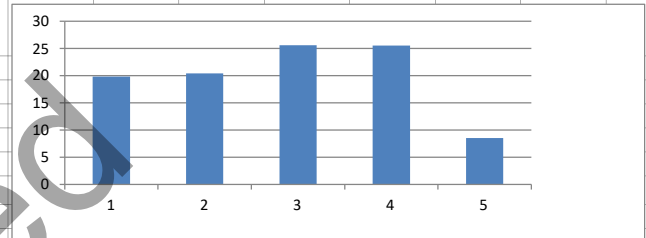


### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol in whole blood/plasma/serum
<b>Range of measurement values:</b>	0.025 to 0.400 g/100mL
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 15, Effective Date 4/30/2025)
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	Gayle Swanson A4166
	<b>Date Prepared:</b> 10/29/2025

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.825	%	Normal	A	1.41	601	0.583	20
2	Matrix - Duplicates	0.846	%	Normal	A	1.41	2195	0.599	20
3	Aqueous QC Bias	1.064	%	Normal	A	1.41	209	0.753	26
4	Pipettor/Diluter	0.750	%	Normal	B	1.00		0.750	26
5	CRM - Calibrators	0.500	%	Normal	B	2.00		0.250	9
<b>Combined Standard Unc</b>		$u_c$						<b>1.37</b>	<b>100</b>
Expanded Unc		$U$ (k=2)	95.45%					2.75	
Expanded Unc		$U$ (k=3)	99.73%					4.12	
<b>Reported Uncertainty:</b>		<b>5.0</b>	<b>99.96%</b>	3.6373	k				



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

- 1 Measurement Process Reproducibility (data from 070224-062625) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory (Lot # 041323RB) and externally purchased (ASQ Lot #4130622206/9), weighted by number of replicates per control lot and reported as RSD.
- 2 Matrix Duplicates - this is the standard deviation from duplicate analysis from 2196 samples analyzed from 070224 through 062625 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
- 3 Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control Lot #518018. Assumes a normal distribution.
- 4 Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s ML600HF1178651, ML600AJ16402, ML600BB17066 (k=1, Rainin 10/1/24)
- 5 CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen. In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Data Excluded from Uncertainty Calculation for Date Range 070224-062625

# Entries

0

NO DATA EXCLUDED FROM UNCERTAINTY CALCULATION 070224-062625

Analyst

Initials

Date

Type

Lot

Result(s)

Target

% Difference

Instrument

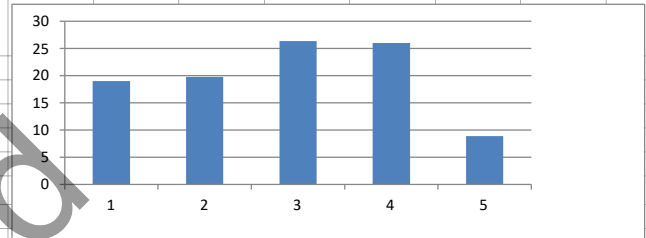
Comment

Uncontrolled

### Measurement Uncertainty Estimation Form

**Measurement:** Concentration of Ethanol in whole blood/plasma/serum  
**Range of measurement values:** 0.025 to 0.400 g/100mL  
**Procedure name and revision:** Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)  
**Estimation prepared by:** Toxicology Section      Gayle Swanson A4166      **Date Prepared:** 11/4/2024

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.756	%	Normal	A	1.41	641	0.534	19
2	Matrix - Duplicates	0.788	%	Normal	A	1.41	2293	0.557	20
3	Aqueous QC Bias	1.051	%	Normal	A	1.41	225	0.743	26
4	Pipettor/Diluter	0.732	%	Normal	B	1.00		0.732	26
5	CRM - Calibrators	0.500	%	Normal	B	2.00		0.250	9
<b>Combined Standard Unc</b> $u_c$								<b>1.32</b>	<b>100</b>
Expanded Unc $U$ (k=2)			95.45%					2.64	
Expanded Unc $U$ (k=3)			99.73%					3.96	
<b>Reported Uncertainty:</b>		<b>5.0</b>	<b>99.98%</b>			3.7837	k		



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

- Measurement Process Reproducibility (data from 070123-063024) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory reported as RSD; Lot # 041323RB.
- Matrix Duplicates - this is the standard deviation from duplicate analysis from 2294 samples analyzed from 070123 through 063024 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
- Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control weighted by # of replicates per control lot and reported as RSD; Lot #s 14082019-B and 518018. Assumes a normal distribution.
- Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s ML600HF1178651, ML600AJ16402, ML600BB17066 (k=1, Calibrate Inc. 10/17/23)
- CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen. In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Unclassified

Data Excluded from Uncertainty Calculation for Date Range 070123-063024

# Entries

11

Analyst

Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
KW	10/11/2023	Aqueous Control	28062021-A	0.3236	0.300	7.87%	Jill	Rosners Outlier Test
KW	10/11/2023	Aqueous Control	28062021-A	0.3224	0.300	7.47%	Jill	Rosners Outlier Test
KW	10/11/2023	Aqueous Control	28062021-A	0.3227	0.300	7.57%	Jill	Rosners Outlier Test
RB	2/6/2024	Aqueous Control	28062021-A	0.3169	0.300	5.63%	Jill	Rosners Outlier Test
RB	2/6/2024	Aqueous Control	28062021-A	0.3149	0.300	4.97%	Jill	Rosners Outlier Test
RB	2/6/2024	Aqueous Control	28062021-A	0.3147	0.300	4.90%	Jill	Rosners Outlier Test
jsh	2/6/2024	Aqueous Control	28062021-A	0.3157	0.300	5.23%	Jack	Rosners Outlier Test
jsh	2/6/2024	Aqueous Control	28062021-A	0.3166	0.300	5.53%	Jack	Rosners Outlier Test
jsh	2/6/2024	Aqueous Control	28062021-A	0.3179	0.300	5.97%	Jack	Rosners Outlier Test

