Institute for
Interlaboratory Studies

Results of Proficiency Test Chlorinated Organic Compounds (COC) in Textile October 2023

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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CONTENTS

1 INTRODUCTION

Since the 1990's many countries have adopted environmental standards and requirements restricting the use of harmful chemicals in the production of textiles and clothing. Laws and regulations impose some of these standards and requirements. In addition to mandatory environmental standards and requirements for textiles, some Eco-labelling schemes are imposing environmental requirements for textile products on a voluntary basis, e.g. Milieukeur (Netherlands), Bluesign® (Switzerland) and OEKO-TEX® Standard 100 (Switzerland).

Since 2021 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the determination of Chlorinated Benzenes and Chlorinated Toluenes (Chlorinated Organic Compounds) every year. During the annual proficiency testing program of 2023 it was decided to continue the proficiency test for the determination of Chlorinated Organic Compounds (COC) in Textile.

In this interlaboratory study 63 laboratories in 20 countries registered for participation, see appendix 4 for the number of participants per country. In this report the results of the Chlorinated Organic Compounds (COC) in Textile proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to a laboratory that has performed the tests in accordance with for ISO/IEC17043 relevant requirements of ISO/IEC17025.
It was decided to send one polyester sample of 5 grams labelled #23730.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on ISO/IEC17043:2010. 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 Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

A batch of green polyester was selected which was made positive on Chlorinated Organic Compounds by a third party. The batch was cut into small pieces and after homogenization 90 small plastic bags were filled with approximately 5 grams each and labelled #23730. The homogeneity of the subsamples was checked by determination of 1,2,4,5-Tetrachlorobenzene and 1,4-Dichlorobenzene in accordance with EN17137 on 6 stratified randomly selected subsamples.

	1,2,4,5-Tetrachlorobenzene in mg/kg	1,4-Dichlorobenzene in mg/kg
sample #23730-1	8.9	0.19
sample #23730-2	8.5	0.19
sample #23730-3	8.2	0.18
sample #23730-4	7.9	0.18
sample #23730-5	8.8	0.17
sample #23730-6	8.7	0.17

Table 1: homogeneity test results of subsamples #23730

From the above test results the relative standard deviations (RSD) were calculated and compared with 0.3 times the corresponding average relative standard deviation obtained from the average of PT uncertainties of previous PTs in agreement with the procedure of ISO13528, Annex B2 in the next table.

	1,2,4,5-Tetrachlorobenzene	1,4-Dichlorobenzene
RSD% (observed)	4.5	5.0
reference method	iis PTs*)	iis PTs*)
0.3 x RSD% (reference method)	5.4	5.4

Table 2: evaluation of the repeatabilities of subsamples #23730

*) see also table 5, which showed the RSD% in previous PTs for each component.

The calculated relative standard deviations are in agreement with 0.3 times the corresponding average relative standard deviation obtained from the previous iis PTs. Therefore, homogeneity of the subsamples was assumed.

To each of the participating laboratories one sample labelled #23730 was sent on September 13, 2023.

2.5 ANALYZES

The participants were requested to determine on the sample the concentrations of eleven individual Chlorotoluenes and eleven individual Chlorobenzenes.
To ensure homogeneity it was requested not to use less than 0.5 gram per determination.
It was also requested to report if the laboratory was accredited for the determined components and to report some analytical details.

It was explicitly requested to treat the sample as if it was a routine sample and to report the test results using the indicated units on the report form and not to round the test results but report as much significant figures as possible. It was also requested not to report ‘less than’ test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

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

3 RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and the original test results are placed under 'Remarks' in the result tables in appendices 1 and 2. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

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

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

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

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

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

3.2 GRAPHICS

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

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

Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

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 (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

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

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

The z-scores were calculated according to:

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

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

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

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

4 EVALUATION

In this proficiency test no problems were encountered with the dispatch of the samples. Five participants reported the test results after the final reporting date and two other participants did not report any test results. Not all participants were able to report all components requested.
In total 61 participants reported 278 numerical test results. Observed were 10 outlying test results, which is 3.6%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

Not all data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER COMPONENT

In this section the reported test results are discussed per component. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 5.

Test method EN17137 is considered to be the official test method for the determination of Chlorotoluenes and Chlorobenzenes in Textile. The precision data mentioned in EN17137 appendix B.5) is not clear and measured at one concentration level of 0.1 mg/kg. The precision data mentioned for repeatability and reproducibility are almost similar, which is very rare. Therefore, it is decided to use the Horwitz equation.

3-Chlorotoluene: The group of participants may have had difficulty to meet the target requirements. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated reproducibility calculated with the Horwitz equation.

2,6-Dichlorotoluene: The group of participants may have had difficulty to meet the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility calculated with the Horwitz equation.

1,4-Dichlorobenzene The group of participants may have had difficulty to meet the target requirements. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated reproducibility calculated with the Horwitz equation.

1,3,5-Trichlorobenzene The group of participants may have had difficulty to meet the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility calculated with the Horwitz equation.

1,2,4,5-Tetrachlorobenzene The group of participants met the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility calculated with the Horwitz equation.

The majority of the participants agreed on a concentration near or below the limit of detection for all other requested components. Therefore, no z-scores are calculated for these components. The test results are given in appendix 2.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard

deviation) and the target reproducibility derived from reference methods are presented in the next table.

Component	unit	n	average	2.8 * sd	R(target)
3-Chlorotoluene	mg/kg	55	12.7	6.3	3.9
2,6-Dichlorotoluene	mg/kg	52	0.34	0.23	0.18
1,4-Dichlorobenzene	mg/kg	47	0.16	0.13	0.09
1,3,5-Trichlorobenzene	mg/kg	59	4.9	2.0	1.7
1,2,4,5-Tetrachlorobenzene	mg/kg	55	8.9	2.8	2.9

Table 3: reproducibilities of components on sample #23730

Without further statistical calculations it can be concluded that for many tests there is not a good compliance of the group of participants with the reference method. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF OCTOBER 2023 WITH THE PREVIOUS PTS

	October 2023	October 2022	November 2021
Number of reporting laboratories	61	73	26
Number of test results	278	325	93
Number of statistical outliers	10	2	5
Percentage of statistical outliers	3.6%	0.6%	5.4%

Table 4: comparison with the previous proficiency tests

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

The performance of the determinations of the proficiency test was compared to uncertainties observed in PTs over the years, expressed as relative standard deviation (RSD) of the PTs, see next table.

