APPENDIX A-5

BACKGROUND SOIL

9385995

General UCL Statistics for Full Data Sets

User Selected Options	
From File	J:\1352 - Gulfco RI\risk\eco\Tables for Revisited SLERA\background soil table.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 SDL (antimony)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.125	Minimum of Log Data	-2.079
Maximum	2.19	Maximum of Log Data	0.784
Mean	0.953	Mean of log Data	-0.711
Median	0.815	SD of log Data	1.345
SD	0.878		
Coefficient of Variation	0.921		
Skewness	0.157		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.775	Shapiro Wilk Test Statistic	0.726
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.462	95% H-UCL	6.827
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.117
95% Adjusted-CLT UCL	1.424	97.5% Chebyshev (MVUE) UCL	4.01
95% Modified-t UCL	1.464	99% Chebyshev (MVUE) UCL	5.765
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.685	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.39		
nu star	13.71		
Approximate Chi Square Value (.05)	6.373	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	1.41
Adjusted Chi Square Value	5.527	95% Jackknife UCL	1.462
		95% Standard Bootstrap UCL	1.381
Anderson-Darling Test Statistic	1.346	95% Bootstrap-t UCL	1.452
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	1.306
Kolmogorov-Smirnov Test Statistic	0.329	95% Percentile Bootstrap UCL	1.394
Kolmogorov-Smirnov 5% Critical Value	0.275	95% BCA Bootstrap UCL	1.416
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.163
		97.5% Chebyshev(Mean, Sd) UCL	2.687
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.715
95% Approximate Gamma UCL	2.05		
95% Adjusted Gamma UCL	2.364		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	3.715
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.24	Minimum of Log Data	-1.427
Maximum	5.9	Maximum of Log Data	1.775
Mean	3.438	Mean of log Data	0.985
Median	3.625	SD of log Data	0.947
SD	1.792		
Coefficient of Variation	0.521		
Skewness	-0.35		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk Test Statistic	0.749
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.477	95% H-UCL	10.79
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9.349
95% Adjusted-CLT UCL	4.303	97.5% Chebyshev (MVUE) UCL	11.68
95% Modified-t UCL	4.466	99% Chebyshev (MVUE) UCL	16.27
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.572	Data appear Normal at 5% Significance Level	
Theta Star	2.187		
nu star	31.44		

Approximate Chi Square Value (.05)	19.63	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	4.37
Adjusted Chi Square Value	18.03	95% Jackknife UCL	4.477
		95% Standard Bootstrap UCL	4.299
Anderson-Darling Test Statistic	0.699	95% Bootstrap-t UCL	4.371
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	4.292
Kolmogorov-Smirnov Test Statistic	0.293	95% Percentile Bootstrap UCL	4.299
Kolmogorov-Smirnov 5% Critical Value	0.27	95% BCA Bootstrap UCL	4.27
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.908
		97.5% Chebyshev(Mean, Sd) UCL	6.976
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.075
95% Approximate Gamma UCL	5.507		
95% Adjusted Gamma UCL	5.997		
Potential UCL to Use		Use 95% Student's-t UCL	4.477

Result or 1/2 SDL (barium)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	150	Minimum of Log Data	5.011
Maximum	1130	Maximum of Log Data	7.03
Mean	333.1	Mean of log Data	5.617
Median	259	SD of log Data	0.571
SD	288.1		
Coefficient of Variation	0.865		
Skewness	2.844		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.59	Shapiro Wilk Test Statistic	0.83
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	500.1	95% H-UCL	504
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	573.9
95% Adjusted-CLT UCL	570.5	97.5% Chebyshev (MVUE) UCL	684.7
95% Modified-t UCL	513.7	99% Chebyshev (MVUE) UCL	902.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.005	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	166.1		
nu star	40.11		
Approximate Chi Square Value (.05)	26.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	482.9
Adjusted Chi Square Value	24.7	95% Jackknife UCL	500.1
		95% Standard Bootstrap UCL	476.3
Anderson-Darling Test Statistic	1.01	95% Bootstrap-t UCL	877.8
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	1100
Kolmogorov-Smirnov Test Statistic	0.268	95% Percentile Bootstrap UCL	505.4
Kolmogorov-Smirnov 5% Critical Value	0.269	95% BCA Bootstrap UCL	601.4
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	730.2
		97.5% Chebyshev(Mean, Sd) UCL	902
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1239
95% Approximate Gamma UCL	502.3		
95% Adjusted Gamma UCL	540.9		
Potential UCL to Use		Use 95% Approximate Gamma UCL	502.3

Result or 1/2 SDL (benzo(a)anthracene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.00323	Minimum of Log Data	-5.735
Maximum	0.082	Maximum of Log Data	-2.501
Mean	0.0116	Mean of log Data	-5.267
Median	0.00381	SD of log Data	0.979
SD	0.0247		
Coefficient of Variation	2.125		
Skewness	3.16		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.383	Shapiro Wilk Test Statistic	0.478
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.026	95% H-UCL	0.0226

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0189
95% Adjusted-CLT UCL	0.0328	97.5% Chebyshev (MVUE) UCL	0.0236
95% Modified-t UCL	0.0273	99% Chebyshev (MVUE) UCL	0.033
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.583	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.02		
nu star	11.66		
Approximate Chi Square Value (.05)	5.004	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0245
Adjusted Chi Square Value	4.271	95% Jackknife UCL	0.026
		95% Standard Bootstrap UCL	0.0238
Anderson-Darling Test Statistic	2.903	95% Bootstrap-t UCL	0.543
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	0.258
Kolmogorov-Smirnov Test Statistic	0.513	95% Percentile Bootstrap UCL	0.0272
Kolmogorov-Smirnov 5% Critical Value	0.276	95% BCA Bootstrap UCL	0.0351
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0457
		97.5% Chebyshev(Mean, Sd) UCL	0.0605
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0894
95% Approximate Gamma UCL	0.0271		
95% Adjusted Gamma UCL	0.0318		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0457

Result or 1/2 SDL (benzo(a)pyrene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.00434	Minimum of Log Data	-5.44
Maximum	0.076	Maximum of Log Data	-2.577
Mean	0.0122	Mean of log Data	-5.008
Median	0.005	SD of log Data	0.863
SD	0.0224		
Coefficient of Variation	1.833		
Skewness	3.157		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.391	Shapiro Wilk Test Statistic	0.495
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0252	95% H-UCL	0.0219
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0207
95% Adjusted-CLT UCL	0.0314	97.5% Chebyshev (MVUE) UCL	0.0257
95% Modified-t UCL	0.0264	99% Chebyshev (MVUE) UCL	0.0354
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.739	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0165		
nu star	14.78		
Approximate Chi Square Value (.05)	7.109	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0239
Adjusted Chi Square Value	6.207	95% Jackknife UCL	0.0252
		95% Standard Bootstrap UCL	0.0233
Anderson-Darling Test Statistic	2.773	95% Bootstrap-t UCL	0.307
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	0.171
Kolmogorov-Smirnov Test Statistic	0.505	95% Percentile Bootstrap UCL	0.0263
Kolmogorov-Smirnov 5% Critical Value	0.274	95% BCA Bootstrap UCL	0.0334
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0431
		97.5% Chebyshev(Mean, Sd) UCL	0.0565
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0828
95% Approximate Gamma UCL	0.0254		
95% Adjusted Gamma UCL	0.0291		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0431

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.00349	Minimum of Log Data	-5.658
Maximum	0.057	Maximum of Log Data	-2.865
Mean	0.00941	Mean of log Data	-5.234
Median	0.00411	SD of log Data	0.84
SD	0.0167		
Coefficient of Variation	1.777		
Skewness	3.157		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.393	Shapiro Wilk Test Statistic	0.497
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0191	95% H-UCL	0.0166
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.016
95% Adjusted-CLT UCL	0.0238	97.5% Chebyshev (MVUE) UCL	0.0198
95% Modified-t UCL	0.02	99% Chebyshev (MVUE) UCL	0.0272
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.777	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0121		
nu star	15.53		
Approximate Chi Square Value (.05)	7.632	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0181
Adjusted Chi Square Value	6.692	95% Jackknife UCL	0.0191
		95% Standard Bootstrap UCL	0.0179
Anderson-Darling Test Statistic	2.757	95% Bootstrap-t UCL	0.231
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	0.116
Kolmogorov-Smirnov Test Statistic	0.496	95% Percentile Bootstrap UCL	0.02
Kolmogorov-Smirnov 5% Critical Value	0.274	95% BCA Bootstrap UCL	0.0252
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0325
		97.5% Chebyshev(Mean, Sd) UCL	0.0424
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.062
95% Approximate Gamma UCL	0.0192		
95% Adjusted Gamma UCL	0.0218		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0325

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.015	Minimum of Log Data	-4.2
Maximum	0.083	Maximum of Log Data	-2.489
Mean	0.0241	Mean of log Data	-3.896
Median	0.0173	SD of log Data	0.508
SD	0.0208		
Coefficient of Variation	0.866		
Skewness	3.104		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.458	Shapiro Wilk Test Statistic	0.581
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0361	95% H-UCL	0.0337
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0391
95% Adjusted-CLT UCL	0.0418	97.5% Chebyshev (MVUE) UCL	0.0461
95% Modified-t UCL	0.0372	99% Chebyshev (MVUE) UCL	0.0599
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.254	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0107		
nu star	45.09		
Approximate Chi Square Value (.05)	30.68	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0349
Adjusted Chi Square Value	28.63	95% Jackknife UCL	0.0361
		95% Standard Bootstrap UCL	0.034
Anderson-Darling Test Statistic	2.124	95% Bootstrap-t UCL	0.111
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	0.0864
Kolmogorov-Smirnov Test Statistic	0.417	95% Percentile Bootstrap UCL	0.0365
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	0.038
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0527
		97.5% Chebyshev(Mean, Sd) UCL	0.0652
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0895
95% Approximate Gamma UCL	0.0353		
95% Adjusted Gamma UCL	0.0379		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0527

Result or 1/2 SDL (benzo(k)fluoranthene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	

Minimum	0.00493	Minimum of Log Data	-5.313
Maximum	0.106	Maximum of Log Data	-2.244
Mean	0.0158	Mean of log Data	-4.861
Median	0.00575	SD of log Data	0.927
SD	0.0317		
Coefficient of Variation	2		
Skewness	3.16		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.386	Shapiro Wilk Test Statistic	0.483
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0342	95% H-UCL	0.0296
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0263
95% Adjusted-CLT UCL	0.043	97.5% Chebyshev (MVUE) UCL	0.0328
95% Modified-t UCL	0.0359	99% Chebyshev (MVUE) UCL	0.0455
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.644	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0246		
nu star	12.88		
Approximate Chi Square Value (.05)	5.815	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0323
Adjusted Chi Square Value	5.014	95% Jackknife UCL	0.0342
		95% Standard Bootstrap UCL	0.0311
Anderson-Darling Test Statistic	2.864	95% Bootstrap-t UCL	0.608
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	0.269
Kolmogorov-Smirnov Test Statistic	0.505	95% Percentile Bootstrap UCL	0.0358
Kolmogorov-Smirnov 5% Critical Value	0.275	95% BCA Bootstrap UCL	0.046
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0595
		97.5% Chebyshev(Mean, Sd) UCL	0.0784
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.116
95% Approximate Gamma UCL	0.0351		
95% Adjusted Gamma UCL	0.0407		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0595

Result or 1/2 SDL (cadmium)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.0075	Minimum of Log Data	-4.893
Maximum	0.11	Maximum of Log Data	-2.207
Mean	0.0311	Mean of log Data	-4.091
Median	0.0095	SD of log Data	1.081
SD	0.0398		
Coefficient of Variation	1.283		
Skewness	1.571		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.641	Shapiro Wilk Test Statistic	0.713
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0541	95% H-UCL	0.0974
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.071
95% Adjusted-CLT UCL	0.0585	97.5% Chebyshev (MVUE) UCL	0.0898
95% Modified-t UCL	0.0552	99% Chebyshev (MVUE) UCL	0.127
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.725	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0428		
nu star	14.5		
Approximate Chi Square Value (.05)	6.912	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0518
Adjusted Chi Square Value	6.025	95% Jackknife UCL	0.0541
		95% Standard Bootstrap UCL	0.0507
Anderson-Darling Test Statistic	1.584	95% Bootstrap-t UCL	0.105
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	0.0699
Kolmogorov-Smirnov Test Statistic	0.411	95% Percentile Bootstrap UCL	0.0515
Kolmogorov-Smirnov 5% Critical Value	0.274	95% BCA Bootstrap UCL	0.0581
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.086
		97.5% Chebyshev(Mean, Sd) UCL	0.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.156
95% Approximate Gamma UCL	0.0651		
95% Adjusted Gamma UCL	0.0747		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.156

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (carbazole)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.00376	Minimum of Log Data	-5.583
Maximum	0.011	Maximum of Log Data	-4.51
Mean	0.00512	Mean of log Data	-5.328
Median	0.00443	SD of log Data	0.312
SD	0.00214		
Coefficient of Variation	0.418		
Skewness	2.781		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.608	Shapiro Wilk Test Statistic	0.731
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.00636	95% H-UCL	0.00627
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00727
95% Adjusted-CLT UCL	0.00687	97.5% Chebyshev (MVUE) UCL	0.00822
95% Modified-t UCL	0.00646	99% Chebyshev (MVUE) UCL	0.0101
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.758	Data do not follow a Discernable Distribution (0.05)	
Theta Star	7.57E-04		
nu star	135.2		
Approximate Chi Square Value (.05)	109.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.00623
Adjusted Chi Square Value	105.3	95% Jackknife UCL	0.00636
		95% Standard Bootstrap UCL	0.0062
Anderson-Darling Test Statistic	1.249	95% Bootstrap-t UCL	0.00912
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	0.0106
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL	0.00636
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	0.00679
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00807
		97.5% Chebyshev(Mean, Sd) UCL	0.00934
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0119
95% Approximate Gamma UCL	0.00633		
95% Adjusted Gamma UCL	0.00657		
Potential UCL to Use		Use 95% Student's-t UCL	0.00636
		or 95% Modified-t UCL	0.00646

Result or 1/2 SDL (chromium)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	10.7	Minimum of Log Data	2.37
Maximum	20.1	Maximum of Log Data	3.001
Mean	15.2	Mean of log Data	2.703
Median	14.15	SD of log Data	0.199
SD	3.02		
Coefficient of Variation	0.199		
Skewness	0.27		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.95	95% H-UCL	17.26
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.39
95% Adjusted-CLT UCL	16.86	97.5% Chebyshev (MVUE) UCL	21.21
95% Modified-t UCL	16.96	99% Chebyshev (MVUE) UCL	24.77
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	19.81	Data appear Normal at 5% Significance Level	
Theta Star	0.767		
nu star	396.2		
Approximate Chi Square Value (.05)	351.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	16.77
Adjusted Chi Square Value	343.7	95% Jackknife UCL	16.95
		95% Standard Bootstrap UCL	16.7
Anderson-Darling Test Statistic	0.388	95% Bootstrap-t UCL	17.01

Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	16.75
Kolmogorov-Smirnov Test Statistic	0.205	95% Percentile Bootstrap UCL	16.71
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	16.74
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.36
		97.5% Chebyshev(Mean, Sd) UCL	21.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.7
95% Approximate Gamma UCL	17.15		
95% Adjusted Gamma UCL	17.52		
Potential UCL to Use		Use 95% Student's-t UCL	16.95

Result or 1/2 SDL (chrysene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.006	Minimum of Log Data	-5.116
Maximum	0.083	Maximum of Log Data	-2.489
Mean	0.0145	Mean of log Data	-4.742
Median	0.00675	SD of log Data	0.8
SD	0.0241		
Coefficient of Variation	1.668		
Skewness	3.156		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.395	Shapiro Wilk Test Statistic	0.493
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0284	95% H-UCL	0.0247
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0247
95% Adjusted-CLT UCL	0.0351	97.5% Chebyshev (MVUE) UCL	0.0305
95% Modified-t UCL	0.0297	99% Chebyshev (MVUE) UCL	0.0417
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.856	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0169		
nu star	17.12		
Approximate Chi Square Value (.05)	8.758	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.027
Adjusted Chi Square Value	7.74	95% Jackknife UCL	0.0284
		95% Standard Bootstrap UCL	0.0264
Anderson-Darling Test Statistic	2.737	95% Bootstrap-t UCL	0.307
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	0.154
Kolmogorov-Smirnov Test Statistic	0.496	95% Percentile Bootstrap UCL	0.0296
Kolmogorov-Smirnov 5% Critical Value	0.273	95% BCA Bootstrap UCL	0.0372
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0477
		97.5% Chebyshev(Mean, Sd) UCL	0.062
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0903
95% Approximate Gamma UCL	0.0282		
95% Adjusted Gamma UCL	0.032		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0477

Result or 1/2 SDL (copper)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	7.68	Minimum of Log Data	2.039
Maximum	19.3	Maximum of Log Data	2.96
Mean	12.12	Mean of log Data	2.449
Median	10.8	SD of log Data	0.313
SD	3.955		
Coefficient of Variation	0.326		
Skewness	0.802		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.948
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14.41	95% H-UCL	14.96
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.35
95% Adjusted-CLT UCL	14.51	97.5% Chebyshev (MVUE) UCL	19.63
95% Modified-t UCL	14.46	99% Chebyshev (MVUE) UCL	24.1
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	7.922	Data appear Normal at 5% Significance Level	
Theta Star	1.529		
nu star	158.4		
Approximate Chi Square Value (.05)	130.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	14.17
Adjusted Chi Square Value	125.9	95% Jackknife UCL	14.41
		95% Standard Bootstrap UCL	14.08
Anderson-Darling Test Statistic	0.317	95% Bootstrap-t UCL	15.03
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	14.63
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	14.04
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	14.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.57
		97.5% Chebyshev(Mean, Sd) UCL	19.93
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.56
95% Approximate Gamma UCL	14.73		
95% Adjusted Gamma UCL	15.25		
Potential UCL to Use		Use 95% Student's-t UCL	14.41

Result or 1/2 SDL (fluoranthene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.00486	Minimum of Log Data	-5.328
Maximum	0.156	Maximum of Log Data	-1.858
Mean	0.0208	Mean of log Data	-4.834
Median	0.00575	SD of log Data	1.053
SD	0.0475		
Coefficient of Variation	2.286		
Skewness	3.161		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.38	Shapiro Wilk Test Statistic	0.477
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0483	95% H-UCL	0.0428
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0324
95% Adjusted-CLT UCL	0.0615	97.5% Chebyshev (MVUE) UCL	0.0409
95% Modified-t UCL	0.0508	99% Chebyshev (MVUE) UCL	0.0575
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.513	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0405		
nu star	10.26		
Approximate Chi Square Value (.05)	4.106	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0455
Adjusted Chi Square Value	3.456	95% Jackknife UCL	0.0483
		95% Standard Bootstrap UCL	0.0443
Anderson-Darling Test Statistic	2.929	95% Bootstrap-t UCL	1.171
Anderson-Darling 5% Critical Value	0.766	95% Hall's Bootstrap UCL	0.527
Kolmogorov-Smirnov Test Statistic	0.515	95% Percentile Bootstrap UCL	0.0508
Kolmogorov-Smirnov 5% Critical Value	0.278	95% BCA Bootstrap UCL	0.0659
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0863
		97.5% Chebyshev(Mean, Sd) UCL	0.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.17
95% Approximate Gamma UCL	0.0519		
95% Adjusted Gamma UCL	0.0617		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.17
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (Indeno(1,2,3-cd)pyrene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.0125	Minimum of Log Data	-4.382
Maximum	0.417	Maximum of Log Data	-0.875
Mean	0.0551	Mean of log Data	-3.88
Median	0.0148	SD of log Data	1.063
SD	0.127		
Coefficient of Variation	2.308		
Skewness	3.161		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.379	Shapiro Wilk Test Statistic	0.47
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842

Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.129	95% H-UCL	0.114
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0853
95% Adjusted-CLT UCL	0.164	97.5% Chebyshev (MVUE) UCL	0.108
95% Modified-t UCL	0.136	99% Chebyshev (MVUE) UCL	0.152
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.505	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.109		
nu star	10.09		
Approximate Chi Square Value (.05)	4	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.121
Adjusted Chi Square Value	3.36	95% Jackknife UCL	0.129
		95% Standard Bootstrap UCL	0.119
Anderson-Darling Test Statistic	2.966	95% Bootstrap-t UCL	3.62
Anderson-Darling 5% Critical Value	0.767	95% Hall's Bootstrap UCL	1.642
Kolmogorov-Smirnov Test Statistic	0.523	95% Percentile Bootstrap UCL	0.135
Kolmogorov-Smirnov 5% Critical Value	0.278	95% BCA Bootstrap UCL	0.175
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.23
		97.5% Chebyshev(Mean, Sd) UCL	0.306
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.455
95% Approximate Gamma UCL	0.139		
95% Adjusted Gamma UCL	0.166		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.455
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	11	Minimum of Log Data	2.398
Maximum	15.2	Maximum of Log Data	2.721
Mean	13.43	Mean of log Data	2.591
Median	13.35	SD of log Data	0.118
SD	1.547		
Coefficient of Variation	0.115		
Skewness	-0.326		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk Test Statistic	0.909
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14.33	95% H-UCL	14.43
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.62
95% Adjusted-CLT UCL	14.18	97.5% Chebyshev (MVUE) UCL	16.56
95% Modified-t UCL	14.32	99% Chebyshev (MVUE) UCL	18.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	57	Data appear Normal at 5% Significance Level	
Theta Star	0.236		
nu star	1140		
Approximate Chi Square Value (.05)	1063	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	14.23
Adjusted Chi Square Value	1050	95% Jackknife UCL	14.33
		95% Standard Bootstrap UCL	14.18
Anderson-Darling Test Statistic	0.379	95% Bootstrap-t UCL	14.21
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	14.11
Kolmogorov-Smirnov Test Statistic	0.169	95% Percentile Bootstrap UCL	14.17
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	14.15
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.56
		97.5% Chebyshev(Mean, Sd) UCL	16.49
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	18.3
95% Approximate Gamma UCL	14.41		
95% Adjusted Gamma UCL	14.59		
Potential UCL to Use		Use 95% Student's-t UCL	14.33

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	14.4	Minimum of Log Data	2.667
Maximum	32.5	Maximum of Log Data	3.481
Mean	21.14	Mean of log Data	3.027

Median	19.9	SD of log Data	0.229
SD	5.166		
Coefficient of Variation	0.244		
Skewness	1.214		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.912	Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.13	95% H-UCL	24.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27.82
95% Adjusted-CLT UCL	24.5	97.5% Chebyshev (MVUE) UCL	30.72
95% Modified-t UCL	24.24	99% Chebyshev (MVUE) UCL	36.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.43	Data appear Normal at 5% Significance Level	
Theta Star	1.465		
nu star	288.6		
Approximate Chi Square Value (.05)	250.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	23.83
Adjusted Chi Square Value	244.1	95% Jackknife UCL	24.13
		95% Standard Bootstrap UCL	23.71
Anderson-Darling Test Statistic	0.311	95% Bootstrap-t UCL	26.29
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	40.64
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL	23.88
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	24.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.26
		97.5% Chebyshev(Mean, Sd) UCL	31.34
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	37.39
95% Approximate Gamma UCL	24.38		
95% Adjusted Gamma UCL	25		
Potential UCL to Use		Use 95% Student's-t UCL	24.13

Result or 1/2 SDL (manganese)

General Statistics

Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	284	Minimum of Log Data	5.649
Maximum	551	Maximum of Log Data	6.312
Mean	377.4	Mean of log Data	5.909
Median	333	SD of log Data	0.227
SD	93.76		
Coefficient of Variation	0.248		
Skewness	1.28		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.796	Shapiro Wilk Test Statistic	0.843
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	431.8	95% H-UCL	436.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	495.4
95% Adjusted-CLT UCL	439	97.5% Chebyshev (MVUE) UCL	546.6
95% Modified-t UCL	433.8	99% Chebyshev (MVUE) UCL	647.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.38	Data appear Lognormal at 5% Significance Level	
Theta Star	26.25		
nu star	287.6		
Approximate Chi Square Value (.05)	249.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	426.2
Adjusted Chi Square Value	243.1	95% Jackknife UCL	431.8
		95% Standard Bootstrap UCL	422.7
Anderson-Darling Test Statistic	0.85	95% Bootstrap-t UCL	494.2
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	681.2
Kolmogorov-Smirnov Test Statistic	0.284	95% Percentile Bootstrap UCL	425.6
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	436.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	506.6
		97.5% Chebyshev(Mean, Sd) UCL	562.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	672.4
95% Approximate Gamma UCL	435.3		
95% Adjusted Gamma UCL	446.4		
Potential UCL to Use		Use 95% Student's-t UCL	431.8
		or 95% Modified-t UCL	433.8
		or 95% H-UCL	436.5

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.015	Minimum of Log Data	-4.2
Maximum	0.03	Maximum of Log Data	-3.507
Mean	0.0213	Mean of log Data	-3.871
Median	0.0195	SD of log Data	0.217
SD	0.00479		
Coefficient of Variation	0.225		
Skewness	0.734		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0241	95% H-UCL	0.0245
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0277
95% Adjusted-CLT UCL	0.0242	97.5% Chebyshev (MVUE) UCL	0.0305
95% Modified-t UCL	0.0241	99% Chebyshev (MVUE) UCL	0.0359
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	16.3	Data appear Normal at 5% Significance Level	
Theta Star	0.00131		
nu star	326.1		
Approximate Chi Square Value (.05)	285.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0238
Adjusted Chi Square Value	278.6	95% Jackknife UCL	0.0241
		95% Standard Bootstrap UCL	0.0236
Anderson-Darling Test Statistic	0.458	95% Bootstrap-t UCL	0.0246
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	0.024
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL	0.0238
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	0.0239
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0279
		97.5% Chebyshev(Mean, Sd) UCL	0.0308
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0364
95% Approximate Gamma UCL	0.0243		
95% Adjusted Gamma UCL	0.0249		
Potential UCL to Use		Use 95% Student's-t UCL	0.0241

