Test Group Summary Report
C77 Pesticides in Soil
January 2024 PT Round

Issued: March 5, 2024

PTC | Proficiency Testing Canada

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1.0 The Proficiency Testing Report

The Proficiency Testing Report consists of two parts.

- *PTC Proficiency Testing Report*: This report contains participant-specific data and other confidential information. This report is emailed to participants at the end of the PT round.
- *Test Group Summary Report*: A Test Group Summary Report is created for each quantified test group at the end of the PT round. These reports contain more detailed information on the round than is found in the participant-specific PTC Proficiency Testing Report. These reports do not contain any confidential information and are made available on the PTC web site.

2.0 Definitions

The participant-specific PTC Proficiency Testing Report contains some terms that new participants may not be familiar with.

Code:	The registration code that is unique to each analyte that a participant is registered for.
App:	If a participant is accredited by CALA, this three-digit number is the appendix number that the accredited method is assigned to.
N:	The number of participants results that were used to calculate the summary statistics. This excludes qualified data (e.g., <) and any results that were flagged as outliers.
Assigned:	The Assigned Value is the robust mean of the reported results, outliers excluded. This is often referred to as the "target" value.
$\pm u$:	The uncertainty of the assigned value.
Reported:	The result reported by the participant.
s:	The Standard Deviation of Proficiency Assessment (SDPA). This value is used to determine the acceptance limits for the PT evaluation.
z-Score:	A value assigned to each reported result that is a measure of the degree to which it deviates from the Assigned Value.
Score:	The composite score of the four results reported for each analyte. It is normalized to a score out of 100.
Bias:	A flag assigned if bias is detected using the re-scaled *z*-score procedure.

3.0 Scoring System

Participant performance is evaluated for each proficiency testing sample by a quantitative method that is consistent with ISO/IEC 17043 - *Conformity assessment- General requirements for the competence of proficiency testing providers*, the *International Harmonized Protocol for Proficiency Testing of (Chemical) Analytical Laboratories* (2006), and ISO 13528:2015 *Statistical methods for use in proficiency testing by interlaboratory comparisons*.

The following is a brief description of the evaluation procedure used by PTC. The detailed evaluation procedure is described in PROC09 – PT Evaluation *Procedure*, which is available on the PTC website www.PTCanada.org).

3.1 HOMOGENEITY AND STABILITY ASSESSMENT

Homogeneity and stability are assessed using participant data. Regression analysis is performed on reported result against order of sample production (Homogeneity) and reported result against date of analysis (Stability). If the slope is significantly different than zero for either then the Standard Deviation of Proficiency Assessment (s) is increased to minimize the impact.

3.2 THE Z SCORE

A "z-score" is calculated for each reported result as follows:

$$z - Score = \frac{(x - \bar{X})}{SDPA}$$

where: x = participant result;
$\overline{X}$ = the Assigned Value;
SDPA = the Standard Deviation for Proficiency Assessment.

The assigned value $\overline{X}$ is generally estimated from the inter-laboratory Robust mean after outliers due to obvious gross errors (e.g., reported in wrong units) have been removed.

The Standard Deviation for Proficiency Assessment, s, is determined as follows:

- The inter-laboratory Robust standard deviation ($Stdev_{rob}$) is calculated using reported results, obvious outliers removed;
- The regression equation standard deviation ($Stdev_{reg}$) is estimated from regression equations derived from previous studies (see PROC11- *PT Regression Equations* for details);
- The SDPA is the higher of $Stdev_{rob}$ and $Stdev_{reg}$;
- When a laboratory reports its detection limit, s will be estimated using a pooled variance procedure that uses both the inter-laboratory data and the reported detection limit.

3.2 COMPOSITE (PT) SCORE

Since each PT round involves four or two separate samples of distinct concentration for each test, it is necessary to calculate a composite PT score for each test to determine overall performance. The composite score is calculated by first averaging the absolute *z*-scores for the four results and then calculating a final score as 100 + (-15 x avg |z|).

Acceptable PT Scores equal or exceed 70.

3.3 IDENTIFYING BIAS

The proficiency testing report provides flags for bias. These are determined using the re-scaled *z*-score procedure.

$$RSZ = \frac{\sum z}{\sqrt{N}}$$

where *z* = the *z*- score
N = the number of samples

Flags are assigned for each test group/parameter combination as follows:

RSZ ≥ -2 and ≤ 2	no flag assigned
RSZ > 2	H (High)
RSZ > 3	VH (Very High)
RSZ < -2	L (LOW)
RSZ < -3	VL (Very Low)

3.4 DEVIATIONS FROM EVALUATION PROCEDURE

Other than changes to the Standard Deviation of Proficiency Assessment due to homogeneity or stability flags, any deviation from the published evaluation procedure is described on the cover page(s) of the final *PTC Proficiency Testing Report*.

4.0 PT Round Specific Data Summary

The following pages provide more detailed information about the PT round indicated in the cover page of this report than is found in the participant-specific PTC Proficiency Testing Report. The graphical representations and the statistical summaries are based upon the data after outliers have been removed.

4.1 SUMMARY STATISTICS

In addition to some of the statistics found in the customer reports, this table includes additional summary statistics such as Median, different measures of dispersion, the number of outliers removed, the number of results in the Questionable range (|z| between 2 and 3) and the Unacceptable range (z > 3), and whether a data set was flagged for Homogeneity or Stability. This section also includes sorted scatter plots of the data for each sample.

4.2 *z*- SCORE PLOTS

The z -scores for each sample are ranked in increasing order and plotted. When the data is normally distributed, the plot should show a slight sigmoidal curve, with an equal number of points above zero as below. Each bar in these plots is colour-coded to indicate the analytical method used by the participant.

4.3 KERNEL DENSITY PLOTS

Kernel density plots are generated for each data set. These plots are a graphical way to represent the overall data distribution and are used to visualize possible deviations from normality and unimodality.

4.4 STABILITY AND HOMOGENEITY PLOTS

Plots of reported result against analysis date, and reported result against order of bottling are displayed, along with the regression line. These regression analyses are used to determine if the SDPA should be adjusted due to homogeneity or stability.

4.5 BOX-AND-WHISKER PLOTS

Box-and-Whisker plots are another way to display the distribution of the data. The box denotes the first and third quartile and the whiskers are the 5th and 95th percentile.

4.6 HISTORIC COMPARISON PLOT

The Historic Comparison Plot is a plot of robust mean against robust standard deviation for the previous ten PT rounds as well as the current PT round. This plot can be used to identify possible changes in the sample formulation.

4,4'-DDT (P,P'-DDT)

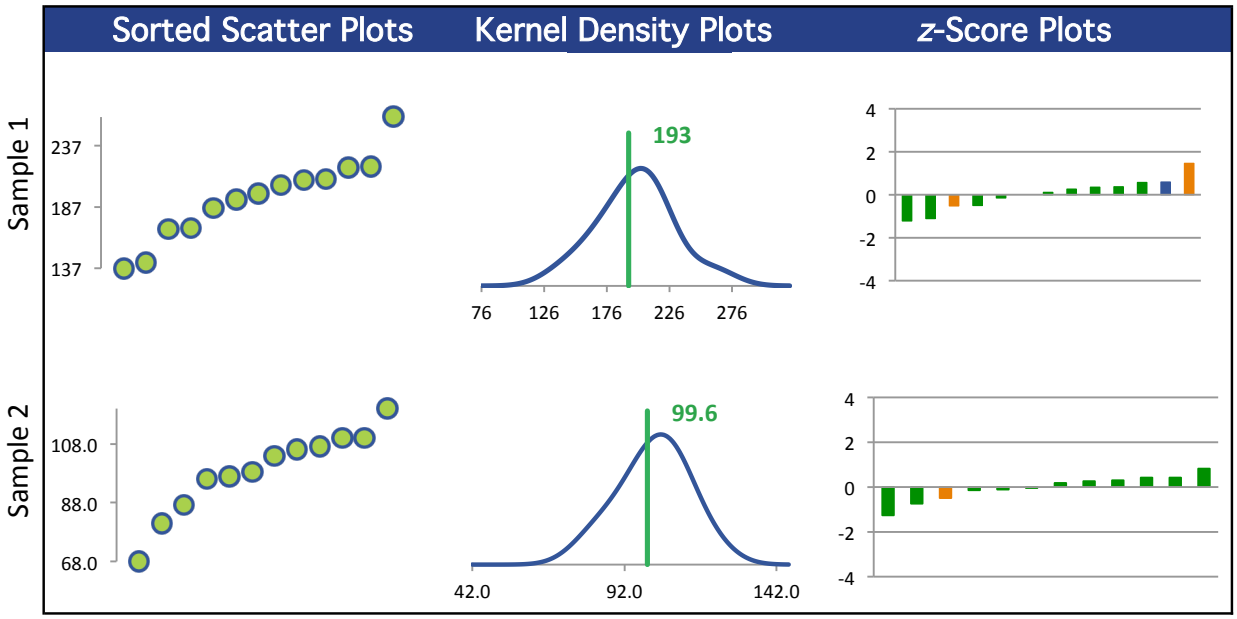
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	12	13	12
Median µg/kg	198	101	312	360
Robust Mean µg/kg	193	99.6	307	359
U µg/kg	12.1	5.12	24.4	22.9
Robust Standard Deviation µg/kg	34.8	14.2	70.3	63.6
Regression Standard Deviation µg/kg	45.9	25.0	71.5	83.1
Stability Flag				Stability
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	45.9	25.0	71.5	94.6
Outliers	0	0	0	1
|z|>3.0	0	0	0	0
2<|z|<3	0	0	0	0

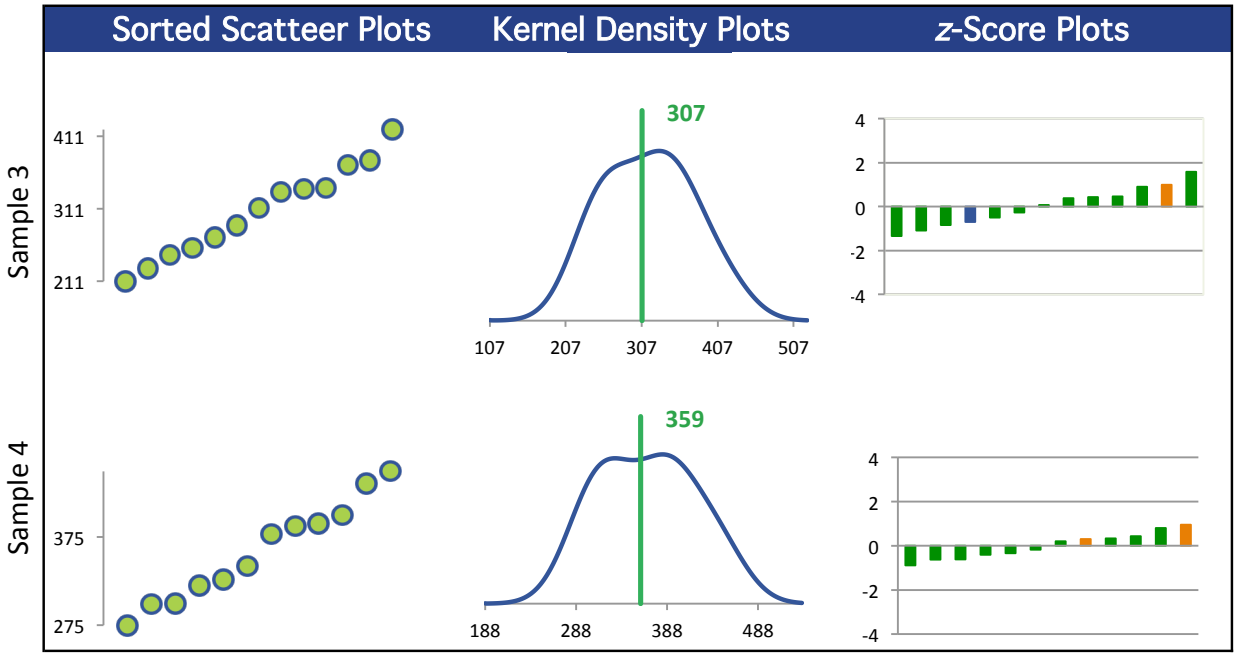
Methods Used

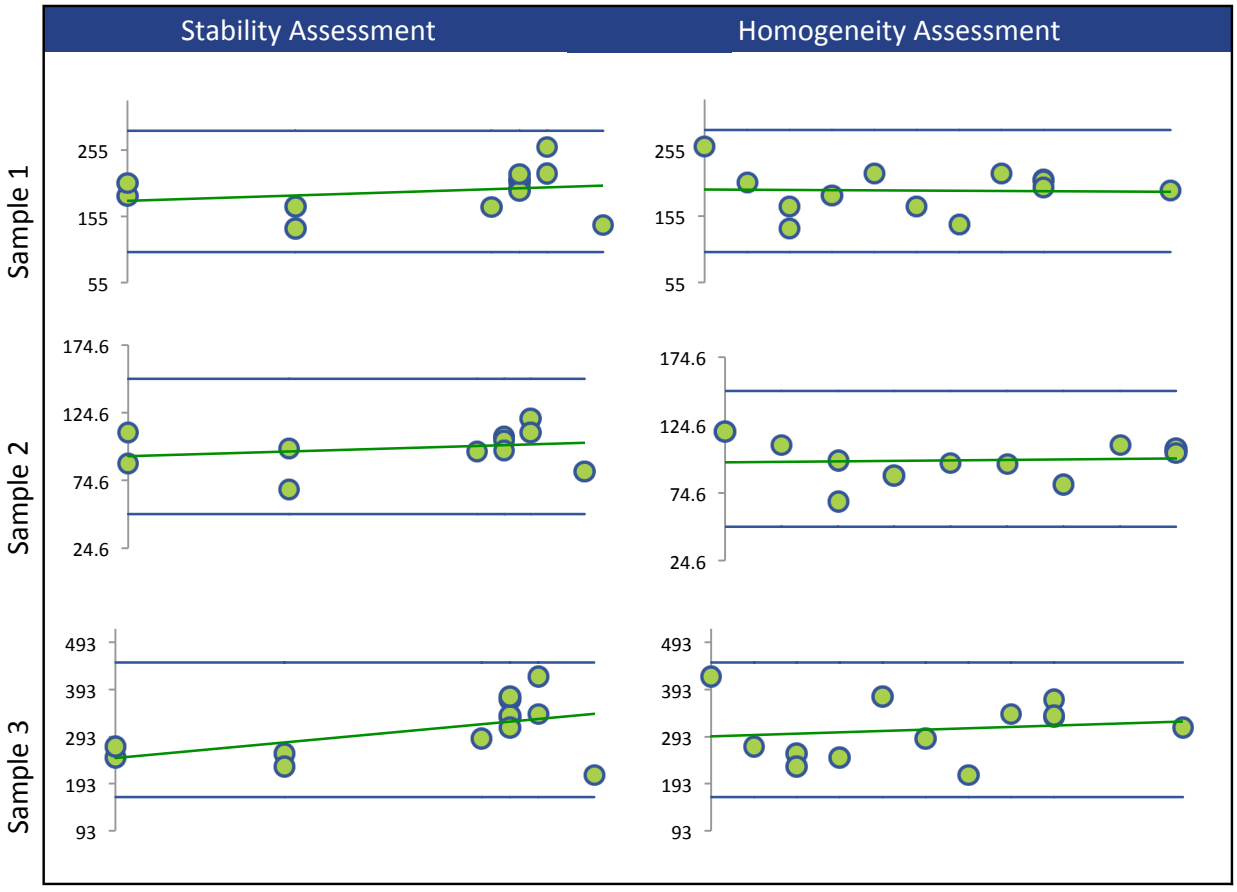
Method	C77-1	C77-2	C77-3	C77-4
GC/MS - EXTRACTION (Blue)	4	3	4	4
GC/ECD - EXTRACTION (Red)	5	5	5	4
GC/MS/MS (Green)	2	2	2	2
HI RESOLUTION GC/MS (Orange)	1	1	1	1
GC/ECD - SHAKE EXTRACTION (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



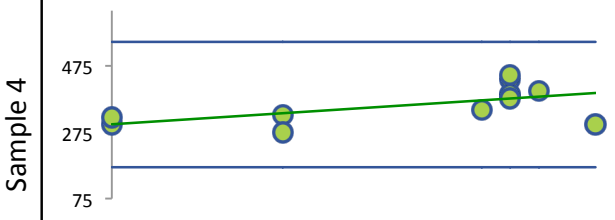
4,4'-DDT (P,P'-DDT)


Sorted Scatteer Plots
Kernel Density Plots
z-Score Plots
Sample 3
411
311
211
307
107
207
307
407
507
4
2
0
-2
-4
Sample 4
375
275
359
188
288
388
488
4
2
0
-2
-4

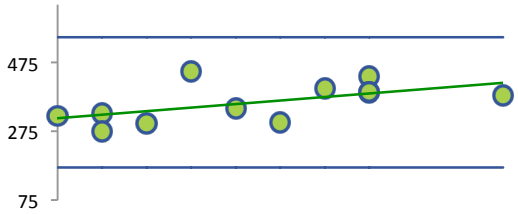

Stability Assessment
Homogeneity Assessment
Sample 1
255
155
55
Sample 2
174.6
124.6
74.6
24.6
Sample 3
493
393
293
193
93

4,4'-DDT (P,P'-DDT)

Stability Assessment



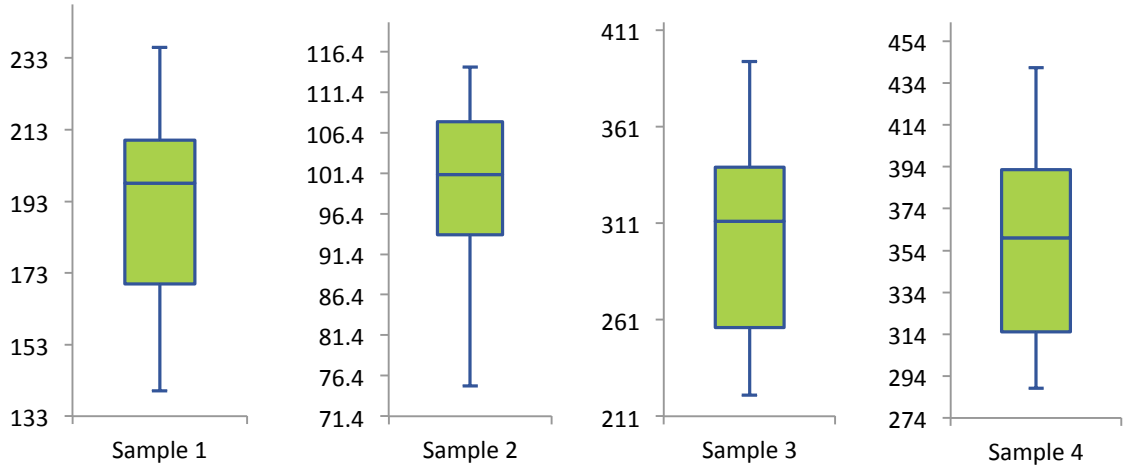
Homogeneity Assessment



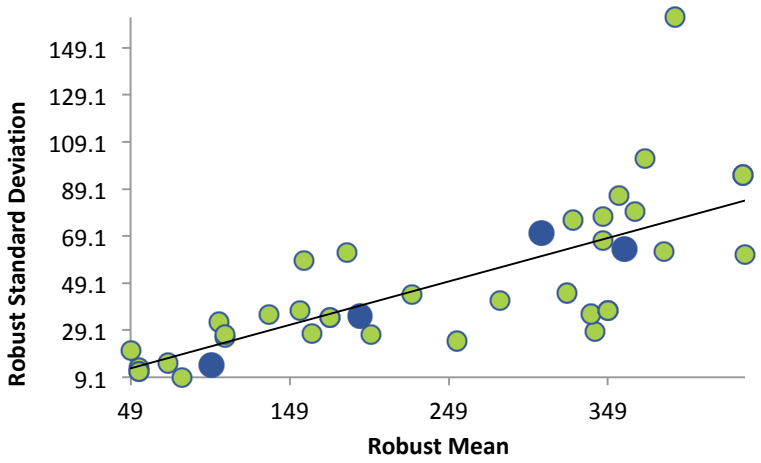
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ALDRIN

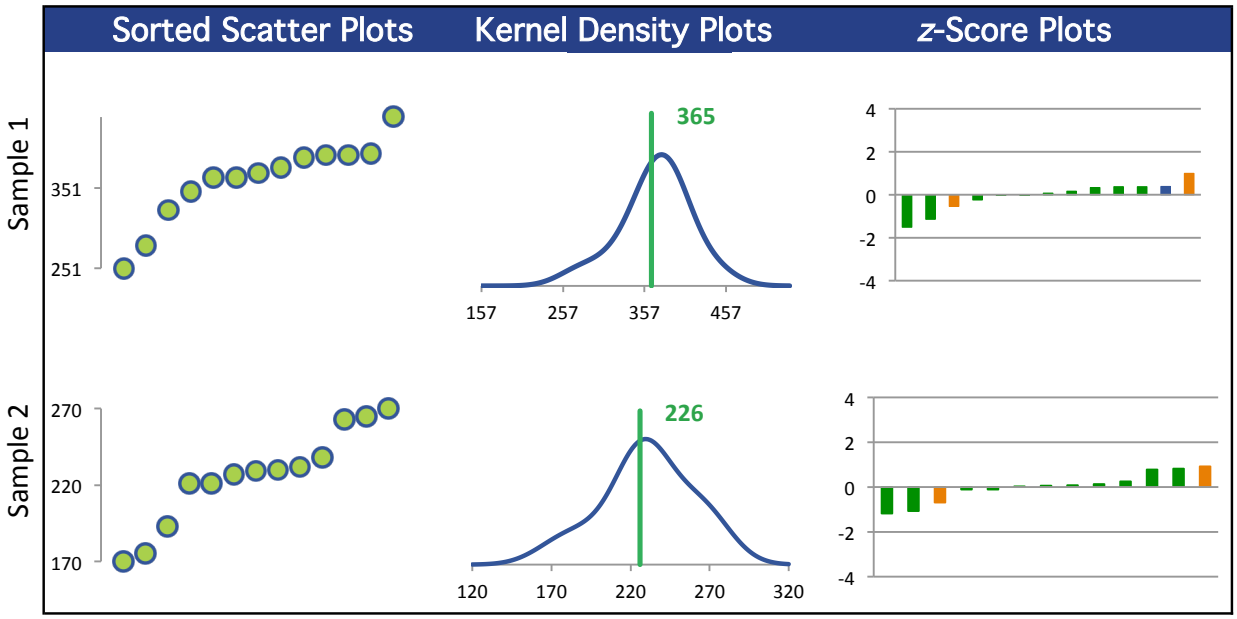
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	370	229	95.1	280
Robust Mean µg/kg	365	226	95.7	276
U µg/kg	15.6	12.2	4.75	13.0
Robust Standard Deviation µg/kg	45.0	35.2	13.7	37.6
Regression Standard Deviation µg/kg	75.7	47.6	21.2	57.8
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	75.7	47.6	21.2	57.8
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

