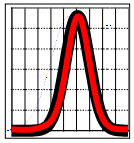
Mycotoxin Program

Recap and Reports

AAFCO Check Sample Program



Mycotoxin Program Model

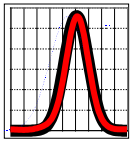
- All samples formulated to contain known Mycotoxin quantities.

- Use professional provider to produce samples.
  - Assigned value for each analyte
  - Uncertainty in assigned value
  - Sample homogeneity assessment

- Distribution to clients as usual (include MSD?).
- New input section for the Data Reporting Website.
  - Include detection limit
  - Identify values as a Detect or a Non-detect
  - Do not allow reporting Zero values.

- Calculate Z scores for detected data.
- Identify Non-detects and score.
- Issue sample reports.

AAFCO Check Sample Program



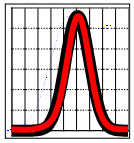
To Calculate a Z Score we need:

- A lab result to test (X_{LAB}).
- An Assigned Value (X_a) to test against.
- A SD for Proficiency Testing (σ_{ffp}) that is fit-for-purpose and is usually a measure of the anticipated and usual data spread.

$$Z = \frac{X_{LAB} - X_a}{\sigma_{ffp}}$$

- Choosing σ_{ffp} appropriately will determine the spread in Z scores.

AAFCO Check Sample Program



The Importance of σ_{ffp} in Assigning Z Scores

Z Scores ranging from -2 to 2 represent acceptable data dispersion from $-2\sigma_{ffp}$ to $2\sigma_{ffp}$

$$Z = \frac{X_{LAB} - X_a}{\sigma_{ffp}}$$

AAFCO Check Sample Program

Horwitz

$$\sigma_R = \sigma_H = 0.02 \times C_{mf}^{0.8495}$$

$$\%RSD_H = 2 \times C_{mf}^{-0.1505}$$

C_{mf} (mass fraction) easily derived from X_a units

Widely recognized as an appropriate measure of variance among Proficiency testing providers.

IUPAC

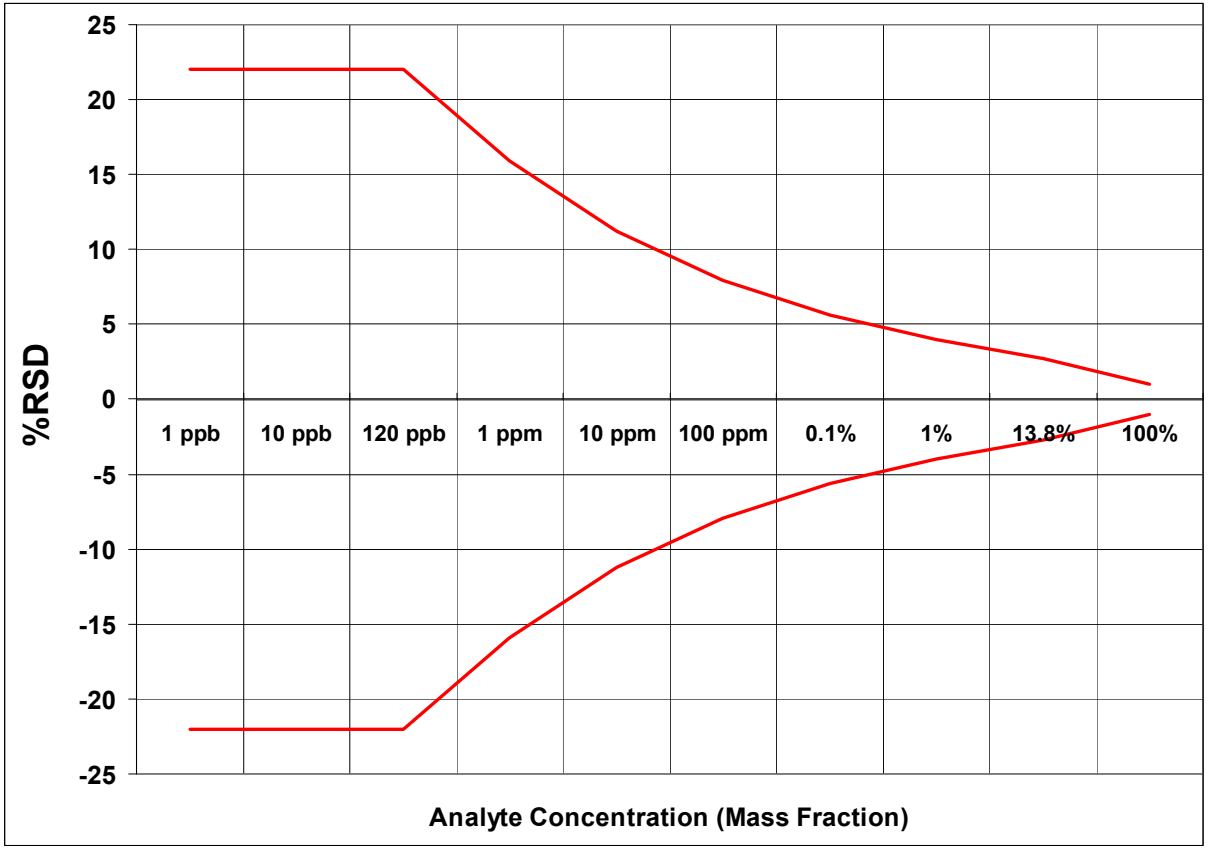
fapas

ISO International Organization for Standardization

AOAC INTERNATIONAL

Modified Horwitz Model

$\sigma_R = 0.22 \times C$	%RSD = 22	if $C < 1.2 \times 10^{-7}$
$\sigma_R = 0.02 \times C^{0.8495}$	%RSD = $2 \times C^{-0.1505}$	if $1.2 \times 10^{-7} \leq C \leq 0.138$
$\sigma_R = 0.01 \times C^{0.5}$	%RSD = $C^{-0.5}$	if $C > 0.138$



AAFCO Check Sample Program

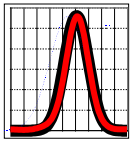
Calculating Z values For Mycotoxins

$$Z = \frac{X_{LAB} - X_{a(Formulation)}}{\sigma_{ModifiedHorwitz}}$$

Mycotoxin Program

Data Reporting and Non-Detects

AAFCO Check Sample Program



Currently Mycotoxin Codes are reporting ~21% zero values.

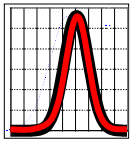
A zero value may have been a Non-Detect.

Zero is **NOT** a Measurement
It is an abstraction of reporting precision and instrument resolution.

An Analyte Measurement is either:

A **Detect** with a non-zero numerical result.
Or:
A **Non-Detect** with a detection limit.

AAFCO Check Sample Program



The New Data Reporting Protocol

If you detect the analyte and get an instrument measurement:
Report this result in the required units and click **DETECT**.

If you do not detect the analyte:
Report the Detection Limit in the same units and click **NON-DETECT**.

Any reported value will have to be assigned
either a DETECT or NON-DETECT status.

AAFCO Check Sample Program

Data Censored at The Detection Limit

- With Censored data we calculate the POD or “probability of detection”.
- The POD is based on the Assigned Value, LOD and the expected dispersion of lab results for this analyte (σ_{ffp}).
- For **2 Non-Detects** we simply multiply the individual probabilities.
- For one Non-Detect in a pair of results we have an interesting problem, now we have an estimate of the lab bias!
- Dispersion about the lab bias estimate is defined by 2/3 Horwitz Sigma, the “Horwitz within lab SD”.

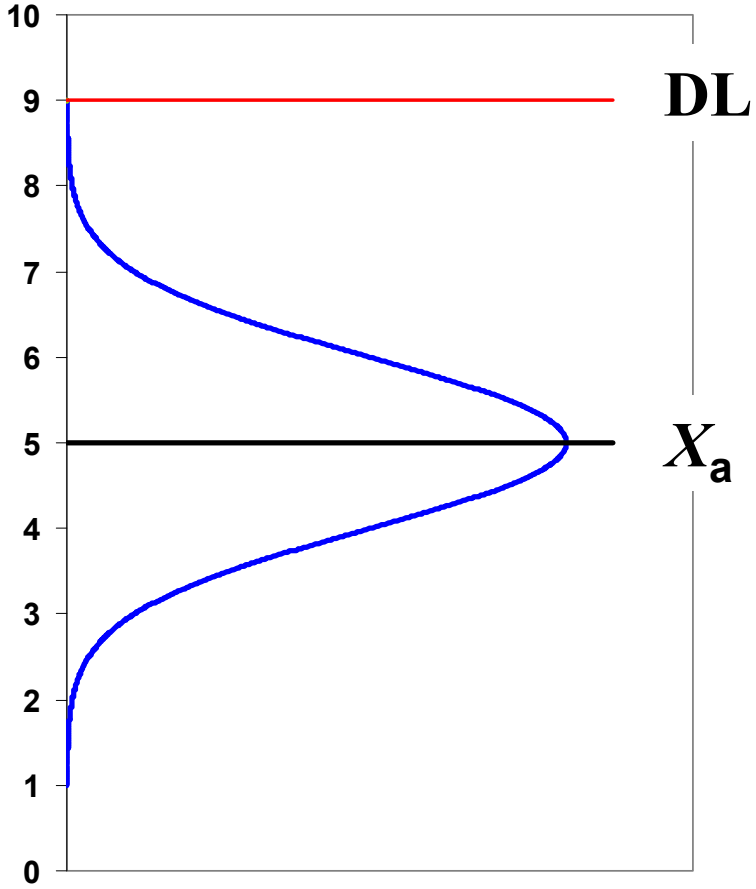
Now given the LOD, the Assigned Value $\mathbf{X_a}$ and σ_{ffp} we can calculate a probability of detecting both results at that detection limit.

Probability of Detection for Non-Detects

SCORE
POD 2 (0.0% p)
POD 1 (0.0% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

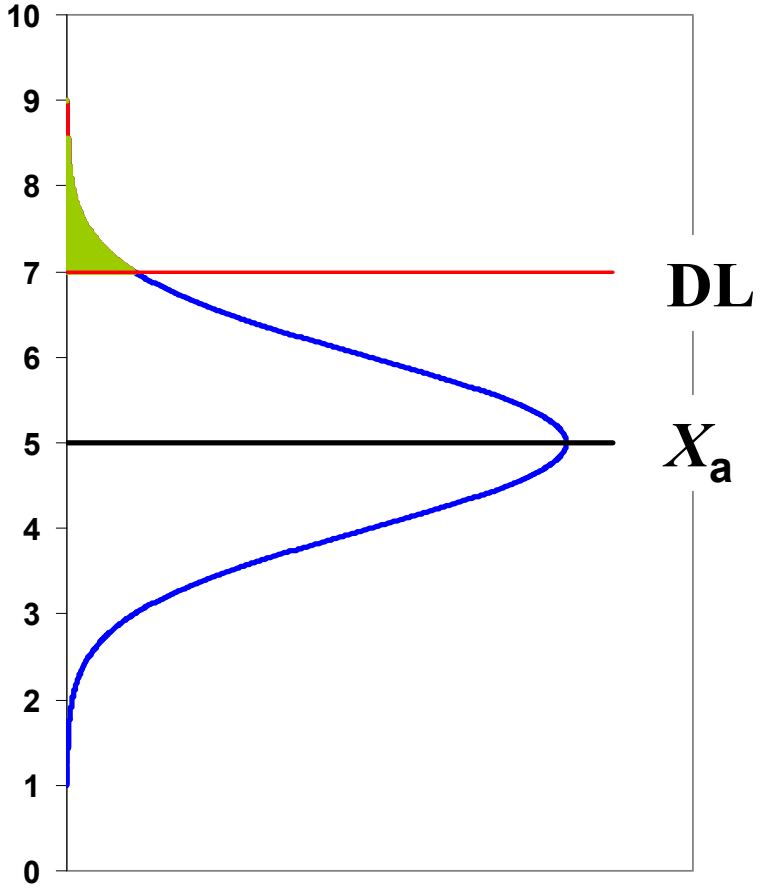
However, there is a 100.0 % probability that your lab would not have detected this analyte above the Detection Limit.

