Results of Proficiency Test
Total PAH in Polymers
March 2022

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1 INTRODUCTION

Polycyclic Aromatic Hydrocarbons (PAH) are often, not intentionally, introduced in plastic and rubber with processing additives of plastics and rubber. As they are considered essential raw materials of consumer components in articles under REACH, the PAH risk of plastics and rubbers shall be identified. Enterprises shall strictly monitor PAH in high-risk materials, to ensure that the products comply with regulation requirements and with trust of consumers. Already in 2008 the Board of Technical Work Equipment and Consumer Products (AtAV) of Germany includes 16 types of PAH in GS certification. In 2014 the German committee for product safety (AfPS) amended the PAH testing requirements under GS-Mark. This AfPS GS PAH specification was updated in August 2019 and became mandatory at July 2020. Differences between the AfPS 2019 and the 2014 version include reducing the number of PAH from 18 to 15 and only sum up the PAH quantified from 0.2 mg/kg onwards.

Since 2015 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the determination of Total PAH in Polymers every year. During the annual proficiency testing program 2021/2022 it was decided to continue the proficiency test for the determination of Total PAH in Polymers.

In this interlaboratory study 103 laboratories in 26 countries registered for participation, see appendix 4 for the number of participants per country. In this report the results of the Total PAH in Polymers proficiency test are presented and discussed. This report is also electronically available through the iis website ww.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 an ISO/IEC17025 accredited laboratory.
It was decided to send one sample of approximately 3 grams labelled #22530.
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 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 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 grinded black rubber from a basket (a real-life sample) was selected. The sample turned out into a mix of black rubber particles and white fiber after grinding of the material. After mixing well 130 subsamples with approximately 3 grams each were prepared and labelled #22530.
The homogeneity of the subsamples was checked by determination of Anthracene, Benzo[g,h,i]perylene and Total PAH content with an in-house test method on 8 stratified randomly selected subsamples.

	Anthracene in mg/kg	Benzo[g,h,i]perylene in mg/kg
sample #22530-1	4.225	3.043
sample #22530-2	3.752	2.627
sample #22530-3	3.578	2.844
sample #22530-4	3.828	2.628
sample #22530-5	3.988	2.603
sample #22530-6	3.946	2.609
sample #22530-7	4.059	2.664
sample #22530-8	3.870	2.636

Table 1: homogeneity test results of subsamples #22530

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Anthracene in mg/kg	Benzo[g,h,i]perylene in mg/kg
r (observed)	0.552	0.438
reference test method	IEC62321-10:20	IEC62321-10:20
0.3 x R (reference test method)	0.623	0.432

Table 2: evaluation of the repeatabilities of subsamples #22530

The calculated repeatabilities are in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

To each of the participating laboratories one sample labelled #22530 was sent on February 16, 2022.

2.5 ANALYZES

The participants were requested to determine the concentrations of any of the following PAH (CAS No.)
- Total PAH
- Naphthalene (91-20-3)
- Acenaphthene (83-32-9)
- Phenanthrene (85-01-8)
- Fluoranthene (206-44-0)
- Sum of Phenanthrene, Anthracene, Fluoranthene and Pyrene
- Benzo[a]anthracene (56-55-3)
- Triphenylene (217-59-4)
- Benzo[b]fluoranthene (205-99-2)
- Benzo[k]fluoranthene (207-08-9)
- Benzo[e]pyrene (192-97-2)
- Indeno[1,2,3-c,d]pyrene (193-39-5)
- Benzo[g,h,i]perylene (191-24-2)

- Acenaphthylene (208-96-8)
- Fluorene (86-73-7)
- Anthracene (120-12-7)
- Pyrene (129-00-0)

- Chrysene (218-01-9)
- Sum of Chrysene and Triphenylene
- Benzo[j]fluoranthene (205-82-3)
- Sum of [b],[j] and [k] Benzofluoranthenes
- Benzo[a]pyrene (50-32-8)
- Dibenzo[a,h]anthracene (53-70-3)
- Cyclopenta[c,d]pyrene (27208-37-3)

It was requested to report if the laboratory was accredited for the determined components and to report some analytical details. Furthermore, to ensure homogeneity it was requested to not use less than 0.5 gram per determination.

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:

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

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:

|z| < 1   good
1 < |z| < 2   satisfactory
2 < |z| < 3   questionable
3 < |z| unsatisfactory

4   EVALUATION

In this proficiency test some problems were encountered with the dispatch of the samples. Fifteen participants reported the test results after the final reporting date and seven participants did not report any test results at all. Not all laboratories were able to report all components.
In total 96 participants reported 1447 numerical test results. Observed were 32 outlying test results, which is 2.2%. In proficiency tests 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.

The majority of the participants reported to have used AfPS GS 2019:01 PAK. This test method has superseded AfPS GS 2014:01 PAK. The main difference is the number of PAH determined. In the AfPS GS 2019:01 PAK version the number is reduced from 18 to 15 PAH (not listed are Acenaphthylene, Acenaphthene and Fluorene). This method also clarifies that only PAH that have been quantified from 0.2 mg/kg are considered for the sum of 15 PAH. The calculation of the total PAH has been evaluated using the AfPS GS 2019:01 PAK version.
Furthermore, five participants reported to have used IEC62321-10 (PAH in polymers and electronics by GC-MS), seven participants reported to have done an in-house method and nine other participants used other test methods.

Regretfully, in test method AfPS GS 2019:01 PAK no precision data is mentioned. However, the method IEC62321-10:20 did have a precision statement. In table 5 of this method the repeatability and reproducibility are mentioned for 18 PAH based on four samples with different concentrations measured by 20 to 30 laboratories. All reproducibility data was used and compared by iis. When all reproducibilities were made relative to the concentrations, this data showed that the relative reproducibility of all PAH for concentrations between 23 mg/kg to 1041 mg/kg was around 50%. Below this concentration, the relative reproducibility varied between 50% and 1000%, which is expected because lower concentrations usually show higher variations. Based on this, iis decided to use all data between 23 and 1041 mg/kg to calculate a relative reproducibility for PAH. This relative reproducibility is 53.2% of the concentration.

Looking at the PT reports of previous years, the relative calculated reproducibility of the group is in line with this relative target reproducibility of 53.2%. This was also found for PAH with concentrations below 20 mg/kg. In the iis PTs it appears that the participants are able to determine PAH at lower concentrations with the same variation as the higher concentrations.

Therefore, iis decided to evaluate all PAH that were present in the sample with a relative reproducibility of 53.2%.

Total PAH: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IEC62321-10:20.
The total PAH level was also calculated by iis over the 15 PAH which level exceeds 0.2 mg/kg according to AfPS GS 2019:01, chapter §3.2. It appeared that about 93% of the reporting laboratories found a different total level of PAH than was calculated by iis, using the reported test results. An explanation for this could be that participants summarized all determined components to calculate the total PAH level, instead of only the 15 PAH mentioned in AfPS GS 2019:01.

Naphthalene: This determination was problematic at the low concentration of 0.14 mg/kg. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of IEC62321-10:20.

Acenaphthylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of IEC62321-10:20.

Acenaphthene: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IEC62321-10:20.

Fluorene: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of IEC62321-10:20.

Phenanthrene: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IEC62321-10:20.

Anthracene: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IEC62321-10:20.

Fluoranthene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of IEC62321-10:20.

Pyrene: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IEC62321-10:20.

Sum of Phenanthrene, Anthracene, Fluoranthene and Pyrene: This determination was not problematic. No statistical outliers were observed but three test results were excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of IEC62321-10:20.

Benzo[a]anthracene: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IEC62321-10:20.

Chrysene: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IEC62321-10:20.

Benzo[b]fluoranthene: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IEC62321-10:20.

Benzo[e]pyrene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of IEC62321-10:20.

Benzo[a]pyrene: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IEC62321-10:20.

Indeno[1,2,3-c,d]pyrene: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of IEC62321-10:20.

Benzo[g,h,i]perylene: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of IEC62321-10:20.

Since Triphenylene was not present higher than 0.2 mg/kg (see appendix 2), the sum of Chrysene and Triphenylene often gave the same test result as the determination of Chrysene. Therefore, this sum was not evaluated separately, but added to the table of Chrysene.

The same applies to the sum of Benzo[b,j,k]fluoranthene. Since Benzo[j]fluoranthene and Benzo[k]fluoranthene were not present higher than 0.2 mg/kg (see appendix 2), the sum of Benzo[b,j,k]fluoranthene often gave the same test result as the determination of Benzo[b]fluoranthene. Therefore, this sum was not evaluated separately, but added to the table of Benzo[b]fluoranthene.

The participants did agree on a concentration near or below the limit of detection for the other PAH not mentioned above. Therefore, no z-scores were calculated for these components. The reported test values 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(lit)
Total PAH	mg/kg	54	34.02	10.07	18.10
Naphthalene	mg/kg	43	0.14	0.10	0.08
Acenaphthylene	mg/kg	41	0.13	0.07	0.07
Acenaphthene	mg/kg	76	0.34	0.20	0.18
Fluorene	mg/kg	84	1.01	0.49	0.54
Phenanthrene	mg/kg	90	6.46	2.07	3.44
Anthracene	mg/kg	86	1.18	0.47	0.63
Fluoranthene	mg/kg	94	4.21	1.44	2.24
Pyrene	mg/kg	93	13.59	4.74	7.23
Sum of Ph, An, Fl and Py *)	mg/kg	68	25.48	6.72	13.55
Benzo[a]anthracene	mg/kg	84	0.52	0.32	0.28
Chrysene	mg/kg	81	0.64	0.37	0.34
Benzo[b]fluoranthene	mg/kg	58	0.34	0.28	0.18
Benzo[e]pyrene	mg/kg	81	0.71	0.38	0.38
Benzo[a]pyrene	mg/kg	83	0.52	0.33	0.28
Indeno[1,2,3-c,d]pyrene	mg/kg	68	0.38	0.22	0.20
Benzo[g,h,i]perylene	mg/kg	86	3.21	1.96	1.71

Table 3: reproducibilities of components on sample #22530

*) Sum of Phenanthrene, Anthracene, Fluoranthene and Pyrene

Without further statistical calculations, it can be concluded for many tests there is a good compliance of the group of participants with the reference test method. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF MARCH 2022 WITH PREVIOUS PTS

	March 2022	February 2021	February 2020	February 2019	February 2018
Number of reporting laboratories	96	101	103	96	104
Number of test results	1447	589	2271	1844	1772
Number of statistical outliers	32	23	81	53	46
Percentage of statistical outliers	2.2%	3.9%	3.6%	2.9%	2.6%

Table 4: comparison with previous proficiency tests

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

The performance of the determinations of the proficiency tests was compared, expressed as relative standard deviation (RSD) of the PTs in the next table.

Component	March 2022	February 2021	February 2020	February 2019	February 2018	Target IEC ****)
Total PAH	11%	11%	12-15%	15%	n.e.	19%
Naphthalene	25%	31%	16-25%	24%	30%	19%
Acenaphthylene	21%	n.e.	29%	n.e.	23%	19%
Acenaphthene	21%	n.e.	12-25%	17%	14-29%	19%
Fluorene	17%	n.e.	12-14%	16%	n.e.	19%
Phenanthrene	11%	37%	14-37%	13-14%	13%	19%
Anthracene	14%	13%	15%	20%	12-37%	19%
Fluoranthene	12%	n.e.	16%	12%	14%	19%
Pyrene	12%	n.e.	11-42%	16%	12-13%	19%
Sum of pH, An, Fl and Py *)	9%	12%	14-51%	n.e.	n.e.	19%
Benzo[a]anthracene	22%	n.e.	25%	15-18%	23%	19%
Chrysene	20%	12%	34%	23%	n.e.	19%
Sum of Chrys. and Triphenyl **)	n.e.	n.e.	n.e.	n.e.	23%	19%
Benzo[b]fluoranthene	29%	n.e.	27%	16-18%	22%	19%
Benzo[j]fluoranthene	n.e.	n.e.	32%	18%	25%	19%
Benzo[k]fluoranthene	n.e.	n.e.	30%	21%	23%	19%
Sum of [b],[j] and [k] Benzof.***)	n.e.	n.e.	26%	14-18%	30%	19%
Benzo[e]pyrene	19%	n.e.	23%	20%	19%	19%
Benzo[a]pyrene	23%	11%	26%	21%	26%	19%
Indeno[1,2,3-c,d]pyrene	21%	n.e.	21%	23%	29%	19%
Dibenzo[a,h]anthracene	n.e.	n.e.	33%	n.e.	n.e.	19%
Benzo[g,h,i]perylene	22%	n.e.	21%	19%	31%	19%
Cyclopenta(c,d)pyrene	n.e.	n.e.	n.e.	n.e.	26%	19%

Table 5: development of uncertainties over the years
*) Sum of Phenanthrene, Anthracene, Fluoranthene and Pyrene
**) Sum of of Chrysene and Triphenylene
***) Sum of [b],[j] and [k] Benzofluoranthenes
****) Target = 53.2/2.8

The uncertainties observed in this PT are comparable to the uncertainties observed in previous PTs.

4.4 EVALUATION OF THE ANALYTICAL DETAILS

The participants were asked to provide some analytical details which are listed in appendix 3. Based on the reported answers the following can be summarized:
− 93% of the participants mentioned that they are accredited for determination of PAH.
− 52% of the participants mentioned that they have further cut or grinded the samples before use, and 48% of the participants used the samples as received.
− 87% of the participants mentioned to have used 0.5 grams, 2% used 0.1-0.3 grams and 11% used 1 or more grams.

The effect of sample intake on the determination of PAH in polymers is not significant.

5   DISCUSSION

All participants would have rejected the sample in accordance with the latest GS-Mark certification on PAH (July 2020, see next table) for category 1, 2 and 3 (use by children).

Parameter	Category 1	Category 2		Category 3	
	Materials intended to be placed in the mouth, or materials coming into long-term contact with skin (more than 30s) during the intended use - in toys according to Directive 2009/48/EC or - for the use by children[a,b] up to 3 years of age	Materials not covered by category 1, coming into long-term contact (more than 30s) or short-term repetitive contact[c] with skin during the intended or foreseeable use[d]		Materials covered neither by category 1 nor by category 2, coming into short-term contact (up to 30s) with skin during the intended or foreseeable use	
		a. use by children	b. other consumer products	a. use by children	b. other consumer products
Benzo[a]pyrene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[e]pyrene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[a]anthracene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[b]fluoranthene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[j]fluoranthene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[k]fluoranthene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysen mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenenzo[a,h]anthracene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[ghi]perylene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno[1,2,3-cd]pyrene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Phenanthrene, Pyrene, Anthracene, Fluoranthene mg/kg	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene mg/kg	< 1	< 2		< 10	
Sum 15 PAH mg/kg	< 1	< 5	< 10	< 20	< 50

Table 6: Category limits from German GS-Mark per July 2020

6   CONCLUSION

The majority of the participants is able to determine PAH in the polymer matrix. The observed reproducibilities in this proficiency test on PAH in Polymers are in line with the reproducibilities of PAH of previous PTs.

However, 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 Total PAH in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	iis calc*)	mark	remarks
310		-----		-----	-----		
551		-----		-----	-----		
623	AfPS GS 2019	42.81		1.36	30.9		
840	AfPS GS 2019	35.21		0.18	33.47		
841		-----		-----	33.712		
2108	AfPS GS 2019	43.86		1.52	40.33		
2115	AfPS GS 2019	30.75		-0.51	28.49		
2129	AfPS GS 2019	32.1		-0.30	30.426		
2135		-----		-----	30.72		
2137		-----		-----	24.76		
2156	AfPS GS 2019	29.24	C	-0.74	29.24		First reported 29.46
2159	IEC62321-10	27.86		-0.95	25.69		
2165		-----		-----	27.42		
2184		-----		-----	28.28		
2201	AfPS GS 2019	32.0		-0.31	30.6		
2215	AfPS GS 2019	32.27		-0.27	31.604		
2218	AfPS GS 2019	33.101		-0.14	31.502		
2223	In house	not determined		-----	34.269		
2250	AfPS GS 2019	36.02		0.31	34.35		
2256	AfPS GS 2019	32.24		-0.28	30.835		
2265	AfPS GS 2019	31.34		-0.41	29.93		
2267		-----		-----	-----		
2287	AfPS GS 2019	35.70		0.26	38.87		
2300	ZEK01.4-08	31.6	C	-0.37	29.55		First reported 48.03
2301		-----		-----	33.385		
2310	AfPS GS 2019	32.3		-0.27	31.08		
2311	AfPS GS 2019	57.73	R(0.01)	3.67	30.878		
2316	AfPS GS 2019	8.182	R(0.01)	-4.00	6.212	R(0.01)	
2320		-----		-----	27.965		
2330	AfPS GS 2019	Not applicable		-----	25.98		
2347		-----		-----	32.61		
2350	IEC62321-10	37.87	C	0.60	35.631		First reported 40.67
2352	IEC62321-10	33.42		-0.09	31.52		
2353		-----		-----	32.1576		
2355		-----		-----	32.67		
2357	AfPS GS 2019	34.14		0.02	32.51		
2358		-----		-----	32.1576		
2363	AfPS GS 2019	34.61		0.09	32.96		
2365	AfPS GS 2019	34.460		0.07	32.547		
2366	AfPS GS 2019	29.528		-0.69	33.097		
2369	AfPS GS 2019	35.470		0.22	33.608		
2370	AfPS GS 2019	35.613		0.25	33.942		
2372	AfPS GS 2019	33.5223		-0.08	32.4651		
2373	AfPS GS 2019	35.550		0.24	33.449		
2375	ISO/TS16190	33.41		-0.09	31.04		
2378		-----		-----	31.78		
2379	AfPS GS 2019	Not analyzed		-----	39.4758		
2380		-----		-----	30.173		
2382		-----		-----	32.08		
2384	AfPS GS 2019	35.13		0.17	32.92		
2386	AfPS GS 2019	33.637		-0.06	31.577		
2390	AfPS GS 2019	34.839		0.13	34.467		
2406	AfPS GS 2019	not applicable		-----	27.2		
2426	AfPS GS 2019	50.006	R(0.01)	2.47	25.847		
2446	§64 ASU 82.02-30	35.035		0.16	33.84		
2459	AfPS GS 2019	37.699		0.57	34.468		
2462		31.53		-0.38	30.47		
2481		-----		-----	-----		
2495	IEC62321-10	36.12		0.33	33.75		
2504	AfPS GS 2019	not applicable		-----	30.793		
2511		-----		-----	37.9954		
2538		-----		-----	36.253		
2561		-----		-----	30.64		
2590		-----		-----	34.305		
2605		-----		-----	31.57		
2643		-----		-----	28.02		
2649	AfPS GS 2019	33.39		-0.10	31.34		
2674		-----		-----	27.32		
2678		-----		-----	-----		
2734		-----		-----	-----		
2737		-----		-----	22.815		
2743	IEC62321-10	37.9529		0.61	35.7885		
2811	AfPS GS 2019	37.17		0.49	36.78		
2815	ZEK01.4-08	30.1		-0.61	27.048		
2829	AfPS GS 2019	36.716		0.42	30.849		