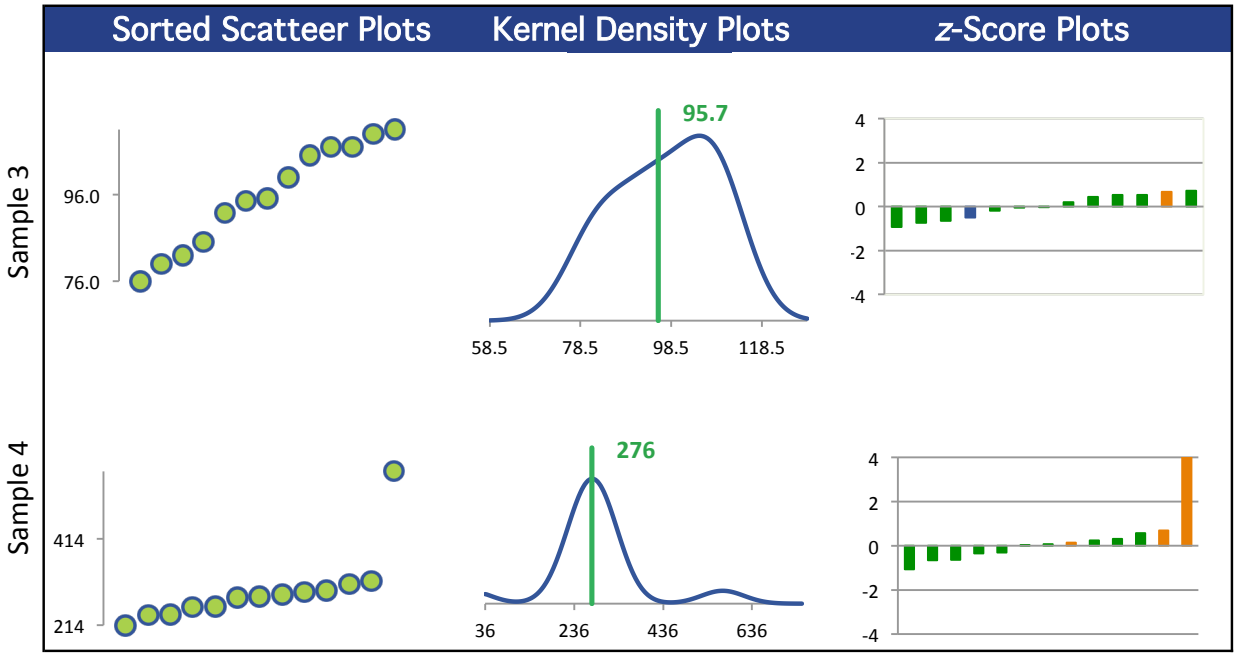
Methods Used

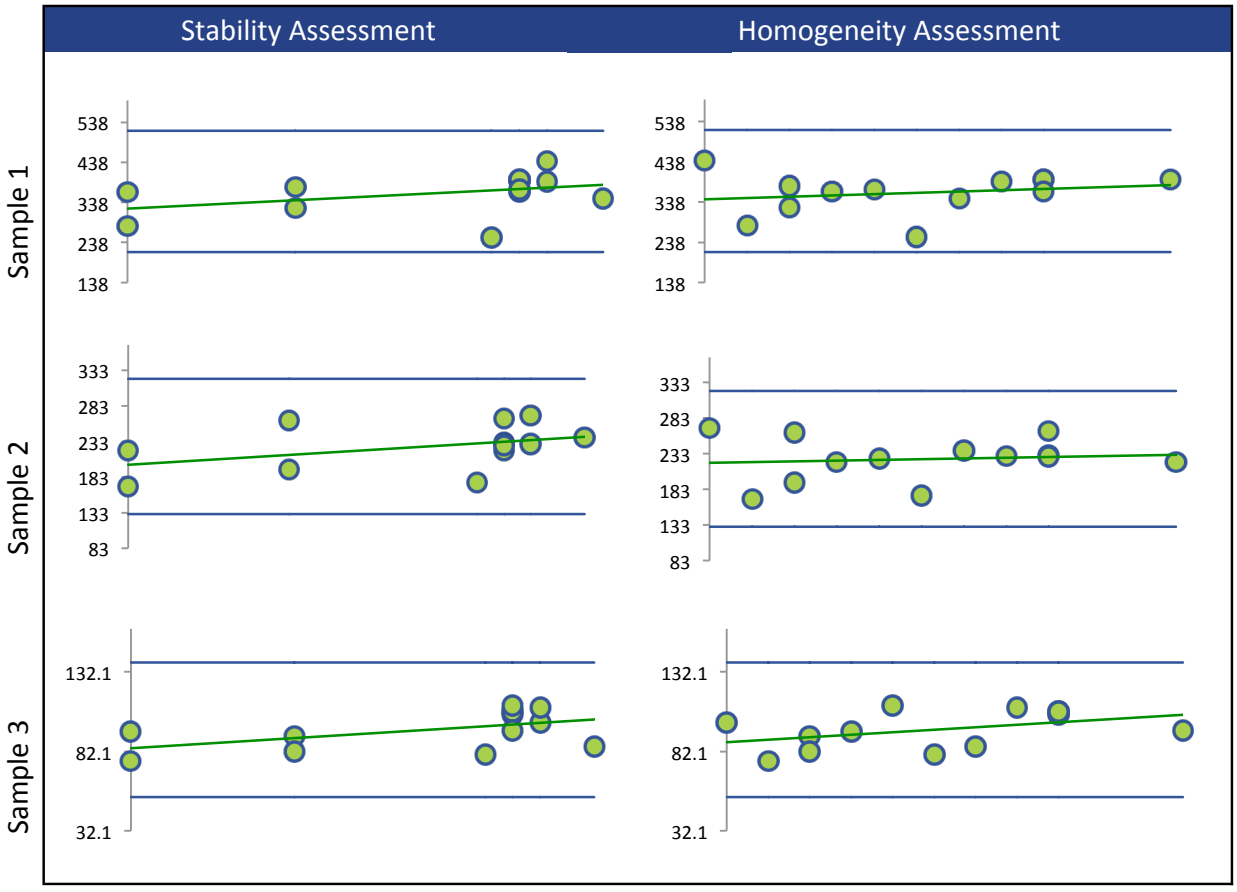
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	5
GC/MS - EXTRACTION (Red)	4	4	4	4
GC/ECD - SHAKE EXTRACTION (Green)	1	1	1	1
GC/MS/MS (Orange)	2	2	2	2
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



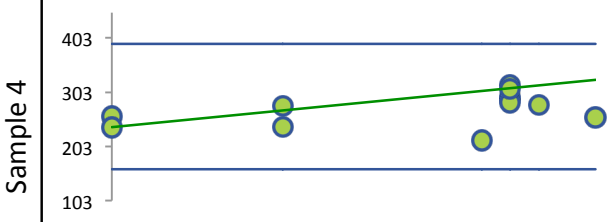
ALDRIN


Sorted Scatteer Plots
Kernel Density Plots
z-Score Plots
Sample 3
96.0
76.0
95.7
58.5
78.5
98.5
118.5
4
2
0
-2
-4
Sample 4
414
214
276
36
236
436
636
4
2
0
-2
-4

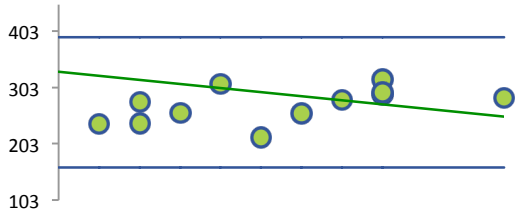

Stability Assessment
Homogeneity Assessment
Sample 1
538
438
338
238
138
538
438
338
238
138
Sample 2
333
283
233
183
133
83
333
283
233
183
133
83
Sample 3
132.1
82.1
32.1
132.1
82.1
32.1

ALDRIN

Stability Assessment



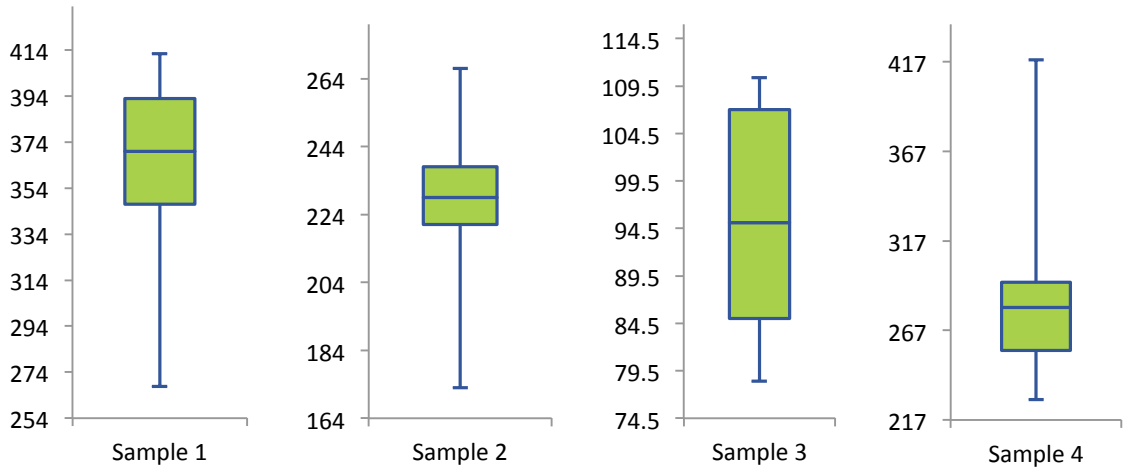
Homogeneity Assessment



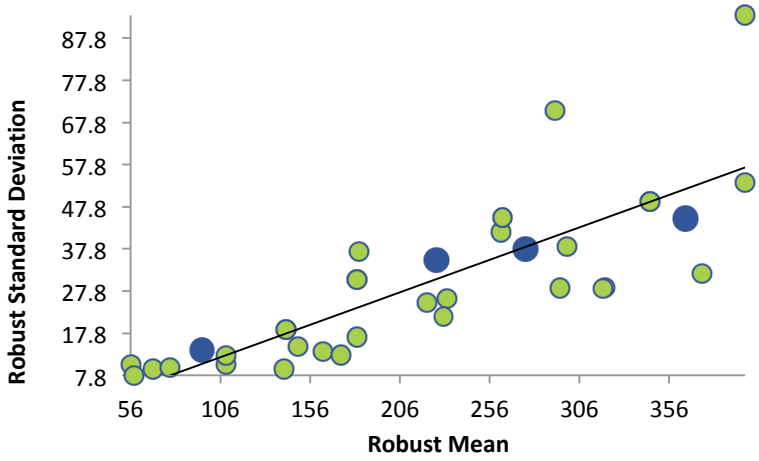
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ALPHA-BHC

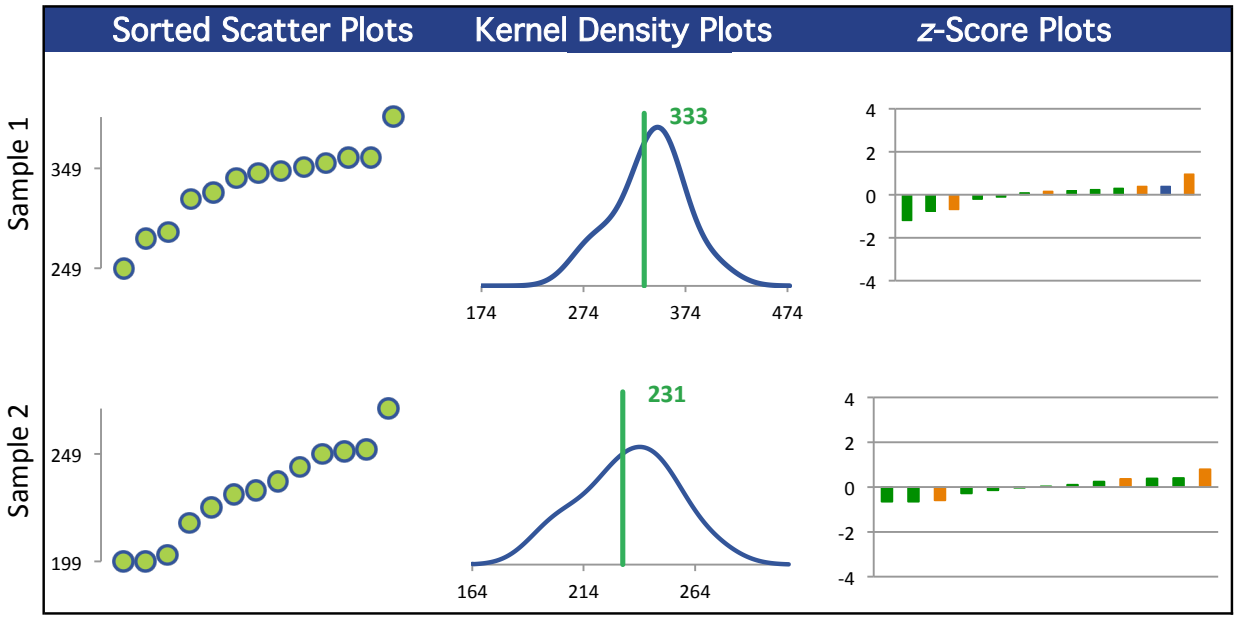
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	344	232	80.0	189
Robust Mean µg/kg	333	231	77.9	185
U µg/kg	14.1	8.60	2.92	7.21
Robust Standard Deviation µg/kg	40.7	24.8	8.41	20.8
Regression Standard Deviation µg/kg	69.9	49.4	18.8	40.3
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	69.9	49.4	18.8	40.3
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

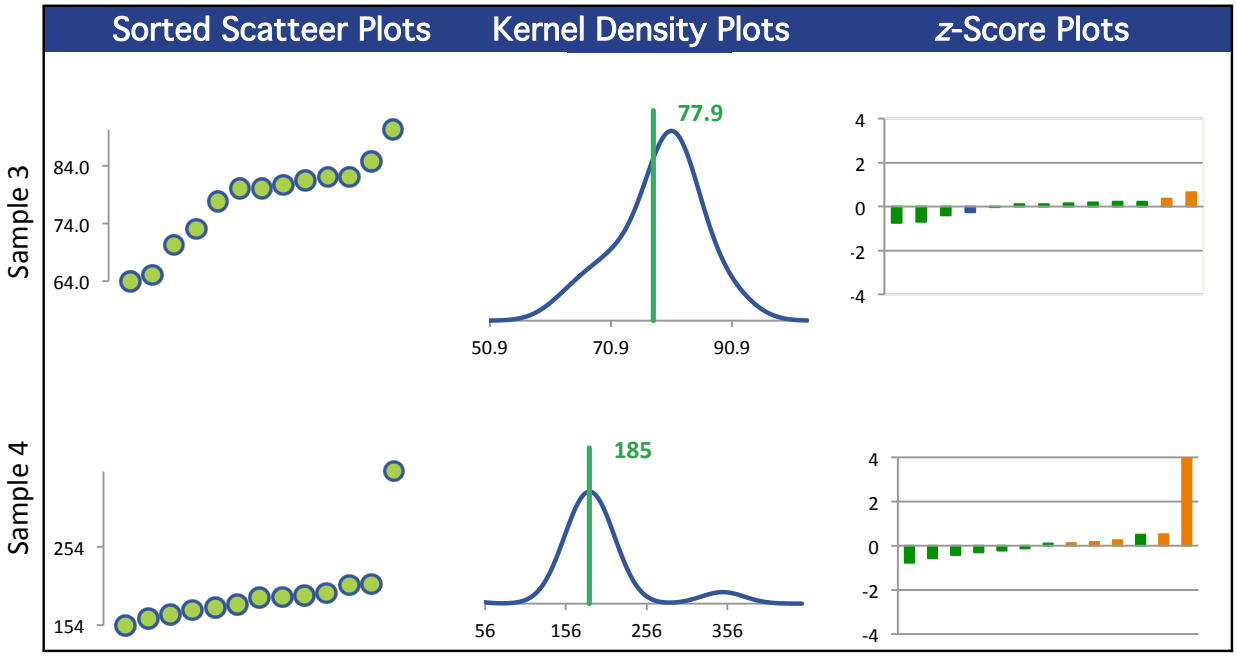
Methods Used

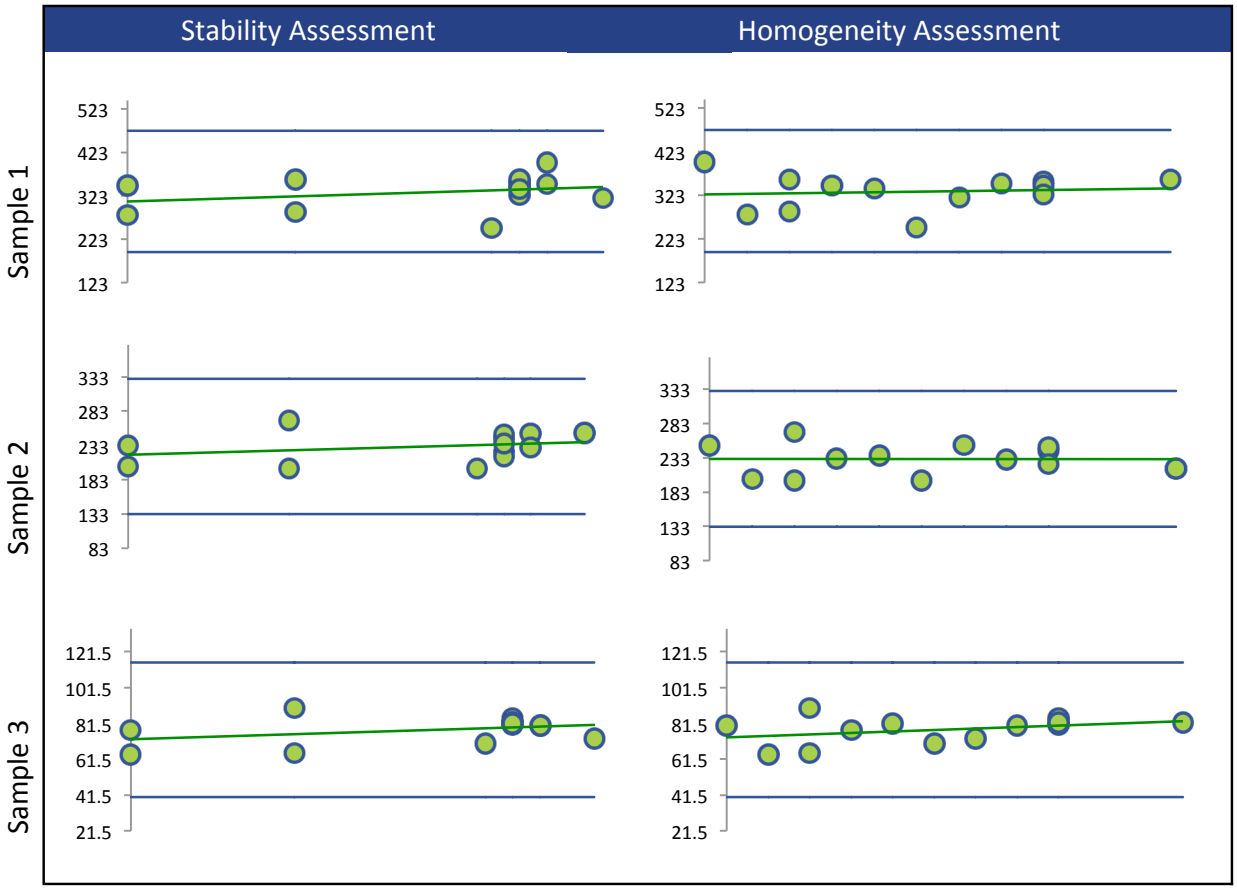
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	5
GC/MS - EXTRACTION (Red)	4	4	4	4
GC/ECD - SHAKE EXTRACTION (Green)	1	1	1	1
GC/MS/MS (Orange)	2	2	2	2
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



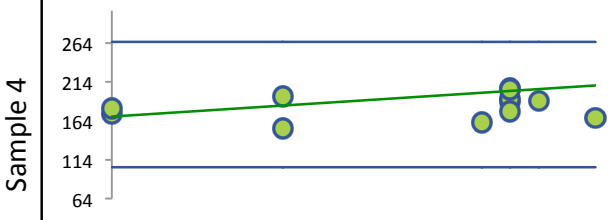
ALPHA-BHC


Sorted Scatteer Plots
Kernel Density Plots
z-Score Plots
Sample 3
84.0
74.0
64.0
77.9
50.9
70.9
90.9
4
2
0
-2
-4
Sample 4
254
154
185
56
156
256
356
4
2
0
-2
-4

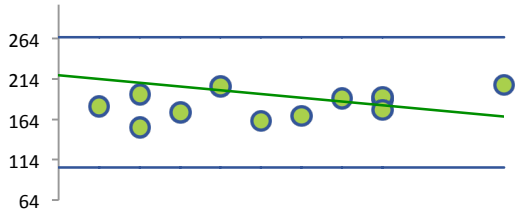

Stability Assessment
Homogeneity Assessment
Sample 1
523
423
323
223
123
Sample 2
333
283
233
183
133
83
Sample 3
121.5
101.5
81.5
61.5
41.5
21.5

ALPHA-BHC

Stability Assessment



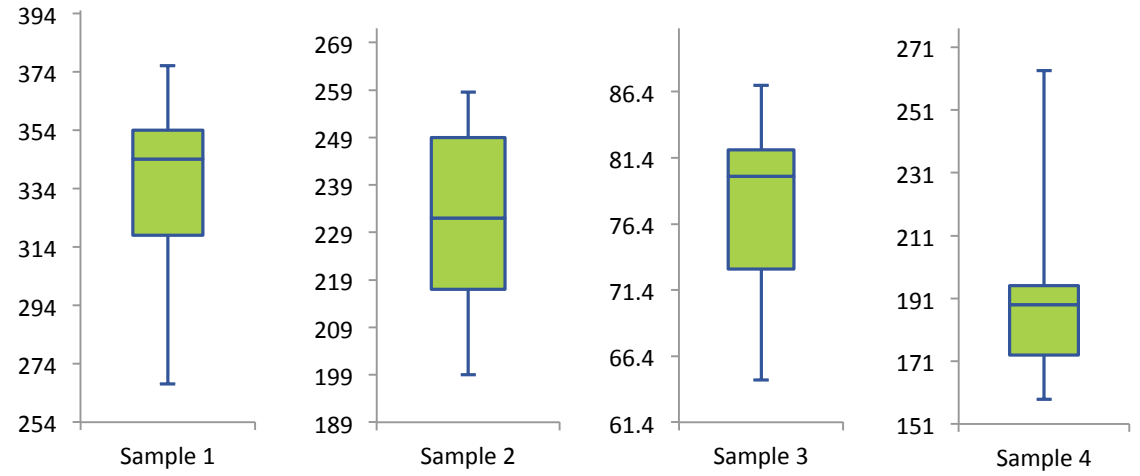
Homogeneity Assessment



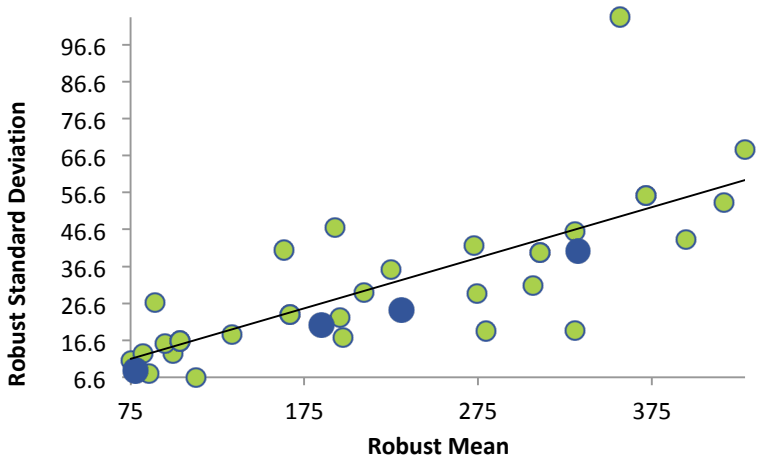
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ALPHA-CHLORDANE

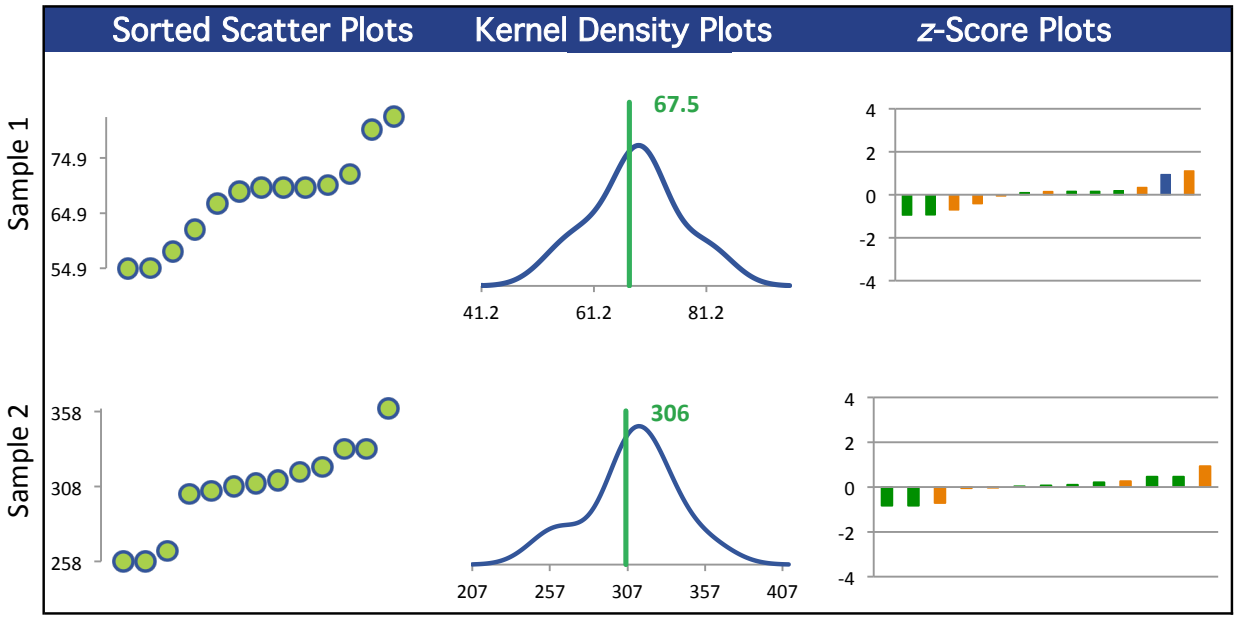
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	12
Median µg/kg	69.5	310	171	380
Robust Mean µg/kg	67.5	306	166	375
U µg/kg	3.28	11.8	8.39	13.9
Robust Standard Deviation µg/kg	9.47	34.0	24.2	38.6
Regression Standard Deviation µg/kg	13.3	58.1	31.9	71.0
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	13.3	58.1	31.9	71.0
Outliers	0	0	0	1
|z|>3.0	0	0	0	0
2<|z|<3	0	0	0	0

