	229.9	Fr 129.14	-2.01
2167	IEC62321	276.75		0.54	2442		-----		-----
2169	IEC62321	259.2		-0.42	2444	IEC62321	260.72		-0.33
2172	IEC62321	258.3		-0.47	2445	in house	245.5		-1.16
2173	IEC62321	267.1		0.01	2453	CPSC-CH-E1002-08.2	250		-0.92
2175	EPA3052	264.46		-0.13	2462	EPA3052	273.4		0.35
2177	IEC62321	256		-0.59	2470	CPSC-CH-E1002-08.1	277.4		0.57
2179	IEC62321	267.9		0.06	2475	in house	292		1.36
2182	EPA3051A	268.1		0.07	2479	IEC62321	267.5		0.03
2184	IEC62321	2.79.2		-----	2482	E1613	255.364		-0.62
2190	in house	247.3		-1.06	2488		-----		-----
2196	IEC62321	260		-0.37	2489	IEC62321	260.7		-0.34
2197		253.1		-0.75	2491	IEC62321	267.996		0.06
2201	IEC62321	269.3		0.13	2492	in house	272.03		0.28
2202	in house	280.3		0.73	2493	EPA3052/6020A	278.4		0.63
2212	CPSC-CH-E1002-08.1	277		0.55	2494	EPA3052	279.15		0.67
2216	IEC62321	236.7		-1.64	2500	CPSC-CH-E1002-08	267		0.01
2217	IEC62321	241.4		-1.38	2502	IEC62321	277.4		0.57
2218	CPSC-CH-E1002-08.1	247.52		-1.05	2503	CPSIA F963	224.8	ex	-2.28
2228		-----		-----	2504	EPA	307.30		2.20
2229	IEC62321	261.6		-0.29	2508	CPSC-CH-E1001-08.1	272.0		0.28
2236	EPA3051A	281.5		0.79	2513	IEC62321	259.3		-0.41
2241	IEC62321	263.12		-0.20	3100	IEC62321	256.5		-0.56
2246	CPSC-CH-E1002-08	276.4		0.52	3104		-----		-----
2247	IEC62321	261		-0.32	3107		-----		-----
2251	IEC62321	136.8618	G(0.01)	-7.06	3110	CPSC-CH-E1002-08.2	271.03		0.23
2253	CPSC-CH-E1003-09.1	274.201		0.40	3111	in house	282.74		0.86
2254	in house	279.5		0.69	3113	INH-053	269.585		0.15
2255	EPA3052	267.06		0.01	3116	CPSC-CH-E1002-08.2	294.1		1.48
2256	CPSC-CH-E1002-08.1	284.4		0.95	3122	in house	284		0.93
2258	INH-00164	278.89		0.65	3124	EPA3052	286.2		1.05
2259	IEC62321	263		-0.21	3134		-----		-----
2265	EN1122	263.75		-0.17	3146	EN11885	264.0		-0.16
2269	in house	223.38		-2.36	3153	IEC62321	253.9		-0.70
2271	EPA3052	262		-0.26	3154	EN1122	262.1		-0.26
2282	IEC62321	258.1		-0.48	3160	CPSC-CH-E1002-08.1	290.25		1.27
2284	EPA3052	264.2		-0.14	3163	in house	292		1.36
2289		-----		-----	3166	in house	274		0.39
2290	IEC62321	264.7		-0.12	3167	IEC62321	270.9		0.22
2293	CPSC-CH-E1002-08.1	274.2		0.40	3169	CPSC-CH-E1002-08.1	274.328		0.40
2294		-----		-----	3172	CPSC-CH-E1002-08.1	290.0		1.26
2298	CPSC-CH-E1002-08.2	272.50		0.31	3176	INH-1303	293.6		1.45
2301	CPSC-CH-E1002-08.1	295.8		1.57	3182	EPA3052	264.45		-0.13
2303		279.28		0.67	3185	IEC62321	255.2		-0.63
2309	IEC62321	260		-0.37	3190	IEC62321	264		-0.16
2310	EPA3052	266		-0.05	3192	in house	248.7		-0.99
2311	EPA3052	265		-0.10	3197	in house	264.2		-0.14
2316	IEC62321	271		0.22	3199	EPA3051	309		2.29