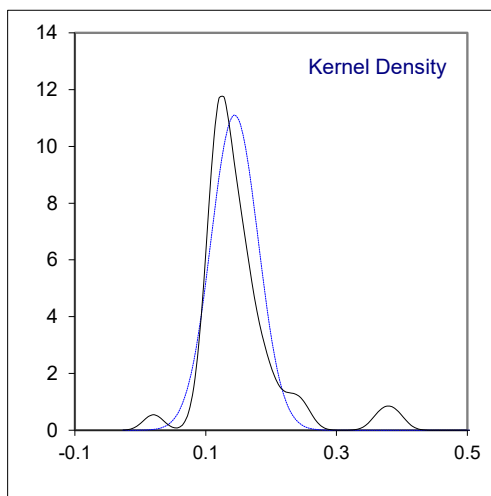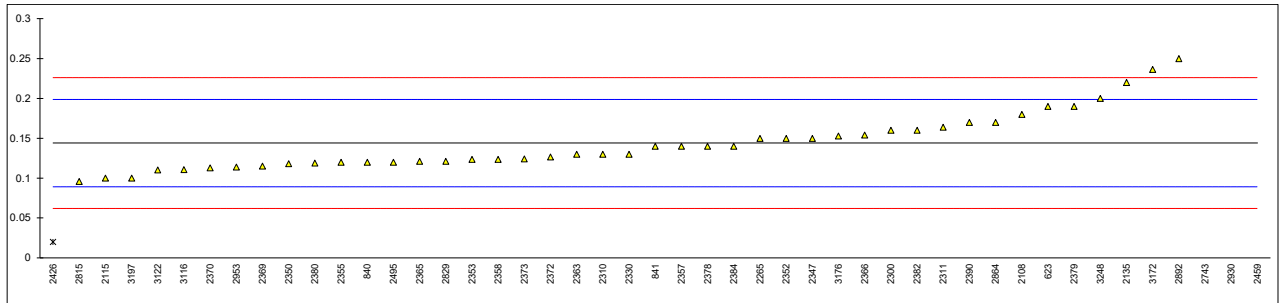| lab	method	value	mark	z(targ)	iis calc*)	mark	remarks
2858	AfPS GS 2019	28.900		-0.79	25.573		
2864		-----		-----	27.83		
2867		-----		-----	28.11		
2892	AfPS GS 2019	41.311		1.13	39.83		
2910		-----		-----	27.73		
2930		-----		-----	26.69		
2953		-----		-----	27.493		
2977		-----		-----	-----		
2988	AfPS GS 2019	37.29		0.51	35.66		
3100	AfPS GS 2019	31.07		-0.46	29.63		
3116		-----		-----	28.818		
3122	AfPS GS 2019	37.74901		0.58	31.65264		
3153	AfPS GS 2019	32.63		-0.21	30.96		
3154	AfPS GS 2014	24.752		-1.43	22.674		
3163		-----		-----	-----		
3172		-----		-----	33.3824		
3176	In house	38.919		0.76	30.693		
3182	ZEK01.4-08	32.30		-0.27	30.12		
3185		-----		-----	30.1		
3197	AfPS GS 2019	37.19		0.49	35.22		
3209		-----		-----	21.84		
3210		35.7133		0.26	33.1817		
3214	AfPS GS 2019	31.33		-0.42	30.05		
3218	AfPS GS 2019	30.97		-0.47	29.6		
3228		-----		-----	28.02		
3230		-----		-----	-----		
3237	AfPS GS 2019	29.44		-0.71	27.18		
3248	AfPS GS 2019	32.1		-0.30	30.5		
	normality	OK			OK		
	n	54			93		
	outliers	3			1		
	mean (n)	34.0181			31.1688		
	st.dev. (n)	3.59611	RSD = 11%		3.61754	RSD = 12%	
	R(calc.)	10.0691			10.1291		
	st.dev.(IEC62321-10:20)	6.46344			5.92208		
	R(IEC62321-10:20)	18.0976			16.5818		

*) iis calculated the total of 15 PAH whose level in the material is found to exceed 0.2 mg/kg according to AfPS GS 2019

Kernel Density
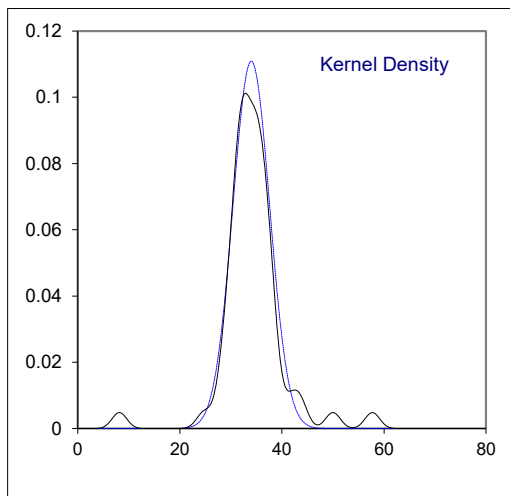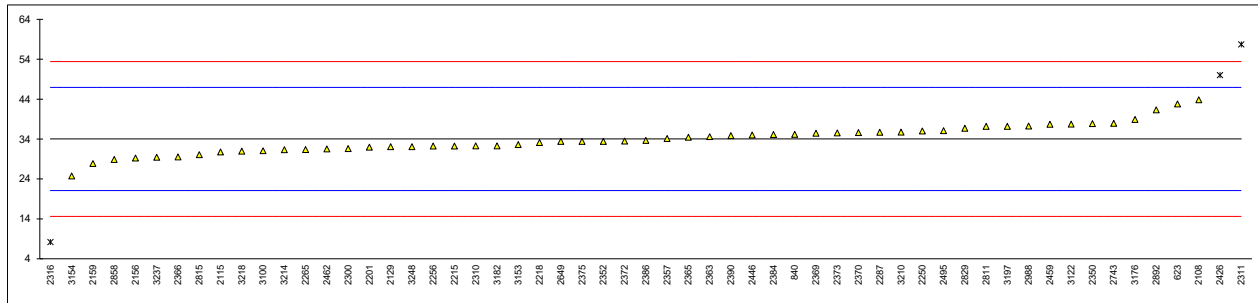
Determination of Naphthalene, CAS No. 91-20-3 in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	Remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.19		1.68	
840	AfPS GS 2019	0.12		-0.88	
841	AfPS GS 2019	0.140		-0.15	
2108	AfPS GS 2019	0.18		1.31	
2115	AfPS GS 2019	0.1		-1.61	
2129	AfPS GS 2019	<0.05		<-3.44	Possibly a false negative result?
2135	AfPS GS 2014	0.22		2.78	
2137		-----		-----	
2156	AfPS GS 2019	<0.2		-----	
2159	IEC62321-10	< 0.2		-----	
2165	AfPS GS 2019	not detected		-----	
2184	AfPS GS 2014	not detected		-----	
2201	AfPS GS 2019	not detected		-----	
2215	AfPS GS 2019	not detected		-----	
2218	AfPS GS 2019	Not detected		-----	
2223	In house	<0.1		-----	
2250		-----		-----	
2256		-----		-----	
2265	AfPS GS 2019	0.15		0.22	
2267		-----		-----	
2287	AfPS GS 2019	<0.2		-----	
2300	ZEK01.4-08	0.16		0.58	
2301		-----		-----	
2310	AfPS GS 2019	0.13		-0.51	
2311	AfPS GS 2019	0.164		0.73	
2316	AfPS GS 2019	Not Detected		-----	
2320	AfPS GS 2019	<0.2	C	-----	First reported 0.261
2330	AfPS GS 2019	0.13		-0.51	
2347	AfPS GS 2019	0.15		0.22	
2350	IEC62321-10	0.118		-0.95	
2352	IEC62321-10	0.15		0.22	
2353	AfPS GS 2019	0.1235		-0.75	
2355	AfPS GS 2019	0.12		-0.88	
2357	AfPS GS 2019	0.14		-0.15	
2358	AfPS GS 2019	0.1235		-0.75	
2363	AfPS GS 2019	0.13		-0.51	
2365	AfPS GS 2019	0.121		-0.84	
2366	AfPS GS 2019	0.154		0.36	
2369	AfPS GS 2019	0.115		-1.06	
2370	AfPS GS 2019	0.113		-1.13	
2372	AfPS GS 2019	0.1266		-0.64	
2373	AfPS GS 2019	0.124		-0.73	
2375	ISO/TS16190	<0.2		-----	
2378	EN17132	0.14		-0.15	
2379	AfPS GS 2019	0.1900		1.68	
2380	AfPS GS 2019	0.119		-0.91	
2382	AFPS GS 2019	0.16		0.58	
2384	AfPS GS 2019	0.14		-0.15	
2386	AfPS GS 2019	not detected		-----	
2390	AfPS GS 2019	0.170		0.95	
2406	AfPS GS 2019	not detected		-----	
2426	AfPS GS 2019	0.020	R(0.05)	-4.53	
2446	§64 ASU 82.02-30	<0,2		-----	
2459	AfPS GS 2019	1.897	R(0.01)	64.06	
2462		-----		-----	
2481		-----		-----	
2495	IEC62321-10	0.12		-0.88	
2504	AfPS GS 2019	not applicable		-----	
2511		-----		-----	
2538		-----		-----	
2561		-----		-----	
2590		-----		-----	
2605	AfPS GS 2019	<0.20		-----	
2643		-----		-----	
2649		-----		-----	
2674	AfPS GS 2014	not detected		-----	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743	IEC62321-10	0.3683	R(0.01)	8.20	
2811	AfPS GS 2019	not detected		-----	
2815	ZEK01.4-08	0.096		-1.75	
2829	AfPS GS 2019	0.121		-0.84	

lab	method	value	mark	z(targ)	Remarks
2858	AfPS GS 2019	not detected	C	-----	First reported 0.774
2864	AfPS GS 2019	0.17		0.95	
2867	AfPS GS 2019	<0.2		-----	
2892	AfPS GS 2019	0.25		3.87	
2910	AfPS GS 2019	not detected		-----	
2930	In house	0.39	R(0.01)	8.99	
2953	AfPS GS 2019	0.114		-1.10	
2977		-----		-----	
2988	AfPS GS 2019	not detected		-----	
3100	AfPS GS 2019	<0.2		-----	
3116	AfPS GS 2014	0.1106		-1.22	
3122	AfPS GS 2019	0.11034		-1.23	
3153	AfPS GS 2019	<0.20		-----	
3154		-----		-----	
3163		-----		-----	
3172	AfPS GS 2019	0.2364		3.38	
3176	In house	0.153		0.33	
3182	ZEK01.4-08	<0.10		-----	
3185	AfPS GS 2019	<0.2		-----	
3197	AfPS GS 2019	0.10		-1.61	
3209		-----		-----	
3210		<0.2		-----	
3214	AfPS GS 2019	<0.2		-----	
3218	AfPS GS 2019	<0.20		-----	
3228	AfPS GS 2019	not detected		-----	
3230		-----		-----	
3237		-----		-----	
3248	AfPS GS 2019	0.2		2.05	

|			
normality	not OK		
n	43		
outliers	4		
mean (n)	0.1440		
st.dev. (n)	0.03592	RSD = 25%	
R(calc.)	0.1006		
st.dev.(IEC62321-10:20)	0.02736		
R(IEC62321-10:20)	0.0766		

Determination of Acenaphthylene, CAS No. 208-96-8 in sample #22530; results in mg/kg

lab	method	value	Mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.07		-2.34	
840	AfPS GS 2019	0.1		-1.09	
841	AfPS GS 2019	0.115		-0.46	
2108	AfPS GS 2019	0.20		3.09	
2115	AfPS GS 2019	0.12		-0.25	
2129	AfPS GS 2019	0.070		-2.34	
2135		-----		-----	
2137		-----		-----	
2156		-----		-----	
2159	IEC62321-10	< 0.2		-----	
2165	AfPS GS 2019	not detected		-----	
2184	AfPS GS 2014	not detected		-----	
2201	AfPS GS 2019	not detected		-----	
2215	AfPS GS 2019	not detected		-----	
2218	AfPS GS 2019	Not detected		-----	
2223	In house	0.108		-0.75	
2250		-----		-----	
2256		-----		-----	
2265	AfPS GS 2019	< 0,2		-----	
2267		-----		-----	
2287	AfPS GS 2019	<0.2		-----	
2300	ZEK01.4-08	0.15		1.00	
2301		-----		-----	
2310	AfPS GS 2019	0.13		0.17	
2311	AfPS GS 2019	0.12		-0.25	
2316		-----		-----	
2320	AfPS GS 2019	Not Detected		-----	
2330	AfPS GS 2019	0.12		-0.25	
2347	AfPS GS 2019	0.13		0.17	
2350	IEC62321-10	<0.1		-----	
2352	IEC62321-10	0.14		0.59	
2353	AfPS GS 2019	0.1273		0.06	
2355	AfPS GS 2019	0.11		-0.67	
2357	AfPS GS 2019	0.13		0.17	
2358	AfPS GS 2019	0.1273		0.06	
2363	AfPS GS 2019	0.13		0.17	
2365	AfPS GS 2019	0.114		-0.50	
2366	AfPS GS 2019	0.122		-0.17	
2369	AfPS GS 2019	0.134		0.34	
2370	AfPS GS 2019	0.103		-0.96	
2372	AfPS GS 2019	0.1		-1.09	
2373	AfPS GS 2019	0.143		0.71	
2375	ISO/TS16190	<0.2		-----	
2378	EN17132	0.14		0.59	
2379	AfPS GS 2019	0.1112		-0.62	
2380	AfPS GS 2019	0.119		-0.29	
2382	AFPS GS 2019	0.14		0.59	
2384	AfPS GS 2019	Not Detected [<0.1]		-----	
2386	AfPS GS 2019	0.106		-0.83	
2390	AfPS GS 2019	0.133	C	0.29	First reported 0.226
2406	AfPS GS 2019	not detected		-----	
2426	AfPS GS 2019	0.086		-1.67	
2446	§64 ASU 82.02-30	<0,2		-----	
2459	AfPS GS 2019	0.875	R(0.01)	31.29	
2462		-----		-----	
2481		-----		-----	
2495	IEC62321-10	<0.1		-----	
2504	AfPS GS 2019	not applicable		-----	
2511	EN17132	<0.2		-----	
2538	In house	0.138		0.50	
2561		-----		-----	
2590		-----		-----	
2605	AfPS GS 2019	<0.20		-----	
2643		-----		-----	
2649		-----		-----	
2674	AfPS GS 2014	not detected		-----	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743		-----		-----	
2811	AfPS GS 2019	not determined		-----	
2815	ZEK01.4-08	0.124		-0.08	
2829	AfPS GS 2019	0.163		1.55	

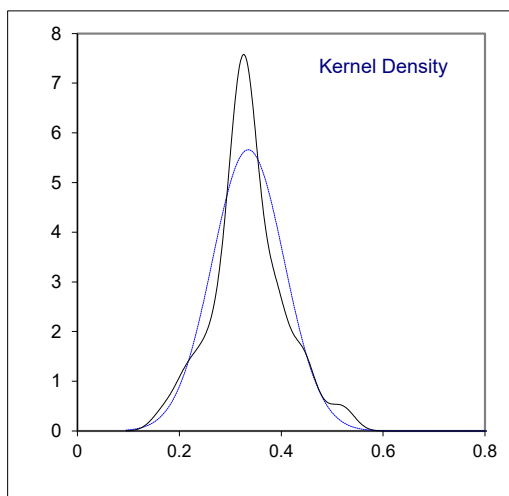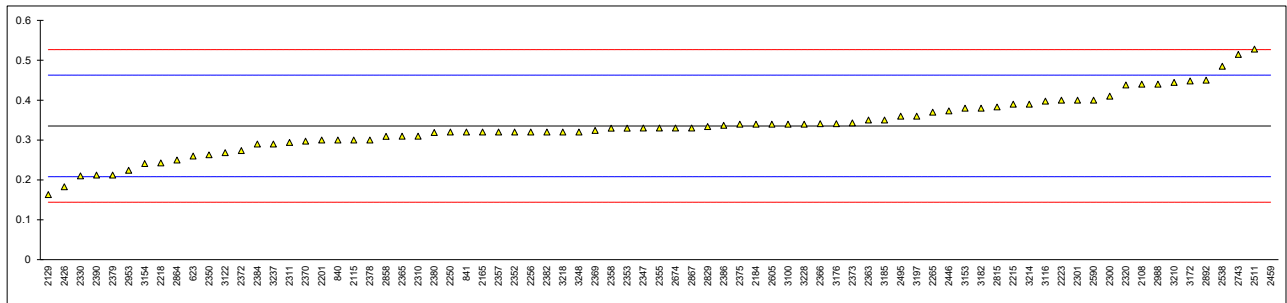| lab	method	value	Mark	z(targ)	remarks
2858	AfPS GS 2019	0.155		1.21	
2864	AfPS GS 2019	not detected		-----	
2867	AfPS GS 2019	<0.2		-----	
2892	AfPS GS 2019	0.13		0.17	
2910	AfPS GS 2019	not applicable		-----	
2930	In house	<0.38	C	-----	First reported 0.27
2953	AfPS GS 2019	0.181		2.30	
2977		-----		-----	
2988	AfPS GS 2019	not detected		-----	
3100	AfPS GS 2019	<0.2		-----	
3116	AfPS GS 2014	0.1218		-0.17	
3122	AfPS GS 2019	<0.1	C	-----	First reported 1.09229
3153	AfPS GS 2019	<0.20		-----	
3154		-----		-----	
3163		-----		-----	
3172	AfPS GS 2019	< 0.2		-----	
3176		-----		-----	
3182	ZEK01.4-08	<0.10		-----	
3185	AfPS GS 2019	<0.2		-----	
3197	AfPS GS 2019	0.13		0.17	
3209		-----		-----	
3210		0.1736		1.99	
3214	AfPS GS 2019	<0.2		-----	
3218	AfPS GS 2019	<0.20		-----	
3228	AfPS GS 2019	not detected		-----	
3230		-----		-----	
3237		-----		-----	
3248	AfPS GS 2019	0.1		-1.09	

normality	suspect	
n	41	
outliers	1	
mean (n)	0.1260	
st.dev. (n)	0.02592	RSD = 21%
R(calc.)	0.0726	
st.dev.(IEC62321-10:20)	0.02394	
R(IEC62321-10:20)	0.0670	

Kernel Density
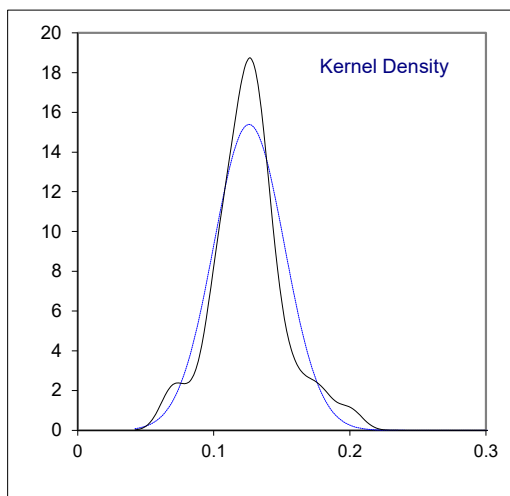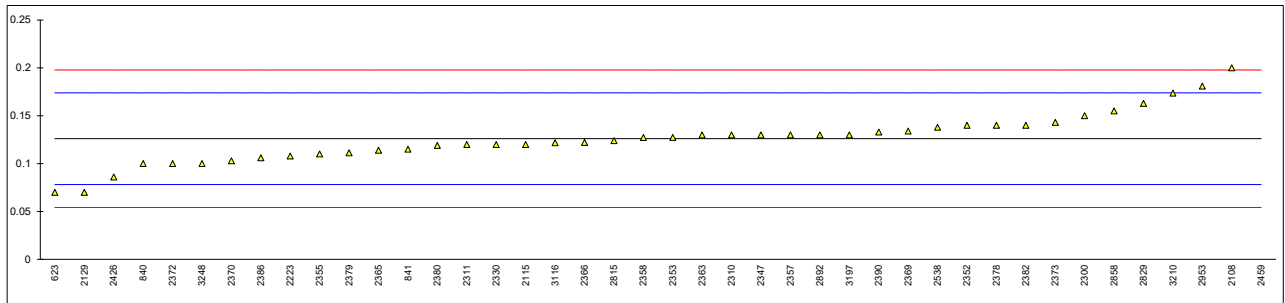
Determination of Acenaphthene, CAS No. 83-32-9 in sample #22530; results in mg/kg