Component	October 2023	October 2022	November 2021
2-Chlorotoluene	---	17%	22%
3-Chlorotoluene	18%	---	---
2.6-Dichlorotoluene	25%	---	---
1,4-Dichlorobenzene	30%	---	17%
1,3,5-Trichlorobenzene	15%	---	---
1,2,4-Trichlorobenzene	---	16%	---
1,2,3,4-Tetrachlorobenzene	---	19%	---
1,2,4,5-Tetrachlorobenzene	11%	19%	19%
Pentachlorobenzene	---	16%	---
Hexachlorobenzene	19%	19%	12%

Table 5: development of the uncertainties over the years

4.4 EVALUATION OF THE ANALYTICAL DETAILS

For this PT some analytical details were requested which are listed in appendix 3. Based on the answers given by the participants the following can be summarized:

- A majority (about 90%) of the participants mentioned that they are accredited for the determination of Chlorinated Organic Compounds in Textile.
- About 40% of the participants used the sample as received and about 60% did further cut or further grind the samples prior to analysis.
- About 25% of the participants used 0.5 grams of sample intake, about 40% used a sample intake of 1 gram and about 35% used a sample intake of 2 grams.
- All participants mentioned to have used Dichloromethane as extraction solvent and almost all participants carried out the extraction at room temperature for 30 minutes.

When the analytical details were investigated separately, it appeared that the effect on the determination of Chlorinated Organic Compounds in textile is negligible.

5 DISCUSSION

For the determination of Chlorinated Organic Compounds limits are mentioned in Ecolabelling standards like OEKO-TEX® Standard 100. See table below.

	Class 1 Baby (mg/kg)	Class 2 in direct contact with skin (mg/kg)	Class 3 with no direct contact with skin (mg/kg)	Class 4 Decoration material (mg/kg)
Sum of Chlorotoluenes and Chlorobenzenes	1.0	1.0	1.0	1.0

Table 6: OEKO-TEX® Standard 100 Ecolabelling Standard and Requirements for Textiles in EU

It appears that all reporting participants would have rejected the sample for all Classes for the sum of Chlorotoluenes and Chlorobenzenes.

6 CONCLUSION

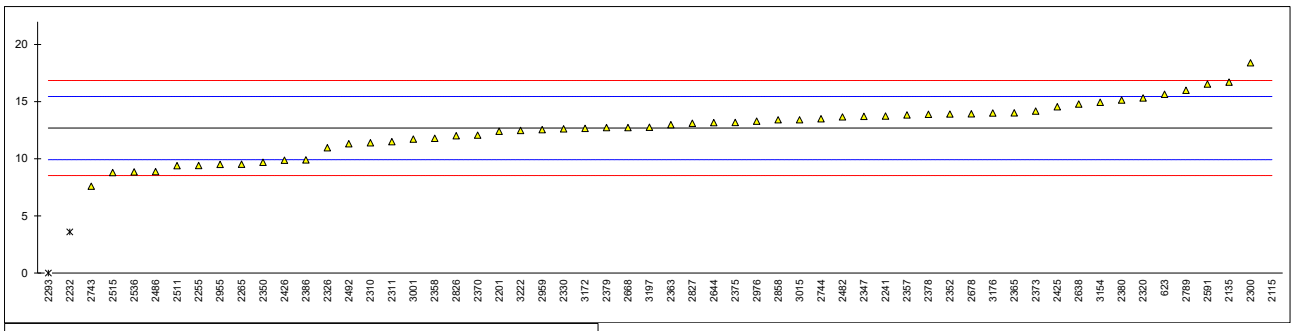
Each participating laboratory will have to evaluate its performance in this study and decide about any corrective actions if necessary. Therefore, participation on a regular basis in this scheme could be helpful to improve the performance and thus increase of the quality of the analytical results.

APPENDIX 1

Determination of 3-Chlorotoluene (CAS No. 108–41–8) on sample #23730; results in mg/kg

lab	method	value	mark	z(targ)	remarks
551		-----		-----	
623	EN17137	15.636		2.13	
2115	In house	736.4	R(0.01)	522.62	
2135		16.70		2.90	
2201	EN17137	12.40		-0.21	
2232	EN17137	3.587	R(0.05)	-6.57	
2241	EN17137	13.739		0.76	
2255	EN17137	9.40		-2.37	
2265	EN17137	9.52		-2.29	
2293	EN17137	0.0	R(0.01)	-9.16	
2300	EN17137	18.39		4.12	
2310	EN17137	11.4		-0.93	
2311	EN17137	11.488		-0.87	
2320		15.32		1.90	
2326	EN17137	10.96		-1.25	
2330	EN17137	12.6139		-0.05	
2347	DIN54232	13.71		0.74	
2350	EN17137	9.681		-2.17	
2352	EN17137	13.91		0.88	
2357	EN17137	13.83		0.83	
2358	EN17137	11.781		-0.65	
2363	EN17137	12.98		0.21	
2365	EN17137	14.01		0.96	
2370	EN17137	12.0601		-0.45	
2373	EN17137	14.1634		1.07	
2375	EN17137	13.17		0.35	
2378	EN17137	13.88		0.86	
2379	EN17137	12.7289		0.03	
2380	EN17137	15.13		1.76	
2386	EN17137	9.89		-2.02	
2425	In house	14.55		1.35	
2426	EN17137	9.87		-2.03	
2482	EN17137	13.66		0.70	
2486	EN17137	8.873		-2.75	reported as sum of 2-,3- and 4-CT
2492		11.311		-0.99	
2511	EN17137	9.39		-2.38	
2515		8.79	C	-2.81	first reported 6.09, reported as sum of 2-,3- and 4-CT
2536	EN17137	8.836		-2.78	reported as sum of 2-,3- and 4-CT
2590		-----		-----	
2591	EN17137	16.53		2.78	
2638	In house	14.781		1.51	
2644	EN17137	13.16		0.34	
2668	EN17137	12.73		0.03	
2678	EN17137	13.93		0.90	
2743	EN17137	7.59	C	-3.68	first reported 20.21
2744	EN17137	13.50		0.59	
2789	DIN54232	15.985		2.38	
2826	EN17137	12.012		-0.49	
2827	EN17137	13.101		0.30	
2858	EN17137	13.398		0.51	
2955	EN17137	9.50		-2.30	
2959	EN17137	12.54		-0.11	
2976	EN17137	13.287		0.43	
3001	EN17137	11.71		-0.70	
3015	EN17137	13.4		0.52	
3116		-----		-----	
3154	EN17137	14.927		1.62	
3172	EN17137	12.652		-0.02	
3176	EN17137	14.00		0.95	
3197	EN17137	12.75		0.05	
3222	EN17137	12.475		-0.15	
3237		-----		-----	
3248		-----		-----	