Probability of Detection for Non-Detects

SCORE
POD 2 (0.05% p)
POD 1 (2.3% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

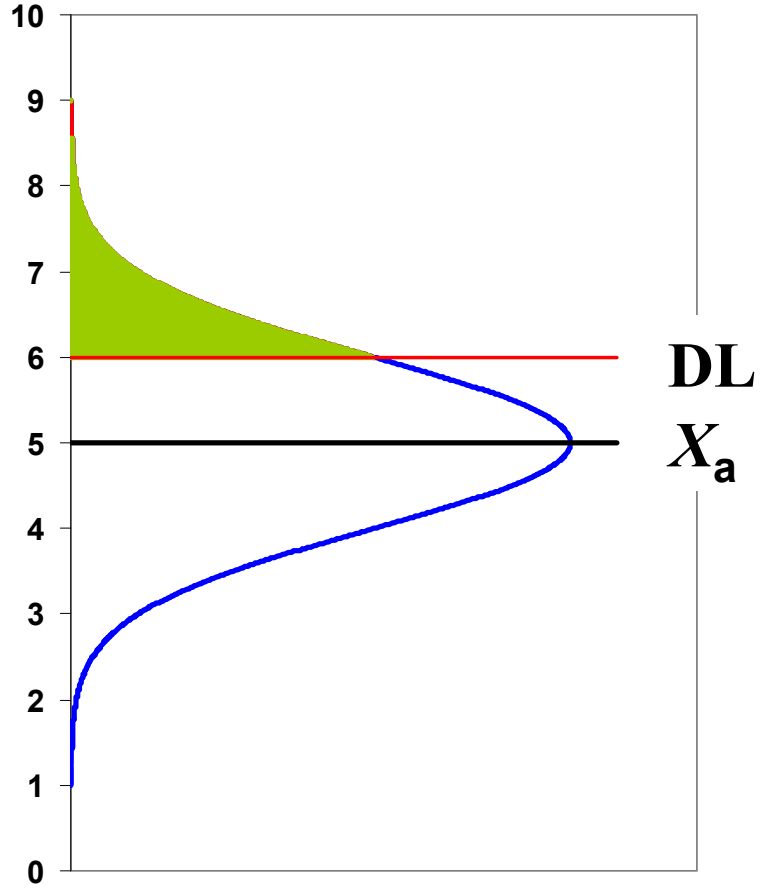
However, there is a 97.7 % probability that your lab would not have detected this analyte above the Detection Limit.

Probability of Detection for Non-Detects

SCORE
POD 2 (2.5% p)
POD 1 (15.9% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

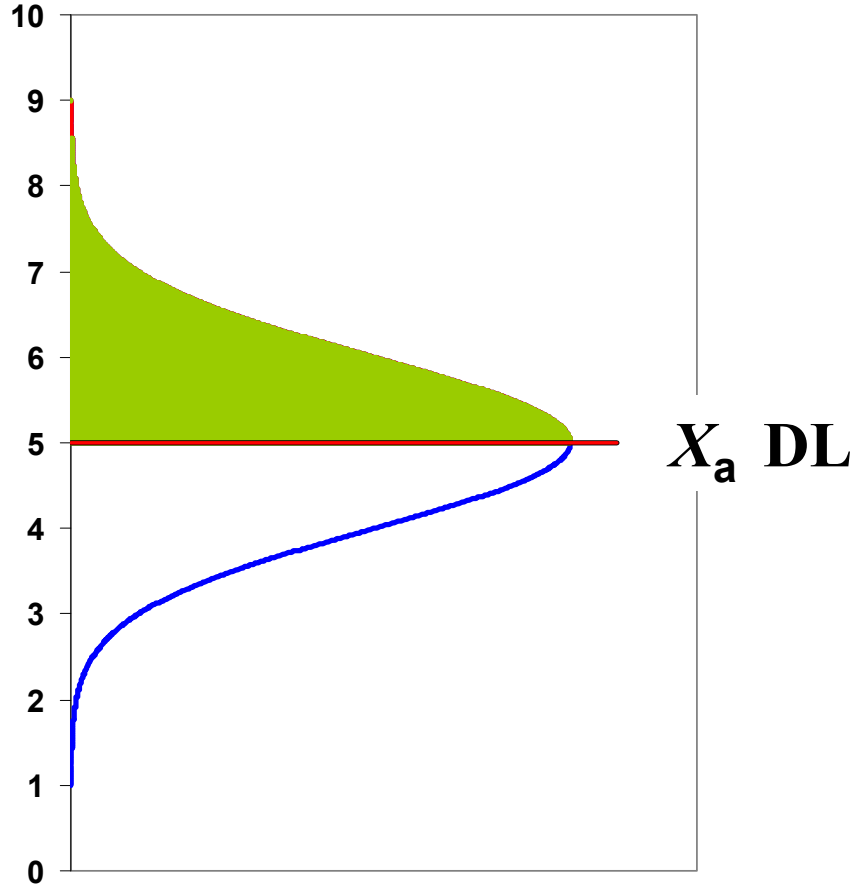
However, there is a 84.1 % probability that your lab would not have detected this analyte above the Detection Limit.

Probability of Detection for Non-Detects

SCORE
POD 2 (25.0% p)
POD 1 (50.0% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

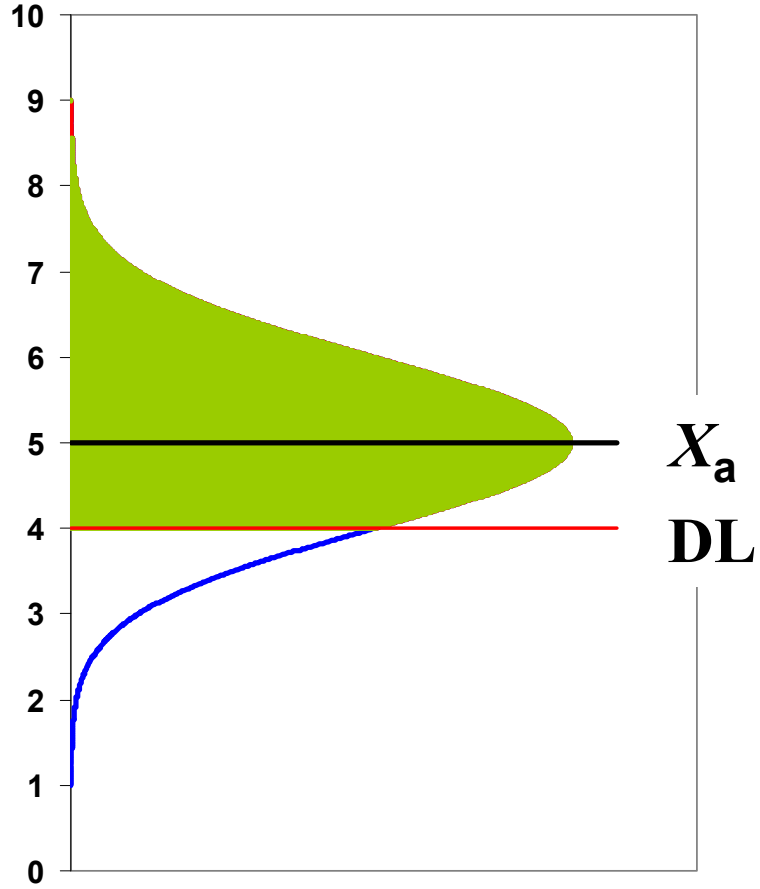
However, there is a 50.0 % probability that your lab could have detected this analyte above the Detection Limit.

Probability of Detection for Non-Detects

SCORE
POD 2 (70.7% p)
POD 1 (84.1% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

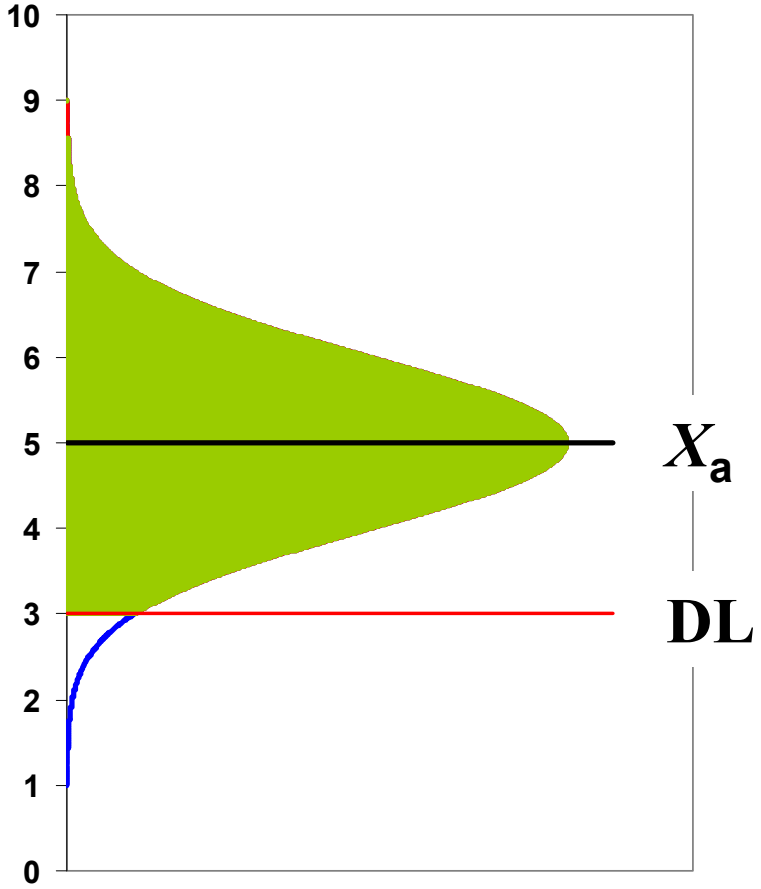
However, there is a 15.9 % probability that your lab would not have detected this analyte above the Detection Limit.

Probability of Detection for Non-Detects

SCORE
POD 2 (95.4% p)
POD 1 (97.7% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

However, there is a 2.3 % probability that your lab would not have detected this analyte above the Detection Limit.

Probability of Detection for Non-Detects

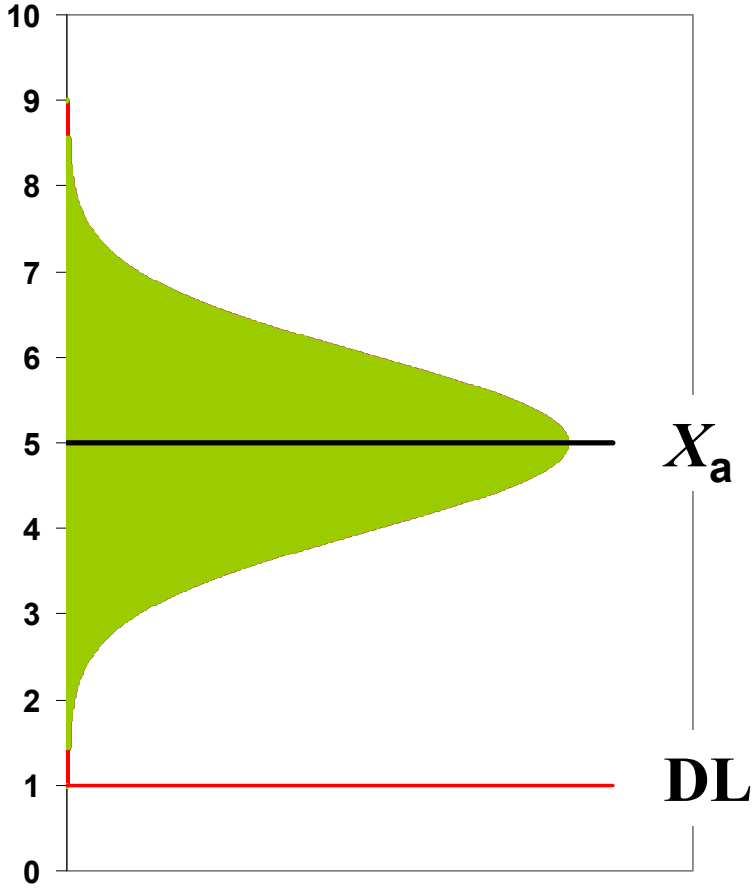
SCORE

POD 2 (100.0% p)

POD 1 (100.0% p)

$$X_a = 5$$

$$\sigma_{ffp} = 1$$



You did not detect the analyte!

However, there is a 0 % probability that your lab would not have detected this analyte above the Detection Limit.

Mycotoxin Program

#201461, Poultry Feed Reports

First AAFCO Mycotoxin Program Sample

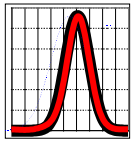
Sample Name	Poultry Feed
Sample Code	201461
# Tests in Duplicate	127
# Methods	43
# Analytes	13
# Labs	23
Issue Date	5/31/2014

Poultry Feed contaminated with Mycotoxins

AAFCO Check Sample Program

AAFCO CSP Mycotoxin Program

Are these Values in ranges of interest??



Code	Analyte	Assigned Value ppb (LOD)
600	Total Aflatoxin	20.1 (0.5)
601	AB1	18.5 (0.5)
602	AB2	1.6 (0.5)
603	AG1	ND (0.5)
604	AG2	ND (0.5)
610	Deoxynivalenol	1,200 (100)
620	Total Fumonisin	1,900 (100)
621	FB1	1,300 (100)
622	FB2	400 (100)
623	FB3	200 (100)
630	Ochratoxin A	44 (1.0)
640	T-2	236.8 (100)
650	Zearalenone	242.3 (50)

Expert Lab did not detect.