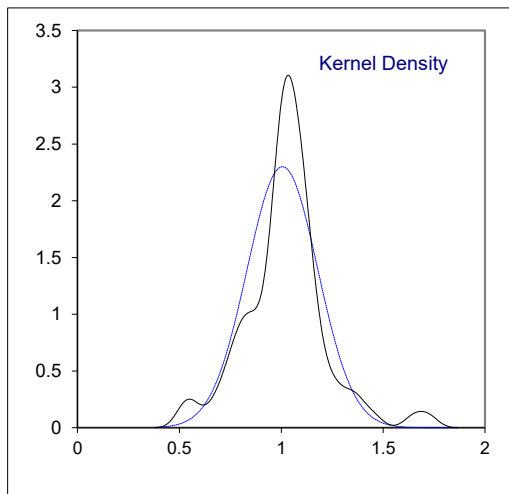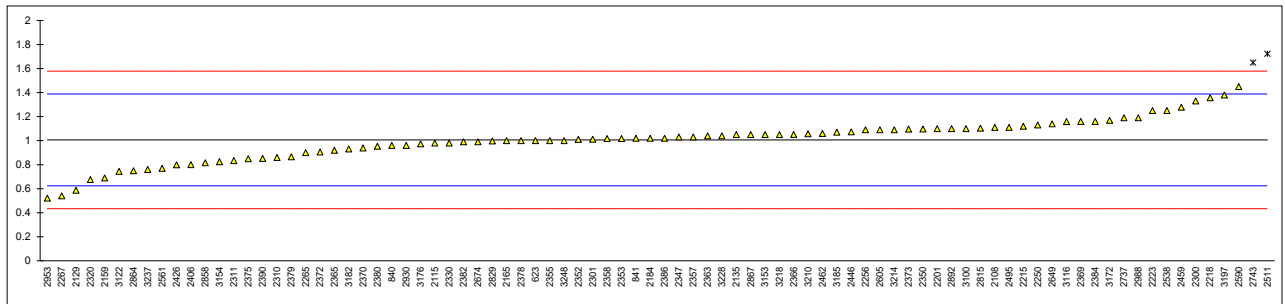| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.26		-1.18	
840	AfPS GS 2019	0.3		-0.55	
841	AfPS GS 2019	0.320		-0.24	
2108	AfPS GS 2019	0.44		1.64	
2115	AfPS GS 2019	0.30		-0.55	
2129	AfPS GS 2019	0.163		-2.70	
2135		-----		-----	
2137		-----		-----	
2156		-----		-----	
2159	IEC62321-10	< 0.2		-----	
2165	AfPS GS 2019	0.32		-0.24	
2184	AfPS GS 2014	0.34		0.07	
2201	AfPS GS 2019	0.3		-0.55	
2215	AfPS GS 2019	0.39		0.86	
2218	AfPS GS 2019	0.243		-1.45	
2223	In house	0.400		1.02	
2250	AfPS GS 2019	0.32		-0.24	
2256	AfPS GS 2019	0.320		-0.24	
2265	AfPS GS 2019	0.37		0.54	
2267		-----		-----	
2287	AfPS GS 2019	<0.2		-----	
2300	ZEK01.4-08	0.41		1.17	
2301	AfPS GS 2019	0.40		1.02	
2310	AfPS GS 2019	0.31		-0.40	
2311	AfPS GS 2019	0.294		-0.65	
2316		-----		-----	
2320	AfPS GS 2019	0.438	C	1.61	First reported Not Detected
2330	AfPS GS 2019	0.21		-1.97	
2347	AfPS GS 2019	0.33		-0.08	
2350	IEC62321-10	0.263		-1.14	
2352	IEC62321-10	0.32		-0.24	
2353	AfPS GS 2019	0.3298		-0.09	
2355	AfPS GS 2019	0.33		-0.08	
2357	AfPS GS 2019	0.32		-0.24	
2358	AfPS GS 2019	0.3298		-0.09	
2363	AfPS GS 2019	0.35		0.23	
2365	AfPS GS 2019	0.310		-0.40	
2366	AfPS GS 2019	0.341		0.09	
2369	AfPS GS 2019	0.324		-0.18	
2370	AfPS GS 2019	0.297		-0.60	
2372	AfPS GS 2019	0.2737		-0.97	
2373	AfPS GS 2019	0.343		0.12	
2375	ISO/TS16190	0.34		0.07	
2378	EN17132	0.3		-0.55	
2379	AfPS GS 2019	0.2122		-1.93	
2380	AfPS GS 2019	0.319		-0.26	
2382	AFPS GS 2019	0.32		-0.24	
2384	AfPS GS 2019	0.29		-0.71	
2386	AfPS GS 2019	0.337		0.03	
2390	AfPS GS 2019	0.212		-1.94	
2406	AfPS GS 2019	<0.2	C	-----	First reported not detected
2426	AfPS GS 2019	0.183		-2.39	
2446	§64 ASU 82.02-30	0.373		0.59	
2459	AfPS GS 2019	1.079	R(0.01)	11.67	
2462		-----		-----	
2481		-----		-----	
2495	IEC62321-10	0.36		0.39	
2504	AfPS GS 2019	not applicable		-----	
2511	EN17132	0.5280		3.02	
2538	In house	0.485		2.35	
2561		-----		-----	
2590	AfPS GS 2019	0.4	C	1.02	First reported 0.802
2605	AfPS GS 2019	0.34		0.07	
2643		-----		-----	
2649		-----		-----	
2674	AfPS GS 2014	0.33		-0.08	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743	IEC62321-10	0.5147		2.82	
2811	AfPS GS 2019	not determined		-----	
2815	ZEK01.4-08	0.383		0.75	
2829	AfPS GS 2019	0.334		-0.02	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	0.309		-0.41	
2864	AfPS GS 2019	0.25	C	-1.34	First reported not detected
2867	AfPS GS 2019	0.33		-0.08	
2892	AfPS GS 2019	0.45		1.80	
2910	AfPS GS 2019	not applicable		-----	
2930	In house	<0.59 mg/kg	C	-----	First reported 0.36
2953	AfPS GS 2019	0.224		-1.75	
2977		-----		-----	
2988	AfPS GS 2019	0.44		1.64	
3100	AfPS GS 2019	0.34		0.07	
3116	AfPS GS 2014	0.3974		0.97	
3122	AfPS GS 2019	0.26810		-1.05	
3153	AfPS GS 2019	0.38		0.70	
3154	AfPS GS 2014	0.241		-1.48	
3163		-----		-----	
3172	AfPS GS 2019	0.4483		1.77	
3176	In house	0.341		0.09	
3182	ZEK01.4-08	0.38		0.70	
3185	AfPS GS 2019	0.35		0.23	
3197	AfPS GS 2019	0.36		0.39	
3209		-----		-----	
3210		0.4446		1.72	
3214	AfPS GS 2019	0.39		0.86	
3218	AfPS GS 2019	0.32		-0.24	
3228	AfPS GS 2019	0.34		0.07	
3230		-----		-----	
3237	AfPS GS 2019	0.29		-0.71	
3248	AfPS GS 2019	0.32		-0.24	

normality	OK			
n	76			
outliers	1			
mean (n)	0.3353			
st.dev. (n)	0.07052	RSD = 21%		
R(calc.)	0.1975			
st.dev.(IEC62321-10:20)	0.06371			
R(IEC62321-10:20)	0.1784			

Kernel Density

Determination of Fluorene, CAS No. 86-73-7 in sample #22530; results in mg/kg

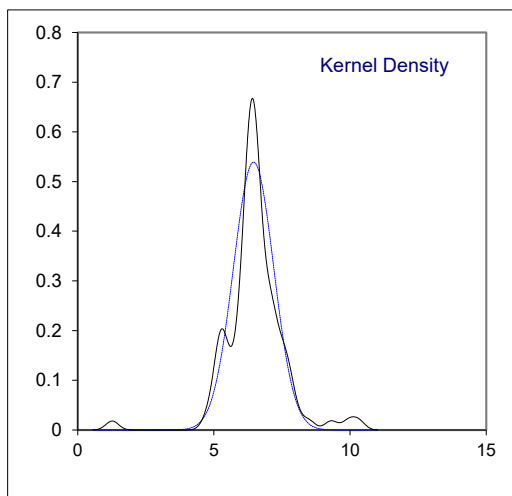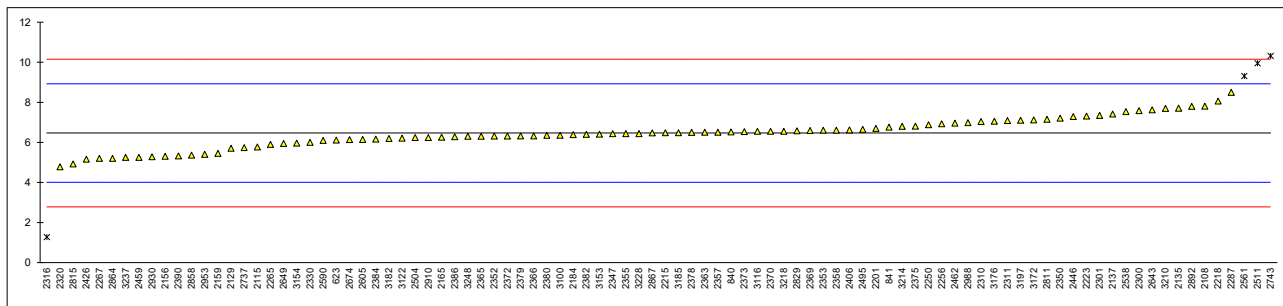| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	1		-0.03	
840	AfPS GS 2019	0.96		-0.24	
841	AfPS GS 2019	1.020		0.07	
2108	AfPS GS 2019	1.11		0.54	
2115	AfPS GS 2019	0.98		-0.14	
2129	AfPS GS 2019	0.587		-2.19	
2135	AfPS GS 2014	1.05		0.23	
2137		-----		-----	
2156		-----		-----	
2159	IEC62321-10	0.69		-1.65	
2165	AfPS GS 2019	1.00		-0.03	
2184	AfPS GS 2014	1.02		0.07	
2201	AfPS GS 2019	1.1		0.49	
2215	AfPS GS 2019	1.12		0.60	
2218	AfPS GS 2019	1.356		1.83	
2223	In house	1.25		1.28	
2250	AfPS GS 2019	1.13		0.65	
2256	AfPS GS 2019	1.09		0.44	
2265	AfPS GS 2019	0.90		-0.55	
2267	In house	0.54		-2.44	
2287	AfPS GS 2019	<0.2		<-4.22	Possibly a false negative result?
2300	ZEK01.4-08	1.33		1.70	
2301	AfPS GS 2019	1.012		0.03	
2310	AfPS GS 2019	0.86		-0.76	
2311	AfPS GS 2019	0.834		-0.90	
2316		-----		-----	
2320	AfPS GS 2019	0.677		-1.72	
2330	AfPS GS 2019	0.98		-0.14	
2347	AfPS GS 2019	1.03		0.13	
2350	IEC62321-10	1.098		0.48	
2352	IEC62321-10	1.01		0.02	
2353	AfPS GS 2019	1.0176		0.06	
2355	AfPS GS 2019	1.00		-0.03	
2357	AfPS GS 2019	1.03		0.13	
2358	AfPS GS 2019	1.0176		0.06	
2363	AfPS GS 2019	1.04		0.18	
2365	AfPS GS 2019	0.920		-0.45	
2366	AfPS GS 2019	1.052		0.24	
2369	AfPS GS 2019	1.160		0.81	
2370	AfPS GS 2019	0.939		-0.35	
2372	AfPS GS 2019	0.9061		-0.52	
2373	AfPS GS 2019	1.097		0.48	
2375	ISO/TS16190	0.85		-0.82	
2378	EN17132	1		-0.03	
2379	AfPS GS 2019	0.8662		-0.73	
2380	AfPS GS 2019	0.953		-0.28	
2382	AFPS GS 2019	0.99		-0.08	
2384	AfPS GS 2019	1.16		0.81	
2386	AfPS GS 2019	1.020		0.07	
2390	AfPS GS 2019	0.852		-0.81	
2406	AfPS GS 2019	0.80		-1.08	
2426	AfPS GS 2019	0.799		-1.08	
2446	§64 ASU 82.02-30	1.073		0.35	
2459	AfPS GS 2019	1.277		1.42	
2462		1.06		0.28	
2481		-----		-----	
2495	IEC62321-10	1.11		0.54	
2504	AfPS GS 2019	not applicable		-----	
2511	EN17132	1.7228	R(0.05)	3.75	
2538	In house	1.25		1.28	
2561	AfPS GS 2019	0.77		-1.23	
2590	AfPS GS 2019	1.451		2.33	
2605	AfPS GS 2019	1.09		0.44	
2643		-----		-----	
2649	AfPS GS 2019	1.14		0.70	
2674	AfPS GS 2014	0.99		-0.08	
2678		-----		-----	
2734		-----		-----	
2737	ISO16190	1.19		0.96	
2743	IEC62321-10	1.6497	R(0.05)	3.37	
2811	AfPS GS 2019	not determined		-----	
2815	ZEK01.4-08	1.104		0.51	
2829	AfPS GS 2019	0.998		-0.04	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	0.816		-0.99	
2864	AfPS GS 2019	0.75		-1.34	
2867	AfPS GS 2019	1.05		0.23	
2892	AfPS GS 2019	1.10		0.49	
2910	AfPS GS 2019	not applicable		-----	
2930	In house	0.96		-0.24	
2953	AfPS GS 2019	0.522		-2.53	
2977		-----		-----	
2988	AfPS GS 2019	1.19		0.96	
3100	AfPS GS 2019	1.10		0.49	
3116	AfPS GS 2014	1.1587		0.80	
3122	AfPS GS 2019	0.74483		-1.37	
3153	AfPS GS 2019	1.05		0.23	
3154	AfPS GS 2014	0.825		-0.95	
3163		-----		-----	
3172	AfPS GS 2019	1.169		0.85	
3176	In house	0.973		-0.17	
3182	ZEK01.4-08	0.93		-0.40	
3185	AfPS GS 2019	1.07		0.34	
3197	AfPS GS 2019	1.38		1.96	
3209		-----		-----	
3210		1.0581		0.27	
3214	AfPS GS 2019	1.09		0.44	
3218	AfPS GS 2019	1.05		0.23	
3228	AfPS GS 2019	1.04		0.18	
3230		-----		-----	
3237	AfPS GS 2019	0.76		-1.29	
3248	AfPS GS 2019	1.0		-0.03	

	normality	OK		
	n	84		
	outliers	2		
	mean (n)	1.0059		
	st.dev. (n)	0.17356	RSD = 17%	
	R(calc.)	0.4860		
	st.dev.(IEC62321-10:20)	0.19112		
	R(IEC62321-10:20)	0.5351		

Kernel Density

Determination of Phenanthrene, CAS No. 85-01-8 in sample #22530; results in mg/kg

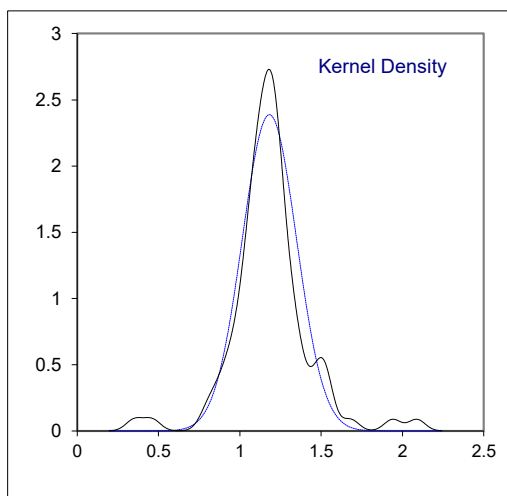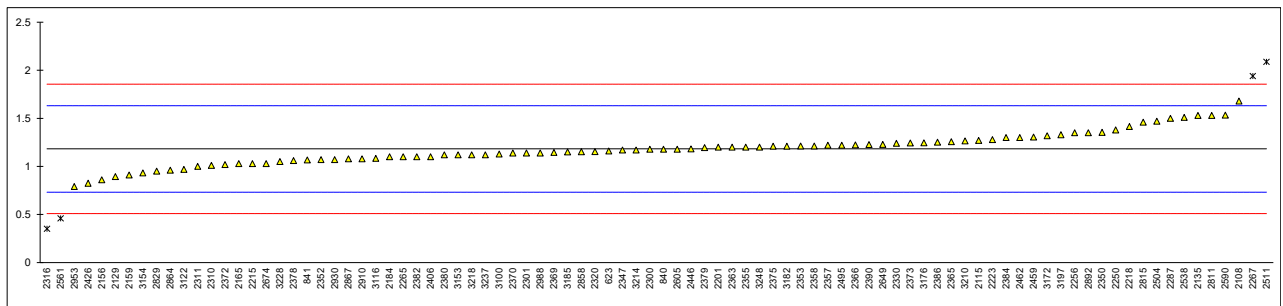| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	6.11	C	-0.29	First reported 10.24
840	AfPS GS 2019	6.52		0.05	
841	AfPS GS 2019	6.760		0.24	
2108	AfPS GS 2019	7.81		1.10	
2115	AfPS GS 2019	5.77		-0.56	
2129	AfPS GS 2019	5.70		-0.62	
2135	AfPS GS 2014	7.71		1.02	
2137	KS M6956	7.42		0.78	
2156	AfPS GS 2019	5.31		-0.94	
2159	IEC62321-10	5.45		-0.82	
2165	AfPS GS 2019	6.26		-0.17	
2184	AfPS GS 2014	6.39		-0.06	
2201	AfPS GS 2019	6.7		0.19	
2215	AfPS GS 2019	6.48		0.01	
2218	AfPS GS 2019	8.063		1.30	
2223	In house	7.31		0.69	
2250	AfPS GS 2019	6.88		0.34	
2256	AfPS GS 2019	6.93		0.38	
2265	AfPS GS 2019	5.90		-0.46	
2267	In house	5.2		-1.03	
2287	AfPS GS 2019	8.50		1.66	
2300	ZEK01.4-08	7.58		0.91	
2301	AfPS GS 2019	7.35		0.72	
2310	AfPS GS 2019	7.04		0.47	
2311	AfPS GS 2019	7.09		0.51	
2316	AfPS GS 2019	1.270	R(0.01)	-4.23	
2320	AfPS GS 2019	4.778		-1.37	
2330	AfPS GS 2019	6.00		-0.38	
2347	AfPS GS 2019	6.43		-0.03	
2350	IEC62321-10	7.205		0.60	
2352	IEC62321-10	6.32		-0.12	
2353	AfPS GS 2019	6.6041		0.11	
2355	AfPS GS 2019	6.44		-0.02	
2357	AfPS GS 2019	6.51		0.04	
2358	AfPS GS 2019	6.6041		0.11	
2363	AfPS GS 2019	6.51		0.04	
2365	AfPS GS 2019	6.306		-0.13	
2366	AfPS GS 2019	6.322		-0.11	
2369	AfPS GS 2019	6.591		0.10	
2370	AfPS GS 2019	6.55		0.07	
2372	AfPS GS 2019	6.3208		-0.12	
2373	AfPS GS 2019	6.533		0.06	
2375	ISO/TS16190	6.81		0.28	
2378	EN17132	6.5		0.03	
2379	AfPS GS 2019	6.3215		-0.12	
2380	AfPS GS 2019	6.35		-0.09	
2382	AFPS GS 2019	6.40		-0.05	
2384	AfPS GS 2019	6.16		-0.25	
2386	AfPS GS 2019	6.283		-0.15	
2390	AfPS GS 2019	5.319		-0.93	
2406	AfPS GS 2019	6.62		0.13	
2426	AfPS GS 2019	5.157		-1.06	
2446	§64 ASU 82.02-30	7.288		0.67	
2459	AfPS GS 2019	5.253		-0.99	
2462		6.96		0.40	
2481		-----		-----	
2495	IEC62321-10	6.65		0.15	
2504	AfPS GS 2019	6.24		-0.18	
2511	EN17132	9.9469	R(0.01)	2.84	
2538	In house	7.54		0.88	
2561	AfPS GS 2019	9.31	R(0.05)	2.32	
2590	AfPS GS 2019	6.1	C	-0.30	First reported 8.785
2605	AfPS GS 2019	6.15		-0.25	
2643	In house	7.62		0.94	
2649	AfPS GS 2019	5.94		-0.43	
2674	AfPS GS 2014	6.14		-0.26	
2678		-----		-----	
2734		-----		-----	
2737	ISO16190	5.74		-0.59	
2743	IEC62321-10	10.3157	R(0.01)	3.14	
2811	AfPS GS 2019	7.15		0.56	
2815	ZEK01.4-08	4.922		-1.25	
2829	AfPS GS 2019	6.576	C	0.09	First reported 3.288