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.42	Minimum of Log Data	-0.868
Maximum	0.68	Maximum of Log Data	-0.386
Mean	0.522	Mean of log Data	-0.659
Median	0.505	SD of log Data	0.137
SD	0.0739		
Coefficient of Variation	0.142		
Skewness	0.94		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.565	95% H-UCL	0.568
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.621
95% Adjusted-CLT UCL	0.568	97.5% Chebyshev (MVUE) UCL	0.663
95% Modified-t UCL	0.566	99% Chebyshev (MVUE) UCL	0.747
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	40.85	Data appear Normal at 5% Significance Level	
Theta Star	0.0128		
nu star	817		
Approximate Chi Square Value (.05)	751.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.56
Adjusted Chi Square Value	740.8	95% Jackknife UCL	0.565
		95% Standard Bootstrap UCL	0.56
Anderson-Darling Test Statistic	0.217	95% Bootstrap-t UCL	0.579
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	0.59
Kolmogorov-Smirnov Test Statistic	0.153	95% Percentile Bootstrap UCL	0.558
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	0.561

Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.624
		97.5% Chebyshev(Mean, Sd) UCL	0.668
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.755
95% Approximate Gamma UCL	0.567		
95% Adjusted Gamma UCL	0.576		
Potential UCL to Use		Use 95% Student's-t UCL	0.565

Result or 1/2 SDL (phenanthrene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.00286	Minimum of Log Data	-5.859
Maximum	0.137	Maximum of Log Data	-1.988
Mean	0.0167	Mean of log Data	-5.327
Median	0.00336	SD of log Data	1.179
SD	0.0423		
Coefficient of Variation	2.525		
Skewness	3.162		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.375	Shapiro Wilk Test Statistic	0.459
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0412	95% H-UCL	0.0383
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0239
95% Adjusted-CLT UCL	0.053	97.5% Chebyshev (MVUE) UCL	0.0304
95% Modified-t UCL	0.0435	99% Chebyshev (MVUE) UCL	0.0432
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.425	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0394		
nu star	8.497		
Approximate Chi Square Value (.05)	3.026	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0387
Adjusted Chi Square Value	2.487	95% Jackknife UCL	0.0412
		95% Standard Bootstrap UCL	0.0378
Anderson-Darling Test Statistic	3.041	95% Bootstrap-t UCL	1.724
Anderson-Darling 5% Critical Value	0.776	95% Hall's Bootstrap UCL	0.748
Kolmogorov-Smirnov Test Statistic	0.53	95% Percentile Bootstrap UCL	0.0434
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	0.0568
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.075
		97.5% Chebyshev(Mean, Sd) UCL	0.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.15
95% Approximate Gamma UCL	0.047		
95% Adjusted Gamma UCL	0.0572		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.15

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (pyrene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.0085	Minimum of Log Data	-4.768
Maximum	0.127	Maximum of Log Data	-2.064
Mean	0.0218	Mean of log Data	-4.347
Median	0.01	SD of log Data	0.811
SD	0.037		
Coefficient of Variation	1.696		
Skewness	3.156		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.396	Shapiro Wilk Test Statistic	0.501
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0432	95% H-UCL	0.0376
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0373
95% Adjusted-CLT UCL	0.0535	97.5% Chebyshev (MVUE) UCL	0.046
95% Modified-t UCL	0.0452	99% Chebyshev (MVUE) UCL	0.063
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.834	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0262		

nu star	16.67		
Approximate Chi Square Value (.05)	8.437	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.041
Adjusted Chi Square Value	7.441	95% Jackknife UCL	0.0432
		95% Standard Bootstrap UCL	0.0404
Anderson-Darling Test Statistic	2.722	95% Bootstrap-t UCL	0.464
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	0.239
Kolmogorov-Smirnov Test Statistic	0.493	95% Percentile Bootstrap UCL	0.0452
Kolmogorov-Smirnov 5% Critical Value	0.273	95% BCA Bootstrap UCL	0.0564
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0728
		97.5% Chebyshev(Mean, Sd) UCL	0.0948
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.138
95% Approximate Gamma UCL	0.0431		
95% Adjusted Gamma UCL	0.0488		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0728

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	36.6	Minimum of Log Data	3.6
Maximum	969	Maximum of Log Data	6.876
Mean	247	Mean of log Data	4.667
Median	75.5	SD of log Data	1.272
SD	364.6		
Coefficient of Variation	1.476		
Skewness	1.694		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.62	Shapiro Wilk Test Statistic	0.795
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	458.3	95% H-UCL	1141
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	602.7
95% Adjusted-CLT UCL	502.6	97.5% Chebyshev (MVUE) UCL	772.1
95% Modified-t UCL	468.6	99% Chebyshev (MVUE) UCL	1105
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.567	Data do not follow a Discernable Distribution (0.05)	
Theta Star	435.3		
nu star	11.35		
Approximate Chi Square Value (.05)	4.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	436.6
Adjusted Chi Square Value	4.085	95% Jackknife UCL	458.3
		95% Standard Bootstrap UCL	426.1
Anderson-Darling Test Statistic	1.247	95% Bootstrap-t UCL	1346
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	1691
Kolmogorov-Smirnov Test Statistic	0.346	95% Percentile Bootstrap UCL	430.3
Kolmogorov-Smirnov 5% Critical Value	0.277	95% BCA Bootstrap UCL	496.4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	749.5
		97.5% Chebyshev(Mean, Sd) UCL	967
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1394
95% Approximate Gamma UCL	583.8		
95% Adjusted Gamma UCL	685.9		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1394

Recommended UCL exceeds the maximum observation

APPENDIX A-6

INTRACOASTAL WATERWAY SEDIMENT

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	J:\1352 - Gulfco RI\risk\data queries oct 07\EPC tables with onehalf DL\IWSE Data - Just site data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 SDL (1,2-dichloroethane)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	9.2000E-5	Minimum of Log Data	-9.294
Maximum	0.0030	Maximum of Log Data	-5.802
Mean	4.1025E-4	Mean of log Data	-8.349
Median	1.7900E-4	SD of log Data	0.893
SD	7.0923E-4		
Coefficient of Variation	1.729		
Skewness	3.752		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.432	Shapiro Wilk Test Statistic	0.832
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	7.2108E-4	95% H-UCL	6.3456E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.0066E-4
95% Adjusted-CLT UCL	8.7963E-4	97.5% Chebyshev (MVUE) UCL	8.5627E-4
95% Modified-t UCL	7.4880E-4	99% Chebyshev (MVUE) UCL	0.0011
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.889	Data do not follow a Discernable Distribution (0.05)	
Theta Star	4.6126E-4		
nu star	28.46		
Approximate Chi Square Value (.05)	17.29	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	7.0189E-4
Adjusted Chi Square Value	16.3	95% Jackknife UCL	7.2108E-4
		95% Standard Bootstrap UCL	6.9181E-4
Anderson-Darling Test Statistic	1.681	95% Bootstrap-t UCL	0.0016
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	0.0017
Kolmogorov-Smirnov Test Statistic	0.283	95% Percentile Bootstrap UCL	7.4878E-4
Kolmogorov-Smirnov 5% Critical Value	0.221	95% BCA Bootstrap UCL	9.6719E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0011
		97.5% Chebyshev(Mean, Sd) UCL	0.0015
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0021
95% Approximate Gamma UCL	6.7541E-4		
95% Adjusted Gamma UCL	7.1630E-4		

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0011

Result or 1/2 SDL (1,2diphenylhydrazine/azobenzen)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	13

Raw Statistics		Log-transformed Statistics	
Minimum	0.0050	Minimum of Log Data	-5.288
Maximum	0.0317	Maximum of Log Data	-3.451
Mean	0.0073	Mean of log Data	-5.056
Median	0.0054	SD of log Data	0.447
SD	0.0065		
Coefficient of Variation	0.883		
Skewness	3.903		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.369	Shapiro Wilk Test Statistic	0.515
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0103	95% H-UCL	0.0088
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0105
95% Adjusted-CLT UCL	0.0118	97.5% Chebyshev (MVUE) UCL	0.012
95% Modified-t UCL	0.0105	99% Chebyshev (MVUE) UCL	0.015
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.896	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0025		
nu star	92.68		
Approximate Chi Square Value (.05)	71.48	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0101
Adjusted Chi Square Value	69.36	95% Jackknife UCL	0.0103
		95% Standard Bootstrap UCL	0.0099
Anderson-Darling Test Statistic	3.453	95% Bootstrap-t UCL	0.0268
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	0.0205
Kolmogorov-Smirnov Test Statistic	0.376	95% Percentile Bootstrap UCL	0.0106
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0124
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0145
		97.5% Chebyshev(Mean, Sd) UCL	0.0176
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0236
95% Approximate Gamma UCL	0.0095		
95% Adjusted Gamma UCL	0.0098		
Potential UCL to Use		Use 95% Student's-t UCL	0.0103
		or 95% Modified-t UCL	0.0105

Result or 1/2 SDL (2-methylnaphthalene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14

Raw Statistics		Log-transformed Statistics	
Minimum	0.0066	Minimum of Log Data	-5.021
Maximum	0.0188	Maximum of Log Data	-3.974
Mean	0.0083	Mean of log Data	-4.828
Median	0.0073	SD of log Data	0.261
SD	0.0029		
Coefficient of Variation	0.357		
Skewness	3.264		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.566	Shapiro Wilk Test Statistic	0.699
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0096	95% H-UCL	0.0093
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0106
95% Adjusted-CLT UCL	0.0102	97.5% Chebyshev (MVUE) UCL	0.0117
95% Modified-t UCL	0.0097	99% Chebyshev (MVUE) UCL	0.0137
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	10.55	Data do not follow a Discernable Distribution (0.05)	
Theta Star	7.8871E-4		
nu star	337.5		
Approximate Chi Square Value (.05)	295.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0095
Adjusted Chi Square Value	291.5	95% Jackknife UCL	0.0096
		95% Standard Bootstrap UCL	0.0094
Anderson-Darling Test Statistic	1.783	95% Bootstrap-t UCL	0.0116
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	0.0139
Kolmogorov-Smirnov Test Statistic	0.24	95% Percentile Bootstrap UCL	0.0096
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0104
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0116
		97.5% Chebyshev(Mean, Sd) UCL	0.013
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0157
95% Approximate Gamma UCL	0.0094		
95% Adjusted Gamma UCL	0.0096		
Potential UCL to Use		Use 95% Student's-t UCL	0.0096
		or 95% Modified-t UCL	0.0097

Result or 1/2 SDL (3,3'-dichlorobenzidine)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	0.0293	Minimum of Log Data	-3.53
Maximum	0.151	Maximum of Log Data	-1.89
Mean	0.0408	Mean of log Data	-3.312
Median	0.0316	SD of log Data	0.4
SD	0.0297		
Coefficient of Variation	0.729		
Skewness	3.845		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.396	Shapiro Wilk Test Statistic	0.541
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0538	95% H-UCL	0.0483
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0568
95% Adjusted-CLT UCL	0.0607	97.5% Chebyshev (MVUE) UCL	0.0643
95% Modified-t UCL	0.055	99% Chebyshev (MVUE) UCL	0.0792
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.785	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0108		
nu star	121.1		
Approximate Chi Square Value (.05)	96.71	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.053
Adjusted Chi Square Value	94.23	95% Jackknife UCL	0.0538
		95% Standard Bootstrap UCL	0.0527
Anderson-Darling Test Statistic	3.16	95% Bootstrap-t UCL	0.108
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	0.0974
Kolmogorov-Smirnov Test Statistic	0.345	95% Percentile Bootstrap UCL	0.0553
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0628
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0732
		97.5% Chebyshev(Mean, Sd) UCL	0.0872
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.115
95% Approximate Gamma UCL	0.0511		
95% Adjusted Gamma UCL	0.0524		
Potential UCL to Use		Use 95% Student's-t UCL	0.0538
		or 95% Modified-t UCL	0.055

Result or 1/2 SDL (4,4'-ddt)

General Statistics

Number of Valid Samples	17	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	8.8500E-5	Minimum of Log Data	-9.333
Maximum	0.0033	Maximum of Log Data	-5.708
Mean	4.1103E-4	Mean of log Data	-8.608

Median	1.0250E-4	SD of log Data	1.086
SD	7.9620E-4		
Coefficient of Variation	1.937		
Skewness	3.45		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.467	Shapiro Wilk Test Statistic	0.714
Shapiro Wilk Critical Value	0.892	Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	7.4817E-4	95% H-UCL	7.0721E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.1445E-4
95% Adjusted-CLT UCL	9.0131E-4	97.5% Chebyshev (MVUE) UCL	8.8812E-4
95% Modified-t UCL	7.7510E-4	99% Chebyshev (MVUE) UCL	0.0012
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.648	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	6.3401E-4		
nu star	22.04		
Approximate Chi Square Value (.05)	12.37	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0346	95% CLT UCL	7.2866E-4
Adjusted Chi Square Value	11.61	95% Jackknife UCL	7.4817E-4
		95% Standard Bootstrap UCL	7.1836E-4
Anderson-Darling Test Statistic	2.621	95% Bootstrap-t UCL	0.0018
Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	0.0018
Kolmogorov-Smirnov Test Statistic	0.375	95% Percentile Bootstrap UCL	7.5694E-4
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	9.4576E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0012
		97.5% Chebyshev(Mean, Sd) UCL	0.0016
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0023
95% Approximate Gamma UCL	7.3242E-4		
95% Adjusted Gamma UCL	7.8005E-4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0023

Result or 1/2 SDL (4,6-dinitro-2-methylphenol)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	0.0123	Minimum of Log Data	-4.402
Maximum	0.0627	Maximum of Log Data	-2.769
Mean	0.017	Mean of log Data	-4.186
Median	0.0132	SD of log Data	0.399
SD	0.0123		
Coefficient of Variation	0.725		
Skewness	3.843		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.396	Shapiro Wilk Test Statistic	0.542
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0224	95% H-UCL	0.0201
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0237
95% Adjusted-CLT UCL	0.0252	97.5% Chebyshev (MVUE) UCL	0.0268
95% Modified-t UCL	0.0229	99% Chebyshev (MVUE) UCL	0.033
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.812	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0044		
nu star	122		
Approximate Chi Square Value (.05)	97.49	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0221
Adjusted Chi Square Value	95	95% Jackknife UCL	0.0224
		95% Standard Bootstrap UCL	0.022
Anderson-Darling Test Statistic	3.154	95% Bootstrap-t UCL	0.0447
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	0.0405
Kolmogorov-Smirnov Test Statistic	0.344	95% Percentile Bootstrap UCL	0.023
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0264
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0304
		97.5% Chebyshev(Mean, Sd) UCL	0.0363
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0477
95% Approximate Gamma UCL	0.0213		
95% Adjusted Gamma UCL	0.0218		
Potential UCL to Use		Use 95% Student's-t UCL	0.0224
		or 95% Modified-t UCL	0.0229

Result or 1/2 SDL (acenaphthene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0061	Minimum of Log Data	-5.099
Maximum	0.0631	Maximum of Log Data	-2.763
Mean	0.0116	Mean of log Data	-4.757
Median	0.0067	SD of log Data	0.628
SD	0.0144		
Coefficient of Variation	1.248		
Skewness	3.498		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.423	Shapiro Wilk Test Statistic	0.58
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887

Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0179	95% H-UCL	0.0149
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0177
95% Adjusted-CLT UCL	0.0208	97.5% Chebyshev (MVUE) UCL	0.0209
95% Modified-t UCL	0.0184	99% Chebyshev (MVUE) UCL	0.0272
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.535	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0075		
nu star	49.11		
Approximate Chi Square Value (.05)	34.02	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0175
Adjusted Chi Square Value	32.6	95% Jackknife UCL	0.0179
		95% Standard Bootstrap UCL	0.0174
Anderson-Darling Test Statistic	3.332	95% Bootstrap-t UCL	0.0819
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	0.0483
Kolmogorov-Smirnov Test Statistic	0.415	95% Percentile Bootstrap UCL	0.0177
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0211
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0273
		97.5% Chebyshev(Mean, Sd) UCL	0.034
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0474
95% Approximate Gamma UCL	0.0167		
95% Adjusted Gamma UCL	0.0174		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0273

Result or 1/2 SDL (aluminum)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	3900	Minimum of Log Data	8.269
Maximum	12500	Maximum of Log Data	9.433
Mean	6854	Mean of log Data	8.781
Median	6345	SD of log Data	0.331
SD	2346		
Coefficient of Variation	0.342		
Skewness	0.876		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7882	95% H-UCL	8081
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9351

95% Adjusted-CLT UCL	7956	97.5% Chebyshev (MVUE) UCL	10434
95% Modified-t UCL	7904	99% Chebyshev (MVUE) UCL	12562
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.977	Data appear Normal at 5% Significance Level	
Theta Star	859.3		
nu star	255.3		
Approximate Chi Square Value (.05)	219.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	7819
Adjusted Chi Square Value	215.5	95% Jackknife UCL	7882
		95% Standard Bootstrap UCL	7774
Anderson-Darling Test Statistic	0.237	95% Bootstrap-t UCL	8066
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	8093
Kolmogorov-Smirnov Test Statistic	0.116	95% Percentile Bootstrap UCL	7798
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	7883
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9411
		97.5% Chebyshev(Mean, Sd) UCL	10517
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12689
95% Approximate Gamma UCL	7980		
95% Adjusted Gamma UCL	8120		
Potential UCL to Use		Use 95% Student's-t UCL	7882

Result or 1/2 SDL (anthracene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0067	Minimum of Log Data	-5.006
Maximum	0.0753	Maximum of Log Data	-2.586
Mean	0.0201	Mean of log Data	-4.283
Median	0.0089	SD of log Data	0.838
SD	0.0205		
Coefficient of Variation	1.017		
Skewness	1.776		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.711	Shapiro Wilk Test Statistic	0.805
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0291	95% H-UCL	0.0335
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0378
95% Adjusted-CLT UCL	0.0309	97.5% Chebyshev (MVUE) UCL	0.0459
95% Modified-t UCL	0.0294	99% Chebyshev (MVUE) UCL	0.0619
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.24	Data do not follow a Discernable Distribution (0.05)	

Theta Star	0.0162		
nu star	39.69		
Approximate Chi Square Value (.05)	26.26	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0285
Adjusted Chi Square Value	25.02	95% Jackknife UCL	0.0291
		95% Standard Bootstrap UCL	0.0283
Anderson-Darling Test Statistic	1.546	95% Bootstrap-t UCL	0.0368
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	0.0337
Kolmogorov-Smirnov Test Statistic	0.323	95% Percentile Bootstrap UCL	0.0289
Kolmogorov-Smirnov 5% Critical Value	0.219	95% BCA Bootstrap UCL	0.0317
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0424
		97.5% Chebyshev(Mean, Sd) UCL	0.052
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.071
95% Approximate Gamma UCL	0.0304		
95% Adjusted Gamma UCL	0.0319		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0424

Result or 1/2 SDL (antimony)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	0.74	Minimum of Log Data	-0.301
Maximum	8.14	Maximum of Log Data	2.097
Mean	2.245	Mean of log Data	0.629
Median	1.75	SD of log Data	0.57
SD	1.751		
Coefficient of Variation	0.78		
Skewness	2.813		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.675	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.012	95% H-UCL	3.02
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.591
95% Adjusted-CLT UCL	3.294	97.5% Chebyshev (MVUE) UCL	4.201
95% Modified-t UCL	3.064	99% Chebyshev (MVUE) UCL	5.399
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.429	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.924		
nu star	77.73		
Approximate Chi Square Value (.05)	58.42	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	2.965
Adjusted Chi Square Value	56.52	95% Jackknife UCL	3.012

		95% Standard Bootstrap UCL	2.935
Anderson-Darling Test Statistic	0.73	95% Bootstrap-t UCL	3.9
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	5.856
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	3.061
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	3.384
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.153
		97.5% Chebyshev(Mean, Sd) UCL	4.979
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.601
95% Approximate Gamma UCL	2.987		
95% Adjusted Gamma UCL	3.088		
Potential UCL to Use		Use 95% Approximate Gamma UCL	2.987

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		**Log-transformed Statistics**	
Minimum	2.41	Minimum of Log Data	0.88
Maximum	7.62	Maximum of Log Data	2.031
Mean	4.026	Mean of log Data	1.341
Median	3.805	SD of log Data	0.327
SD	1.4		
Coefficient of Variation	0.348		
Skewness	1.175		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.64	95% H-UCL	4.732
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.471
95% Adjusted-CLT UCL	4.712	97.5% Chebyshev (MVUE) UCL	6.099
95% Modified-t UCL	4.657	99% Chebyshev (MVUE) UCL	7.332
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.049	Data appear Normal at 5% Significance Level	
Theta Star	0.5		
nu star	257.6		
Approximate Chi Square Value (.05)	221.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	4.602
Adjusted Chi Square Value	217.6	95% Jackknife UCL	4.64
		95% Standard Bootstrap UCL	4.587
Anderson-Darling Test Statistic	0.318	95% Bootstrap-t UCL	4.811
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	4.939
Kolmogorov-Smirnov Test Statistic	0.15	95% Percentile Bootstrap UCL	4.618
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	4.696

Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.552
		97.5% Chebyshev(Mean, Sd) UCL	6.212
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	7.508
95% Approximate Gamma UCL	4.684		
95% Adjusted Gamma UCL	4.766		
Potential UCL to Use		Use 95% Student's-t UCL	4.64

Result or 1/2 SDL (atrazine (aatrex))

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.012	Minimum of Log Data	-4.423
Maximum	0.0814	Maximum of Log Data	-2.508
Mean	0.0179	Mean of log Data	-4.189
Median	0.0129	SD of log Data	0.466
SD	0.017		
Coefficient of Variation	0.951		
Skewness	3.921		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.359	Shapiro Wilk Test Statistic	0.502
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0254	95% H-UCL	0.0216
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0255
95% Adjusted-CLT UCL	0.0294	97.5% Chebyshev (MVUE) UCL	0.0293
95% Modified-t UCL	0.0261	99% Chebyshev (MVUE) UCL	0.0368
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.613	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0068		
nu star	83.62		
Approximate Chi Square Value (.05)	63.55	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0249
Adjusted Chi Square Value	61.56	95% Jackknife UCL	0.0254
		95% Standard Bootstrap UCL	0.0247
Anderson-Darling Test Statistic	3.587	95% Bootstrap-t UCL	0.0697
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	0.0528
Kolmogorov-Smirnov Test Statistic	0.387	95% Percentile Bootstrap UCL	0.0264
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	0.0308
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0365
		97.5% Chebyshev(Mean, Sd) UCL	0.0445
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0603
95% Approximate Gamma UCL	0.0236		
95% Adjusted Gamma UCL	0.0243		

Potential UCL to Use		Use 95% Student's-t UCL	0.0254
		or 95% Modified-t UCL	0.0261

Result or 1/2 SDL (barium)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	14

Raw Statistics		Log-transformed Statistics	
Minimum	116	Minimum of Log Data	4.754
Maximum	377	Maximum of Log Data	5.932
Mean	215.3	Mean of log Data	5.339
Median	198	SD of log Data	0.263
SD	59.65		
Coefficient of Variation	0.277		
Skewness	1.296		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.887	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	241.4	95% H-UCL	244.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	277.3
95% Adjusted-CLT UCL	244.9	97.5% Chebyshev (MVUE) UCL	304.2
95% Modified-t UCL	242.2	99% Chebyshev (MVUE) UCL	357.1

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	12.47	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	17.27		
nu star	398.9		
Approximate Chi Square Value (.05)	353.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	239.8
Adjusted Chi Square Value	348.8	95% Jackknife UCL	241.4
		95% Standard Bootstrap UCL	239.4
Anderson-Darling Test Statistic	0.562	95% Bootstrap-t UCL	250.3
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	261.9
Kolmogorov-Smirnov Test Statistic	0.17	95% Percentile Bootstrap UCL	240
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	244.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	280.3
		97.5% Chebyshev(Mean, Sd) UCL	308.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	363.6
95% Approximate Gamma UCL	242.8		
95% Adjusted Gamma UCL	246.2		
Potential UCL to Use		Use 95% Approximate Gamma UCL	242.8

Result or 1/2 SDL (benzo(a)anthracene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14

Raw Statistics		Log-transformed Statistics	
Minimum	0.0062	Minimum of Log Data	-5.075
Maximum	0.395	Maximum of Log Data	-0.929
Mean	0.0454	Mean of log Data	-4.365
Median	0.0069	SD of log Data	1.321
SD	0.103		
Coefficient of Variation	2.258		
Skewness	3.108		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.454	Shapiro Wilk Test Statistic	0.591
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0904	95% H-UCL	0.092
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0734
95% Adjusted-CLT UCL	0.109	97.5% Chebyshev (MVUE) UCL	0.0931
95% Modified-t UCL	0.0937	99% Chebyshev (MVUE) UCL	0.132
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.447	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.102		
nu star	14.31		
Approximate Chi Square Value (.05)	6.785	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0876
Adjusted Chi Square Value	6.203	95% Jackknife UCL	0.0904
		95% Standard Bootstrap UCL	0.0863
Anderson-Darling Test Statistic	3.576	95% Bootstrap-t UCL	0.28
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	0.328
Kolmogorov-Smirnov Test Statistic	0.468	95% Percentile Bootstrap UCL	0.0904
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.118
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.157
		97.5% Chebyshev(Mean, Sd) UCL	0.206
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.301
95% Approximate Gamma UCL	0.0958		
95% Adjusted Gamma UCL	0.105		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.301