normality	OK	
n	55	
outliers	3	
mean (n)	12.6860	
st.dev. (n)	2.25246	RSD = 18%
R(calc.)	6.3069	
st.dev.(Horwitz)	1.38477	
R(Horwitz)	3.8774	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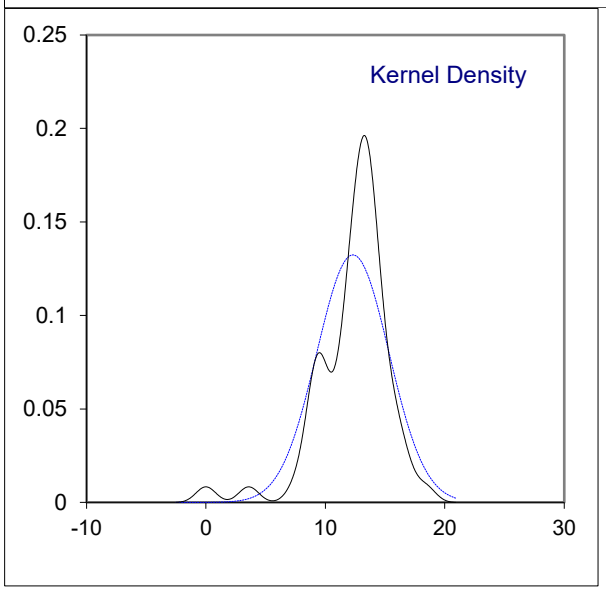
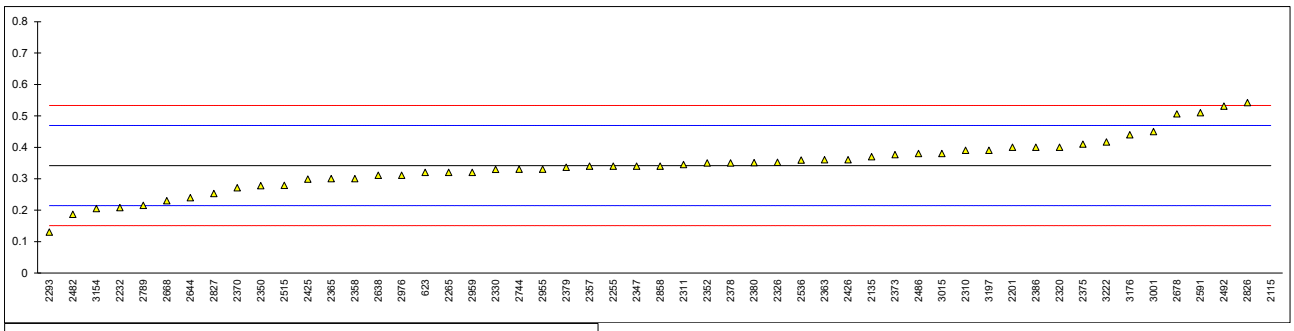
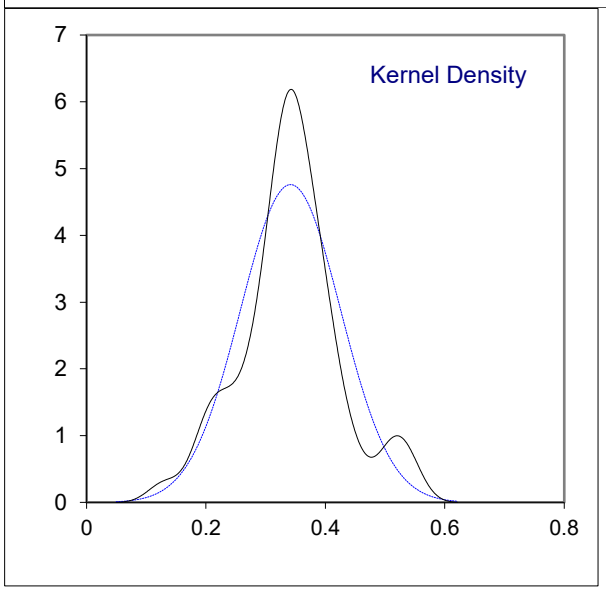

Kernel Density
0.25
0.2
0.15
0.1
0.05
0
-10
0
10
20
30

Determination of 2,6-Dichlorotoluene (CAS No. 118–69–4) on sample #23730; results in mg/kg

lab	method	value	mark	z(targ)	remarks
551		-----		-----	
623	EN17137	0.320	C	-0.34	first reported 5.825
2115	In house	18.6	R(0.01)	283.92	reported sum of 25-DCT and 26-DCT
2135		0.370	C	0.44	reported as 25-DCT
2201	EN17137	0.40		0.90	
2232	EN17137	0.208		-2.08	
2241	EN17137	<0.5		-----	
2255	EN17137	0.34		-0.03	
2265	EN17137	0.32		-0.34	
2293	EN17137	0.13		-3.30	
2300	EN17137	Not detected		-----	
2310	EN17137	0.39		0.75	
2311	EN17137	0.345		0.05	
2320		0.40		0.90	
2326	EN17137	0.352		0.16	reported sum of 25- and 26-DCT
2330	EN17137	0.3299		-0.19	
2347	DIN54232	0.34		-0.03	
2350	EN17137	0.278		-0.99	
2352	EN17137	0.35		0.12	
2357	EN17137	0.34		-0.03	
2358	EN17137	0.300		-0.65	
2363	EN17137	0.36		0.28	
2365	EN17137	0.30		-0.65	
2370	EN17137	0.2710		-1.10	
2373	EN17137	0.3764		0.54	
2375	EN17137	0.41		1.06	
2378	EN17137	0.35		0.12	
2379	EN17137	0.3367		-0.08	
2380	EN17137	0.351		0.14	
2386	EN17137	0.40	C	0.90	reported as 25-DCT, first reported <0.1
2425	In house	0.299		-0.67	
2426	EN17137	0.36		0.28	
2482	EN17137	0.1865		-2.42	reported sum of 25-DCT and 26-DCT
2486	EN17137	0.380		0.59	reported sum of 35-DCT, 25-DCT and 26-DCT
2492		0.531		2.94	
2511		-----		-----	
2515		0.279		-0.98	reported sum of 35-DCT, 24-DCT, 25-DCT and 26-DCT
2536	EN17137	0.359		0.26	reported sum of 35-DCT, 25-DCT and 26-DCT
2590		-----		-----	
2591	EN17137	0.51		2.61	reported sum of 25-DCT and 26-DCT
2638	In house	0.311	C	-0.48	reported as 25-DCT, first reported “not detected”
2644	EN17137	0.24		-1.59	reported sum of 25-DCT and 26-DCT
2668	EN17137	0.23		-1.74	
2678	EN17137	0.506		2.55	
2743		-----		-----	
2744	EN17137	0.33		-0.19	
2789	DIN54232	0.215		-1.97	
2826	EN17137	0.542		3.11	
2827	EN17137	0.253		-1.38	
2858	EN17137	0.340		-0.03	
2955	EN17137	0.33		-0.19	
2959	EN17137	0.32		-0.34	
2976	EN17137	0.311		-0.48	
3001	EN17137	0.45	C	1.68	reported as 25-DCT, first reported “not detected”
3015	EN17137	0.38		0.59	
3116		-----		-----	
3154	EN17137	0.205		-2.13	
3172	EN17137	< 0.025		-----	
3176	EN17137	0.44		1.52	
3197	EN17137	0.39		0.75	
3222	EN17137	0.417		1.17	
3237		-----		-----	
3248		-----		-----	

normality	OK	
n	52	
outliers	1	
mean (n)	0.34197	
st.dev. (n)	0.083824	RSD = 25%
R(calc.)	0.23471	
st.dev.(Horwitz)	0.064306	
R(Horwitz)	0.18006	