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	5.368		-0.89	
2864	AfPS GS 2019	5.2		-1.03	
2867	AfPS GS 2019	6.47		0.01	
2892	AfPS GS 2019	7.8		1.09	
2910	AfPS GS 2019	6.24		-0.18	
2930	In house	5.28		-0.96	
2953	AfPS GS 2019	5.408		-0.86	
2977		-----		-----	
2988	AfPS GS 2019	6.99		0.43	
3100	AfPS GS 2019	6.35		-0.09	
3116	AfPS GS 2014	6.5470		0.07	
3122	AfPS GS 2019	6.20878		-0.21	
3153	AfPS GS 2019	6.41		-0.04	
3154	AfPS GS 2014	5.962		-0.41	
3163		-----		-----	
3172	AfPS GS 2019	7.125		0.54	
3176	In house	7.061		0.49	
3182	ZEK01.4-08	6.19		-0.22	
3185	AfPS GS 2019	6.48		0.01	
3197	AfPS GS 2019	7.10		0.52	
3209		-----		-----	
3210		7.6901		1.00	
3214	AfPS GS 2019	6.80		0.27	
3218	AfPS GS 2019	6.55		0.07	
3228	AfPS GS 2019	6.44		-0.02	
3230		-----		-----	
3237	AfPS GS 2019	5.25		-0.99	
3248	AfPS GS 2019	6.3		-0.13	

normality	OK		
n	90		
outliers	4		
mean (n)	6.4630		
st.dev. (n)	0.73992	RSD = 11%	
R(calc.)	2.0718		
st.dev.(IEC62321-10:20)	1.22796		
R(IEC62321-10:20)	3.4383		

Kernel Density

Determination of Anthracene, CAS No. 120-12-7 in sample #22530; results in mg/kg

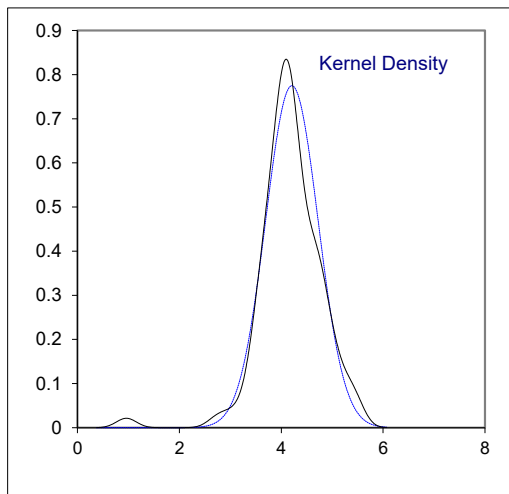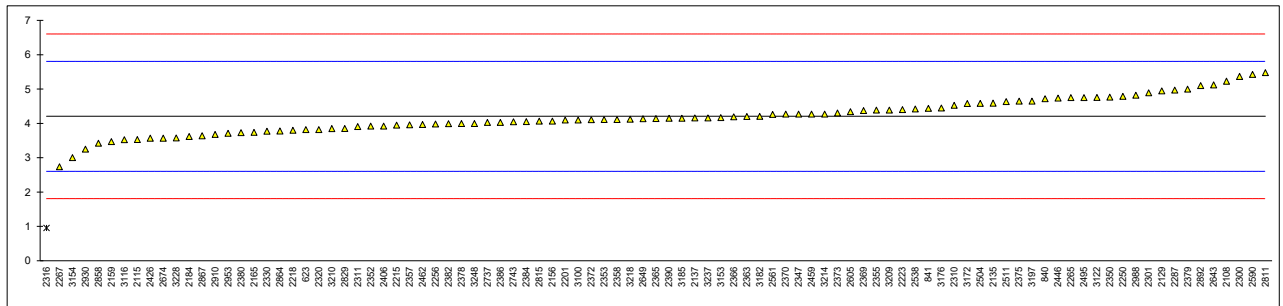| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	1.16		-0.10	
840	AfPS GS 2019	1.18		-0.01	
841	AfPS GS 2019	1.068		-0.51	
2108	AfPS GS 2019	1.68		2.22	
2115	AfPS GS 2019	1.27		0.39	
2129	AfPS GS 2019	0.894		-1.28	
2135	AfPS GS 2014	1.53		1.55	
2137		-----		-----	
2156	AfPS GS 2019	0.86		-1.43	
2159	IEC62321-10	0.91		-1.21	
2165	AfPS GS 2019	1.03		-0.68	
2184	AfPS GS 2014	1.10		-0.37	
2201	AfPS GS 2019	1.2		0.08	
2215	AfPS GS 2019	1.03		-0.68	
2218	AfPS GS 2019	1.414		1.03	
2223	In house	1.28		0.44	
2250	AfPS GS 2019	1.38		0.88	
2256	AfPS GS 2019	1.35		0.75	
2265	AfPS GS 2019	1.10		-0.37	
2267	In house	1.94	R(0.01)	3.37	
2287	AfPS GS 2019	1.50		1.42	
2300	ZEK01.4-08	1.18		-0.01	
2301	AfPS GS 2019	1.14		-0.19	
2310	AfPS GS 2019	1.01		-0.77	
2311	AfPS GS 2019	1.00		-0.81	
2316	AfPS GS 2019	0.352	C,R(0.01)	-3.70	First reported 0.195
2320	AfPS GS 2019	1.154		-0.13	
2330	AfPS GS 2019	1.24		0.26	
2347	AfPS GS 2019	1.17		-0.05	
2350	IEC62321-10	1.355		0.77	
2352	IEC62321-10	1.07		-0.50	
2353	AfPS GS 2019	1.2122		0.13	
2355	AfPS GS 2019	1.20		0.08	
2357	AfPS GS 2019	1.22		0.17	
2358	AfPS GS 2019	1.2122		0.13	
2363	AfPS GS 2019	1.20		0.08	
2365	AfPS GS 2019	1.258		0.34	
2366	AfPS GS 2019	1.224		0.19	
2369	AfPS GS 2019	1.145		-0.17	
2370	AfPS GS 2019	1.14		-0.19	
2372	AfPS GS 2019	1.0196		-0.72	
2373	AfPS GS 2019	1.244		0.28	
2375	ISO/TS16190	1.21		0.12	
2378	EN17132	1.06		-0.54	
2379	AfPS GS 2019	1.1953		0.06	
2380	AfPS GS 2019	1.12		-0.28	
2382	AFPS GS 2019	1.10		-0.37	
2384	AfPS GS 2019	1.30		0.52	
2386	AfPS GS 2019	1.252		0.31	
2390	AfPS GS 2019	1.226		0.20	
2406	AfPS GS 2019	1.10		-0.37	
2426	AfPS GS 2019	0.825		-1.59	
2446	§64 ASU 82.02-30	1.183		0.00	
2459	AfPS GS 2019	1.306		0.55	
2462		1.30		0.52	
2481		-----		-----	
2495	IEC62321-10	1.22		0.17	
2504	AfPS GS 2019	1.47		1.28	
2511	EN17132	2.0883	R(0.01)	4.03	
2538	In house	1.51		1.46	
2561	AfPS GS 2019	0.46	R(0.01)	-3.22	
2590	AfPS GS 2019	1.534		1.57	
2605	AfPS GS 2019	1.18		-0.01	
2643		-----		-----	
2649	AfPS GS 2019	1.23		0.21	
2674	AfPS GS 2014	1.03		-0.68	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743		-----		-----	
2811	AfPS GS 2019	1.53		1.55	
2815	ZEK01.4-08	1.46	C	1.24	First reported 1.985
2829	AfPS GS 2019	0.952		-1.02	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	1.153		-0.13	
2864	AfPS GS 2019	0.96		-0.99	
2867	AfPS GS 2019	1.08		-0.45	
2892	AfPS GS 2019	1.35		0.75	
2910	AfPS GS 2019	1.08		-0.45	
2930	In house	1.07		-0.50	
2953	AfPS GS 2019	0.791		-1.74	
2977		-----		-----	
2988	AfPS GS 2019	1.14		-0.19	
3100	AfPS GS 2019	1.13		-0.23	
3116	AfPS GS 2014	1.0838		-0.44	
3122	AfPS GS 2019	0.96890		-0.95	
3153	AfPS GS 2019	1.12		-0.28	
3154	AfPS GS 2014	0.932		-1.11	
3163		-----		-----	
3172	AfPS GS 2019	1.319		0.61	
3176	In house	1.245		0.28	
3182	ZEK01.4-08	1.21		0.12	
3185	AfPS GS 2019	1.15		-0.14	
3197	AfPS GS 2019	1.33		0.66	
3209		-----		-----	
3210		1.2649		0.37	
3214	AfPS GS 2019	1.17		-0.05	
3218	AfPS GS 2019	1.12		-0.28	
3228	AfPS GS 2019	1.05		-0.59	
3230		-----		-----	
3237	AfPS GS 2019	1.12		-0.28	
3248	AfPS GS 2019	1.2		0.08	

normality	OK	
n	86	
outliers	4	
mean (n)	1.1821	
st.dev. (n)	0.16703	RSD = 14%
R(calc.)	0.4677	
st.dev.(IEC62321-10:20)	0.22460	
R(IEC62321-10:20)	0.6289	

Kernel Density

Determination of Fluoranthene, CAS No. 206-44-0 in sample #22530; results in mg/kg

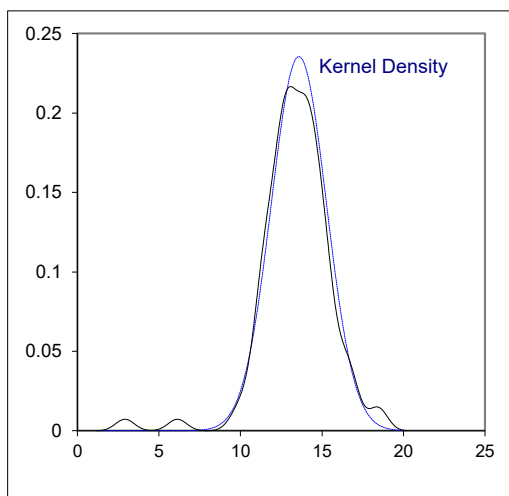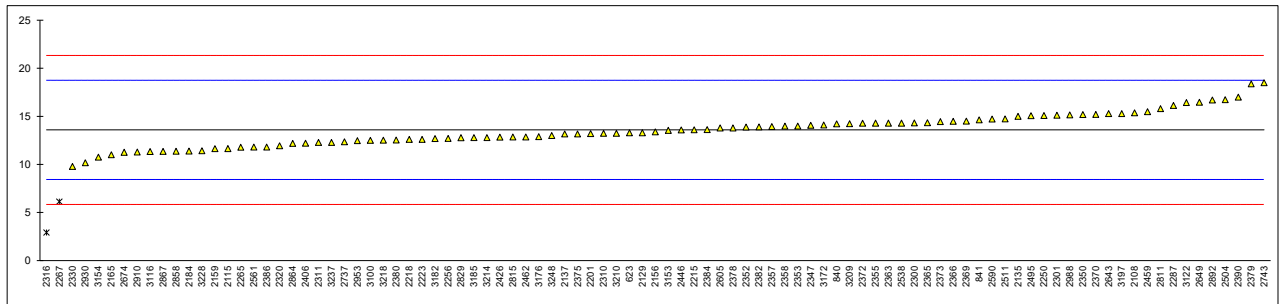| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	3.82		-0.48	
840	AfPS GS 2019	4.72		0.64	
841	AfPS GS 2019	4.440		0.29	
2108	AfPS GS 2019	5.23		1.28	
2115	AfPS GS 2019	3.53		-0.85	
2129	AfPS GS 2019	4.95		0.93	
2135	AfPS GS 2014	4.59		0.48	
2137	KS M6956	4.16		-0.06	
2156	AfPS GS 2019	4.07		-0.17	
2159	IEC62321-10	3.47		-0.92	
2165	AfPS GS 2019	3.74		-0.58	
2184	AfPS GS 2014	3.62		-0.73	
2201	AfPS GS 2019	4.1		-0.13	
2215	AfPS GS 2019	3.95		-0.32	
2218	AfPS GS 2019	3.800		-0.51	
2223	In house	4.40		0.24	
2250	AfPS GS 2019	4.79		0.73	
2256	AfPS GS 2019	3.98		-0.28	
2265	AfPS GS 2019	4.75		0.68	
2267	In house	2.74		-1.83	
2287	AfPS GS 2019	4.97		0.96	
2300	ZEK01.4-08	5.37		1.46	
2301	AfPS GS 2019	4.89		0.86	
2310	AfPS GS 2019	4.53		0.41	
2311	AfPS GS 2019	3.908		-0.37	
2316	AfPS GS 2019	0.957	R(0.01)	-4.07	
2320	AfPS GS 2019	3.822		-0.48	
2330	AfPS GS 2019	3.77		-0.55	
2347	AfPS GS 2019	4.27		0.08	
2350	IEC62321-10	4.762		0.70	
2352	IEC62321-10	3.92		-0.36	
2353	AfPS GS 2019	4.1132		-0.12	
2355	AfPS GS 2019	4.39		0.23	
2357	AfPS GS 2019	3.96		-0.31	
2358	AfPS GS 2019	4.1132		-0.12	
2363	AfPS GS 2019	4.20		-0.01	
2365	AfPS GS 2019	4.144		-0.08	
2366	AfPS GS 2019	4.191		-0.02	
2369	AfPS GS 2019	4.373		0.21	
2370	AfPS GS 2019	4.27		0.08	
2372	AfPS GS 2019	4.1093		-0.12	
2373	AfPS GS 2019	4.303		0.12	
2375	ISO/TS16190	4.65		0.56	
2378	EN17132	4		-0.26	
2379	AfPS GS 2019	4.9979		0.99	
2380	AfPS GS 2019	3.73		-0.60	
2382	AFPS GS 2019	3.99		-0.27	
2384	AfPS GS 2019	4.05		-0.20	
2386	AfPS GS 2019	4.032		-0.22	
2390	AfPS GS 2019	4.150		-0.07	
2406	AfPS GS 2019	3.92		-0.36	
2426	AfPS GS 2019	3.568		-0.80	
2446	§64 ASU 82.02-30	4.738		0.67	
2459	AfPS GS 2019	4.270		0.08	
2462		3.97		-0.30	
2481		-----		-----	
2495	IEC62321-10	4.75		0.68	
2504	AfPS GS 2019	4.584	C	0.47	First reported 6.37
2511	EN17132	4.6358		0.54	
2538	In house	4.42		0.27	
2561	AfPS GS 2019	4.26		0.07	
2590	AfPS GS 2019	5.426		1.53	
2605	AfPS GS 2019	4.34		0.17	
2643	In house	5.12		1.14	
2649	AfPS GS 2019	4.14		-0.08	
2674	AfPS GS 2014	3.57		-0.80	
2678		-----		-----	
2734		-----		-----	
2737	ISO16190	4.03		-0.22	
2743	IEC62321-10	4.0488		-0.20	
2811	AfPS GS 2019	5.48		1.59	
2815	ZEK01.4-08	4.068		-0.17	
2829	AfPS GS 2019	3.852		z-0.44	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	3.422		-0.98	
2864	AfPS GS 2019	3.78		-0.53	
2867	AfPS GS 2019	3.64		-0.71	
2892	AfPS GS 2019	5.10		1.12	
2910	AfPS GS 2019	3.68		-0.66	
2930	In house	3.25		-1.20	
2953	AfPS GS 2019	3.712		-0.62	
2977		-----		-----	
2988	AfPS GS 2019	4.82		0.77	
3100	AfPS GS 2019	4.10		-0.13	
3116	AfPS GS 2014	3.5230		-0.85	
3122	AfPS GS 2019	4.75697		0.69	
3153	AfPS GS 2019	4.17		-0.05	
3154	AfPS GS 2014	3.004		-1.50	
3163		-----		-----	
3172	AfPS GS 2019	4.579		0.47	
3176	In house	4.448		0.30	
3182	ZEK01.4-08	4.21		0.00	
3185	AfPS GS 2019	4.15		-0.07	
3197	AfPS GS 2019	4.65		0.56	
3209	AfPS GS 2019	4.39		0.23	
3210		3.8518		-0.44	
3214	AfPS GS 2019	4.27		0.08	
3218	AfPS GS 2019	4.12		-0.11	
3228	AfPS GS 2019	3.58		-0.78	
3230		-----		-----	
3237	AfPS GS 2019	4.16		-0.06	
3248	AfPS GS 2019	4.0		-0.26	

normality	OK	
n	94	
outliers	1	
mean (n)	4.2062	
st.dev. (n)	0.51482	RSD = 12%
R(calc.)	1.4415	
st.dev.(IEC62321-10:20)	0.79918	
R(IEC62321-10:20)	2.2377	