Analyst

Initials	Date	Type	Result 1	Result 2	Average	% Difference	Instrument	Comment
GMS	11/1/2023	Matrix Duplicate	0.1269	0.0751	0.1010	51.29%	Jack	Pipetting error, not matrix effect
RB	3/6/2024	Matrix Duplicate	0.0843	0.0617	0.0730	30.96%	Jill	Pipetting error, not matrix effect

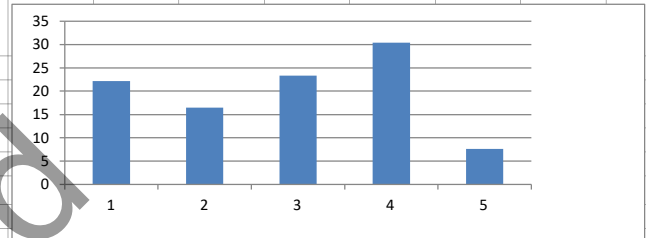
### Measurement Uncertainty Estimation Form

**Measurement:** Concentration of Ethanol in whole blood/plasma/serum  
**Range of measurement values:** 0.025 to 0.400 g/100mL  
**Procedure name and revision:** Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)

**Estimation prepared by:** Toxicology Section

**Date Prepared:** 10/31/2023

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.803	%	Normal	A	1.41	703	0.568	22
2	Matrix - Duplicates	0.597	%	Normal	A	1.41	2243	0.422	16
3	Aqueous QC Bias	0.846	%	Normal	A	1.41	224	0.598	23
4	Pipettor/Diluter	0.780	%	Normal	B	1.00		0.780	30
5	CRM - Calibrators	0.390	%	Normal	B	2.00		0.195	8
<b>Combined Standard Unc</b>		$u_c$						<b>1.23</b>	<b>100</b>
Expanded Unc		$U$ (k=2)	95.45%					2.45	
Expanded Unc		$U$ (k=3)	99.73%					3.68	
<b>Reported Uncertainty:</b>		<b>5.0</b>	<b>99.99%</b>	4.0756	k				



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

- Measurement Process Reproducibility (data from 070122-063023) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot # 092421JM and 041323RB.
- Matrix Duplicates - this is the standard deviation from duplicate analysis from 2244 samples analyzed from 070122 through 063023 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
- Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control; Lot #s 14082019-B. Assumes a normal distribution.
- Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s ML600HF11786S1, ML600AJ16402, ML600BB17066 (k=1, Calibrate Inc. 10/13/22)
- CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen. In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncertified

Data Excluded from Uncertainty Calculation for Date Range 070122-063023

# Entries

9

Analyst

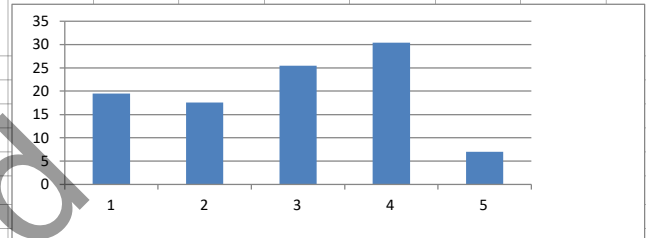
Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
JSH	8/10/2022	WBC	092421JM	0.1529	0.199	-23.17%	Jack	Rosner's Outlier Test
GMS	9/12/2022	WBC	092421JM	0.1818	0.199	-8.64%	Jack	Rosner's Outlier Test
RB	10/18/2022	WBC	092421JM	0.1563	0.199	-21.46%	Jill	Rosner's Outlier Test
JSH	11/4/2022	WBC	092421JM	0.1555	0.199	-21.86%	Jack	Rosner's Outlier Test
NI	2/8/2023	WBC	092421JM	0.1845	0.199	-7.29%	Jack	Rosner's Outlier Test
GMS	2/28/2023	WBC	092421JM	0.1251	0.199	-37.14%	Jack	Rosner's Outlier Test
GMS	2/28/2023	WBC	092421JM	0.1010	0.199	-49.25%	Jack	Rosner's Outlier Test
DJS	5/12/2023	WBC	092421JM	0.0926	0.199	-53.47%	Jack	Rosner's Outlier Test
RB	5/19/2023	WBC	092421JM	0.1869	0.199	-6.08%	Jill	Rosner's Outlier Test

Uncontrolled

### Measurement Uncertainty Estimation Form

**Measurement:** Concentration of Ethanol in whole blood/plasma/serum  
**Range of measurement values:** 0.025 to 0.400 g/100mL  
**Procedure name and revision:** Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)  
**Estimation prepared by:** Toxicology Section **Date Prepared:** 10/20/2022 (updated 1/30/23 to include coverage probability calculation)