3210	EN17072	<25	False -?	<-13.13
3214	EPA3052	288.7		1.19
3218	IEC62321	257.4		-0.51
3220	EPA3050B	237.8		-1.58
3225	IEC62321	264.3		-0.14
3228	IEC62321	262		-0.26
3237	in house	251.16		-0.85
3239	IEC62321	285.5		1.01
3248	IEC62321	265		-0.10
8005	INH-023	290.5		1.28
	normality	OK		
	n	139		
	outliers	3	+1 excluded	
	mean (n)	266.870		
	st.dev. (n)	16.1929		
	R(calc.)	45.340		
	R(Horwitz)	51.568		

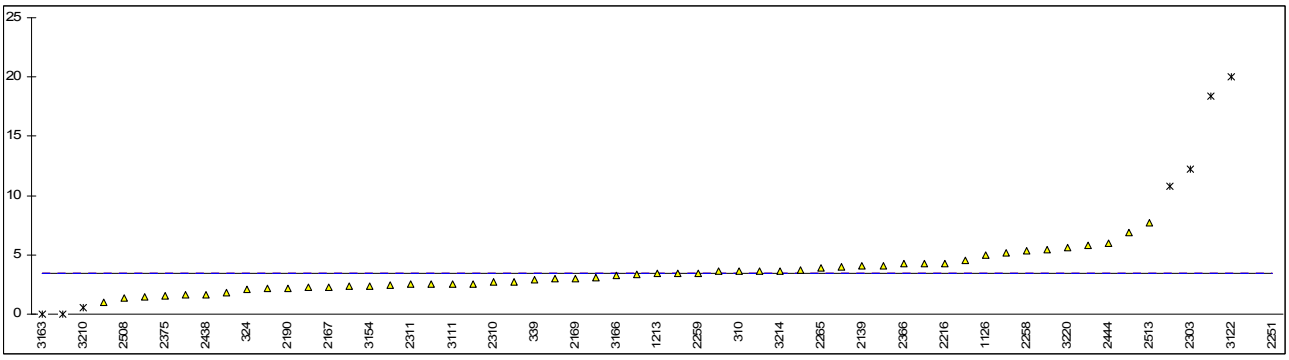


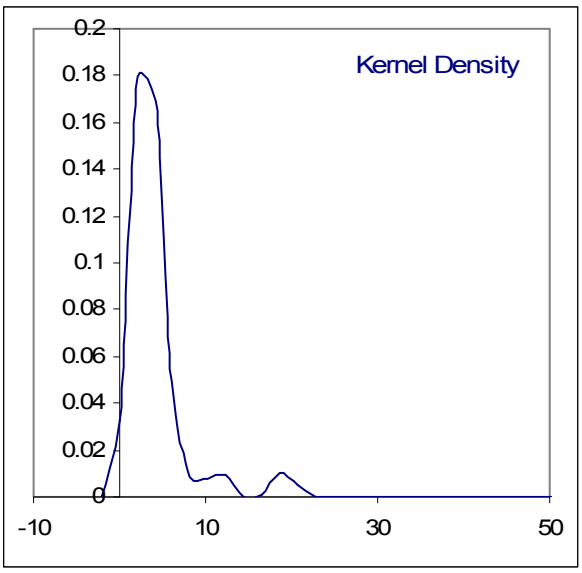


Determination of Mercury as Hg on sample #12081; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
110	INH-034	n.d.		-----	2350	IEC62321	n.d.		-----
310	in house	3.6		-----	2353	EPA3051	<5		-----
324	EPA3052	2.043		-----	2359	EPA3052	n.d.		-----
330	in house	<10		-----	2361	CPSC	<5		-----
339	INH-344	2.9		-----	2366	EPA3052	4.25		-----
362	EN1122	1.43		-----	2370	IEC62321	n.d.		-----
551	IEC62321	n.d.		-----	2372	IEC62321	n.d.		-----
605	EPA3051A	2.23		-----	2375	INH-003	1.5		-----
607	EPA3052	3.60		-----	2379	IEC62321	n.d.		-----
622	in house	1.8		-----	2380	EPA3052	n.d.		-----
632	INH-003	5.80		-----	2385	in house	3.45		-----
826	IEC62321	5.2		-----	2390		-----		-----
840	IEC62321	n.d.		-----	2401		-----		-----
1051		-----		-----	2406	CPSC-CH-E1002-08.2	<5		-----
1126	in house	5		-----	2410	IEC62321	3.6		-----
1213	IEC62321	3.406		-----	2413	in house	n.d.		-----
2115		-----		-----	2415	CPSC	n.d.		-----
2127	IEC62321	3.7		-----	2418	EPA3050B/3052	n.d.		-----
2129	ISO11083	2.52		-----	2420		-----		-----
2132	in house	<10		-----	2421		-----		-----
2137	IEC62321	<0.1		-----	2425	EPA3052	n.d.		-----
2139	IEC62321	4.1		-----	2426	EPA3052	n.d.		-----
2146		-----		-----	2431	CPSC-CH-E1001-08	<5		-----
2152	in house	<12		-----	2432		-----		-----
2156	IEC62321	1.0		-----	2433	EPA3051	n.d.		-----
2165	IEC62321	<2		-----	2438	EPA3052	1.64		-----
2167	IEC62321	2.30		-----	2442		-----		-----
2169	IEC62321	3.03		-----	2444	IEC62321	5.99		-----
2172	IEC62321	<2		-----	2445	in house	2.345		-----
2173	IEC62321	n.d.		-----	2453		-----		-----
2175	EPA3052	5.47		-----	2462	EPA3052	n.d.		-----