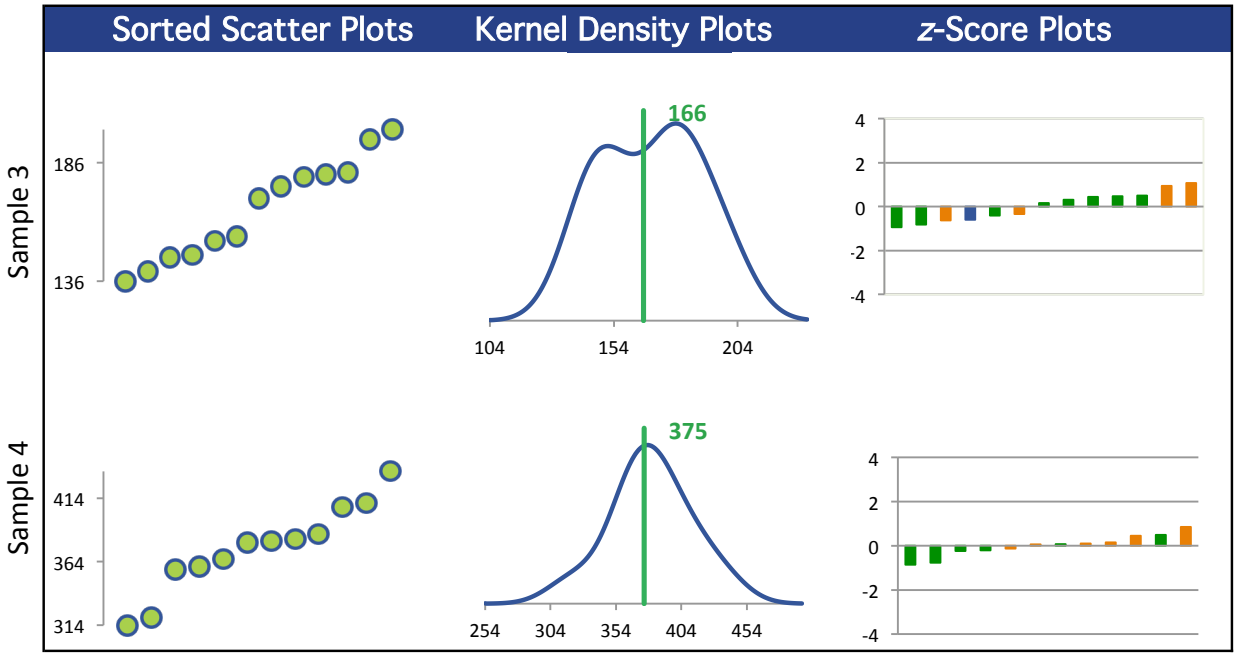
Methods Used

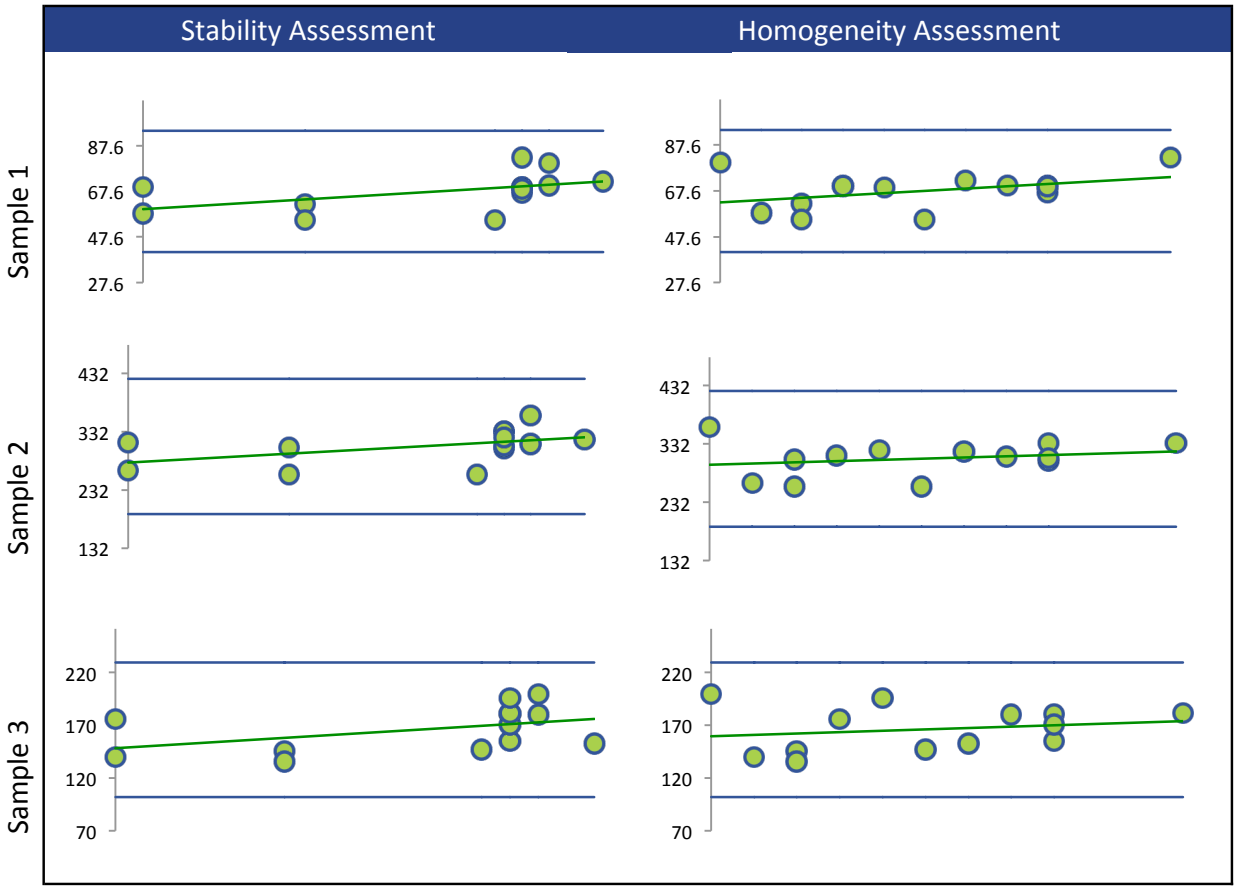
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	4
GC/MS - EXTRACTION (Red)	4	4	4	4
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



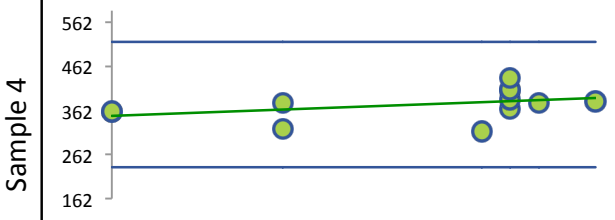
ALPHA-CHLORDANE



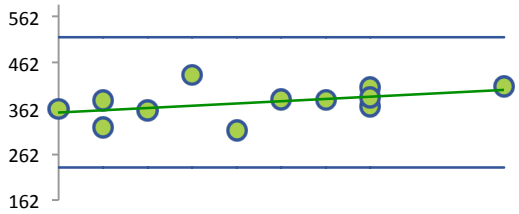


ALPHA-CHLORDANE

Stability Assessment



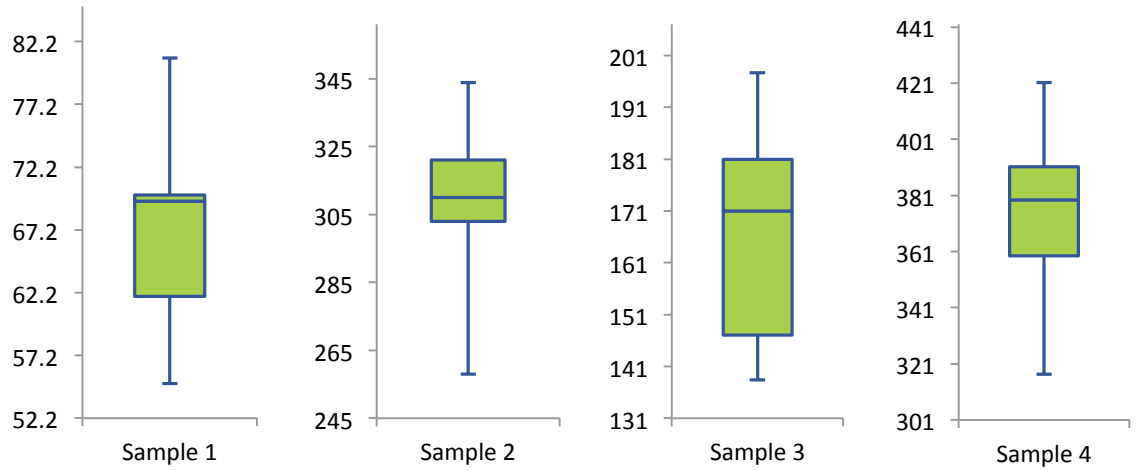
Homogeneity Assessment



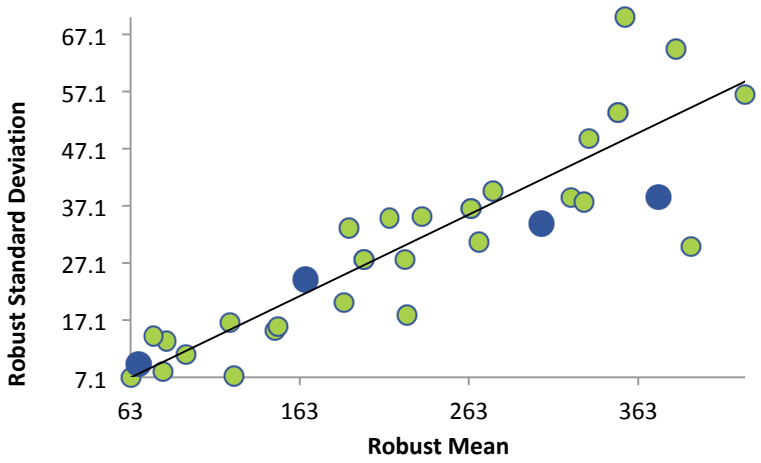
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BETA-BHC

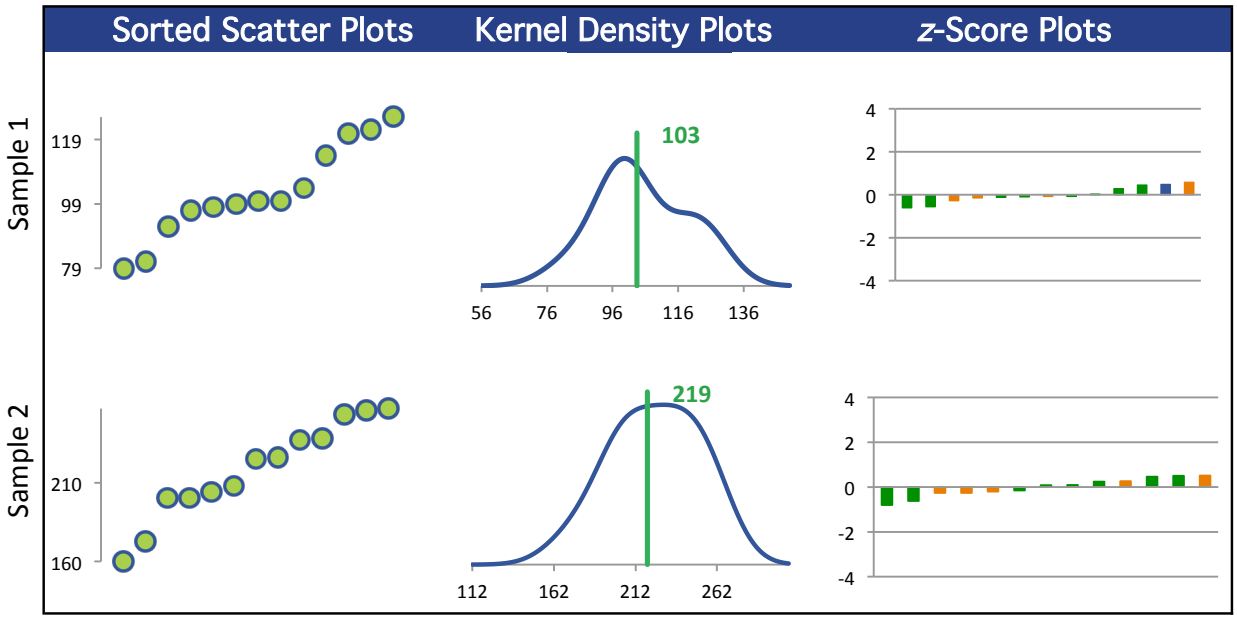
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	100	225	343	278
Robust Mean µg/kg	103	219	331	284
U µg/kg	5.79	11.6	17.9	16.2
Robust Standard Deviation µg/kg	16.7	33.5	51.5	46.6
Regression Standard Deviation µg/kg	27.7	48.5	68.7	60.1
Stability Flag			Stability	
Homogeneity Flag	Homogeneity	Homogeneity		
Standard Deviation Used (SDPA) µg/kg	39.6	74.0	110	60.1
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

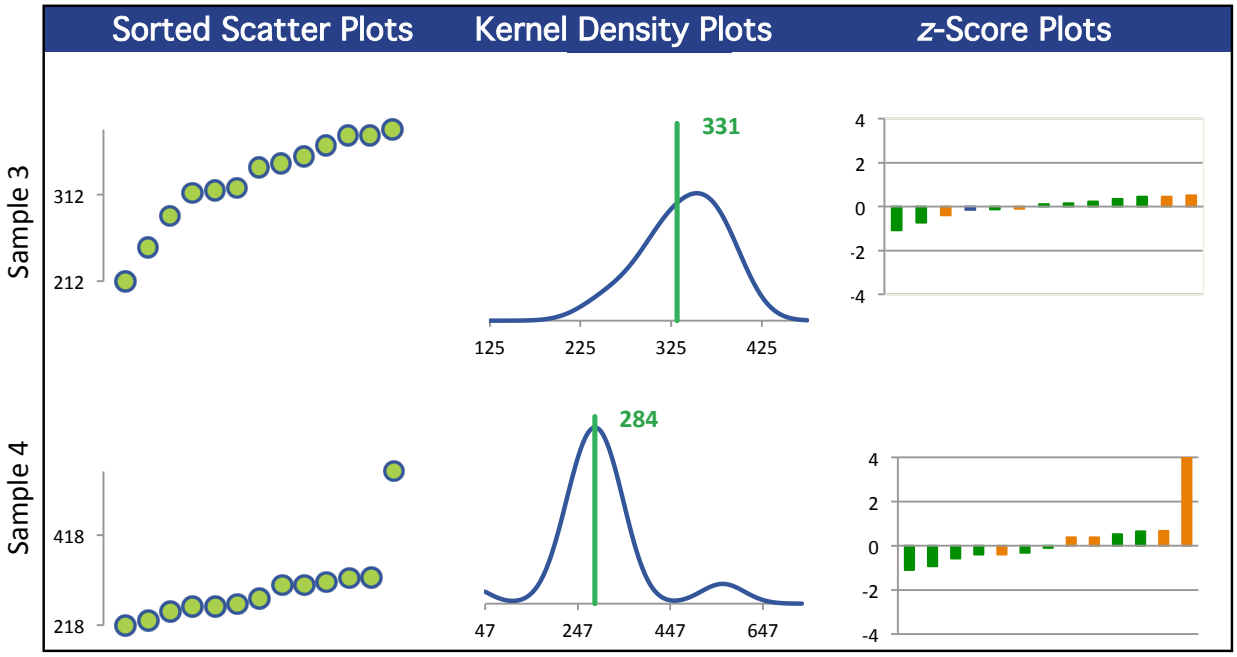
Methods Used

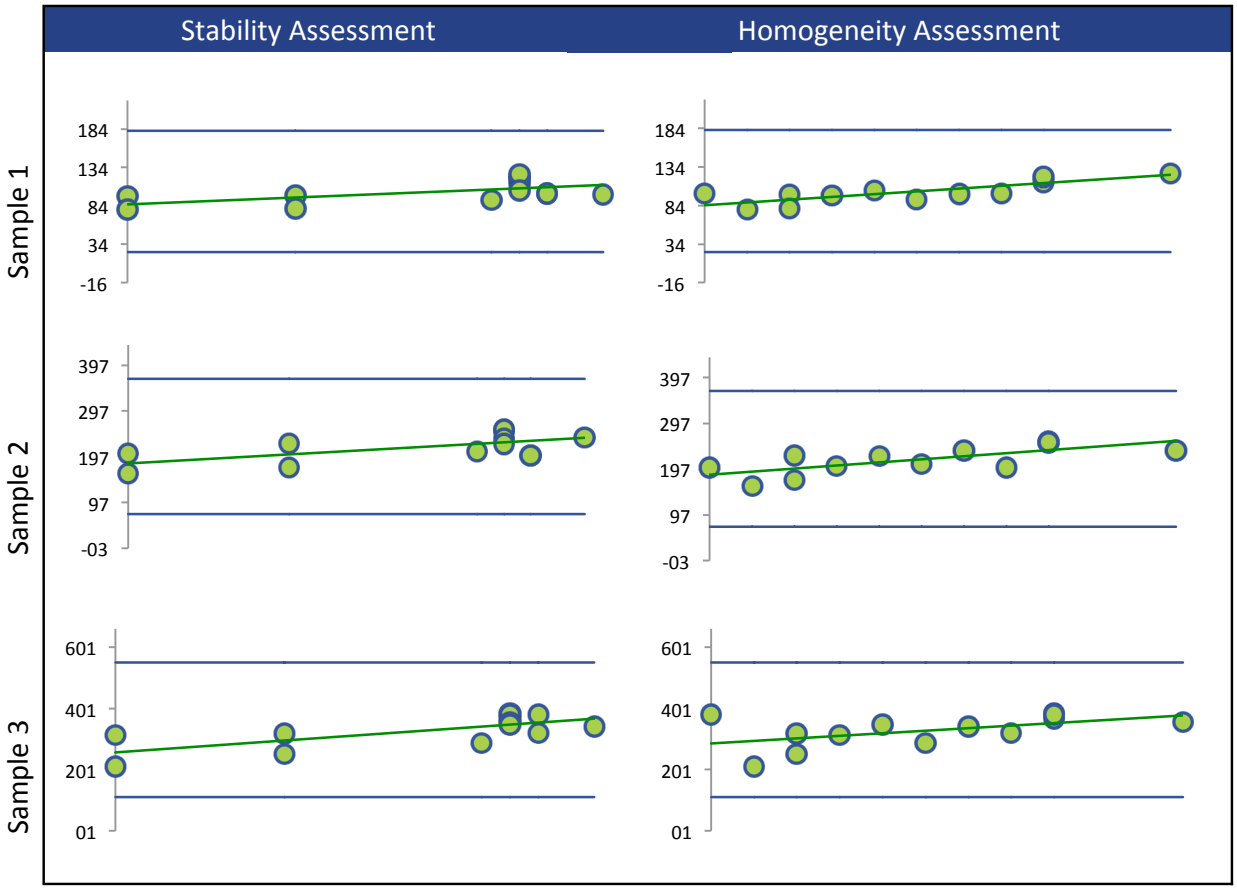
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	5
GC/MS - EXTRACTION (Red)	4	4	4	4
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



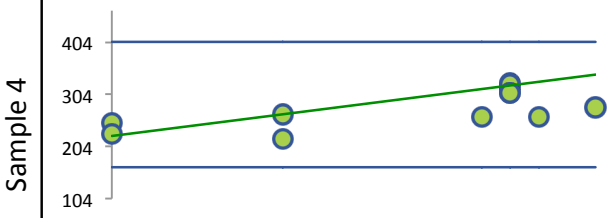
BETA-BHC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
312
212
331
125
225
325
425
4
2
0
-2
-4
Sample 4
418
218
284
47
247
447
647
4
2
0
-2
-4

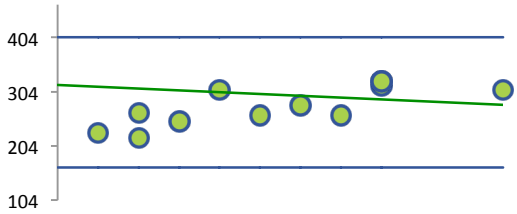

Stability Assessment
Homogeneity Assessment
Sample 1
184
134
84
34
-16
184
134
84
34
-16
Sample 2
397
297
197
97
-03
397
297
197
97
-03
Sample 3
601
401
201
01
601
401
201
01

BETA-BHC

Stability Assessment



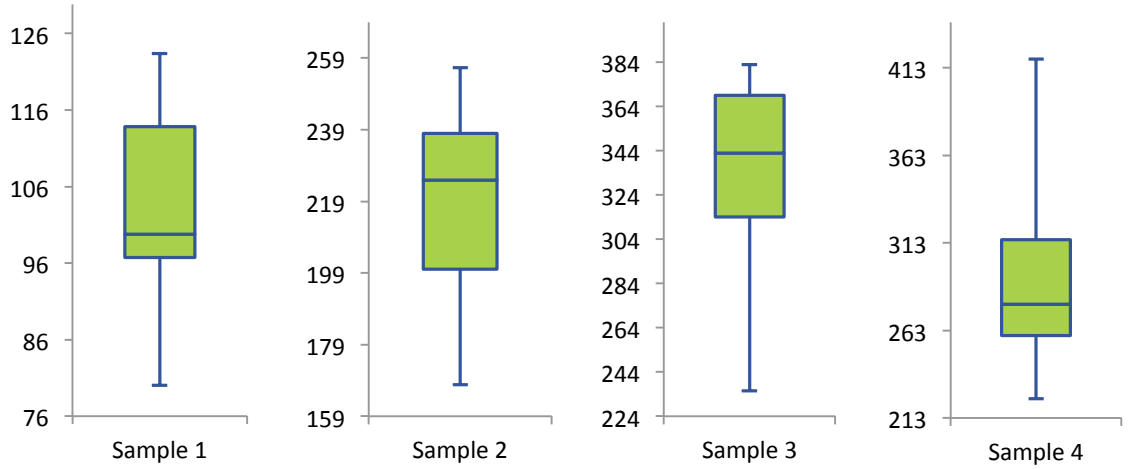
Homogeneity Assessment



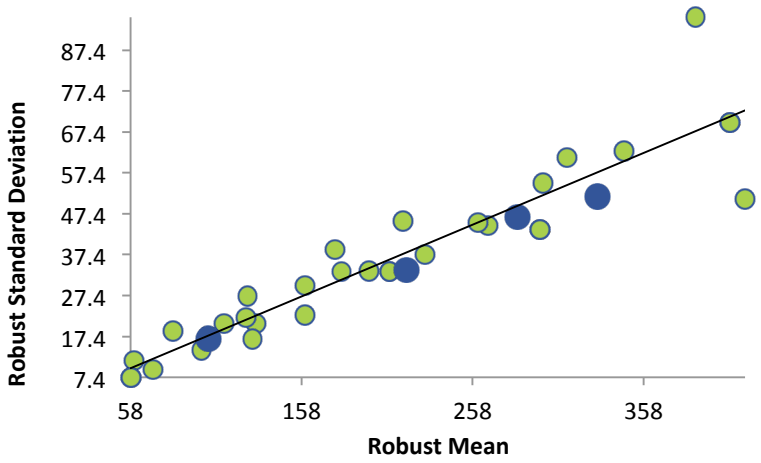
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



DIELDRIN

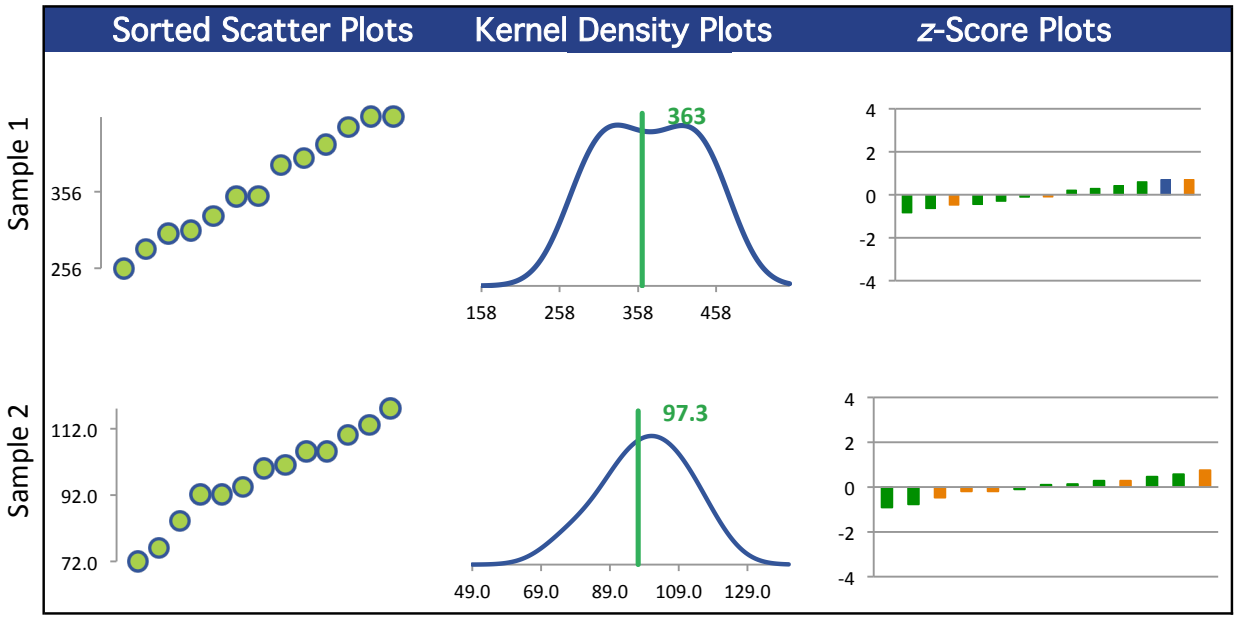
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	350	100	159	255
Robust Mean µg/kg	363	97.3	163	257
U µg/kg	26.5	5.30	11.0	13.2
Robust Standard Deviation µg/kg	76.4	15.3	31.7	38.0
Regression Standard Deviation µg/kg	64.7	20.3	31.3	47.0
Stability Flag		Stability		
Homogeneity Flag	Homogeneity		Homogeneity	
Standard Deviation Used (SDPA) µg/kg	128	27.7	56.5	47.0
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