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.770	%	Normal	A	1.41	703	0.545	20
2	Matrix - Duplicates	0.693	%	Normal	A	1.41	2528	0.490	18
3	Aqueous QC Bias	1.008	%	Normal	A	1.41	247	0.713	26
4	Pipettor/Diluter	0.850	%	Normal	B	1.00		0.850	30
5	CRM - Calibrators	0.390	%	Normal	B	2.00		0.195	7
<b>Combined Standard Unc</b>		$u_c$						<b>1.34</b>	<b>100</b>
Expanded Unc		$U$ (k=2)	95.45%					2.69	
Expanded Unc		$U$ (k=3)	99.73%					4.03	
<b>Reported Uncertainty:</b>		<b>5.0</b>	<b>99.97%</b>	3.7214	k				



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

- Measurement Process Reproducibility (data from 070121-063022) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot # 052920JM and 092421JM
- Matrix Duplicates - this is the standard deviation from duplicate analysis from 2529 samples analyzed from 070121 through 063022 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
- Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control; Lot #s 14082019-B. Assumes a normal distribution.
- Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s MD96HH2479, ML600HF11786S1, MD96HB2375, ML600AJ16402, ML600BB17066 (k=1, Calibrate Inc. 10/13/21)
- CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen. In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

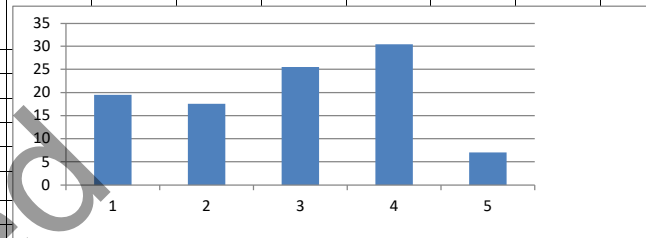
Uncollected

### Measurement Uncertainty Estimation Form

**Measurement:** Concentration of Ethanol in whole blood/plasma/serum  
**Range of measurement values:** 0.025 to 0.400 g/100mL  
**Procedure name and revision:** Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)

**Estimation prepared by:** Toxicology Section **Date Prepared:** 10/20/2022

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.770	%	Normal	A	1.41	703	0.545	20
2	Matrix - Duplicates	0.693	%	Normal	A	1.41	2528	0.490	18
3	Aqueous QC Bias	1.008	%	Normal	A	1.41	247	0.713	26
4	Pipettor/Diluter	0.850	%	Normal	B	1.00		0.850	30
5	CRM - Calibrators	0.390	%	Normal	B	2.00		0.195	7
<b>Combined Standard Unc</b>		$u_c$						<b>1.34</b>	<b>100</b>
<b>Expanded Unc</b>		$U (k=2)$						<b>2.69</b>	
<b>Expanded Unc</b>		$U (k=3)$						<b>4.03</b>	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

- 1 Measurement Process Reproducibility (data from 070121-063022) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #052920JM and 092421JM
- 2 Matrix Duplicates - this is the standard deviation from duplicate analysis from 2529 samples analyzed from 0701201 through 063022 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
- 3 Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control; Lot #s 14082019-B. Assumes a normal distribution.
- 4 Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s MD96HH2479, ML600HF1178651, MD96HB2375, ML600AJ16402, ML600BB17066 (k=1, Calibrate Inc. 10/13/21)
- 5 CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
 In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncollected

Data Excluded from Uncertainty Calculation for Date Range 070121-063022

# Entries

2

Analyst

Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
JSH	9/14/2021	Whole Blood	052920JM	0.0399	0.198	-79.85%	Jill	AqC 0.04 and WBC switched when loading instrument
JSH	9/14/2021	Aqueous Control	14082019-B	0.1932	0.040	383.00%	Jill	AqC 0.04 and WBC switched when loading instrument

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>		Concentration of Ethanol in whole blood/plasma/serum									
<b>Range of measurement values:</b>		0.025 to 0.400 g/100mL									
<b>Procedure name and revision:</b>		Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)									
<b>Estimation prepared by:</b> <i>Toxicology Section</i>								<b>Date Prepared:</b>	11/29/2021		
Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %		
1	Reproducibility Whole Blood Control	0.704	%	Normal	A	1.41	722	0.498	18		
2	Matrix - Duplicates	0.610	%	Normal	A	1.41	2443	0.432	15		
3	Aqueous QC Bias	1.049	%	Normal	A	1.41	261	0.742	26		
4	Pipettor/Diluter	0.939	%	Normal	B	1.00		0.939	33		
5	CRM - Calibrators	0.400	%	Normal	B	2.00		0.200	7		
<b>Combined Standard Unc</b>		$u_c$						<b>1.38</b>	<b>100</b>		
<b>Expanded Unc</b>		$U (k=2)$						<b>2.76</b>			
<b>Expanded Unc</b>		$U (k=3)$						<b>4.14</b>			
<b>Reported Uncertainty:</b>		<b>5.0</b>									

Line Item	Component Contribution %
1	18
2	15
3	26
4	33
5	7

**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 070120-063021) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #021419JM and 052920JM
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 2444 samples analyzed from 070120 through 063021 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
3	Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control; Lot #s 14082019-B. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s MD96HH2479, ML600HF11786, MD96HB2375, ML600AJ16402, ML600BB17066 (k=1, Calibrate Inc. 10/30/20 and 5/4/21)
5	CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncollected

Data Excluded from Uncertainty Calculation for Date Range 070120-063021

# Entries

1

Analyst

Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
NI	12/2/2020	Whole Blood	052920JM	0.1029	0.198	-48.03%	Jack	Outlier Tests (Grubbs'/Rosner's)