2177		-----		-----	2470	CPSC-CH-E1002-08.1	<5		-----
2179	IEC62321	n.d.		-----	2475	in house	<0.6		-----
2182	EPA3051A	n.d.	Fr 21	-----	2479	IEC62321	n.d.		-----
2184	IEC62321	n.d.		-----	2482	E1483	3.1		-----
2190	in house	2.2		-----	2488		-----		-----
2196	IEC62321	n.d.		-----	2489	IEC62321	2.13		-----
2197		-----		-----	2491	IEC62321	2.480		-----
2201	IEC62321	<2		-----	2492	in house	<5		-----
2202		-----		-----	2493	EPA3052/6020A	2.726		-----
2212	in house	3		-----	2494	EPA3052	n.d.		-----
2216	IEC62321	4.3		-----	2500	IEC62321	n.d.		-----
2217	IEC62321	<10		-----	2502	IEC62321	2.504		-----
2218		-----		-----	2503	CPSIA F963	64.06	G(0.01)	-----
2228		-----		-----	2504	EPA	1.61		-----
2229	IEC62321	<5.0		-----	2508	CPSC-CH-E1001-08.1	1.325		-----
2236	EPA3051A	<10		-----	2513	IEC62321	7.68		-----
2241	IEC62321	n.d.		-----	3100	IEC62321	<10		-----
2246	in house	<20		-----	3104		-----		-----
2247	IEC62321	<5		-----	3107		-----		-----
2251	IEC62321	527.2352	G(0.01)	-----	3110	CPSC-CH-E1002-08.2	<15		-----
2253	CPSC-CH-E1003-09.1	n.d.		-----	3111	in house	2.52		-----
2254	in house	n.d.		-----	3113		-----		-----
2255	EPA3052	0.00	ex	-----	3116		-----		-----
2256	EPA3051	<10		-----	3122	in house	20	G(0.01)	-----
2258	INH-00164	5.3467		-----	3124		-----		-----
2259	IEC62321	3.46		-----	3134		-----		-----
2265	DIN54233	3.92		-----	3146	EN1483	4.57		-----
2269	in house	10.77	G(0.01)	-----	3153	IEC62321	n.d.		-----
2271	EPA3052	<10.0		-----	3154	EN1122	2.375		-----
2282	IEC62321	<10		-----	3160		-----		-----
2284	EPA3052	<5		-----	3163	in house	0	ex	-----
2289		-----		-----	3166	in house	3.28		-----
2290	IEC62321	<10		-----	3167	IEC62321	18.37	G(0.01)	-----
2293		-----		-----	3169	EPA3052	6.865		-----
2294		-----		-----	3172		<10		-----
2298		-----		-----	3176	in house	4.0		-----
2301	CPSC-CH-E1002-08.1	n.d.		-----	3182	EPA3052	<2		-----
2303		12.25	G(0.01)	-----	3185	IEC62321	<2		-----
2309	IEC62321	<5		-----	3190	IEC62321	<2		-----
2310	EPA3052	2.7		-----	3192		-----		-----
2311	EPA3052	2.5		-----	3197	in house	4.1		-----
2316	IEC62321	<5		-----	3199	EPA3051	<5.00		-----