Result or 1/2 SDL (benzo(a)pyrene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	0.0062	Minimum of Log Data	-5.083
Maximum	0.445	Maximum of Log Data	-0.81
Mean	0.0661	Mean of log Data	-3.88
Median	0.0078	SD of log Data	1.521
SD	0.115		
Coefficient of Variation	1.737		
Skewness	2.722		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.598	Shapiro Wilk Test Statistic	0.764
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.116	95% H-UCL	0.27
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.168
95% Adjusted-CLT UCL	0.134	97.5% Chebyshev (MVUE) UCL	0.215
95% Modified-t UCL	0.12	99% Chebyshev (MVUE) UCL	0.309
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.48	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.138		
nu star	15.36		
Approximate Chi Square Value (.05)	7.512	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.113
Adjusted Chi Square Value	6.895	95% Jackknife UCL	0.116
		95% Standard Bootstrap UCL	0.113
Anderson-Darling Test Statistic	1.831	95% Bootstrap-t UCL	0.184
Anderson-Darling 5% Critical Value	0.793	95% Hall's Bootstrap UCL	0.279
Kolmogorov-Smirnov Test Statistic	0.36	95% Percentile Bootstrap UCL	0.117
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.144
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.191
		97.5% Chebyshev(Mean, Sd) UCL	0.245
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.352
95% Approximate Gamma UCL	0.135		
95% Adjusted Gamma UCL	0.147		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.352

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	0.0043	Minimum of Log Data	-5.443
Maximum	0.611	Maximum of Log Data	-0.493
Mean	0.1	Mean of log Data	-3.526
Median	0.0371	SD of log Data	1.76

SD	0.157		
Coefficient of Variation	1.565		
Skewness	2.573		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.66	Shapiro Wilk Test Statistic	0.861
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.169	95% H-UCL	0.867
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.367
95% Adjusted-CLT UCL	0.192	97.5% Chebyshev (MVUE) UCL	0.476
95% Modified-t UCL	0.173	99% Chebyshev (MVUE) UCL	0.692
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.461	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.218		
nu star	14.74		
Approximate Chi Square Value (.05)	7.082	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.165
Adjusted Chi Square Value	6.485	95% Jackknife UCL	0.169
		95% Standard Bootstrap UCL	0.164
Anderson-Darling Test Statistic	0.881	95% Bootstrap-t UCL	0.234
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	0.418
Kolmogorov-Smirnov Test Statistic	0.25	95% Percentile Bootstrap UCL	0.169
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.193
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.271
		97.5% Chebyshev(Mean, Sd) UCL	0.345
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.491
95% Approximate Gamma UCL	0.209		
95% Adjusted Gamma UCL	0.228		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.491

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	0.0062	Minimum of Log Data	-5.083
Maximum	0.442	Maximum of Log Data	-0.816
Mean	0.0661	Mean of log Data	-3.851
Median	0.0086	SD of log Data	1.48
SD	0.117		
Coefficient of Variation	1.766		
Skewness	2.643		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.594	Shapiro Wilk Test Statistic	0.805
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.117	95% H-UCL	0.244
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.161
95% Adjusted-CLT UCL	0.135	97.5% Chebyshev (MVUE) UCL	0.206
95% Modified-t UCL	0.121	99% Chebyshev (MVUE) UCL	0.294
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.49	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.135		
nu star	15.66		
Approximate Chi Square Value (.05)	7.726	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.114
Adjusted Chi Square Value	7.099	95% Jackknife UCL	0.117
		95% Standard Bootstrap UCL	0.112
Anderson-Darling Test Statistic	1.602	95% Bootstrap-t UCL	0.217
Anderson-Darling 5% Critical Value	0.792	95% Hall's Bootstrap UCL	0.304
Kolmogorov-Smirnov Test Statistic	0.303	95% Percentile Bootstrap UCL	0.117
Kolmogorov-Smirnov 5% Critical Value	0.226	95% BCA Bootstrap UCL	0.142
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.193
		97.5% Chebyshev(Mean, Sd) UCL	0.248
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.357
95% Approximate Gamma UCL	0.134		
95% Adjusted Gamma UCL	0.146		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.357

Result or 1/2 SDL (benzo(k)fluoranthene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0095	Minimum of Log Data	-4.651
Maximum	0.318	Maximum of Log Data	-1.146
Mean	0.0589	Mean of log Data	-3.644
Median	0.0122	SD of log Data	1.253
SD	0.0853		
Coefficient of Variation	1.447		
Skewness	2.204		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.773
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0963	95% H-UCL	0.157
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.135
95% Adjusted-CLT UCL	0.107	97.5% Chebyshev (MVUE) UCL	0.17
95% Modified-t UCL	0.0983	99% Chebyshev (MVUE) UCL	0.24
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.641	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0919		
nu star	20.52		
Approximate Chi Square Value (.05)	11.24	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.094
Adjusted Chi Square Value	10.46	95% Jackknife UCL	0.0963
		95% Standard Bootstrap UCL	0.0921
Anderson-Darling Test Statistic	1.775	95% Bootstrap-t UCL	0.129
Anderson-Darling 5% Critical Value	0.776	95% Hall's Bootstrap UCL	0.122
Kolmogorov-Smirnov Test Statistic	0.35	95% Percentile Bootstrap UCL	0.0958
Kolmogorov-Smirnov 5% Critical Value	0.223	95% BCA Bootstrap UCL	0.108
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.152
		97.5% Chebyshev(Mean, Sd) UCL	0.192
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.271
95% Approximate Gamma UCL	0.108		
95% Adjusted Gamma UCL	0.116		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.271

Result or 1/2 SDL (beryllium)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.29	Minimum of Log Data	-1.238
Maximum	0.82	Maximum of Log Data	-0.198
Mean	0.463	Mean of log Data	-0.815
Median	0.42	SD of log Data	0.307
SD	0.149		
Coefficient of Variation	0.322		
Skewness	0.894		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.905	Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.528	95% H-UCL	0.539
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.619
95% Adjusted-CLT UCL	0.533	97.5% Chebyshev (MVUE) UCL	0.687
95% Modified-t UCL	0.53	99% Chebyshev (MVUE) UCL	0.821

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.119	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0508		
nu star	291.8		
Approximate Chi Square Value (.05)	253.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.524
Adjusted Chi Square Value	249.2	95% Jackknife UCL	0.528
		95% Standard Bootstrap UCL	0.523
Anderson-Darling Test Statistic	0.452	95% Bootstrap-t UCL	0.541
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	0.541
Kolmogorov-Smirnov Test Statistic	0.161	95% Percentile Bootstrap UCL	0.523
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.532
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.625
		97.5% Chebyshev(Mean, Sd) UCL	0.696
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.834
95% Approximate Gamma UCL	0.534		
95% Adjusted Gamma UCL	0.542		
Potential UCL to Use		Use 95% Student's-t UCL	0.528

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.675	Minimum of Log Data	-0.393
Maximum	27.2	Maximum of Log Data	3.303
Mean	12.04	Mean of log Data	1.699
Median	13.45	SD of log Data	1.616
SD	9.92		
Coefficient of Variation	0.824		
Skewness	-0.0194		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.735
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.39	95% H-UCL	97.34
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	52.5
95% Adjusted-CLT UCL	16.11	97.5% Chebyshev (MVUE) UCL	67.76
95% Modified-t UCL	16.39	99% Chebyshev (MVUE) UCL	97.73
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.657	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	18.32		
nu star	21.03		

Approximate Chi Square Value (.05)	11.62	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	16.12
Adjusted Chi Square Value	10.83	95% Jackknife UCL	16.39
		95% Standard Bootstrap UCL	16.06
Anderson-Darling Test Statistic	1.705	95% Bootstrap-t UCL	16.58
Anderson-Darling 5% Critical Value	0.774	95% Hall's Bootstrap UCL	16.03
Kolmogorov-Smirnov Test Statistic	0.288	95% Percentile Bootstrap UCL	15.89
Kolmogorov-Smirnov 5% Critical Value	0.223	95% BCA Bootstrap UCL	15.84
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.85
		97.5% Chebyshev(Mean, Sd) UCL	27.53
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	36.72
95% Approximate Gamma UCL	21.81		
95% Adjusted Gamma UCL	23.4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	36.72
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (butyl benzyl phthalate)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0076	Minimum of Log Data	-4.873
Maximum	0.202	Maximum of Log Data	-1.599
Mean	0.0208	Mean of log Data	-4.553
Median	0.0082	SD of log Data	0.798
SD	0.0483		
Coefficient of Variation	2.323		
Skewness	3.996		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.292	Shapiro Wilk Test Statistic	0.405
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.042	95% H-UCL	0.0238
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0273
95% Adjusted-CLT UCL	0.0536	97.5% Chebyshev (MVUE) UCL	0.033
95% Modified-t UCL	0.044	99% Chebyshev (MVUE) UCL	0.0442
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.743	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.028		
nu star	23.78		
Approximate Chi Square Value (.05)	13.68	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0407
Adjusted Chi Square Value	12.82	95% Jackknife UCL	0.042
		95% Standard Bootstrap UCL	0.0398

Anderson-Darling Test Statistic	4.868	95% Bootstrap-t UCL	0.642
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL	0.369
Kolmogorov-Smirnov Test Statistic	0.499	95% Percentile Bootstrap UCL	0.0449
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	0.0575
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0735
		97.5% Chebyshev(Mean, Sd) UCL	0.0963
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.141
95% Approximate Gamma UCL	0.0362		
95% Adjusted Gamma UCL	0.0386		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0735

Result or 1/2 SDL (carbazole)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0060	Minimum of Log Data	-5.108
Maximum	0.0861	Maximum of Log Data	-2.452
Mean	0.0151	Mean of log Data	-4.632
Median	0.0069	SD of log Data	0.79
SD	0.0214		
Coefficient of Variation	1.413		
Skewness	2.948		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.49	Shapiro Wilk Test Statistic	0.64
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0245	95% H-UCL	0.0217
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0249
95% Adjusted-CLT UCL	0.0281	97.5% Chebyshev (MVUE) UCL	0.0301
95% Modified-t UCL	0.0252	99% Chebyshev (MVUE) UCL	0.0402
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.076	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0141		
nu star	34.44		
Approximate Chi Square Value (.05)	22.01	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0239
Adjusted Chi Square Value	20.89	95% Jackknife UCL	0.0245
		95% Standard Bootstrap UCL	0.0235
Anderson-Darling Test Statistic	3.042	95% Bootstrap-t UCL	0.0644
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	0.0724
Kolmogorov-Smirnov Test Statistic	0.416	95% Percentile Bootstrap UCL	0.0249
Kolmogorov-Smirnov 5% Critical Value	0.22	95% BCA Bootstrap UCL	0.0304
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0384

		97.5% Chebyshev(Mean, Sd) UCL	0.0485
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0683
95% Approximate Gamma UCL	0.0237		
95% Adjusted Gamma UCL	0.025		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0384

Result or 1/2 SDL (chloroform)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	1.1400E-4	Minimum of Log Data	-9.079
Maximum	0.0052	Maximum of Log Data	-5.246
Mean	9.0178E-4	Mean of log Data	-7.93
Median	2.2100E-4	SD of log Data	1.189
SD	0.0016		
Coefficient of Variation	1.851		
Skewness	2.462		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.486	Shapiro Wilk Test Statistic	0.796
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0016	95% H-UCL	0.0018
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0016
95% Adjusted-CLT UCL	0.0018	97.5% Chebyshev (MVUE) UCL	0.0021
95% Modified-t UCL	0.0016	99% Chebyshev (MVUE) UCL	0.0029
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.58	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0015		
nu star	18.56		
Approximate Chi Square Value (.05)	9.799	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0015
Adjusted Chi Square Value	9.081	95% Jackknife UCL	0.0016
		95% Standard Bootstrap UCL	0.0015
Anderson-Darling Test Statistic	2.224	95% Bootstrap-t UCL	0.0066
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	0.0061
Kolmogorov-Smirnov Test Statistic	0.358	95% Percentile Bootstrap UCL	0.0015
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.0018
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0027
		97.5% Chebyshev(Mean, Sd) UCL	0.0035
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0050
95% Approximate Gamma UCL	0.0017		
95% Adjusted Gamma UCL	0.0018		

Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0050

Result or 1/2 SDL (chromium)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	5.01	Minimum of Log Data	1.611
Maximum	14.4	Maximum of Log Data	2.667
Mean	9.214	Mean of log Data	2.177
Median	10.19	SD of log Data	0.314
SD	2.644		
Coefficient of Variation	0.287		
Skewness	-0.17		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.902	Shapiro Wilk Test Statistic	0.873
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	10.37	95% H-UCL	10.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.44
95% Adjusted-CLT UCL	10.27	97.5% Chebyshev (MVUE) UCL	13.83
95% Modified-t UCL	10.37	99% Chebyshev (MVUE) UCL	16.55

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.542	Data appear Normal at 5% Significance Level	
Theta Star	0.966		
nu star	305.3		
Approximate Chi Square Value (.05)	265.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	10.3
Adjusted Chi Square Value	261.7	95% Jackknife UCL	10.37
		95% Standard Bootstrap UCL	10.24
Anderson-Darling Test Statistic	0.99	95% Bootstrap-t UCL	10.32
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	10.26
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	10.21
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	10.2
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.09
		97.5% Chebyshev(Mean, Sd) UCL	13.34
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	15.79
95% Approximate Gamma UCL	10.58		
95% Adjusted Gamma UCL	10.75		

Potential UCL to Use		Use 95% Student's-t UCL	10.37

Result or 1/2 SDL (chrysene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0054	Minimum of Log Data	-5.212
Maximum	0.475	Maximum of Log Data	-0.744
Mean	0.0774	Mean of log Data	-3.614
Median	0.0177	SD of log Data	1.522
SD	0.123		
Coefficient of Variation	1.585		
Skewness	2.577		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.649	Shapiro Wilk Test Statistic	0.886
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.131	95% H-UCL	0.353
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.219
95% Adjusted-CLT UCL	0.149	97.5% Chebyshev (MVUE) UCL	0.281
95% Modified-t UCL	0.134	99% Chebyshev (MVUE) UCL	0.404
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.519	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.149		
nu star	16.62		
Approximate Chi Square Value (.05)	8.399	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.128
Adjusted Chi Square Value	7.741	95% Jackknife UCL	0.131
		95% Standard Bootstrap UCL	0.125
Anderson-Darling Test Statistic	0.903	95% Bootstrap-t UCL	0.186
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	0.311
Kolmogorov-Smirnov Test Statistic	0.206	95% Percentile Bootstrap UCL	0.126
Kolmogorov-Smirnov 5% Critical Value	0.226	95% BCA Bootstrap UCL	0.16
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.211
		97.5% Chebyshev(Mean, Sd) UCL	0.269
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.382
95% Approximate Gamma UCL	0.153		
95% Adjusted Gamma UCL	0.166		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.153

Result or 1/2 SDL (cobalt)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		**Log-transformed Statistics**	
Minimum	3.05	Minimum of Log Data	1.115

Maximum	7.16	Maximum of Log Data	1.969
Mean	4.385	Mean of log Data	1.449
Median	4.06	SD of log Data	0.245
SD	1.131		
Coefficient of Variation	0.258		
Skewness	0.956		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.916	Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	4.881	95% H-UCL	4.93
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.562
95% Adjusted-CLT UCL	4.922	97.5% Chebyshev (MVUE) UCL	6.073
95% Modified-t UCL	4.892	99% Chebyshev (MVUE) UCL	7.077
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	14.16	Data appear Normal at 5% Significance Level	
Theta Star	0.31		
nu star	453.1		
Approximate Chi Square Value (.05)	404.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	4.85
Adjusted Chi Square Value	399.6	95% Jackknife UCL	4.881
		95% Standard Bootstrap UCL	4.824
Anderson-Darling Test Statistic	0.352	95% Bootstrap-t UCL	4.955
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	4.97
Kolmogorov-Smirnov Test Statistic	0.129	95% Percentile Bootstrap UCL	4.846
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	4.865
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.618
		97.5% Chebyshev(Mean, Sd) UCL	6.151
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	7.198
95% Approximate Gamma UCL	4.909		
95% Adjusted Gamma UCL	4.973		
Potential UCL to Use		Use 95% Student's-t UCL	4.881

Result or 1/2 SDL (copper)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	3.28	Minimum of Log Data	1.188
Maximum	12.6	Maximum of Log Data	2.534
Mean	7.112	Mean of log Data	1.87
Median	6.655	SD of log Data	0.456
SD	2.997		
Coefficient of Variation	0.421		

Skewness	0.299		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk Test Statistic	0.908
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	8.425	95% H-UCL	9.125
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10.8
95% Adjusted-CLT UCL	8.404	97.5% Chebyshev (MVUE) UCL	12.38
95% Modified-t UCL	8.435	99% Chebyshev (MVUE) UCL	15.48

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.602	Data appear Normal at 5% Significance Level	
Theta Star	1.546		
nu star	147.3		
Approximate Chi Square Value (.05)	120.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	8.344
Adjusted Chi Square Value	117.4	95% Jackknife UCL	8.425
		95% Standard Bootstrap UCL	8.292
Anderson-Darling Test Statistic	0.46	95% Bootstrap-t UCL	8.485
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	8.39
Kolmogorov-Smirnov Test Statistic	0.168	95% Percentile Bootstrap UCL	8.258
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	8.299
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10.38
		97.5% Chebyshev(Mean, Sd) UCL	11.79
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14.57
95% Approximate Gamma UCL	8.712		
95% Adjusted Gamma UCL	8.918		
Potential UCL to Use		Use 95% Student's-t UCL	8.425

Result or 1/2 SDL (cyclohexane)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	8.9500E-4	Minimum of Log Data	-7.019
Maximum	0.0042	Maximum of Log Data	-5.46
Mean	0.0023	Mean of log Data	-6.214
Median	0.0017	SD of log Data	0.55
SD	0.0013		
Coefficient of Variation	0.561		
Skewness	0.694		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.793	Shapiro Wilk Test Statistic	0.872

Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0028	95% H-UCL	0.0031
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0037
95% Adjusted-CLT UCL	0.0029	97.5% Chebyshev (MVUE) UCL	0.0043
95% Modified-t UCL	0.0028	99% Chebyshev (MVUE) UCL	0.0055
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.996	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	7.7140E-4		
nu star	95.86		
Approximate Chi Square Value (.05)	74.28	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0028
Adjusted Chi Square Value	72.12	95% Jackknife UCL	0.0028
		95% Standard Bootstrap UCL	0.0028
Anderson-Darling Test Statistic	1.082	95% Bootstrap-t UCL	0.0029
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	0.0027
Kolmogorov-Smirnov Test Statistic	0.215	95% Percentile Bootstrap UCL	0.0028
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0029
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0037
		97.5% Chebyshev(Mean, Sd) UCL	0.0043
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0055
95% Approximate Gamma UCL	0.0029		
95% Adjusted Gamma UCL	0.0030		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0029

Result or 1/2 SDL (dibenz(a,h)anthracene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0059	Minimum of Log Data	-5.133
Maximum	0.235	Maximum of Log Data	-1.448
Mean	0.0435	Mean of log Data	-4.041
Median	0.0078	SD of log Data	1.342
SD	0.0649		
Coefficient of Variation	1.491		
Skewness	2.176		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.652	Shapiro Wilk Test Statistic	0.766
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0719	95% H-UCL	0.135

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.105
95% Adjusted-CLT UCL	0.0796	97.5% Chebyshev (MVUE) UCL	0.133
95% Modified-t UCL	0.0734	99% Chebyshev (MVUE) UCL	0.189
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.587	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0742		
nu star	18.77		
Approximate Chi Square Value (.05)	9.952	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0702
Adjusted Chi Square Value	9.227	95% Jackknife UCL	0.0719
		95% Standard Bootstrap UCL	0.0692
Anderson-Darling Test Statistic	1.818	95% Bootstrap-t UCL	0.106
Anderson-Darling 5% Critical Value	0.781	95% Hall's Bootstrap UCL	0.19
Kolmogorov-Smirnov Test Statistic	0.358	95% Percentile Bootstrap UCL	0.0702
Kolmogorov-Smirnov 5% Critical Value	0.224	95% BCA Bootstrap UCL	0.0813
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.114
		97.5% Chebyshev(Mean, Sd) UCL	0.145
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.205
95% Approximate Gamma UCL	0.0821		
95% Adjusted Gamma UCL	0.0885		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.205

Result or 1/2 SDL (dibenzofuran)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0086	Minimum of Log Data	-4.75
Maximum	0.0305	Maximum of Log Data	-3.49
Mean	0.0123	Mean of log Data	-4.486
Median	0.0096	SD of log Data	0.386
SD	0.0065		
Coefficient of Variation	0.534		
Skewness	2.369		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.579	Shapiro Wilk Test Statistic	0.678
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0152	95% H-UCL	0.0147
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0172
95% Adjusted-CLT UCL	0.016	97.5% Chebyshev (MVUE) UCL	0.0195
95% Modified-t UCL	0.0153	99% Chebyshev (MVUE) UCL	0.0239
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	4.848	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0025		
nu star	155.2		
Approximate Chi Square Value (.05)	127.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.015
Adjusted Chi Square Value	124.5	95% Jackknife UCL	0.0152
		95% Standard Bootstrap UCL	0.0149
Anderson-Darling Test Statistic	2.403	95% Bootstrap-t UCL	0.0241
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	0.0298
Kolmogorov-Smirnov Test Statistic	0.304	95% Percentile Bootstrap UCL	0.015
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0162
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0194
		97.5% Chebyshev(Mean, Sd) UCL	0.0225
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0286
95% Approximate Gamma UCL	0.015		
95% Adjusted Gamma UCL	0.0153		
Potential UCL to Use		Use 95% Student's-t UCL	0.0152
		or 95% Modified-t UCL	0.0153

Result or 1/2 SDL (diethyl phthalate)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0104	Minimum of Log Data	-4.566
Maximum	0.0389	Maximum of Log Data	-3.247
Mean	0.0135	Mean of log Data	-4.369
Median	0.0112	SD of log Data	0.326
SD	0.0069		
Coefficient of Variation	0.513		
Skewness	3.652		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.461	Shapiro Wilk Test Statistic	0.602
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0166	95% H-UCL	0.0157
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0181
95% Adjusted-CLT UCL	0.0181	97.5% Chebyshev (MVUE) UCL	0.0202
95% Modified-t UCL	0.0169	99% Chebyshev (MVUE) UCL	0.0242
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.232	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0021		
nu star	199.4		
Approximate Chi Square Value (.05)	167.8	Nonparametric Statistics	

Adjusted Level of Significance	0.0335	95% CLT UCL	0.0164
Adjusted Chi Square Value	164.5	95% Jackknife UCL	0.0166
		95% Standard Bootstrap UCL	0.0162
Anderson-Darling Test Statistic	2.57	95% Bootstrap-t UCL	0.0251
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	0.0261
Kolmogorov-Smirnov Test Statistic	0.283	95% Percentile Bootstrap UCL	0.0167
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0185
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0211
		97.5% Chebyshev(Mean, Sd) UCL	0.0244
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0308
95% Approximate Gamma UCL	0.0161		
95% Adjusted Gamma UCL	0.0164		
Potential UCL to Use		Use 95% Student's-t UCL	0.0166
		or 95% Modified-t UCL	0.0169

Result or 1/2 SDL (di-n-octyl phthalate)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	13

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0051	Minimum of Log Data	-5.279
Maximum	0.192	Maximum of Log Data	-1.65
Mean	0.018	Mean of log Data	-4.875
Median	0.0056	SD of log Data	0.9
SD	0.0465		
Coefficient of Variation	2.577		
Skewness	3.983		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.303	Shapiro Wilk Test Statistic	0.476
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0384	95% H-UCL	0.0208
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0228
95% Adjusted-CLT UCL	0.0495	97.5% Chebyshev (MVUE) UCL	0.0279
95% Modified-t UCL	0.0403	99% Chebyshev (MVUE) UCL	0.038
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.613	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0294		
nu star	19.61		
Approximate Chi Square Value (.05)	10.57	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0371
Adjusted Chi Square Value	9.817	95% Jackknife UCL	0.0384
		95% Standard Bootstrap UCL	0.0368
Anderson-Darling Test Statistic	4.473	95% Bootstrap-t UCL	0.744

Anderson-Darling 5% Critical Value	0.779	95% Hall's Bootstrap UCL	0.313
Kolmogorov-Smirnov Test Statistic	0.468	95% Percentile Bootstrap UCL	0.041
Kolmogorov-Smirnov 5% Critical Value	0.224	95% BCA Bootstrap UCL	0.0529
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0686
		97.5% Chebyshev(Mean, Sd) UCL	0.0906
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.134
95% Approximate Gamma UCL	0.0335		
95% Adjusted Gamma UCL	0.036		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0686