Uncontrolled

### Measurement Uncertainty Estimation Form

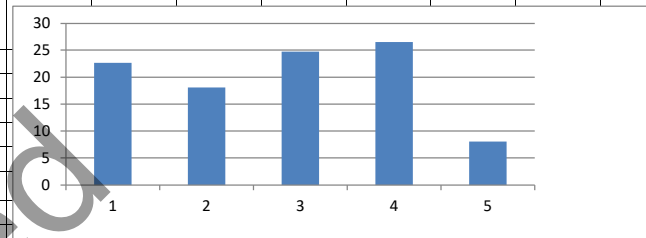
**Measurement:** Concentration of Ethanol in whole blood/plasma/serum

**Range of measurement values:** 0.025 to 0.400 g/100mL

**Procedure name and revision:** Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)

**Estimation prepared by:** Toxicology Section **Date Prepared:** 12/4/2020

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.798	%	Normal	A	1.41	725	0.564	23
2	Matrix - Duplicates	0.639	%	Normal	A	1.41	2586	0.452	18
3	Aqueous QC Bias	0.873	%	Normal	A	1.41	262	0.617	25
4	Pipettor/Diluter	0.662	%	Normal	B	1.00		0.662	27
5	CRM - Calibrators	0.400	%	Normal	B	2.00		0.200	8
<b>Combined Standard Unc</b>		$u_c$						<b>1.18</b>	100
<b>Expanded Unc</b>		$U (k=2)$						<b>2.35</b>	
<b>Expanded Unc</b>		$U (k=3)$						<b>3.53</b>	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

- 1 Measurement Process Reproducibility (data from 070119-063020) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #021419JM
- 2 Matrix Duplicates - this is the standard deviation from duplicate analysis from 2587 samples analyzed from 070119 through 063020 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
- 3 Aqueous QC Bias - concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control weighted by # of replicates per control lot and reported as RSD; Lot #s 09022015-A and 14082019-B. Assumes a normal distribution.
- 4 Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery from serial #s MD96HH2479, ML600HF11786, MD96HB2375 (k=1, Calibrate Inc. 10/24/19)
- 5 CRM Calibrators uncertainty - based on certificates of analysis for the lot #s used in this time period with the largest relative expanded uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen. In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncensored

Data Excluded from Uncertainty Calculation for Date Range 070119-063020

# Entries

12

Analyst

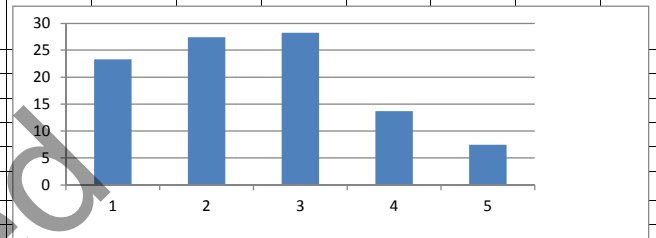
Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
JSH	5/1/2020	Whole Blood	021419JM	0.0000	0.201	-100.00%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
DJS	4/16/2020	Whole Blood	021419JM	0.1430	0.201	-28.86%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
DJS	4/16/2020	Whole Blood	021419JM	0.1436	0.201	-28.56%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
DJS	4/16/2020	Whole Blood	021419JM	0.1431	0.201	-28.81%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
DJS	4/16/2020	Whole Blood	021419JM	0.1429	0.201	-28.91%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
DJS	4/16/2020	Whole Blood	021419JM	0.1432	0.201	-28.76%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
DJS	4/16/2020	Whole Blood	021419JM	0.1425	0.201	-29.10%	Jill	WBC container cap not crimped adequately resulting in evaporation/ethanol loss
NI	1/7/2020	Whole Blood	021419JM	0.1374	0.201	-31.64%	Jill	Outlier Tests (Grubbs'/Rosner's)
JSH	11/20/2019	Whole Blood	021419JM	0.1416	0.201	-29.55%	Jill	Outlier Tests (Grubbs'/Rosner's)
JSH	8/28/2019	Whole Blood	021419JM	0.1446	0.201	-28.06%	Jill	Outlier Tests (Grubbs'/Rosner's)
NI	12/9/2019	Whole Blood	021419JM	0.1861	0.201	-7.41%	Jack	Outlier Tests (Grubbs'/Rosner's)
GMS	4/28/2020	Whole Blood	021419JM	0.1867	0.201	-7.11%	Jack	Outlier Tests (Grubbs'/Rosner's)

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol in whole blood/plasma/serum		
<b>Range of measurement values:</b>	0.025 to 0.400 g/100mL		
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 13, Effective Date 2/6/2019)		
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	<b>Date Prepared:</b>		11/15/2019

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.772	%	Normal	A	1.41	872	0.546	23
2	Matrix - Duplicates	0.908	%	Normal	A	1.41	3046	0.642	27
3	Aqueous QC Bias	0.936	%	Normal	A	1.41	314	0.662	28
4	Pipettor/Diluter	0.321	%	Normal	B	1.00		0.321	14
5	CRM - Calibrators	0.350	%	Normal	B	2.00		0.175	7
<b>Combined Standard Unc</b>		$u_c$						<b>1.13</b>	100
Expanded Unc		$U$ (k=2)						2.26	
Expanded Unc		$U$ (k=3)						3.40	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculation

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 070118-063019) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #s120117JM and 021419JM
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 3047 samples analyzed from 070118 through 063019 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
3	Aqueous QC Bias - the concentration with the largest percent difference from the target; 0.040 g/100mL Lipomed Aqueous Control Lot # 09022015-A. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery serial #MD96KE1165 (k=1, Calibrate Inc. 10/11/18)
5	CRM Calibrators uncertainty - all of the certificates of analysis for the lot #s used in this time period have the same uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
 In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncollected

Data Excluded from Uncertainty Calculation for Date Range 070118-063019

# Entries

3

Analyst Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
GMS	3/6/2019	Whole Blood	120117JM	0.1396	0.200	-30.20%	Jill	Grubbs' Test/Rosner's
DJS	8/29/2018	Whole Blood	120117JM	0.1746	0.200	-12.70%	Jack	Grubbs' Test/Rosner's
JM	2/27/2019	Whole Blood	120117JM	0.1881	0.200	-5.95%	Jill	Grubbs' Test/Rosner's

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>		Concentration of Ethanol in whole blood/plasma/serum																				
<b>Range of measurement values:</b>		0.025 to 0.400 g/100mL																				
<b>Procedure name and revision:</b>		Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 12, Effective Date 4/10/2018)																				
<b>Estimation prepared by:</b> <i>Toxicology Section</i>								<b>Date Prepared:</b>		10/25/2018												
Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %													
1	Reproducibility Whole Blood Control	0.695	%	Normal	A	1.41	853	0.492	25	<table border="1" style="display: none;"> <caption>Component Contribution Data</caption> <thead> <tr> <th>Line Item</th> <th>Component Contribution %</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25</td> </tr> <tr> <td>2</td> <td>23</td> </tr> <tr> <td>3</td> <td>33</td> </tr> <tr> <td>4</td> <td>9</td> </tr> <tr> <td>5</td> <td>9</td> </tr> </tbody> </table>	Line Item	Component Contribution %	1	25	2	23	3	33	4	9	5	9
Line Item	Component Contribution %																					
1	25																					
2	23																					
3	33																					
4	9																					
5	9																					
2	Matrix - Duplicates	0.641	%	Normal	A	1.41	3005	0.453	23													
3	Aqueous QC Bias	0.910	%	Normal	A	1.41	309	0.643	33													
4	Pipettor/Diluter	0.174	%	Normal	B	1.00		0.174	9													
5	CRM - Calibrators	0.350	%	Normal	B	2.00		0.175	9													
<b>Combined Standard Unc</b>		$u_c$						<b>0.96</b>	<b>100</b>													
<b>Expanded Unc</b>		$U (k=2)$						<b>1.92</b>														
<b>Expanded Unc</b>		$U (k=3)$						<b>2.88</b>														
<b>Reported Uncertainty:</b>		<b>5.0</b>																				
<b>NOTE:</b> Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations																						
<b>The basis for the data above:</b>																						
1	Measurement Process Reproducibility (data from 070117-063018) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #120116JM and 120117JM																					
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 3006 samples analyzed from 070117 through 063018 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.																					
3	Aqueous QC Bias - the concentration with the largest percent difference from the target; 0.300 g/100mL Lipomed Aqueous Control Lot # 18052015-A/1. Assumes a normal distribution.																					
4	Pipettor/Diluter - this is the largest uncertainty for sample or internal standard delivery serial #MD96HH2479 (k=1, Calibrate Inc. 10/23/17)																					
5	CRM Calibrators uncertainty - all of the certificates of analysis for the lot #s used in this time period have the same uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.																					
<b>Revision:</b> This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.																						
In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.																						

Data Excluded from Uncertainty Calculation for Date Range 070117-063018

# Entries

0

***NO DATA EXCLUDED FROM UNCERTAINTY CALCULATION 070117-063018***

Analyst

Initials

Date

Type

Lot

Result(s)

Target

% Difference

Instrument

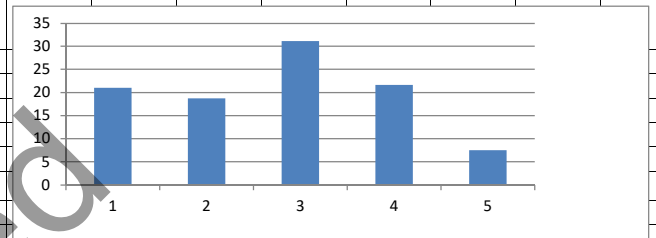
Comment

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol in whole blood/plasma/serum
<b>Range of measurement values:</b>	0.025 to 0.400 g/100mL
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 11, Effective Date 10/19/2017)
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	<b>Date Prepared:</b> 10/30/2017

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.690	%	Normal	A	1.41	914	0.488	21
2	Matrix - Duplicates	0.616	%	Normal	A	1.41	3168	0.436	19
3	Aqueous QC Bias	1.023	%	Normal	A	1.41	338	0.723	31
4	Pipettor/Diluter	1.007	%	Normal	B	2.00		0.504	22
5	CRM - Calibrators	0.350	%	Normal	B	2.00		0.175	8
<b>Combined Standard Unc</b>		$u_c$						<b>1.11</b>	<b>100</b>
<b>Expanded Unc</b>		$U$ (k=2)						<b>2.22</b>	
<b>Expanded Unc</b>		$U$ (k=3)						<b>3.33</b>	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 070116-063017) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #s 122915JM and 120116JM
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 3169 samples analyzed from 070116 through 063017 with alcohol concentrations ranging from 0.025-0.400 g/100mL. Assumes a normal distribution.
3	Aqueous QC Bias - the concentration, weighted by # of replicates per control lot, with the largest uncertainty, 0.040 g/100mL Lipomed Aqueous Control Lot #s 30112011-B and 09022015-A. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample and internal standard delivery serial# MD96HB2375 (k=2, Calibrate Inc. 11/21/16)
5	CRM Calibrators uncertainty - all of the certificates of analysis for the lot #s used in this time period have the same uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
 In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncollected

Data Excluded from Uncertainty Calculation for Date Range 070116-063017

# Entries

5

Analyst

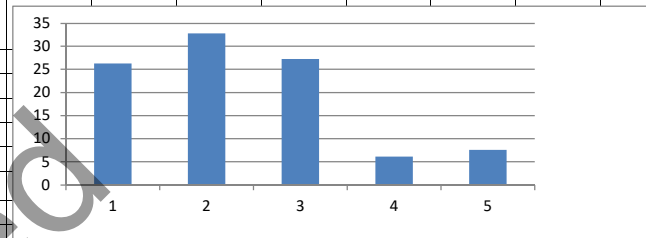
Analyst Initials	Date	Type	Lot	Result(s)	Target	% Difference	Instrument	Comment
KK	8/26/2016	whole blood	122915JM	0.0398	0.1970	-79.80%	Hobbes II	GC Busy error at vial 48, causing a vial number/data path mismatch, aqueous 0.040 QC mislabeled as WBC
JSH	10/4/2016	201600001835826 matrix	n/a	0.1543 and 0.2965	n/a	-63.09%	Jill	analyst notes state "insufficient amount pipetted"
DJS	11/10/2016	whole blood	122915JM	0.1484	0.199	-25.43%	Hobbes II	Grubb's Test/Rosner's Test
JSH	11/22/2016	whole blood	122915JM	0.1500	0.199	-24.62%	Jill	Grubb's Test/Rosner's Test
DJS	12/28/2016	whole blood	122915JM	0.1430	0.199	-28.14%	Jill	Grubb's Test/Rosner's Test

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol in whole blood/plasma/serum
<b>Range of measurement values:</b>	0.025 to 0.400 g/100ml
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 9, Effective Date 5/24/2016)
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	<b>Date Prepared:</b> 11/16/2016

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.857	%	Normal	A	1.41	935	0.606	26
2	Matrix - Duplicates	1.069	%	Normal	A	1.41	3313	0.756	33
3	Aqueous QC Bias	0.888	%	Normal	A	1.41	247	0.628	27
4	Pipettor/Diluter	0.282	%	Normal	B	2.00		0.141	6
5	CRM - Calibrators	0.350	%	Normal	B	2.00		0.175	8
<b>Combined Standard Unc</b>		$u_c$						<b>1.18</b>	100
<b>Expanded Unc</b>		$U (k=2)$						<b>2.35</b>	
<b>Expanded Unc</b>		$U (k=3)$						<b>3.53</b>	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 070115-063016) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD; Lot #011615JM and 122915JM
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 3314 samples analyzed from 070115 through 063016. Assumes a normal distribution.
3	Aqueous QC Bias - the concentration, weighted by # of replicates per control lot, with the largest uncertainty, 0.040 g/100mL Lipomed Aqueous Control Lot #s 30112011-B and 09022015-A. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample and internal standard delivery serial# MD96KE1165 (k=2, Calibrate Inc. 10/21/15)
5	CRM Calibrators uncertainty - all of the certificates of analysis for the lot #s used in this time period have the same uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
 In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

QC Data Excluded from Uncertainty Calculation for Date Range 070115-063016

# Entries

1

Analyst

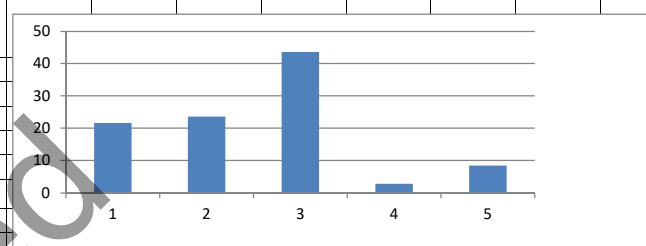
Initials	Date	Control Type	Lot	Result	Target	% Difference	Instrument	Comment
JSH	12/18/2015	whole blood	011615JM	0.1485	0.1970	-24.62%	Hobbes II	Grubbs Outlier Test

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol in whole blood/plasma/serum
<b>Range of measurement values:</b>	0.025 to 0.400 g/100ml
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17, Revision 8, Effective Date 11/5/2015 )
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	<b>Date Prepared:</b> 12/2/2015

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.632	%	Normal	A	1.41	1119	0.447	22
2	Matrix - Duplicates	0.687	%	Normal	A	1.41	4244	0.486	24
3	Aqueous QC Bias	1.272	%	Normal	A	1.41	399	0.900	44
4	Pipettor/Diluter	0.115	%	Normal	B	2.00		0.058	3
5	CRM - Calibrators	0.350	%	Normal	B	2.00		0.175	8
<b>Combined Standard Unc</b>		$u_c$						<b>1.13</b>	100
<b>Expanded Unc</b>		$U (k=2)$						2.26	
<b>Expanded Unc</b>		$U (k=3)$						3.39	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 070114-063015) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD, Lot #030714JM and 011615JM
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 4245 samples analyzed from 070114 through 063015. Assumes a normal distribution.
3	Aqueous QC Bias - the concentration with the largest uncertainty, 0.080 g/100mL Lipomed Aqueous Control Lot #1412011-A. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample and internal standard delivery serial# MD96KE1165 (k=2, Calibrate Inc. 10/8/14)
5	CRM Calibrators uncertainty - all of the certificates of analysis for the lot #s used in this time period have the same uncertainty. Certificates indicate a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
 In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncollected

QC Data Excluded from Uncertainty Calculation for Date Range 070114-063015

# Entries

6

Analyst

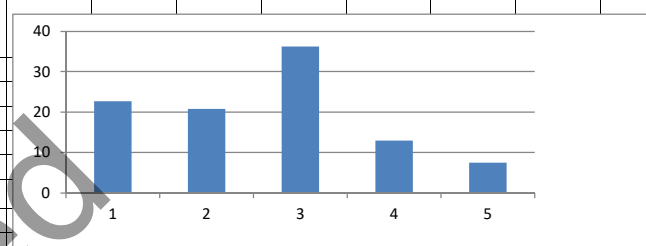
Initials	Date	Control Type	Lot	Result	Target	% Difference	Instrument	Comment
DJS	7/30/2014	Whole Blood	030714JM	0.1729	0.1980	-12.68	Hobbes II	Grubbs Test
JSH	11/20/2014	Whole Blood	030714JM	0.0396	0.1980	-80.00	Hobbes II	Control vials switched (0.040 Aqueous QC analyzed)
JSH	11/20/2014	Aqueous	30112011-B	0.1983	0.0400	395.75	Hobbes II	Control vials switched (0.198 Whole Blood QC analyzed)
DJS	1/21/2015	Whole Blood	030714JM	0.2995	0.1980	51.26	Hobbes II	Control vials switched (0.300 Aqueous QC analyzed)
DJS	1/21/2015	Aqueous	05012012-B	0.1989	0.3000	-33.70	Hobbes II	Control vials switched (0.198 Whole Blood QC analyzed)
FLS	2/11/2015	Whole Blood	030714JM	0.1436	0.1980	-27.47	Hobbes II	Grubbs Test

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol
<b>Range of measurement values:</b>	0.025 to 0.400 g/100ml
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17 Revision 6 Effective Date 12/1/2014 )
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	<b>Date Prepared:</b> 12/2/2014

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole Blood Control	0.75063727	%	Normal	A	1.41	1297	0.530780702	23
2	Matrix - Duplicates	0.68807262	%	Normal	A	1.41	5335	0.486540817	21
3	Aqueous QC Bias	1.19846726	%	Normal	A	1.41	839	0.847444328	36
4	Pipettor/Diluter	0.60413355	%	Normal	B	2.00		0.302066773	13
5	CRM - Calibrators	0.35000000	%	Normal	B	2.00		0.175	7
<b>Combined Standard Unc</b>		$u_c$						<b>1.165539079</b>	<b>100</b>
<b>Expanded Unc</b>		$U (k=2)$						<b>2.331078158</b>	
<b>Expanded Unc</b>		$U (k=3)$						<b>3.496617236</b>	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 070113-063014) - Whole Blood Controls made in-house by the Phoenix Crime Laboratory weighted by # of replicates per control lot and reported as RSD, Lot #s 042413JM and 030714JM
2	Matrix Duplicates - this is the standard deviation from duplicate analysis from 5336 samples analyzed from 070113 through 063014. Assumes a normal distribution.
3	Aqueous QC Bias - the concentration with the largest uncertainty weighted by # of replicates per control lot and reported as RSD, 0.080 g/100ml. Lipomed Aqueous Control Lot #s 21022011-A and 14112011-A. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample and internal standard delivery serial # MD96HB2375 (k=2, Calibrate Inc. 10/2/13)
5	CRM Calibrators uncertainty - this is the largest uncertainty for any of the CRMs used in the calibration curve. Certificate indicates a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen.  
 In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

Uncollected

QC Data Excluded from Uncertainty Calculation for Date Range 070113-063014

# Entries

4

Analyst

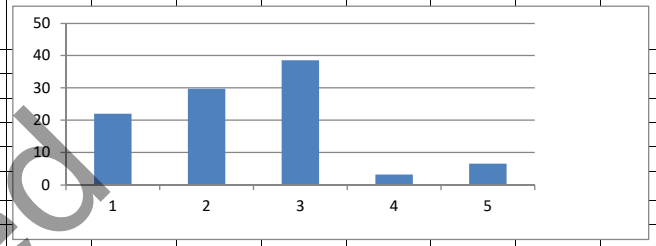
Initials	Date	Control Type	Lot	Result	Target	% Difference	Instrument	Comment
NC	8/20/2013	Whole Blood	042413JM	0.1849	0.1980	-6.62	Calvin	insufficient amount pipetted
JSH	2/19/2014	Whole Blood	042413JM	0.1634	0.1980	-17.47	Hobbes II	Grubbs outlier test
ABG	5/13/2014	Whole Blood	030714JM	0.2056	0.1980	3.84	Hobbes II	maintenance performed on pip/dil
ABG	5/13/2014	Aqueous	30112011-B	0.0408	0.0400	2.00	Hobbes II	maintenance performed on pip/dil

Uncontrolled

### Measurement Uncertainty Estimation Form

<b>Measurement:</b>	Concentration of Ethanol
<b>Range of measurement values:</b>	0.025 to 0.400 g/100ml
<b>Procedure name and revision:</b>	Protocol for the Analysis of Ethanol (TOX-SOP-17 Revision 5 Effective Date 12/11/2013 )
<b>Estimation prepared by:</b> <i>Toxicology Section</i>	<b>Date Prepared:</b> 12/11/2013