3210	EN17072	0.5	ex	-----
3214	EPA3052	3.60		-----
3218	IEC62321	<2		-----
3220	EPA3050B	5.60		-----
3225	IEC62321	<10		-----
3228	IEC62321	n.d.		-----
3237	in house	4.26		-----
3239	IEC62321	3.363		-----
3248	IEC62321	<0.078		-----
8005		-----		-----
	normality	not OK		
	n	58		
	outliers	6	+3 excluded	
	mean (n)	3.412		
	st.dev. (n)	1.4597		
	R(calc.)	4.087		
	R(Horwitz)	(1.271)		





APPENDIX 2; Analytical details regarding Mercury determination

Lab	Technique to release the metal (Hg)	Acid / acid mixture used (Hg)	Lab	Technique to release the metal (Hg)	Acid / acid mixture used (Hg)
110	Acid digestion	HNO_3	**2254**	Microwave	$HCl / HNO_3 / H_2O_2$
310	Microwave	HNO_3	**2255**	Microwave	HNO_3 / H_2O_2
324	Microwave	HNO_3 / HF	**2256**	Microwave	HNO_3
330	Microwave	HNO_3 / H_2O_2	**2258**	Microwave	HNO_3
339	Acid digestion	HNO_3	**2259**	Microwave	HNO_3 / H_2O_2
362	--	--	**2265**	Microwave	HNO_3
551	Microwave	HNO_3	**2269**	Microwave	HNO_3
605	Microwave	HNO_3	**2271**	Acid digestion	HNO_3 / HCl
607	Microwave	HNO_3 / HF	**2282**	Microwave	HNO_3
622	Acid digestion	HNO_3 / H_2SO_4	**2284**	Microwave	$HF / HNO_3 / H_2O_2$
632	Microwave	HNO_3 / HF	**2290**	Microwave	HNO_3
826	Microwave	HNO_3	**2293**	--	--
840	Microwave	HNO_3 / H_2O_2	**2298**	--	--
1051	--	--	**2301**	Microwave	HNO_3
1126	Microwave	$HCl / HNO_3 / H_2O_2$	**2303**	Microwave	HNO_3
1213	Microwave	HNO_3 / H_2O_2	**2309**	Microwave	HNO_3 / HF
2115	Microwave	HNO_3 / HCl	**2310**	Microwave	$HF / HNO_3 / H_2O_2$
2127	Microwave	$HCl / HNO_3 / H_2O_2 / HBF_4$	**2311**	Microwave	$HF / HNO_3 / H_2O_2$
2129	Microwave	HNO_3	**2316**	Microwave	HF / HNO_3
2132	Microwave	HNO_3 / HCl	**2350**	Microwave	HNO_3
2137	Microwave	$HF / HNO_3 / H_2O_2$	**2353**	Microwave	$HBF_4 / HNO_3 / H_2O_2$
2139	Microwave	$HF / HNO_3 / H_2O_2$	**2359**	Microwave	HNO_3 / H_2O_2
2146	--	--	**2361**	Microwave	$HBF_4 / HNO_3 / H_2O_2$
2152	Microwave	HNO_3	**2366**	Microwave	HNO_3 / H_2O_2
2156	Microwave	HNO_3 / H_2O_2	**2370**	Microwave	HNO_3
2165	Microwave	HNO_3	**2372**	Microwave	HF / HNO_3 / HCl
2167	Microwave	HNO_3	**2375**	Microwave	HNO_3
2169	Microwave	HNO_3	**2379**	Microwave	--
2172	Microwave	HNO_3	**2380**	--	--
2173	Microwave	HNO_3 / H_2O_2	**2385**	Microwave	HNO_3 / H_2O_2
2175	Microwave	$HCl / HNO_3 / H_2O_2$	**2401**	--	--
2177	Microwave	--	**2406**	Microwave	HNO_3
2179	Microwave	HNO_3 / HCl	**2410**	Microwave	$HF / HNO_3 / H_2O_2$
2182	Microwave	HNO_3	**2413**	Microwave	HNO_3 / H_2O_2
2184	Microwave	HNO_3 / H_2O_2	**2415**	Microwave	HNO_3
2190	Acid digestion	$HNO_3 / HClO_4$	**2418**	Microwave	--
2196	Microwave	HNO_3	**2420**	--	--
2197	--	--	**2421**	--	--
2201	Microwave	HNO_3	**2425**	Microwave	HNO_3 / H_2O_2
2202	Microwave	HNO_3 / HF	**2426**	Microwave	HNO_3
2212	Combustion	--	**2431**	Microwave	HNO_3
2216	Microwave	HNO_3	**2432**	--	--
2217	Acid digestion	HNO_3 / H_2O_2	**2433**	Acid digestion	HNO_3
2218	Microwave	HNO3	**2438**	Microwave	HF / HNO_3 / HCl
2229	Microwave	HNO_3 / H_2O_2	**2442**	--	--
2236	Microwave	HNO_3 / HF	**2444**	Microwave	HNO_3 / HCl
2241	Microwave	HNO_3 / H_2O_2	**2445**	Microwave	HNO_3
2246	Microwave	HNO_3 / H_2O_2	**2453**	--	--
2247	Microwave	HNO_3	**2462**	Microwave	--
2251	Microwave	$HF / HNO_3 / H_2O_2$	**2470**	Microwave	HNO_3
2253	Microwave	HNO_3	**2475**	XRF	--