Result or 1/2 SDL (fluoranthene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0068	Minimum of Log Data	-4.984
Maximum	0.804	Maximum of Log Data	-0.218
Mean	0.113	Mean of log Data	-3.442
Median	0.016	SD of log Data	1.651
SD	0.201		
Coefficient of Variation	1.786		
Skewness	3.01		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.577	Shapiro Wilk Test Statistic	0.826
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.201	95% H-UCL	0.642
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.327
95% Adjusted-CLT UCL	0.236	97.5% Chebyshev (MVUE) UCL	0.423
95% Modified-t UCL	0.207	99% Chebyshev (MVUE) UCL	0.611
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.451	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.25		
nu star	14.44		
Approximate Chi Square Value (.05)	6.872	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.196
Adjusted Chi Square Value	6.285	95% Jackknife UCL	0.201
		95% Standard Bootstrap UCL	0.194
Anderson-Darling Test Statistic	1.352	95% Bootstrap-t UCL	0.306
Anderson-Darling 5% Critical Value	0.796	95% Hall's Bootstrap UCL	0.492
Kolmogorov-Smirnov Test Statistic	0.27	95% Percentile Bootstrap UCL	0.201
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.236
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.332
		97.5% Chebyshev(Mean, Sd) UCL	0.427

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.614
95% Approximate Gamma UCL	0.237		
95% Adjusted Gamma UCL	0.259		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.614

Result or 1/2 SDL (fluorene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	0.006	Minimum of Log Data	-5.116
Maximum	0.046	Maximum of Log Data	-3.079
Mean	0.0122	Mean of log Data	-4.65
Median	0.0073	SD of log Data	0.63
SD	0.0111		
Coefficient of Variation	0.916		
Skewness	2.347		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.612	Shapiro Wilk Test Statistic	0.739
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.017	95% H-UCL	0.0167
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0198
95% Adjusted-CLT UCL	0.0185	97.5% Chebyshev (MVUE) UCL	0.0233
95% Modified-t UCL	0.0173	99% Chebyshev (MVUE) UCL	0.0304
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.859	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0065		
nu star	59.5		
Approximate Chi Square Value (.05)	42.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0167
Adjusted Chi Square Value	41.15	95% Jackknife UCL	0.017
		95% Standard Bootstrap UCL	0.0166
Anderson-Darling Test Statistic	2.153	95% Bootstrap-t UCL	0.022
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	0.018
Kolmogorov-Smirnov Test Statistic	0.349	95% Percentile Bootstrap UCL	0.0169
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0194
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0243
		97.5% Chebyshev(Mean, Sd) UCL	0.0295
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0398
95% Approximate Gamma UCL	0.0169		
95% Adjusted Gamma UCL	0.0176		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0243

Result or 1/2 SDL (gamma-chlordane)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14

Raw Statistics		Log-transformed Statistics	
Minimum	1.5950E-4	Minimum of Log Data	-8.743
Maximum	8.2600E-4	Maximum of Log Data	-7.099
Mean	3.1319E-4	Mean of log Data	-8.275
Median	1.9550E-4	SD of log Data	0.615
SD	2.3598E-4		
Coefficient of Variation	0.753		
Skewness	1.351		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.664	Shapiro Wilk Test Statistic	0.719
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.1661E-4	95% H-UCL	4.3515E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.1626E-4
95% Adjusted-CLT UCL	4.3152E-4	97.5% Chebyshev (MVUE) UCL	6.0830E-4
95% Modified-t UCL	4.1993E-4	99% Chebyshev (MVUE) UCL	7.8909E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.133	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.4684E-4		
nu star	68.25		
Approximate Chi Square Value (.05)	50.24	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	4.1022E-4
Adjusted Chi Square Value	48.48	95% Jackknife UCL	4.1661E-4
		95% Standard Bootstrap UCL	4.0927E-4
Anderson-Darling Test Statistic	2.341	95% Bootstrap-t UCL	4.9207E-4
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	3.9193E-4
Kolmogorov-Smirnov Test Statistic	0.362	95% Percentile Bootstrap UCL	4.1500E-4
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	4.2356E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.7034E-4
		97.5% Chebyshev(Mean, Sd) UCL	6.8160E-4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.0017E-4
95% Approximate Gamma UCL	4.2550E-4		
95% Adjusted Gamma UCL	4.4092E-4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	5.7034E-4

Result or 1/2 SDL (hexachlorobenzene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	14

Raw Statistics		Log-transformed Statistics	
Minimum	0.0075	Minimum of Log Data	-4.893
Maximum	0.0319	Maximum of Log Data	-3.445
Mean	0.01	Mean of log Data	-4.686
Median	0.0081	SD of log Data	0.355
SD	0.0059		
Coefficient of Variation	0.593		
Skewness	3.745		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.433	Shapiro Wilk Test Statistic	0.579
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0126	95% H-UCL	0.0117
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0136
95% Adjusted-CLT UCL	0.014	97.5% Chebyshev (MVUE) UCL	0.0153
95% Modified-t UCL	0.0129	99% Chebyshev (MVUE) UCL	0.0186

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.058	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0019		
nu star	161.9		
Approximate Chi Square Value (.05)	133.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0125
Adjusted Chi Square Value	130.5	95% Jackknife UCL	0.0126
		95% Standard Bootstrap UCL	0.0123
Anderson-Darling Test Statistic	2.793	95% Bootstrap-t UCL	0.0208
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	0.021
Kolmogorov-Smirnov Test Statistic	0.307	95% Percentile Bootstrap UCL	0.0128
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0146
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0165
		97.5% Chebyshev(Mean, Sd) UCL	0.0193
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0248
95% Approximate Gamma UCL	0.0122		
95% Adjusted Gamma UCL	0.0124		
Potential UCL to Use		Use 95% Student's-t UCL	0.0126
		or 95% Modified-t UCL	0.0129

Result or 1/2 SDL (indeno(1,2,3-cd)pyrene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	0.0099	Minimum of Log Data	-4.615

Maximum	0.405	Maximum of Log Data	-0.904
Mean	0.0722	Mean of log Data	-3.552
Median	0.0126	SD of log Data	1.335
SD	0.111		
Coefficient of Variation	1.532		
Skewness	2.205		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.644	Shapiro Wilk Test Statistic	0.769
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.121	95% H-UCL	0.215
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.169
95% Adjusted-CLT UCL	0.134	97.5% Chebyshev (MVUE) UCL	0.215
95% Modified-t UCL	0.123	99% Chebyshev (MVUE) UCL	0.304
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.577	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.125		
nu star	18.48		
Approximate Chi Square Value (.05)	9.738	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.118
Adjusted Chi Square Value	9.022	95% Jackknife UCL	0.121
		95% Standard Bootstrap UCL	0.117
Anderson-Darling Test Statistic	1.828	95% Bootstrap-t UCL	0.173
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	0.141
Kolmogorov-Smirnov Test Statistic	0.352	95% Percentile Bootstrap UCL	0.12
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.134
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.193
		97.5% Chebyshev(Mean, Sd) UCL	0.245
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.347
95% Approximate Gamma UCL	0.137		
95% Adjusted Gamma UCL	0.148		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.347

Result or 1/2 SDL (iron)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	6750	Minimum of Log Data	8.817
Maximum	28200	Maximum of Log Data	10.25
Mean	13352	Mean of log Data	9.427
Median	13200	SD of log Data	0.389
SD	5546		
Coefficient of Variation	0.415		

Skewness	1.341		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.873	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15782	95% H-UCL	16280
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19078
95% Adjusted-CLT UCL	16129	97.5% Chebyshev (MVUE) UCL	21568
95% Modified-t UCL	15860	99% Chebyshev (MVUE) UCL	26460
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.759	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2318		
nu star	184.3		
Approximate Chi Square Value (.05)	153.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	15632
Adjusted Chi Square Value	150.7	95% Jackknife UCL	15782
		95% Standard Bootstrap UCL	15544
Anderson-Darling Test Statistic	0.495	95% Bootstrap-t UCL	16816
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	18440
Kolmogorov-Smirnov Test Statistic	0.198	95% Percentile Bootstrap UCL	15673
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	16268
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19395
		97.5% Chebyshev(Mean, Sd) UCL	22010
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27146
95% Approximate Gamma UCL	15989		
95% Adjusted Gamma UCL	16325		
Potential UCL to Use		Use 95% Approximate Gamma UCL	15989

Result or 1/2 SDL (isopropylbenzene (cumene))

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	1.2400E-4	Minimum of Log Data	-8.995
Maximum	0.0070	Maximum of Log Data	-4.956
Mean	0.0010	Mean of log Data	-7.845
Median	2.4000E-4	SD of log Data	1.198
SD	0.0019		
Coefficient of Variation	1.926		
Skewness	2.71		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.493	Shapiro Wilk Test Statistic	0.804

Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0018	95% H-UCL	0.0020
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0018
95% Adjusted-CLT UCL	0.0021	97.5% Chebyshev (MVUE) UCL	0.0023
95% Modified-t UCL	0.0019	99% Chebyshev (MVUE) UCL	0.0032
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.566	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0017		
nu star	18.12		
Approximate Chi Square Value (.05)	9.479	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0018
Adjusted Chi Square Value	8.774	95% Jackknife UCL	0.0018
		95% Standard Bootstrap UCL	0.0018
Anderson-Darling Test Statistic	2.176	95% Bootstrap-t UCL	0.0081
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	0.0068
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	0.0018
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.0022
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0031
		97.5% Chebyshev(Mean, Sd) UCL	0.0040
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0058
95% Approximate Gamma UCL	0.0019		
95% Adjusted Gamma UCL	0.0020		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0058

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	5	Minimum of Log Data	1.609
Maximum	32.3	Maximum of Log Data	3.475
Mean	11.56	Mean of log Data	2.311
Median	10.03	SD of log Data	0.512
SD	7.161		
Coefficient of Variation	0.62		
Skewness	2.013		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.774	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14.69	95% H-UCL	15.11

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.95
95% Adjusted-CLT UCL	15.46	97.5% Chebyshev (MVUE) UCL	20.79
95% Modified-t UCL	14.84	99% Chebyshev (MVUE) UCL	26.37
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.16	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.657		
nu star	101.1		
Approximate Chi Square Value (.05)	78.92	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	14.5
Adjusted Chi Square Value	76.69	95% Jackknife UCL	14.69
		95% Standard Bootstrap UCL	14.4
Anderson-Darling Test Statistic	0.574	95% Bootstrap-t UCL	17.86
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	31.55
Kolmogorov-Smirnov Test Statistic	0.167	95% Percentile Bootstrap UCL	14.56
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	15.63
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.36
		97.5% Chebyshev(Mean, Sd) UCL	22.74
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	29.37
95% Approximate Gamma UCL	14.81		
95% Adjusted Gamma UCL	15.24		
Potential UCL to Use		Use 95% Approximate Gamma UCL	14.81

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	6.4	Minimum of Log Data	1.856
Maximum	20	Maximum of Log Data	2.996
Mean	10.53	Mean of log Data	2.306
Median	9.88	SD of log Data	0.314
SD	3.559		
Coefficient of Variation	0.338		
Skewness	1.247		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	12.09	95% H-UCL	12.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.16
95% Adjusted-CLT UCL	12.29	97.5% Chebyshev (MVUE) UCL	15.73
95% Modified-t UCL	12.14	99% Chebyshev (MVUE) UCL	18.83
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	8.624	Data appear Normal at 5% Significance Level	
Theta Star	1.221		
nu star	276		
Approximate Chi Square Value (.05)	238.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	12
Adjusted Chi Square Value	234.5	95% Jackknife UCL	12.09
		95% Standard Bootstrap UCL	11.95
Anderson-Darling Test Statistic	0.319	95% Bootstrap-t UCL	12.55
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	12.89
Kolmogorov-Smirnov Test Statistic	0.119	95% Percentile Bootstrap UCL	11.96
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	12.23
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.41
		97.5% Chebyshev(Mean, Sd) UCL	16.09
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	19.39
95% Approximate Gamma UCL	12.19		
95% Adjusted Gamma UCL	12.39		
Potential UCL to Use		Use 95% Student's-t UCL	12.09

Result or 1/2 SDL (manganese)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	192	Minimum of Log Data	5.257
Maximum	474	Maximum of Log Data	6.161
Mean	283.3	Mean of log Data	5.603
Median	275	SD of log Data	0.301
SD	87.59		
Coefficient of Variation	0.309		
Skewness	0.667		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	321.6	95% H-UCL	328.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	377.1
95% Adjusted-CLT UCL	323.2	97.5% Chebyshev (MVUE) UCL	417.8
95% Modified-t UCL	322.2	99% Chebyshev (MVUE) UCL	497.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.583	Data appear Normal at 5% Significance Level	
Theta Star	29.56		
nu star	306.7		
Approximate Chi Square Value (.05)	267.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	319.3

Adjusted Chi Square Value	262.9	95% Jackknife UCL	321.6
		95% Standard Bootstrap UCL	318.6
Anderson-Darling Test Statistic	0.707	95% Bootstrap-t UCL	324.1
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	322.7
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	319.3
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	322.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	378.7
		97.5% Chebyshev(Mean, Sd) UCL	420
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	501.1
95% Approximate Gamma UCL	325.2		
95% Adjusted Gamma UCL	330.4		
Potential UCL to Use		Use 95% Student's-t UCL	321.6

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	13
Raw Statistics		Log-transformed Statistics	
Minimum	0.011	Minimum of Log Data	-4.51
Maximum	0.036	Maximum of Log Data	-3.324
Mean	0.0201	Mean of log Data	-3.972
Median	0.02	SD of log Data	0.367
SD	0.0073		
Coefficient of Variation	0.368		
Skewness	0.618		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0233	95% H-UCL	0.0242
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0282
95% Adjusted-CLT UCL	0.0234	97.5% Chebyshev (MVUE) UCL	0.0318
95% Modified-t UCL	0.0233	99% Chebyshev (MVUE) UCL	0.0387
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.623	Data appear Normal at 5% Significance Level	
Theta Star	0.0030		
nu star	211.9		
Approximate Chi Square Value (.05)	179.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0231
Adjusted Chi Square Value	175.8	95% Jackknife UCL	0.0233
		95% Standard Bootstrap UCL	0.023
Anderson-Darling Test Statistic	0.386	95% Bootstrap-t UCL	0.0239
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	0.0237
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL	0.0229

Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0231
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0281
		97.5% Chebyshev(Mean, Sd) UCL	0.0316
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0384
95% Approximate Gamma UCL	0.0237		
95% Adjusted Gamma UCL	0.0242		
Potential UCL to Use		Use 95% Student's-t UCL	0.0233

Result or 1/2 SDL (methylcyclohexane)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	2.9950E-4	Minimum of Log Data	-8.113
Maximum	0.0037	Maximum of Log Data	-5.599
Mean	9.5050E-4	Mean of log Data	-7.232
Median	5.8250E-4	SD of log Data	0.724
SD	8.5690E-4		
Coefficient of Variation	0.902		
Skewness	2.396		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.699	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0013	95% H-UCL	0.0014
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0016
95% Adjusted-CLT UCL	0.0014	97.5% Chebyshev (MVUE) UCL	0.0020
95% Modified-t UCL	0.0013	99% Chebyshev (MVUE) UCL	0.0026
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.649	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	5.7638E-4		
nu star	52.77		
Approximate Chi Square Value (.05)	37.08	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0013
Adjusted Chi Square Value	35.59	95% Jackknife UCL	0.0013
		95% Standard Bootstrap UCL	0.0012
Anderson-Darling Test Statistic	0.885	95% Bootstrap-t UCL	0.0016
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	0.0027
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	0.0013
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0014
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0018
		97.5% Chebyshev(Mean, Sd) UCL	0.0022
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0030
95% Approximate Gamma UCL	0.0013		

95% Adjusted Gamma UCL	0.0014		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0013

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.14	Minimum of Log Data	-1.966
Maximum	5.66	Maximum of Log Data	1.733
Mean	0.667	Mean of log Data	-1.108
Median	0.24	SD of log Data	0.95
SD	1.358		
Coefficient of Variation	2.036		
Skewness	3.761		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.407	Shapiro Wilk Test Statistic	0.774
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.262	95% H-UCL	0.991
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.064
95% Adjusted-CLT UCL	1.566	97.5% Chebyshev (MVUE) UCL	1.308
95% Modified-t UCL	1.315	99% Chebyshev (MVUE) UCL	1.788
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.724	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.922		
nu star	23.15		
Approximate Chi Square Value (.05)	13.21	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	1.225
Adjusted Chi Square Value	12.36	95% Jackknife UCL	1.262
		95% Standard Bootstrap UCL	1.201
Anderson-Darling Test Statistic	2.348	95% Bootstrap-t UCL	4.4
Anderson-Darling 5% Critical Value	0.771	95% Hall's Bootstrap UCL	3.298
Kolmogorov-Smirnov Test Statistic	0.318	95% Percentile Bootstrap UCL	1.306
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	1.687
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.146
		97.5% Chebyshev(Mean, Sd) UCL	2.786
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.044
95% Approximate Gamma UCL	1.169		
95% Adjusted Gamma UCL	1.25		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	2.146

Result or 1/2 SDL (nickel)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	5.8	Minimum of Log Data	1.758
Maximum	16.7	Maximum of Log Data	2.815
Mean	9.589	Mean of log Data	2.223
Median	9.93	SD of log Data	0.283
SD	2.741		
Coefficient of Variation	0.286		
Skewness	0.821		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	10.79	95% H-UCL	11.02
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.58
95% Adjusted-CLT UCL	10.87	97.5% Chebyshev (MVUE) UCL	13.88
95% Modified-t UCL	10.81	99% Chebyshev (MVUE) UCL	16.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.02	Data appear Normal at 5% Significance Level	
Theta Star	0.87		
nu star	352.6		
Approximate Chi Square Value (.05)	310.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	10.72
Adjusted Chi Square Value	305.5	95% Jackknife UCL	10.79
		95% Standard Bootstrap UCL	10.7
Anderson-Darling Test Statistic	0.57	95% Bootstrap-t UCL	10.95
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	11.23
Kolmogorov-Smirnov Test Statistic	0.205	95% Percentile Bootstrap UCL	10.69
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	10.77
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.58
		97.5% Chebyshev(Mean, Sd) UCL	13.87
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16.41
95% Approximate Gamma UCL	10.9		
95% Adjusted Gamma UCL	11.07		
Potential UCL to Use		Use 95% Student's-t UCL	10.79

Result or 1/2 SDL (n-nitrosodiphenylamine)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14

Raw Statistics		Log-transformed Statistics	
Minimum	0.0069	Minimum of Log Data	-4.969
Maximum	0.0434	Maximum of Log Data	-3.137
Mean	0.0102	Mean of log Data	-4.738
Median	0.0075	SD of log Data	0.446
SD	0.0089		
Coefficient of Variation	0.879		
Skewness	3.902		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.369	Shapiro Wilk Test Statistic	0.514
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0141	95% H-UCL	0.0122
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0144
95% Adjusted-CLT UCL	0.0162	97.5% Chebyshev (MVUE) UCL	0.0165
95% Modified-t UCL	0.0144	99% Chebyshev (MVUE) UCL	0.0205
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.914	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0034		
nu star	93.24		
Approximate Chi Square Value (.05)	71.97	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0138
Adjusted Chi Square Value	69.85	95% Jackknife UCL	0.0141
		95% Standard Bootstrap UCL	0.0137
Anderson-Darling Test Statistic	3.455	95% Bootstrap-t UCL	0.0353
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	0.0281
Kolmogorov-Smirnov Test Statistic	0.374	95% Percentile Bootstrap UCL	0.0145
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.017
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0199
		97.5% Chebyshev(Mean, Sd) UCL	0.0241
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0324
95% Approximate Gamma UCL	0.0132		
95% Adjusted Gamma UCL	0.0136		
Potential UCL to Use		Use 95% Student's-t UCL	0.0141
		or 95% Modified-t UCL	0.0144

Result or 1/2 SDL (phenanthrene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	0.0076	Minimum of Log Data	-4.88
Maximum	0.508	Maximum of Log Data	-0.677
Mean	0.0746	Mean of log Data	-3.548

Median	0.021	SD of log Data	1.383
SD	0.126		
Coefficient of Variation	1.691		
Skewness	3.037		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.583	Shapiro Wilk Test Statistic	0.857
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.13	95% H-UCL	0.248
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.184
95% Adjusted-CLT UCL	0.152	97.5% Chebyshev (MVUE) UCL	0.235
95% Modified-t UCL	0.134	99% Chebyshev (MVUE) UCL	0.334
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.564	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.132		
nu star	18.03		
Approximate Chi Square Value (.05)	9.415	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.126
Adjusted Chi Square Value	8.713	95% Jackknife UCL	0.13
		95% Standard Bootstrap UCL	0.126
Anderson-Darling Test Statistic	1.118	95% Bootstrap-t UCL	0.204
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	0.315
Kolmogorov-Smirnov Test Statistic	0.267	95% Percentile Bootstrap UCL	0.133
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.16
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.212
		97.5% Chebyshev(Mean, Sd) UCL	0.272
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.388
95% Approximate Gamma UCL	0.143		
95% Adjusted Gamma UCL	0.154		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.388

Result or 1/2 SDL (pyrene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	0.0073	Minimum of Log Data	-4.92
Maximum	0.862	Maximum of Log Data	-0.149
Mean	0.13	Mean of log Data	-3.251
Median	0.023	SD of log Data	1.632
SD	0.22		
Coefficient of Variation	1.697		
Skewness	2.746		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.617	Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.227	95% H-UCL	0.729
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.383
95% Adjusted-CLT UCL	0.261	97.5% Chebyshev (MVUE) UCL	0.495
95% Modified-t UCL	0.233	99% Chebyshev (MVUE) UCL	0.714
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.465	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.279		
nu star	14.89		
Approximate Chi Square Value (.05)	7.184	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.221
Adjusted Chi Square Value	6.582	95% Jackknife UCL	0.227
		95% Standard Bootstrap UCL	0.218
Anderson-Darling Test Statistic	1.081	95% Bootstrap-t UCL	0.336
Anderson-Darling 5% Critical Value	0.794	95% Hall's Bootstrap UCL	0.545
Kolmogorov-Smirnov Test Statistic	0.241	95% Percentile Bootstrap UCL	0.226
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.264
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.37
		97.5% Chebyshev(Mean, Sd) UCL	0.474
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.678
95% Approximate Gamma UCL	0.269		
95% Adjusted Gamma UCL	0.294		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.678

Result or 1/2 SDL (silver)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0335	Minimum of Log Data	-3.396
Maximum	0.54	Maximum of Log Data	-0.616
Mean	0.172	Mean of log Data	-2.392
Median	0.0448	SD of log Data	1.164
SD	0.184		
Coefficient of Variation	1.07		
Skewness	0.821		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.731	Shapiro Wilk Test Statistic	0.729
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.252	95% H-UCL	0.44
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.409
95% Adjusted-CLT UCL	0.257	97.5% Chebyshev (MVUE) UCL	0.512
95% Modified-t UCL	0.254	99% Chebyshev (MVUE) UCL	0.716
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.792	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.217		
nu star	25.36		
Approximate Chi Square Value (.05)	14.88	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.247
Adjusted Chi Square Value	13.98	95% Jackknife UCL	0.252
		95% Standard Bootstrap UCL	0.247
Anderson-Darling Test Statistic	2.15	95% Bootstrap-t UCL	0.273
Anderson-Darling 5% Critical Value	0.767	95% Hall's Bootstrap UCL	0.245
Kolmogorov-Smirnov Test Statistic	0.368	95% Percentile Bootstrap UCL	0.246
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	0.254
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.372
		97.5% Chebyshev(Mean, Sd) UCL	0.459
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.629
95% Approximate Gamma UCL	0.293		
95% Adjusted Gamma UCL	0.312		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.629

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (strontium)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		**Log-transformed Statistics**	
Minimum	32.8	Minimum of Log Data	3.49
Maximum	81.7	Maximum of Log Data	4.403
Mean	44.86	Mean of log Data	3.765
Median	39.85	SD of log Data	0.274
SD	14.43		
Coefficient of Variation	0.322		
Skewness	1.805		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.754	Shapiro Wilk Test Statistic	0.838
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	51.19	95% H-UCL	51.06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	58.14

95% Adjusted-CLT UCL	52.54	97.5% Chebyshev (MVUE) UCL	63.96
95% Modified-t UCL	51.46	99% Chebyshev (MVUE) UCL	75.39
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	10.61	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	4.23		
nu star	339.4		
Approximate Chi Square Value (.05)	297.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	50.8
Adjusted Chi Square Value	293.2	95% Jackknife UCL	51.19
		95% Standard Bootstrap UCL	50.44
Anderson-Darling Test Statistic	1.15	95% Bootstrap-t UCL	57.32
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	81.83
Kolmogorov-Smirnov Test Statistic	0.261	95% Percentile Bootstrap UCL	50.68
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	51.96
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	60.59
		97.5% Chebyshev(Mean, Sd) UCL	67.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	80.77
95% Approximate Gamma UCL	51.14		
95% Adjusted Gamma UCL	51.92		
Potential UCL to Use		Use 95% Student's-t UCL	51.19
		or 95% Modified-t UCL	51.46

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		**Log-transformed Statistics**	
Minimum	19.1	Minimum of Log Data	2.95
Maximum	36.6	Maximum of Log Data	3.6
Mean	25.58	Mean of log Data	3.225
Median	23.95	SD of log Data	0.186
SD	5.051		
Coefficient of Variation	0.198		
Skewness	1.084		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.888	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	27.79	95% H-UCL	27.88
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	30.76
95% Adjusted-CLT UCL	28.02	97.5% Chebyshev (MVUE) UCL	33
95% Modified-t UCL	27.85	99% Chebyshev (MVUE) UCL	37.42
Gamma Distribution Test		**Data Distribution**	

k star (bias corrected)	24.34	Data appear Normal at 5% Significance Level	
Theta Star	1.051		
nu star	778.8		
Approximate Chi Square Value (.05)	715.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	27.65
Adjusted Chi Square Value	708.1	95% Jackknife UCL	27.79
		95% Standard Bootstrap UCL	27.65
Anderson-Darling Test Statistic	0.584	95% Bootstrap-t UCL	28.45
Anderson-Darling 5% Critical Value	0.736	95% Hall's Bootstrap UCL	28.66
Kolmogorov-Smirnov Test Statistic	0.202	95% Percentile Bootstrap UCL	27.66
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	27.93
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	31.08
		97.5% Chebyshev(Mean, Sd) UCL	33.46
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	38.14
95% Approximate Gamma UCL	27.86		
95% Adjusted Gamma UCL	28.13		
Potential UCL to Use		Use 95% Student's-t UCL	27.79