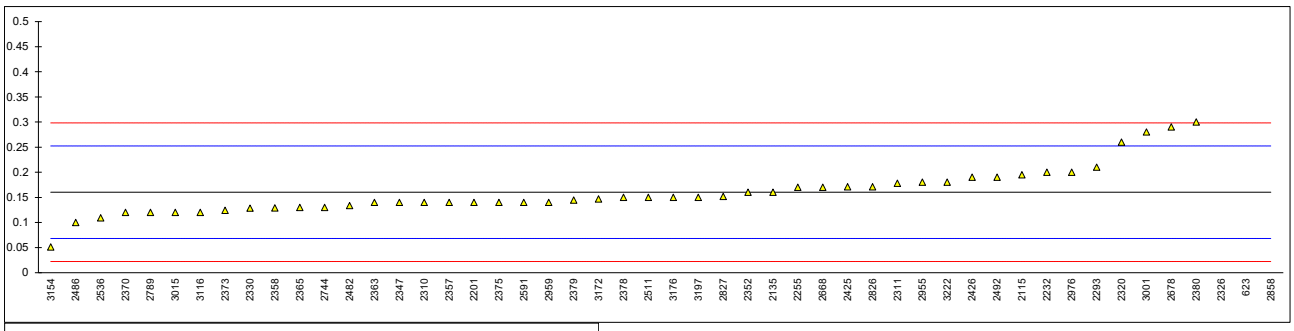

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2293 2482 3154 2232 2789 2668 2644 2827 2370 2350 2515 2425 2365 2358 2638 2976 623 2265 2959 2330 2744 2955 2379 2357 2255 2347 2858 2311 2352 2378 2380 2326 2536 2383 2426 2135 2373 2486 3015 2310 3197 2201 2386 2320 2375 3222 3176 3001 2678 2891 2492 2826 2115

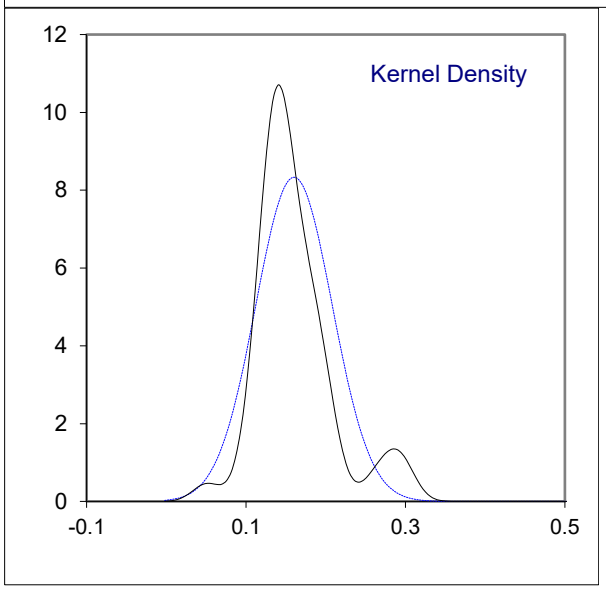

Kernel Density
7
6
5
4
3
2
1
0
0
0.2
0.4
0.6
0.8

Determination of 1,4-Dichlorobenzene (CAS No. 106–46–7) on sample #23730; results in mg/kg

lab	method	value	mark	z(targ)	remarks
551		-----		-----	
623	EN17137	1.456	C,R(0.01)	38.36	first reported 0.852
2115	In house	0.195		1.03	
2135		0.16		-0.01	
2201	EN17137	0.14		-0.60	
2232	EN17137	0.200		1.18	
2241	EN17137	<0.5		-----	
2255	EN17137	0.17		0.29	
2265	EN17137	<0,1		-----	
2293	EN17137	0.21		1.47	
2300	EN17137	Not detected		-----	
2310	EN17137	0.14		-0.60	
2311	EN17137	0.178		0.52	
2320		0.26		2.95	
2326	EN17137	1.074	C,R(0.01)	27.05	first reported 1.392
2330	EN17137	0.1285		-0.94	
2347	DIN54232	0.14		-0.60	
2350	EN17137	< 0.1		-----	
2352	EN17137	0.16		-0.01	
2357	EN17137	0.14		-0.60	
2358	EN17137	0.129		-0.93	
2363	EN17137	0.14		-0.60	
2365	EN17137	0.13		-0.90	
2370	EN17137	0.1198		-1.20	
2373	EN17137	0.1241		-1.07	
2375	EN17137	0.14		-0.60	
2378	EN17137	0.15		-0.30	
2379	EN17137	0.1443		-0.47	
2380	EN17137	0.300		4.14	
2386	EN17137	< 0.1		-----	
2425	In house	0.171		0.32	
2426	EN17137	0.19		0.88	
2482	EN17137	0.1334		-0.80	
2486	EN17137	0.10		-1.78	
2492		0.190		0.88	
2511	EN17137	0.15		-0.30	
2515		-----		-----	
2536	EN17137	0.109		-1.52	
2590		-----		-----	
2591	EN17137	0.14		-0.60	
2638	In house	not detected		-----	
2644		-----		-----	
2668	EN17137	0.17		0.29	
2678	EN17137	0.29		3.84	
2743		-----		-----	
2744	EN17137	0.13		-0.90	
2789	DIN54232	0.12		-1.19	
2826	EN17137	0.171		0.32	
2827	EN17137	0.152		-0.25	
2858	EN17137	1.462	C,R(0.01)	38.53	first reported 1.007
2955	EN17137	0.18		0.58	
2959	EN17137	0.14		-0.60	
2976	EN17137	0.200		1.18	
3001	EN17137	0.28		3.54	
3015	EN17137	0.12		-1.19	
3116	EN17137	0.120		-1.19	
3154	EN17137	0.051		-3.23	
3172	EN17137	0.14697		-0.39	
3176	EN17137	0.15		-0.30	
3197	EN17137	0.15		-0.30	
3222	EN17137	0.180		0.58	
3237		-----		-----	
3248		-----		-----	

normality	not OK	
n	47	
outliers	3	
mean (n)	0.16028	
st.dev. (n)	0.047894	RSD = 30%
R(calc.)	0.13410	
st.dev.(Horwitz)	0.033781	
R(Horwitz)	0.09459	