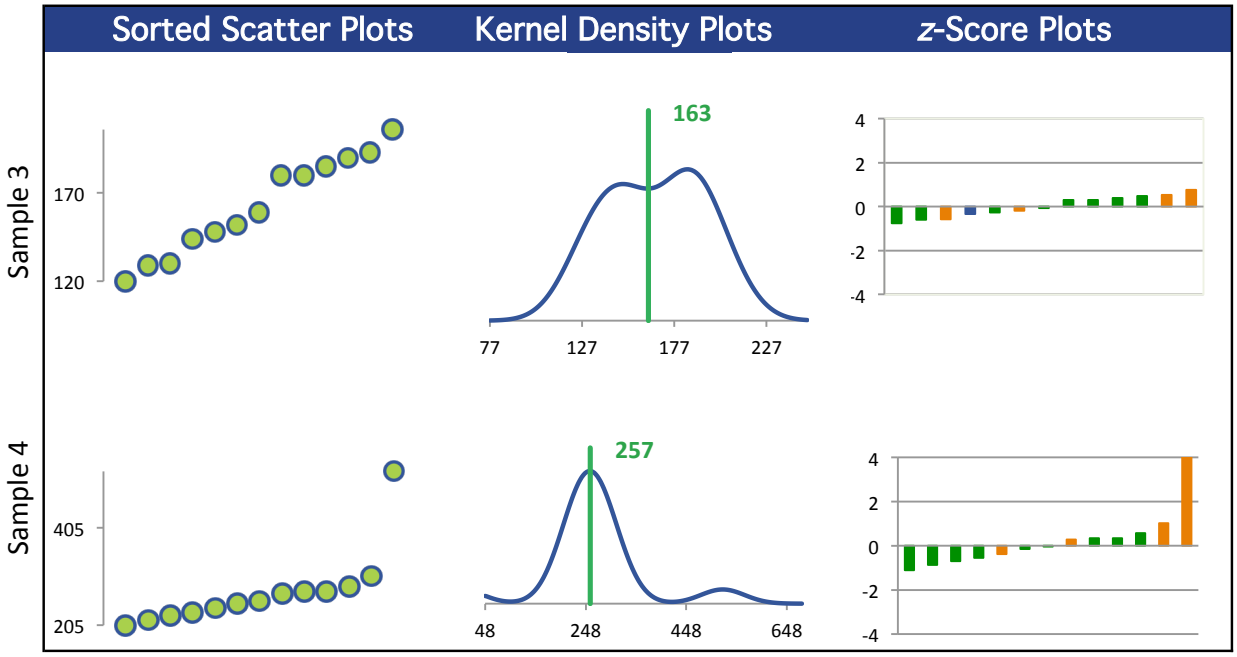
Methods Used

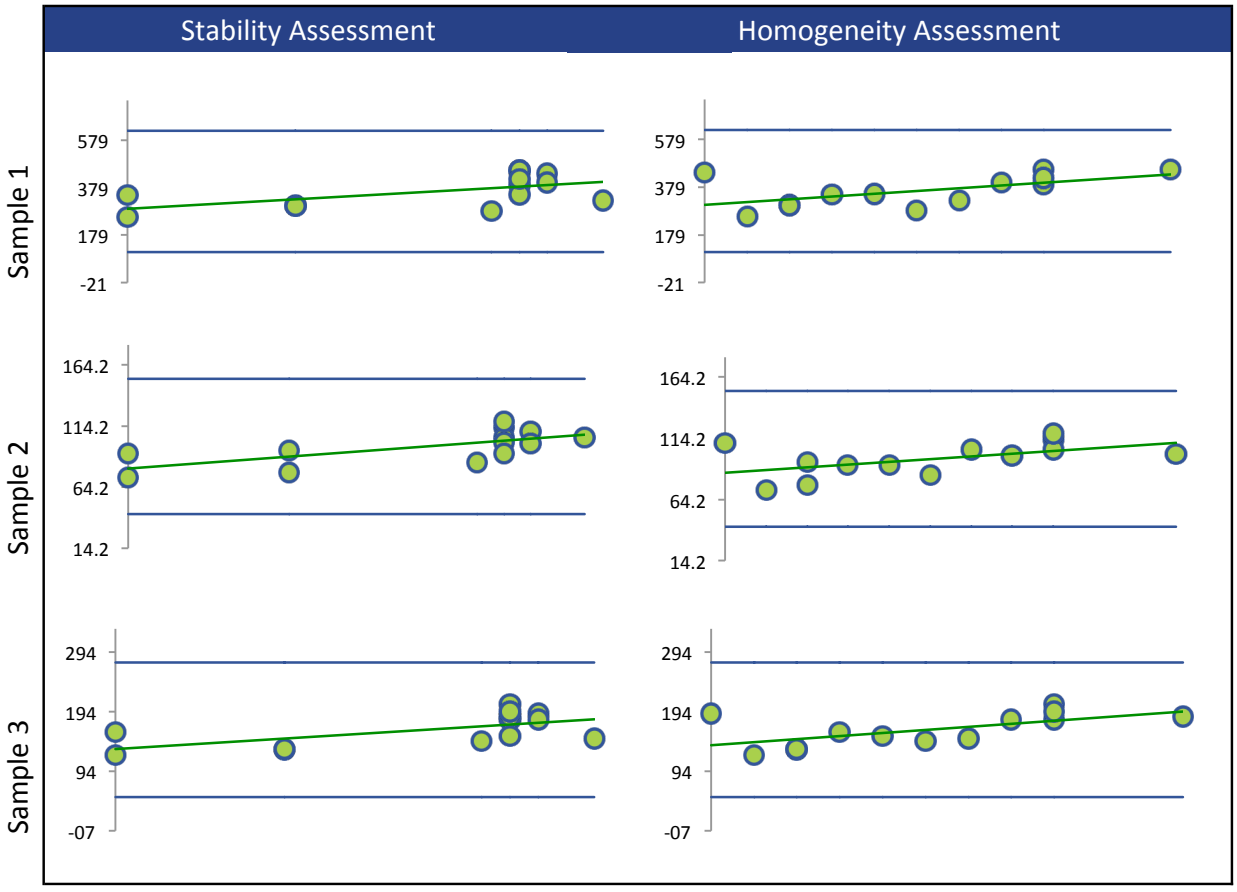
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	6	6	6	6
GC/MS - EXTRACTION (Red)	3	3	3	3
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



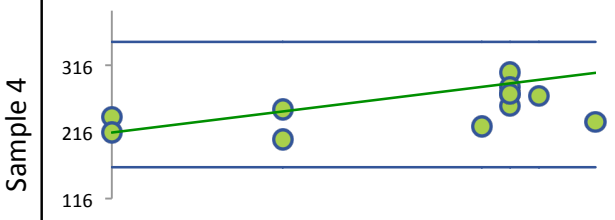
DIELDRIN


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
170
120
163
77
127
177
227
4
2
0
-2
-4
Sample 4
405
205
257
48
248
448
648
4
2
0
-2
-4

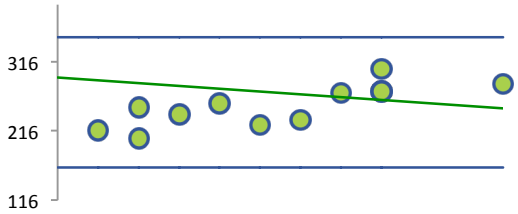

Stability Assessment
Homogeneity Assessment
Sample 1
579
379
179
-21
Sample 2
164.2
114.2
64.2
14.2
Sample 3
294
194
94
-07

DIELDRIN

Stability Assessment



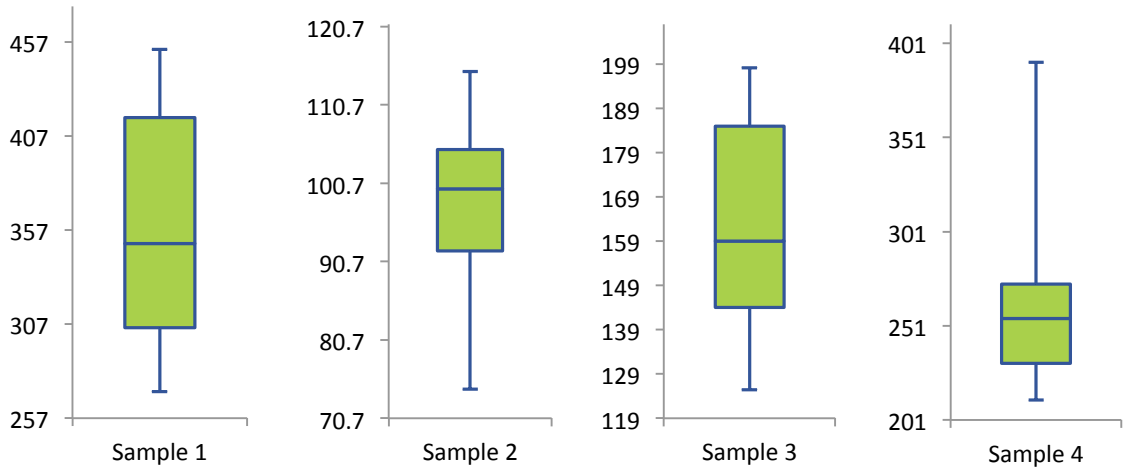
Homogeneity Assessment



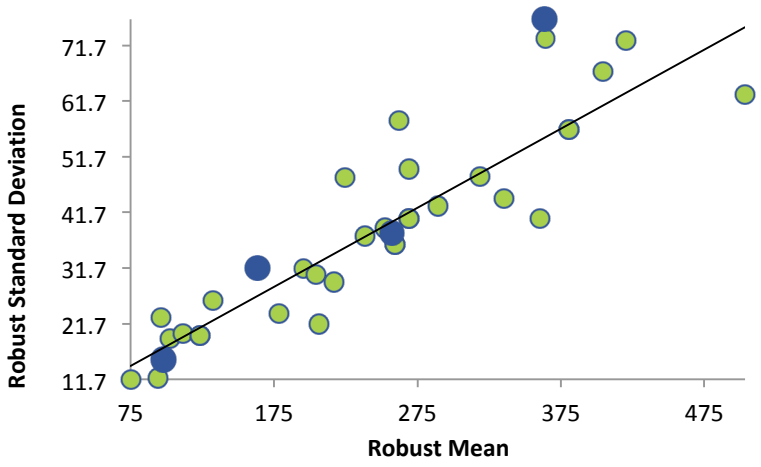
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ENDOSULFAN I (A-ENDOSULFAN)

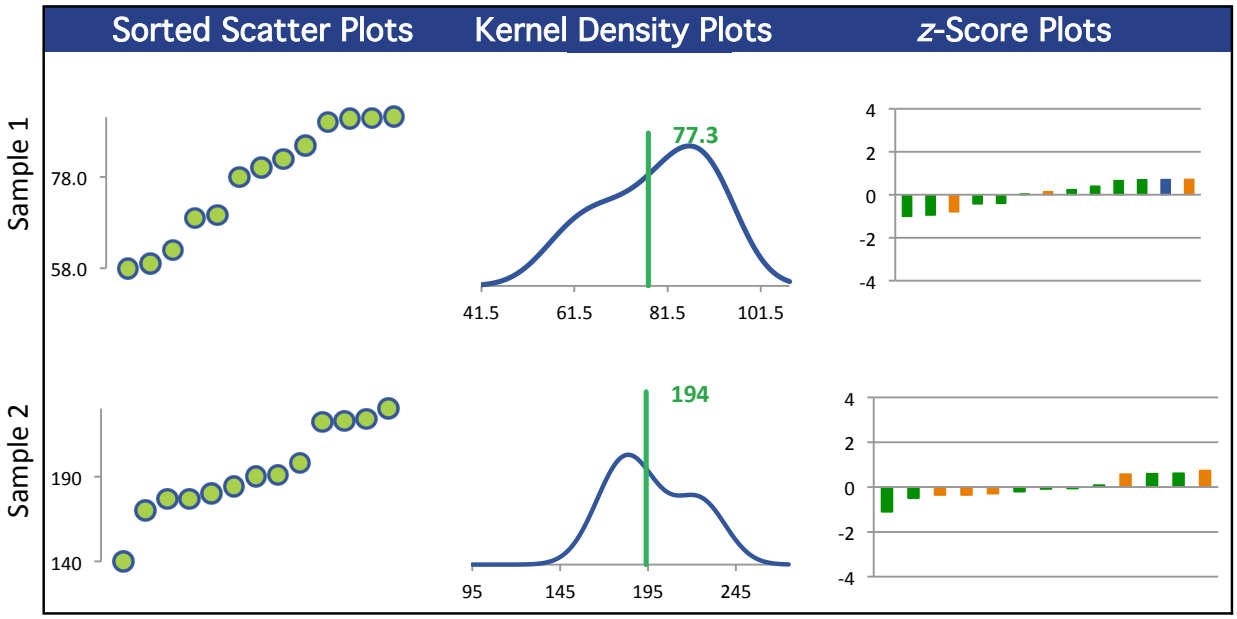
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	80.0	190	60.0	150
Robust Mean µg/kg	77.3	194	59.9	153
U µg/kg	4.92	9.50	3.22	5.55
Robust Standard Deviation µg/kg	14.2	27.4	9.28	16.0
Regression Standard Deviation µg/kg	19.2	40.4	16.0	32.9
Stability Flag		Stability		
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	19.2	49.0	16.0	32.9
Outliers	0	0	0	0
|z|>3.0	0	0	0	0
2<|z|<3	0	0	0	0

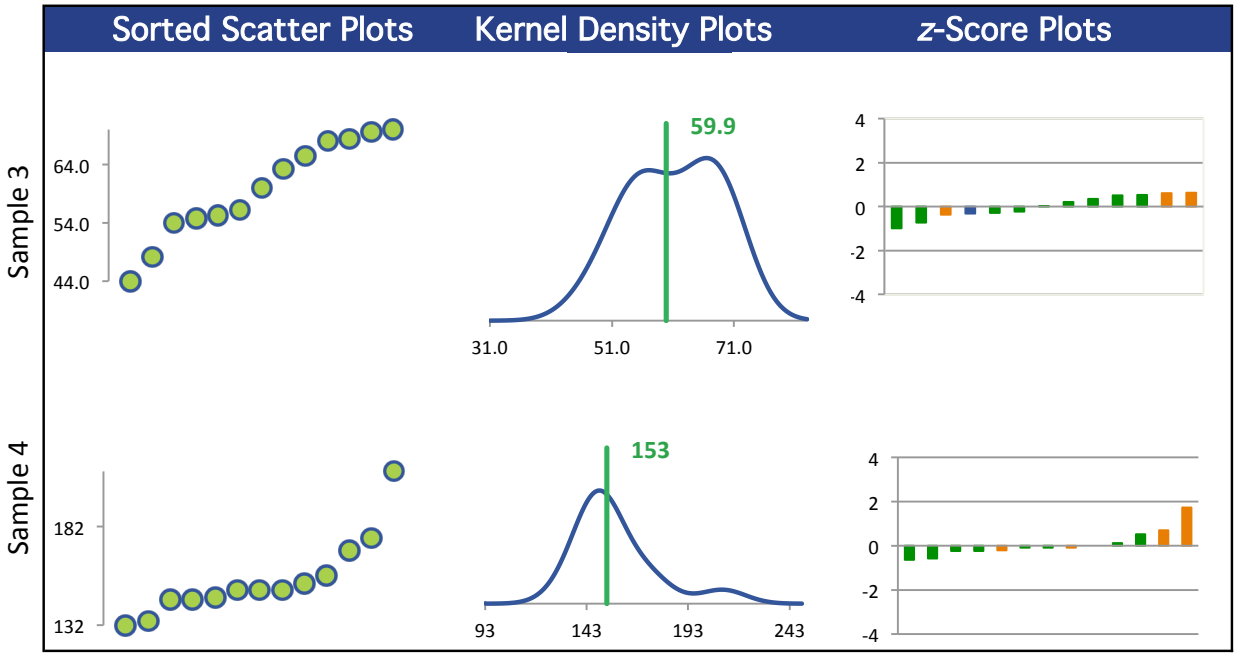
Methods Used

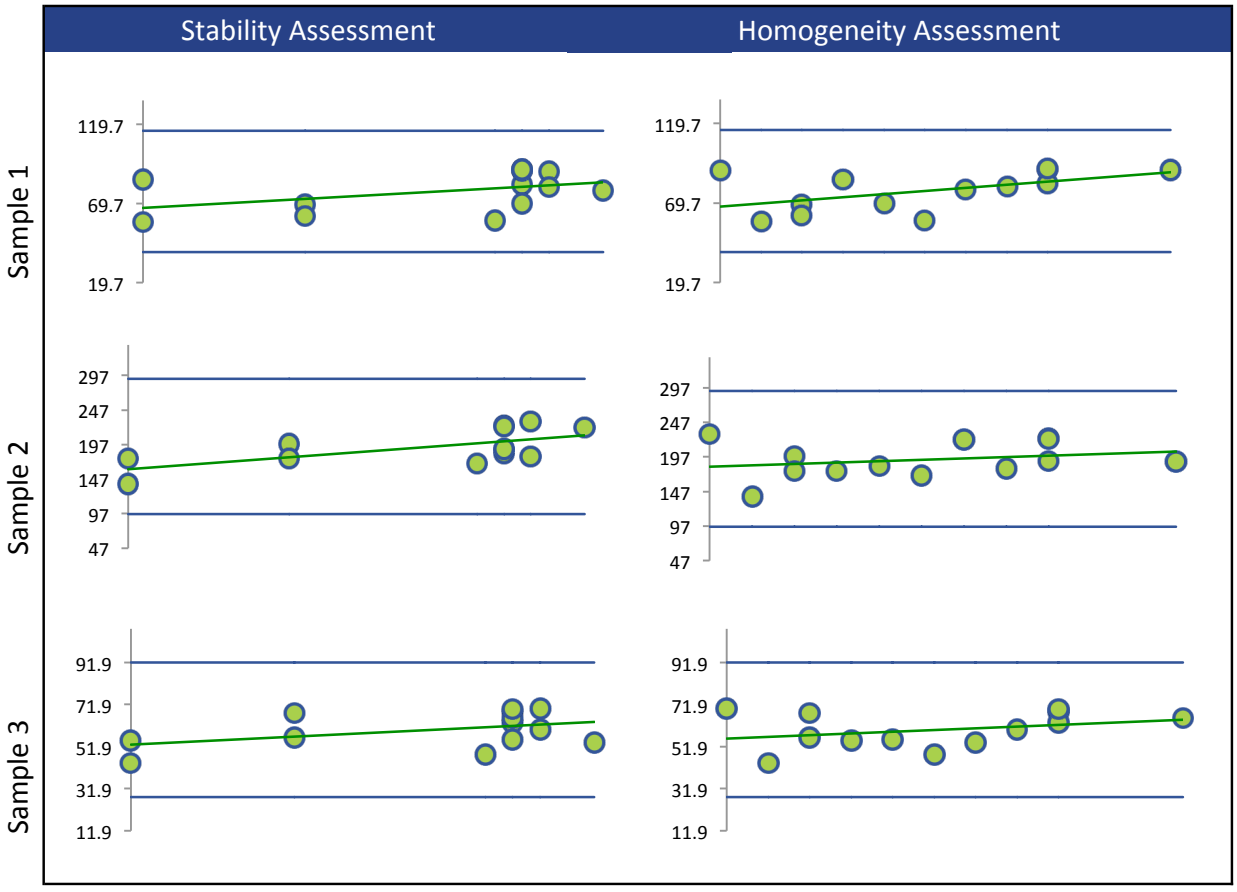
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	6	6	6	6
GC/MS - EXTRACTION (Red)	3	3	3	3
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



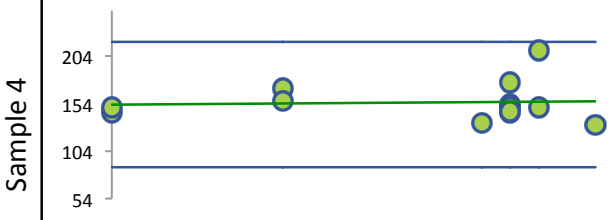
ENDOSULFAN I (A-ENDOSULFAN)



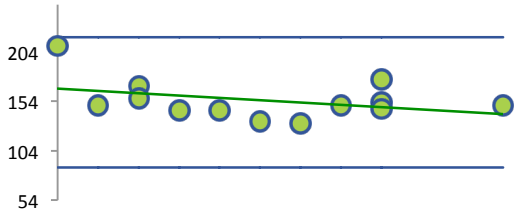


ENDOSULFAN I (A-ENDOSULFAN)

Stability Assessment



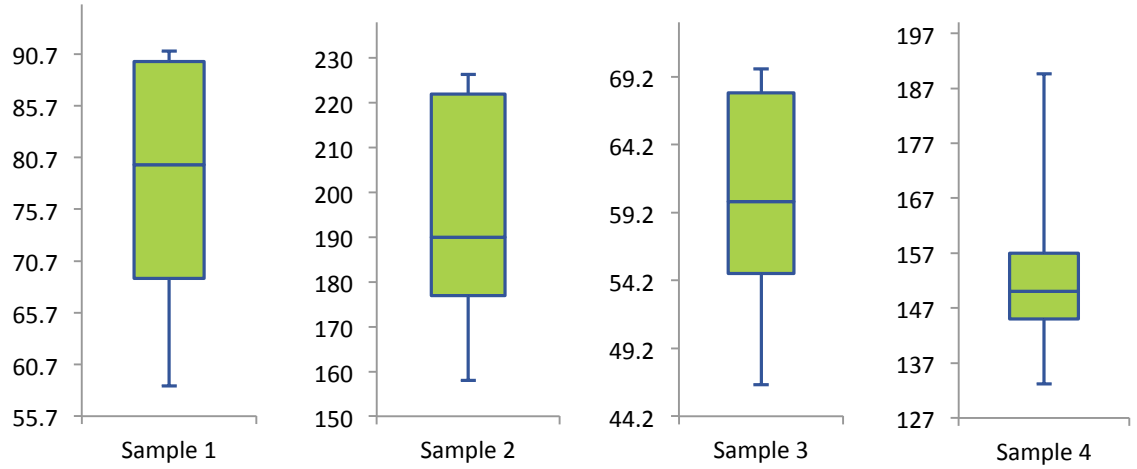
Homogeneity Assessment



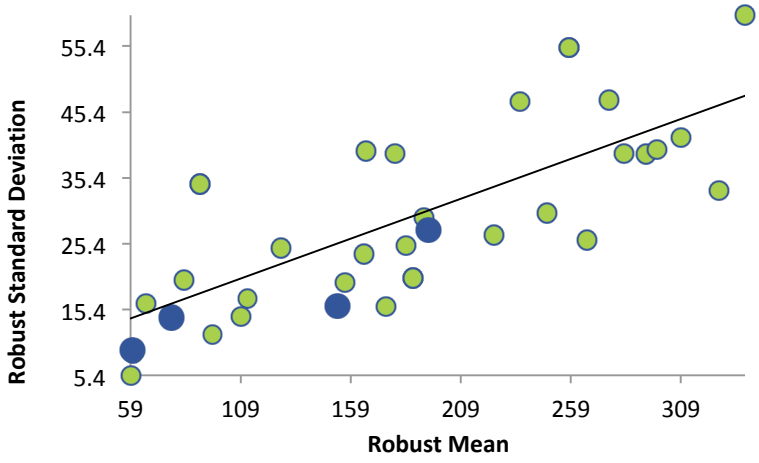
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ENDOSULFAN II (B-ENDOSULFAN)

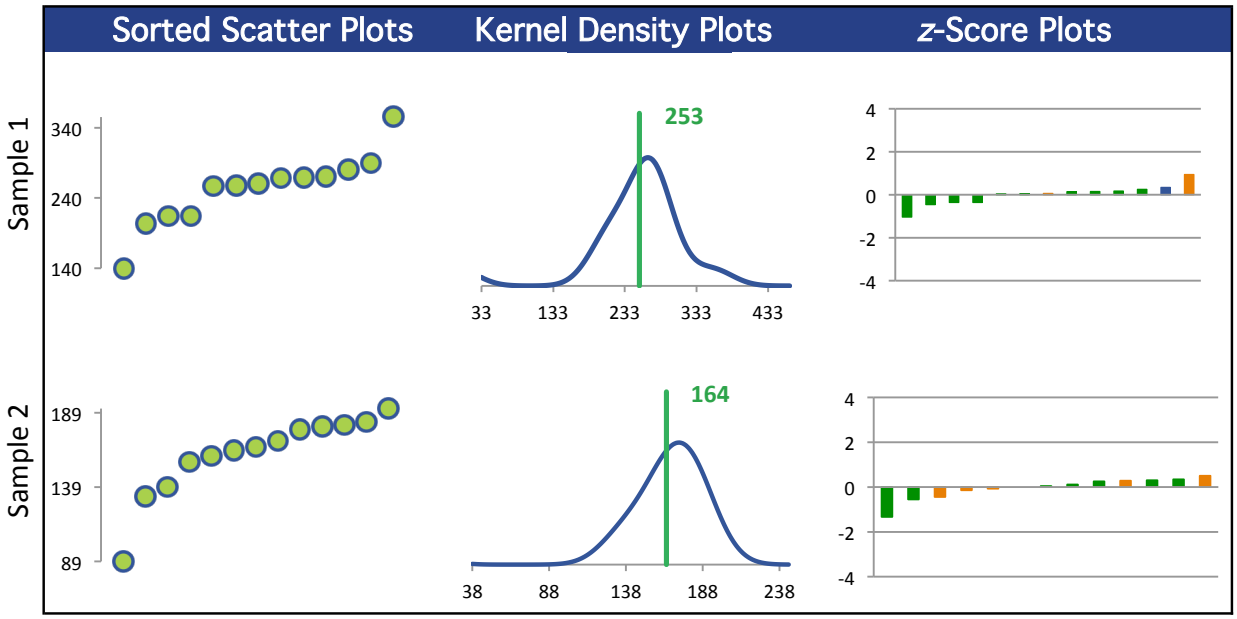
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	260	166	136	76.6
Robust Mean µg/kg	253	164	126	75.3
U µg/kg	14.5	7.80	7.14	5.55
Robust Standard Deviation µg/kg	41.9	22.5	20.6	16.0
Regression Standard Deviation µg/kg	54.5	36.5	28.8	18.5
Stability Flag		Stability	Stability	Stability
Homogeneity Flag	Homogeneity			
Standard Deviation Used (SDPA) µg/kg	109	56.4	43.9	30.7
Outliers	0	0	0	0
|z|>3.0	0	0	0	0
2<|z|<3	0	0	0	0