Result or 1/2 SDL (toluene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics		Log-transformed Statistics	
Minimum	4.4500E-4	Minimum of Log Data	-7.717
Maximum	0.0058	Maximum of Log Data	-5.148
Mean	0.0014	Mean of log Data	-6.833
Median	8.6250E-4	SD of log Data	0.733
SD	0.0013		
Coefficient of Variation	0.937		
Skewness	2.533		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.679	Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0020	95% H-UCL	0.0021
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0025
95% Adjusted-CLT UCL	0.0022	97.5% Chebyshev (MVUE) UCL	0.0030
95% Modified-t UCL	0.0020	99% Chebyshev (MVUE) UCL	0.0040
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.593	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	8.9869E-4		
nu star	50.99		
Approximate Chi Square Value (.05)	35.59	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0019

Adjusted Chi Square Value	34.13	95% Jackknife UCL	0.0020
		95% Standard Bootstrap UCL	0.0019
Anderson-Darling Test Statistic	0.909	95% Bootstrap-t UCL	0.0025
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	0.0041
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	0.0019
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0022
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0028
		97.5% Chebyshev(Mean, Sd) UCL	0.0035
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0047
95% Approximate Gamma UCL	0.0020		
95% Adjusted Gamma UCL	0.0021		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0020

Result or 1/2 SDL (vanadium)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		**Log-transformed Statistics**	
Minimum	9.06	Minimum of Log Data	2.204
Maximum	21.2	Maximum of Log Data	3.054
Mean	13.86	Mean of log Data	2.599
Median	13.45	SD of log Data	0.251
SD	3.523		
Coefficient of Variation	0.254		
Skewness	0.54		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15.4	95% H-UCL	15.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.67
95% Adjusted-CLT UCL	15.44	97.5% Chebyshev (MVUE) UCL	19.32
95% Modified-t UCL	15.42	99% Chebyshev (MVUE) UCL	22.56
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	13.89	**Data appear Normal at 5% Significance Level**	
Theta Star	0.998		
nu star	444.4		
Approximate Chi Square Value (.05)	396.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	15.31
Adjusted Chi Square Value	391.4	95% Jackknife UCL	15.4
		95% Standard Bootstrap UCL	15.26
Anderson-Darling Test Statistic	0.338	95% Bootstrap-t UCL	15.59
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	15.42
Kolmogorov-Smirnov Test Statistic	0.148	95% Percentile Bootstrap UCL	15.34

Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	15.42
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.7
		97.5% Chebyshev(Mean, Sd) UCL	19.36
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.62
95% Approximate Gamma UCL	15.53		
95% Adjusted Gamma UCL	15.74		
Potential UCL to Use		Use 95% Student's-t UCL	15.4

Result or 1/2 SDL (zinc)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15

Raw Statistics		Log-transformed Statistics	
Minimum	18	Minimum of Log Data	2.89
Maximum	92.6	Maximum of Log Data	4.528
Mean	45.36	Mean of log Data	3.722
Median	43.6	SD of log Data	0.454
SD	19.88		
Coefficient of Variation	0.438		
Skewness	0.681		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	54.07	95% H-UCL	57.96
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	68.57
95% Adjusted-CLT UCL	54.44	97.5% Chebyshev (MVUE) UCL	78.56
95% Modified-t UCL	54.21	99% Chebyshev (MVUE) UCL	98.18
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.539	Data appear Normal at 5% Significance Level	
Theta Star	9.992		
nu star	145.3		
Approximate Chi Square Value (.05)	118.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	53.53
Adjusted Chi Square Value	115.7	95% Jackknife UCL	54.07
		95% Standard Bootstrap UCL	53.04
Anderson-Darling Test Statistic	0.399	95% Bootstrap-t UCL	55.53
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	55.68
Kolmogorov-Smirnov Test Statistic	0.163	95% Percentile Bootstrap UCL	53.4
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	54.04
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	67.02
		97.5% Chebyshev(Mean, Sd) UCL	76.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	94.81
95% Approximate Gamma UCL	55.64		

				95% Adjusted Gamma UCL	56.97						
				Potential UCL to Use						Use 95% Student's-t UCL	54.07

APPENDIX A-7

BACKGROUND SEDIMENT INTRACOASTAL WATERWAY

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	J:\1352 - Gulfco RI\risk\data queries oct 07\EPC tables with onehalf DL\ISWE data - JUST BACKGROUN
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 SDL (1,2,4-trimethylbenzene)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	1.6000E-4	Minimum of Log Data	-8.74
Maximum	0.0039	Maximum of Log Data	-5.544
Mean	9.1039E-4	Mean of log Data	-7.594
Median	3.6200E-4	SD of log Data	1.097
SD	0.0012		
Coefficient of Variation	1.33		
Skewness	2.32		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.677	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0016	95% H-UCL	0.0036
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0022
95% Adjusted-CLT UCL	0.0019	97.5% Chebyshev (MVUE) UCL	0.0028
95% Modified-t UCL	0.0017	99% Chebyshev (MVUE) UCL	0.004
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.725	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0012		
nu star	13.06		
Approximate Chi Square Value (.05)	5.932	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0015
Adjusted Chi Square Value	4.957	95% Jackknife UCL	0.0016
		95% Standard Bootstrap UCL	0.0015
Anderson-Darling Test Statistic	0.564	95% Bootstrap-t UCL	0.0033
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	0.0043
Kolmogorov-Smirnov Test Statistic	0.223	95% Percentile Bootstrap UCL	0.0015
Kolmogorov-Smirnov 5% Critical Value	0.287	95% BCA Bootstrap UCL	0.0018
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0026
		97.5% Chebyshev(Mean, Sd) UCL	0.0034
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0049
95% Approximate Gamma UCL	0.002		
95% Adjusted Gamma UCL	0.0024		

Potential UCL to Use		Use 95% Approximate Gamma UCL	0.002

Result or 1/2 SDL (1,4-dichlorobenzene)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	3.4050E-4	Minimum of Log Data	-7.985
Maximum	0.0041	Maximum of Log Data	-5.494
Mean	0.0014	Mean of log Data	-6.917
Median	7.7000E-4	SD of log Data	0.947
SD	0.0013		
Coefficient of Variation	0.936		
Skewness	1.198		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.817	Shapiro Wilk Test Statistic	0.905
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0023	95% H-UCL	0.0045
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0035
95% Adjusted-CLT UCL	0.0024	97.5% Chebyshev (MVUE) UCL	0.0044
95% Modified-t UCL	0.0023	99% Chebyshev (MVUE) UCL	0.0061
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.015	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0014		
nu star	18.26		
Approximate Chi Square Value (.05)	9.58	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0022
Adjusted Chi Square Value	8.288	95% Jackknife UCL	0.0023
		95% Standard Bootstrap UCL	0.0021
Anderson-Darling Test Statistic	0.467	95% Bootstrap-t UCL	0.0031
Anderson-Darling 5% Critical Value	0.736	95% Hall's Bootstrap UCL	0.0030
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	0.0022
Kolmogorov-Smirnov 5% Critical Value	0.285	95% BCA Bootstrap UCL	0.0023
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0034
		97.5% Chebyshev(Mean, Sd) UCL	0.0043
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0060
95% Approximate Gamma UCL	0.0028		
95% Adjusted Gamma UCL	0.0032		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0028

Result or 1/2 SDL (2-butanone)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	2.5250E-4	Minimum of Log Data	-8.284
Maximum	0.0024	Maximum of Log Data	-6.02
Mean	0.0011	Mean of log Data	-7.04
Median	0.0011	SD of log Data	0.879
SD	8.4810E-4		
Coefficient of Variation	0.718		
Skewness	0.348		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.89	Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0017	95% H-UCL	0.0033
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0028
95% Adjusted-CLT UCL	0.0016	97.5% Chebyshev (MVUE) UCL	0.0035
95% Modified-t UCL	0.0017	99% Chebyshev (MVUE) UCL	0.0048
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.288	**Data appear Normal at 5% Significance Level**	
Theta Star	9.1690E-4		
nu star	23.19		
Approximate Chi Square Value (.05)	13.23	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0016
Adjusted Chi Square Value	11.68	95% Jackknife UCL	0.0017
		95% Standard Bootstrap UCL	0.0016
Anderson-Darling Test Statistic	0.402	95% Bootstrap-t UCL	0.0017
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	0.0015
Kolmogorov-Smirnov Test Statistic	0.179	95% Percentile Bootstrap UCL	0.0016
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	0.0016
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0024
		97.5% Chebyshev(Mean, Sd) UCL	0.0029
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0039
95% Approximate Gamma UCL	0.0020		
95% Adjusted Gamma UCL	0.0023		
Potential UCL to Use		Use 95% Student's-t UCL	0.0017

Result or 1/2 SDL (4,4'-ddt)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	8
Raw Statistics		**Log-transformed Statistics**	
Minimum	9.1500E-5	Minimum of Log Data	-9.299

Maximum	5.7000E-4	Maximum of Log Data	-7.47
Mean	1.5550E-4	Mean of log Data	-8.988
Median	1.0450E-4	SD of log Data	0.576
SD	1.5569E-4		
Coefficient of Variation	1.001		
Skewness	2.981		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.443	Shapiro Wilk Test Statistic	0.531
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.5201E-4	95% H-UCL	2.4166E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.6745E-4
95% Adjusted-CLT UCL	2.9597E-4	97.5% Chebyshev (MVUE) UCL	3.2068E-4
95% Modified-t UCL	2.6060E-4	99% Chebyshev (MVUE) UCL	4.2525E-4

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.697	Data do not follow a Discernable Distribution (0.05)	
Theta Star	9.1636E-5		
nu star	30.54		
Approximate Chi Square Value (.05)	18.92	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	2.4086E-4
Adjusted Chi Square Value	17.02	95% Jackknife UCL	2.5201E-4
		95% Standard Bootstrap UCL	2.3684E-4
Anderson-Darling Test Statistic	2.237	95% Bootstrap-t UCL	0.0012
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	9.1506E-4
Kolmogorov-Smirnov Test Statistic	0.481	95% Percentile Bootstrap UCL	2.5644E-4
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	2.6300E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.8172E-4
		97.5% Chebyshev(Mean, Sd) UCL	4.7960E-4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.7188E-4
95% Approximate Gamma UCL	2.5102E-4		
95% Adjusted Gamma UCL	2.7908E-4		

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	3.8172E-4

Result or 1/2 SDL (aluminum)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	4730	Minimum of Log Data	8.462
Maximum	21800	Maximum of Log Data	9.99
Mean	12213	Mean of log Data	9.255
Median	10800	SD of log Data	0.604
SD	6892		
Coefficient of Variation	0.564		

Skewness	0.403		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16486	95% H-UCL	21311
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23251
95% Adjusted-CLT UCL	16322	97.5% Chebyshev (MVUE) UCL	28003
95% Modified-t UCL	16537	99% Chebyshev (MVUE) UCL	37338
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.326	Data appear Normal at 5% Significance Level	
Theta Star	5252		
nu star	41.86		
Approximate Chi Square Value (.05)	28.03	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	15992
Adjusted Chi Square Value	25.67	95% Jackknife UCL	16486
		95% Standard Bootstrap UCL	15701
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	16891
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	15366
Kolmogorov-Smirnov Test Statistic	0.176	95% Percentile Bootstrap UCL	15822
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	16030
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22228
		97.5% Chebyshev(Mean, Sd) UCL	26561
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	35073
95% Approximate Gamma UCL	18240		
95% Adjusted Gamma UCL	19920		
Potential UCL to Use		Use 95% Student's-t UCL	16486

Result or 1/2 SDL (antimony)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	1.68	Minimum of Log Data	0.519
Maximum	7.33	Maximum of Log Data	1.992
Mean	4.023	Mean of log Data	1.251
Median	2.83	SD of log Data	0.568
SD	2.215		
Coefficient of Variation	0.55		
Skewness	0.488		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.866	Shapiro Wilk Test Statistic	0.897

Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.396	95% H-UCL	6.669
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.407
95% Adjusted-CLT UCL	5.366	97.5% Chebyshev (MVUE) UCL	8.87
95% Modified-t UCL	5.416	99% Chebyshev (MVUE) UCL	11.74
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.544	Data appear Normal at 5% Significance Level	
Theta Star	1.581		
nu star	45.79		
Approximate Chi Square Value (.05)	31.27	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	5.238
Adjusted Chi Square Value	28.76	95% Jackknife UCL	5.396
		95% Standard Bootstrap UCL	5.174
Anderson-Darling Test Statistic	0.505	95% Bootstrap-t UCL	5.62
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	5.015
Kolmogorov-Smirnov Test Statistic	0.233	95% Percentile Bootstrap UCL	5.182
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	5.207
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.241
		97.5% Chebyshev(Mean, Sd) UCL	8.634
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11.37
95% Approximate Gamma UCL	5.892		
95% Adjusted Gamma UCL	6.407		
Potential UCL to Use		Use 95% Student's-t UCL	5.396

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	2.36	Minimum of Log Data	0.859
Maximum	9.62	Maximum of Log Data	2.264
Mean	5.813	Mean of log Data	1.623
Median	4.63	SD of log Data	0.566
SD	3.107		
Coefficient of Variation	0.534		
Skewness	0.351		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk Test Statistic	0.878
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.739	95% H-UCL	9.637

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10.71
95% Adjusted-CLT UCL	7.646	97.5% Chebyshev (MVUE) UCL	12.83
95% Modified-t UCL	7.759	99% Chebyshev (MVUE) UCL	16.97
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.603	Data appear Normal at 5% Significance Level	
Theta Star	2.233		
nu star	46.86		
Approximate Chi Square Value (.05)	32.15	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	7.517
Adjusted Chi Square Value	29.61	95% Jackknife UCL	7.739
		95% Standard Bootstrap UCL	7.435
Anderson-Darling Test Statistic	0.558	95% Bootstrap-t UCL	8.086
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	7.147
Kolmogorov-Smirnov Test Statistic	0.223	95% Percentile Bootstrap UCL	7.476
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	7.543
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10.33
		97.5% Chebyshev(Mean, Sd) UCL	12.28
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16.12
95% Approximate Gamma UCL	8.473		
95% Adjusted Gamma UCL	9.202		
Potential UCL to Use		Use 95% Student's-t UCL	7.739

Result or 1/2 SDL (barium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	111	Minimum of Log Data	4.71
Maximum	280	Maximum of Log Data	5.635
Mean	209.7	Mean of log Data	5.318
Median	201	SD of log Data	0.263
SD	47.73		
Coefficient of Variation	0.228		
Skewness	-0.775		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Test Statistic	0.849
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	239.2	95% H-UCL	253.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	291.1
95% Adjusted-CLT UCL	231.4	97.5% Chebyshev (MVUE) UCL	326
95% Modified-t UCL	238.6	99% Chebyshev (MVUE) UCL	394.7
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	12.22	Data appear Normal at 5% Significance Level	
Theta Star	17.15		
nu star	220		
Approximate Chi Square Value (.05)	186.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	235.8
Adjusted Chi Square Value	180.2	95% Jackknife UCL	239.2
		95% Standard Bootstrap UCL	233.9
Anderson-Darling Test Statistic	0.517	95% Bootstrap-t UCL	234.2
Anderson-Darling 5% Critical Value	0.721	95% Hall's Bootstrap UCL	233.5
Kolmogorov-Smirnov Test Statistic	0.25	95% Percentile Bootstrap UCL	233
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	230.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	279
		97.5% Chebyshev(Mean, Sd) UCL	309
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	368
95% Approximate Gamma UCL	247.1		
95% Adjusted Gamma UCL	256		
Potential UCL to Use		Use 95% Student's-t UCL	239.2

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	0.0045	Minimum of Log Data	-5.394
Maximum	0.0369	Maximum of Log Data	-3.3
Mean	0.0087	Mean of log Data	-5.045
Median	0.0054	SD of log Data	0.66
SD	0.0106		
Coefficient of Variation	1.213		
Skewness	2.99		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.429	Shapiro Wilk Test Statistic	0.512
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0153	95% H-UCL	0.0146
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0154
95% Adjusted-CLT UCL	0.0183	97.5% Chebyshev (MVUE) UCL	0.0187
95% Modified-t UCL	0.0159	99% Chebyshev (MVUE) UCL	0.0252
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.273	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0068		
nu star	22.92		
Approximate Chi Square Value (.05)	13.03	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0145

Adjusted Chi Square Value	11.49	95% Jackknife UCL	0.0153
		95% Standard Bootstrap UCL	0.0141
Anderson-Darling Test Statistic	2.375	95% Bootstrap-t UCL	0.111
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	0.0773
Kolmogorov-Smirnov Test Statistic	0.493	95% Percentile Bootstrap UCL	0.0157
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	0.016
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0241
		97.5% Chebyshev(Mean, Sd) UCL	0.0307
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0438
95% Approximate Gamma UCL	0.0153		
95% Adjusted Gamma UCL	0.0174		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0241

Result or 1/2 SDL (beryllium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.32	Minimum of Log Data	-1.139
Maximum	1.32	Maximum of Log Data	0.278
Mean	0.766	Mean of log Data	-0.403
Median	0.69	SD of log Data	0.566
SD	0.403		
Coefficient of Variation	0.527		
Skewness	0.315		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.016	95% H-UCL	1.27
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.412
95% Adjusted-CLT UCL	1.002	97.5% Chebyshev (MVUE) UCL	1.69
95% Modified-t UCL	1.018	99% Chebyshev (MVUE) UCL	2.237
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.633	Data appear Normal at 5% Significance Level	
Theta Star	0.291		
nu star	47.4		
Approximate Chi Square Value (.05)	32.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.987
Adjusted Chi Square Value	30.03	95% Jackknife UCL	1.016
		95% Standard Bootstrap UCL	0.976
Anderson-Darling Test Statistic	0.424	95% Bootstrap-t UCL	1.035
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	0.942
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL	0.979

Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	0.992
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.351
		97.5% Chebyshev(Mean, Sd) UCL	1.605
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.103
95% Approximate Gamma UCL	1.113		
95% Adjusted Gamma UCL	1.208		
Potential UCL to Use		Use 95% Student's-t UCL	1.016

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	13.3	Minimum of Log Data	2.588
Maximum	47.9	Maximum of Log Data	3.869
Mean	27.64	Mean of log Data	3.222
Median	26	SD of log Data	0.472
SD	12.82		
Coefficient of Variation	0.464		
Skewness	0.532		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	35.59	95% H-UCL	40.83
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.85
95% Adjusted-CLT UCL	35.48	97.5% Chebyshev (MVUE) UCL	55.15
95% Modified-t UCL	35.71	99% Chebyshev (MVUE) UCL	71.47
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.598	Data appear Normal at 5% Significance Level	
Theta Star	7.684		
nu star	64.76		
Approximate Chi Square Value (.05)	47.24	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	34.67
Adjusted Chi Square Value	44.1	95% Jackknife UCL	35.59
		95% Standard Bootstrap UCL	34.22
Anderson-Darling Test Statistic	0.301	95% Bootstrap-t UCL	37.24
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	35.13
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	34.61
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	34.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46.26
		97.5% Chebyshev(Mean, Sd) UCL	54.32
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	70.15
95% Approximate Gamma UCL	37.89		

95% Adjusted Gamma UCL	40.59		
Potential UCL to Use		Use 95% Student's-t UCL	35.59

Result or 1/2 SDL (carbon disulfide)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	8.8000E-5	Minimum of Log Data	-9.338
Maximum	0.0084	Maximum of Log Data	-4.778
Mean	0.0015	Mean of log Data	-7.728
Median	4.0500E-4	SD of log Data	1.636
SD	0.0027		
Coefficient of Variation	1.789		
Skewness	2.348		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.612	Shapiro Wilk Test Statistic	0.888
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0032	95% H-UCL	0.0283
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0044
95% Adjusted-CLT UCL	0.0038	97.5% Chebyshev (MVUE) UCL	0.0058
95% Modified-t UCL	0.0034	99% Chebyshev (MVUE) UCL	0.0084
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.41	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0037		
nu star	7.375		
Approximate Chi Square Value (.05)	2.378	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0030
Adjusted Chi Square Value	1.825	95% Jackknife UCL	0.0032
		95% Standard Bootstrap UCL	0.0030
Anderson-Darling Test Statistic	0.768	95% Bootstrap-t UCL	0.0153
Anderson-Darling 5% Critical Value	0.77	95% Hall's Bootstrap UCL	0.0118
Kolmogorov-Smirnov Test Statistic	0.256	95% Percentile Bootstrap UCL	0.0031
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	0.0039
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0055
		97.5% Chebyshev(Mean, Sd) UCL	0.0073
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0108
95% Approximate Gamma UCL	0.0048		
95% Adjusted Gamma UCL	0.0062		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0048

Result or 1/2 SDL (chromium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	5.81	Minimum of Log Data	1.76
Maximum	22.5	Maximum of Log Data	3.114
Mean	12.81	Mean of log Data	2.43
Median	11.1	SD of log Data	0.527
SD	6.512		
Coefficient of Variation	0.508		
Skewness	0.444		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.89	Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.85	95% H-UCL	20.21
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	22.82
95% Adjusted-CLT UCL	16.73	97.5% Chebyshev (MVUE) UCL	27.14
95% Modified-t UCL	16.9	99% Chebyshev (MVUE) UCL	35.62
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.941	Data appear Normal at 5% Significance Level	
Theta Star	4.356		
nu star	52.95		
Approximate Chi Square Value (.05)	37.23	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	16.38
Adjusted Chi Square Value	34.47	95% Jackknife UCL	16.85
		95% Standard Bootstrap UCL	16.18
Anderson-Darling Test Statistic	0.391	95% Bootstrap-t UCL	17.33
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	15.96
Kolmogorov-Smirnov Test Statistic	0.167	95% Percentile Bootstrap UCL	16.21
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	16.55
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.28
		97.5% Chebyshev(Mean, Sd) UCL	26.37
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	34.41
95% Approximate Gamma UCL	18.22		
95% Adjusted Gamma UCL	19.68		
Potential UCL to Use		Use 95% Student's-t UCL	16.85

Result or 1/2 SDL (cis-1,2-dichloroethene)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	1.0200E-4	Minimum of Log Data	-9.191
Maximum	0.0284	Maximum of Log Data	-3.561
Mean	0.0034	Mean of log Data	-7.775
Median	2.3050E-4	SD of log Data	1.763
SD	0.0093		
Coefficient of Variation	2.706		
Skewness	2.995		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.415	Shapiro Wilk Test Statistic	0.777
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0092	95% H-UCL	0.0514
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0052
95% Adjusted-CLT UCL	0.0119	97.5% Chebyshev (MVUE) UCL	0.0068
95% Modified-t UCL	0.0097	99% Chebyshev (MVUE) UCL	0.01
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.29	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0119		
nu star	5.211		
Approximate Chi Square Value (.05)	1.251	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0085
Adjusted Chi Square Value	0.892	95% Jackknife UCL	0.0092
		95% Standard Bootstrap UCL	0.0083
Anderson-Darling Test Statistic	1.687	95% Bootstrap-t UCL	0.189
Anderson-Darling 5% Critical Value	0.803	95% Hall's Bootstrap UCL	0.106
Kolmogorov-Smirnov Test Statistic	0.384	95% Percentile Bootstrap UCL	0.0096
Kolmogorov-Smirnov 5% Critical Value	0.301	95% BCA Bootstrap UCL	0.0128
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0171
		97.5% Chebyshev(Mean, Sd) UCL	0.0229
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0345
95% Approximate Gamma UCL	0.0144		
95% Adjusted Gamma UCL	0.0202		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0345

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (cobalt)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	3.32	Minimum of Log Data	1.2
Maximum	11.8	Maximum of Log Data	2.468
Mean	6.698	Mean of log Data	1.8

Median	5.92	SD of log Data	0.481
SD	3.165		
Coefficient of Variation	0.473		
Skewness	0.508		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.904	Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	8.66	95% H-UCL	9.999
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11.45
95% Adjusted-CLT UCL	8.624	97.5% Chebyshev (MVUE) UCL	13.5
95% Modified-t UCL	8.69	99% Chebyshev (MVUE) UCL	17.53
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.458	Data appear Normal at 5% Significance Level	
Theta Star	1.937		
nu star	62.24		
Approximate Chi Square Value (.05)	45.09	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	8.433
Adjusted Chi Square Value	42.03	95% Jackknife UCL	8.66
		95% Standard Bootstrap UCL	8.395
Anderson-Darling Test Statistic	0.361	95% Bootstrap-t UCL	9.077
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	8.427
Kolmogorov-Smirnov Test Statistic	0.171	95% Percentile Bootstrap UCL	8.376
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	8.624
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11.3
		97.5% Chebyshev(Mean, Sd) UCL	13.29
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17.2
95% Approximate Gamma UCL	9.245		
95% Adjusted Gamma UCL	9.918		
Potential UCL to Use		Use 95% Student's-t UCL	8.66