Kernel Density

Determination of Pyrene, CAS No. 129-00-0in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	13.28	C	-0.12	First reported 20.27
840	AfPS GS 2019	14.22		0.25	
841	AfPS GS 2019	14.630		0.40	
2108	AfPS GS 2019	15.37		0.69	
2115	AfPS GS 2019	11.64		-0.75	
2129	AfPS GS 2019	13.3		-0.11	
2135	AfPS GS 2014	15.00		0.55	
2137	KS M6956	13.18		-0.16	
2156	AfPS GS 2019	13.38		-0.08	
2159	IEC62321-10	11.63		-0.76	
2165	AfPS GS 2019	11.00		-1.00	
2184	AfPS GS 2014	11.38		-0.85	
2201	AfPS GS 2019	13.2		-0.15	
2215	AfPS GS 2019	13.6		0.01	
2218	AfPS GS 2019	12.598		-0.38	
2223	In house	12.6		-0.38	
2250	AfPS GS 2019	15.08		0.58	
2256	AfPS GS 2019	12.7		-0.34	
2265	AfPS GS 2019	11.80		-0.69	
2267	In house	6.13	R(0.01)	-2.89	
2287	AfPS GS 2019	16.13		0.99	
2300	ZEK01.4-08	14.32	C	0.28	First reported 25.12
2301	AfPS GS 2019	15.11		0.59	
2310	AfPS GS 2019	13.23		-0.14	
2311	AfPS GS 2019	12.298		-0.50	
2316	AfPS GS 2019	2.91	R(0.01)	-4.14	
2320	AfPS GS 2019	11.946		-0.64	
2330	AfPS GS 2019	9.79		-1.47	
2347	AfPS GS 2019	14.08		0.19	
2350	IEC62321-10	15.19		0.62	
2352	IEC62321-10	13.88		0.11	
2353	AfPS GS 2019	13.9901		0.16	
2355	AfPS GS 2019	14.29		0.27	
2357	AfPS GS 2019	13.94		0.14	
2358	AfPS GS 2019	13.9901		0.16	
2363	AfPS GS 2019	14.29		0.27	
2365	AfPS GS 2019	14.331		0.29	
2366	AfPS GS 2019	14.491		0.35	
2369	AfPS GS 2019	14.492		0.35	
2370	AfPS GS 2019	15.2		0.63	
2372	AfPS GS 2019	14.286		0.27	
2373	AfPS GS 2019	14.462		0.34	
2375	ISO/TS16190	13.18		-0.16	
2378	EN17132	13.8		0.08	
2379	AfPS GS 2019	18.3833		1.86	
2380	AfPS GS 2019	12.55		-0.40	
2382	AFPS GS 2019	13.90		0.12	
2384	AfPS GS 2019	13.61		0.01	
2386	AfPS GS 2019	11.816		-0.69	
2390	AfPS GS 2019	16.995		1.32	
2406	AfPS GS 2019	12.21		-0.53	
2426	AfPS GS 2019	12.833		-0.29	
2446	§64 ASU 82.02-30	13.585		0.00	
2459	AfPS GS 2019	15.482		0.73	
2462		12.85		-0.28	
2481		-----		-----	
2495	IEC62321-10	15.07		0.58	
2504	AfPS GS 2019	16.739	C	1.22	First reported 20.59
2511	EN17132	14.7283		0.44	
2538	In house	14.29		0.27	
2561	AfPS GS 2019	11.81		-0.69	
2590	AfPS GS 2019	14.721		0.44	
2605	AfPS GS 2019	13.79		0.08	
2643	In house	15.28		0.66	
2649	AfPS GS 2019	16.47		1.12	
2674	AfPS GS 2014	11.26		-0.90	
2678		-----		-----	
2734		-----		-----	
2737	ISO16190	12.35		-0.48	
2743	IEC62321-10	18.4992		1.90	
2811	AfPS GS 2019	15.79		0.85	
2815	ZEK01.4-08	12.846		-0.29	
2829	AfPS GS 2019	12.783	C	-0.31	First reported 6.229

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	11.368		-0.86	
2864	AfPS GS 2019	12.19		-0.54	
2867	AfPS GS 2019	11.35		-0.87	
2892	AfPS GS 2019	16.70		1.21	
2910	AfPS GS 2019	11.30		-0.89	
2930	In house	10.17		-1.32	
2953	AfPS GS 2019	12.469		-0.43	
2977		-----		-----	
2988	AfPS GS 2019	15.14		0.60	
3100	AfPS GS 2019	12.50		-0.42	
3116	AfPS GS 2014	11.3335		-0.87	
3122	AfPS GS 2019	16.42543		1.10	
3153	AfPS GS 2019	13.55		-0.01	
3154	AfPS GS 2014	10.744		-1.10	
3163		-----		-----	
3172	AfPS GS 2019	14.10		0.20	
3176	In house	12.889		-0.27	
3182	ZEK01.4-08	12.69		-0.35	
3185	AfPS GS 2019	12.79		-0.31	
3197	AfPS GS 2019	15.28		0.66	
3209	AfPS GS 2019	14.23		0.25	
3210		13.2367		-0.14	
3214	AfPS GS 2019	12.80		-0.30	
3218	AfPS GS 2019	12.52		-0.41	
3228	AfPS GS 2019	11.42		-0.84	
3230		-----		-----	
3237	AfPS GS 2019	12.3		-0.50	
3248	AfPS GS 2019	13.0		-0.23	

normality	OK		
n	93		
outliers	2		
mean (n)	13.5854		
st.dev. (n)	1.69460	RSD = 12%	
R(calc.)	4.7449		
st.dev.(IEC62321-10:20)	2.58122		
R(IEC62321-10:20)	7.2274		

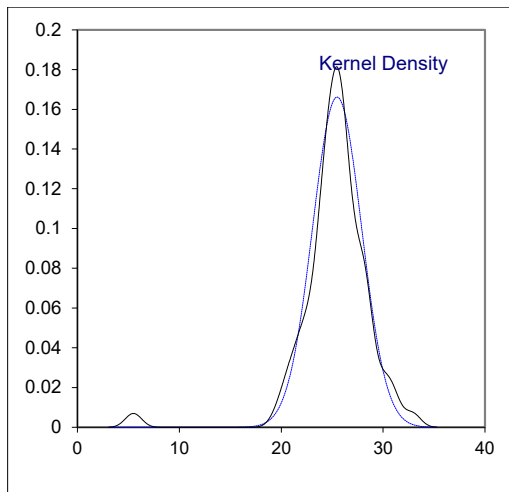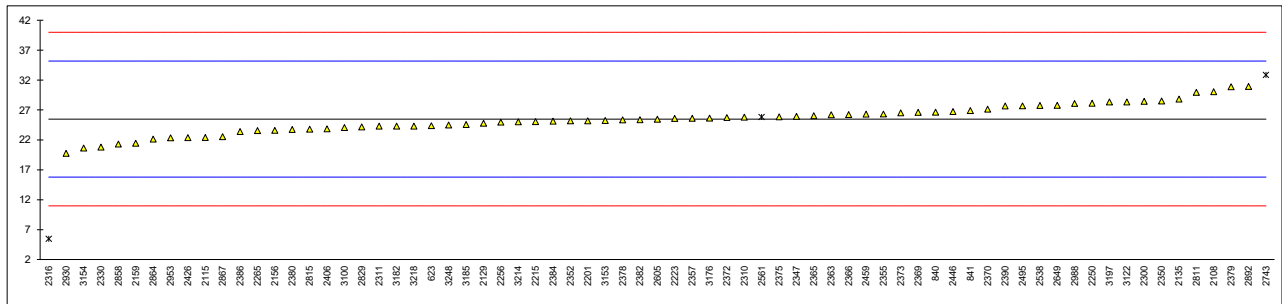Determination of Sum of Phenanthrene, Anthracene, Fluoranthene and Pyrene in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	24.37	C	-0.23	First reported 35.49
840	AfPS GS 2019	26.64	C	0.24	First reported 12.42
841	AfPS GS 2019	26.898		0.29	
2108	AfPS GS 2019	30.08		0.95	
2115	AfPS GS 2019	22.4		-0.64	
2129	AfPS GS 2019	24.8		-0.14	
2135	AfPS GS 2014	28.83		0.69	
2137		-----		-----	
2156	AfPS GS 2019	23.61		-0.39	
2159	IEC62321-10	21.46		-0.83	
2165		-----		-----	
2184		-----		-----	
2201	AfPS GS 2019	25.2		-0.06	
2215	AfPS GS 2019	25.06		-0.09	
2218		-----		-----	
2223	In house	25.6		0.02	
2250	AfPS GS 2019	28.13		0.55	
2256	AfPS GS 2019	24.96		-0.11	
2265	AfPS GS 2019	23.55		-0.40	
2267		-----		-----	
2287		-----		-----	
2300	ZEK01.4-08	28.45	C	0.61	First reported 39.25
2301		-----		-----	
2310	AfPS GS 2019	25.81		0.07	
2311	AfPS GS 2019	24.296		-0.24	
2316	AfPS GS 2019	5.489	ex, C	-4.13	First reported 2.42
2320		-----		-----	
2330	AfPS GS 2019	20.80		-0.97	
2347	AfPS GS 2019	25.95		0.10	
2350	IEC62321-10	28.51		0.63	
2352	IEC62321-10	25.19		-0.06	
2353		-----		-----	
2355	AfPS GS 2019	26.32		0.17	
2357	AfPS GS 2019	25.63		0.03	
2358		-----		-----	
2363	AfPS GS 2019	26.20		0.15	
2365	AfPS GS 2019	26.039		0.12	
2366	AfPS GS 2019	26.228		0.15	
2369	AfPS GS 2019	26.601		0.23	
2370	AfPS GS 2019	27.16		0.35	
2372	AfPS GS 2019	25.7357		0.05	
2373	AfPS GS 2019	26.542		0.22	
2375	ISO/TS16190	25.85		0.08	
2378	EN17132	25.36		-0.02	
2379	AfPS GS 2019	30.8979		1.12	
2380	AfPS GS 2019	23.75	C	-0.36	First reported 11.20
2382	AFPS GS 2019	25.39		-0.02	
2384	AfPS GS 2019	25.12		-0.07	
2386	AfPS GS 2019	23.384		-0.43	
2390	AfPS GS 2019	27.680		0.45	
2406	AfPS GS 2019	23.85		-0.34	
2426	AfPS GS 2019	22.383		-0.64	
2446	§64 ASU 82.02-30	26.746		0.26	
2459	AfPS GS 2019	26.311		0.17	
2462		-----		-----	
2481		-----		-----	
2495	IEC62321-10	27.69		0.46	
2504	AfPS GS 2019	Not applicable	C	-----	First reported 34.67
2511		-----		-----	
2538	In house	27.76		0.47	
2561	AfPS GS 2019	25.84	ex	0.07	
2590		-----		-----	
2605	AfPS GS 2019	25.46		0.00	
2643		-----		-----	
2649	AfPS GS 2019	27.78		0.48	
2674		-----		-----	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743	IEC62321-10	32.8637	ex	1.53	
2811	AfPS GS 2019	29.95		0.92	
2815	ZEK01.4-08	23.82		-0.34	
2829	AfPS GS 2019	24.163	C	-0.27	First reported 14.321

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	21.311		-0.86	
2864	AfPS GS 2019	22.13		-0.69	
2867	AfPS GS 2019	22.54		-0.61	
2892	AfPS GS 2019	30.95		1.13	
2910		-----		-----	
2930	In house	19.76		-1.18	
2953	AfPS GS 2019	22.361	C	-0.64	First reported 9.894
2977		-----		-----	
2988	AfPS GS 2019	28.09		0.54	
3100	AfPS GS 2019	24.08		-0.29	
3116		-----		-----	
3122	AfPS GS 2019	28.36008		0.60	
3153	AfPS GS 2019	25.25		-0.05	
3154	AfPS GS 2014	20.642		-1.00	
3163		-----		-----	
3172		-----		-----	
3176	In house	25.643		0.03	
3182	ZEK01.4-08	24.30		-0.24	
3185	AfPS GS 2019	24.57		-0.19	
3197	AfPS GS 2019	28.36		0.60	
3209		-----		-----	
3210		-----		-----	
3214	AfPS GS 2019	25.04		-0.09	
3218	AfPS GS 2019	24.31		-0.24	
3228		-----		-----	
3230		-----		-----	
3237		-----		-----	
3248	AfPS GS 2019	24.5		-0.20	

normality	OK			
n	68			
outliers	0+3ex			
mean (n)	25.4793			
st.dev. (n)	2.401597	RSD = 9%		
R(calc.)	6.7245			
st.dev.(IEC62321-10:20)	4.84106			
R(IEC62321-10:20)	13.5550			

Lab 2316: test result excluded as corresponding test results in all reported individual components are statistical outliers
Lab 2561: test result excluded as corresponding test result in all reported individual components are statistical outliers
Lab 2743: test result excluded as corresponding test result in all reported individual components are statistical outliers

Determination of Benzo[a]anthracene, CAS No. 56-55-3 in sample #22530; results in mg/kg

lab	method	Value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.54		0.19	
840	AfPS GS 2019	0.48		-0.41	
841	AfPS GS 2019	0.462		-0.60	
2108	AfPS GS 2019	0.77		2.52	
2115	AfPS GS 2019	0.56		0.39	
2129	AfPS GS 2019	0.305		-2.18	
2135		-----		-----	
2137		-----		-----	
2156	AfPS GS 2019	<0.2	C	<-3.24	First reported 0.22. Possibly a false negative test result?
2159	IEC62321-10	0.40		-1.22	
2165	AfPS GS 2019	0.48		-0.41	
2184	AfPS GS 2014	0.50		-0.21	
2201	AfPS GS 2019	0.4		-1.22	
2215	AfPS GS 2019	0.51		-0.11	
2218	AfPS GS 2019	0.359		-1.64	
2223	In house	0.531		0.10	
2250	AfPS GS 2019	0.43		-0.92	
2256	AfPS GS 2019	0.526		0.05	
2265	AfPS GS 2019	0.64		1.20	
2267		-----		-----	
2287	AfPS GS 2019	0.77	C	2.52	First reported <0.2
2300	ZEK01.4-08	0.31		-2.13	
2301	AfPS GS 2019	0.5		-0.21	
2310	AfPS GS 2019	0.61		0.90	
2311	AfPS GS 2019	0.698		1.79	
2316	AfPS GS 2019	0.352	C	-1.71	First reported 0.176
2320	AfPS GS 2019	0.597	C	0.77	First reported Not Detected
2330	AfPS GS 2019	0.23		-2.94	
2347	AfPS GS 2019	0.48		-0.41	
2350	IEC62321-10	0.567		0.47	
2352	IEC62321-10	0.44		-0.82	
2353	AfPS GS 2019	0.5194		-0.02	
2355	AfPS GS 2019	0.51		-0.11	
2357	AfPS GS 2019	0.61		0.90	
2358	AfPS GS 2019	0.5194		-0.02	
2363	AfPS GS 2019	0.52		-0.01	
2365	AfPS GS 2019	0.525		0.04	
2366	AfPS GS 2019	0.521		0.00	
2369	AfPS GS 2019	0.515		-0.06	
2370	AfPS GS 2019	0.510		-0.11	
2372	AfPS GS 2019	0.5730		0.53	
2373	AfPS GS 2019	0.601		0.81	
2375	ISO/TS16190	0.55		0.29	
2378	EN17132	0.45		-0.72	
2379	AfPS GS 2019	0.7638		2.45	
2380	AfPS GS 2019	0.438		-0.84	
2382	AFPS GS 2019	0.56		0.39	
2384	AfPS GS 2019	0.55		0.29	
2386	AfPS GS 2019	0.472		-0.49	
2390	AfPS GS 2019	0.540		0.19	
2406	AfPS GS 2019	<0.2	C	<-3.24	First reported not detected. Possibly a false negative test result?
2426	AfPS GS 2019	0.639		1.19	
2446	§64 ASU 82.02-30	0.43		-0.92	
2459	AfPS GS 2019	1.097	R(0.01)	5.82	
2462		0.51		-0.11	
2481	In house	0.60		0.80	
2495	IEC62321-10	0.60		0.80	
2504	AfPS GS 2019	Not applicable	C	-----	First reported not detected
2511	EN17132	0.6811		1.62	
2538	In house	0.613		0.93	
2561	AfPS GS 2019	0.46		-0.62	
2590	AfPS GS 2019	0.8	C	2.82	First reported 1.294
2605	AfPS GS 2019	0.54		0.19	
2643		-----		-----	
2649	AfPS GS 2019	0.61	C	0.90	First reported 0.92
2674	AfPS GS 2014	0.49		-0.31	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743		-----		-----	
2811	AfPS GS 2019	0.51	C	-0.11	First reported 0.84
2815	ZEK01.4-08	0.276		-2.47	
2829	AfPS GS 2019	0.330		-1.93	

lab	method	Value	mark	z(targ)	remarks
2858		-----	W	-----	Reported not detected
2864	AfPS GS 2019	0.35		-1.73	
2867	AfPS GS 2019	0.50		-0.21	
2892	AfPS GS 2019	0.49		-0.31	
2910	AfPS GS 2019	0.49		-0.31	
2930	In house	0.67		1.51	
2953	AfPS GS 2019	0.331		-1.92	
2977		-----		-----	
2988	AfPS GS 2019	0.66		1.41	
3100	AfPS GS 2019	0.49		-0.31	
3116	AfPS GS 2014	0.5286		0.08	
3122	AfPS GS 2019	0.39166		-1.31	
3153	AfPS GS 2019	0.51		-0.11	
3154	AfPS GS 2014	0.671		1.52	
3163		-----		-----	
3172	AfPS GS 2019	0.5640		0.44	
3176	In house	0.606		0.86	
3182	ZEK01.4-08	0.62		1.00	
3185	AfPS GS 2019	0.47		-0.51	
3197	AfPS GS 2019	0.67		1.51	
3209		-----		-----	
3210		0.5504		0.30	
3214	AfPS GS 2019	0.48		-0.41	
3218	AfPS GS 2019	0.46		-0.62	
3228	AfPS GS 2019	0.53		0.09	
3230		-----		-----	
3237	AfPS GS 2019	0.34		-1.83	
3248	AfPS GS 2019	0.6		0.80	

|				
normality	OK			
n	84			
outliers	1			
mean (n)	0.5209			
st.dev. (n)	0.11305	RSD = 22%		
R(calc.)	0.3165			
st.dev.(IEC62321-10:20)	0.09897			
R(IEC62321-10:20)	0.2771			