#201461, Poultry Feed Reports

All Tests by Method

Mycotoxin Proficiency Testing

Issue Date: 05/31/2014

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0001	601.23	AB1 (ppb)	LC-MS/MS	15.63	17.73	Y	Y		100%	-0.45	18.5	4.07
2033	601.23	AB1 (ppb)	LC-MS/MS	19.21	19.22	Y	Y		100%	0.18	18.5	4.07
0964	601.21	AB1 (ppb)	LC post-col photochem der. -Fl	21.782	16.994	Y	Y		100%	0.22	18.5	4.07
0918	601.23	AB1 (ppb)	LC-MS/MS	21.9	20.6	Y	Y		100%	0.68	18.5	4.07
0218	601.23	AB1 (ppb)	LC-MS/MS	21.7	20.82	Y	Y		100%	0.68	18.5	4.07
0010	601.23	AB1 (ppb)	LC-MS/MS	28.6	26.5	Y	Y		100%	2.22	18.5	4.07
2060	601.23	AB1 (ppb)	LC-MS/MS	31.024	30.292	Y	Y		100%	2.99	18.5	4.07
0553	601.23	AB1 (ppb)	LC-MS/MS			N	N	1	100.00%	NoZ	18.5	4.07
0001	602.23	AB2 (ppb)	LC-MS/MS		1.03	N	Y	0.5	99.91%	-1.62	1.6	0.352
0964	602.21	AB2 (ppb)	LC post-col photochem der.-Fl	1.51	1.358	Y	Y		100%	-0.47	1.6	0.352
0918	602.23	AB2 (ppb)	LC-MS/MS	1.88	1.81	Y	Y		100%	0.70	1.6	0.352
2033	602.23	AB2 (ppb)	LC-MS/MS	2.09	2.28	Y	Y		100%	1.66	1.6	0.352
2060	602.23	AB2 (ppb)	LC-MS/MS	2.609	2.006	Y	Y		100%	2.01	1.6	0.352
0218	602.23	AB2 (ppb)	LC-MS/MS	2.32	2.34	Y	Y		100%	2.07	1.6	0.352
0010	602.23	AB2 (ppb)	LC-MS/MS	4.1	3.2	Y	Y		100%	5.82	1.6	0.352
0553	602.23	AB2 (ppb)	LC-MS/MS			N	N	1	95.59%	NoZ	1.6	0.352
0001	603.23	AG1 (ppb)	LC-MS/MS			N	N	0.5			ND (0.5)	
0010	603.23	AG1 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
0218	603.23	AG1 (ppb)	LC-MS/MS		1.54	N	Y	1			ND (0.5)	
0553	603.23	AG1 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
0918	603.23	AG1 (ppb)	LC-MS/MS	0.5	1.1	Y	Y				ND (0.5)	
2033	603.23	AG1 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
2060	603.23	AG1 (ppb)	LC-MS/MS	1.27	1.543	Y	Y				ND (0.5)	
0001	604.23	AG2 (ppb)	LC-MS/MS			N	N	0.5			ND (0.5)	
0010	604.23	AG2 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
0218	604.23	AG2 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
0553	604.23	AG2 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
0918	604.23	AG2 (ppb)	LC-MS/MS			N	N	0.03			ND (0.5)	
2033	604.23	AG2 (ppb)	LC-MS/MS			N	N	1			ND (0.5)	
2060	604.23	AG2 (ppb)	LC-MS/MS	0.091	0.112	Y	Y				ND (0.5)	
0957	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1	0.8	Y	Y		100%	-6.42	1,200	186.8
0297	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1	1.1	Y	Y		100%	-6.42	1,200	186.8
0660	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1	1.4	Y	Y		100%	-6.42	1,200	186.8
0202	610.06	Deoxynivalenol (ppb)	r-Biopharm Ridascreen DON	1.3	1.3	Y	Y		100%	-6.42	1,200	186.8

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0918	610.23	Deoxynivalenol (ppb)	LC-MS/MS	1.21	1.42	Y	Y		100%	-6.42	1,200	186.8
2060	610.23	Deoxynivalenol (ppb)	LC-MS/MS	461.3	642.5	Y	Y		100%	-3.47	1,200	186.8
2052	610.23	Deoxynivalenol (ppb)	LC-MS/MS	695	686	Y	Y		100%	-2.73	1,200	186.8
0001	610.23	Deoxynivalenol (ppb)	LC-MS/MS	733.1	709.9	Y	Y		100%	-2.56	1,200	186.8
0013	610.20	Deoxynivalenol (ppb)	LC	1,040	1,050	Y	Y		100%	-0.83	1,200	186.8
0218	610.25	Deoxynivalenol (ppb)	GC-MS	1,021	1,109	Y	Y		100%	-0.72	1,200	186.8
0003	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,100	1,100	Y	Y		100%	-0.54	1,200	186.8
0027	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,100	1,100	Y	Y		100%	-0.54	1,200	186.8
0964	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,125	1,075	Y	Y		100%	-0.54	1,200	186.8
2033	610.22	Deoxynivalenol (ppb)	LC-MS	1,312	995	Y	Y		100%	-0.25	1,200	186.8
0227	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,300	1,200	Y	Y		100%	0.27	1,200	186.8
0033	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,300	1,300	Y	Y		100%	0.54	1,200	186.8
0035	610.08	Deoxynivalenol (ppb)	r-Biopharm Ridascreen FAST DOI	1,524	1,261	Y	Y		100%	1.03	1,200	186.8
0918	621.23	FB1 (ppb)	LC-MS/MS	0.16	0.24	Y	Y		100%	-6.50	1,300	199.9
0553	621.23	FB1 (ppb)	LC-MS/MS	993.2	869.1	Y	Y		100%	-1.85	1,300	199.9
2052	621.23	FB1 (ppb)	LC-MS/MS	1,052	820	Y	Y		100%	-1.82	1,300	199.9
0218	621.21	FB1 (ppb)	LC-Fl, OPA der.	1,176	1,267	Y	Y		100%	-0.39	1,300	199.9
2033	621.23	FB1 (ppb)	LC-MS/MS	1,511	1,248	Y	Y		100%	0.40	1,300	199.9
0013	621.20	FB1 (ppb)	LC	1,540	1,560	Y	Y		100%	1.25	1,300	199.9
0001	621.23	FB1 (ppb)	LC-MS/MS	1,676	1,538	Y	Y		100%	1.54	1,300	199.9
2060	621.23	FB1 (ppb)	LC-MS/MS	2,449	2,831	Y	Y		100%	6.70	1,300	199.9
2052	622.23	FB2 (ppb)	LC-MS/MS	296	185	Y	Y		100%	-2.17	400	73.448
0553	622.23	FB2 (ppb)	LC-MS/MS	284.5	251.5	Y	Y		100%	-1.80	400	73.448
2060	622.23	FB2 (ppb)	LC-MS/MS	279.7	274.4	Y	Y		100%	-1.67	400	73.448
0218	622.21	FB2 (ppb)	LC-Fl, OPA der.	270.8	300.4	Y	Y		100%	-1.56	400	73.448
0001	622.23	FB2 (ppb)	LC-MS/MS	468.6	450.2	Y	Y		100%	0.81	400	73.448
0013	622.20	FB2 (ppb)	LC	450	490	Y	Y		100%	0.95	400	73.448
2033	622.23	FB2 (ppb)	LC-MS/MS	525	486	Y	Y		100%	1.44	400	73.448
0918	622.23	FB2 (ppb)	LC-MS/MS			N	N	0.08	100.00%	NoZ	400	73.448
2052	623.23	FB3 (ppb)	LC-MS/MS	150	91	Y	Y		100%	-1.95	200	40.762
2060	623.23	FB3 (ppb)	LC-MS/MS	164.7	150.7	Y	Y		100%	-1.04	200	40.762
0553	623.23	FB3 (ppb)	LC-MS/MS	164.1	212	Y	Y		100%	-0.29	200	40.762
0660	630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	22.9	24.4	Y	Y		100%	-2.10	44	9.68
0964	630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	26.1	27.3	Y	Y		100%	-1.79	44	9.68
0957	630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	29.6	25.9	Y	Y		100%	-1.68	44	9.68
2060	630.23	Ochratoxin A (ppb)	LC-MS/MS	27.757	30.97	Y	Y		100%	-1.51	44	9.68
2033	630.23	Ochratoxin A (ppb)	LC-MS/MS	36	39.21	Y	Y		100%	-0.66	44	9.68
0918	630.23	Ochratoxin A (ppb)	LC-MS/MS	41.7	40.5	Y	Y		100%	-0.30	44	9.68
0218	630.23	Ochratoxin A (ppb)	LC-MS/MS	49.38	49.77	Y	Y		100%	0.58	44	9.68
0553	630.23	Ochratoxin A (ppb)	LC-MS/MS	47.96	51.28	Y	Y		100%	0.58	44	9.68
0001	630.23	Ochratoxin A (ppb)	LC-MS/MS		51.23	N	Y	50	26.77%	0.75	44	9.68
0001	640.23	T-2 (ppb)	LC-MS/MS	95.98	77.75	Y	Y		100%	-3.19	236.8	47.051

Tests ordered by Z score.

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0918	640.23	T-2 (ppb)	LC-MS/MS	131	120	Y	Y		100%	-2.37	236.8	47.051
2060	640.23	T-2 (ppb)	LC-MS/MS	177.5	133.1	Y	Y		100%	-1.73	236.8	47.051
0218	640.23	T-2 (ppb)	LC-MS/MS	206.5	205.2	Y	Y		100%	-0.66	236.8	47.051
2033	640.23	T-2 (ppb)	LC-MS/MS	217.5	199.3	Y	Y		100%	-0.60	236.8	47.051
0202	640.05	T-2 (ppb)	r-Biopharm Ridascreen FAST T-2	251.3	282.1	Y	Y		100%	0.64	236.8	47.051
0964	640.01	T-2 (ppb)	Neogen Veratox T-2 / HT-2	841.5	811.8	Y	Y		100%	12.54	236.8	47.051
0227	640.01	T-2 (ppb)	Neogen Veratox T-2 / HT-2	2,376	3,480	Y	Y		100%	57.20	236.8	47.051
0202	600.12	Total Aflatoxin (ppb)	r-Biopharm Ridascreen FAST Afla	10.2	14.9	Y	Y		100%	-1.71	20.1	4.422
0004	600.14	Total Aflatoxin (ppb)	Vicam Aflatest	14	14	Y	Y		100%	-1.38	20.1	4.422
0660	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	16.9	17.2	Y	Y		100%	-0.69	20.1	4.422
0001	600.24	Total Aflatoxin (ppb)	LC-MS/MS	15.63	18.76	Y	Y		100%	-0.66	20.1	4.422
0027	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	18.8	17.1	Y	Y		100%	-0.49	20.1	4.422
0958	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	17.9	18.2	Y	Y		100%	-0.46	20.1	4.422
0227	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	18	19	Y	Y		100%	-0.36	20.1	4.422
0003	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19.2	18.1	Y	Y		100%	-0.33	20.1	4.422
0964	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19	19.1	Y	Y		100%	-0.24	20.1	4.422
0957	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	23.5	14.7	Y	Y		100%	-0.23	20.1	4.422
0297	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19.75	20.25	Y	Y		100%	-0.02	20.1	4.422
0035	600.20	Total Aflatoxin (ppb)	LC	20.429	21.171	Y	Y		100%	0.16	20.1	4.422
0964	600.21	Total Aflatoxin (ppb)	LC post-col photochem der. Fl	23.293	18.352	Y	Y		100%	0.16	20.1	4.422
0042	600.20	Total Aflatoxin (ppb)	LC	20.33	23.06	Y	Y		100%	0.36	20.1	4.422
2033	600.24	Total Aflatoxin (ppb)	LC-MS/MS	21.48	22.1	Y	Y	Highlights show sum of different Mycotoxin forms	100%	0.38	20.1	4.422
0959	600.10	Total Aflatoxin (ppb)	TLC	22.1	21.5	Y	Y		100%	0.38	20.1	4.422
0035	600.13	Total Aflatoxin (ppb)	r-Biopharm Ridascreen FAST Afla	23.391	22.068	Y	Y		100%	0.59	20.1	4.422
0959	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	0.7	0.1	Y	Y		100%	-6.88	1,900	276
0957	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	2	1.5	Y	Y		100%	-6.88	1,900	276
0202	620.09	Total Fumonisin (ppb)	r-Biopharm Ridascreen Fast Fumc	1.8	2	Y	Y		100%	-6.88	1,900	276
0958	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1.9	2	Y	Y		100%	-6.88	1,900	276
2052	620.23	Total Fumonisin (ppb)	LC-MS/MS	1,498	1,096	Y	Y		100%	-2.19	1,900	276
0042	620.12	Total Fumonisin (ppb)	Vicam FumoniTest 200	1,320	1,520	Y	Y		100%	-1.74	1,900	276
0964	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1,400	2,100	Y	Y		100%	-0.54	1,900	276
0027	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1,900	1,900	Y	Y		100%	0.00	1,900	276
0004	620.11	Total Fumonisin (ppb)	Vicam FumoniTest	2,000	1,900	Y	Y		100%	0.18	1,900	276
0227	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	2,000	2,000	Y	Y		100%	0.36	1,900	276
0013	620.11	Total Fumonisin (ppb)	Vicam FumoniTest	1,980	2,040	Y	Y		100%	0.40	1,900	276
0001	620.23	Total Fumonisin (ppb)	LC-MS/MS	2,144	1,988	Y	Y		100%	0.60	1,900	276
0035	620.09	Total Fumonisin (ppb)	r-Biopharm Ridascreen Fast Fumc	2,358	3,265	Y	Y		100%	3.30	1,900	276
0957	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	0.2	0.2	Y	Y		100%	-5.05	242.3	47.978
0660	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	0.2	0.4	Y	Y		100%	-5.04	242.3	47.978
0553	650.23	Zearalenone (ppb)	LC-MS	44.81	42.18	Y	Y		100%	-4.14	242.3	47.978
0202	650.06	Zearalenone (ppb)	r-Biopharm Ridascreen FAST Zea	135.9	136	Y	Y		100%	-2.22	242.3	47.978
2052	650.24	Zearalenone (ppb)	LC-MS/MS	149	135	Y	Y		100%	-2.09	242.3	47.978