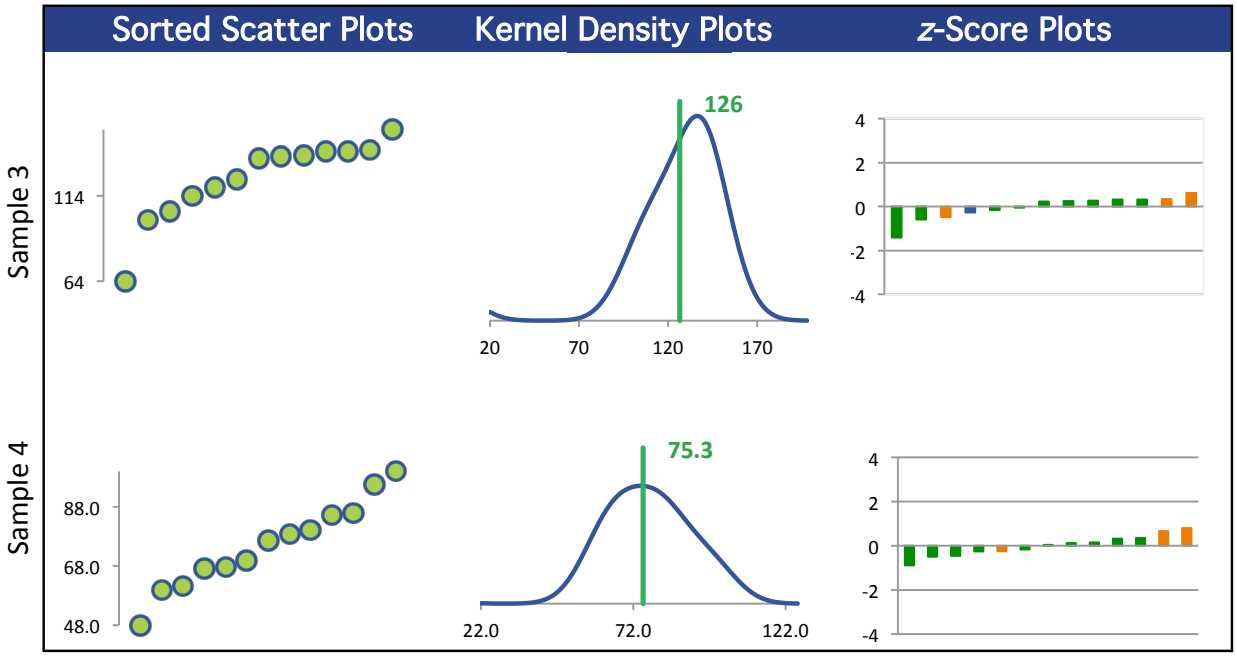
Methods Used

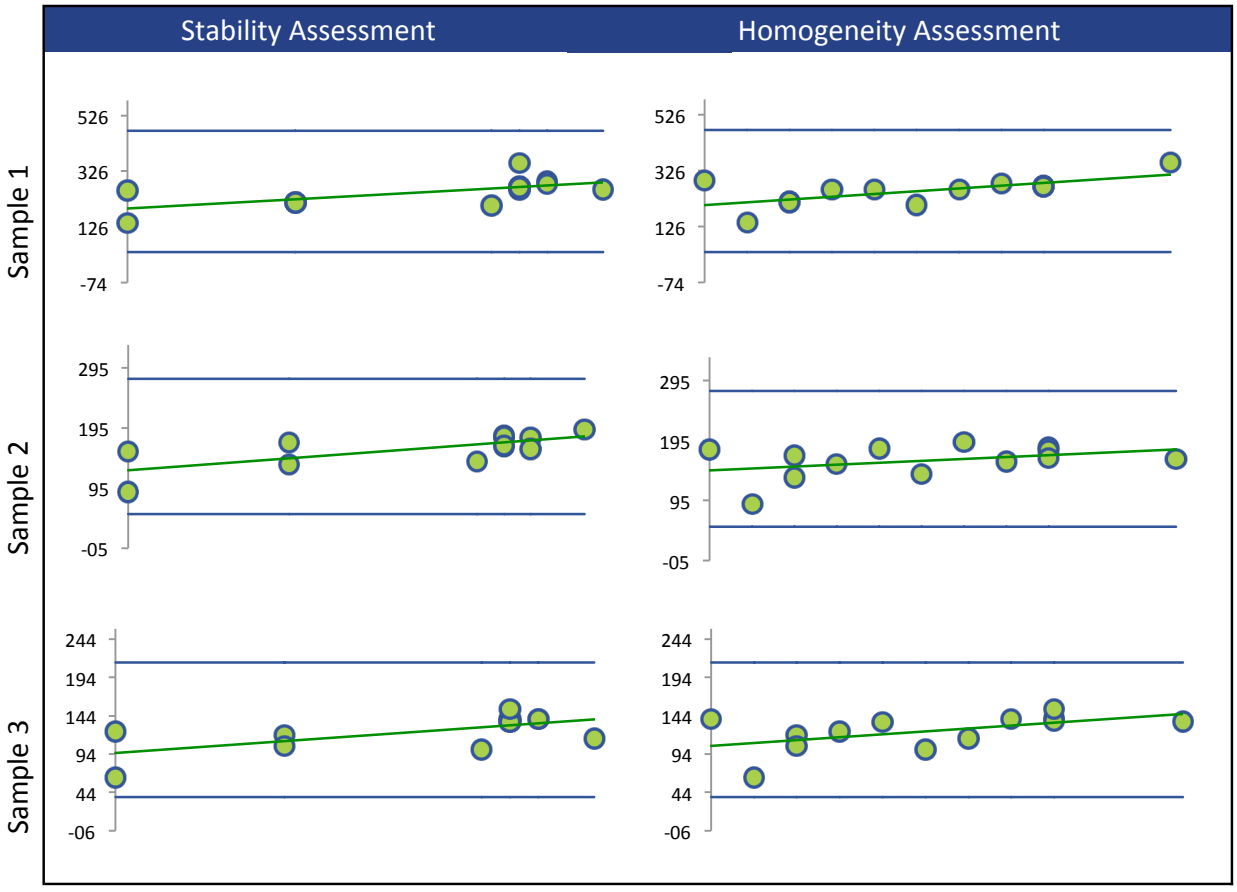
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	6	6	6	6
GC/MS/MS (Red)	2	2	2	2
GC/MS - EXTRACTION (Green)	3	3	3	3
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



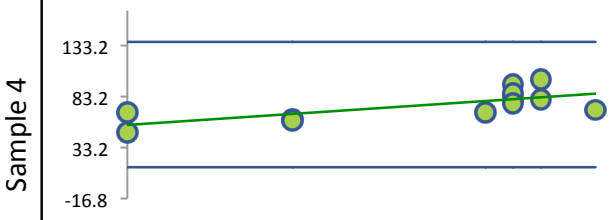
ENDOSULFAN II (B-ENDOSULFAN)



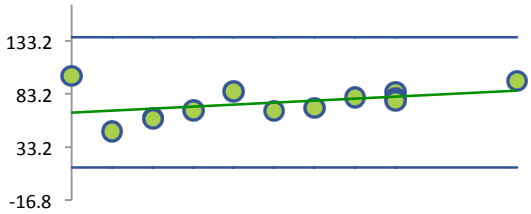


ENDOSULFAN II (B-ENDOSULFAN)

Stability Assessment



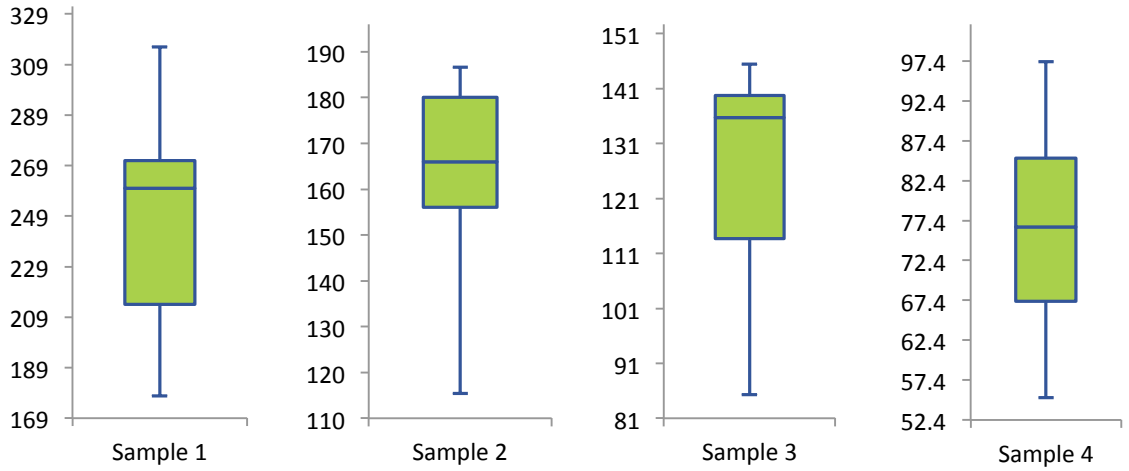
Homogeneity Assessment



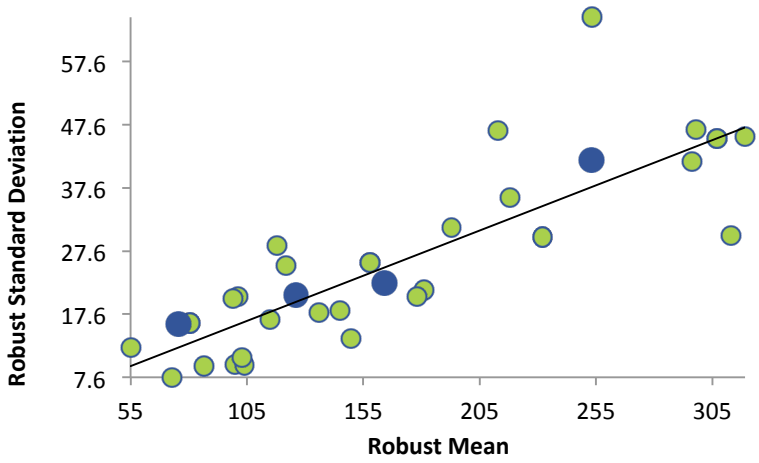
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ENDRIN

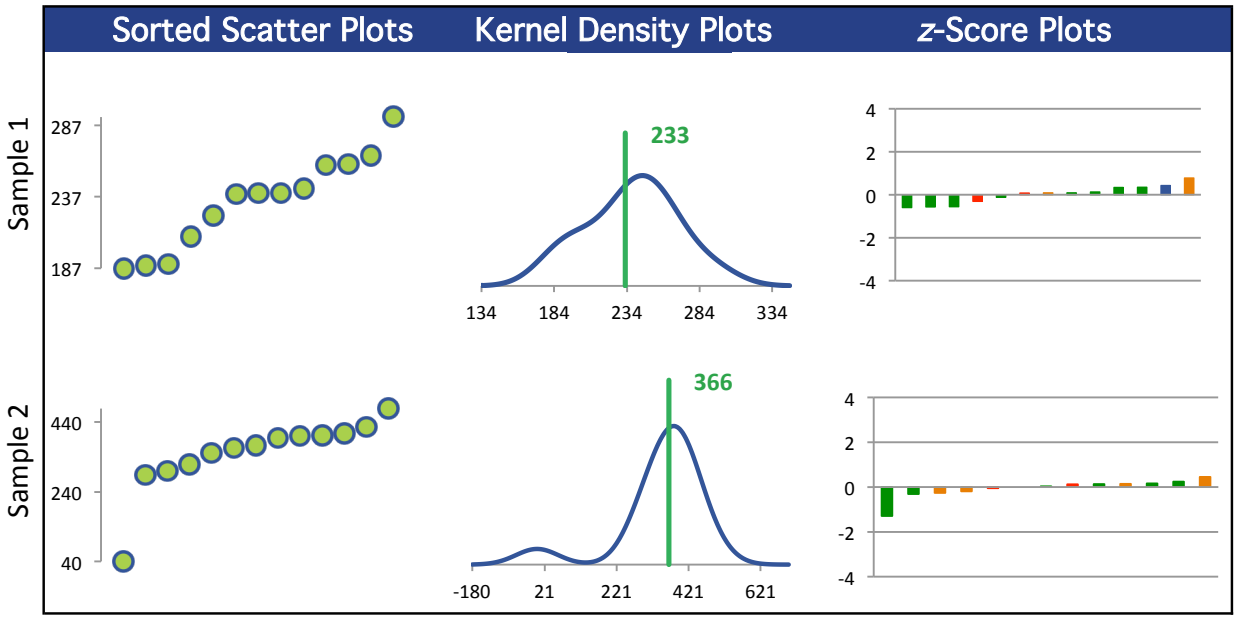
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	12
Median µg/kg	240	373	176	76.6
Robust Mean µg/kg	233	366	174	76.5
U µg/kg	12.6	23.1	11.0	3.37
Robust Standard Deviation µg/kg	36.3	66.5	31.8	9.34
Regression Standard Deviation µg/kg	40.7	59.7	32.1	18.1
Stability Flag				
Homogeneity Flag	Homogeneity	Homogeneity		
Standard Deviation Used (SDPA) µg/kg	76.7	252	32.1	18.1
Outliers	0	0	0	1
|z|>3.0	0	0	0	0
2<|z|<3	0	0	1	0

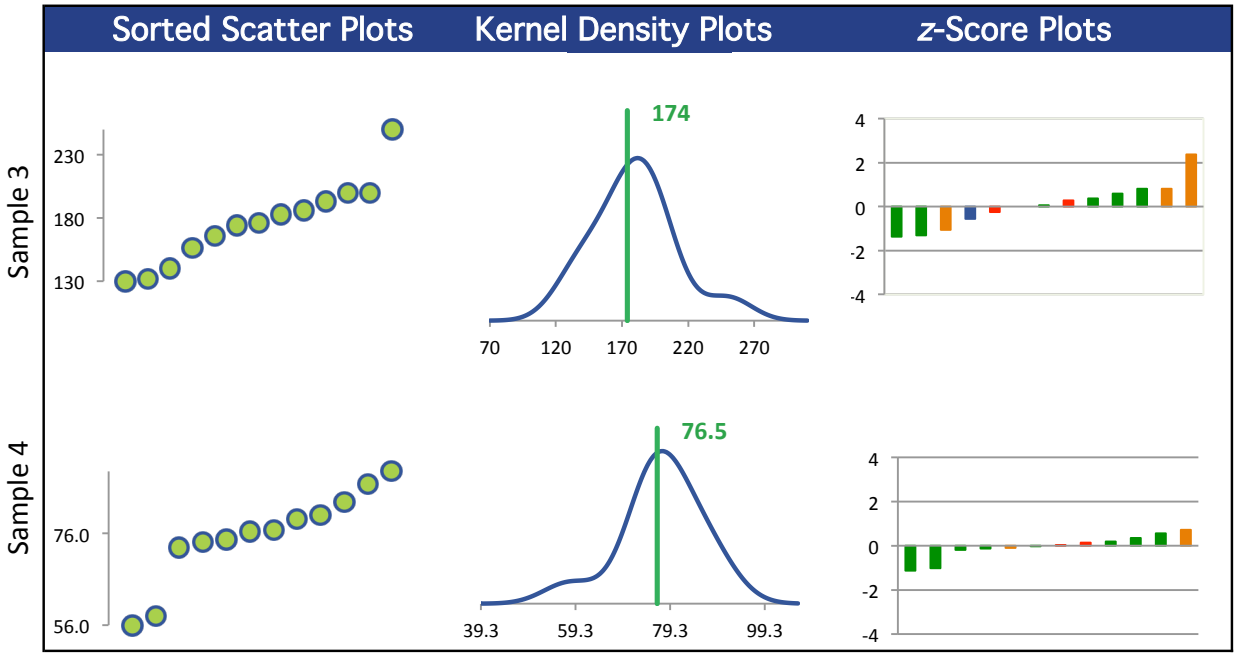
Methods Used

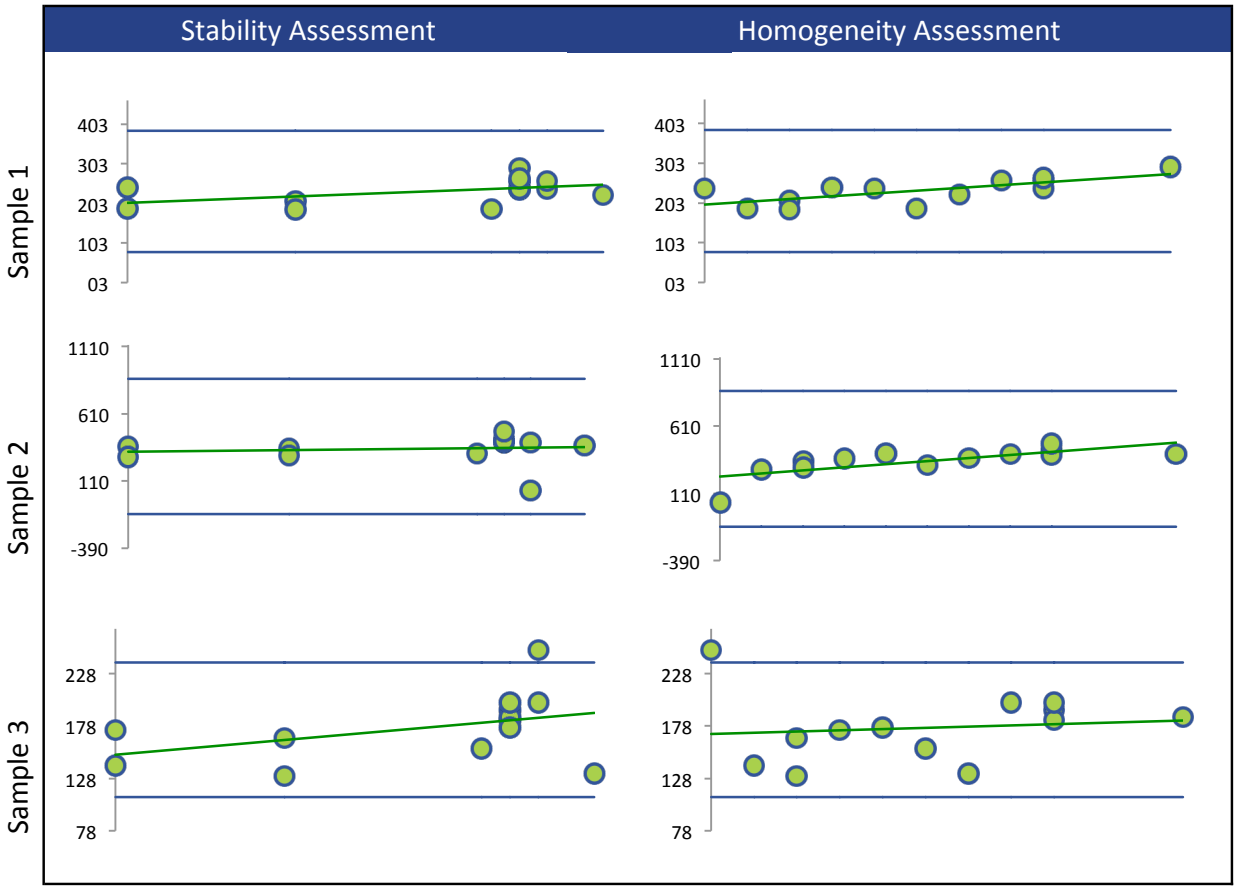
Method	C77-1	C77-2	C77-3	C77-4
GC/MS - EXTRACTION (Blue)	3	3	3	3
GC/ECD - EXTRACTION (Red)	6	6	6	5
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



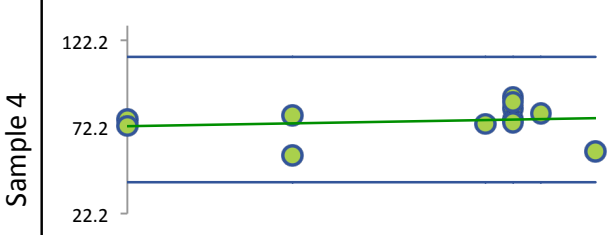
ENDRIN


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
230
180
130
174
70
120
170
220
270
4
2
0
-2
-4
Sample 4
76.0
56.0
76.5
39.3
59.3
79.3
99.3

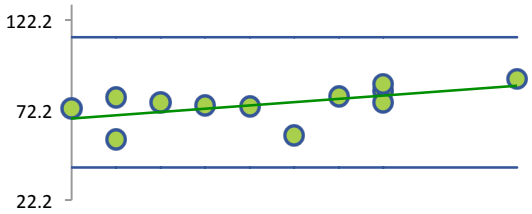

Stability Assessment
Homogeneity Assessment
Sample 1
403
303
203
103
03
Sample 2
1110
610
110
-390
Sample 3
228
178
128
78

ENDRIN

Stability Assessment



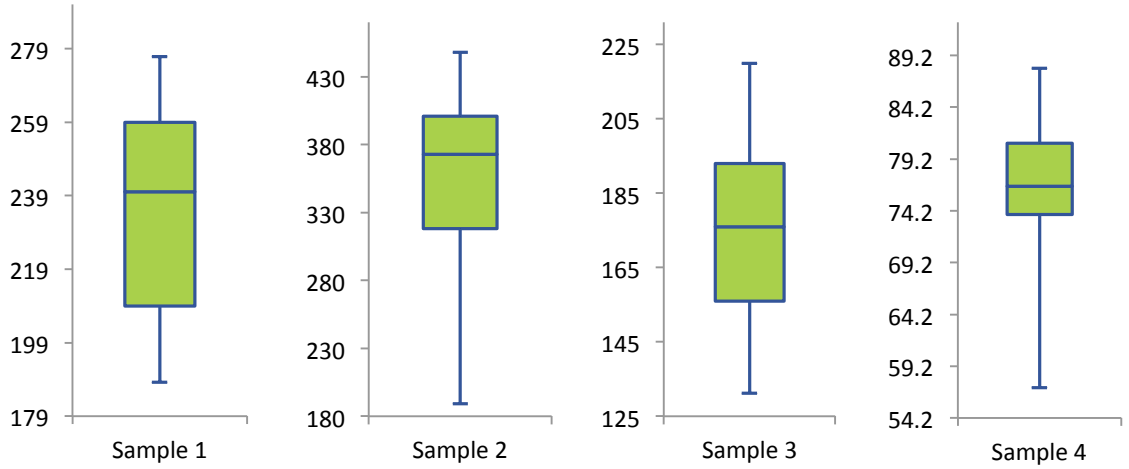
Homogeneity Assessment



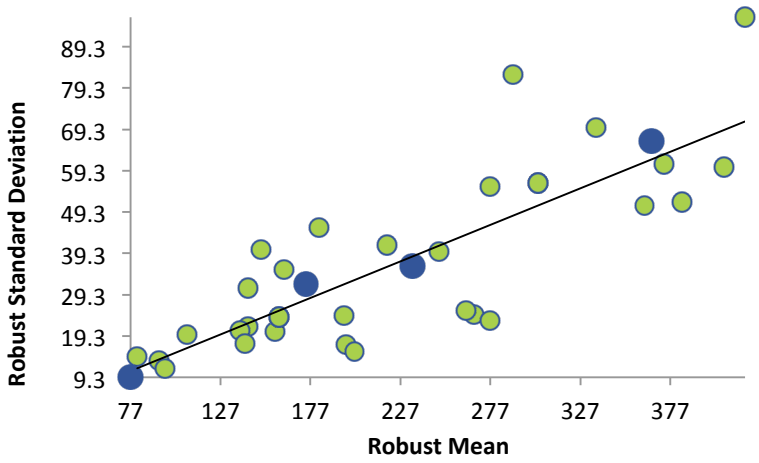
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ENDRIN

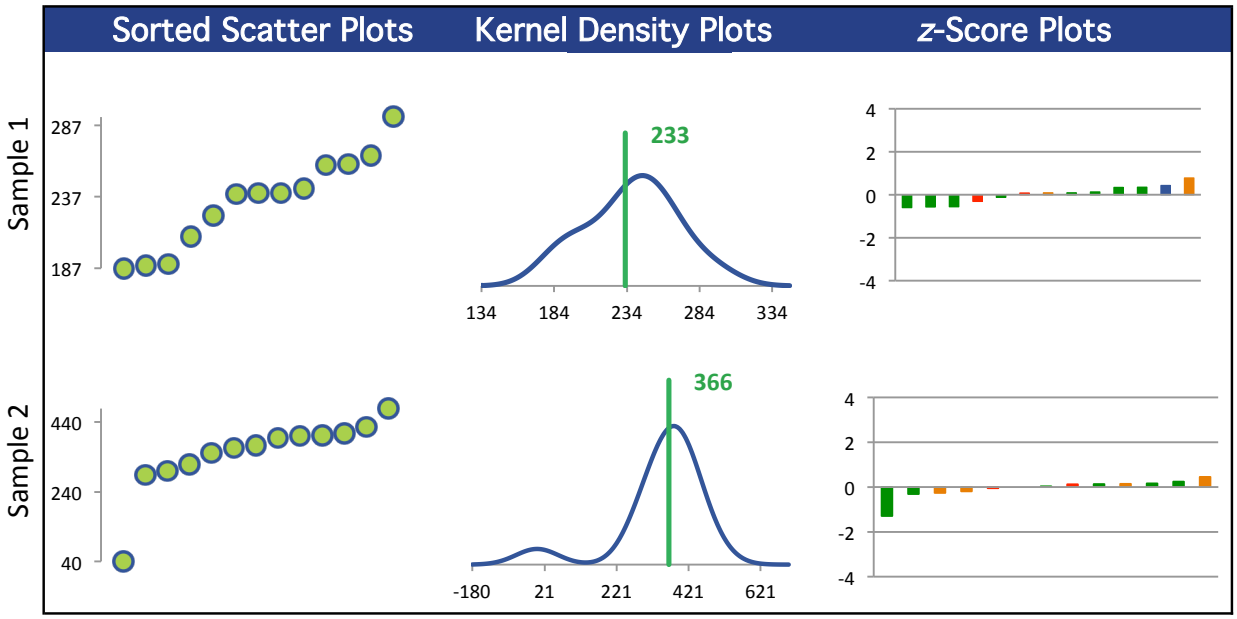
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	12
Median µg/kg	240	373	176	76.6
Robust Mean µg/kg	233	366	174	76.5
U µg/kg	12.6	23.1	11.0	3.37
Robust Standard Deviation µg/kg	36.3	66.5	31.8	9.34
Regression Standard Deviation µg/kg	40.7	59.7	32.1	18.1
Stability Flag				
Homogeneity Flag	Homogeneity	Homogeneity		
Standard Deviation Used (SDPA) µg/kg	76.7	252	32.1	18.1
Outliers	0	0	0	1
|z|>3.0	0	0	0	0
2<|z|<3	0	0	1	0