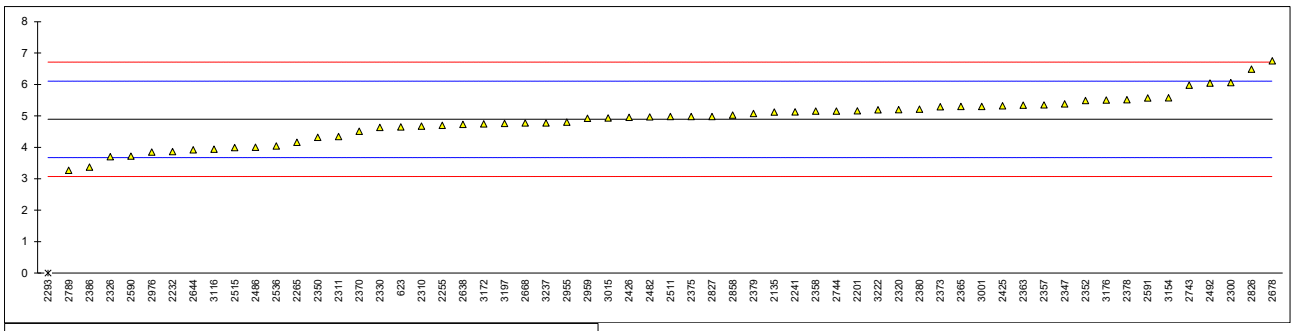

0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
3154 2486 2536 2370 2789 3015 3116 2373 2330 2358 2365 2744 2482 2363 2347 2310 2357 2201 2375 2591 2959 2379 3172 2378 2511 3176 3197 2827 2352 2135 2255 2668 2425 2826 2311 2955 3222 2426 2492 2115 2232 2976 2293 2320 3001 2678 2380 2326 623 2858

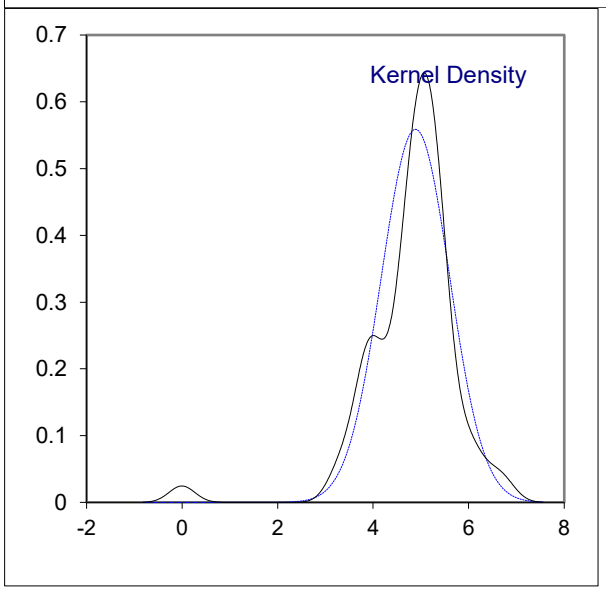

Kernel Density
12
10
8
6
4
2
0
-0.1
0.1
0.3
0.5

Determination of 1,3,5-Trichlorobenzene (CAS No. 108–70–3) on sample #23730; results in mg/kg

lab	method	value	mark	z(targ)	remarks
551		-----		-----	
623	EN17137	4.647	C	-0.40	first reported not detected
2115		-----		-----	
2135		5.12		0.37	
2201	EN17137	5.16		0.44	
2232	EN17137	3.862		-1.67	
2241	EN17137	5.124		0.38	
2255	EN17137	4.70		-0.31	
2265	EN17137	4.16		-1.19	
2293	EN17137	0.0	R(0.01)	-7.94	
2300	EN17137	6.06	C	1.90	first reported 9.3
2310	EN17137	4.67		-0.36	
2311	EN17137	4.344		-0.89	
2320		5.20		0.50	
2326	EN17137	3.699		-1.93	
2330	EN17137	4.6328		-0.42	
2347	DIN54232	5.38		0.79	
2350	EN17137	4.317		-0.93	
2352	EN17137	5.49		0.97	
2357	EN17137	5.35		0.74	
2358	EN17137	5.148		0.42	
2363	EN17137	5.34		0.73	
2365	EN17137	5.30		0.66	
2370	EN17137	4.5100		-0.62	
2373	EN17137	5.2897		0.65	
2375	EN17137	4.98		0.14	
2378	EN17137	5.51		1.00	
2379	EN17137	5.0755		0.30	
2380	EN17137	5.212		0.52	
2386	EN17137	3.37		-2.47	
2425	In house	5.32		0.70	
2426	EN17137	4.95		0.10	
2482	EN17137	4.965		0.12	
2486	EN17137	3.999		-1.45	
2492		6.042		1.87	
2511	EN17137	4.9793		0.14	
2515		3.99		-1.46	
2536	EN17137	4.043		-1.38	
2590	EN17137	3.720		-1.90	
2591	EN17137	5.57		1.10	
2638	In house	4.7295		-0.26	
2644	EN17137	3.92		-1.58	
2668	EN17137	4.77		-0.20	
2678	EN17137	6.75		3.02	
2743	EN17137	5.974		1.76	
2744	EN17137	5.15		0.42	
2789	DIN54232	3.27		-2.63	
2826	EN17137	6.482		2.58	
2827	EN17137	4.982		0.15	
2858	EN17137	5.024		0.22	
2955	EN17137	4.80		-0.15	
2959	EN17137	4.92		0.05	
2976	EN17137	3.848		-1.69	
3001	EN17137	5.3		0.66	
3015	EN17137	4.93		0.06	
3116	EN17137	3.94		-1.54	
3154	EN17137	5.577		1.11	
3172	EN17137	4.745		-0.24	
3176	EN17137	5.50		0.99	
3197	EN17137	4.76		-0.21	
3222	EN17137	5.195		0.49	
3237	EN17137	4.77		-0.20	
3248		-----		-----	

normality	OK	
n	59	
outliers	1	
mean (n)	4.8909	
st.dev. (n)	0.71427	RSD = 15%
R(calc.)	2.0000	
st.dev.(Horwitz)	0.61624	
R(Horwitz)	1.7255	

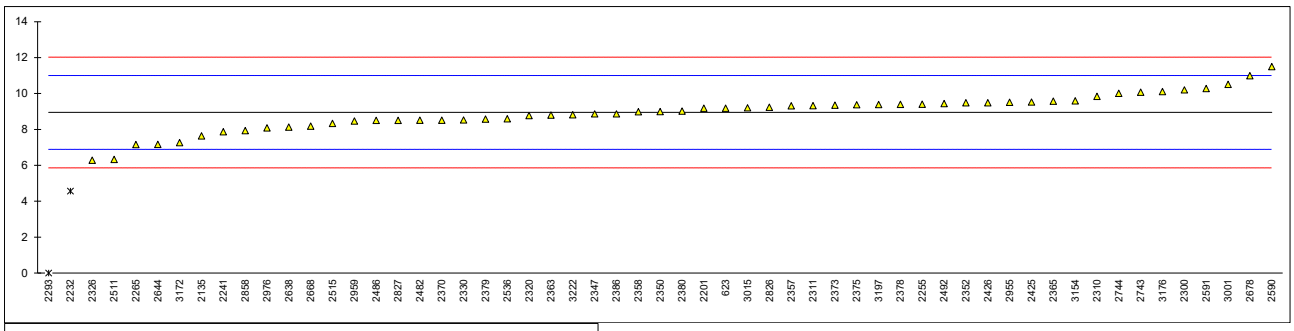

8
7
6
5
4
3
2
1
0
2293
2789
2386
2326
2590
2976
2232
2644
3116
2515
2486
2536
2265
2350
2311
2370
2330
623
2310
2255
2638
3172
3197
2668
3237
2955
2959
3015
2426
2482
2511
2375
2827
2858
2379
2135
2241
2358
2744
2201
3222
2320
2380
2373
2365
3001
2425
2363
2357
2347
2352
3176
2378
2591
3154
2743
2492
2300
2826
2678