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0035	650.07	Zearalenone (ppb)	r-Biopharm Ridascreen FAST Zea	159.3	184.8	Y	Y		100%	-1.46	242.3	47.978
0918	650.24	Zearalenone (ppb)	LC-MS/MS	190	167	Y	Y		100%	-1.33	242.3	47.978
2033	650.24	Zearalenone (ppb)	LC-MS/MS	251.3	240.6	Y	Y		100%	0.08	242.3	47.978
0027	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	252.5	299.6	Y	Y		100%	0.70	242.3	47.978
0218	650.24	Zearalenone (ppb)	LC-MS/MS	286.5	276.5	Y	Y		100%	0.82	242.3	47.978
0001	650.24	Zearalenone (ppb)	LC-MS/MS	301.1	281.7	Y	Y		100%	1.02	242.3	47.978
2060	650.24	Zearalenone (ppb)	LC-MS/MS	315.9	323.2	Y	Y		100%	1.61	242.3	47.978
0227	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	318	494	Y	Y		100%	3.41	242.3	47.978
0964	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	461	493.4	Y	Y		100%	4.90	242.3	47.978

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.
Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

#201461, Poultry Feed Reports

Report Cards

Your method

Your results

Your Z score

Expert lab & Horwitz SD

Mycotoxin Proficiency Testing **Report Card for Lab #[redacted]** **Issue Date: 05/31/2014**

Sample # 201461 Poultry Feed

Method Code	Analyte	Method Used	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz σ ffp
601.23	AB1 (ppb)	LC-MS/MS	31.024	30.292	Y	Y		100%	2.99	18.5	4.07
602.23	AB2 (ppb)	LC-MS/MS	2.609	2.006	Y	Y		100%	2.01	1.6	0.352
603.23	AG1 (ppb)	LC-MS/MS	1.27	1.543	Y	Y				ND (0.5)	
604.23	AG2 (ppb)	LC-MS/MS	0.091	0.112	Y	Y				ND (0.5)	
610.23	Deoxynivalenol (ppb)	LC-MS/MS	461.3	642.5	Y	Y		100%	-3.47	1,200	186.8
621.23	FB1 (ppb)	LC-MS/MS	2,449	2,831	Y	Y		100%	6.70	1,300	199.9
622.23	FB2 (ppb)	LC-MS/MS	279.7	274.4	Y	Y		100%	-1.67	400	73.448
623.23	FB3 (ppb)	LC-MS/MS	164.7	150.7	Y	Y		100%	-1.04	200	40.762
630.23	Ochratoxin A (ppb)	LC-MS/MS	27.757	30.97	Y	Y		100%	-1.51	44	9.68
640.23	T-2 (ppb)	LC-MS/MS	177.5	133.1	Y	Y		100%	-1.73	236.8	47.051
650.24	Zearalenone (ppb)	LC-MS/MS	315.9	323.2	Y	Y		100%	1.61	242.3	47.978

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.
Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

Interesting?? low LOD

Expert Lab did not detect.

Mycotoxin Proficiency Testing **Report Card for Lab #[redacted]** **Issue Date: 05/31/2014**

Sample # 201461 Poultry Feed

Method Code	Analyte	Method Used	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz σ ffp
600.24	Total Aflatoxin (ppb)	LC-MS/MS	15.63	18.76	Y	Y		100%	**-0.66**	20.1	4.422
601.23	AB1 (ppb)	LC-MS/MS	15.63	17.73	Y	Y		100%	**-0.45**	18.5	4.07
602.23	AB2 (ppb)	LC-MS/MS		1.03	N	Y	0.5	99.91%	-1.62	1.6	0.352
603.23	AG1 (ppb)	LC-MS/MS			N	N	0.5			ND (0.5)	
604.23	AG2 (ppb)	LC-MS/MS			N	N	0.5			ND (0.5)	
610.23	Deoxynivalenol (ppb)	LC-MS/MS	733.1	709.9	Y	Y		100%	**-2.56**	1,200	186.8
620.23	Total Fumonisin (ppb)	LC-MS/MS	2,144	1,988	Y	Y		100%	**0.60**	1,900	276
621.23	FB1 (ppb)	LC-MS/MS	1,676	1,538	Y	Y		100%	**1.54**	1,300	199.9
622.23	FB2 (ppb)	LC-MS/MS	468.6	450.2	Y	Y		100%	**0.81**	400	73.448
630.23	Ochratoxin A (ppb)	LC-MS/MS		51.23	N	Y	50	26.77%	0.75	44	9.68
640.23	T-2 (ppb)	LC-MS/MS	95.98	77.75	Y	Y		100%	**-3.19**	236.8	47.051
650.24	Zearalenone (ppb)	LC-MS/MS	301.1	281.7	Y	Y		100%	**1.02**	242.3	47.978

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.
Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

Assigned value < your LOD

Mycotoxin Proficiency Testing **Report Card for Lab #[redacted]** **Issue Date: 05/31/2014**

Sample # 201461 Poultry Feed

Method Code	Analyte	Method Used	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz σ ffp
600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19	19.1	Y	Y		100%	**-0.24**	20.1	4.422
600.21	Total Aflatoxin (ppb)	LC post-col photochem der. Fl	23.293	18.352	Y	Y		100%	**0.16**	20.1	4.422
601.21	AB1 (ppb)	LC post-col photochem der. -Fl	21.782	16.994	Y	Y		100%	**0.22**	18.5	4.07
602.21	AB2 (ppb)	LC post-col photochem der.-Fl	1.51	1.358	Y	Y		100%	**-0.47**	1.6	0.352
610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,125	1,075	Y	Y		100%	**-0.54**	1,200	186.8
620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1,400	2,100	Y	Y		100%	**-0.54**	1,900	276
630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	26.1	27.3	Y	Y		100%	**-1.79**	44	9.68
640.01	T-2 (ppb)	Neogen Veratox T-2 / HT-2	841.5	811.8	Y	Y		100%	**12.54**	236.8	47.051
650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	461	493.4	Y	Y		100%	**4.90**	242.3	47.978

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.

Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

Check Your Kits!

Mycotoxin Proficiency Testing **Report Card for Lab #[redacted]** **Issue Date: 05/31/2014**

Sample # 201461 Poultry Feed

Method Code	Analyte	Method Used	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz σ ffp
600.13	Total Aflatoxin (ppb)	r-Biopharm Ridascreen FAST Afla	23.391	22.068	Y	Y		100%	0.59	20.1	4.422
600.20	Total Aflatoxin (ppb)	LC	20.429	21.171	Y	Y		100%	0.16	20.1	4.422
610.08	Deoxynivalenol (ppb)	r-Biopharm Ridascreen FAST DOI	1,524	1,261	Y	Y		100%	1.03	1,200	186.8
620.09	Total Fumonisin (ppb)	r-Biopharm Ridascreen Fast Fumc	2,358	3,265	Y	Y		100%	3.30	1,900	276
650.07	Zearalenone (ppb)	r-Biopharm Ridascreen FAST Zea	159.3	184.8	Y	Y		100%	-1.46	242.3	47.978

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.
Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

Check Your Kits!

Mycotoxin Proficiency Testing **Report Card for Lab #[redacted]** **Issue Date: 05/31/2014**

Sample # 201461 Poultry Feed

Method Code	Analyte	Method Used	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz σ ffp
600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	18	19	Y	Y		100%	-0.36	20.1	4.422
610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,300	1,200	Y	Y		100%	0.27	1,200	186.8
620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	2,000	2,000	Y	Y		100%	0.36	1,900	276
640.01	T-2 (ppb)	Neogen Veratox T-2 / HT-2	2,376	3,480	Y	Y		100%	57.20	236.8	47.051
650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	318	494	Y	Y		100%	3.41	242.3	47.978

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.
Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

Or Check Just 1 Kit!

Mycotoxin Proficiency Testing **Report Card for Lab #[redacted]** **Issue Date: 05/31/2014**

Sample # 201461 Poultry Feed

Method Code	Analyte	Method Used	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz σ ffp
610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,300	1,300	Y	Y		100%	**0.54**	1,200	186.8

Notes: Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%). If only 1 of 2 results detected Z for that is Grey and Probability of Detection is for the Non-Detect (see documentation). A Red NoZ indicates both results Not Detected with a Probability Of Detecting a single value.
Where the Assigned Value is ND then the LOD follows as (LOD) in the Analyte units.

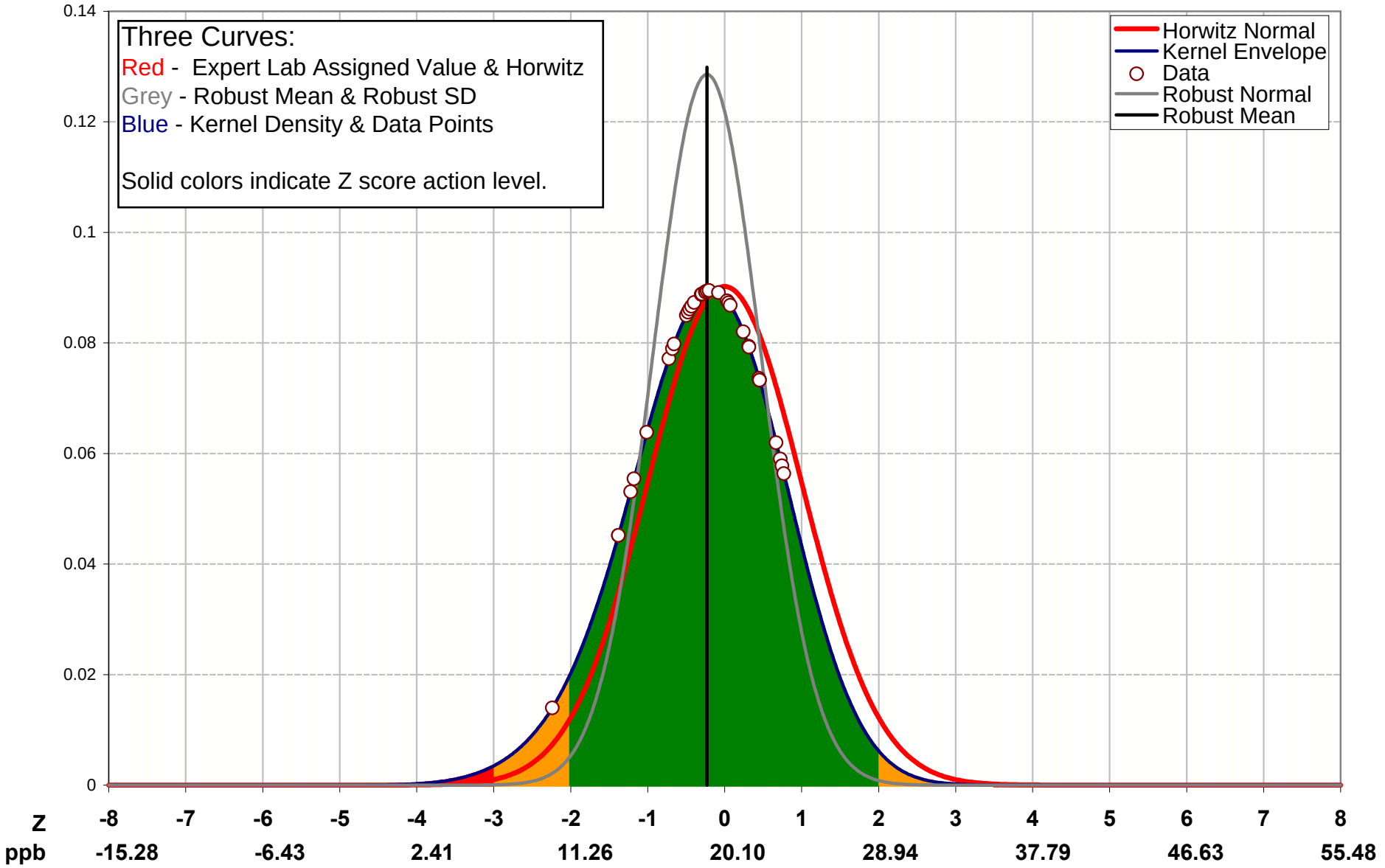
Comfortable Z Score

#201461, Poultry Feed Reports

Behind the Scene Analysis

Total Aflatoxin (ppb) Code: 600 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014



Assigned Value	**20.1 (ppb)**	# Methods Used	8	Unique LOD's at:
Horwitz SD	4.42 (ppb)	Kernel Bandwidth	3.32 (ppb)	
Robust Mean (Det.)	**19.1 (ppb)**	Number of Non-Detects	0	
Robust SD (Det.)	3.10 (ppb)	**Number of Detects**	**34**	
		Participating Labs	15	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Look at Methods Used