Kernel Density
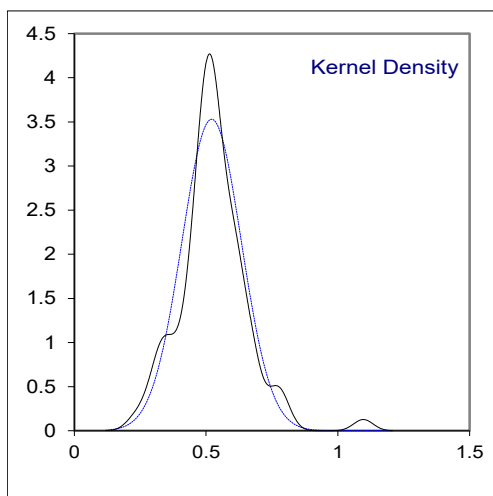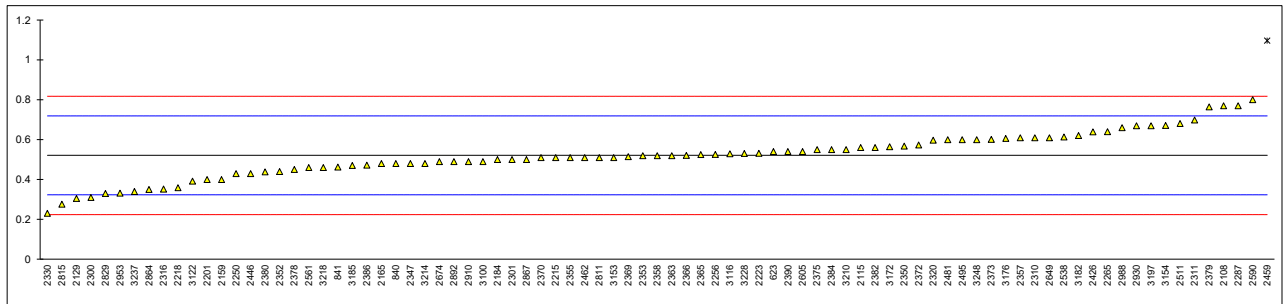
Determination of Chrysene, CAS No. 218-01-9 in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	Sum C+T*	remarks
310		-----		-----	-----	
551		-----		-----	-----	
623	AfPS GS 2019	0.90		2.11	0.90	
840	AfPS GS 2019	0.69		0.39	not analyzed	
841	AfPS GS 2019	0.614		-0.23	-----	
2108	AfPS GS 2019	1.16	R(0.05)	4.24	-----	
2115	AfPS GS 2019	1.0		2.93	-----	
2129	AfPS GS 2019	0.337		-2.50	0.337	
2135		-----		-----	-----	
2137		-----		-----	-----	
2156	AfPS GS 2019	0.66		0.14	-----	
2159	IEC62321-10	0.48		-1.33	-----	
2165	AfPS GS 2019	0.60		-0.35	-----	
2184	AfPS GS 2014	0.56		-0.67	-----	
2201	AfPS GS 2019	0.6		-0.35	0.6	
2215	AfPS GS 2019	0.61		-0.27	not applicable	
2218	AfPS GS 2019	0.604		-0.31	-----	
2223	In house	0.942		2.46	not determined	
2250	AfPS GS 2019	0.53		-0.92	0.80	
2256	AfPS GS 2019	0.755		0.92	0.755	
2265	AfPS GS 2019	0.82		1.46	-----	
2267		-----		-----	-----	
2287	AfPS GS 2019	0.73	C	0.72	-----	First reported <0.2
2300	ZEK01.4-08	0.53		-0.92	0.53	
2301	AfPS GS 2019	0.68		0.31	-----	
2310	AfPS GS 2019	0.56		-0.67	-----	
2311	AfPS GS 2019	0.663		0.17	-----	
2316	AfPS GS 2019	0.371	C	-2.22	-----	First reported 0.254
2320	AfPS GS 2019	0.557	C	-0.70	-----	First reported Not Detected
2330	AfPS GS 2019	0.26		-3.13	Not applicable	
2347	AfPS GS 2019	0.66		0.14	-----	
2350	IEC62321-10	0.797		1.27	not analyzed	
2352	IEC62321-10	0.69		0.39	-----	
2353	AfPS GS 2019	0.7371		0.78	-----	
2355	AfPS GS 2019	0.66		0.14	-----	
2357	AfPS GS 2019	0.68		0.31	-----	
2358	AfPS GS 2019	0.7371		0.78	-----	
2363	AfPS GS 2019	0.66		0.14	not applicable	
2365	AfPS GS 2019	0.488		-1.26	-----	
2366	AfPS GS 2019	0.723		0.66	out of capability	
2369	AfPS GS 2019	0.677		0.28	out capacity	
2370	AfPS GS 2019	0.549		-0.76	-----	
2372	AfPS GS 2019	0.5842		-0.48	not analyzed	
2373	AfPS GS 2019	0.724		0.67	not applicable	
2375	ISO/TS16190	0.53		-0.92	0.82	
2378	EN17132	0.7		0.47	-----	
2379	AfPS GS 2019	1.2578	C,R(0.05)	5.04	Not analyzed	First reported 1.1937
2380	AfPS GS 2019	0.719		0.63	0.719	
2382	AFPS GS 2019	0.64		-0.02	-----	
2384	AfPS GS 2019	0.58	C	-0.51	-----	First reported 1.06
2386	AfPS GS 2019	0.510		-1.08	not determined	
2390	AfPS GS 2019	0.882		1.96	0.882	
2406	AfPS GS 2019	0.56		-0.67	0.56	
2426	AfPS GS 2019	0.688		0.37	0.688	
2446	§64 ASU 82.02-30	0.395	C	-2.03	<0.2	First reported <0.2
2459	AfPS GS 2019	1.543	R(0.01)	7.38	1.543	
2462		0.57		-0.59	-----	
2481	In house	0.66		0.14	-----	
2495	IEC62321-10	0.63		-0.10	-----	
2504	AfPS GS 2019	Not applicable	C	-----	not applicable	First reported not detected
2511	EN17132	0.8379		1.60	-----	
2538	In house	0.653		0.09	1.006	
2561	AfPS GS 2019	0.68		0.31	-----	
2590	AfPS GS 2019	0.8	C	1.29	-----	First reported 1.541
2605	AfPS GS 2019	0.66		0.14	-----	
2643		-----		-----	-----	
2649	AfPS GS 2019	0.80	C	1.29	-----	First reported 1.4
2674	AfPS GS 2014	0.59		-0.43	-----	
2678		-----		-----	-----	
2734		-----		-----	-----	
2737		-----		-----	-----	
2743		-----		-----	-----	
2811	AfPS GS 2019	0.84		1.62	not determined	
2815	ZEK01.4-08	<1	C	-----	-----	First reported 0.263
2829	AfPS GS 2019	0.470	C	-1.41	not analyzed	First reported 0.24

lab	method	value	mark	z(targ)	Sum C+T*		remarks
2858		-----	W	-----	-----		Reported not detected
2864	AfPS GS 2019	0.58		-0.51	-----		
2867	AfPS GS 2019	0.57		-0.59	-----		
2892	AfPS GS 2019	1.17	R(0.05)	4.32	1.17		
2910	AfPS GS 2019	0.61		-0.27	-----		
2930	In house	0.83		1.54	-----		
2953	AfPS GS 2019	0.449		-1.58	-----		
2977		-----		-----	-----		
2988	AfPS GS 2019	0.58		-0.51	-----		
3100	AfPS GS 2019	0.54		-0.84	--		
3116	AfPS GS 2014	0.5976		-0.37	-----		
3122	AfPS GS 2019	0.60989		-0.27	-----		
3153	AfPS GS 2019	0.45		-1.58	0.69		
3154		-----		-----	-----		
3163		-----		-----	-----		
3172	AfPS GS 2019	0.7216		0.65	-----		
3176	In house	0.843		1.64	0.843		
3182	ZEK01.4-08	0.69		0.39	0.69		
3185	AfPS GS 2019	0.57		-0.59	-----		
3197	AfPS GS 2019	0.70		0.47	-----		
3209		-----		-----	-----		
3210		0.6646		0.18	-----		
3214	AfPS GS 2019	0.63		-0.10	-----		
3218	AfPS GS 2019	0.63		-0.10	0.63		
3228	AfPS GS 2019	0.55		-0.76	-----		
3230		-----		-----	-----		
3237	AfPS GS 2019	0.70		0.47	-----		
3248	AfPS GS 2019	0.7		0.47	0.7	C	First reported 1.3

normality	OK
n	81
outliers	4
mean (n)	0.6423
st.dev. (n)	0.13124 RSD = 20%
R(calc.)	0.3675
st.dev.(IEC62321-10:20)	0.12205
R(IEC62321-10:20)	0.3417

*) Sum C+T = Sum of Chrysene and Triphenylene (Triphenylene not present > 0.2 mg/kg)
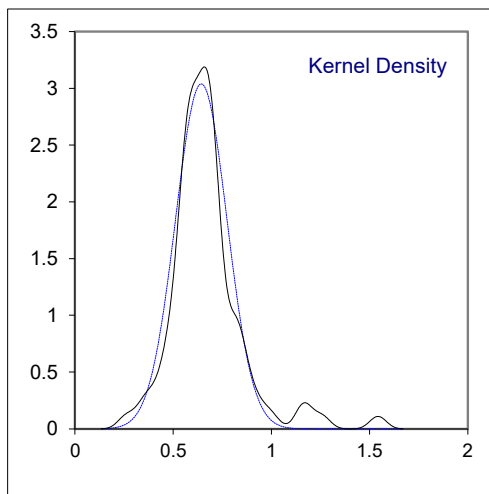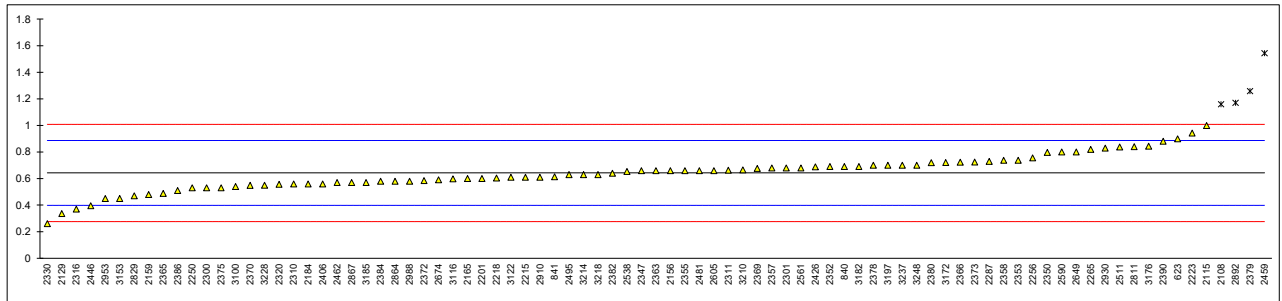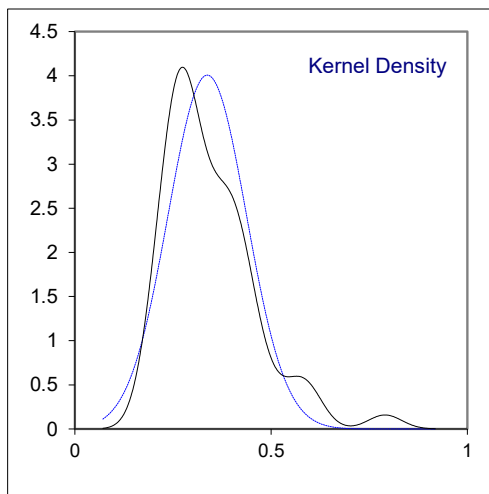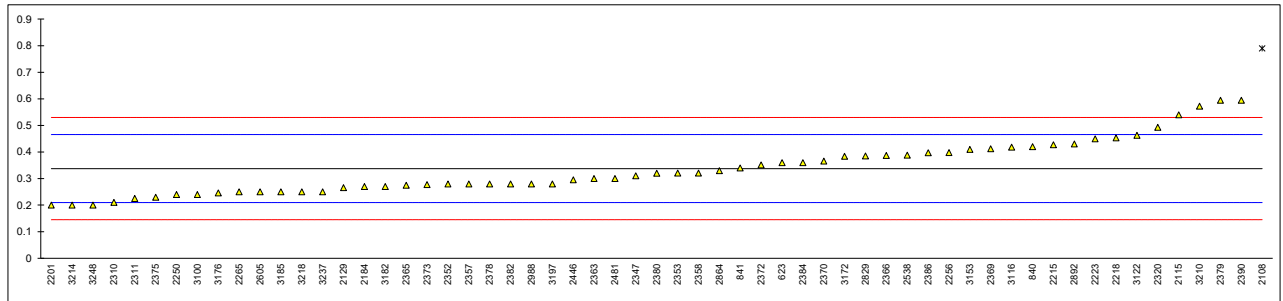
Determination of Benzo[b]fluoranthene, CAS No. 205-99-2 in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	[b]/[j]/[k] *)		remarks
310		-----		-----	-----		
551		-----		-----	-----		
623	AfPS GS 2019	0.36	C	0.35	0.36	C	First reported not detected
840	AfPS GS 2019	0.42		1.29	0.68		
841	AfPS GS 2019	0.340		0.04	0.580		
2108	AfPS GS 2019	0.79	R(0.01)	7.06	1.45		
2115	AfPS GS 2019	0.54		3.16	-----		
2129	AfPS GS 2019	0.266		-1.11	0.477		
2135		-----		-----	-----		
2137		-----		-----	-----		
2156	AfPS GS 2019	<0.2		-----	0.26		
2159	IEC62321-10	< 0.2		-----	0.45		
2165	AfPS GS 2019	not detected		-----	-----		
2184	AfPS GS 2014	0.27		-1.05	-----		
2201	AfPS GS 2019	0.2		-2.14	0.2		
2215	AfPS GS 2019	0.427	C	1.40	0.427	C	First reported not detected
2218	AfPS GS 2019	0.453		1.80	-----		
2223	In house	0.450		1.76	0.837		
2250	AfPS GS 2019	0.24		-1.52	-----		
2256	AfPS GS 2019	0.398		0.94	0.398		
2265	AfPS GS 2019	0.25		-1.36	0.25		
2267		-----		-----	-----		
2287	AfPS GS 2019	<0.2		-----	-----		
2300		-----		-----	Not detected	C	First reported 0.37
2301		-----		-----	-----		
2310	AfPS GS 2019	0.21	C	-1.99	0.32	C	First reported Not Detected
2311	AfPS GS 2019	0.225		-1.75	0.4686		
2316	AfPS GS 2019	Not Detected		-----	-----		
2320	AfPS GS 2019	0.493	C	2.43	0.493	C	First reported Not Detected
2330	AfPS GS 2019	Not detected		-----	Not detected		
2347	AfPS GS 2019	0.31		-0.43	0.31		
2350	IEC62321-10	not applicable		-----	0.762		
2352	IEC62321-10	0.28		-0.90	0.28		
2353	AfPS GS 2019	0.3210		-0.26	-----		
2355		-----		-----	-----		
2357	AfPS GS 2019	0.28		-0.90	0.28		
2358	AfPS GS 2019	0.3210		-0.26	-----		
2363	AfPS GS 2019	0.30		-0.58	0.30		
2365	AfPS GS 2019	0.275		-0.97	0.381		
2366	AfPS GS 2019	0.387		0.77	0.387		
2369	AfPS GS 2019	0.412		1.16	0.542		
2370	AfPS GS 2019	0.366		0.45	0.585		
2372	AfPS GS 2019	0.3513		0.22	0.5751		
2373	AfPS GS 2019	0.277		-0.94	0.277		
2375	ISO/TS16190	0.23		-1.68	0.37		
2378	EN17132	0.28		-0.90	0.28		
2379	AfPS GS 2019	0.5946	C	4.01	0.5946	C	First reported Not Detected
2380	AfPS GS 2019	0.320		-0.27	0.320		
2382	AFPS GS 2019	0.28		-0.90	0.28		
2384	AfPS GS 2019	0.36		0.35	0.71		
2386	AfPS GS 2019	0.397	C	0.93	0.690		First reported 0.97
2390	AfPS GS 2019	0.595	C	4.02	0.791	C	First reported Not Detected
2406	AfPS GS 2019	<0.2	C	-----	<0.2	C	First reported not detected
2426	AfPS GS 2019	ND		-----	ND		
2446	§64 ASU 82.02-30	0.295	C	-0.66	0.295	C	First reported <0.2
2459	AfPS GS 2019	ND		-----	ND		
2462		-----		-----	-----		
2481	In house	0.30		-0.58	0.56		
2495		-----		-----	0.77		
2504	AfPS GS 2019	not applicable		-----	not applicable		
2511		-----		-----	-----		
2538	In house	0.388		0.79	0.917		
2561		-----		-----	0.46		
2590		-----		-----	0.8	C	First reported 1.807
2605	AfPS GS 2019	0.25		-1.36	0.25		
2643		-----		-----	-----		
2649		-----		-----	-----		
2674	AfPS GS 2014	not applicable		-----	-----		
2678		-----		-----	-----		
2734		-----		-----	-----		
2737		-----		-----	-----		
2743		-----		-----	-----		
2811	AfPS GS 2019	not determined		-----	0.50		
2815		-----		-----	0.571		
2829	AfPS GS 2019	0.385		0.74	0.881		

lab	method	value	mark	z(targ)	[b]/[j]/[k] *)		remarks
2858		-----	W	-----	-----	W	Reported not detected
2864	AfPS GS 2019	0.33		-0.12	0.47		
2867		-----		-----	-----		
2892	AfPS GS 2019	0.43		1.44	0.78		
2910	AfPS GS 2019	not applicable		-----	-----		
2930	In house	<0.55	C	-----	1.07		First reported 0.48
2953		-----		-----	-----		
2977		-----		-----	-----		
2988	AfPS GS 2019	0.28		-0.90	-----		
3100	AfPS GS 2019	0.24		-1.52	0.24		
3116	AfPS GS 2014	0.4184		1.26	-----		
3122	AfPS GS 2019	0.46255		1.95	0.85053		
3153	AfPS GS 2019	0.41		1.13	0.64		
3154		-----		-----	0.498		
3163		-----		-----	-----		
3172	AfPS GS 2019	0.3842		0.73	-----		
3176	In house	0.246		-1.43	0.312		
3182	ZEK01.4-08	0.27		-1.05	0.57		
3185	AfPS GS 2019	0.25		-1.36	0.25		
3197	AfPS GS 2019	0.28		-0.90	0.80		
3209		-----		-----	-----		
3210		0.5727		3.67	-----		
3214	AfPS GS 2019	0.2		-2.14	0.2		
3218	AfPS GS 2019	0.25		-1.36	0.25		
3228	AfPS GS 2019	not detected		-----	-----		
3230		-----		-----	-----		
3237	AfPS GS 2019	0.25		-1.36	-----		
3248	AfPS GS 2019	0.2		-2.14	0.2		

|				
normality	OK			
n	58			
outliers	1			
mean (n)	0.3374			
st.dev. (n)	0.09953	RSD = 29%		
R(calc.)	0.2787			
st.dev.(IEC62321-10:20)	0.06411			
R(IEC62321-10:20)	0.1795			

*) Sum of [b]/[j]/[k] Benzofluoranthenes

Determination of Benzo[e]pyrene, CAS No. 192-97-2 in sample #22530; results in mg/kg