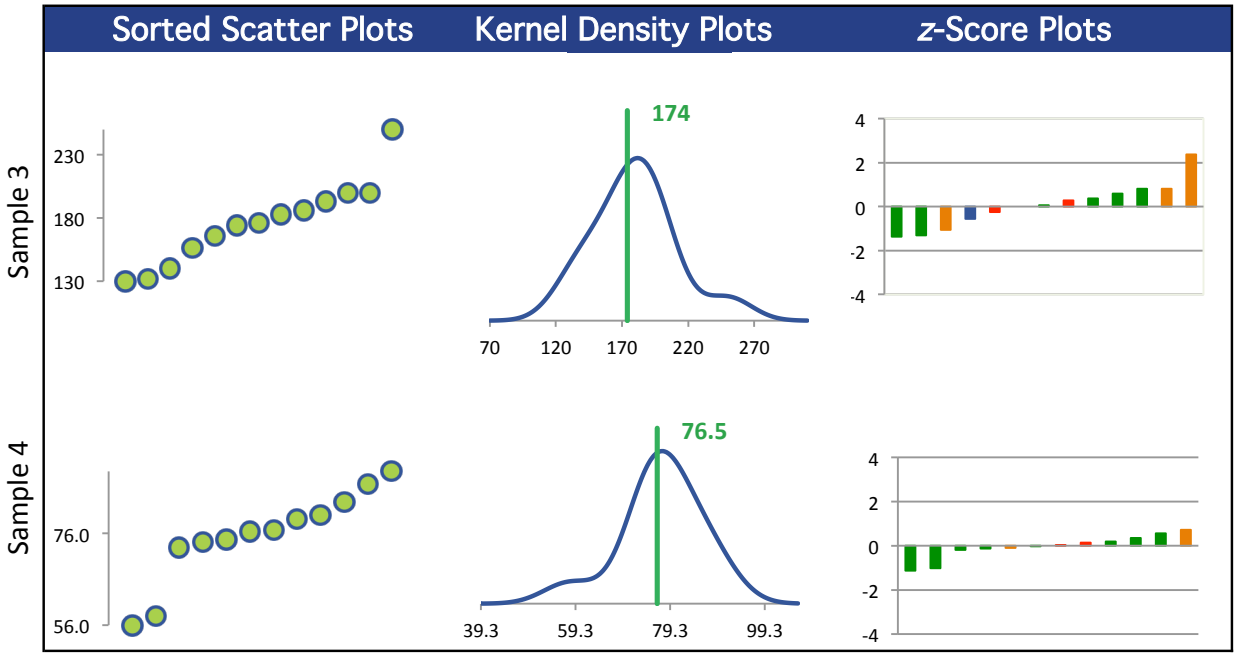
Methods Used

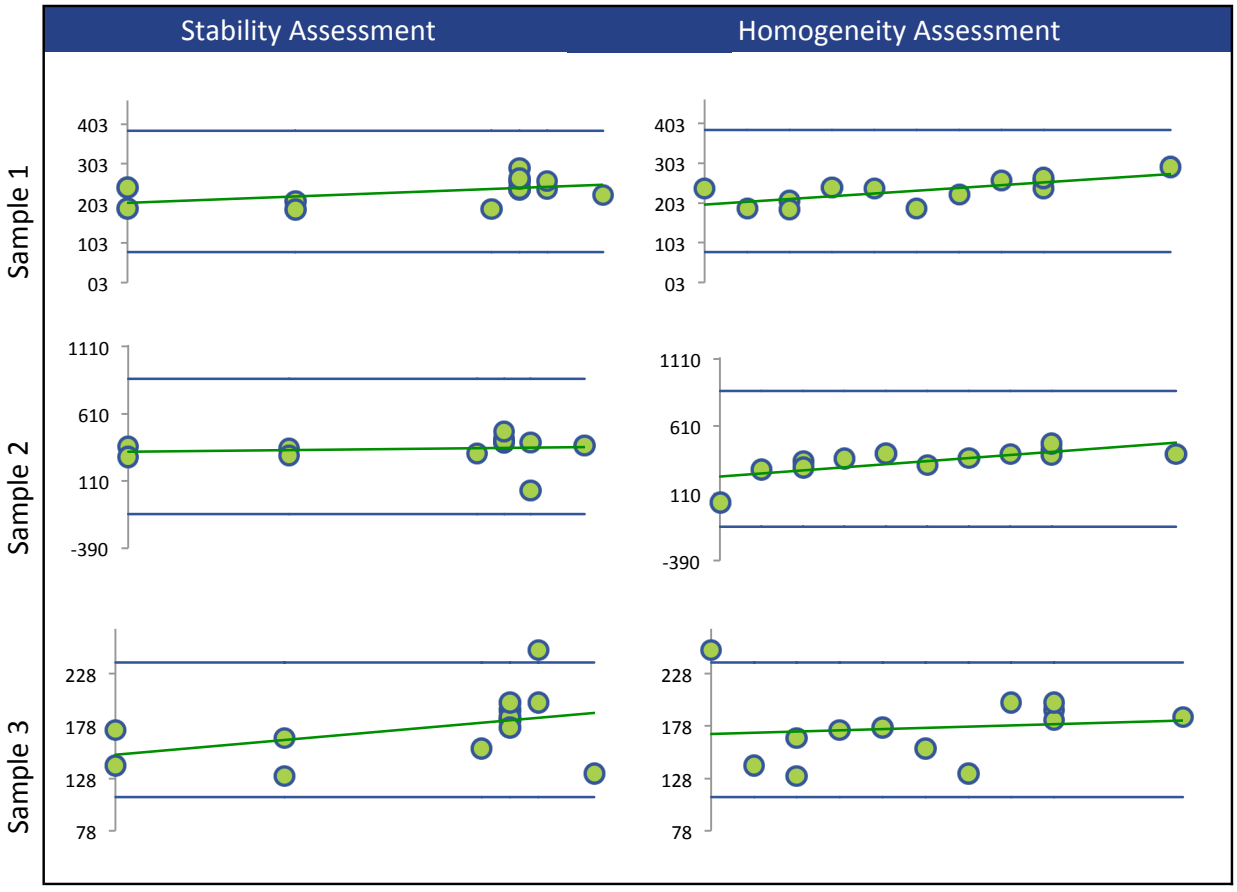
Method	C77-1	C77-2	C77-3	C77-4
GC/MS - EXTRACTION (Blue)	3	3	3	3
GC/ECD - EXTRACTION (Red)	6	6	6	5
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



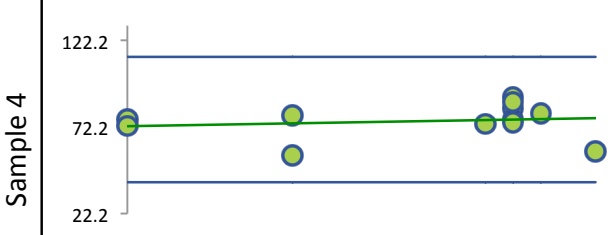
ENDRIN


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
230
180
130
174
70
120
170
220
270
4
2
0
-2
-4
Sample 4
76.0
56.0
76.5
39.3
59.3
79.3
99.3

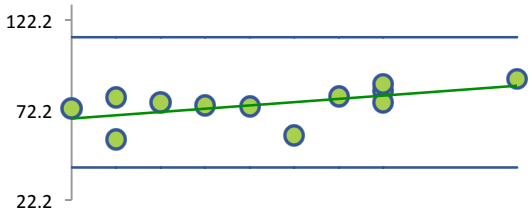

Stability Assessment
Homogeneity Assessment
Sample 1
403
303
203
103
03
Sample 2
1110
610
110
-390
Sample 3
228
178
128
78

ENDRIN

Stability Assessment



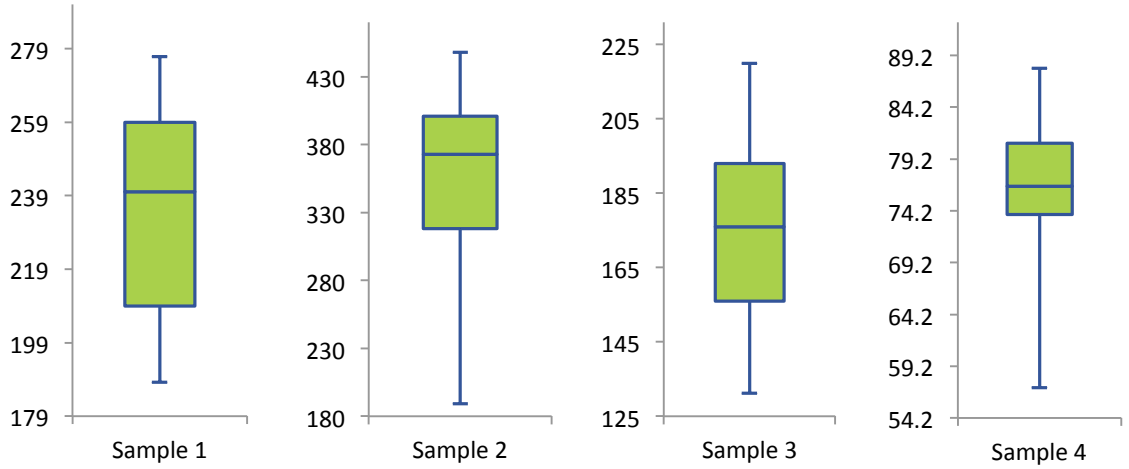
Homogeneity Assessment



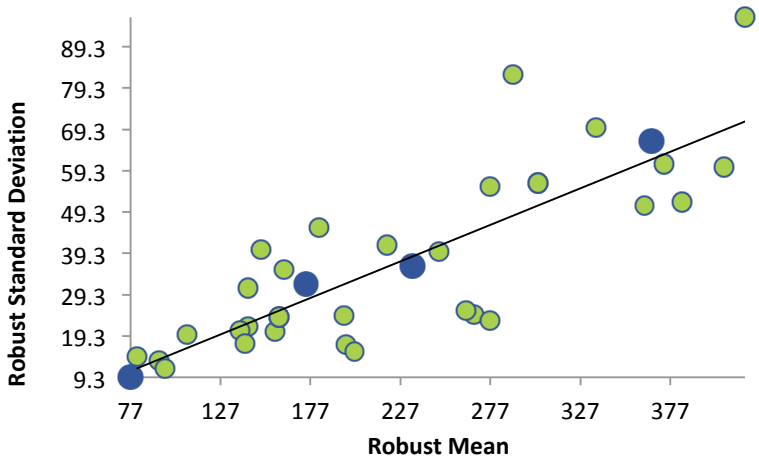
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



LINDANE (GAMMA-BHC)

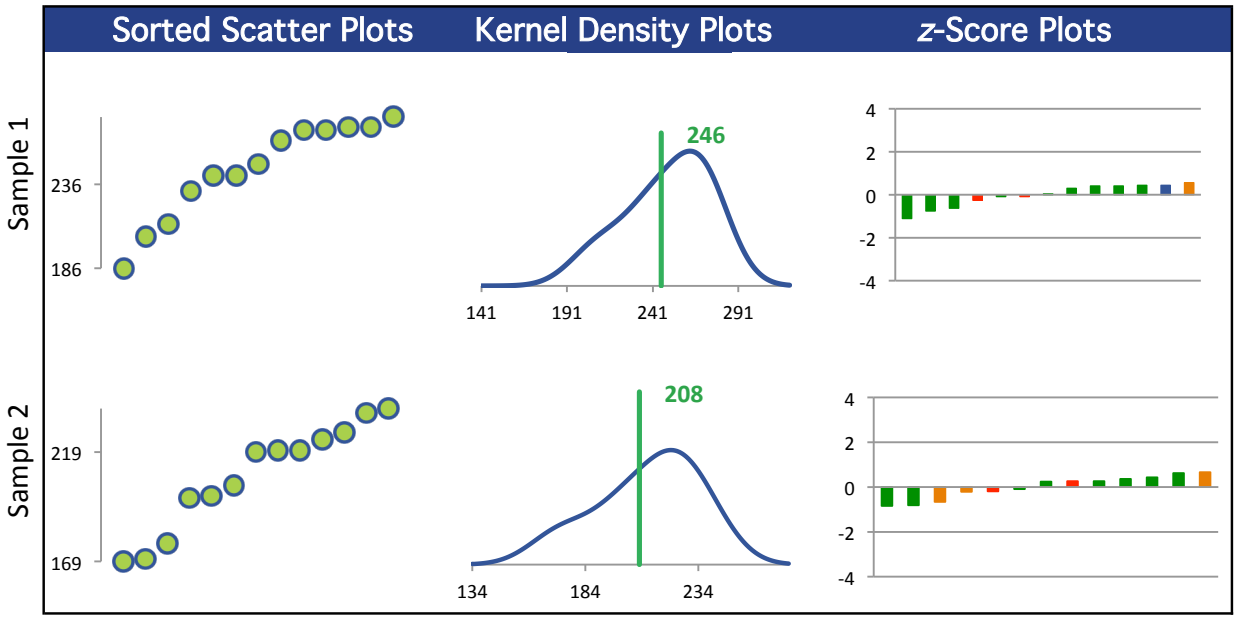
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	248	219	349	80.0
Robust Mean µg/kg	246	208	329	79.5
U µg/kg	10.4	9.50	18.9	3.95
Robust Standard Deviation µg/kg	30.0	27.4	54.4	11.4
Regression Standard Deviation µg/kg	54.0	46.7	70.3	21.5
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	54.0	46.7	70.3	21.5
Outliers	0	0	0	0
|z|>3.0	0	0	0	0
2<|z|<3	0	0	0	1

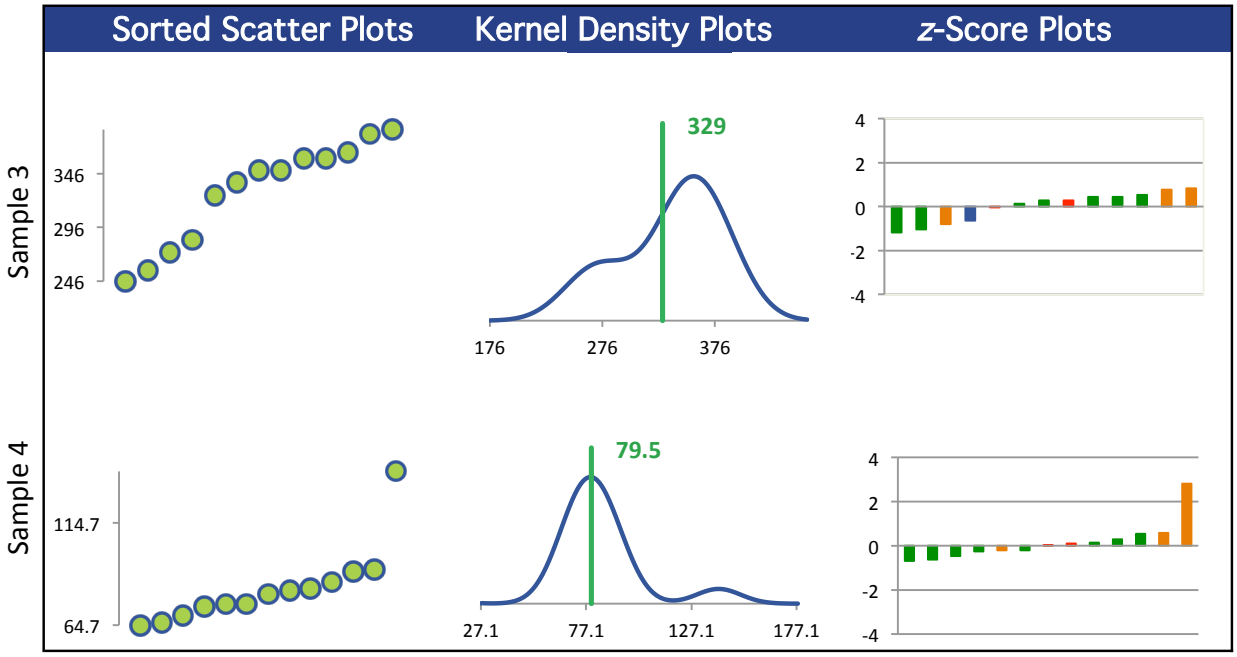
Methods Used

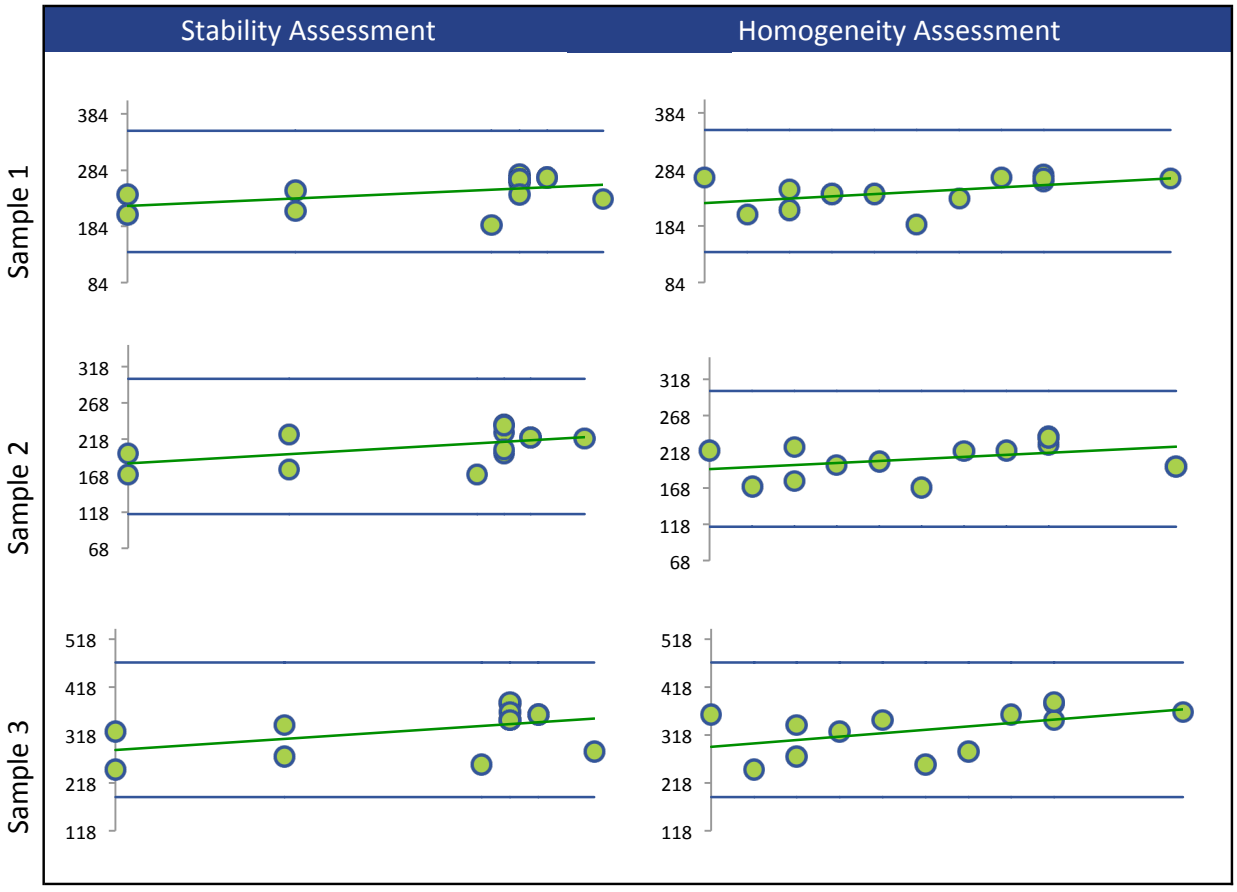
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	5
GC/MS - EXTRACTION (Red)	4	4	4	4
GC/ECD - SHAKE EXTRACTION (Green)	1	1	1	1
GC/MS/MS (Orange)	2	2	2	2
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



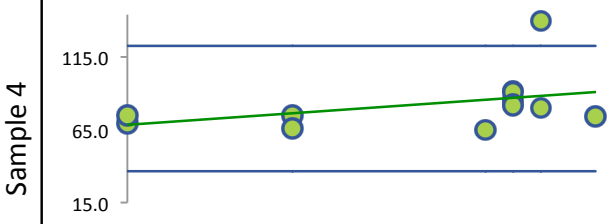
LINDANE (GAMMA-BHC)



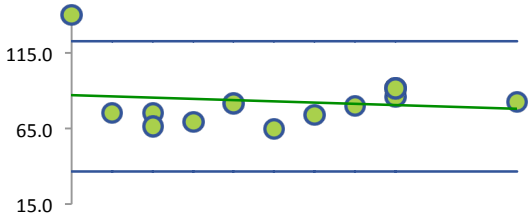


LINDANE (GAMMA-BHC)

Stability Assessment



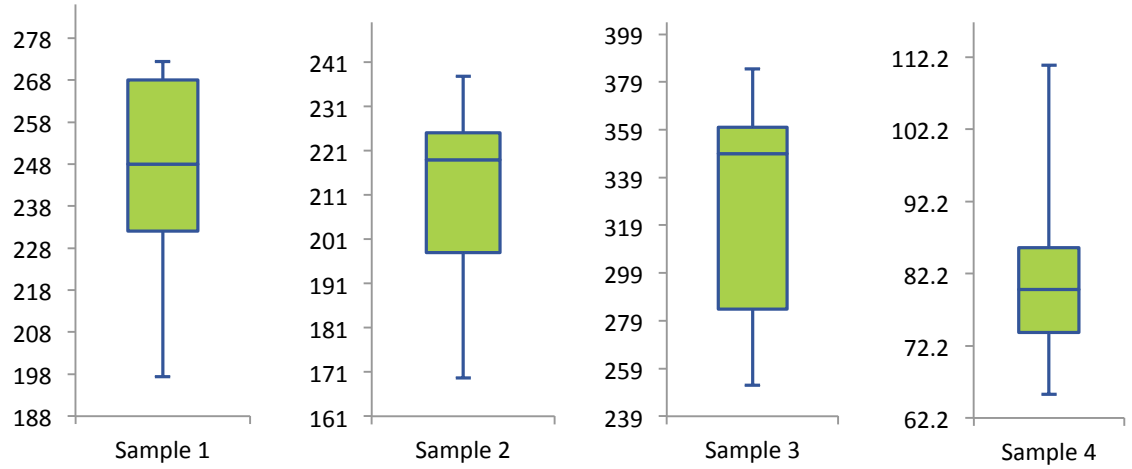
Homogeneity Assessment



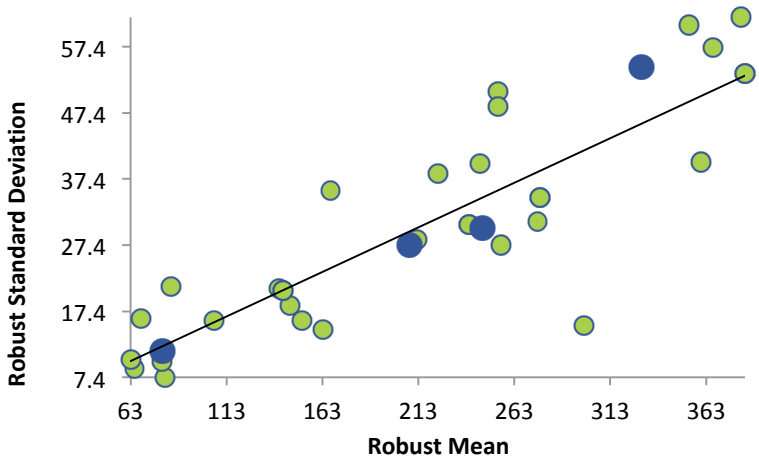
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



GAMMA-CHLORDANE

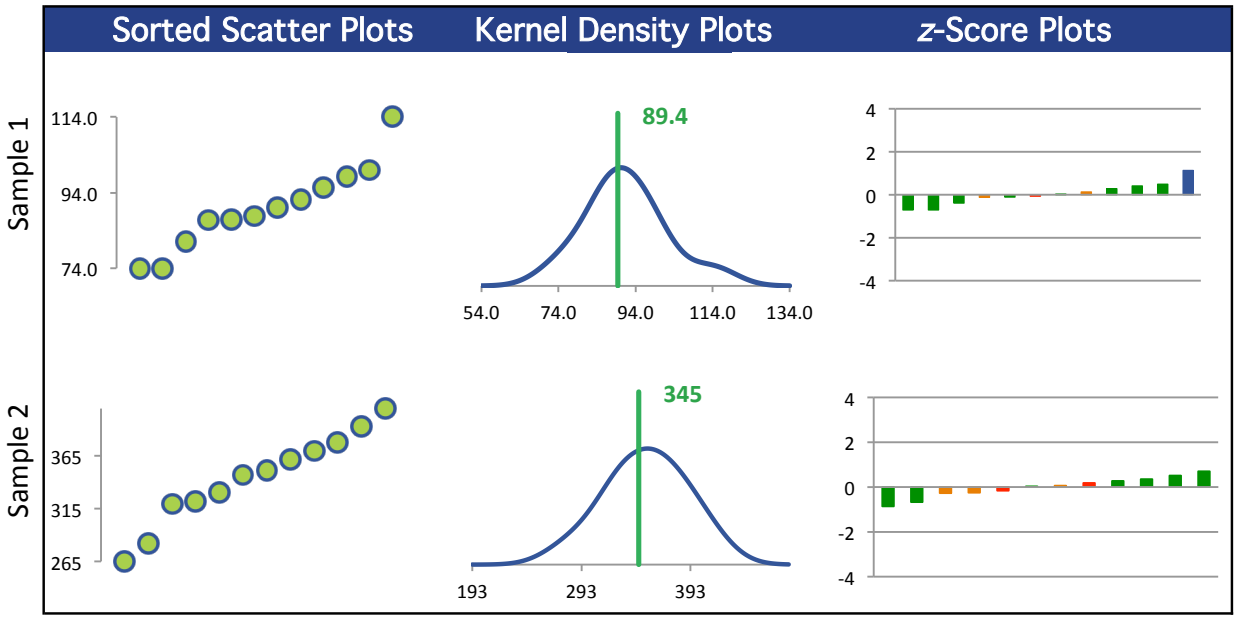
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	12	12	12	12
Median µg/kg	88.9	349	303	166
Robust Mean µg/kg	89.4	345	286	166
U µg/kg	4.04	17.0	16.9	8.73
Robust Standard Deviation µg/kg	11.2	47.0	46.7	24.2
Regression Standard Deviation µg/kg	17.0	59.5	49.7	29.7
Stability Flag		Stability		
Homogeneity Flag	Homogeneity		Homogeneity	
Standard Deviation Used (SDPA) µg/kg	21.8	93.5	86.8	29.7
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