Very close Z scores

Mycotoxin Proficiency Testing

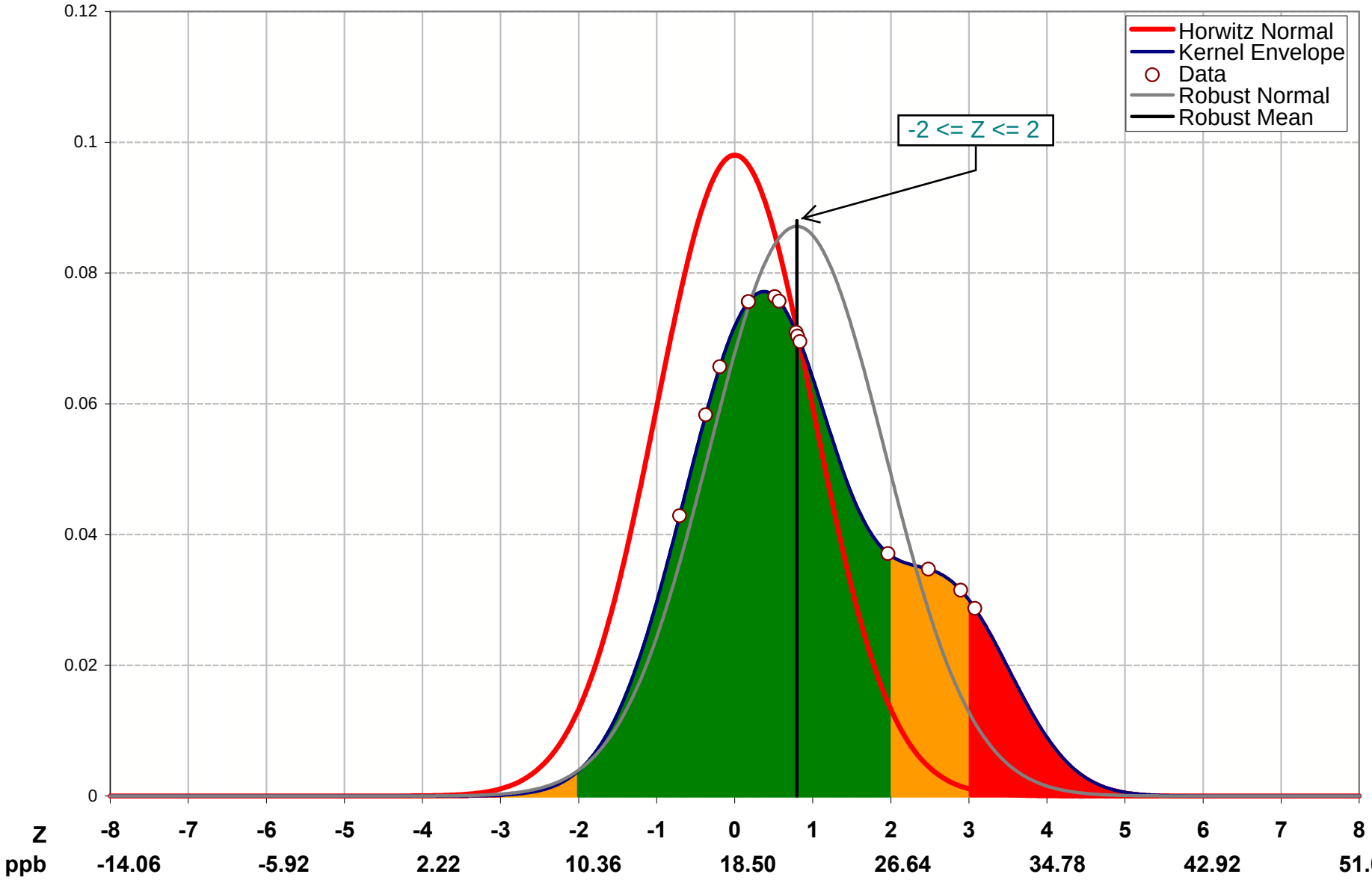
Issue Date: 05/31/2014

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0202	600.12	Total Aflatoxin (ppb)	r-Biopharm Ridascreen FAST Aflatoxin	10.2	14.9	Y	Y		100%	-1.71	20.1	4.422
0004	600.14	Total Aflatoxin (ppb)	Vicam Aflatest	14	14	Y	Y		100%	-1.38	20.1	4.422
0660	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	16.9	17.2	Y	Y		100%	-0.69	20.1	4.422
0001	600.24	Total Aflatoxin (ppb)	LC-MS/MS	15.63	18.76	Y	Y		100%	-0.66	20.1	4.422
0027	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	18.8	17.1	Y	Y		100%	-0.49	20.1	4.422
0958	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	17.9	18.2	Y	Y		100%	-0.46	20.1	4.422
0227	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	18	19	Y	Y		100%	-0.36	20.1	4.422
0003	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19.2	18.1	Y	Y		100%	-0.33	20.1	4.422
0964	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19	19.1	Y	Y		100%	-0.24	20.1	4.422
0957	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	23.5	14.7	Y	Y		100%	-0.23	20.1	4.422
0297	600.01	Total Aflatoxin (ppb)	Neogen Veratox Aflatoxin	19.75	20.25	Y	Y		100%	-0.02	20.1	4.422
0035	600.20	Total Aflatoxin (ppb)	LC	20.429	21.171	Y	Y		100%	0.16	20.1	4.422
0964	600.21	Total Aflatoxin (ppb)	LC post-col photochem der. FI	23.293	18.352	Y	Y		100%	0.16	20.1	4.422
0042	600.20	Total Aflatoxin (ppb)	LC	20.33	23.06	Y	Y		100%	0.36	20.1	4.422
2033	600.24	Total Aflatoxin (ppb)	LC-MS/MS	21.48	22.1	Y	Y		100%	0.38	20.1	4.422
0959	600.10	Total Aflatoxin (ppb)	TLC	22.1	21.5	Y	Y		100%	0.38	20.1	4.422
0035	600.13	Total Aflatoxin (ppb)	r-Biopharm Ridascreen FAST Aflatoxin SC	23.391	22.068	Y	Y		100%	0.59	20.1	4.422

AB1 (ppb) Code: 601 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014

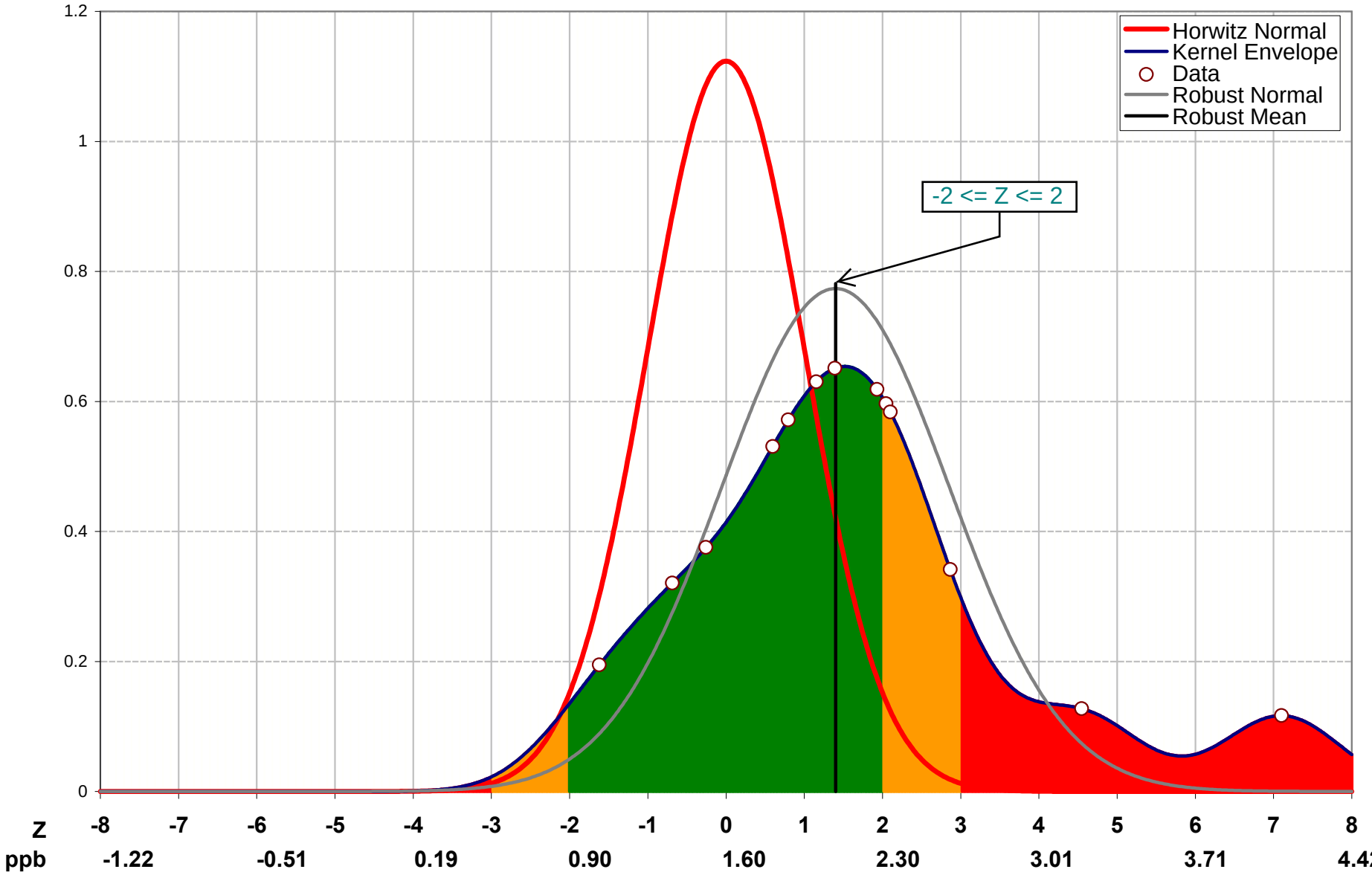


		# Methods Used	2		
Assigned Value	**18.5 (ppb)**	Kernel Bandwidth	3.05 (ppb)	Unique LOD's at:	1 (ppb)
Horwitz SD	4.07 (ppb)	Number of Non-Detects	2		
Robust Mean (Det.)	**21.7 (ppb)**	**Number of Detects**	**14**		
Robust SD (Det.)	4.58 (ppb)	Participating Labs	8		

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

AB2 (ppb) Code: 602 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014

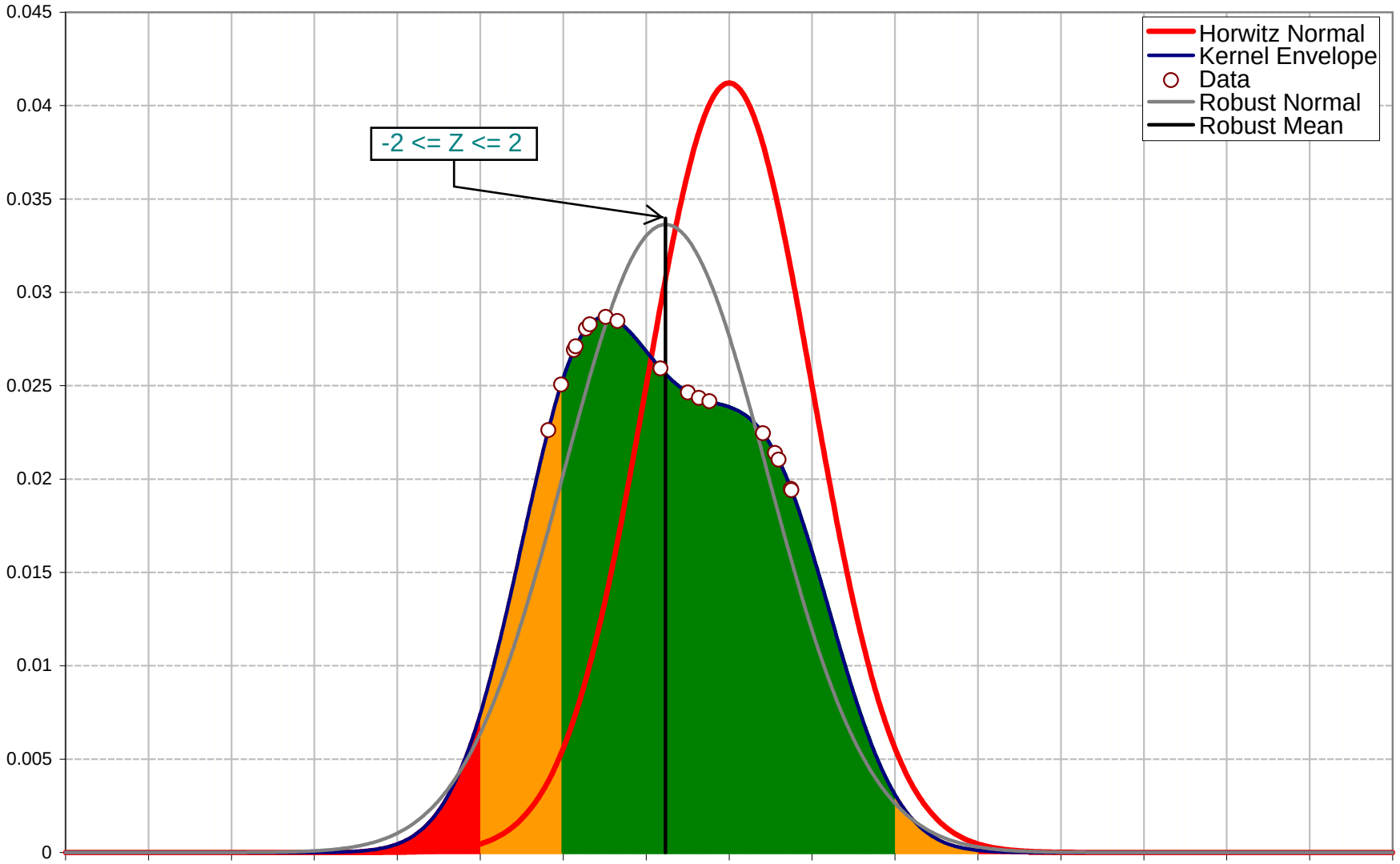


		# Methods Used	2		
Assigned Value	**1.6 (ppb)**	Kernel Bandwidth	0.26 (ppb)	Unique LOD's at:	0.5 (ppb)
Horwitz SD	0.35 (ppb)	Number of Non-Detects	3		1 (ppb)
Robust Mean (Det.)	**2.1 (ppb)**	**Number of Detects**	**13**		
Robust SD (Det.)	0.51 (ppb)	Participating Labs	8		