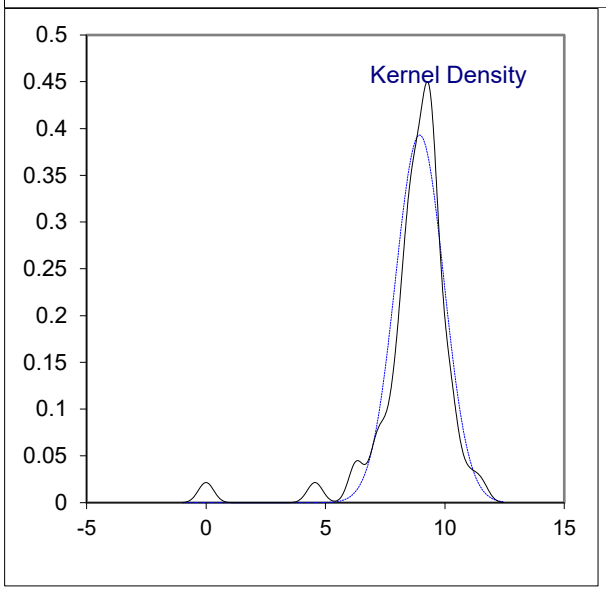

Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-2
0
2
4
6
8

Determination of 1,2,4,5-Tetrachlorobenzene (CAS No. 95-94-3) on sample #23730; results in mg/kg

lab	method	value	mark	z(targ)	remarks
551		-----		-----	
623	EN17137	9.176		0.23	
2115		-----		-----	
2135		7.63		-1.27	
2201	EN17137	9.17		0.22	
2232	EN17137	4.561	R(0.01)	-4.26	
2241	EN17137	7.871		-1.04	
2255	EN17137	9.40		0.45	
2265	EN17137	7.15		-1.74	
2293	EN17137	0.0	R(0.01)	-8.69	
2300	EN17137	10.2	C	1.22	first reported 12.8
2310	EN17137	9.83		0.86	
2311	EN17137	9.315		0.36	
2320		8.77		-0.17	
2326	EN17137	6.28		-2.59	
2330	EN17137	8.5247		-0.41	
2347	DIN54232	8.86		-0.08	
2350	EN17137	8.984		0.04	
2352	EN17137	9.48		0.52	
2357	EN17137	9.31		0.36	
2358	EN17137	8.974		0.03	
2363	EN17137	8.79		-0.15	
2365	EN17137	9.57		0.61	
2370	EN17137	8.5049		-0.42	
2373	EN17137	9.3445		0.39	
2375	EN17137	9.37		0.42	
2378	EN17137	9.39		0.44	
2379	EN17137	8.5712		-0.36	
2380	EN17137	9.01		0.07	
2386	EN17137	8.86		-0.08	
2425	In house	9.52		0.56	
2426	EN17137	9.48		0.52	
2482	EN17137	8.504		-0.43	
2486	EN17137	8.497		-0.43	reported sum of 1235-TeCB and 1245-TeCB
2492		9.431		0.48	
2511	EN17137	6.32		-2.55	
2515		8.33	C	-0.59	first reported 5.52, reported sum of 1235-TeCB and 1245-TeCB
2536	EN17137	8.587		-0.34	reported sum of 1235-TeCB and 1245-TeCB
2590	EN17137	11.489		2.48	
2591	EN17137	10.27		1.29	
2638	In house	8.1205		-0.80	
2644	EN17137	7.16	C	-1.73	first reported as 1235-TeCB
2668	EN17137	8.17		-0.75	
2678	EN17137	10.98		1.98	
2743	EN17137	10.067		1.09	
2744	EN17137	10	C	1.03	first reported 5.80
2789		-----		-----	
2826	EN17137	9.230		0.28	
2827	EN17137	8.497		-0.43	
2858	EN17137	7.930		-0.98	
2955	EN17137	9.50		0.54	
2959	EN17137	8.46		-0.47	
2976	EN17137	8.077		-0.84	
3001	EN17137	10.5		1.51	
3015	EN17137	9.2		0.25	
3116		-----		-----	
3154	EN17137	9.583		0.62	reported sum of 1235-TeCB and 1245-TeCB
3172	EN17137	7.261		-1.63	
3176	EN17137	10.1	C	1.13	first reported 12.60
3197	EN17137	9.38		0.43	
3222	EN17137	8.811		-0.13	
3237		-----		-----	
3248		-----		-----	

normality	OK	
n	55	
outliers	2	
mean (n)	8.9416	
st.dev. (n)	1.01539	RSD = 11%
R(calc.)	2.8431	
st.dev.(Horwitz)	1.02881	
R(Horwitz)	2.8807	


14
12
10
8
6
4
2
0
2293 2232 2326 2511 2265 2644 3172 2135 2241 2858 2976 2638 2668 2515 2959 2486 2827 2482 2370 2330 2379 2536 2320 2363 3222 2347 2386 2358 2350 2380 2201 623 3015 2826 2357 2311 2373 2375 3197 2378 2255 2492 2352 2426 2955 2425 2365 3154 2310 2744 2743 3176 2300 2591 3001 2678 2590


Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-5
0
5
10
15

APPENDIX 2 Other reported components

Abbreviations of components

2-CT = 2-Chlorotoluene CAS No. 95-49-8
4-CT = 4-Chlorotoluene CAS No. 106–43–4
23-DCT = 2,3-Dichlorotoluene CAS No. 32768–54–0
24-DCT = 2,4-Dichlorotoluene CAS No. 95–73–8
25-DCT = 2,5-Dichlorotoluene CAS No. 19398–61–9
34-DCT = 3,4-Dichlorotoluene CAS No. 95–75–0
236-TCT = 2,3,6-Trichlorotoluene CAS No. 2077–46–5
245-TCT = 2,4,5-Trichlorotoluene CAS No. 6639–30–1
PentaCT = Pentachlorotoluene CAS No. 877–11–2
12-DCB = 1,2-Dichlorobenzene CAS No. 95–50–1
13-DCB = 1,3-Dichlorobenzene CAS No. 541–73–1
123-TCB = 1,2,3-Trichlorobenzene CAS No. 87–61–6
124-TCB = 1,2,4-Trichlorobenzene CAS No. 120-82-1
1234-TeCB = 1,2,3,4-Tetrachlorobenzene CAS No. 634-66-2
1235-TeCB = 1,2,3,5-Tetrachlorobenzene CAS No. 634–90–2
PentaCB = Pentachlorobenzene CAS No. 608–93–5
HexaCB = Hexachlorobenzene CAS No. 118–74–1