Result or 1/2 SDL (copper)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	2.68	Minimum of Log Data	0.986
Maximum	16.8	Maximum of Log Data	2.821
Mean	8.138	Mean of log Data	1.902
Median	6.87	SD of log Data	0.676
SD	5.165		
Coefficient of Variation	0.635		
Skewness	0.626		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.34	95% H-UCL	15.71
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.4
95% Adjusted-CLT UCL	11.35	97.5% Chebyshev (MVUE) UCL	19.95
95% Modified-t UCL	11.4	99% Chebyshev (MVUE) UCL	26.94
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.895	Data appear Normal at 5% Significance Level	
Theta Star	4.294		
nu star	34.11		
Approximate Chi Square Value (.05)	21.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	10.97
Adjusted Chi Square Value	19.7	95% Jackknife UCL	11.34
		95% Standard Bootstrap UCL	10.88
Anderson-Darling Test Statistic	0.31	95% Bootstrap-t UCL	12.32
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	11.26
Kolmogorov-Smirnov Test Statistic	0.177	95% Percentile Bootstrap UCL	10.93
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	11.27
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.64
		97.5% Chebyshev(Mean, Sd) UCL	18.89
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	25.27
95% Approximate Gamma UCL	12.76		
95% Adjusted Gamma UCL	14.09		
Potential UCL to Use		Use 95% Student's-t UCL	11.34

Result or 1/2 SDL (iron)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	7440	Minimum of Log Data	8.915
Maximum	27900	Maximum of Log Data	10.24
Mean	16496	Mean of log Data	9.596
Median	15000	SD of log Data	0.518
SD	8097		
Coefficient of Variation	0.491		
Skewness	0.325		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	21515	95% H-UCL	25764
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	29179
95% Adjusted-CLT UCL	21247	97.5% Chebyshev (MVUE) UCL	34648
95% Modified-t UCL	21563	99% Chebyshev (MVUE) UCL	45392
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.072	**Data appear Normal at 5% Significance Level**	
Theta Star	5370		
nu star	55.3		
Approximate Chi Square Value (.05)	39.21	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	20935
Adjusted Chi Square Value	36.37	95% Jackknife UCL	21515
		95% Standard Bootstrap UCL	20682
Anderson-Darling Test Statistic	0.415	95% Bootstrap-t UCL	22181
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	20333
Kolmogorov-Smirnov Test Statistic	0.177	95% Percentile Bootstrap UCL	20913
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	21189
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28260
		97.5% Chebyshev(Mean, Sd) UCL	33351
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	43351
95% Approximate Gamma UCL	23264		
95% Adjusted Gamma UCL	25080		
Potential UCL to Use		Use 95% Student's-t UCL	21515

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	5.34	Minimum of Log Data	1.675
Maximum	14.5	Maximum of Log Data	2.674
Mean	9.587	Mean of log Data	2.194
Median	9.2	SD of log Data	0.393
SD	3.603		
Coefficient of Variation	0.376		
Skewness	0.161		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	11.82	95% H-UCL	13.05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.14
95% Adjusted-CLT UCL	11.63	97.5% Chebyshev (MVUE) UCL	17.53

95% Modified-t UCL	11.83	99% Chebyshev (MVUE) UCL	22.23
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.179	Data appear Normal at 5% Significance Level	
Theta Star	1.851		
nu star	93.21		
Approximate Chi Square Value (.05)	71.95	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	11.56
Adjusted Chi Square Value	68.02	95% Jackknife UCL	11.82
		95% Standard Bootstrap UCL	11.48
Anderson-Darling Test Statistic	0.417	95% Bootstrap-t UCL	12.11
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	11.28
Kolmogorov-Smirnov Test Statistic	0.182	95% Percentile Bootstrap UCL	11.45
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	11.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.82
		97.5% Chebyshev(Mean, Sd) UCL	17.09
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.54
95% Approximate Gamma UCL	12.42		
95% Adjusted Gamma UCL	13.14		
Potential UCL to Use		Use 95% Student's-t UCL	11.82

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	7.29	Minimum of Log Data	1.987
Maximum	44.6	Maximum of Log Data	3.798
Mean	21.4	Mean of log Data	2.852
Median	17.1	SD of log Data	0.697
SD	14.41		
Coefficient of Variation	0.673		
Skewness	0.724		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.868	Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	30.33	95% H-UCL	42.41
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	43.59
95% Adjusted-CLT UCL	30.54	97.5% Chebyshev (MVUE) UCL	53.19
95% Modified-t UCL	30.52	99% Chebyshev (MVUE) UCL	72.04
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.757	Data appear Normal at 5% Significance Level	
Theta Star	12.18		

nu star	31.63		
Approximate Chi Square Value (.05)	19.78	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	29.3
Adjusted Chi Square Value	17.83	95% Jackknife UCL	30.33
		95% Standard Bootstrap UCL	28.98
Anderson-Darling Test Statistic	0.391	95% Bootstrap-t UCL	32.35
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	30.14
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL	29.69
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	30.27
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	42.33
		97.5% Chebyshev(Mean, Sd) UCL	51.39
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	69.18
95% Approximate Gamma UCL	34.22		
95% Adjusted Gamma UCL	37.96		
Potential UCL to Use		Use 95% Student's-t UCL	30.33

Result or 1/2 SDL (manganese)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	212	Minimum of Log Data	5.357
Maximum	442	Maximum of Log Data	6.091
Mean	330.7	Mean of log Data	5.767
Median	321	SD of log Data	0.284
SD	88.99		
Coefficient of Variation	0.269		
Skewness	-0.147		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk Test Statistic	0.899
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	385.8	95% H-UCL	406.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	468.4
95% Adjusted-CLT UCL	377.9	97.5% Chebyshev (MVUE) UCL	527.8
95% Modified-t UCL	385.6	99% Chebyshev (MVUE) UCL	644.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.817	Data appear Normal at 5% Significance Level	
Theta Star	33.68		
nu star	176.7		
Approximate Chi Square Value (.05)	147	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	379.5
Adjusted Chi Square Value	141.2	95% Jackknife UCL	385.8
		95% Standard Bootstrap UCL	376.9

Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	383.3
Anderson-Darling 5% Critical Value	0.721	95% Hall's Bootstrap UCL	371.3
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	379.1
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	377.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	460
		97.5% Chebyshev(Mean, Sd) UCL	515.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	625.8
95% Approximate Gamma UCL	397.6		
95% Adjusted Gamma UCL	413.7		
Potential UCL to Use		Use 95% Student's-t UCL	385.8

Result or 1/2 SDL (mercury)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	0.05	Maximum of Log Data	-2.996
Mean	0.0176	Mean of log Data	-4.227
Median	0.016	SD of log Data	0.613
SD	0.0132		
Coefficient of Variation	0.753		
Skewness	2.163		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.752	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0258	95% H-UCL	0.0302
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0328
95% Adjusted-CLT UCL	0.0282	97.5% Chebyshev (MVUE) UCL	0.0396
95% Modified-t UCL	0.0263	99% Chebyshev (MVUE) UCL	0.0529
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.962	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0089		
nu star	35.32		
Approximate Chi Square Value (.05)	22.73	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0248
Adjusted Chi Square Value	20.62	95% Jackknife UCL	0.0258
		95% Standard Bootstrap UCL	0.0244
Anderson-Darling Test Statistic	0.431	95% Bootstrap-t UCL	0.0357
Anderson-Darling 5% Critical Value	0.727	95% Hall's Bootstrap UCL	0.0574
Kolmogorov-Smirnov Test Statistic	0.184	95% Percentile Bootstrap UCL	0.0249
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	0.0283
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0368

		97.5% Chebyshev(Mean, Sd) UCL	0.0452
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0615
95% Approximate Gamma UCL	0.0273		
95% Adjusted Gamma UCL	0.0301		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0273

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.16	Minimum of Log Data	-1.833
Maximum	0.35	Maximum of Log Data	-1.05
Mean	0.241	Mean of log Data	-1.458
Median	0.24	SD of log Data	0.282
SD	0.0675		
Coefficient of Variation	0.28		
Skewness	0.35		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.283	95% H-UCL	0.296
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.34
95% Adjusted-CLT UCL	0.281	97.5% Chebyshev (MVUE) UCL	0.383
95% Modified-t UCL	0.283	99% Chebyshev (MVUE) UCL	0.468
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.681	Data appear Normal at 5% Significance Level	
Theta Star	0.0249		
nu star	174.3		
Approximate Chi Square Value (.05)	144.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.278
Adjusted Chi Square Value	139	95% Jackknife UCL	0.283
		95% Standard Bootstrap UCL	0.276
Anderson-Darling Test Statistic	0.283	95% Bootstrap-t UCL	0.292
Anderson-Darling 5% Critical Value	0.721	95% Hall's Bootstrap UCL	0.278
Kolmogorov-Smirnov Test Statistic	0.167	95% Percentile Bootstrap UCL	0.276
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	0.274
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.339
		97.5% Chebyshev(Mean, Sd) UCL	0.382
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.465
95% Approximate Gamma UCL	0.29		
95% Adjusted Gamma UCL	0.302		

Potential UCL to Use		Use 95% Student's-t UCL	0.283

Result or 1/2 SDL (nickel)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	6.31	Minimum of Log Data	1.842
Maximum	27.3	Maximum of Log Data	3.307
Mean	14.91	Mean of log Data	2.562
Median	13	SD of log Data	0.571
SD	8.111		
Coefficient of Variation	0.544		
Skewness	0.452		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.892	Shapiro Wilk Test Statistic	0.909
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	19.94	95% H-UCL	24.87
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27.58
95% Adjusted-CLT UCL	19.79	97.5% Chebyshev (MVUE) UCL	33.04
95% Modified-t UCL	20.01	99% Chebyshev (MVUE) UCL	43.78
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.55	Data appear Normal at 5% Significance Level	
Theta Star	5.847		
nu star	45.91		
Approximate Chi Square Value (.05)	31.36	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	19.36
Adjusted Chi Square Value	28.85	95% Jackknife UCL	19.94
		95% Standard Bootstrap UCL	19.01
Anderson-Darling Test Statistic	0.395	95% Bootstrap-t UCL	20.34
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	19.01
Kolmogorov-Smirnov Test Statistic	0.172	95% Percentile Bootstrap UCL	19.16
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	19.24
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.7
		97.5% Chebyshev(Mean, Sd) UCL	31.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	41.81
95% Approximate Gamma UCL	21.83		
95% Adjusted Gamma UCL	23.73		
Potential UCL to Use		Use 95% Student's-t UCL	19.94

Result or 1/2 SDL (strontium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	34.8	Minimum of Log Data	3.55
Maximum	87.4	Maximum of Log Data	4.47
Mean	59.17	Mean of log Data	4.015
Median	59.3	SD of log Data	0.388
SD	22.06		
Coefficient of Variation	0.373		
Skewness	0.141		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.854	Shapiro Wilk Test Statistic	0.849
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	72.84	95% H-UCL	80.08
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	92.89
95% Adjusted-CLT UCL	71.63	97.5% Chebyshev (MVUE) UCL	107.5
95% Modified-t UCL	72.9	99% Chebyshev (MVUE) UCL	136.1
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.29	**Data appear Normal at 5% Significance Level**	
Theta Star	11.18		
nu star	95.22		
Approximate Chi Square Value (.05)	73.71	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	71.26
Adjusted Chi Square Value	69.73	95% Jackknife UCL	72.84
		95% Standard Bootstrap UCL	70.57
Anderson-Darling Test Statistic	0.641	95% Bootstrap-t UCL	73.19
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	68.52
Kolmogorov-Smirnov Test Statistic	0.247	95% Percentile Bootstrap UCL	70.6
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	71.02
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	91.22
		97.5% Chebyshev(Mean, Sd) UCL	105.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	132.3
95% Approximate Gamma UCL	76.43		
95% Adjusted Gamma UCL	80.79		
Potential UCL to Use		Use 95% Student's-t UCL	72.84

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	21.1	Minimum of Log Data	3.049

Maximum	54.5	Maximum of Log Data	3.998
Mean	31.79	Mean of log Data	3.417
Median	28.6	SD of log Data	0.297
SD	10.49		
Coefficient of Variation	0.33		
Skewness	1.471		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.859	Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	38.29	95% H-UCL	39.38
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	45.43
95% Adjusted-CLT UCL	39.37	97.5% Chebyshev (MVUE) UCL	51.38
95% Modified-t UCL	38.58	99% Chebyshev (MVUE) UCL	63.05
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	8.159	Data appear Normal at 5% Significance Level	
Theta Star	3.896		
nu star	146.9		
Approximate Chi Square Value (.05)	119.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	37.54
Adjusted Chi Square Value	114.7	95% Jackknife UCL	38.29
		95% Standard Bootstrap UCL	37.2
Anderson-Darling Test Statistic	0.42	95% Bootstrap-t UCL	44.39
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	71.05
Kolmogorov-Smirnov Test Statistic	0.239	95% Percentile Bootstrap UCL	37.59
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	39.23
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	47.03
		97.5% Chebyshev(Mean, Sd) UCL	53.62
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	66.58
95% Approximate Gamma UCL	38.95		
95% Adjusted Gamma UCL	40.7		
Potential UCL to Use		Use 95% Student's-t UCL	38.29

Result or 1/2 SDL (trichloroethene)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	1.4300E-4	Minimum of Log Data	-8.853
Maximum	0.0159	Maximum of Log Data	-4.141
Mean	0.0021	Mean of log Data	-7.537
Median	3.2350E-4	SD of log Data	1.495
SD	0.0051		
Coefficient of Variation	2.351		

Skewness	2.966		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.454	Shapiro Wilk Test Statistic	0.832
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0053	95% H-UCL	0.0178
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0043
95% Adjusted-CLT UCL	0.0068	97.5% Chebyshev (MVUE) UCL	0.0055
95% Modified-t UCL	0.0056	99% Chebyshev (MVUE) UCL	0.0081
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.378	Data appear Lognormal at 5% Significance Level	
Theta Star	0.0058		
nu star	6.802		
Approximate Chi Square Value (.05)	2.063	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0050
Adjusted Chi Square Value	1.558	95% Jackknife UCL	0.0053
		95% Standard Bootstrap UCL	0.0047
Anderson-Darling Test Statistic	1.313	95% Bootstrap-t UCL	0.0421
Anderson-Darling 5% Critical Value	0.779	95% Hall's Bootstrap UCL	0.0252
Kolmogorov-Smirnov Test Statistic	0.319	95% Percentile Bootstrap UCL	0.0054
Kolmogorov-Smirnov 5% Critical Value	0.296	95% BCA Bootstrap UCL	0.0072
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0096
		97.5% Chebyshev(Mean, Sd) UCL	0.0129
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0193
95% Approximate Gamma UCL	0.0072		
95% Adjusted Gamma UCL	0.0095		
Potential UCL to Use		Use 95% Chebyshev (MVUE) UCL	0.0043

Result or 1/2 SDL (vanadium)

General Statistics

Number of Valid Samples	9	Number of Unique Samples	9

Raw Statistics		Log-transformed Statistics	
Minimum	10.2	Minimum of Log Data	2.322
Maximum	34.2	Maximum of Log Data	3.532
Mean	20.21	Mean of log Data	2.913
Median	19.1	SD of log Data	0.461
SD	9.135		
Coefficient of Variation	0.452		
Skewness	0.468		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Test Statistic	0.919

Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	25.87	95% H-UCL	29.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	33.92
95% Adjusted-CLT UCL	25.73	97.5% Chebyshev (MVUE) UCL	39.86
95% Modified-t UCL	25.95	99% Chebyshev (MVUE) UCL	51.51
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.758	Data appear Normal at 5% Significance Level	
Theta Star	5.378		
nu star	67.64		
Approximate Chi Square Value (.05)	49.71	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	25.22
Adjusted Chi Square Value	46.49	95% Jackknife UCL	25.87
		95% Standard Bootstrap UCL	25
Anderson-Darling Test Statistic	0.366	95% Bootstrap-t UCL	26.93
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	25.05
Kolmogorov-Smirnov Test Statistic	0.183	95% Percentile Bootstrap UCL	25.01
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	25.46
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	33.48
		97.5% Chebyshev(Mean, Sd) UCL	39.23
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	50.51
95% Approximate Gamma UCL	27.5		
95% Adjusted Gamma UCL	29.41		
Potential UCL to Use		Use 95% Student's-t UCL	25.87

Result or 1/2 SDL (xylene (total))

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	4.6250E-4	Minimum of Log Data	-7.679
Maximum	0.0044	Maximum of Log Data	-5.414
Mean	0.0017	Mean of log Data	-6.668
Median	0.0010	SD of log Data	0.863
SD	0.0014		
Coefficient of Variation	0.818		
Skewness	0.955		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0026	95% H-UCL	0.0046

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0040
95% Adjusted-CLT UCL	0.0027	97.5% Chebyshev (MVUE) UCL	0.005
95% Modified-t UCL	0.0026	99% Chebyshev (MVUE) UCL	0.0069
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.218	Data appear Normal at 5% Significance Level	
Theta Star	0.0014		
nu star	21.93		
Approximate Chi Square Value (.05)	12.29	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0025
Adjusted Chi Square Value	10.79	95% Jackknife UCL	0.0026
		95% Standard Bootstrap UCL	0.0024
Anderson-Darling Test Statistic	0.43	95% Bootstrap-t UCL	0.0030
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	0.0027
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	0.0025
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	0.0026
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0038
		97.5% Chebyshev(Mean, Sd) UCL	0.0047
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0064
95% Approximate Gamma UCL	0.0031		
95% Adjusted Gamma UCL	0.0035		
Potential UCL to Use		Use 95% Student's-t UCL	0.0026

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	19.3	Minimum of Log Data	2.96
Maximum	54.1	Maximum of Log Data	3.991
Mean	36.04	Mean of log Data	3.515
Median	34.1	SD of log Data	0.404
SD	13.68		
Coefficient of Variation	0.379		
Skewness	0.0735		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.901	Shapiro Wilk Test Statistic	0.897
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	44.52	95% H-UCL	49.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	57.54
95% Adjusted-CLT UCL	43.66	97.5% Chebyshev (MVUE) UCL	66.8
95% Modified-t UCL	44.54	99% Chebyshev (MVUE) UCL	84.99
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	4.975	Data appear Normal at 5% Significance Level	
Theta Star	7.246		
nu star	89.54		
Approximate Chi Square Value (.05)	68.73	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	43.54
Adjusted Chi Square Value	64.89	95% Jackknife UCL	44.52
		95% Standard Bootstrap UCL	42.93
Anderson-Darling Test Statistic	0.426	95% Bootstrap-t UCL	44.54
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	42.26
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	42.99
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	43.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	55.91
		97.5% Chebyshev(Mean, Sd) UCL	64.51
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	81.4
95% Approximate Gamma UCL	46.96		
95% Adjusted Gamma UCL	49.74		
Potential UCL to Use		Use 95% Student's-t UCL	44.52

APPENDIX A-8

NORTH OF MARLIN SEDIMENT

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	J:\1352 - Gulfco RI\risk\data queries oct 07\EPC tables with onehalf DL\Copy of north wetland detections
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 SDL (1,2-dichloroethane)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	40

Raw Statistics		**Log-transformed Statistics**	
Minimum	6.1500E-5	Minimum of Log Data	-9.696
Maximum	0.0024	Maximum of Log Data	-6.032
Mean	2.4915E-4	Mean of log Data	-9.1
Median	7.6250E-5	SD of log Data	0.927
SD	5.4106E-4		
Coefficient of Variation	2.172		
Skewness	3.34		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.373	Shapiro Wilk Test Statistic	0.564
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.8018E-4	95% H-UCL	2.3239E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.8326E-4
95% Adjusted-CLT UCL	4.1783E-4	97.5% Chebyshev (MVUE) UCL	3.3255E-4
95% Modified-t UCL	3.8646E-4	99% Chebyshev (MVUE) UCL	4.2936E-4
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.713	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.4927E-4		
nu star	68.48		
Approximate Chi Square Value (.05)	50.43	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	3.7760E-4
Adjusted Chi Square Value	49.95	95% Jackknife UCL	3.8018E-4
		95% Standard Bootstrap UCL	3.7454E-4
Anderson-Darling Test Statistic	11.29	95% Bootstrap-t UCL	4.7307E-4
Anderson-Darling 5% Critical Value	0.792	95% Hall's Bootstrap UCL	3.6616E-4
Kolmogorov-Smirnov Test Statistic	0.392	95% Percentile Bootstrap UCL	3.8040E-4
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	4.2357E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.8956E-4
		97.5% Chebyshev(Mean, Sd) UCL	7.3685E-4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0010
95% Approximate Gamma UCL	3.3830E-4		
95% Adjusted Gamma UCL	3.4156E-4		

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	5.8956E-4

Result or 1/2 SDL (2-methylnaphthalene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	33
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0042	Minimum of Log Data	-5.46
Maximum	0.43	Maximum of Log Data	-0.844
Mean	0.0246	Mean of log Data	-4.637
Median	0.006	SD of log Data	1.069
SD	0.0639		
Coefficient of Variation	2.595		
Skewness	5.712		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.343	Shapiro Wilk Test Statistic	0.691
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0401	95% H-UCL	0.0249
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0304
95% Adjusted-CLT UCL	0.0479	97.5% Chebyshev (MVUE) UCL	0.0362
95% Modified-t UCL	0.0414	99% Chebyshev (MVUE) UCL	0.0477
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.627	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0392		
nu star	60.23		
Approximate Chi Square Value (.05)	43.38	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0398
Adjusted Chi Square Value	42.94	95% Jackknife UCL	0.0401
		95% Standard Bootstrap UCL	0.0398
Anderson-Darling Test Statistic	8.232	95% Bootstrap-t UCL	0.0684
Anderson-Darling 5% Critical Value	0.8	95% Hall's Bootstrap UCL	0.0914
Kolmogorov-Smirnov Test Statistic	0.358	95% Percentile Bootstrap UCL	0.0421
Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	0.0572
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0648
		97.5% Chebyshev(Mean, Sd) UCL	0.0822
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.116
95% Approximate Gamma UCL	0.0342		
95% Adjusted Gamma UCL	0.0345		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.116

Result or 1/2 SDL (4,4'-ddt)

General Statistics			
Number of Valid Samples	56	Number of Unique Samples	52

Raw Statistics		Log-transformed Statistics	
Minimum	7.7000E-5	Minimum of Log Data	-9.472
Maximum	0.0092	Maximum of Log Data	-4.686
Mean	9.5155E-4	Mean of log Data	-7.784
Median	3.5500E-4	SD of log Data	1.284
SD	0.0015		
Coefficient of Variation	1.597		
Skewness	3.563		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.287	Lilliefors Test Statistic	0.142
Lilliefors Critical Value	0.118	Lilliefors Critical Value	0.118
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0012	95% H-UCL	0.0014
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0018
95% Adjusted-CLT UCL	0.0013	97.5% Chebyshev (MVUE) UCL	0.0021
95% Modified-t UCL	0.0013	99% Chebyshev (MVUE) UCL	0.0029
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.7	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0013		
nu star	78.45		
Approximate Chi Square Value (.05)	59.05	Nonparametric Statistics	
Adjusted Level of Significance	0.0457	95% CLT UCL	0.0012
Adjusted Chi Square Value	58.6	95% Jackknife UCL	0.0012
		95% Standard Bootstrap UCL	0.0012
Anderson-Darling Test Statistic	2.244	95% Bootstrap-t UCL	0.0015
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	0.0018
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	0.0013
Kolmogorov-Smirnov 5% Critical Value	0.124	95% BCA Bootstrap UCL	0.0014
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0018
		97.5% Chebyshev(Mean, Sd) UCL	0.0022
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0029
95% Approximate Gamma UCL	0.0012		
95% Adjusted Gamma UCL	0.0012		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0022

Result or 1/2 SDL (acenaphthene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	34

Raw Statistics		Log-transformed Statistics	
Minimum	0.0042	Minimum of Log Data	-5.46

Maximum	0.133	Maximum of Log Data	-2.017
Mean	0.0195	Mean of log Data	-4.671
Median	0.0055	SD of log Data	1.034
SD	0.031		
Coefficient of Variation	1.59		
Skewness	2.314		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.546	Shapiro Wilk Test Statistic	0.667
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.027	95% H-UCL	0.0228
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0278
95% Adjusted-CLT UCL	0.0285	97.5% Chebyshev (MVUE) UCL	0.0331
95% Modified-t UCL	0.0273	99% Chebyshev (MVUE) UCL	0.0434
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.771	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0253		
nu star	74.06		
Approximate Chi Square Value (.05)	55.24	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0269
Adjusted Chi Square Value	54.74	95% Jackknife UCL	0.027
		95% Standard Bootstrap UCL	0.0267
Anderson-Darling Test Statistic	8.594	95% Bootstrap-t UCL	0.0293
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	0.0276
Kolmogorov-Smirnov Test Statistic	0.357	95% Percentile Bootstrap UCL	0.0272
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0296
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.039
		97.5% Chebyshev(Mean, Sd) UCL	0.0475
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.064
95% Approximate Gamma UCL	0.0261		
95% Adjusted Gamma UCL	0.0264		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.064

Result or 1/2 SDL (acenaphthylene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	36

Raw Statistics		Log-transformed Statistics	
Minimum	0.0037	Minimum of Log Data	-5.591
Maximum	0.545	Maximum of Log Data	-0.607
Mean	0.0314	Mean of log Data	-4.703
Median	0.0063	SD of log Data	1.137
SD	0.0928		
Coefficient of Variation	2.957		