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Ochratoxin A (ppb) Code: 630 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014



		# Methods Used	2		
Assigned Value	**44 (ppb)**	Kernel Bandwidth	7.26 (ppb)	Unique LOD's at:	50 (ppb)
Horwitz SD	9.68 (ppb)	Number of Non-Detects	1		
Robust Mean (Det.)	**37 (ppb)**	**Number of Detects**	**17**		
Robust SD (Det.)	11.86 (ppb)	Participating Labs	9		

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Keep an eye on Method Order

Mycotoxin Proficiency Testing

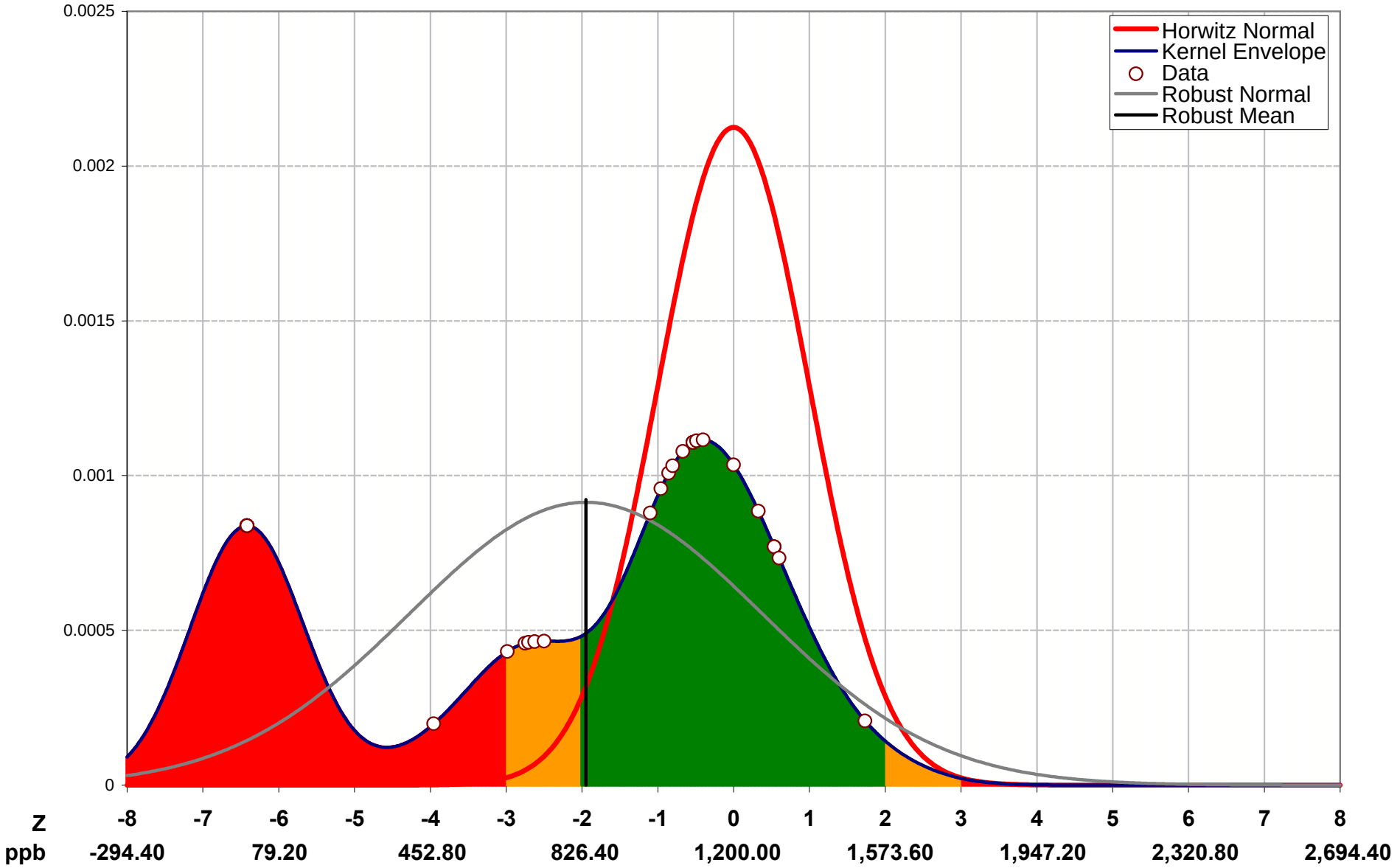
Issue Date: 05/31/2014

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0660	630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	22.9	24.4	Y	Y		100%	-2.10	44	9.68
0964	630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	26.1	27.3	Y	Y		100%	-1.79	44	9.68
0957	630.01	Ochratoxin A (ppb)	Neogen Veratox for Ochratoxin	29.6	25.9	Y	Y		100%	-1.68	44	9.68
2060	630.23	Ochratoxin A (ppb)	LC-MS/MS	27.757	30.97	Y	Y		100%	-1.51	44	9.68
2033	630.23	Ochratoxin A (ppb)	LC-MS/MS	36	39.21	Y	Y		100%	-0.66	44	9.68
0918	630.23	Ochratoxin A (ppb)	LC-MS/MS	41.7	40.5	Y	Y		100%	-0.30	44	9.68
0218	630.23	Ochratoxin A (ppb)	LC-MS/MS	49.38	49.77	Y	Y		100%	0.58	44	9.68
0553	630.23	Ochratoxin A (ppb)	LC-MS/MS	47.96	51.28	Y	Y		100%	0.58	44	9.68
0001	630.23	Ochratoxin A (ppb)	LC-MS/MS		51.23	N	Y	50	26.77%	0.75	44	9.68

Deoxynivalenol (ppb) Code: 610 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014



Assigned Value	**1200 (ppb)**	# Methods Used	7	
Horwitz SD	186.80 (ppb)	Kernel Bandwidth	140.10 (ppb)	Unique LOD's at:
Robust Mean (Det.)	**836 (ppb)**	Number of Non-Detects	0	
Robust SD (Det.)	434.45 (ppb)	**Number of Detects**	**34**	
		Participating Labs	17	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Possible Unit Errors
ppm vs ppb??

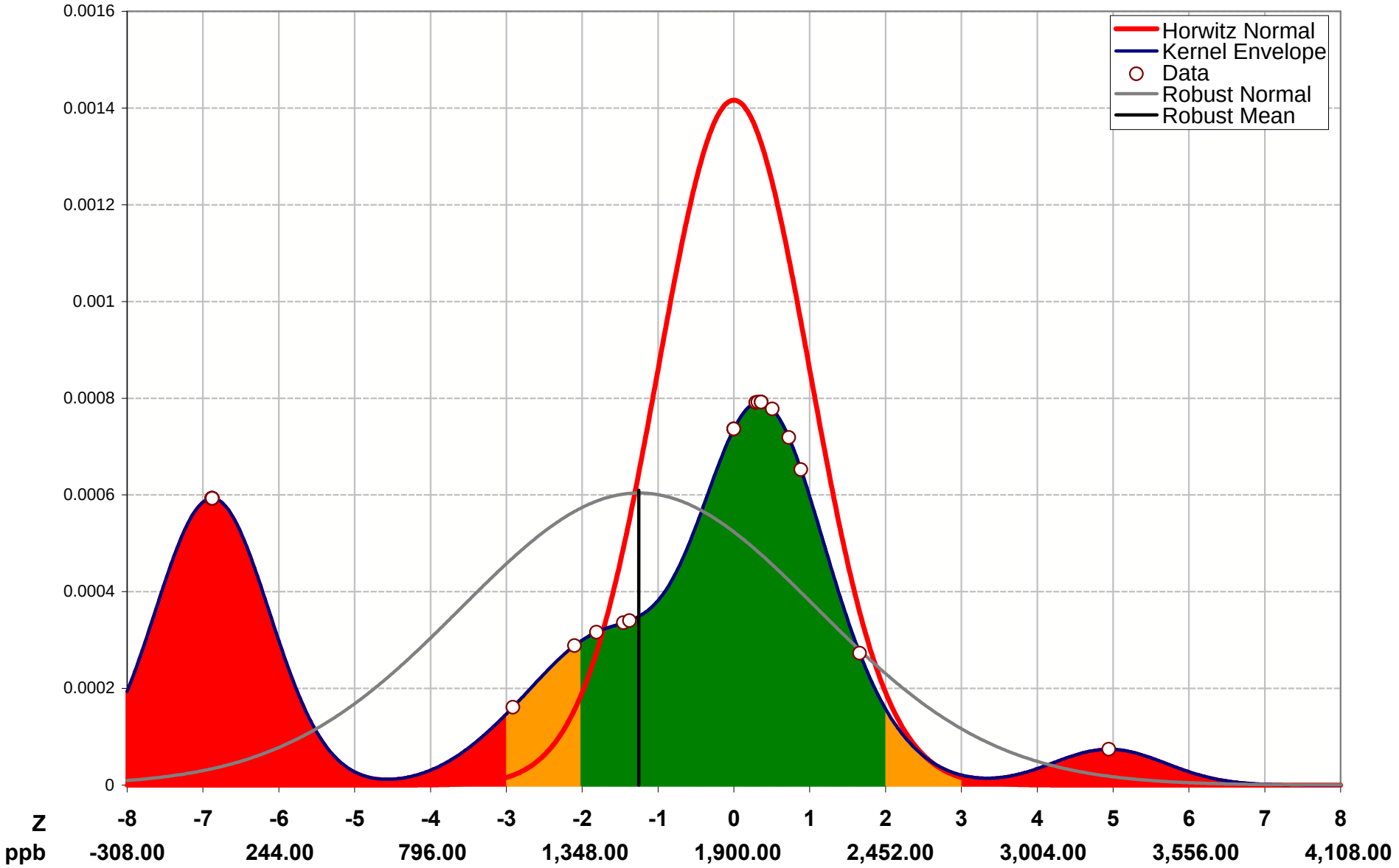
Mycotoxin Proficiency Testing **Issue Date: 05/31/2014**

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0957	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1	0.8	Y	Y		100%	-6.42	1,200	186.8
0297	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1	1.1	Y	Y		100%	-6.42	1,200	186.8
0660	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1	1.4	Y	Y		100%	-6.42	1,200	186.8
0202	610.06	Deoxynivalenol (ppb)	r-Biopharm Ridascreen DON	1.3	1.3	Y	Y		100%	-6.42	1,200	186.8
0918	610.23	Deoxynivalenol (ppb)	LC-MS/MS	1.21	1.42	Y	Y		100%	-6.42	1,200	186.8
2060	610.23	Deoxynivalenol (ppb)	LC-MS/MS	461.3	642.5	Y	Y		100%	-3.47	1,200	186.8
2052	610.23	Deoxynivalenol (ppb)	LC-MS/MS	695	686	Y	Y		100%	-2.73	1,200	186.8
0001	610.23	Deoxynivalenol (ppb)	LC-MS/MS	733.1	709.9	Y	Y		100%	-2.56	1,200	186.8
0013	610.20	Deoxynivalenol (ppb)	LC	1,040	1,050	Y	Y		100%	-0.83	1,200	186.8
0218	610.25	Deoxynivalenol (ppb)	GC-MS	1,021	1,109	Y	Y		100%	-0.72	1,200	186.8
0003	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,100	1,100	Y	Y		100%	-0.54	1,200	186.8
0027	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,100	1,100	Y	Y		100%	-0.54	1,200	186.8
0964	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,125	1,075	Y	Y		100%	-0.54	1,200	186.8
2033	610.22	Deoxynivalenol (ppb)	LC-MS	1,312	995	Y	Y		100%	-0.25	1,200	186.8
0227	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,300	1,200	Y	Y		100%	0.27	1,200	186.8
0033	610.01	Deoxynivalenol (ppb)	Neogen Veratox for DON	1,300	1,300	Y	Y		100%	0.54	1,200	186.8
0035	610.08	Deoxynivalenol (ppb)	r-Biopharm Ridascreen FAST DON SC	1,524	1,261	Y	Y		100%	1.03	1,200	186.8

Total Fumonisin (ppb) Code: 620 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014



Assigned Value	**1900 (ppb)**	# Methods Used	5	
Horwitz SD	276.00 (ppb)	Kernel Bandwidth	207.00 (ppb)	Unique LOD's at:
Robust Mean (Det.)	**1554 (ppb)**	Number of Non-Detects	0	
Robust SD (Det.)	647.08 (ppb)	**Number of Detects**	**26**	
		Participating Labs	13	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Possible Unit Errors
ppm vs ppb??