Line Item	Uncertainty Component	Value	Units	Distribution	Type	Divisor	Degrees Freedom (n-1)	Standard Uncertainty	Component Contribution %
1	Reproducibility Whole blood control	0.83520487	%	Normal	A	1.41	2208	0.590579031	22
2	Matrix - Duplicates	0.79820765	%	Normal	A	1.00	8663	0.798207648	30
3	Aqueous QC Bias	1.46165414	%	Normal	A	1.41	132	1.033545551	39
4	Pipettor/Diluter	0.17015933	%	Normal	B	2.00		0.085079666	3
5	CRM- Calibrators	0.35000000	%	Normal	B	2.00		0.175	7
<b>Combined Standard Unc</b>		$u_c$						<b>1.446374432</b>	<b>100</b>
<b>Expanded Unc</b>		$U (k=2)$						<b>2.892748863</b>	
<b>Expanded Unc</b>		$U (k=3)$						<b>4.339123295</b>	
<b>Reported Uncertainty:</b>		<b>5.0</b>							



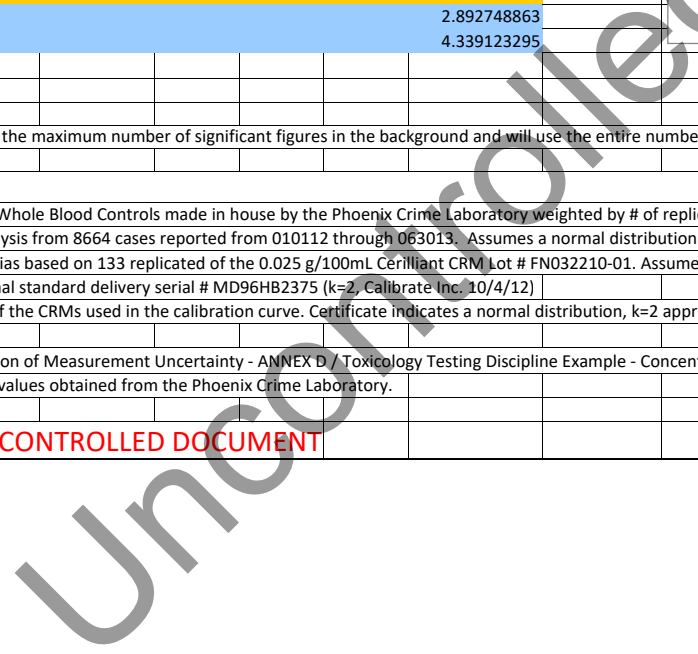
**NOTE:** Regardless of the number of digits that are showing in a cell, Excel carries the maximum number of significant figures in the background and will use the entire number for further calculations

**The basis for the data above:**

1	Measurement Process Reproducibility (data from 010112-063013) - Whole Blood Controls made in house by the Phoenix Crime Laboratory weighted by # of replicated per control lot and reported as RSD, Lot #s 091611JM, 071012JM, and 042413JM
2	Matrix Duplicates - This is the standard deviation from duplicate analysis from 8664 cases reported from 010112 through 063013. Assumes a normal distribution.
3	Aqueous QC Bias - the largest uncertainty used in the evaluation of bias based on 133 replicated of the 0.025 g/100mL Cerilliant CRM Lot # FN032210-01. Assumes a normal distribution.
4	Pipettor/Diluter - this is the largest uncertainty for sample and internal standard delivery serial # MD96HB2375 (k=2, Calibrate Inc. 10/4/12)
5	CRM Calibrators uncertainty - this is the largest uncertainty for any of the CRMs used in the calibration curve. Certificate indicates a normal distribution, k=2 approx. 95% confidence interval.

**Revision:** This budget uses as a reference ASCLD/LAB Guidance on the Estimation of Measurement Uncertainty - ANNEX D / Toxicology Testing Discipline Example - Concentration of Ethanol in an Ante-Mortem Blood Specimen. In place of the tolerances used in the example it incorporates actual values obtained from the Phoenix Crime Laboratory.

UNCONTROLLED DOCUMENT



Whole Blood QC Data Excluded from Uncertainty Calculation for Date Range 010112-063013

# Entries

8

Analyst

Initials	Date	Control Type	Lot	Result	Target	% Difference	Instrument	Comment
NI	2/7/2012	Whole Blood	091611JM	0.1770	0.1990	-11.06	Calvin	Grubbs Outlier Test
NI	5/2/2012	Whole Blood	091611JM	0.1954	0.1990	-1.81	Susie	Power failure, Repipetted and rerun on 5/3/12
NI	5/2/2012	Whole Blood	091611JM	0.1961	0.1990	-1.46	"	"
GMS	7/17/2012	Whole Blood	091611JM	0.2769	0.1990	39.15	Hobbes II	Not enough internal standard pipetted
GMS	10/23/2012	Whole Blood	071012JM	0.0782	0.1960	-60.10	Hobbes II	Control vials switched (0.080 Aqueous QC analyzed)
NI	11/7/2012	Whole Blood	071012JM	0.0000	0.1960	-100.00	Calvin	Chromatography not acceptable and no result obtained
KK	3/27/2013	Whole Blood	071012JM	0.1400	0.1960	-28.57	Hobbes II	Grubbs Outlier Test
GMS	6/27/2013	Whole Blood	042413JM	0.0783	0.1980	-60.45	Calvin	Control vials switched (0.080 Aqueous QC analyzed)

Uncontrolled