Lab	Technique to release the metal (Hg)	Acid / acid mixture used (Hg)	Lab	Technique to release the metal (Hg)	Acid / acid mixture used (Hg)
2479	Microwave	HNO_3 / H_2O_2			
2482	Microwave	--			
2489	Microwave	HNO_3 / H_2O_2			
2491	Microwave	HNO_3 / H_2O_2			
2492	Microwave	HNO_3			
2493	Microwave	HNO_3			
2494	Microwave	HNO_3 / H_2O_2			
2500	Microwave	HNO_3			
2502	Microwave	--			
2503	Microwave	HNO_3			
2504	Microwave	HNO_3			
2508	Microwave	HNO_3			
2513	Microwave	HBF_4 / HNO_3 / H_2O_2			
3100	Microwave	HNO_3			
3104	--	--			
3110	Microwave	HNO_3 / H_2O_2			
3111	Microwave	HNO_3			
3113	--	--			
3116	--	--			
3122	Microwave	HNO_3			
3124	Microwave	HF / HNO_3 / HCl			
3146	Microwave	HNO_3 / H_2O_2			
3153	Microwave	HNO_3			
3154	Microwave	HNO_3 / H_2O_2			
3160	--	--			
3163	XRF	--			
3166	Microwave	HCl / HNO_3			
3167	Microwave	HNO_3 / H_2O_2			
3169	Microwave	HNO_3			
3172	Acid digestion	HNO_3			
3176	Microwave	HNO_3 / H_2SO_4			
3182	Microwave	HNO_3			
3185	Microwave	HNO_3 / H_2O_2			
3190	Microwave	HNO_3			
3192	--	--			
3197	Microwave	HNO_3			
3199	Microwave	HNO_3			
3210	Microwave	HCl / HNO_3			
3214	Microwave	HNO_3			
3218	Microwave	HF / HNO_3			
3220	Microwave	HNO_3			
3225	Microwave	HNO_3			
3228	Microwave	HNO_3			
3237	Microwave	HNO_3			
3239	Microwave	HCl / HNO_3			
3248	Microwave	HNO_3 / H_2O_2			
8005	--	--			