Skewness	4.65		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.333	Shapiro Wilk Test Statistic	0.64
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0539	95% H-UCL	0.0261
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0316
95% Adjusted-CLT UCL	0.063	97.5% Chebyshev (MVUE) UCL	0.038
95% Modified-t UCL	0.0554	99% Chebyshev (MVUE) UCL	0.0505
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.492	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0638		
nu star	47.23		
Approximate Chi Square Value (.05)	32.46	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0534
Adjusted Chi Square Value	32.08	95% Jackknife UCL	0.0539
		95% Standard Bootstrap UCL	0.0527
Anderson-Darling Test Statistic	10.36	95% Bootstrap-t UCL	0.117
Anderson-Darling 5% Critical Value	0.813	95% Hall's Bootstrap UCL	0.136
Kolmogorov-Smirnov Test Statistic	0.408	95% Percentile Bootstrap UCL	0.0551
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	0.0662
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0898
		97.5% Chebyshev(Mean, Sd) UCL	0.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.165
95% Approximate Gamma UCL	0.0457		
95% Adjusted Gamma UCL	0.0462		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.165

Result or 1/2 SDL (aluminum)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	38
Raw Statistics		Log-transformed Statistics	
Minimum	3400	Minimum of Log Data	8.132
Maximum	19200	Maximum of Log Data	9.863
Mean	13229	Mean of log Data	9.454
Median	13650	SD of log Data	0.296
SD	3162		
Coefficient of Variation	0.239		
Skewness	-0.611		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.972	Shapiro Wilk Test Statistic	0.854

Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13995	95% H-UCL	14384
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15840
95% Adjusted-CLT UCL	13936	97.5% Chebyshev (MVUE) UCL	16931
95% Modified-t UCL	13988	99% Chebyshev (MVUE) UCL	19075
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	13.16	Data appear Normal at 5% Significance Level	
Theta Star	1005		
nu star	1264		
Approximate Chi Square Value (.05)	1182	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	13980
Adjusted Chi Square Value	1180	95% Jackknife UCL	13995
		95% Standard Bootstrap UCL	13978
Anderson-Darling Test Statistic	0.922	95% Bootstrap-t UCL	13984
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	13975
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL	13979
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	13943
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15218
		97.5% Chebyshev(Mean, Sd) UCL	16079
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17770
95% Approximate Gamma UCL	14141		
95% Adjusted Gamma UCL	14170		
Potential UCL to Use		Use 95% Student's-t UCL	13995

Result or 1/2 SDL (anthracene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		Log-transformed Statistics	
Minimum	0.0029	Minimum of Log Data	-5.821
Maximum	0.334	Maximum of Log Data	-1.097
Mean	0.0288	Mean of log Data	-4.661
Median	0.0060	SD of log Data	1.197
SD	0.0678		
Coefficient of Variation	2.358		
Skewness	3.546		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.418	Shapiro Wilk Test Statistic	0.774
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0452	95% H-UCL	0.0302

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0364
95% Adjusted-CLT UCL	0.0502	97.5% Chebyshev (MVUE) UCL	0.044
95% Modified-t UCL	0.046	99% Chebyshev (MVUE) UCL	0.0589
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.54	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0533		
nu star	51.83		
Approximate Chi Square Value (.05)	36.3	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0448
Adjusted Chi Square Value	35.89	95% Jackknife UCL	0.0452
		95% Standard Bootstrap UCL	0.0446
Anderson-Darling Test Statistic	7.224	95% Bootstrap-t UCL	0.0585
Anderson-Darling 5% Critical Value	0.809	95% Hall's Bootstrap UCL	0.0447
Kolmogorov-Smirnov Test Statistic	0.332	95% Percentile Bootstrap UCL	0.0466
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	0.0521
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0714
		97.5% Chebyshev(Mean, Sd) UCL	0.0899
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.126
95% Approximate Gamma UCL	0.0411		
95% Adjusted Gamma UCL	0.0415		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.126

Result or 1/2 SDL (antimony)

General Statistics			
Number of Valid Samples	47	Number of Unique Samples	35
Raw Statistics		Log-transformed Statistics	
Minimum	0.12	Minimum of Log Data	-2.12
Maximum	4.24	Maximum of Log Data	1.445
Mean	1.154	Mean of log Data	-0.151
Median	1.14	SD of log Data	0.938
SD	0.724		
Coefficient of Variation	0.627		
Skewness	1.485		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.863	Shapiro Wilk Test Statistic	0.756
Shapiro Wilk Critical Value	0.946	Shapiro Wilk Critical Value	0.946
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.331	95% H-UCL	1.826
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.226
95% Adjusted-CLT UCL	1.352	97.5% Chebyshev (MVUE) UCL	2.619
95% Modified-t UCL	1.335	99% Chebyshev (MVUE) UCL	3.39
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	1.745	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.661		
nu star	164.1		
Approximate Chi Square Value (.05)	135.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0449	95% CLT UCL	1.328
Adjusted Chi Square Value	134.6	95% Jackknife UCL	1.331
		95% Standard Bootstrap UCL	1.329
Anderson-Darling Test Statistic	3.362	95% Bootstrap-t UCL	1.348
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	1.387
Kolmogorov-Smirnov Test Statistic	0.237	95% Percentile Bootstrap UCL	1.331
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	1.357
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.614
		97.5% Chebyshev(Mean, Sd) UCL	1.814
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.205
95% Approximate Gamma UCL	1.398		
95% Adjusted Gamma UCL	1.406		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.614

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	47

Raw Statistics		Log-transformed Statistics	
Minimum	0.06	Minimum of Log Data	-2.813
Maximum	12.8	Maximum of Log Data	2.549
Mean	2.534	Mean of log Data	0.199
Median	2.19	SD of log Data	1.521
SD	2.465		
Coefficient of Variation	0.973		
Skewness	1.753		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.851	Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.131	95% H-UCL	7.442
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.391
95% Adjusted-CLT UCL	3.215	97.5% Chebyshev (MVUE) UCL	10.42
95% Modified-t UCL	3.146	99% Chebyshev (MVUE) UCL	14.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.774	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	3.273		
nu star	74.32		
Approximate Chi Square Value (.05)	55.47	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	3.119

Adjusted Chi Square Value	54.96	95% Jackknife UCL	3.131
		95% Standard Bootstrap UCL	3.105
Anderson-Darling Test Statistic	1.067	95% Bootstrap-t UCL	3.239
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	3.333
Kolmogorov-Smirnov Test Statistic	0.13	95% Percentile Bootstrap UCL	3.167
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	3.266
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.085
		97.5% Chebyshev(Mean, Sd) UCL	4.756
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.074
95% Approximate Gamma UCL	3.395		
95% Adjusted Gamma UCL	3.427		
Potential UCL to Use		Use 95% Approximate Gamma UCL	3.395

Result or 1/2 SDL (barium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	46

Raw Statistics		**Log-transformed Statistics**	
Minimum	36	Minimum of Log Data	3.584
Maximum	820	Maximum of Log Data	6.709
Mean	151.7	Mean of log Data	4.792
Median	102.5	SD of log Data	0.623
SD	136.5		
Coefficient of Variation	0.899		
Skewness	3.09		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.653	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	184.8	95% H-UCL	175.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	207
95% Adjusted-CLT UCL	193.5	97.5% Chebyshev (MVUE) UCL	233.6
95% Modified-t UCL	186.2	99% Chebyshev (MVUE) UCL	285.8
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.194	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	69.14		
nu star	210.7		
Approximate Chi Square Value (.05)	178.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	184.1
Adjusted Chi Square Value	177.1	95% Jackknife UCL	184.8
		95% Standard Bootstrap UCL	184
Anderson-Darling Test Statistic	2.597	95% Bootstrap-t UCL	203.2
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	214
Kolmogorov-Smirnov Test Statistic	0.219	95% Percentile Bootstrap UCL	186.1

Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	192.9
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	237.6
		97.5% Chebyshev(Mean, Sd) UCL	274.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	347.7
95% Approximate Gamma UCL	179.5		
95% Adjusted Gamma UCL	180.4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	237.6

Result or 1/2 SDL (benzo(a)anthracene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	36

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0025	Minimum of Log Data	-5.98
Maximum	0.993	Maximum of Log Data	-0.00702
Mean	0.0543	Mean of log Data	-4.585
Median	0.0056	SD of log Data	1.428
SD	0.175		
Coefficient of Variation	3.226		
Skewness	4.654		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.325	Shapiro Wilk Test Statistic	0.751
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0967	95% H-UCL	0.0509
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0589
95% Adjusted-CLT UCL	0.114	97.5% Chebyshev (MVUE) UCL	0.0726
95% Modified-t UCL	0.0995	99% Chebyshev (MVUE) UCL	0.0996
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.384	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.141		
nu star	36.84		
Approximate Chi Square Value (.05)	23.95	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0959
Adjusted Chi Square Value	23.62	95% Jackknife UCL	0.0967
		95% Standard Bootstrap UCL	0.095
Anderson-Darling Test Statistic	8.124	95% Bootstrap-t UCL	0.27
Anderson-Darling 5% Critical Value	0.839	95% Hall's Bootstrap UCL	0.288
Kolmogorov-Smirnov Test Statistic	0.375	95% Percentile Bootstrap UCL	0.1
Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	0.116
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.164
		97.5% Chebyshev(Mean, Sd) UCL	0.212
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.306
95% Approximate Gamma UCL	0.0835		

95% Adjusted Gamma UCL	0.0847		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.306

Result or 1/2 SDL (benzo(a)pyrene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	32

Raw Statistics		Log-transformed Statistics	
Minimum	0.0043	Minimum of Log Data	-5.447
Maximum	1.3	Maximum of Log Data	0.262
Mean	0.104	Mean of log Data	-4.13
Median	0.0058	SD of log Data	1.695
SD	0.259		
Coefficient of Variation	2.493		
Skewness	3.36		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.455	Shapiro Wilk Test Statistic	0.725
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.167	95% H-UCL	0.148
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.156
95% Adjusted-CLT UCL	0.185	97.5% Chebyshev (MVUE) UCL	0.196
95% Modified-t UCL	0.17	99% Chebyshev (MVUE) UCL	0.275
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.35	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.297		
nu star	33.64		
Approximate Chi Square Value (.05)	21.37	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.165
Adjusted Chi Square Value	21.07	95% Jackknife UCL	0.167
		95% Standard Bootstrap UCL	0.165
Anderson-Darling Test Statistic	7.481	95% Bootstrap-t UCL	0.225
Anderson-Darling 5% Critical Value	0.848	95% Hall's Bootstrap UCL	0.193
Kolmogorov-Smirnov Test Statistic	0.326	95% Percentile Bootstrap UCL	0.168
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	0.197
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.267
		97.5% Chebyshev(Mean, Sd) UCL	0.338
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.476
95% Approximate Gamma UCL	0.164		
95% Adjusted Gamma UCL	0.166		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.476

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	43

Raw Statistics		Log-transformed Statistics	
Minimum	0.0037	Minimum of Log Data	-5.581
Maximum	1.36	Maximum of Log Data	0.307
Mean	0.0902	Mean of log Data	-4.019
Median	0.0119	SD of log Data	1.65
SD	0.237		
Coefficient of Variation	2.63		
Skewness	4.175		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.413	Shapiro Wilk Test Statistic	0.842
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.148	95% H-UCL	0.148
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.159
95% Adjusted-CLT UCL	0.169	97.5% Chebyshev (MVUE) UCL	0.2
95% Modified-t UCL	0.151	99% Chebyshev (MVUE) UCL	0.279
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.395	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.228		
nu star	37.94		
Approximate Chi Square Value (.05)	24.84	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.146
Adjusted Chi Square Value	24.51	95% Jackknife UCL	0.148
		95% Standard Bootstrap UCL	0.146
Anderson-Darling Test Statistic	4.515	95% Bootstrap-t UCL	0.261
Anderson-Darling 5% Critical Value	0.836	95% Hall's Bootstrap UCL	0.168
Kolmogorov-Smirnov Test Statistic	0.218	95% Percentile Bootstrap UCL	0.151
Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	0.175
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.239
		97.5% Chebyshev(Mean, Sd) UCL	0.304
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.431
95% Approximate Gamma UCL	0.138		
95% Adjusted Gamma UCL	0.14		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.431

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	38

Raw Statistics		Log-transformed Statistics	
Minimum	0.0043	Minimum of Log Data	-5.446
Maximum	1.94	Maximum of Log Data	0.663
Mean	0.198	Mean of log Data	-3.047
Median	0.0648	SD of log Data	1.783
SD	0.388		
Coefficient of Variation	1.959		
Skewness	3.146		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.548	Shapiro Wilk Test Statistic	0.917
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.292	95% H-UCL	0.546
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.553
95% Adjusted-CLT UCL	0.317	97.5% Chebyshev (MVUE) UCL	0.699
95% Modified-t UCL	0.296	99% Chebyshev (MVUE) UCL	0.986
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.438	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.453		
nu star	42.01		
Approximate Chi Square Value (.05)	28.16	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.29
Adjusted Chi Square Value	27.8	95% Jackknife UCL	0.292
		95% Standard Bootstrap UCL	0.29
Anderson-Darling Test Statistic	1.962	95% Bootstrap-t UCL	0.352
Anderson-Darling 5% Critical Value	0.826	95% Hall's Bootstrap UCL	0.364
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	0.296
Kolmogorov-Smirnov 5% Critical Value	0.136	95% BCA Bootstrap UCL	0.325
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.442
		97.5% Chebyshev(Mean, Sd) UCL	0.548
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.755
95% Approximate Gamma UCL	0.296		
95% Adjusted Gamma UCL	0.299		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.755

Result or 1/2 SDL (benzo(k)fluoranthene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	30

Raw Statistics		Log-transformed Statistics	
Minimum	0.005	Minimum of Log Data	-5.298
Maximum	0.73	Maximum of Log Data	-0.315
Mean	0.0659	Mean of log Data	-3.783
Median	0.009	SD of log Data	1.455

SD	0.119		
Coefficient of Variation	1.813		
Skewness	4.12		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk Test Statistic	0.807
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0948	95% H-UCL	0.12
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.138
95% Adjusted-CLT UCL	0.105	97.5% Chebyshev (MVUE) UCL	0.171
95% Modified-t UCL	0.0965	99% Chebyshev (MVUE) UCL	0.235
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.561	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.117		
nu star	53.85		
Approximate Chi Square Value (.05)	37.99	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0942
Adjusted Chi Square Value	37.57	95% Jackknife UCL	0.0948
		95% Standard Bootstrap UCL	0.0947
Anderson-Darling Test Statistic	4.058	95% Bootstrap-t UCL	0.121
Anderson-Darling 5% Critical Value	0.807	95% Hall's Bootstrap UCL	0.229
Kolmogorov-Smirnov Test Statistic	0.333	95% Percentile Bootstrap UCL	0.0971
Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	0.112
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.141
		97.5% Chebyshev(Mean, Sd) UCL	0.174
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.237
95% Approximate Gamma UCL	0.0934		
95% Adjusted Gamma UCL	0.0944		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.237

Result or 1/2 SDL (beryllium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	36

Raw Statistics		Log-transformed Statistics	
Minimum	0.28	Minimum of Log Data	-1.273
Maximum	1.37	Maximum of Log Data	0.315
Mean	0.894	Mean of log Data	-0.144
Median	0.93	SD of log Data	0.269
SD	0.206		
Coefficient of Variation	0.23		
Skewness	-0.364		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.943	95% H-UCL	0.962
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.051
95% Adjusted-CLT UCL	0.941	97.5% Chebyshev (MVUE) UCL	1.118
95% Modified-t UCL	0.943	99% Chebyshev (MVUE) UCL	1.249
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	15.18	Data appear Normal at 5% Significance Level	
Theta Star	0.0589		
nu star	1457		
Approximate Chi Square Value (.05)	1369	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.942
Adjusted Chi Square Value	1367	95% Jackknife UCL	0.943
		95% Standard Bootstrap UCL	0.942
Anderson-Darling Test Statistic	0.763	95% Bootstrap-t UCL	0.939
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	0.939
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL	0.942
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	0.938
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.023
		97.5% Chebyshev(Mean, Sd) UCL	1.079
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.189
95% Approximate Gamma UCL	0.951		
95% Adjusted Gamma UCL	0.953		
Potential UCL to Use		Use 95% Student's-t UCL	0.943

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	46
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.58	Minimum of Log Data	-0.545
Maximum	46.2	Maximum of Log Data	3.833
Mean	14.49	Mean of log Data	2.02
Median	11.4	SD of log Data	1.466
SD	12.22		
Coefficient of Variation	0.844		
Skewness	0.839		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.901	Shapiro Wilk Test Statistic	0.8
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	17.45	95% H-UCL	40.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.66
95% Adjusted-CLT UCL	17.62	97.5% Chebyshev (MVUE) UCL	57.72
95% Modified-t UCL	17.48	99% Chebyshev (MVUE) UCL	79.44
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.853	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	16.98		
nu star	81.9		
Approximate Chi Square Value (.05)	62.05	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	17.39
Adjusted Chi Square Value	61.51	95% Jackknife UCL	17.45
		95% Standard Bootstrap UCL	17.3
Anderson-Darling Test Statistic	1.863	95% Bootstrap-t UCL	17.73
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	17.66
Kolmogorov-Smirnov Test Statistic	0.164	95% Percentile Bootstrap UCL	17.35
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	17.58
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.18
		97.5% Chebyshev(Mean, Sd) UCL	25.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.04
95% Approximate Gamma UCL	19.12		
95% Adjusted Gamma UCL	19.29		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	32.04

Result or 1/2 SDL (cadmium)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	35
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0029	Minimum of Log Data	-5.843
Maximum	0.48	Maximum of Log Data	-0.734
Mean	0.103	Mean of log Data	-3.439
Median	0.0158	SD of log Data	1.593
SD	0.146		
Coefficient of Variation	1.423		
Skewness	1.467		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.691	Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.138	95% H-UCL	0.231
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.254
95% Adjusted-CLT UCL	0.142	97.5% Chebyshev (MVUE) UCL	0.317
95% Modified-t UCL	0.139	99% Chebyshev (MVUE) UCL	0.442

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.52	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.198		
nu star	49.9		
Approximate Chi Square Value (.05)	34.68	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.137
Adjusted Chi Square Value	34.29	95% Jackknife UCL	0.138
		95% Standard Bootstrap UCL	0.139
Anderson-Darling Test Statistic	3.459	95% Bootstrap-t UCL	0.148
Anderson-Darling 5% Critical Value	0.81	95% Hall's Bootstrap UCL	0.144
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL	0.137
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	0.142
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.195
		97.5% Chebyshev(Mean, Sd) UCL	0.235
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.313
95% Approximate Gamma UCL	0.148		
95% Adjusted Gamma UCL	0.15		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.313

Result or 1/2 SDL (carbazole)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	35

Raw Statistics		Log-transformed Statistics	
Minimum	0.0040	Minimum of Log Data	-5.507
Maximum	0.141	Maximum of Log Data	-1.959
Mean	0.0192	Mean of log Data	-4.698
Median	0.0055	SD of log Data	1.042
SD	0.0315		
Coefficient of Variation	1.637		
Skewness	2.515		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.54	Shapiro Wilk Test Statistic	0.683
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0269	95% H-UCL	0.0225
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0274
95% Adjusted-CLT UCL	0.0285	97.5% Chebyshev (MVUE) UCL	0.0326
95% Modified-t UCL	0.0271	99% Chebyshev (MVUE) UCL	0.0428

Gamma Distribution Test		Data Distribution
k star (bias corrected)	0.759	Data do not follow a Discernable Distribution (0.05)
Theta Star	0.0253	
nu star	72.88	

Approximate Chi Square Value (.05)	54.22	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0267
Adjusted Chi Square Value	53.72	95% Jackknife UCL	0.0269
		95% Standard Bootstrap UCL	0.0266
Anderson-Darling Test Statistic	8.173	95% Bootstrap-t UCL	0.0305
Anderson-Darling 5% Critical Value	0.79	95% Hall's Bootstrap UCL	0.0283
Kolmogorov-Smirnov Test Statistic	0.369	95% Percentile Bootstrap UCL	0.0274
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0287
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0391
		97.5% Chebyshev(Mean, Sd) UCL	0.0476
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0645
95% Approximate Gamma UCL	0.0259		
95% Adjusted Gamma UCL	0.0261		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0645

Result or 1/2 SDL (carbon disulfide)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	38

Raw Statistics		Log-transformed Statistics	
Minimum	5.9000E-5	Minimum of Log Data	-9.738
Maximum	0.0069	Maximum of Log Data	-4.963
Mean	5.2498E-4	Mean of log Data	-9.042
Median	7.1500E-5	SD of log Data	1.244
SD	0.0014		
Coefficient of Variation	2.753		
Skewness	3.417		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.369	Shapiro Wilk Test Statistic	0.526
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.7506E-4	95% H-UCL	4.1104E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.9331E-4
95% Adjusted-CLT UCL	9.7810E-4	97.5% Chebyshev (MVUE) UCL	5.9875E-4
95% Modified-t UCL	8.9220E-4	99% Chebyshev (MVUE) UCL	8.0588E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.422	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0012		
nu star	40.53		
Approximate Chi Square Value (.05)	26.94	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	8.6816E-4
Adjusted Chi Square Value	26.6	95% Jackknife UCL	8.7506E-4
		95% Standard Bootstrap UCL	8.6161E-4
Anderson-Darling Test Statistic	12.67	95% Bootstrap-t UCL	0.0011

Anderson-Darling 5% Critical Value	0.829	95% Hall's Bootstrap UCL	8.5064E-4
Kolmogorov-Smirnov Test Statistic	0.433	95% Percentile Bootstrap UCL	9.0636E-4
Kolmogorov-Smirnov 5% Critical Value	0.136	95% BCA Bootstrap UCL	9.8527E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0014
		97.5% Chebyshev(Mean, Sd) UCL	0.0018
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0026
95% Approximate Gamma UCL	7.8974E-4		
95% Adjusted Gamma UCL	7.9995E-4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0026

Result or 1/2 SDL (chromium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	42

Raw Statistics		**Log-transformed Statistics**	
Minimum	8.96	Minimum of Log Data	2.193
Maximum	44.6	Maximum of Log Data	3.798
Mean	15.07	Mean of log Data	2.667
Median	14.1	SD of log Data	0.286
SD	5.536		
Coefficient of Variation	0.367		
Skewness	3.399		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.716	Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.41	95% H-UCL	16.14
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.73
95% Adjusted-CLT UCL	16.81	97.5% Chebyshev (MVUE) UCL	18.91
95% Modified-t UCL	16.48	99% Chebyshev (MVUE) UCL	21.24
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	10.44	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.443		
nu star	1003		
Approximate Chi Square Value (.05)	930.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	16.39
Adjusted Chi Square Value	928	95% Jackknife UCL	16.41
		95% Standard Bootstrap UCL	16.4
Anderson-Darling Test Statistic	1.41	95% Bootstrap-t UCL	17.14
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	22.68
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	16.47
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	16.94
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18.56
		97.5% Chebyshev(Mean, Sd) UCL	20.06

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23.02
95% Approximate Gamma UCL	16.25		
95% Adjusted Gamma UCL	16.29		
Potential UCL to Use		Use 95% Student's-t UCL	16.41
		or 95% Modified-t UCL	16.48

Result or 1/2 SDL (chromium vi)

General Statistics

Number of Valid Samples	25	Number of Unique Samples	25

Raw Statistics		Log-transformed Statistics	
Minimum	0.181	Minimum of Log Data	-1.712
Maximum	4.04	Maximum of Log Data	1.396
Mean	0.956	Mean of log Data	-0.684
Median	0.284	SD of log Data	1.105
SD	1.207		
Coefficient of Variation	1.263		
Skewness	1.817		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.672	Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.369	95% H-UCL	1.686
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.894
95% Adjusted-CLT UCL	1.447	97.5% Chebyshev (MVUE) UCL	2.326
95% Modified-t UCL	1.383	99% Chebyshev (MVUE) UCL	3.174
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.831	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.15		
nu star	41.53		
Approximate Chi Square Value (.05)	27.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0395	95% CLT UCL	1.353
Adjusted Chi Square Value	26.99	95% Jackknife UCL	1.369
		95% Standard Bootstrap UCL	1.353
Anderson-Darling Test Statistic	2.142	95% Bootstrap-t UCL	1.559
Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	1.396
Kolmogorov-Smirnov Test Statistic	0.254	95% Percentile Bootstrap UCL	1.33
Kolmogorov-Smirnov 5% Critical Value	0.18	95% BCA Bootstrap UCL	1.459
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.008
		97.5% Chebyshev(Mean, Sd) UCL	2.463
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.358
95% Approximate Gamma UCL	1.43		
95% Adjusted Gamma UCL	1.47		

Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	3.358

Result or 1/2 SDL (chrysene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0037	Minimum of Log Data	-5.579
Maximum	4.05	Maximum of Log Data	1.399
Mean	0.217	Mean of log Data	-3.867
Median	0.0077	SD of log Data	1.845
SD	0.715		
Coefficient of Variation	3.295		
Skewness	4.448		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.344	Shapiro Wilk Test Statistic	0.809
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.39	95% H-UCL	0.284
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.278
95% Adjusted-CLT UCL	0.457	97.5% Chebyshev (MVUE) UCL	0.353
95% Modified-t UCL	0.401	99% Chebyshev (MVUE) UCL	0.499
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.291	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.746		
nu star	27.93		
Approximate Chi Square Value (.05)	16.88	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.387
Adjusted Chi Square Value	16.61	95% Jackknife UCL	0.39
		95% Standard Bootstrap UCL	0.386
Anderson-Darling Test Statistic	6.798	95% Bootstrap-t UCL	0.914
Anderson-Darling 5% Critical Value	0.864	95% Hall's Bootstrap UCL	1.021
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	0.395
Kolmogorov-Smirnov 5% Critical Value	0.139	95% BCA Bootstrap UCL	0.484
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.667
		97.5% Chebyshev(Mean, Sd) UCL	0.861
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.244
95% Approximate Gamma UCL	0.359		
95% Adjusted Gamma UCL	0.365		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.244