Mycotoxin Proficiency Testing

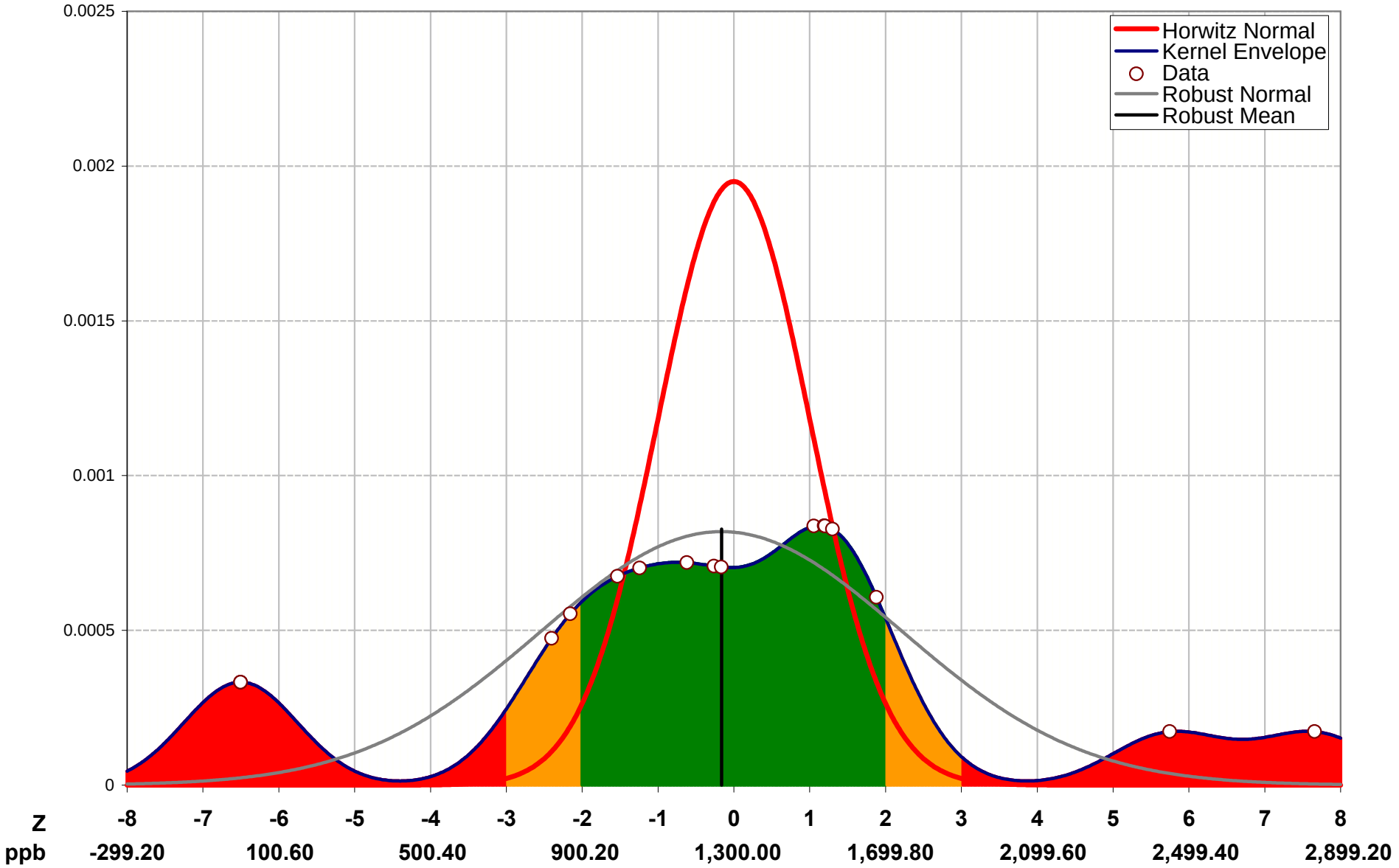
Issue Date: 05/31/2014

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0959	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	0.7	0.1	Y	Y		100%	-6.88	1,900	276
0957	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	2	1.5	Y	Y		100%	-6.88	1,900	276
0202	620.09	Total Fumonisin (ppb)	r-Biopharm Ridascreen Fast Fumonisin	1.8	2	Y	Y		100%	-6.88	1,900	276
0958	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1.9	2	Y	Y		100%	-6.88	1,900	276
2052	620.23	Total Fumonisin (ppb)	LC-MS/MS	1,498	1,096	Y	Y		100%	-2.19	1,900	276
0042	620.12	Total Fumonisin (ppb)	Vicam FumoniTest 200	1,320	1,520	Y	Y		100%	-1.74	1,900	276
0964	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1,400	2,100	Y	Y		100%	-0.54	1,900	276
0027	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	1,900	1,900	Y	Y		100%	0.00	1,900	276
0004	620.11	Total Fumonisin (ppb)	Vicam FumoniTest	2,000	1,900	Y	Y		100%	0.18	1,900	276
0227	620.01	Total Fumonisin (ppb)	Neogen Veratox for Fumonisin	2,000	2,000	Y	Y		100%	0.36	1,900	276
0013	620.11	Total Fumonisin (ppb)	Vicam FumoniTest	1,980	2,040	Y	Y		100%	0.40	1,900	276
0001	620.23	Total Fumonisin (ppb)	LC-MS/MS	2,144	1,988	Y	Y		100%	0.60	1,900	276
0035	620.09	Total Fumonisin (ppb)	r-Biopharm Ridascreen Fast Fumonisin	2,358	3,265	Y	Y		100%	3.30	1,900	276

FB1 (ppb) Code: 621 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014

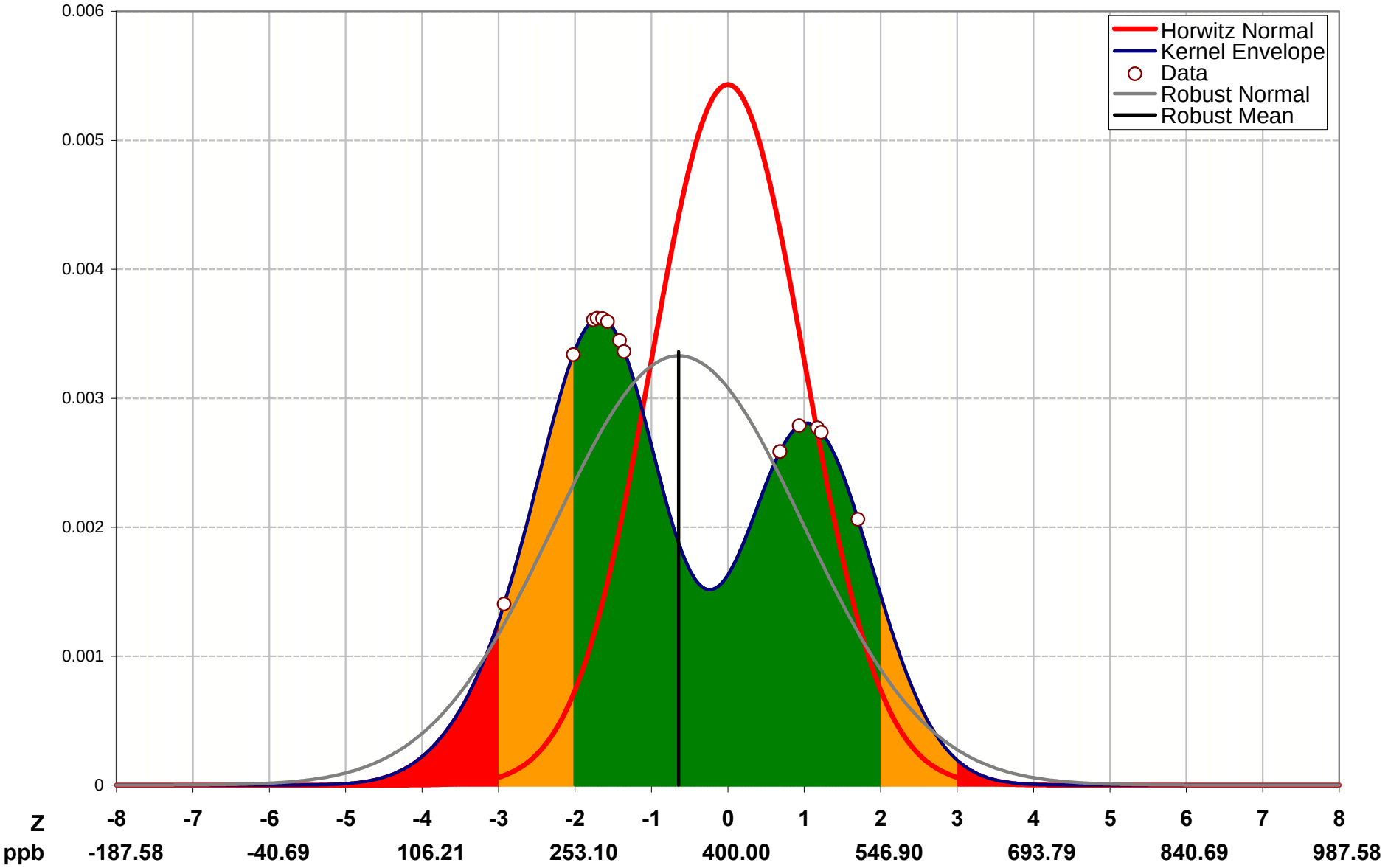


Assigned Value	**1300 (ppb)**	# Methods Used	3	
Horwitz SD	199.90 (ppb)	Kernel Bandwidth	149.93 (ppb)	Unique LOD's at:
Robust Mean (Det.)	**1268 (ppb)**	Number of Non-Detects	0	
Robust SD (Det.)	475.96 (ppb)	**Number of Detects**	**16**	
		Participating Labs	8	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

FB2 (ppb) Code: 622 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014



		# Methods Used	3		
Assigned Value	**400 (ppb)**	Kernel Bandwidth	55.09 (ppb)	Unique LOD's at:	0.08 (ppb)
Horwitz SD	73.45 (ppb)	Number of Non-Detects	2		
Robust Mean (Det.)	**353 (ppb)**	**Number of Detects**	**14**		
Robust SD (Det.)	119.84 (ppb)	Participating Labs	8		

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Keep an eye on possible bimodal data.

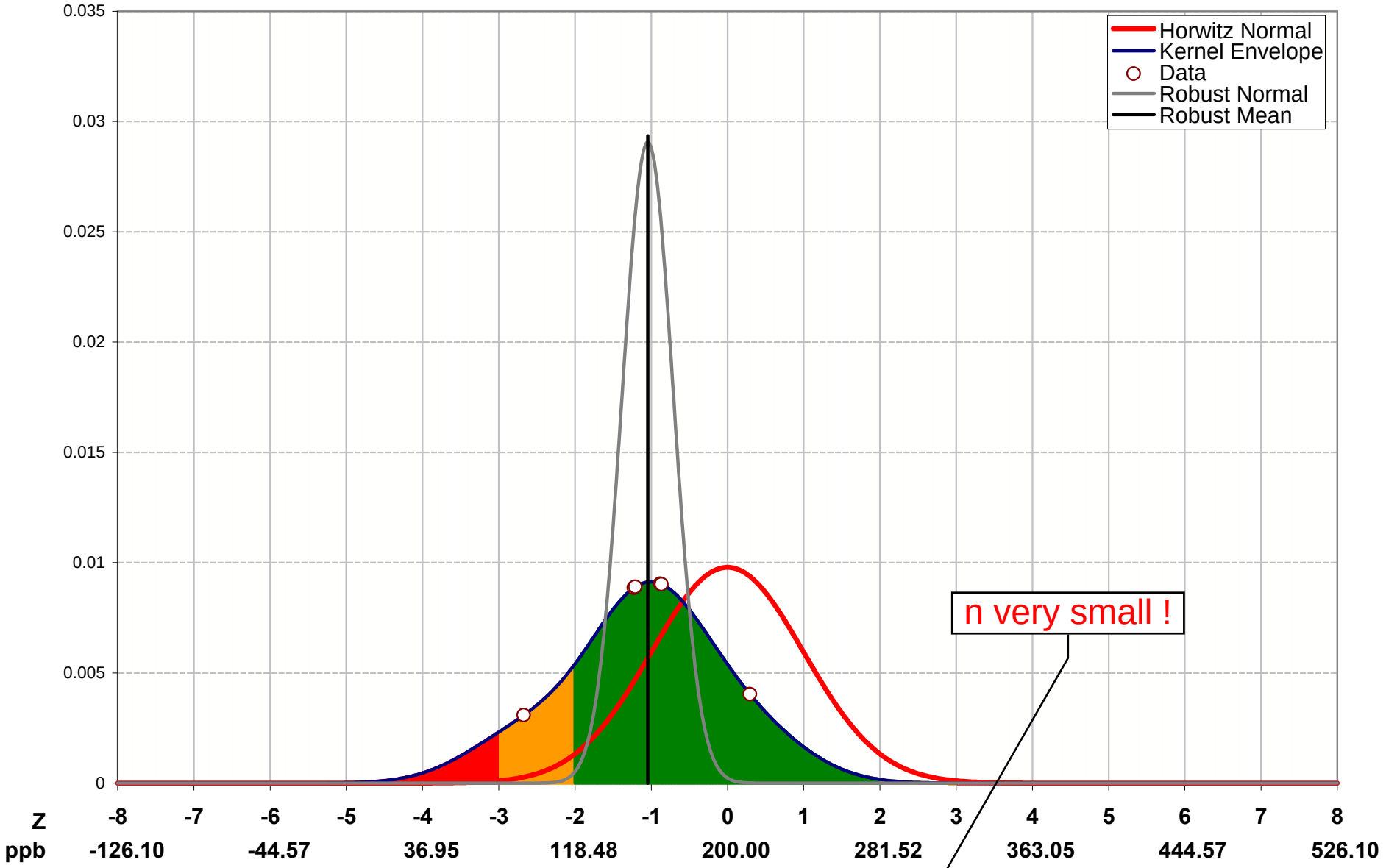
Mycotoxin Proficiency Testing **Issue Date: 05/31/2014**