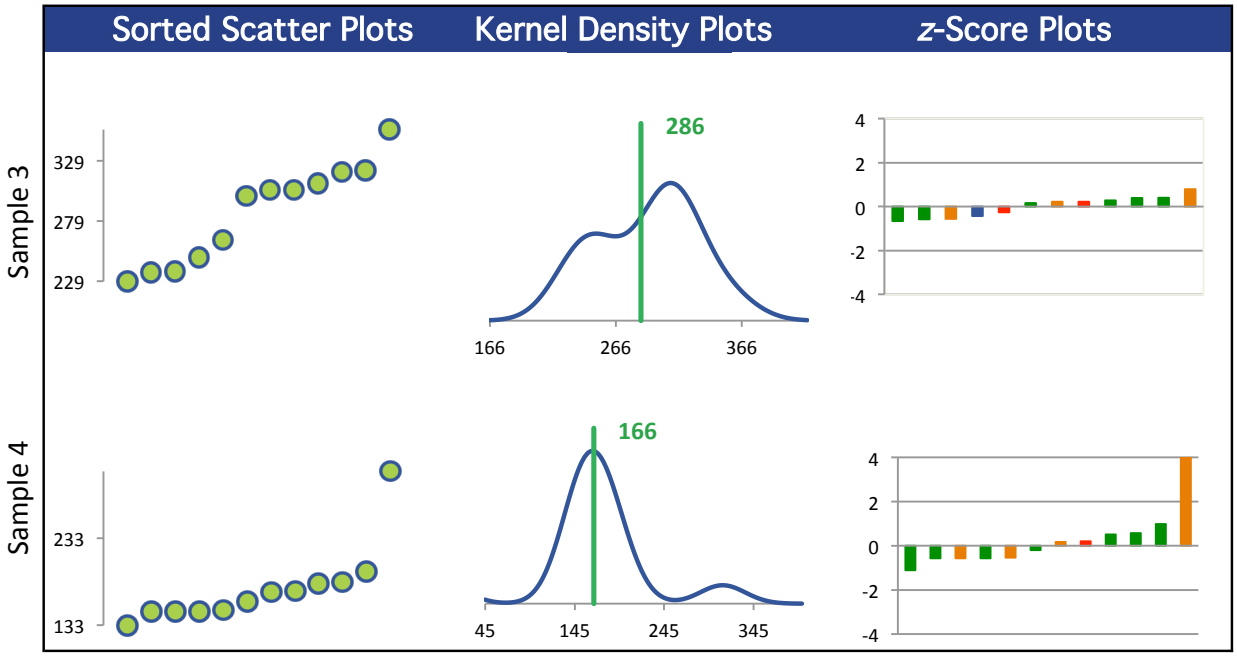
Methods Used

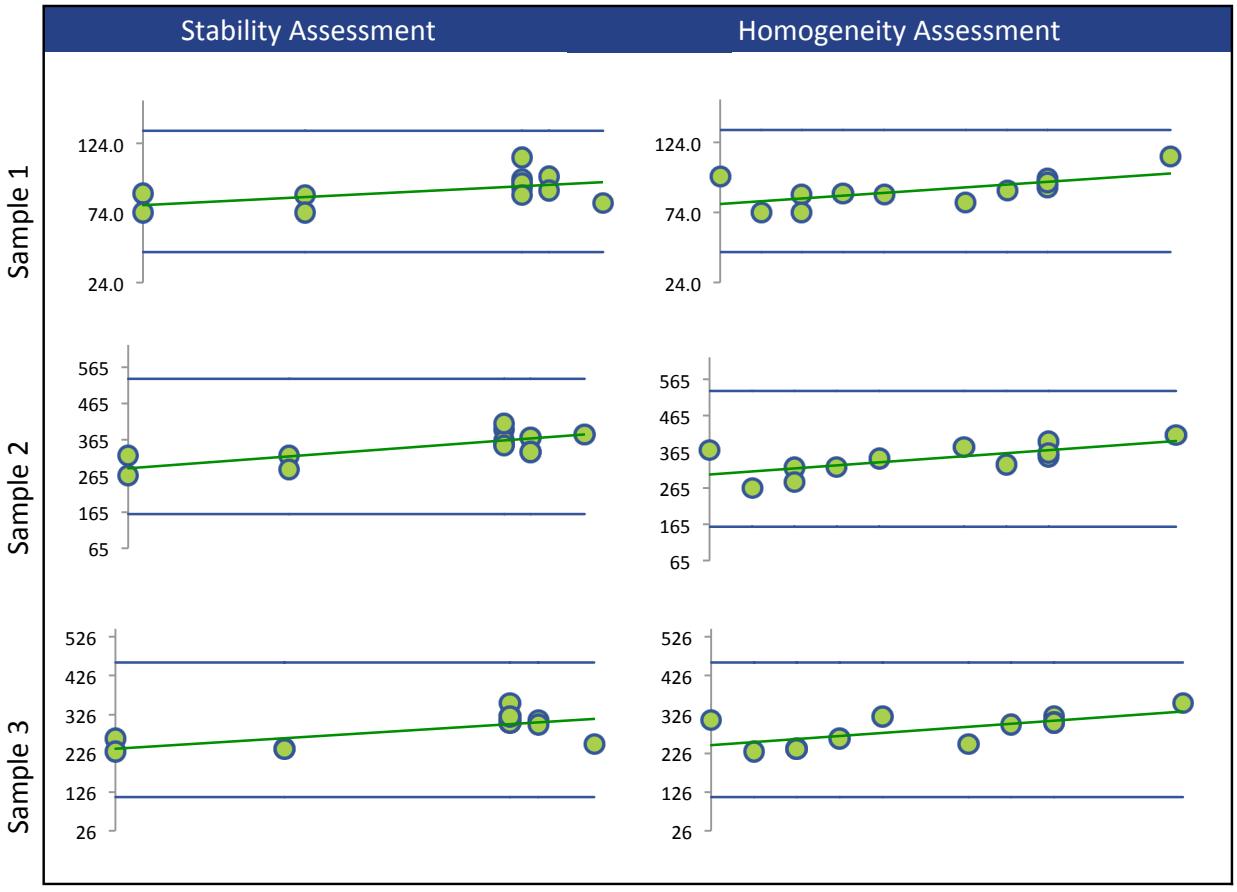
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	4	4	4	4
GC/MS - EXTRACTION (Red)	4	4	4	4
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



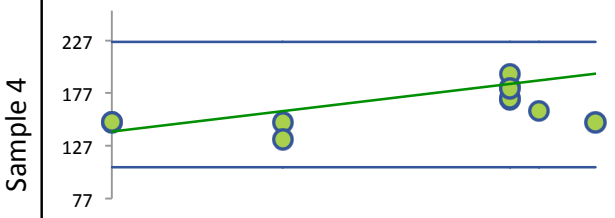
GAMMA-CHLORDANE



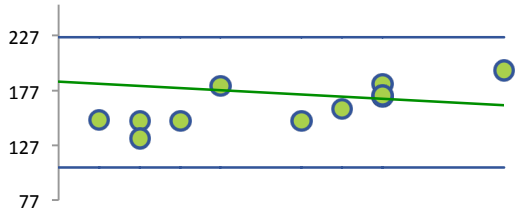


GAMMA-CHLORDANE

Stability Assessment



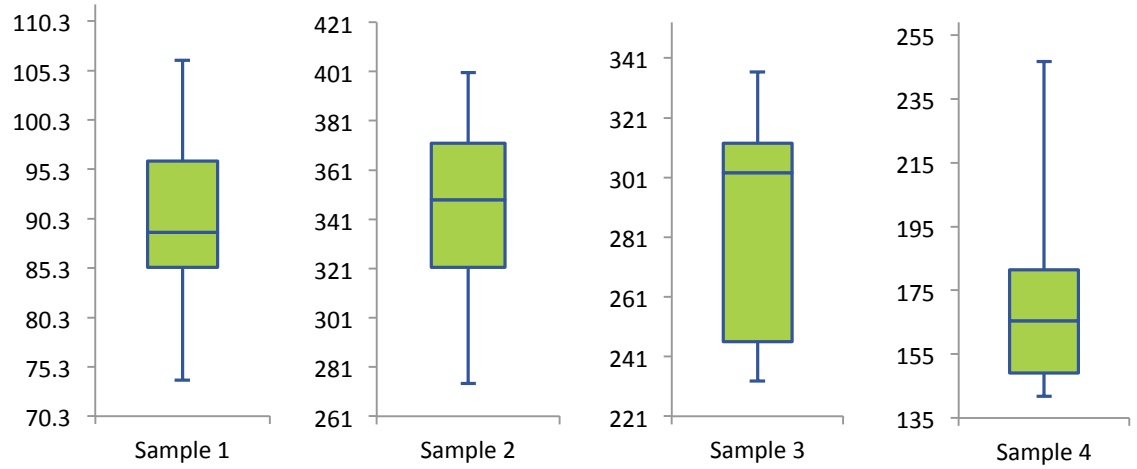
Homogeneity Assessment



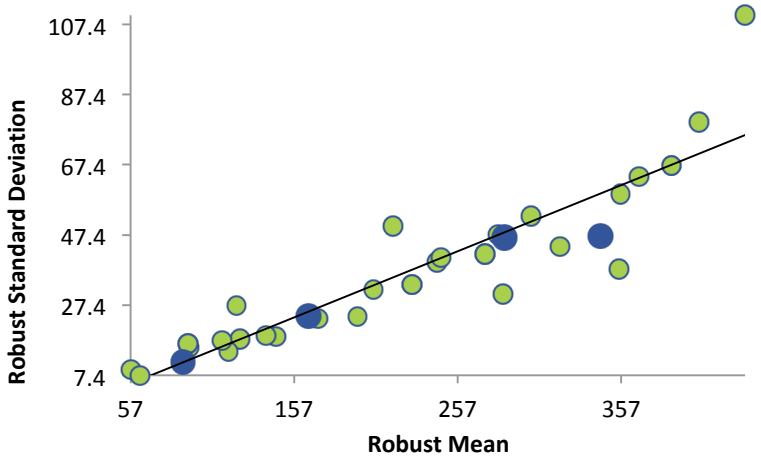
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



HEPTACHLOR

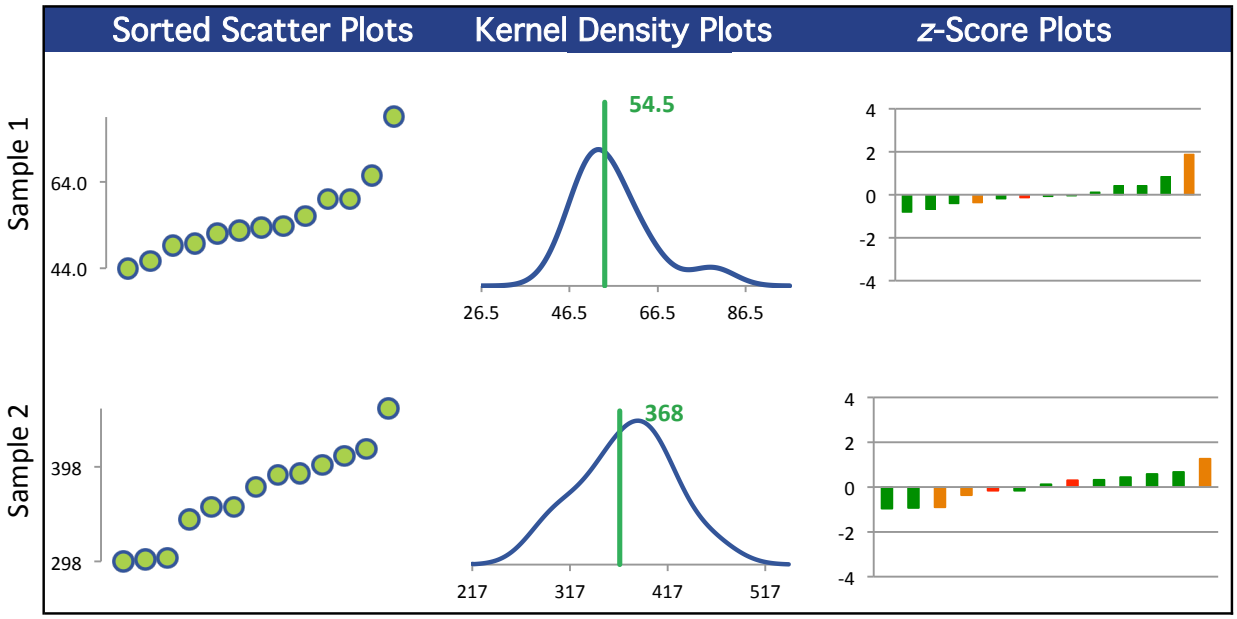
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	13	13	13	13
Median µg/kg	53.4	377	164	254
Robust Mean µg/kg	54.5	368	158	252
U µg/kg	2.70	19.0	8.15	14.9
Robust Standard Deviation µg/kg	7.80	54.7	23.5	43.1
Regression Standard Deviation µg/kg	13.0	73.0	32.8	50.7
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	13.0	73.0	32.8	50.7
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

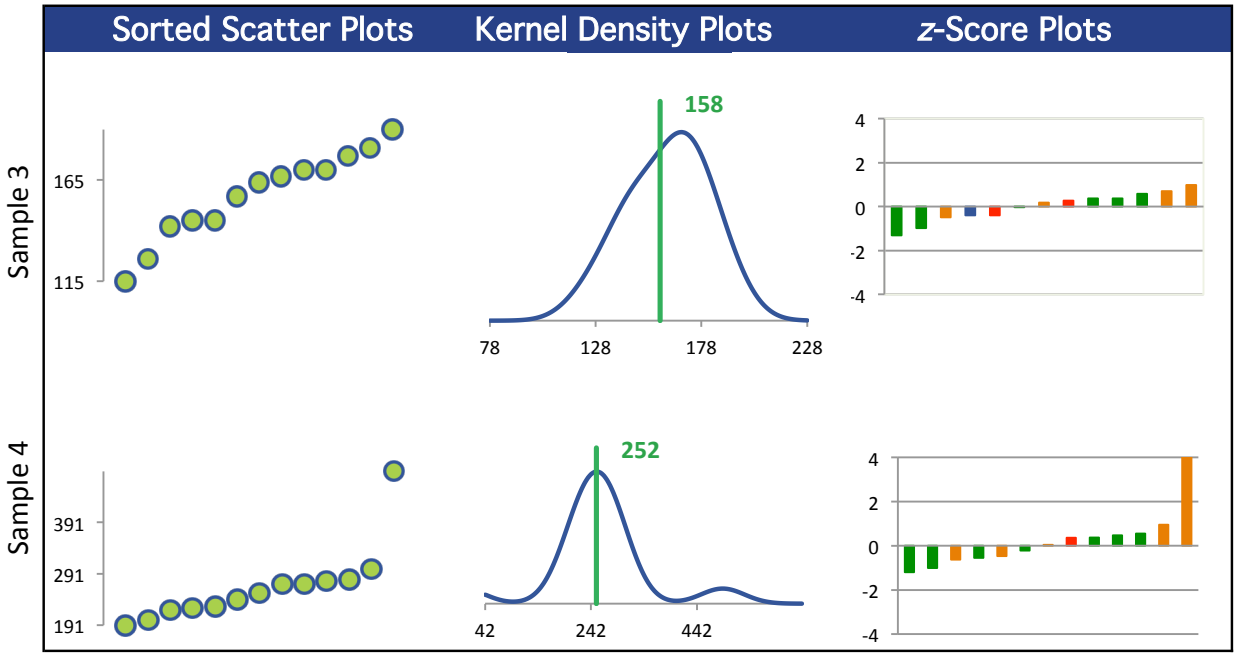
Methods Used

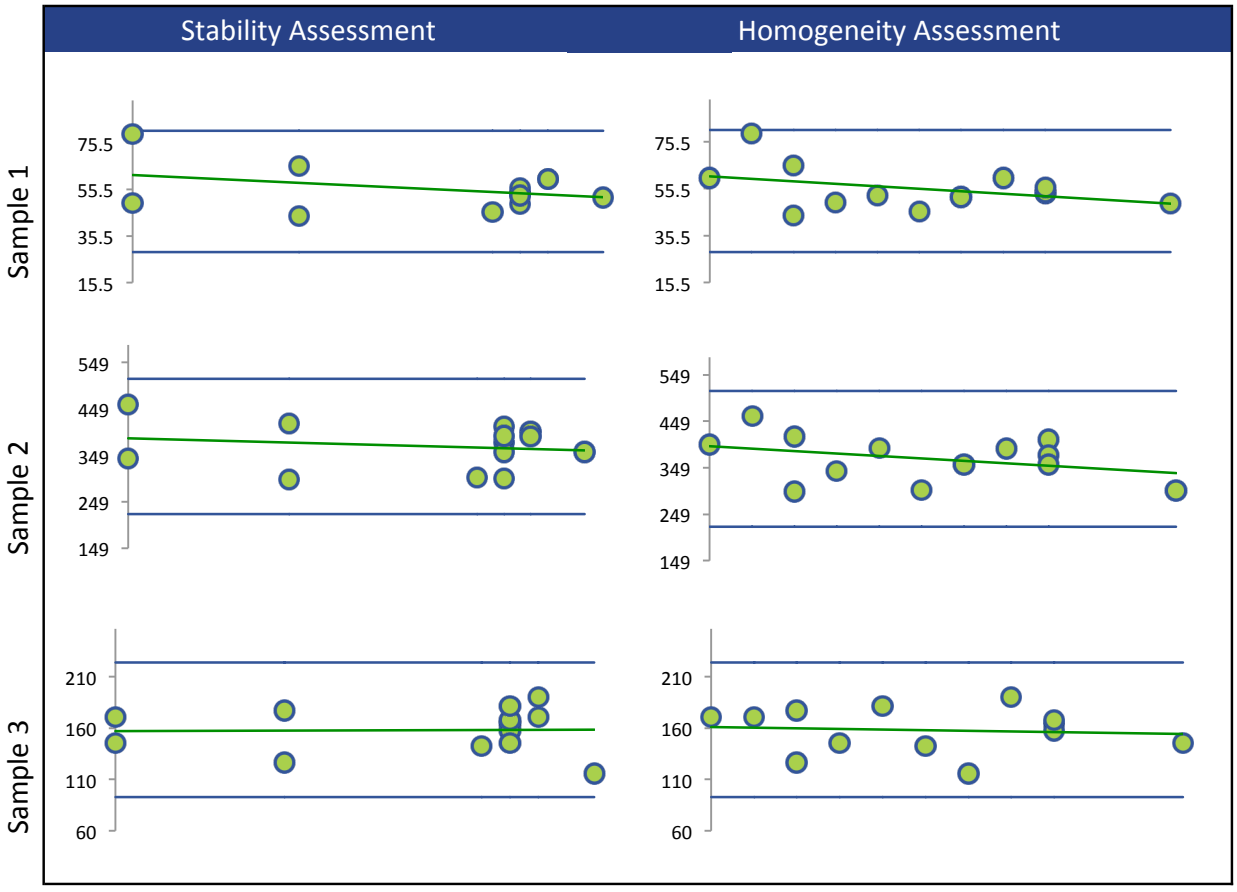
Method	C77-1	C77-2	C77-3	C77-4
GC/MS - EXTRACTION (Blue)	4	4	4	4
GC/ECD - EXTRACTION (Red)	5	5	5	5
GC/ECD - SHAKE EXTRACTION (Green)	1	1	1	1
HI RESOLUTION GC/MS (Orange)	1	1	1	1
GC/MS/MS (Black)	2	2	2	2

All summary stats and the plots below are based on the data excluding any flagged outliers



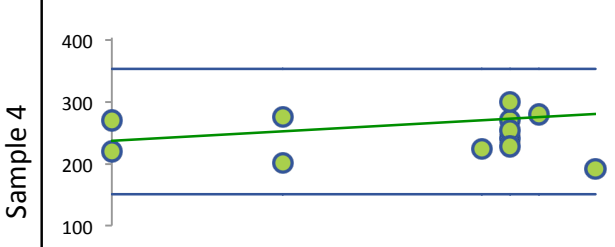
HEPTACHLOR


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
165
115
158
78
128
178
228
4
2
0
-2
-4
Sample 4
391
291
191
252
42
242
442
4
2
0
-2
-4

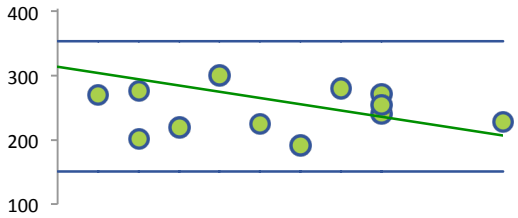

Stability Assessment
Homogeneity Assessment
Sample 1
75.5
55.5
35.5
15.5
Sample 2
549
449
349
249
149
Sample 3
210
160
110
60

HEPTACHLOR

Stability Assessment



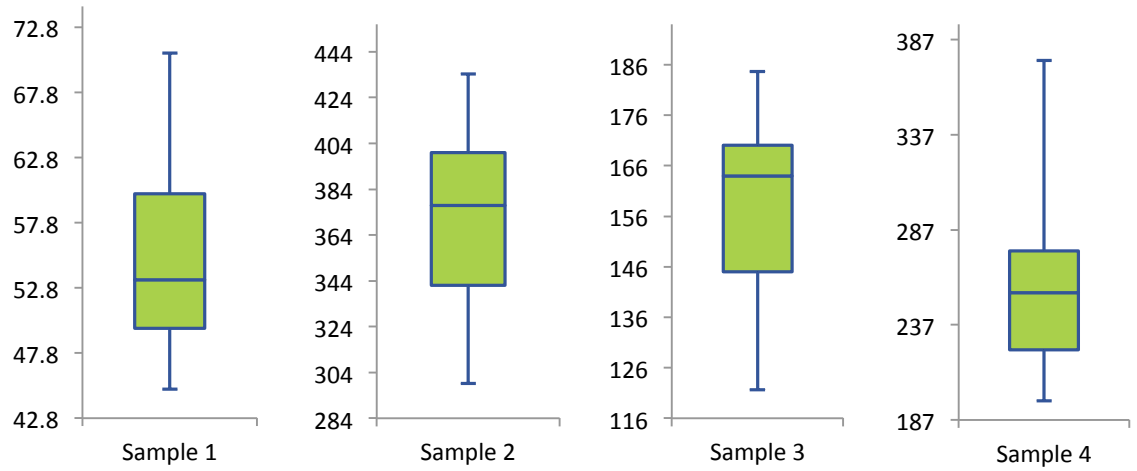
Homogeneity Assessment



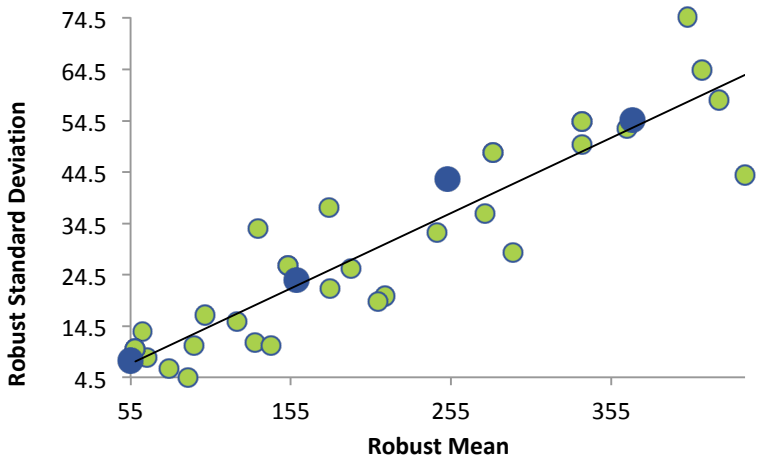
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