Determination of other Chlorinated Organic Compounds (COC) on sample #23730; in mg/kg

lab	2-CT	4-CT	23-DCT	24-DCT	25-DCT	34-DCT
551	-----	-----	-----	-----	-----	-----
623	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2115	-----	-----	-----	-----	-----	-----
2135	-----	-----	-----	-----	-----	-----
2201	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2232	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2241	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2255	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2265	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
2293	0.0	0.0	0.0	0.0	0.0	0.0
2300	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2310	not detected	not detected	not detected	not detected	not detected	not detected
2311	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2320	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2326	Not detected	Not detected	Not detected	Not detected	0.352	Not detected
2330	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2347	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2350	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2352	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----
2358	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2363	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2365	＜0.1	＜0.1	＜0.1	＜0.1	＜0.1	＜0.1
2370	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
2373	not detected	not detected	not detected	not detected	not detected	not detected
2375	-----	-----	-----	-----	-----	-----
2378	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2379	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2380	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2386	< 0.1	1.36	< 0.1	< 0.1	<0.1	< 0.1
2425	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2426	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2482	<0.1	<0.1	<0.1	<0.1	*	<0.1
2486	-----	-----	-----	-----	-----	-----
2492	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2511	-----	-----	-----	-----	-----	-----
2515	-----	-----	-----	-----	0.279	-----
2536	-----	-----	-----	-----	-----	-----
2590	-----	-----	-----	-----	-----	-----
2591	not detected	not detected	not detected	not detected	-----	not detected
2638	not detected	not detected	not detected	not detected	not detected	not detected

lab	2-CT	4-CT	23-DCT	24-DCT	25-DCT	34-DCT
2644	-----	-----	-----	-----	0.24	-----
2668	not detected	not detected	not detected	not detected	not detected	not detected
2678	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2743	-----	-----	-----	-----	-----	-----
2744	ND	ND	ND	ND	ND	ND
2789	-----	-----	-----	-----	-----	-----
2826	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2827	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2858	-----	-----	-----	-----	0.313	-----
2955	not detected	not detected	not detected	not detected	not detected	not detected
2959	-----	-----	-----	-----	-----	-----
2976	-----	-----	-----	-----	-----	-----
3001	Not detected	Not detected	Not detected	Not detected	not detected	Not detected
3015	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3116	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----
3172	< 0.025	< 0.025	-----	< 0.025	< 0.025	< 0.025
3176	-----	-----	-----	-----	-----	-----
3197	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
3222	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----
3248	-----	-----	-----	-----	-----	-----

Determination of other Chlorinated Organic Compounds (COC) on sample #23730; in mg/kg, continued

lab	236-TCT	245-TCT	PentaCT	12-DCB	13-DCB	123-TCB
551	-----	-----	-----	-----	-----	-----
623	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2115	-----	-----	-----	-----	-----	-----
2135	-----	-----	-----	-----	-----	-----
2201	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2232	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2241	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2255	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2265	<0,1	<0,1	<0,1	<0,1	0.13	<0,1
2293	0.0	0.0	0.0	0.0	0.0	0.08
2300	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2310	not detected	not detected	not detected	not detected	not detected	not detected
2311	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2320	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2326	Not detected	Not detected	Not detected	Not detected	Not detected	0.0889
2330	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2347	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2350	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2352	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----
2358	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2363	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2365	＜0.1	＜0.1	＜0.1	＜0.1	＜0.1	＜0.1
2370	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
2373	not detected	not detected	not detected	not detected	not detected	not detected
2375	-----	-----	-----	-----	-----	-----
2378	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2379	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2380	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2386	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2425	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2426	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2482	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2486	-----	-----	-----	-----	-----	-----
2492	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2511	-----	-----	-----	-----	-----	-----
2515	-----	-----	-----	-----	-----	-----
2536	-----	-----	-----	-----	-----	-----
2590	-----	-----	-----	-----	-----	-----
2591	not detected	not detected	not detected	not detected	not detected	not detected
2638	not detected	not detected	not detected	not detected	not detected	not detected
2644	-----	-----	-----	-----	-----	-----
2668	not detected	not detected	not detected	not detected	not detected	not detected
2678	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2743	-----	-----	-----	-----	-----	-----
2744	ND	ND	ND	ND	ND	ND
2789	-----	-----	-----	-----	-----	-----
2826	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
2827	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2858	-----	-----	-----	-----	-----	-----
2955	not detected	not detected	not detected	not detected	not detected	not detected
2959	-----	-----	-----	-----	-----	-----
2976	-----	-----	-----	-----	-----	-----
3001	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
3015	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3116	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----
3172	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
3176	-----	-----	-----	-----	-----	-----
3197	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
3222	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----
3248	-----	-----	-----	-----	-----	-----

Determination of other Chlorinated Organic Compounds (COC) on sample #23730; in mg/kg, continued

lab	124-TCB	1234-TeCB	1235-TeCB		PentaCB	HexaCB
551	-----	-----	-----		-----	-----
623	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2115	-----	-----	-----		-----	0.073
2135	-----	-----	-----		-----	-----
2201	Not detected	Not detected	Not detected		Not detected	Not detected
2232	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1
2241	<0.5	<0.5	<0.5		<0.5	<0.5
2255	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2265	<0,1	<0,1	<0,1		<0,1	<0,1
2293	4.80	0.14	4.03		0.01	0.17
2300	Not detected	Not detected	Not detected		Not detected	Not detected
2310	not detected	not detected	not detected		not detected	not detected
2311	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2320	<0.1	<0.1	<0.1		<0.1	<0.1
2326	Not detected	Not detected	Not detected		Not detected	Not detected
2330	Not detected	Not detected	Not detected		Not detected	Not detected
2347	<0.1	<0.1	<0.1		<0.1	<0.1
2350	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1
2352	-----	-----	-----		-----	-----
2357	-----	-----	-----		-----	-----
2358	Not detected	Not detected	Not detected		Not detected	Not detected
2363	<0.1	<0.1	<0.1		<0.1	<0.1
2365	＜0.1	＜0.1	＜0.1		＜0.1	＜0.1
2370	<0.04	<0.04	<0.04		<0.04	<0.04
2373	not detected	not detected	not detected		not detected	not detected
2375	-----	-----	-----		-----	-----
2378	<0.1	<0.1	<0.1		<0.1	<0.1
2379	Not detected	Not detected	Not detected		Not detected	Not detected
2380	<0.1	<0.1	<0.1		<0.1	<0.1
2386	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1
2425	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2426	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2482	<0.1	<0.1	<0.1		<0.1	<0.1
2486	-----	-----	-----		-----	-----
2492	Not detected	Not detected	Not detected		Not detected	Not detected
2511	-----	-----	-----		-----	-----
2515	-----	-----	-----		-----	-----
2536	-----	-----	-----		-----	-----
2590	-----	-----	-----		-----	-----
2591	not detected	not detected	not detected		not detected	not detected
2638	not detected	not detected	not detected		not detected	not detected
2644	-----	-----	-----	C	-----	-----
2668	not detected	not detected	not detected		not detected	not detected
2678	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2743	-----	-----	-----		-----	-----
2744	ND	ND	ND		ND	ND
2789	-----	-----	7.05		-----	-----
2826	Not detected	Not detected	Not detected		Not detected	Not detected
2827	Not Detected	Not Detected	Not Detected		Not Detected	Not Detected
2858	-----	-----	-----		-----	-----
2955	not detected	not detected	not detected		not detected	not detected
2959	-----	-----	-----		-----	-----
2976	-----	-----	-----		-----	-----
3001	Not detected	Not detected	Not Detected	C	Not detected	0.22
3015	<0.1	<0.1	<0.1		<0.1	<0.1
3116	-----	-----	-----		-----	-----
3154	-----	-----	see comment		-----	-----
3172	< 0.025	< 0.025	< 0.025		< 0.025	-----
3176	-----	-----	-----		-----	-----
3197	<0,05	<0,05	<0,05		<0,05	<0,05
3222	-----	-----	-----		-----	0.137
3237	-----	-----	-----		-----	-----
3248	-----	-----	-----		-----	-----