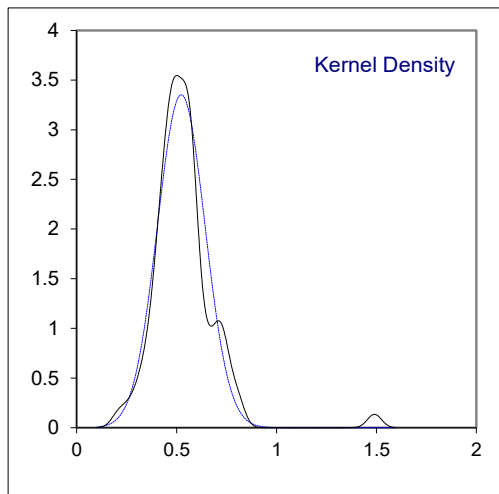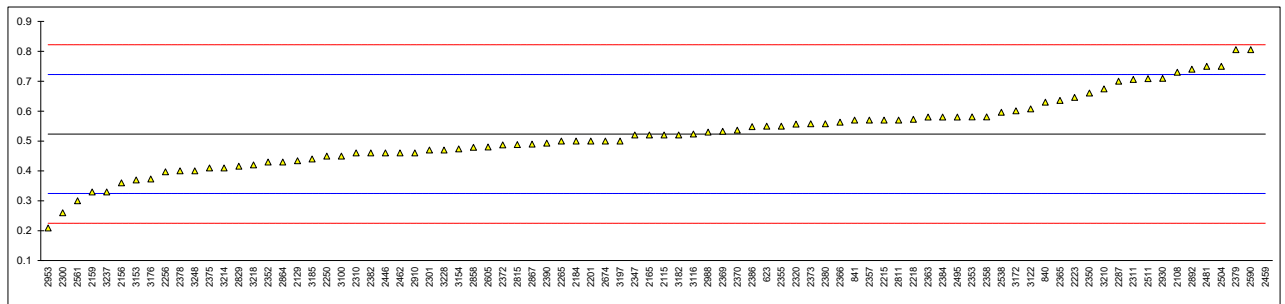| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.73	C	0.18	First reported not detected
840	AfPS GS 2019	0.69		-0.12	
841	AfPS GS 2019	0.710		0.03	
2108	AfPS GS 2019	1.17	R(0.01)	3.45	
2115	AfPS GS 2019	0.79		0.62	
2129	AfPS GS 2019	0.701		-0.04	
2135		-----		-----	
2137		-----		-----	
2156	AfPS GS 2019	0.62		-0.64	
2159	IEC62321-10	0.59		-0.87	
2165	AfPS GS 2019	0.62		-0.64	
2184	AfPS GS 2014	0.64		-0.50	
2201	AfPS GS 2019	0.5		-1.54	
2215	AfPS GS 2019	0.55		-1.17	
2218	AfPS GS 2019	0.869		1.21	
2223	In house	0.938		1.72	
2250	AfPS GS 2019	0.58		-0.94	
2256	AfPS GS 2019	0.602		-0.78	
2265	AfPS GS 2019	0.67		-0.27	
2267		-----		-----	
2287	AfPS GS 2019	0.97	C	1.96	First reported <0.2
2300	ZEK01.4-08	Not detected	C	-----	First reported 0.22
2301	AfPS GS 2019	0.61		-0.72	
2310	AfPS GS 2019	0.79		0.62	
2311	AfPS GS 2019	0.97		1.96	
2316	AfPS GS 2019	Not Detected		-----	
2320	AfPS GS 2019	0.716		0.07	
2330	AfPS GS 2019	Not detected		-----	
2347	AfPS GS 2019	0.82		0.85	
2350	IEC62321-10	0.683	C	-0.17	First reported 1.271
2352	IEC62321-10	0.64		-0.50	
2353	AfPS GS 2019	0.6437		-0.47	
2355	AfPS GS 2019	0.80		0.70	
2357	AfPS GS 2019	0.86		1.14	
2358	AfPS GS 2019	0.6437		-0.47	
2363	AfPS GS 2019	0.83		0.92	
2365	AfPS GS 2019	0.710		0.03	
2366	AfPS GS 2019	0.922		1.61	
2369	AfPS GS 2019	0.831		0.93	
2370	AfPS GS 2019	0.633		-0.55	
2372	AfPS GS 2019	0.6425		-0.48	
2373	AfPS GS 2019	0.822		0.86	
2375	ISO/TS16190	0.68		-0.20	
2378	EN17132	0.65		-0.42	
2379	AfPS GS 2019	0.9573	C	1.87	First reported not detected
2380	AfPS GS 2019	0.635		-0.53	
2382	AFPS GS 2019	0.81		0.77	
2384	AfPS GS 2019	0.79		0.62	
2386	AfPS GS 2019	0.854		1.10	
2390	AfPS GS 2019	0.588		-0.88	
2406	AfPS GS 2019	<0.2	C	<-3.77	First reported not detected, possibly a false negative result?
2426	AfPS GS 2019	ND		-----	
2446	§64 ASU 82.02-30	0.658		-0.36	
2459	AfPS GS 2019	ND		-----	
2462		0.66		-0.35	
2481	In house	0.54		-1.24	
2495	IEC62321-10	0.68		-0.20	
2504	AfPS GS 2019	1.01		2.26	
2511	EN17132	0.5022		-1.52	
2538	In house	0.790		0.62	
2561	AfPS GS 2019	0.59		-0.87	
2590	AfPS GS 2019	0.859		1.14	
2605	AfPS GS 2019	0.66		-0.35	
2643		-----		-----	
2649		-----		-----	
2674	AfPS GS 2014	0.63		-0.57	
2678		-----		-----	
2734		-----		-----	
2737	ISO16190	0.695		-0.09	
2743		-----		-----	
2811	AfPS GS 2019	0.61		-0.72	
2815	ZEK01.4-08	0.546		-1.20	
2829	AfPS GS 2019	0.748		0.31	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	0.982		2.05	
2864	AfPS GS 2019	0.57		-1.02	
2867	AfPS GS 2019	0.67		-0.27	
2892	AfPS GS 2019	0.61		-0.72	
2910	AfPS GS 2019	0.62		-0.64	
2930	In house	1.05		2.56	
2953		-----		-----	
2977		-----		-----	
2988	AfPS GS 2019	0.85		1.07	
3100	AfPS GS 2019	0.51		-1.46	
3116	AfPS GS 2014	0.7123		0.04	
3122	AfPS GS 2019	0.73230		0.19	
3153	AfPS GS 2019	0.51		-1.46	
3154	AfPS GS 2014	0.887		1.34	
3163		-----		-----	
3172	AfPS GS 2019	0.7379		0.23	
3176	In house	0.581		-0.93	
3182	ZEK01.4-08	0.58		-0.94	
3185	AfPS GS 2019	0.56		-1.09	
3197	AfPS GS 2019	0.70		-0.05	
3209		-----		-----	
3210		0.9118		1.53	
3214	AfPS GS 2019	0.58		-0.94	
3218	AfPS GS 2019	0.52		-1.39	
3228	AfPS GS 2019	0.72		0.10	
3230		-----		-----	
3237	AfPS GS 2019	0.55		-1.17	
3248	AfPS GS 2019	0.6		-0.79	

normality	OK			
n	81			
outliers	1			
mean (n)	0.7065			
st.dev. (n)	0.13488			
R(calc.)	0.3777	RSD = 19%		
st.dev.(IEC62321-10:20)	0.13423			
R(IEC62321-10:20)	0.3758			

Kernel Density
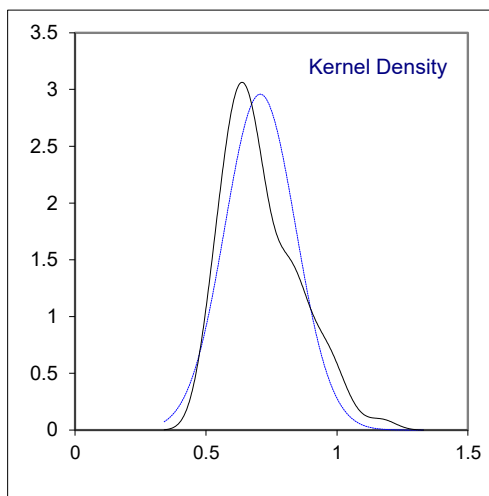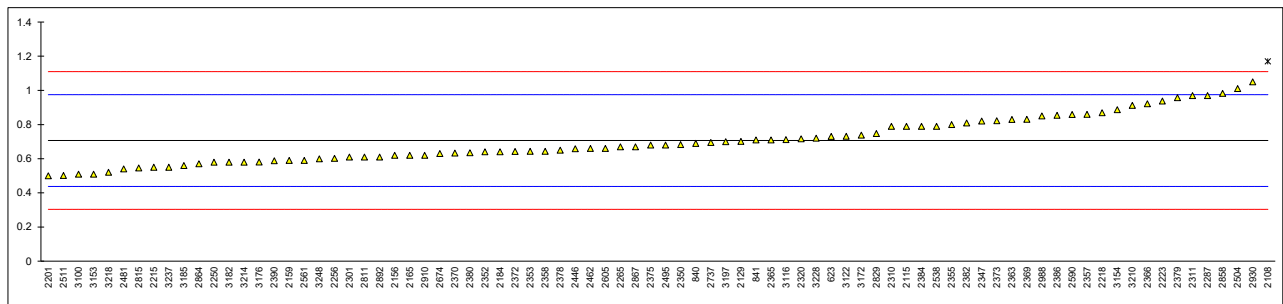
Determination of Benzo[a]pyrene, CAS No. 50-32-8 in sample #22530; results in mg/kg

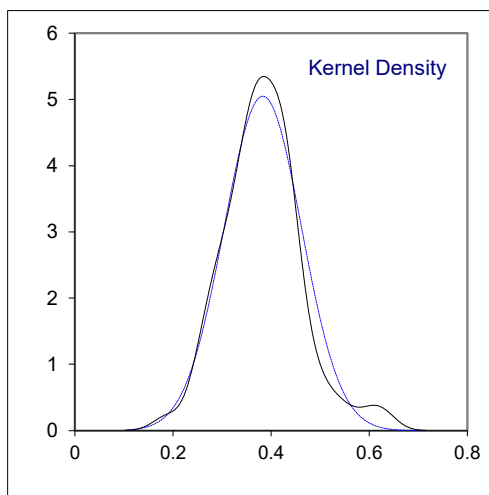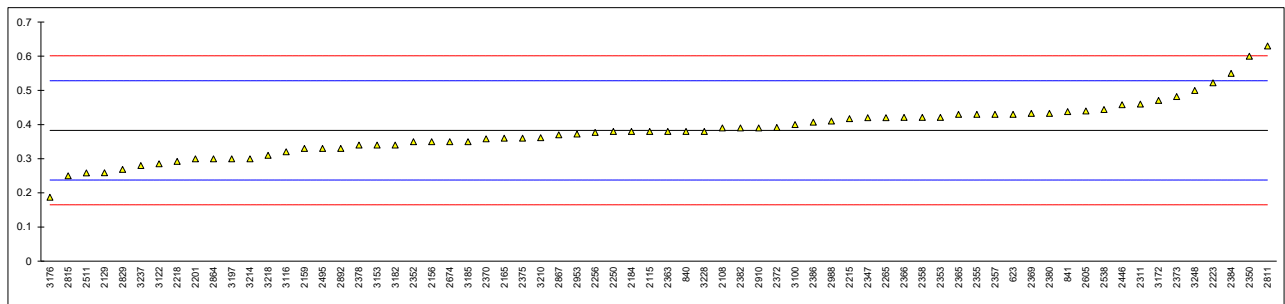| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.55		0.27	
840	AfPS GS 2019	0.63		1.07	
841	AfPS GS 2019	0.570		0.47	
2108	AfPS GS 2019	0.73		2.08	
2115	AfPS GS 2019	0.52		-0.04	
2129	AfPS GS 2019	0.434		-0.90	
2135		-----		-----	
2137		-----		-----	
2156	AfPS GS 2019	0.36		-1.64	
2159	IEC62321-10	0.33		-1.95	
2165	AfPS GS 2019	0.52		-0.04	
2184	AfPS GS 2014	0.50		-0.24	
2201	AfPS GS 2019	0.5		-0.24	
2215	AfPS GS 2019	0.57		0.47	
2218	AfPS GS 2019	0.573		0.50	
2223	In house	0.646		1.23	
2250	AfPS GS 2019	0.45		-0.74	
2256	AfPS GS 2019	0.397		-1.27	
2265	AfPS GS 2019	0.50		-0.24	
2267		-----		-----	
2287	AfPS GS 2019	0.70	C	1.77	First reported <0.2
2300	ZEK01.4-08	0.26		-2.65	
2301	AfPS GS 2019	0.47		-0.54	
2310	AfPS GS 2019	0.46		-0.64	
2311	AfPS GS 2019	0.706		1.83	
2316	AfPS GS 2019	Not Detected		-----	
2320	AfPS GS 2019	0.557	C	0.34	First reported Not Detected
2330	AfPS GS 2019	Not detected		-----	
2347	AfPS GS 2019	0.52		-0.04	
2350	IEC62321-10	0.661	C	1.38	First reported 0.998
2352	IEC62321-10	0.43		-0.94	
2353	AfPS GS 2019	0.5806		0.57	
2355	AfPS GS 2019	0.55		0.27	
2357	AfPS GS 2019	0.57		0.47	
2358	AfPS GS 2019	0.5806		0.57	
2363	AfPS GS 2019	0.58		0.57	
2365	AfPS GS 2019	0.636		1.13	
2366	AfPS GS 2019	0.563		0.40	
2369	AfPS GS 2019	0.533		0.10	
2370	AfPS GS 2019	0.536		0.13	
2372	AfPS GS 2019	0.4872		-0.36	
2373	AfPS GS 2019	0.558		0.35	
2375	ISO/TS16190	0.41		-1.14	
2378	EN17132	0.40		-1.24	
2379	AfPS GS 2019	0.8056	C	2.84	First reported Not Detected
2380	AfPS GS 2019	0.558		0.35	
2382	AFPS GS 2019	0.46		-0.64	
2384	AfPS GS 2019	0.58		0.57	
2386	AfPS GS 2019	0.548		0.25	
2390	AfPS GS 2019	0.493	C	-0.31	First reported Not Detected
2406	AfPS GS 2019	<0.2	C	<-3.25	First reported Not Detected, possible a false negative result?
2426	AfPS GS 2019	ND		-----	
2446	§64 ASU 82.02-30	0.46		-0.64	
2459	AfPS GS 2019	1.490	R(0.01)	9.72	
2462		0.46		-0.64	
2481	In house	0.75		2.28	
2495	IEC62321-10	0.58		0.57	
2504	AfPS GS 2019	0.75		2.28	
2511	EN17132	0.709		1.87	
2538	In house	0.596		0.73	
2561	AfPS GS 2019	0.3		-2.25	
2590	AfPS GS 2019	0.806		2.84	
2605	AfPS GS 2019	0.48		-0.44	
2643		-----		-----	
2649		-----		-----	
2674	AfPS GS 2014	0.50		-0.24	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743		-----		-----	
2811	AfPS GS 2019	0.57	C	0.47	First reported Not Detected
2815	ZEK01.4-08	0.488		-0.36	
2829	AfPS GS 2019	0.416		-1.08	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	0.479	C	-0.45	First reported 0.926
2864	AfPS GS 2019	0.43		-0.94	
2867	AfPS GS 2019	0.49		-0.34	
2892	AfPS GS 2019	0.74		2.18	
2910	AfPS GS 2019	0.46		-0.64	
2930	In house	0.71		1.88	
2953	AfPS GS 2019	0.209		-3.16	
2977		-----		-----	
2988	AfPS GS 2019	0.53		0.07	
3100	AfPS GS 2019	0.45		-0.74	
3116	AfPS GS 2014	0.5236		0.00	
3122	AfPS GS 2019	0.60739		0.84	
3153	AfPS GS 2019	0.37		-1.54	
3154	AfPS GS 2014	0.474		-0.50	
3163		-----		-----	
3172	AfPS GS 2019	0.6012		0.78	
3176	In house	0.373		-1.51	
3182	ZEK01.4-08	0.52		-0.04	
3185	AfPS GS 2019	0.44		-0.84	
3197	AfPS GS 2019	0.50		-0.24	
3209		-----		-----	
3210		0.6745		1.52	
3214	AfPS GS 2019	0.41		-1.14	
3218	AfPS GS 2019	0.42		-1.04	
3228	AfPS GS 2019	0.47		-0.54	
3230		-----		-----	
3237	AfPS GS 2019	0.33		-1.95	
3248	AfPS GS 2019	0.4		-1.24	

normality	OK	
n	83	
outliers	1	
mean (n)	0.5235	
st.dev. (n)	0.11906	RSD = 23%
R(calc.)	0.3334	
st.dev.(IEC62321-10:20)	0.09946	
R(IEC62321-10:20)	0.2785	

Kernel Density

Determination of Indeno[1,2,3-c,d]pyrene, CAS No. 193-39-5 in sample #22530; results in mg/kg

| lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	0.43		0.65	
840	AfPS GS 2019	0.38		-0.04	
841	AfPS GS 2019	0.438		0.76	
2108	AfPS GS 2019	0.39		0.10	
2115	AfPS GS 2019	0.38		-0.04	
2129	AfPS GS 2019	0.259		-1.70	
2135		-----		-----	
2137		-----		-----	
2156	AfPS GS 2019	0.35		-0.45	
2159	IEC62321-10	0.33		-0.73	
2165	AfPS GS 2019	0.36		-0.32	
2184	AfPS GS 2014	0.38		-0.04	
2201	AfPS GS 2019	0.3		-1.14	
2215	AfPS GS 2019	0.417	C	0.47	First reported not detected
2218	AfPS GS 2019	0.292		-1.25	
2223	In house	0.522		1.91	
2250	AfPS GS 2019	0.38		-0.04	
2256	AfPS GS 2019	0.377		-0.08	
2265	AfPS GS 2019	0.42		0.51	
2267		-----		-----	
2287	AfPS GS 2019	<0.2		-----	
2300		-----		-----	
2301		-----		-----	
2310	AfPS GS 2019	Not Detected		-----	
2311	AfPS GS 2019	0.46		1.06	
2316	AfPS GS 2019	Not Detected		-----	
2320	AfPS GS 2019	Not Detected		-----	
2330	AfPS GS 2019	Not detected		-----	
2347	AfPS GS 2019	0.42		0.51	
2350	IEC62321-10	0.600	C	2.98	First reported 0.880
2352	IEC62321-10	0.35		-0.45	
2353	AfPS GS 2019	0.4210		0.52	
2355	AfPS GS 2019	0.43		0.65	
2357	AfPS GS 2019	0.43		0.65	
2358	AfPS GS 2019	0.4210		0.52	
2363	AfPS GS 2019	0.38		-0.04	
2365	AfPS GS 2019	0.430		0.65	
2366	AfPS GS 2019	0.421		0.52	
2369	AfPS GS 2019	0.433		0.69	
2370	AfPS GS 2019	0.358		-0.34	
2372	AfPS GS 2019	0.3917		0.12	
2373	AfPS GS 2019	0.482		1.36	
2375	ISO/TS16190	0.36		-0.32	
2378	EN17132	0.34		-0.59	
2379	AfPS GS 2019	Not detected		-----	
2380	AfPS GS 2019	0.433		0.69	
2382	AFPS GS 2019	0.39		0.10	
2384	AfPS GS 2019	0.55		2.30	
2386	AfPS GS 2019	0.407		0.33	
2390	AfPS GS 2019	Not detected		-----	
2406	AfPS GS 2019	not detected		-----	
2426	AfPS GS 2019	ND		-----	
2446	§64 ASU 82.02-30	0.458		1.03	
2459	AfPS GS 2019	ND		-----	
2462		-----		-----	
2481		-----		-----	
2495	IEC62321-10	0.33		-0.73	
2504	AfPS GS 2019	not applicable		-----	
2511	EN17132	0.2587		-1.71	
2538	In house	0.444		0.84	
2561		-----		-----	
2590		-----		-----	
2605	AfPS GS 2019	0.44		0.78	
2643		-----		-----	
2649		-----		-----	
2674	AfPS GS 2014	0.35		-0.45	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743		-----		-----	
2811	AfPS GS 2019	0.63	C	3.40	First reported 0.79
2815	ZEK01.4-08	0.250		-1.83	
2829	AfPS GS 2019	0.269		-1.57	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	not detected		-----	
2864	AfPS GS 2019	0.3		-1.14	
2867	AfPS GS 2019	0.37		-0.18	
2892	AfPS GS 2019	0.33		-0.73	
2910	AfPS GS 2019	0.39		0.10	
2930	In house	<0.40	C	-----	First reported 0.22
2953	AfPS GS 2019	0.372		-0.15	
2977		-----		-----	
2988	AfPS GS 2019	0.41		0.37	
3100	AfPS GS 2019	0.40		0.23	
3116	AfPS GS 2014	0.3203		-0.86	
3122	AfPS GS 2019	0.28486		-1.35	
3153	AfPS GS 2019	0.34		-0.59	
3154		-----		-----	
3163		-----		-----	
3172	AfPS GS 2019	0.4711		1.21	
3176	In house	0.187		-2.69	
3182	ZEK01.4-08	0.34		-0.59	
3185	AfPS GS 2019	0.35		-0.45	
3197	AfPS GS 2019	0.30		-1.14	
3209		-----		-----	
3210		0.3613		-0.30	
3214	AfPS GS 2019	0.30		-1.14	
3218	AfPS GS 2019	0.31		-1.00	
3228	AfPS GS 2019	0.38		-0.04	
3230		-----		-----	
3237	AfPS GS 2019	0.28		-1.41	
3248	AfPS GS 2019	0.5		1.61	

normality	suspect	
n	68	
outliers	0	
mean (n)	0.3829	
st.dev. (n)	0.07900	RSD = 21%
R(calc.)	0.2212	
st.dev.(IEC62321-10:20)	0.07276	
R(IEC62321-10:20)	0.2037	