Analytical details regarding Hexavalent Chromium determination

Lab	Particle size	Solution	Solid/liquid ratio g/mL	Extraction conditions	Other details
110	2mm*2mm*2mm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	continuous stirring
310	--	--	--	--	--
324	--	--	--	--	--
330	--	--	--	--	--
339	2mm	Water, NaOH	0.1 g/ml	3 hrs at 90-95°C	continuous stirring
362	--	--	--	--	--
551	2mm	Alkaline solution	0.5 g/ml	3hrs at 90-95°C	Sample not grinded
605	250µm	Alkaline solution	0.05 g/ml	3hrs at 90-95°C	
607	250µm	Alkaline solution	0.05 g/ml	3hrs at 90-95°C	
622	--	NaOH, Na_2CO_3	0.02 g/ml	1 hrs at 90-95°C	shaking
632	2mm*2mm*2mm	NaOH, Na_2CO_3	0.05 g/ml	1 hrs at 90-95°C	continuous stirring
826	powder	NaOH, Na_2CO_3	40	3 hrs at 90-95°C	continuous stirring
840	<0.1mm	NaOH, Na_2CO_3	0.05 g/ml	1 hrs at 90-95°C	continuous stirring
1051	--	--	--	--	--
1126	--	--	--	--	--
1213	250µm	NaOH, Na_2CO_3	0.01 g/ml	3 hrs at 90-95°C	continuous stirring
2115	--	--	--	--	--
2127	--	--	--	--	--
2129	grinded to 0.1mm	sweat according ISO105E04	0.02 g/ml	1 hr at 40˚C	--
2132	powder	NaOH, Na_2CO_3	0.04 g/ml	3 hrs at 90-95°C	--
2137	powder	NaOH, Na_2CO_3	0.04 g/ml	1 hrs at 90-95°C	--
2139	pallet	NaOH, Na_2CO_3	0.01 g/ml	1 hrs at 90-95°C	--
2146	--	--	--	--	--
2152	--	--	--	--	--
2156	<1mm	NaOH, Na_2CO_3	0.04 g/ml	3 hrs at 90-95°C	--
2165	<1mm*1mm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	continuous stirring
2167	150µm	NaOH, Na_2CO_3 , $MgCl_2$	0.001 g/ml	1 hrs at 90-95°C	Solution filtered
2169	<0.25mm	NaOH, Na_2CO_3	0.005 g/ml	3 hrs at 90-95°C	continuous stirring
2172	1mm*1mm	NaOH, Na_2CO_3	--	3 hrs at 90-95°C	--
2173	1mmx5mm	NaOH, Na_2CO_3	0.025 g/ml	1 hrs at 90-95°C	continuous stirring
2175	2mm*2mm*2mm	NaOH, Na2CO3	0.02g/ml	1 hrs at 90-95°C	--
2177	<0.25mm	NaOH	0.03 g/ml	3 hrs at 90-95°C	continuous stirring
2179	powder	NaOH, Na_2CO_3 , $MgCl_2$	0.04 g/ml	1 hrs at 90-95°C	--
2182	500µm	NaOH, Na_2CO_3	0.02 g/ml	3 hrs at 90-95°C	--
2184	milling	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	continuous stirring
2190	--	--	--	--	--
2196	500µm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	--
2197	--	--	--	--	--
2201	500µm	NaOH, Na_2CO_3	0.02 g/ml	3 hrs at 90-95°C	continuous stirring
2202	no grinding	alkali solution	0.0625 g/ml	30 min, heating	
2212	--	--	--	--	--
2216	<250 µm	NaOH, Na_2CO_3	0.01 g/ml	4 hrs at 90-95°C	continuous stirring
2217	--	NaOH, Na_2CO_3	--	1 hrs at 90-95°C	--
2218	--	--	--	--	--
2229	--	--	--	--	--
2236	--	--	--	--	--
2241	--	--	--	--	--
2246	--	--	--	--	--
2247	Powder form	phosphate buffer	0.02g/ml	3hrs at 90°C	continuous stirring
2251	--	--	--	--	--
2253	--	--	--	--	--