HEPTACHLOR EPOXIDE

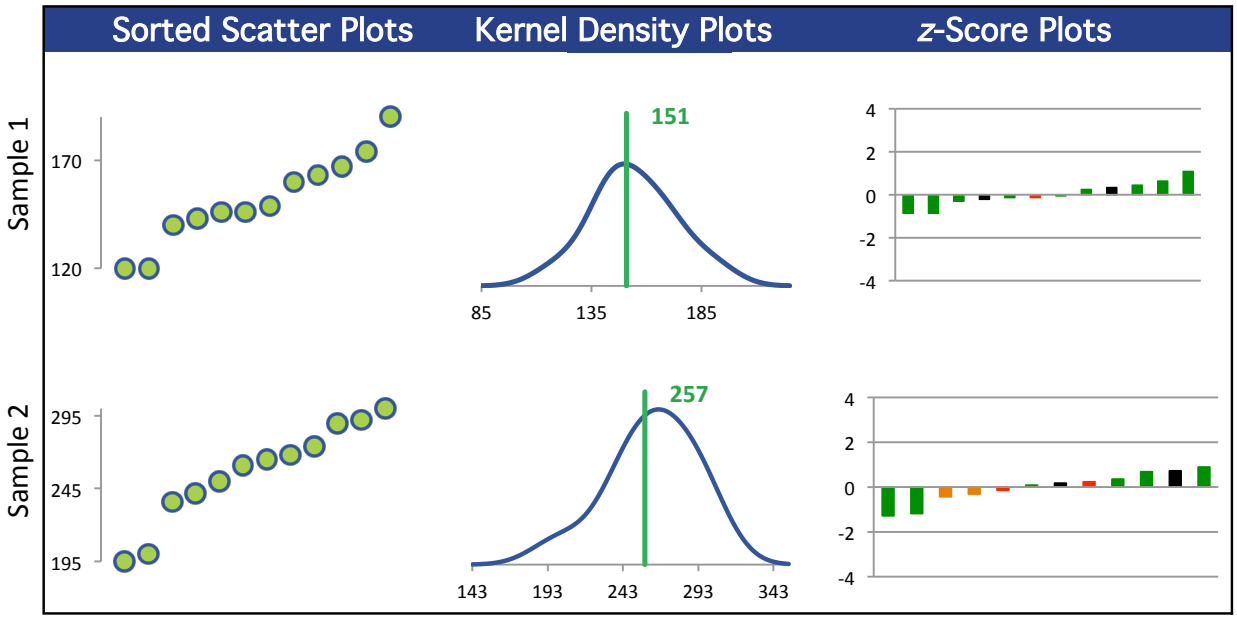
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	12	12	12	12
Median µg/kg	148	263	325	103
Robust Mean µg/kg	151	257	319	103
U µg/kg	8.08	13.2	19.9	3.79
Robust Standard Deviation µg/kg	22.4	36.5	55.2	10.5
Regression Standard Deviation µg/kg	29.4	48.3	59.4	20.8
Stability Flag	Stability		Stability	
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	35.8	48.3	96.5	20.8
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	0

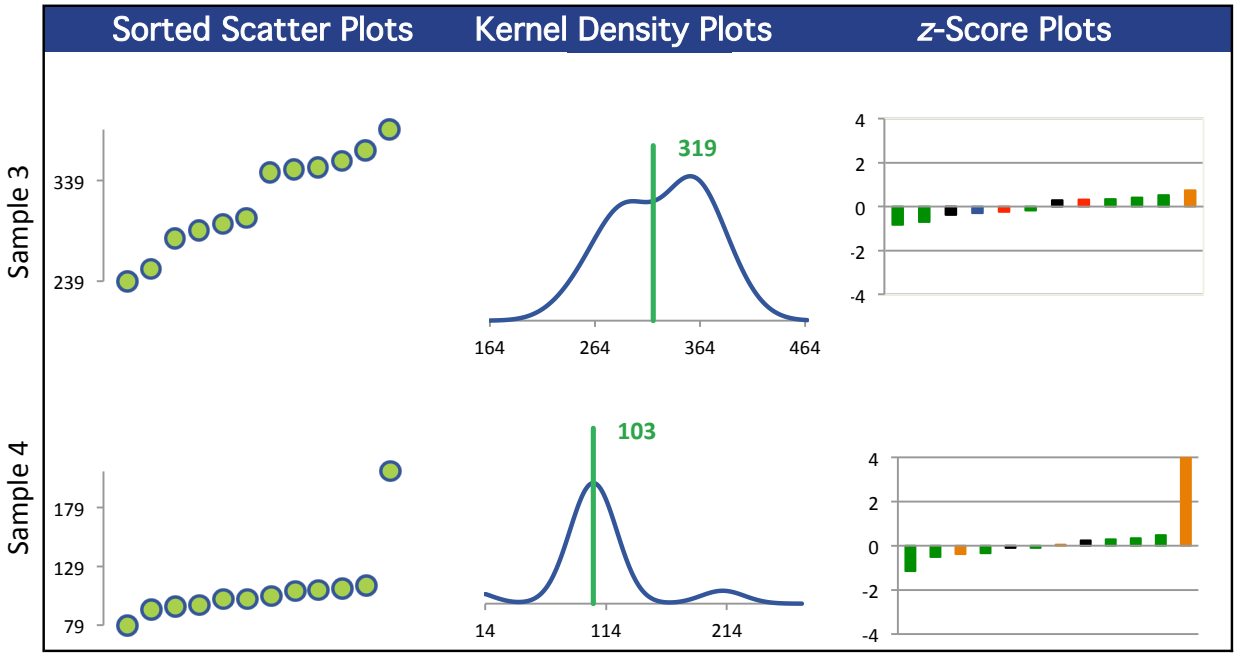
Methods Used

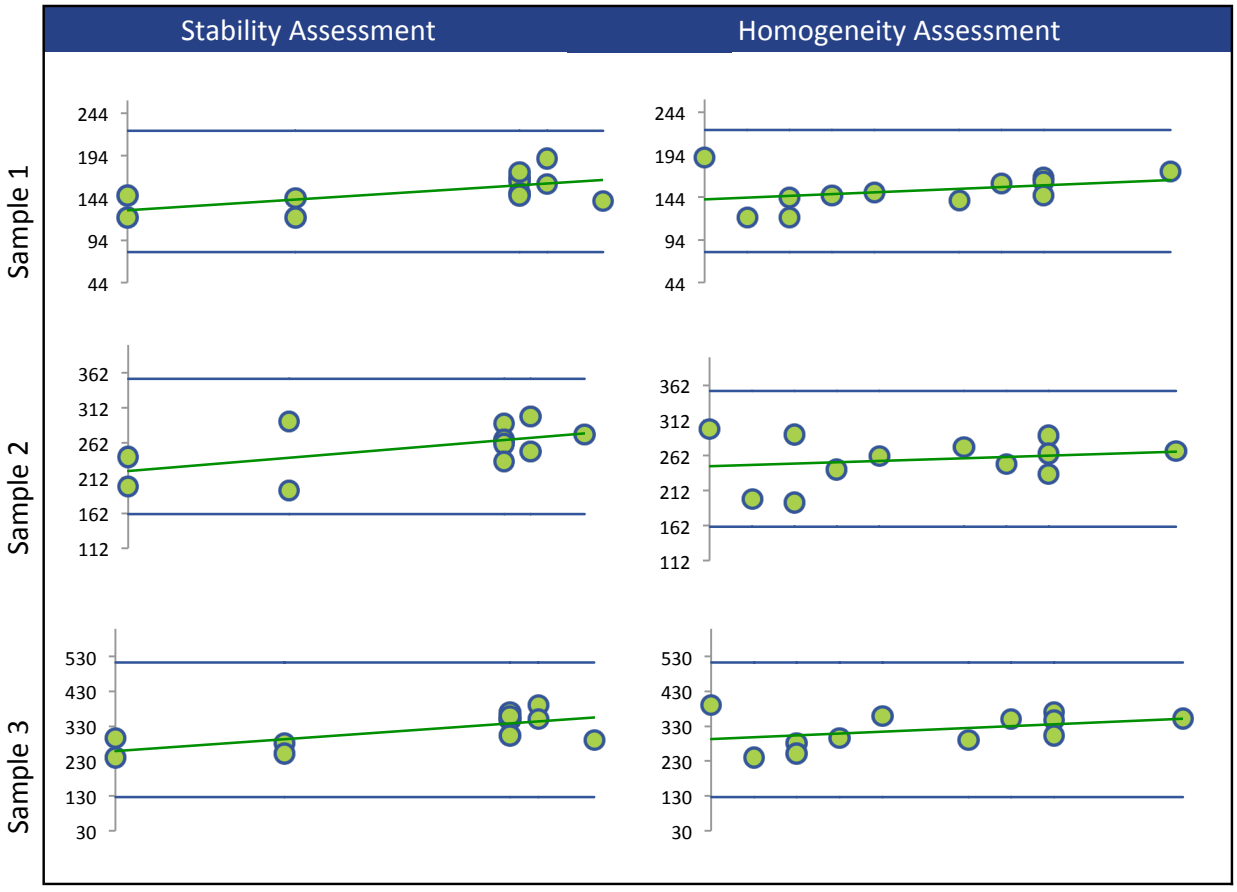
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	5
GC/MS - EXTRACTION (Red)	3	3	3	3
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



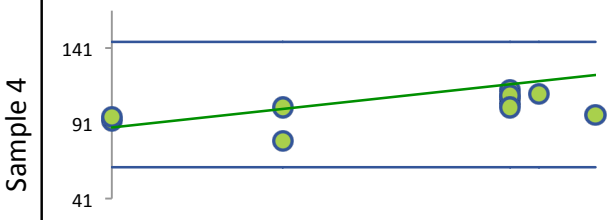
HEPTACHLOR EPOXIDE



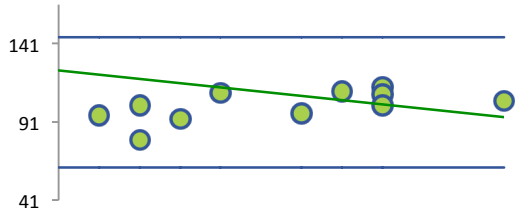


HEPTACHLOR EPOXIDE

Stability Assessment



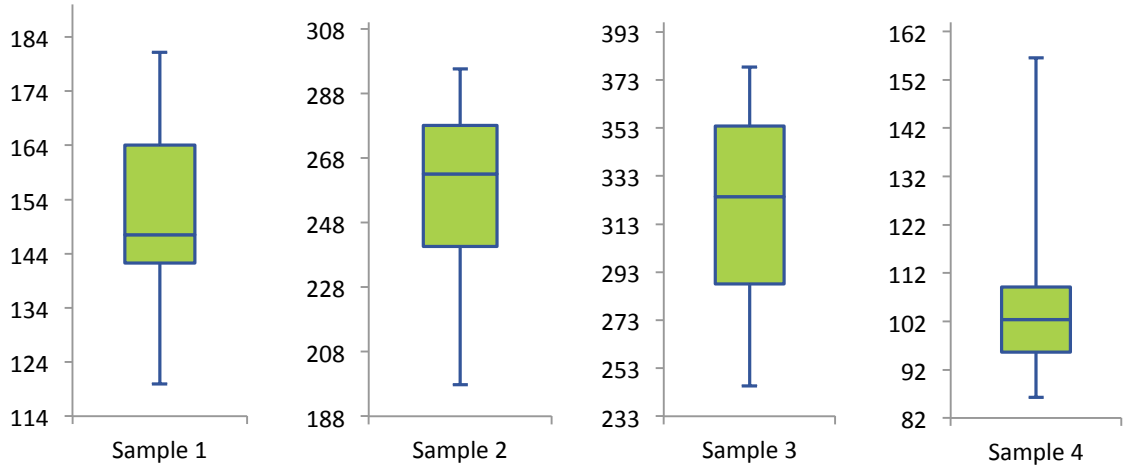
Homogeneity Assessment



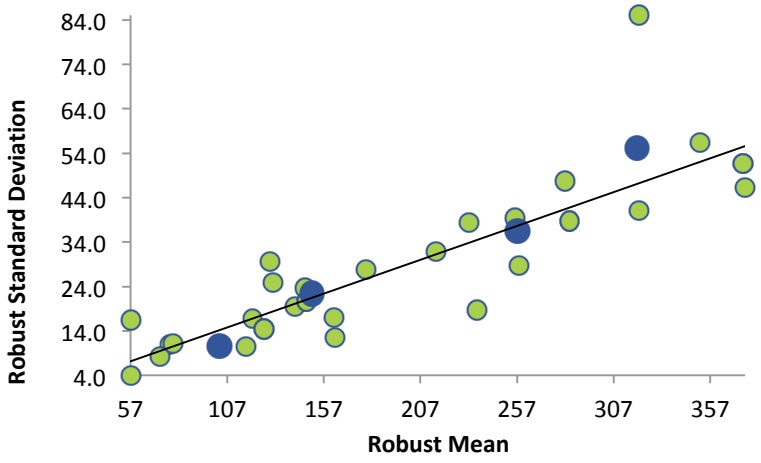
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



4,4'-METHOXYCHLOR (P,P'-METHOXYCHLOR)

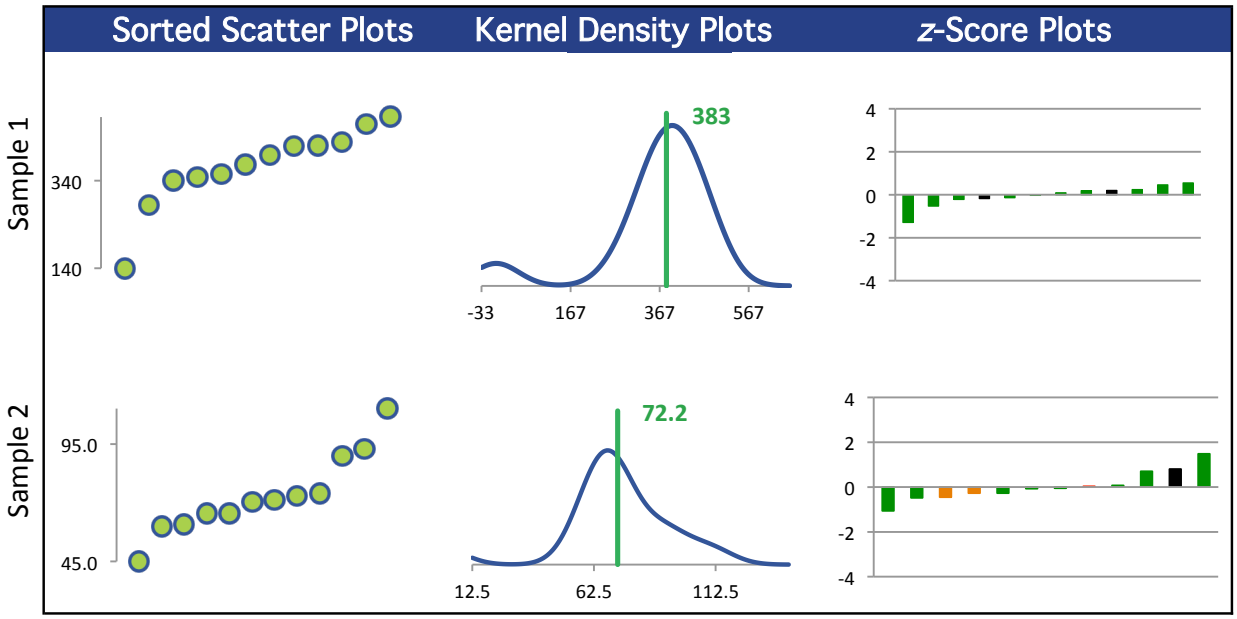
Summary Statistics

Statistic	C77-1	C77-2	C77-3	C77-4
N	12	12	12	12
Median µg/kg	388	70.7	170	313
Robust Mean µg/kg	383	72.2	170	322
U µg/kg	27.5	5.99	12.6	27.1
Robust Standard Deviation µg/kg	76.2	16.6	34.8	75.2
Regression Standard Deviation µg/kg	109	25.6	51.8	93.0
Stability Flag	Stability		Stability	
Homogeneity Flag				
Standard Deviation Used (SDPA) µg/kg	188	25.6	78.7	93.0
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	0	0	1

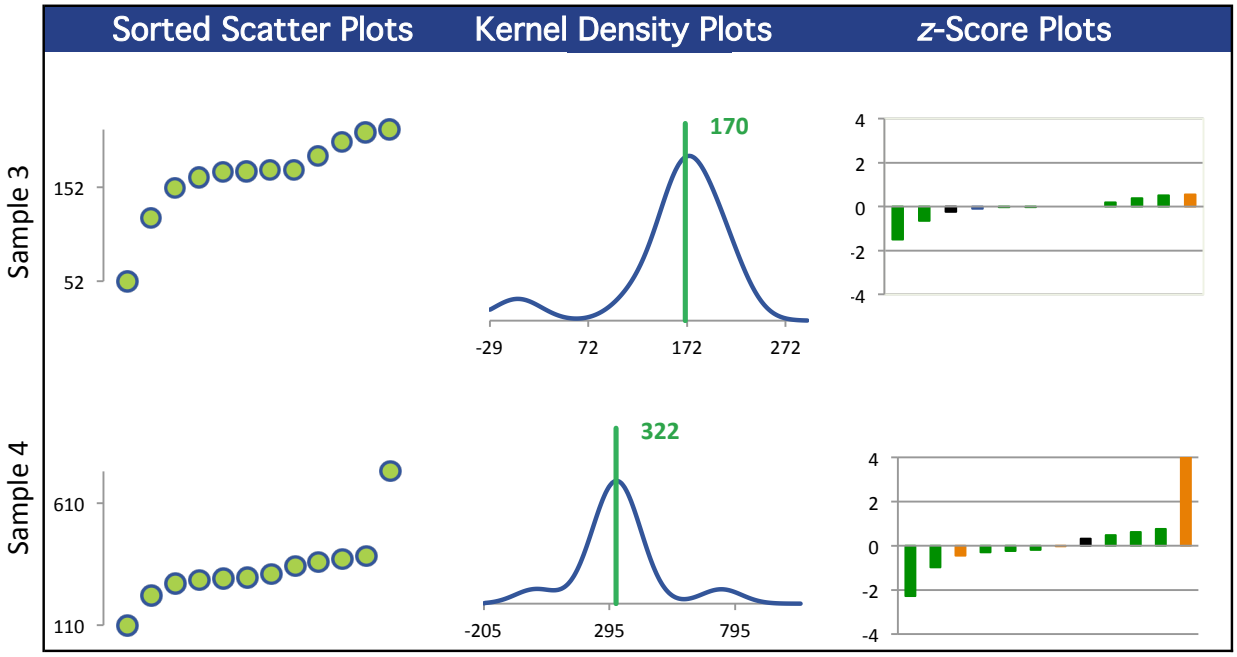
Methods Used

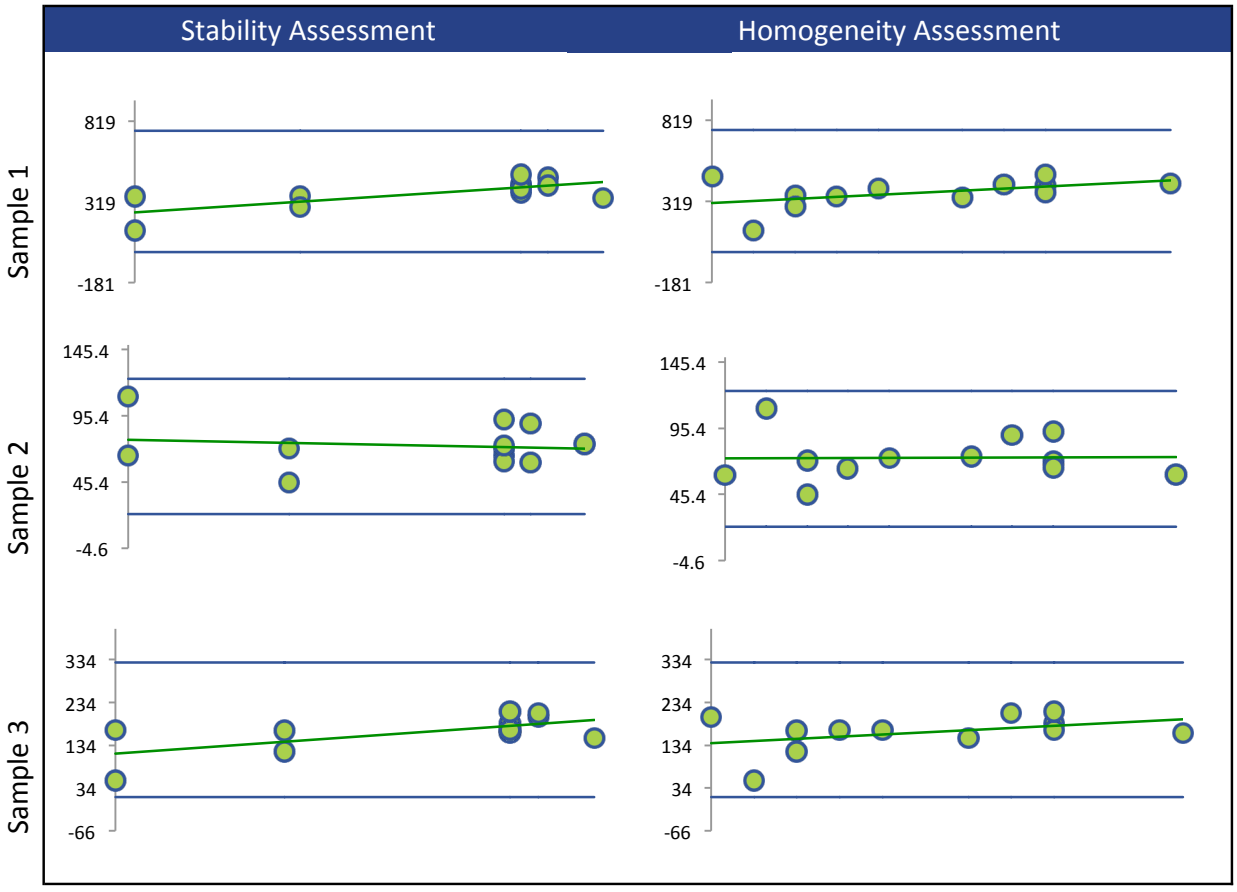
Method	C77-1	C77-2	C77-3	C77-4
GC/ECD - EXTRACTION (Blue)	5	5	5	5
GC/MS - EXTRACTION (Red)	3	3	3	3
GC/MS/MS (Green)	2	2	2	2
GC/ECD - SHAKE EXTRACTION (Orange)	1	1	1	1
HI RESOLUTION GC/MS (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



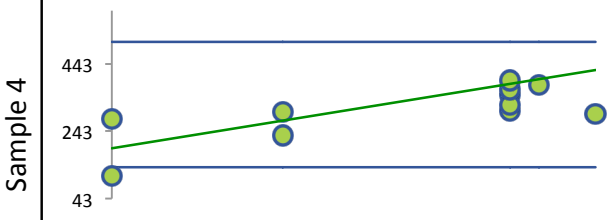
4,4'-METHOXYCHLOR (P,P'-METHOXYCHLOR)



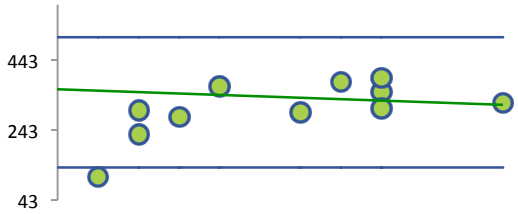


4,4'-METHOXYCHLOR (P,P'-METHOXYCHLOR)

Stability Assessment



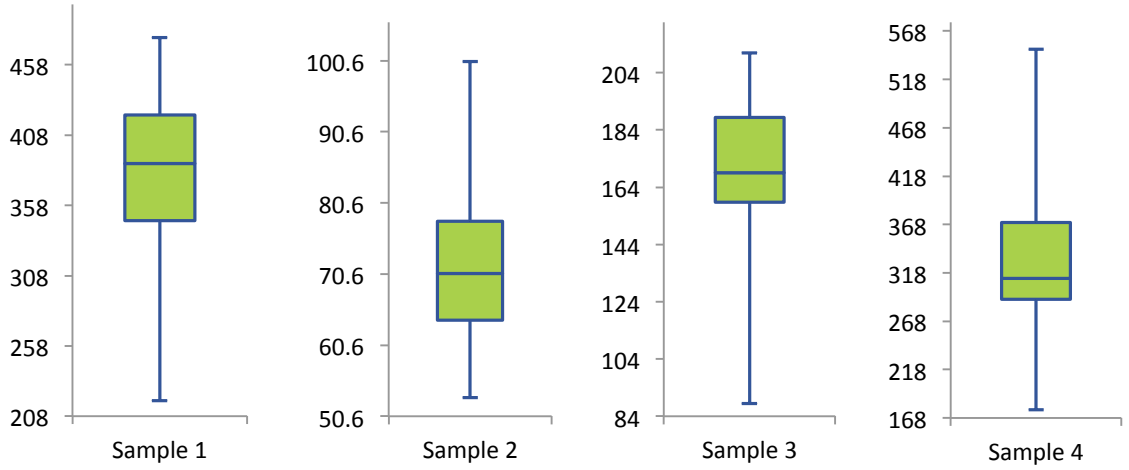
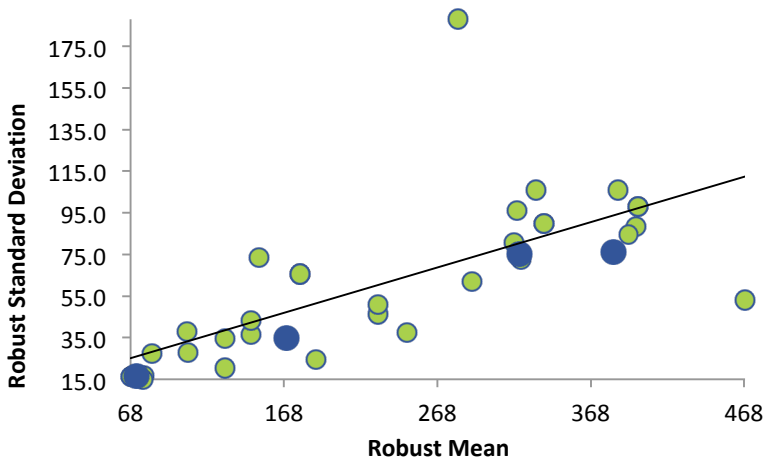
Homogeneity Assessment



Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)