Kernel Density

Determination of Benzo[g,h,i]perylene, CAS No. 191-24-2 in sample #22530; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310		-----		-----	
551		-----		-----	
623	AfPS GS 2019	3.02		-0.31	
840	AfPS GS 2019	3.54		0.54	
841	AfPS GS 2019	3.680		0.77	
2108	AfPS GS 2019	4.57		2.23	
2115	AfPS GS 2019	2.49		-1.18	
2129	AfPS GS 2019	3.28		0.12	
2135	AfPS GS 2014	1.67		-2.52	
2137		-----		-----	
2156	AfPS GS 2019	3.37		0.27	
2159	IEC62321-10	2.10		-1.82	
2165	AfPS GS 2019	2.81		-0.65	
2184	AfPS GS 2014	2.94		-0.44	
2201	AfPS GS 2019	2.9		-0.51	
2215	AfPS GS 2019	3.46		0.41	
2218	AfPS GS 2019	2.477		-1.20	
2223	In house	4.45		2.04	
2250	AfPS GS 2019	3.61		0.66	
2256	AfPS GS 2019	2.82		-0.64	
2265	AfPS GS 2019	3.08		-0.21	
2267		-----		-----	
2287	AfPS GS 2019	4.60		2.28	
2300	ZEK01.4-08	Not detected	C	-----	First reported 5.16
2301	AfPS GS 2019	2.635		-0.94	
2310	AfPS GS 2019	2.64		-0.93	
2311	AfPS GS 2019	2.86		-0.57	
2316	AfPS GS 2019	Not Detected		-----	
2320	AfPS GS 2019	3.345		0.22	
2330	AfPS GS 2019	4.69		2.43	
2347	AfPS GS 2019	3.45		0.40	
2350	IEC62321-10	3.811	C	0.99	First reported 5.408
2352	IEC62321-10	3.50		0.48	
2353	AfPS GS 2019	3.0152		-0.32	
2355	AfPS GS 2019	3.40		0.31	
2357	AfPS GS 2019	3.45		0.40	
2358	AfPS GS 2019	3.0152		-0.32	
2363	AfPS GS 2019	3.49		0.46	
2365	AfPS GS 2019	3.444		0.39	
2366	AfPS GS 2019	3.332		0.20	
2369	AfPS GS 2019	3.606		0.65	
2370	AfPS GS 2019	3.83		1.02	
2372	AfPS GS 2019	3.6995		0.81	
2373	AfPS GS 2019	3.443		0.38	
2375	ISO/TS16190	2.43		-1.28	
2378	EN17132	3.6		0.64	
2379	AfPS GS 2019	4.1987	C	1.62	First reported 5.1238
2380	AfPS GS 2019	3.32		0.18	
2382	AFPS GS 2019	3.55		0.56	
2384	AfPS GS 2019	4.18		1.59	
2386	AfPS GS 2019	5.006		2.95	
2390	AfPS GS 2019	3.679		0.77	
2406	AfPS GS 2019	2.79		-0.69	
2426	AfPS GS 2019	2.137		-1.76	
2446	§64 ASU 82.02-30	4.35		1.87	
2459	AfPS GS 2019	2.130		-1.77	
2462		3.19		-0.03	
2481		-----		-----	
2495	IEC62321-10	3.24		0.05	
2504	AfPS GS 2019	not applicable		-----	
2511	EN17132	3.6072		0.65	
2538	In house	4.691		2.43	
2561	AfPS GS 2019	2.77		-0.72	
2590	AfPS GS 2019	3.259		0.08	
2605	AfPS GS 2019	3.08		-0.21	
2643		-----		-----	
2649	AfPS GS 2019	2.15		-1.74	
2674	AfPS GS 2014	2.76		-0.74	
2678		-----		-----	
2734		-----		-----	
2737		-----		-----	
2743	IEC62321-10	2.5565		-1.07	
2811	AfPS GS 2019	3.67		0.76	
2815	ZEK01.4-08	1.894		-2.16	
2829	AfPS GS 2019	2.568		-1.05	

lab	method	value	mark	z(targ)	remarks
2858	AfPS GS 2019	2.801		-0.67	
2864	AfPS GS 2019	3.14		-0.11	
2867	AfPS GS 2019	2.97		-0.39	
2892	AfPS GS 2019	4.86		2.71	
2910	AfPS GS 2019	2.86		-0.57	
2930	In house	3.27		0.10	
2953	AfPS GS 2019	3.752		0.89	
2977		-----		-----	
2988	AfPS GS 2019	4.26		1.72	
3100	AfPS GS 2019	2.92		-0.47	
3116	AfPS GS 2014	2.7373		-0.77	
3122	AfPS GS 2019	Below quantitation limit		-----	
3153	AfPS GS 2019	2.89		-0.52	
3154		-----		-----	
3163		-----		-----	
3172	AfPS GS 2019	2.543	C	-1.09	First reported 1.416
3176	In house	2.401		-1.32	
3182	ZEK01.4-08	2.80		-0.67	
3185	AfPS GS 2019	2.89		-0.52	
3197	AfPS GS 2019	3.19		-0.03	
3209	AfPS GS 2019	3.22		0.02	
3210		3.4029		0.32	
3214	AfPS GS 2019	2.41		-1.31	
3218	AfPS GS 2019	2.70		-0.83	
3228	AfPS GS 2019	2.88		-0.54	
3230		-----		-----	
3237	AfPS GS 2019	1.90		-2.15	
3248	AfPS GS 2019	2.8		-0.67	

	normality	OK		
	n	86		
	outliers	0		
	mean (n)	3.2084		
	st.dev. (n)	0.69994	RSD = 22%	
	R(calc.)	1.9598		
	st.dev.(IEC62321-10:20)	0.60961		
	R(IEC62321-10:20)	1.7069		

Kernel Density
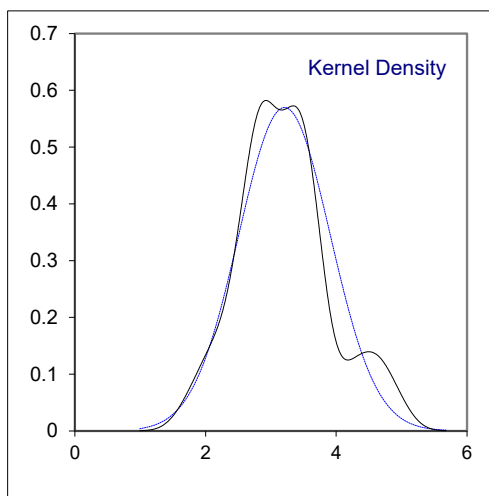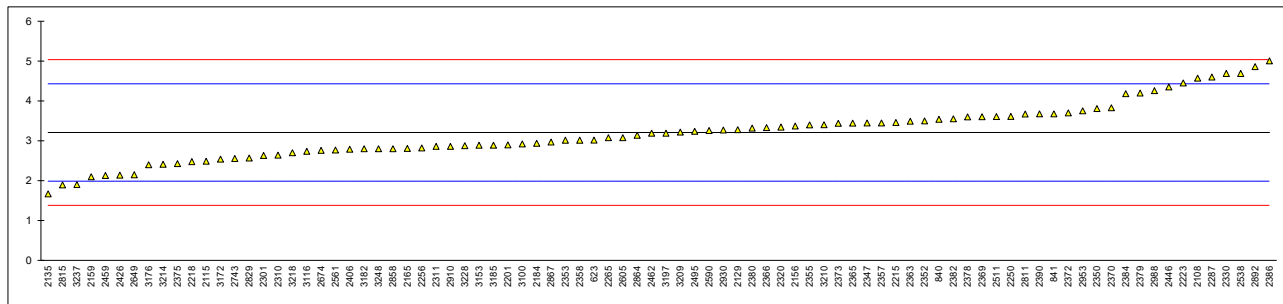
APPENDIX 2
Other reported PAH in sample #22530; results in mg/kg

lab	Triphenylene	Benzo[j]fluoranthene	Benzo[k]fluoranthene	Dibenzo[a,h]anthracene	Cyclopenta[c,d]pyrene
310	-----	-----	-----	-----	-----
551	-----	-----	-----	-----	-----
623	not analyzed	not detected	not detected	not detected	0.36
840	not analyzed	0.12	0.14	<0.1	<0.1
841	-----	0.120	0.120	<0.1	<0.1
2108	0.58	0.33	0.33	-----	-----
2115	-----	-----	-----	-----	0.32
2129	not analyzed	0.101	0.110	<0,05	0.174
2135	-----	-----	-----	-----	-----
2137	-----	-----	-----	-----	-----
2156	-----	<0.2	0.26	<0.2	-----
2159	-----	< 0.2	< 0.2	< 0.2	< 0.2
2165	-----	not detected	not detected	not detected	-----
2184	-----	not detected	not detected	not detected	-----
2201	not detected	not detected	not detected	not detected	not detected
2215	not applicable	not detected	not detected	not detected	not detected
2218	-----	Not detected	Not detected	Not detected	-----
2223	not determined	0.200	0.187	0.160	not determined
2250	0.27	-----	-----	-----	-----
2256	-----	-----	-----	-----	-----
2265	-----	< 0,2	< 0,2	< 0,2	< 0,2
2267	-----	-----	-----	-----	-----
2287	-----	<0.2	<0.2	<0.2	<0.2
2300	-----	-----	Not detected	-----	-----
2301	-----	-----	-----	-----	-----
2310	not analyzed	<0.1	<0.1	Not Detected	Not Detected
2311	-----	0.114	0.1296	Not Detected	0.432
2316	-----	Not Detected	Not Detected	Not Detected	-----
2320	-----	Not Detected	Not Detected	Not Detected	-----
2330	Not applicable	Not detected	Not detected	Not detected	Not detected
2347	-----	<0.1	<0.1	<0.1	-----
2350	not analyzed	not applicable	not applicable	<0.1	not applicable
2352	-----	-----	-----	-----	0.34
2353	not applicable	not detected	not detected	not detected	not applicable
2355	-----	-----	-----	<0.10	-----
2357	-----	<0.2	<0.2	ND	<0.2
2358	not applicable	not detected	not detected	not detected	not applicable
2363	not applicable	not detected	not detected	not detected	not applicable
2365	-----	<0.1	0.106	<0.1	0.342
2366	out of capability	<0.10	<0.10	<0.10	out of capability
2369	out capacity	<0.1	0.130	<0.1	out capacity
2370	-----	0.113	0.106	<0.1	<0.1
2372	not analyzed	0.1093	0.1145	<0.1	not analyzed
2373	not applicable	not detected	not detected	not detected	0.374
2375	0.29	<0.2	<0.2	-----	0.49
2378	out capacity	-----	-----	-----	out capacity
2379	Not analyzed	Not detected	Not detected	Not detected	Not detected
2380	-----	<0.1	<0.1	<0.1	-----
2382	-----	<0.1	<0.1	<0.1	<0.1
2384	-----	0.14	0.21	Not Detected [<0.1]	-----
2386	not determined	0.155	0.139	not detected	0.304
2390	Not accessed	Not detected	Not detected	Not detected	Not detected
2406	not analyzed	not detected	not detected	not detected	not analyzed
2426	ND	ND	ND	ND	ND
2446	<0,2	<0,2	<0,2	<0,2	not analyzed
2459	ND	ND	ND	ND	ND
2462	-----	-----	-----	-----	-----
2481	-----	0.14	0.12	Not detected	-----
2495	-----	-----	-----	<0.1	-----
2504	not applicable	not applicable	not applicable	not detected	not applicable
2511	-----	-----	-----	<0.2	-----
2538	0.353	0.318	0.189	not detected	-----
2561	-----	-----	-----	-----	-----
2590	-----	-----	-----	-----	-----
2605	-----	<0.20	<0.20	<0.20	-----
2643	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----
2674	not applicable	not detected	not detected	not detected	not applicable
2678	-----	-----	-----	-----	-----
2734	-----	-----	-----	-----	-----
2737	-----	-----	-----	-----	-----
2743	-----	-----	-----	-----	-----
2811	not determined	not determined	not determined	not detected	not determined
2815	-----	-----	-----	0.298	-----
2829	not analyzed	1.500	0.141	0.125	not analyzed

lab	Triphenylene	Benzo[j]fluoranthene	Benzo[k]fluoranthene	Dibenzo[a,h]anthracene	Cyclopenta[c,d]pyrene
2858	not detected	not detected	not detected	not detected	not detected
2864	-----	0.14	not detected	not detected	-----
2867	-----	＜0.2	＜0.2	＜0.2	-----
2892	<0.1	0.19	0.16	<0.1	0.32
2910	not applicable	not detected	not detected	not detected	not applicable
2930	-----	n.d., LOD 0.44 mg/kg	n.d., LOD 0.56 mg/kg	-----	-----
2953	-----	-----	-----	-----	-----
2977	-----	-----	-----	-----	-----
2988	-----	not detected	not detected	not detected	-----
3100	--	＜0.2	＜0.2	＜0.2	--
3116	-----	0.2355	0.2571	-----	-----
3122	-----	0.18407	0.20391	<0.1	-----
3153	0.24	<0.20	0.23	<0.20	-----
3154	-----	-----	-----	-----	0.514
3163	-----	-----	-----	-----	-----
3172	-----	< 0.2	< 0.2	< 0.2	-----
3176	-----	0.061	0.05	-----	0.146
3182	Not analysed	0.13	0.17	<0.10	Not analysed
3185	-----	not detected[<0.2]	not detected[<0.2]	not detected[<0.2]	-----
3197	-----	0.25	0.27	<0,1	<0,1
3209	-----	-----	-----	-----	-----
3210	-----	-----	<0.1	<0.1	0.1816
3214	-----	<0.2	<0.2	<0.2	-----
3218	-----	<0.20	<0.20	<0.20	<0.20
3228	-----	not detected	not detected	not detected	-----
3230	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	0.55
3248	not determined	not determined	not determined	0.1	not determined

APPENDIX 3
Analytical details

lab	ISO/IEC 17025	Sample preparation	Intake sample	lab	ISO/IEC 17025	Sample preparation	Intake sample
310	---	---		2406	No	Used as received	0.5 gram
551	---	---		2426	Yes	Further cut	0.5g
623	Yes	Further cut	0.5	2446	Yes	Used as received	0,5
840	Yes	Further cut	0.5g	2459	Yes	Used as received	1.0gm
841	Yes	Further cut	0.5 grams	2462	Yes	Further cut	0.5G
2108	Yes	Used as received	0,5 g	2481	Yes	Used as received	0.5 g
2115	Yes	Used as received	0.5 g	2495	Yes	Used as received	0.5
2129	Yes	Further cut	0.5	2504	Yes	Further cut	0.5 grams
2135	Yes	Used as received	0,5	2511	Yes	Used as received	0.5 gram
2137	Yes	Used as received	0.5	2538	Yes	Further cut	0.5 g
2156	Yes	Further cut	0.50g	2561	Yes	Used as received	1g
2159	Yes	Used as received	1,0 g	2590	Yes	---	0.5g
2165	Yes	Further cut	0.5g	2605	Yes	Further cut	0.500 g
2184	Yes	Used as received	2 grams	2643	Yes	Used as received	0.5 g
2201	Yes	Further cut	0.5 grams	2649	Yes	Used as received	2.1 gram
2215	Yes	Further cut	0.5	2674	Yes	Further grinded	2g
2218	No	Used as received	0.5g	2678	---	---	
2223	Yes	Further grinded	2.95 g	2734	---	---	
2250	Yes	Used as received	0,5	2737	Yes	Used as received	0.5g
2256	Yes	Further cut	0.5013	2743	Yes	Used as received	0.5
2265	Yes	Used as received	0,25g	2811	Yes	Used as received	0,5g
2267	No	Used as received	0.3g	2815	Yes	Used as received	0.503
2287	Yes	Further cut	0.5g	2829	No	Further cut	0.5
2300	Yes	Further cut	0.5 gram.	2858	Yes	Further cut	0.5 gm
2301	No	Used as received	0.5002 gram	2864	Yes	Further cut	0.5 g
2310	Yes	Further cut	0.5gram	2867	Yes	Further cut	0.5g
2311	Yes	Used as received	0.5g	2892	Yes	Further cut	0.5g
2316	Yes	Used as received	0.5119 gram	2910	Yes	Further cut	2g
2320	Yes	Further cut	0.5g	2930	Yes	Further cut	0,5 g
2330	No	Further cut	0.5 g	2953	Yes	Further cut	1
2347	Yes	Further cut	0.5g	2977	---	---	
2350	Yes	Further cut	0.509g	2988	Yes	Used as received	approximately 0.5g
2352	Yes	Further cut	0.5g	3100	Yes	Further cut	0.5001 grams
2353	Yes	Used as received	0.5g	3116	Yes	Used as received	0.5 gram
2355	Yes	Further cut	0.5g	3122	Yes	Used as received	0.500
2357	---	---		3153	Yes	Used as received	0.5 gram
2358	Yes	Used as received	0.5g	3154	Yes	Used as received	0,5
2363	Yes	Further cut	0.5g	3163	---	---	
2365	Yes	Further cut	0.5010g	3172	---	---	
2366	Yes	Further cut	0.1	3176	Yes	Used as received	0,5
2369	Yes	---		3182	No	Used as received	0.50 g
2370	Yes	Further cut	0.5g	3185	Yes	Further cut	0.5g
2372	Yes	Further cut	0.5g	3197	Yes	Further cut	0,5
2373	Yes	Used as received	0.5g	3209	Yes	Used as received	0.5g
2375	Yes	Further cut	0.5g	3210	Yes	Used as received	1 g in 10 mL Toluene
2378	Yes	Used as received	0.5G	3214	Yes	Further cut	0.5264 g
2379	Yes	Further cut	0.5g	3218	Yes	Used as received	0.5g
2380	Yes	Used as received	0.5 g	3228	Yes	Further cut	0.5
2382	Yes	Used as received	0.5g	3230	---	---	
2384	Yes	Further grinded	0.5g	3237	Yes	Used as received	0,5
2386	Yes	Further cut	0,5 g	3248	Yes	Used as received	0.5g
2390	Yes	Further cut	0.5036g				

APPENDIX 4

Number of participants per country

3 labs in	BANGLADESH
1 lab in	BRAZIL
2 labs in	CAMBODIA
3 labs in	FRANCE
11 labs in	GERMANY
9 labs in	HONG KONG
3 labs in	INDIA
2 labs in	INDONESIA
5 labs in	ITALY
26 labs in	JAPAN
8 labs in	KOREA, Republic of
2 labs in	MALAYSIA
1 lab in	MAURITIUS
4 labs in	P.R. of CHINA
1 lab in	PAKISTAN
1 lab in	PORTUGAL
4 labs in	SPAIN
3 labs in	SRI LANKA
3 labs in	SWITZERLAND
3 labs in	TAIWAN
2 labs in	THAILAND
2 labs in	THE NETHERLANDS
1 lab in	TUNISIA
1 lab in	TURKEY
1 lab in	UNITED KINGDOM
1 lab 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

1   iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
2   ISO5725:86
3   ISO5725 parts 1-6:94
4   ISO13528:05
5   M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
6   W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
7   P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
8   J.N. Miller, Analyst, 118, 455, (1993)
9   Analytical Methods Committee, Technical Brief, No 4, January 2001
10   P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
11   W. Horwitz and R. Albert, J. AOAC Int, 79.3, 589-621, (1996)
12   Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)