2254	--	--	--	--	--
2255	approx 1mm	NaOH, Na_2CO_3	0.05 g/ml	4 hrs at 90-95°C	continuous stirring
2256	--	--	--	--	--
2258	--	--	--	--	--
2259	--	--	--	--	--
2265	Small pieces	HK_2PO_4	0.01 g/ml	Room temp.	shaking
2269	--	--	--	--	--
2271	<250 µm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	continuous stirring
2282	1mmx1mm	NaOH, Na_2CO_3	0.01 g/ml	3 hrs at 90-95°C	--
2284	0.5x0.5x0.5mm	NaOH, Na_2CO_3	0.04 g/ml	3 hrs at 90-95°C	--
2290	1mmx1mm	NaOH, Na_2CO_3	0.02 g/ml	3 hrs at 90-95°C	constant stirring
2293	--	--	--	--	--
2298	--	--	--	--	--
2301	--	--	--	--	--
2303	--	--	--	--	--
2309	250µm size sieve	phosphate buffer	0.025 g/ml	3hrs at 95°C	--
2310	--	--	--	--	--
2311	--	--	--	--	--
2316	250 µm	Phospahte buffer	0.025g/ml	3hrs at 90°C	shaker water bath
2350	250 µm	NaOH, Na_2CO_3	0.01 g/ml	3 hrs at 90-95°C	shaker water bath
2353	<2X2X2mm	NaOH, Na_2CO_3	0.025 g/ml	3 hrs at 90-95°C	continuous shaking
2359	2X2X2mm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	--
2361	<2X2X2mm	NaOH, Na_2CO_3	0.025 g/ml	3 hrs at 90-95°C	continuous shaking
2366	250 µm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	shaker water bath
2370	0.5mm x 0.5mm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	constant stirring
2372	<0.25mm	NaOH, Na_2CO_3 , $MgCl_2$	0.05 g/ml	3 hrs at 90-95°C	--
2375	--	NaOH, Na_2CO_3	--	3 hrs at 90-95°C	--
2379	--	Alkaline digestion	0.02 g/ml	3hrs at 90°C	--
2380	--	--	--	--	--
2385	<0.5mm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	--
2401	--	--	--	--	--
2406	<1mm	NaOH, Na_2CO_3	0.01 g/ml	3 hrs at 90-95°C	--
2410	--	--	--	--	--
2413	--	--	--	--	--
2415	powder	Sodium buffer	0.02g/ml	1hr at 90-95°C	--
2418	--	Solvent	0.025g/ml	2hrs at 95°C	
2420	--	--	--	--	--
2421	--	--	--	--	--
2425	reduced	NaOH, Na_2CO_3	0.02 g/ml	1 hrs at 90-95°C	--
2426	<0.5mm	NaOH, Na_2CO_3	0.05 g/ml	1 hrs at 90-95°C	--
2431	--	--	--	--	--
2432	--	--	--	--	--
2433	--	NaOH, Na_2CO_3	--	1 hrs at 90-95°C	--
2438	--	--	--	--	--
2442	--	--	--	--	--
2444	--	--	--	--	--
2445	--	--	--	--	--
2453	--	--	--	--	--
2462	<0.1mm	NaOH, Na_2CO_3	0.03 g/ml	3 hrs at 90-95°C	--
2470	--	--	--	--	--
2475	--	--	--	--	--
2479	<1mm	NaOH, Na_2CO_3	0.025 g/ml	1 hrs at 90-95°C	--
2482	--	--	--	--	--
2489	powder	phosphate buffer	0.013g/ml	3 hrs at 90-95°C	--