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
2052	622.23	FB2 (ppb)	LC-MS/MS	296	185	Y	Y		100%	-2.17	400	73.448
0553	622.23	FB2 (ppb)	LC-MS/MS	284.5	251.5	Y	Y		100%	-1.80	400	73.448
2060	622.23	FB2 (ppb)	LC-MS/MS	279.7	274.4	Y	Y		100%	-1.67	400	73.448
0218	622.21	FB2 (ppb)	LC-Fl, OPA der.	270.8	300.4	Y	Y		100%	-1.56	400	73.448
0001	622.23	FB2 (ppb)	LC-MS/MS	468.6	450.2	Y	Y		100%	0.81	400	73.448
0013	622.20	FB2 (ppb)	LC	450	490	Y	Y		100%	0.95	400	73.448
2033	622.23	FB2 (ppb)	LC-MS/MS	525	486	Y	Y		100%	1.44	400	73.448
0918	622.23	FB2 (ppb)	LC-MS/MS			N	N	0.08	100.00%	NoZ	400	73.448

FB3 (ppb) Code: 623 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014

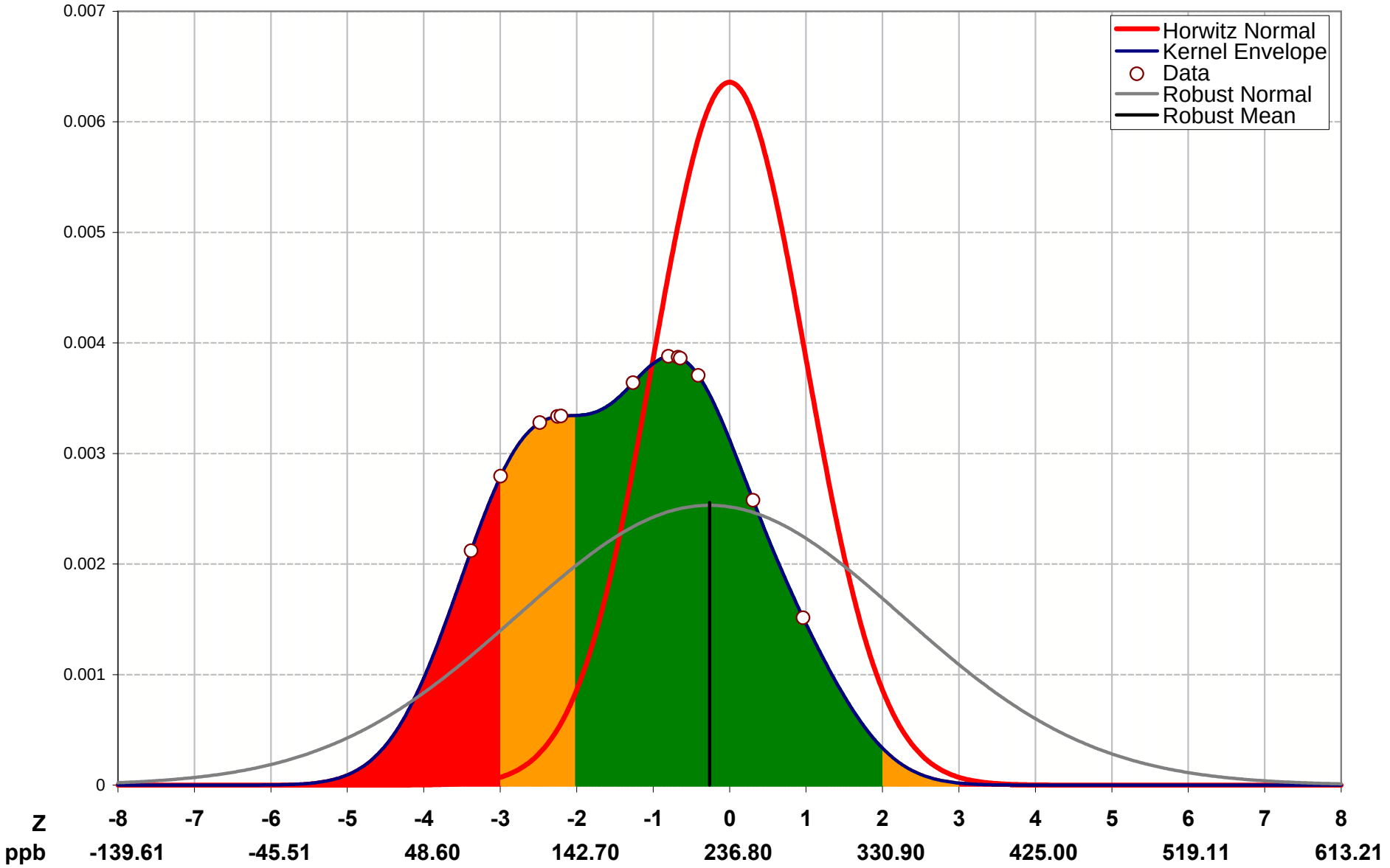


		# Methods Used	1	
Assigned Value	**200 (ppb)**	Kernel Bandwidth	30.57 (ppb)	Unique LOD's at:
Horwitz SD	40.76 (ppb)	Number of Non-Detects	0	
Robust Mean (Det.)	**157 (ppb)**	**Number of Detects**	**6**	
Robust SD (Det.)	13.73 (ppb)	Participating Labs	3	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

T-2 (ppb) Code: 640 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014

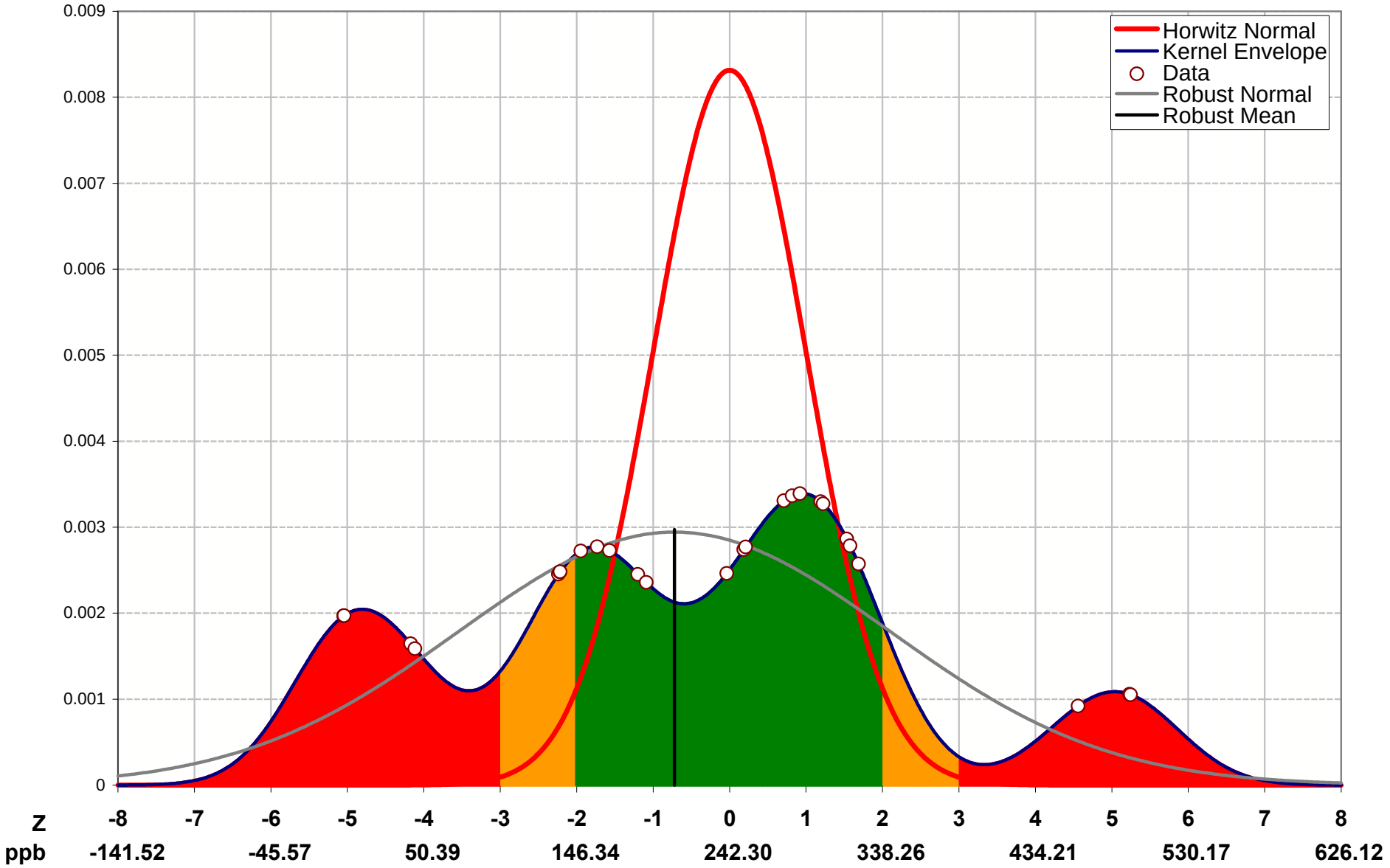


		# Methods Used	3	
Assigned Value	**236.8 (ppb)**	Kernel Bandwidth	35.29 (ppb)	Unique LOD's at:
Horwitz SD	47.05 (ppb)	Number of Non-Detects	0	
Robust Mean (Det.)	**224.6 (ppb)**	**Number of Detects**	**16**	
Robust SD (Det.)	118.21 (ppb)	Participating Labs	8	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

Zearalenone (ppb) Code: 650 - In Sample # 201461, Poultry Feed
Kernel Density Envelope Detected Values Relative to Normal Horwitz Curve

Issue Date: 05/31/2014



Assigned Value	**242.3 (ppb)**	# Methods Used	5	
Horwitz SD	47.98 (ppb)	Kernel Bandwidth	35.98 (ppb)	Unique LOD's at:
Robust Mean (Det.)	**207.7 (ppb)**	Number of Non-Detects	0	
Robust SD (Det.)	135.56 (ppb)	**Number of Detects**	**28**	
		Participating Labs	14	

Note: Area Under the Kernel Envelope is Identical to Area Under Horwitz Normal Curve within the chart.

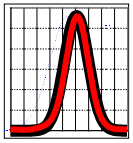
Unusually low values ppm vs ppb??
Order of magnitude 4 range.

Mycotoxin Proficiency Testing **Issue Date: 05/31/2014**

All Tests for Sample # 201461 Poultry Feed

Lab #	Code	Analyte	Method	Result 1	Result 2	Detect ? D1	Detect ? D2	LOD	Probability of Detection	Z Score	Assigned Value	Horwitz
0957	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	0.2	0.2	Y	Y		100%	-5.05	242.3	47.978
0660	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	0.2	0.4	Y	Y		100%	-5.04	242.3	47.978
0553	650.23	Zearalenone (ppb)	LC-MS	44.81	42.18	Y	Y		100%	-4.14	242.3	47.978
0202	650.06	Zearalenone (ppb)	r-Biopharm Ridascreen FAST Zearalenon	135.9	136	Y	Y		100%	-2.22	242.3	47.978
2052	650.24	Zearalenone (ppb)	LC-MS/MS	149	135	Y	Y		100%	-2.09	242.3	47.978
0035	650.07	Zearalenone (ppb)	r-Biopharm Ridascreen FAST Zearalenon SC	159.3	184.8	Y	Y		100%	-1.46	242.3	47.978
0918	650.24	Zearalenone (ppb)	LC-MS/MS	190	167	Y	Y		100%	-1.33	242.3	47.978
2033	650.24	Zearalenone (ppb)	LC-MS/MS	251.3	240.6	Y	Y		100%	0.08	242.3	47.978
0027	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	252.5	299.6	Y	Y		100%	0.70	242.3	47.978
0218	650.24	Zearalenone (ppb)	LC-MS/MS	286.5	276.5	Y	Y		100%	0.82	242.3	47.978
0001	650.24	Zearalenone (ppb)	LC-MS/MS	301.1	281.7	Y	Y		100%	1.02	242.3	47.978
2060	650.24	Zearalenone (ppb)	LC-MS/MS	315.9	323.2	Y	Y		100%	1.61	242.3	47.978
0227	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	318	494	Y	Y		100%	3.41	242.3	47.978
0964	650.01	Zearalenone (ppb)	Neogen Veratox Zearalenone	461	493.4	Y	Y		100%	4.90	242.3	47.978

AAFCO Check Sample Program



THANK YOU!