Lab 2644 first reported 7.16 for 1235-TeCB

Lab 3001 first reported 0.8 for 1235-TeCB

APPENDIX 3 Analytical Details

lab	ISO/IEC17025 accredited	Sample	Sample intake	Release/extract solvent	Extraction Time	Extraction temperature
551	---	---				
623	Yes	Further cut	1	DCM	30	room temperature
2115	No	Used as received	2 g	Dichloromethane	30 min	25 °C
2135	Yes	Used as received	0,5	Dichloromethane	60	30
2201	Yes	Used as received	1.000 g	Dichloromethane	30 minutes	Room Temperature
2232	Yes	Further cut	1.0022 g	Dichloromethane, DCM	30 minutes	Room temperature, 25
2241	Yes	Further cut	0.5g	Dichloromethane	30 minutes	room temperature
2255	Yes	Further cut	0.5	Dichloromethane	30	Room Temperature
2265	Yes	Used as received	1g	Dichlormethane	30min	25°C
2293	Yes	Further cut	2 grams	DCM	30 minutes	Room temperature
2300	Yes	Further cut	2gram	20ml	30 minutes.	Starting at laboratory ambienttemperature.
2310	Yes	Further cut	1	DCM	30	30
2311	Yes	Further cut	0.5	Dichloromethane	30	room temp
2320	Yes	Further cut	1g	DCM	30 min	Room Temperature
2326	Yes	Further cut	2.0036g	DCM	30	Room temp
2330	Yes	Further cut	1 g	DCM	30 mins	Room temperature
2347	Yes	Used as received	0.5g	/	/	/
2350	No	Further cut	2 g	Dichloromethane	30 min	room temperature
2352	Yes	Further cut	2g	Dichloromethane	30min	25℃
2357	---	---				
2358	Yes	Further cut	1.0	DCM	30 minutes	Room temperature
2363	Yes	Further cut	2g	DCM	30mins	25℃
2365	Yes	Further grinded	0.5g	Dichloromethane	30	Room temperature
2370	Yes	Further cut	0.5 grams	Dichloromethane	30 minutes	room temperature
2373	Yes	Further cut	2g	Dichloromethane	30 minutes	Room temperature
2375	Yes	Further cut	2 gram	DCM	30 min	20-25 °C
2378	Yes	Further cut	2g	dichloromethane	30min	ordinary temperature
2379	Yes	Further cut	1 g	DCM	30 min	25 °C
2380	Yes	Further cut	1.0 g	DCM	30 Minutes	(23+/-2) °C
2386	Yes	Further cut	2 g	20 ml Dichloromethane	30 min	Room temperature
2425	No	Further cut	0.5g	Dichloromethane	30 minutes	30 C
2426	Yes	Further cut	0.5 g	Dichloromethane	30 minute	24 +/- 2C
2482	Yes	Used as received	1.0	Dichloromethane	30	Room Temperature
2486	Yes	Used as received	1.0003 g	Dichloromethane	30 minutes	Room temperature
2492	Yes	Used as received	0.5g	Dichloromethane	30 minutes	Room temperature
2511	---	---				
2515	Yes	Used as received	1g grams	Dichloromethane	30 ± 1 minutes	room temperature
2536	Yes	Used as received	1.0015 g	Dichloromethane (DCM)	30 minutes	Room temperature
2590	Yes	Used as received	1g	DCM	30 min	
2591	No	Further cut	2.0 grams	20 mL	30 min	Ultrasonic bath, room temperature
2638	No	Further cut	1 gm	Dichloro methane	30 min	Room temperature
2644	Yes	Used as received	0.5	diclorometano	30	ambiente
2668	Yes	Used as received	0.5g	dichloromethane	30 m	ambient
2678	No	Used as received	1g	Dichloromethane	30 min	Ambient temperature (25°C)
2743	Yes	Used as received	2	Dichlorometane	30	Room temperature
2744	Yes	Used as received	2 g	Dichloromethan	30 minutes	20°C
2789	Yes	Used as received	2	Dichloromethane	30	Ambiental
2826	Yes	Used as received	0.5g	Dichloromethane	30 minutes	Room temperature
2827	Yes	Further cut	0.5g	DCM	30 mins	Ambient temperature
2858	Yes	Further cut	2.0	Dichloromethane (DCM)	30	Room temperature (approximate 25°C)
2955	Yes	Further cut	1	DCM	30	25
2959	Yes	Used as received	1g	Dichloromethane	30	Room Temperature
2976	Yes	Further cut	1	Dichloromethane	30	40
3001	Yes	Further cut	1	Dichloromethane	30	Room temperature
3015	Yes	Further cut	2.0g	Dichloromethane	30 minutes	Laboratory ambient temperature

lab	ISO/IEC17025 accredited	Sample	Sample intake	Release/extract solvent	Extraction Time	Extraction temperature
3116	Yes	Further cut	1 grams	Dichloromethane	30	Room temperature
3154	Yes	Used as received	0,5 g	Dichloromethane	30 min	Laboratory ambient to 40 °C
3172	---	---				
3176	Yes	Further cut	2.0	Dichloromethane	30	Room temperature
3197	Yes	Further cut	0,5g	Dichloromethane	30 min.	room temp.
3222	Yes	Used as received	2g	dichloromethane	30	room temperature
3237	Yes	Used as received	1g	dichloromethane	30	25°C
3248	---	---				

APPENDIX 4

Number of participants per country

7 labs in BANGLADESH
1 lab in BRAZIL
1 lab in CAMBODIA
5 labs in GERMANY
1 lab in GUATEMALA
5 labs in HONG KONG
5 labs in INDIA
1 lab in INDONESIA
6 labs in ITALY
1 lab in KOREA, Republic of
11 labs in P.R. of CHINA
3 labs in PAKISTAN
1 lab in SINGAPORE
2 labs in SPAIN
1 lab in SRI LANKA
1 lab in TAIWAN
1 lab in THAILAND
2 labs in TUNISIA
6 labs in TURKEY
2 labs in VIETNAM

APPENDIX 5

Abbreviations

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?

Literature

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