2491	1*1*1mm	NaOH, Na_2CO_3	0.02 g/ml	3 hrs at 90-95°C	--
2492	cutting	NaOH, Na_2CO_3	0.05 g/ml	1 hrs at 90-95°C	--
2493	--	NaOH, Na_2CO_3	0.02 g/ml	1 hrs at 90-95°C	--
2494	3*3mm	HCl	0.029 g/ml	1 hr room temp.	--
2500	powder	Alkaline digestion solution	0.05 g/ml	1 hrs at 90-95°C	--
2502	<0.5mm	NaOH, Na_2CO_3	0.02 g/ml	1 hrs at 90-95°C	--
2503	--	--	--	--	--
2504	2*2mm	NaOH, Na_2CO_3	0.01 g/ml	3 hrs at 90-95°C	Shaker water bath
2508	--	--	--	--	--
2513	3*2mm	NaOH, Na_2CO_3 , $MgCl_2$	0.05 g/ml	3 hrs at 90-95°C	Continuous stirring
3100	<250µm	NaOH, Na_2CO_3	0.02 g/ml	3 hrs at 90-95°C	Shaker water bath
3104	--	--	--	--	--
3110	--	--	--	--	--
3111	--	--	--	--	--
3113	--	--	--	--	--
3116	--	--	--	--	--
3122	--	--	--	--	--
3124	--	--	--	--	--
3146	<250µm	NaOH, Na_2CO_3	0.04 g/ml	3 hrs at 90-95°C	--
3153	grind into powder	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	Stirring bath
3154	--	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	Stirring bath
3160	--	--	--	--	--
3163	--	--	--	--	--
3166	--	NaOH, Na_2CO_3	--	1 hrs at 90-95°C	--
3167	--	--	--	--	--
3169	<250µm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	--
3172	--	--	--	--	--
3176	--	Na_2CO_3	1:2	30 min at 40°C	waterbath
3182	<250µm	NaOH, Na_2CO_3	0.04 g/ml	3 hrs at 90-95°C	--
3185	<250µm	NaOH, Na_2CO_3	0.04 g/ml	3 hrs at 90-95°C	--
3190	grinded	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	--
3192	--	--	--	--	--
3197	0.08mm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	Shaking water bath
3199	3*3mm	NaOH, Na_2CO_3	0.05 g/ml	1 hrs at 90-95°C	Shaking water bath
3210	--	NaOH, Na_2CO_3	0.02 g/ml	1 hrs at 90-95°C	--
3214	<250µm	NaOH, Na_2CO_3	0.05 g/ml	3 hrs at 90-95°C	--
3218	<250µm	NaOH, Na_2CO_3	0.02 g/ml	3 hrs at 90-95°C	--
3220	approx 1.0 mm	NaOH, Na_2CO_3	0.02 g/ml	1 hrs at 90-95°C	--
3225	<500µm	NaOH, Na_2CO_3	0.01 g/ml	1 hrs at 90-95°C	--
3228	<250µm	NaOH, Na_2CO_3	0.01 g/ml	3 hrs at 90-95°C	--
3237	2*2mm	HNO_3	0.002 g/ml	--	--
3239	<0.2mm	NaOH, Na_2CO_3	0.025 g/ml	3 hrs at 90-95°C	--
3248	powder	NaOH, Na_2CO_3	0.1 g/ml	2 hrs at 90-95°C	--
8005	--	--	--	--	--

APPENDIX 3

Number of participating laboratories per country

5 labs in BANGLADESH
1 lab in BELGIUM
3 labs in BRAZIL
1 lab in BULGARIA
1 lab in CROATIA
2 labs in DENMARK
1 lab in FINLAND
5 labs in FRANCE
10 labs in GERMANY
1 lab in GREECE
2 labs in GUATEMALA
22 labs in HONG KONG
2 labs in HUNGARY
7 labs in INDIA
3 labs in INDONESIA
2 labs in ITALY
3 labs in JAPAN
7 labs in KOREA
3 labs in MALAYSIA
2 labs in MEXICO
28 labs in P.R. of CHINA
2 labs in PAKISTAN
2 labs in PHILIPPINES
1 lab in PORTUGAL
3 labs in SINGAPORE
3 labs in SPAIN
1 lab in SWEDEN
3 labs in TAIWAN R.O.C.
5 labs in THAILAND
3 labs in THE NETHERLANDS
5 labs in TURKEY
11 labs in U.S.A.
2 labs in UNITED KINGDOM
4 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
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 IP 367/96
11 DIN 38402 T41/42
12 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
13 J.N. Miller, Analyst, 118, 455, (1993)
14 Analytical Methods Committee Technical Brief, No4 January 2001
15 The Royal Society of Chemistry 2002, Analyst 2002, 127 page1359-1364, P.J. Lowthian and M. Thompson. (see http://www.rsc.org/suppdata/an/b2/b205600n/)
16 R.G. Visser, Reliability of proficiency test results for metals and phthalates in plastics, Accred Qual Assur, 14:29-34 (2009)