Result or 1/2 SDL (cobalt)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	46
Raw Statistics		**Log-transformed Statistics**	
Minimum	3	Minimum of Log Data	1.099
Maximum	9.89	Maximum of Log Data	2.292
Mean	6.977	Mean of log Data	1.92
Median	7.29	SD of log Data	0.223
SD	1.408		
Coefficient of Variation	0.202		
Skewness	-0.339		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Test Statistic	0.927
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	7.318	95% H-UCL	7.397
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.977
95% Adjusted-CLT UCL	7.3	97.5% Chebyshev (MVUE) UCL	8.405
95% Modified-t UCL	7.316	99% Chebyshev (MVUE) UCL	9.245
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	21.03	**Data appear Normal at 5% Significance Level**	
Theta Star	0.332		
nu star	2019		
Approximate Chi Square Value (.05)	1915	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	7.311
Adjusted Chi Square Value	1912	95% Jackknife UCL	7.318
		95% Standard Bootstrap UCL	7.303
Anderson-Darling Test Statistic	0.753	95% Bootstrap-t UCL	7.303
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	7.301
Kolmogorov-Smirnov Test Statistic	0.15	95% Percentile Bootstrap UCL	7.294
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	7.295
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.863
		97.5% Chebyshev(Mean, Sd) UCL	8.246
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.999
95% Approximate Gamma UCL	7.353		
95% Adjusted Gamma UCL	7.365		
Potential UCL to Use		Use 95% Student's-t UCL	7.318

Result or 1/2 SDL (copper)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	44
Raw Statistics		**Log-transformed Statistics**	
Minimum	5.44	Minimum of Log Data	1.694

Maximum	49	Maximum of Log Data	3.892
Mean	14.49	Mean of log Data	2.553
Median	13.15	SD of log Data	0.471
SD	8.49		
Coefficient of Variation	0.586		
Skewness	2.371		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.755	Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.55	95% H-UCL	16.31
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.75
95% Adjusted-CLT UCL	16.96	97.5% Chebyshev (MVUE) UCL	20.66
95% Modified-t UCL	16.62	99% Chebyshev (MVUE) UCL	24.43
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.055	Data appear Lognormal at 5% Significance Level	
Theta Star	3.574		
nu star	389.3		
Approximate Chi Square Value (.05)	344.6	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	16.51
Adjusted Chi Square Value	343.3	95% Jackknife UCL	16.55
		95% Standard Bootstrap UCL	16.5
Anderson-Darling Test Statistic	1.342	95% Bootstrap-t UCL	17.15
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	17.64
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	16.71
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	17.17
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.83
		97.5% Chebyshev(Mean, Sd) UCL	22.14
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.68
95% Approximate Gamma UCL	16.37		
95% Adjusted Gamma UCL	16.43		
Potential UCL to Use		Use 95% Student's-t UCL	16.55
		or 95% Modified-t UCL	16.62
		or 95% H-UCL	16.31

Result or 1/2 SDL (dibenz(a,h)anthracene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	39

Raw Statistics		Log-transformed Statistics	
Minimum	0.0031	Minimum of Log Data	-5.752
Maximum	2.91	Maximum of Log Data	1.068
Mean	0.203	Mean of log Data	-3.828
Median	0.0188	SD of log Data	1.8

SD	0.625		
Coefficient of Variation	3.076		
Skewness	3.829		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.355	Shapiro Wilk Test Statistic	0.83
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.354	95% H-UCL	0.262
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.263
95% Adjusted-CLT UCL	0.405	97.5% Chebyshev (MVUE) UCL	0.333
95% Modified-t UCL	0.363	99% Chebyshev (MVUE) UCL	0.47
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.302	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.672		
nu star	29.01		
Approximate Chi Square Value (.05)	17.72	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.351
Adjusted Chi Square Value	17.44	95% Jackknife UCL	0.354
		95% Standard Bootstrap UCL	0.356
Anderson-Darling Test Statistic	6.795	95% Bootstrap-t UCL	0.558
Anderson-Darling 5% Critical Value	0.86	95% Hall's Bootstrap UCL	0.358
Kolmogorov-Smirnov Test Statistic	0.33	95% Percentile Bootstrap UCL	0.371
Kolmogorov-Smirnov 5% Critical Value	0.139	95% BCA Bootstrap UCL	0.421
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.596
		97.5% Chebyshev(Mean, Sd) UCL	0.766
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.1
95% Approximate Gamma UCL	0.333		
95% Adjusted Gamma UCL	0.338		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.1

Result or 1/2 SDL (dibenzofuran)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	39

Raw Statistics		Log-transformed Statistics	
Minimum	0.0025	Minimum of Log Data	-5.98
Maximum	0.08	Maximum of Log Data	-2.526
Mean	0.0139	Mean of log Data	-4.779
Median	0.0079	SD of log Data	0.932
SD	0.0176		
Coefficient of Variation	1.267		
Skewness	2.343		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.626	Shapiro Wilk Test Statistic	0.877
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0182	95% H-UCL	0.0176
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0215
95% Adjusted-CLT UCL	0.019	97.5% Chebyshev (MVUE) UCL	0.0253
95% Modified-t UCL	0.0183	99% Chebyshev (MVUE) UCL	0.0326
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.075	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0129		
nu star	103.2		
Approximate Chi Square Value (.05)	80.74	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0181
Adjusted Chi Square Value	80.12	95% Jackknife UCL	0.0182
		95% Standard Bootstrap UCL	0.0179
Anderson-Darling Test Statistic	3.619	95% Bootstrap-t UCL	0.0192
Anderson-Darling 5% Critical Value	0.776	95% Hall's Bootstrap UCL	0.0184
Kolmogorov-Smirnov Test Statistic	0.281	95% Percentile Bootstrap UCL	0.0181
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	0.0191
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.025
		97.5% Chebyshev(Mean, Sd) UCL	0.0298
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0392
95% Approximate Gamma UCL	0.0178		
95% Adjusted Gamma UCL	0.0179		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.025

Result or 1/2 SDL (endosulfan sulfate)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	45
Raw Statistics		**Log-transformed Statistics**	
Minimum	1.4450E-4	Minimum of Log Data	-8.842
Maximum	0.06	Maximum of Log Data	-2.813
Mean	0.0018	Mean of log Data	-8.104
Median	2.1800E-4	SD of log Data	1.163
SD	0.0087		
Coefficient of Variation	4.664		
Skewness	6.541		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.213	Shapiro Wilk Test Statistic	0.552
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0039	95% H-UCL	9.0895E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0011
95% Adjusted-CLT UCL	0.0052	97.5% Chebyshev (MVUE) UCL	0.0013
95% Modified-t UCL	0.0041	99% Chebyshev (MVUE) UCL	0.0017
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.357	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0052		
nu star	34.27		
Approximate Chi Square Value (.05)	21.88	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0039
Adjusted Chi Square Value	21.57	95% Jackknife UCL	0.0039
		95% Standard Bootstrap UCL	0.0039
Anderson-Darling Test Statistic	13.04	95% Bootstrap-t UCL	0.0147
Anderson-Darling 5% Critical Value	0.846	95% Hall's Bootstrap UCL	0.0151
Kolmogorov-Smirnov Test Statistic	0.466	95% Percentile Bootstrap UCL	0.0042
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	0.0067
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0073
		97.5% Chebyshev(Mean, Sd) UCL	0.0097
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0144
95% Approximate Gamma UCL	0.0029		
95% Adjusted Gamma UCL	0.0029		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0144

Result or 1/2 SDL (endrin aldehyde)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	46
Raw Statistics		**Log-transformed Statistics**	
Minimum	1.9700E-4	Minimum of Log Data	-8.532
Maximum	0.01	Maximum of Log Data	-4.605
Mean	0.0010	Mean of log Data	-7.755
Median	2.8000E-4	SD of log Data	1.09
SD	0.0022		
Coefficient of Variation	2.063		
Skewness	3.106		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.449	Shapiro Wilk Test Statistic	0.678
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0016	95% H-UCL	0.0011
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0013
95% Adjusted-CLT UCL	0.0017	97.5% Chebyshev (MVUE) UCL	0.0016
95% Modified-t UCL	0.0016	99% Chebyshev (MVUE) UCL	0.0021

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.626	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0017		
nu star	60.13		
Approximate Chi Square Value (.05)	43.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0016
Adjusted Chi Square Value	42.86	95% Jackknife UCL	0.0016
		95% Standard Bootstrap UCL	0.0016
Anderson-Darling Test Statistic	8.68	95% Bootstrap-t UCL	0.0019
Anderson-Darling 5% Critical Value	0.8	95% Hall's Bootstrap UCL	0.0017
Kolmogorov-Smirnov Test Statistic	0.36	95% Percentile Bootstrap UCL	0.0016
Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	0.0017
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0025
		97.5% Chebyshev(Mean, Sd) UCL	0.0031
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0043
95% Approximate Gamma UCL	0.0015		
95% Adjusted Gamma UCL	0.0015		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0043

Result or 1/2 SDL (endrin ketone)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	47
Raw Statistics		**Log-transformed Statistics**	
Minimum	1.8950E-4	Minimum of Log Data	-8.571
Maximum	0.013	Maximum of Log Data	-4.343
Mean	7.8543E-4	Mean of log Data	-7.945
Median	2.7550E-4	SD of log Data	0.865
SD	0.0020		
Coefficient of Variation	2.622		
Skewness	5.076		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.31	Shapiro Wilk Test Statistic	0.565
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0012	95% H-UCL	6.7884E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.2500E-4
95% Adjusted-CLT UCL	0.0015	97.5% Chebyshev (MVUE) UCL	9.6143E-4
95% Modified-t UCL	0.0013	99% Chebyshev (MVUE) UCL	0.0012
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.719	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0010		
nu star	68.98		

Approximate Chi Square Value (.05)	50.86	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0012
Adjusted Chi Square Value	50.38	95% Jackknife UCL	0.0012
		95% Standard Bootstrap UCL	0.0012
Anderson-Darling Test Statistic	11.56	95% Bootstrap-t UCL	0.0024
Anderson-Darling 5% Critical Value	0.792	95% Hall's Bootstrap UCL	0.0028
Kolmogorov-Smirnov Test Statistic	0.412	95% Percentile Bootstrap UCL	0.0013
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0016
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0020
		97.5% Chebyshev(Mean, Sd) UCL	0.0026
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0037
95% Approximate Gamma UCL	0.0010		
95% Adjusted Gamma UCL	0.0010		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0020

Result or 1/2 SDL (fluoranthene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	34
Raw Statistics		Log-transformed Statistics	
Minimum	0.0032	Minimum of Log Data	-5.734
Maximum	2.17	Maximum of Log Data	0.775
Mean	0.108	Mean of log Data	-4.039
Median	0.0065	SD of log Data	1.566
SD	0.368		
Coefficient of Variation	3.399		
Skewness	4.909		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.198	95% H-UCL	0.119
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.132
95% Adjusted-CLT UCL	0.236	97.5% Chebyshev (MVUE) UCL	0.165
95% Modified-t UCL	0.204	99% Chebyshev (MVUE) UCL	0.229
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.358	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.302		
nu star	34.4		
Approximate Chi Square Value (.05)	21.98	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.196
Adjusted Chi Square Value	21.67	95% Jackknife UCL	0.198
		95% Standard Bootstrap UCL	0.196
Anderson-Darling Test Statistic	6.501	95% Bootstrap-t UCL	0.656

Anderson-Darling 5% Critical Value	0.846	95% Hall's Bootstrap UCL	0.596
Kolmogorov-Smirnov Test Statistic	0.282	95% Percentile Bootstrap UCL	0.206
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	0.264
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.34
		97.5% Chebyshev(Mean, Sd) UCL	0.44
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.637
95% Approximate Gamma UCL	0.17		
95% Adjusted Gamma UCL	0.172		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.637

Result or 1/2 SDL (fluorene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	38

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0033	Minimum of Log Data	-5.715
Maximum	0.139	Maximum of Log Data	-1.973
Mean	0.0186	Mean of log Data	-4.783
Median	0.0055	SD of log Data	1.084
SD	0.0314		
Coefficient of Variation	1.687		
Skewness	2.593		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.54	Shapiro Wilk Test Statistic	0.73
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0262	95% H-UCL	0.022
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0268
95% Adjusted-CLT UCL	0.0279	97.5% Chebyshev (MVUE) UCL	0.0321
95% Modified-t UCL	0.0265	99% Chebyshev (MVUE) UCL	0.0423
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.717	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0259		
nu star	68.81		
Approximate Chi Square Value (.05)	50.71	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.026
Adjusted Chi Square Value	50.23	95% Jackknife UCL	0.0262
		95% Standard Bootstrap UCL	0.0258
Anderson-Darling Test Statistic	7.338	95% Bootstrap-t UCL	0.0295
Anderson-Darling 5% Critical Value	0.792	95% Hall's Bootstrap UCL	0.0286
Kolmogorov-Smirnov Test Statistic	0.359	95% Percentile Bootstrap UCL	0.0263
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0287
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0383
		97.5% Chebyshev(Mean, Sd) UCL	0.0469

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0637
95% Approximate Gamma UCL	0.0252		
95% Adjusted Gamma UCL	0.0255		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0637

Result or 1/2 SDL (gamma-chlordane)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	45

Raw Statistics		Log-transformed Statistics	
Minimum	1.2000E-4	Minimum of Log Data	-9.028
Maximum	0.0036	Maximum of Log Data	-5.627
Mean	4.0476E-4	Mean of log Data	-8.298
Median	2.1800E-4	SD of log Data	0.781
SD	6.7074E-4		
Coefficient of Variation	1.657		
Skewness	3.738		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.435	Shapiro Wilk Test Statistic	0.75
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.6720E-4	95% H-UCL	4.2977E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.1879E-4
95% Adjusted-CLT UCL	6.1982E-4	97.5% Chebyshev (MVUE) UCL	5.9820E-4
95% Modified-t UCL	5.7591E-4	99% Chebyshev (MVUE) UCL	7.5419E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.11	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.6480E-4		
nu star	106.5		
Approximate Chi Square Value (.05)	83.7	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	5.6400E-4
Adjusted Chi Square Value	83.07	95% Jackknife UCL	5.6720E-4
		95% Standard Bootstrap UCL	5.6162E-4
Anderson-Darling Test Statistic	6.585	95% Bootstrap-t UCL	7.3616E-4
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	6.0334E-4
Kolmogorov-Smirnov Test Statistic	0.299	95% Percentile Bootstrap UCL	5.7445E-4
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	6.5255E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.2676E-4
		97.5% Chebyshev(Mean, Sd) UCL	0.0010
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0013
95% Approximate Gamma UCL	5.1511E-4		
95% Adjusted Gamma UCL	5.1899E-4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	8.2676E-4

Result or 1/2 SDL (indeno(1,2,3-cd)pyrene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	40

Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	1.94	Maximum of Log Data	0.663
Mean	0.201	Mean of log Data	-3.037
Median	0.0629	SD of log Data	1.674
SD	0.407		
Coefficient of Variation	2.025		
Skewness	2.987		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.535	Shapiro Wilk Test Statistic	0.888
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.299	95% H-UCL	0.419
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.446
95% Adjusted-CLT UCL	0.324	97.5% Chebyshev (MVUE) UCL	0.56
95% Modified-t UCL	0.304	99% Chebyshev (MVUE) UCL	0.784
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.437	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.46		
nu star	41.91		
Approximate Chi Square Value (.05)	28.07	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.297
Adjusted Chi Square Value	27.72	95% Jackknife UCL	0.299
		95% Standard Bootstrap UCL	0.294
Anderson-Darling Test Statistic	3.169	95% Bootstrap-t UCL	0.344
Anderson-Darling 5% Critical Value	0.826	95% Hall's Bootstrap UCL	0.329
Kolmogorov-Smirnov Test Statistic	0.199	95% Percentile Bootstrap UCL	0.308
Kolmogorov-Smirnov 5% Critical Value	0.136	95% BCA Bootstrap UCL	0.325
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.457
		97.5% Chebyshev(Mean, Sd) UCL	0.567
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.785
95% Approximate Gamma UCL	0.3		
95% Adjusted Gamma UCL	0.304		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.785

Result or 1/2 SDL (iron)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	37

Raw Statistics		Log-transformed Statistics	
Minimum	11100	Minimum of Log Data	9.315
Maximum	60900	Maximum of Log Data	11.02
Mean	17152	Mean of log Data	9.71
Median	16650	SD of log Data	0.25
SD	6903		
Coefficient of Variation	0.402		
Skewness	5.582		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.466	Shapiro Wilk Test Statistic	0.759
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	18824	95% H-UCL	18113
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19692
95% Adjusted-CLT UCL	19649	97.5% Chebyshev (MVUE) UCL	20862
95% Modified-t UCL	18958	99% Chebyshev (MVUE) UCL	23161
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	11.83	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1450		
nu star	1135		
Approximate Chi Square Value (.05)	1058	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	18791
Adjusted Chi Square Value	1056	95% Jackknife UCL	18824
		95% Standard Bootstrap UCL	18743
Anderson-Darling Test Statistic	3.403	95% Bootstrap-t UCL	20880
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	25732
Kolmogorov-Smirnov Test Statistic	0.204	95% Percentile Bootstrap UCL	18919
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	20054
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21495
		97.5% Chebyshev(Mean, Sd) UCL	23374
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27065
95% Approximate Gamma UCL	18404		
95% Adjusted Gamma UCL	18444		
Potential UCL to Use		Use 95% Student's-t UCL	18824
		or 95% Modified-t UCL	18958

Result or 1/2 SDL (lead)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	45

Raw Statistics		Log-transformed Statistics	
Minimum	9.4	Minimum of Log Data	2.241

Maximum	237	Maximum of Log Data	5.468
Mean	25.36	Mean of log Data	2.969
Median	16.7	SD of log Data	0.571
SD	34.13		
Coefficient of Variation	1.346		
Skewness	5.449		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.385	Shapiro Wilk Test Statistic	0.778
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	33.62	95% H-UCL	26.93
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.57
95% Adjusted-CLT UCL	37.6	97.5% Chebyshev (MVUE) UCL	35.35
95% Modified-t UCL	34.27	99% Chebyshev (MVUE) UCL	42.77
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.932	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	13.13		
nu star	185.5		
Approximate Chi Square Value (.05)	155	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	33.46
Adjusted Chi Square Value	154.1	95% Jackknife UCL	33.62
		95% Standard Bootstrap UCL	33.36
Anderson-Darling Test Statistic	5.696	95% Bootstrap-t UCL	50.53
Anderson-Darling 5% Critical Value	0.762	95% Hall's Bootstrap UCL	62.18
Kolmogorov-Smirnov Test Statistic	0.264	95% Percentile Bootstrap UCL	34.16
Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	39.39
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46.83
		97.5% Chebyshev(Mean, Sd) UCL	56.12
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	74.38
95% Approximate Gamma UCL	30.35		
95% Adjusted Gamma UCL	30.52		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	46.83

Result or 1/2 SDL (lithium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	43

Raw Statistics		Log-transformed Statistics	
Minimum	5.43	Minimum of Log Data	1.692
Maximum	27.6	Maximum of Log Data	3.318
Mean	18.65	Mean of log Data	2.9
Median	18.75	SD of log Data	0.25
SD	3.754		
Coefficient of Variation	0.201		

Skewness	-0.745		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.966	Shapiro Wilk Test Statistic	0.819
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	19.56	95% H-UCL	19.99
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.73
95% Adjusted-CLT UCL	19.48	97.5% Chebyshev (MVUE) UCL	23.03
95% Modified-t UCL	19.55	99% Chebyshev (MVUE) UCL	25.57
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	18.42	Data appear Normal at 5% Significance Level	
Theta Star	1.013		
nu star	1768		
Approximate Chi Square Value (.05)	1671	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	19.55
Adjusted Chi Square Value	1668	95% Jackknife UCL	19.56
		95% Standard Bootstrap UCL	19.55
Anderson-Darling Test Statistic	1.236	95% Bootstrap-t UCL	19.53
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	19.55
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL	19.51
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	19.49
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.02
		97.5% Chebyshev(Mean, Sd) UCL	22.04
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.05
95% Approximate Gamma UCL	19.73		
95% Adjusted Gamma UCL	19.77		
Potential UCL to Use		Use 95% Student's-t UCL	19.56

Result or 1/2 SDL (manganese)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	48
Raw Statistics		Log-transformed Statistics	
Minimum	87.6	Minimum of Log Data	4.473
Maximum	1010	Maximum of Log Data	6.918
Mean	331.8	Mean of log Data	5.638
Median	275	SD of log Data	0.583
SD	205.9		
Coefficient of Variation	0.621		
Skewness	1.558		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.975

Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	381.7	95% H-UCL	392.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	461.4
95% Adjusted-CLT UCL	387.8	97.5% Chebyshev (MVUE) UCL	517.6
95% Modified-t UCL	382.8	99% Chebyshev (MVUE) UCL	627.9
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.977	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	111.4		
nu star	285.8		
Approximate Chi Square Value (.05)	247.7	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	380.7
Adjusted Chi Square Value	246.6	95% Jackknife UCL	381.7
		95% Standard Bootstrap UCL	380.3
Anderson-Darling Test Statistic	0.491	95% Bootstrap-t UCL	391.8
Anderson-Darling 5% Critical Value	0.756	95% Hall's Bootstrap UCL	391.7
Kolmogorov-Smirnov Test Statistic	0.116	95% Percentile Bootstrap UCL	382.9
Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	389.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	461.3
		97.5% Chebyshev(Mean, Sd) UCL	517.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	627.5
95% Approximate Gamma UCL	382.9		
95% Adjusted Gamma UCL	384.6		
Potential UCL to Use		Use 95% Approximate Gamma UCL	382.9

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	36
Raw Statistics		Log-transformed Statistics	
Minimum	0.0012	Minimum of Log Data	-6.685
Maximum	0.081	Maximum of Log Data	-2.513
Mean	0.0199	Mean of log Data	-4.305
Median	0.0113	SD of log Data	0.893
SD	0.0194		
Coefficient of Variation	0.974		
Skewness	1.757		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.756	Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0246	95% H-UCL	0.0268

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0327
95% Adjusted-CLT UCL	0.0253	97.5% Chebyshev (MVUE) UCL	0.0382
95% Modified-t UCL	0.0247	99% Chebyshev (MVUE) UCL	0.0491
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.356	Data appear Lognormal at 5% Significance Level	
Theta Star	0.0147		
nu star	130.2		
Approximate Chi Square Value (.05)	104.8	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0245
Adjusted Chi Square Value	104.1	95% Jackknife UCL	0.0246
		95% Standard Bootstrap UCL	0.0245
Anderson-Darling Test Statistic	1.641	95% Bootstrap-t UCL	0.0254
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL	0.0252
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	0.0247
Kolmogorov-Smirnov 5% Critical Value	0.13	95% BCA Bootstrap UCL	0.0254
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0321
		97.5% Chebyshev(Mean, Sd) UCL	0.0374
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0478
95% Approximate Gamma UCL	0.0247		
95% Adjusted Gamma UCL	0.0249		
Potential UCL to Use		Use 95% H-UCL	0.0268

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		Log-transformed Statistics	
Minimum	0.037	Minimum of Log Data	-3.297
Maximum	3.24	Maximum of Log Data	1.176
Mean	0.581	Mean of log Data	-1.175
Median	0.38	SD of log Data	1.255
SD	0.677		
Coefficient of Variation	1.166		
Skewness	2.313		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.745	95% H-UCL	1.094
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.312
95% Adjusted-CLT UCL	0.776	97.5% Chebyshev (MVUE) UCL	1.593
95% Modified-t UCL	0.75	99% Chebyshev (MVUE) UCL	2.147
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	0.88	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.66		
nu star	84.46		
Approximate Chi Square Value (.05)	64.28	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.741
Adjusted Chi Square Value	63.73	95% Jackknife UCL	0.745
		95% Standard Bootstrap UCL	0.738
Anderson-Darling Test Statistic	0.995	95% Bootstrap-t UCL	0.793
Anderson-Darling 5% Critical Value	0.783	95% Hall's Bootstrap UCL	0.796
Kolmogorov-Smirnov Test Statistic	0.126	95% Percentile Bootstrap UCL	0.746
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	0.777
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.006
		97.5% Chebyshev(Mean, Sd) UCL	1.191
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.553
95% Approximate Gamma UCL	0.763		
95% Adjusted Gamma UCL	0.769		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.763

Result or 1/2 SDL (nickel)

General Statistics			
Number of Valid Samples	50	Number of Unique Samples	43
Raw Statistics		Log-transformed Statistics	
Minimum	10.9	Minimum of Log Data	2.389
Maximum	27.7	Maximum of Log Data	3.321
Mean	17.29	Mean of log Data	2.831
Median	17.3	SD of log Data	0.197
SD	3.391		
Coefficient of Variation	0.196		
Skewness	0.421		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Test Statistic	0.979
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.09	95% H-UCL	18.15
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.41
95% Adjusted-CLT UCL	18.11	97.5% Chebyshev (MVUE) UCL	20.33
95% Modified-t UCL	18.09	99% Chebyshev (MVUE) UCL	22.13
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	25.02	Data appear Normal at 5% Significance Level	
Theta Star	0.691		
nu star	2502		
Approximate Chi Square Value (.05)	2387	Nonparametric Statistics	
Adjusted Level of Significance	0.0452	95% CLT UCL	18.07

Adjusted Chi Square Value	2383	95% Jackknife UCL	18.09
		95% Standard Bootstrap UCL	18.07
Anderson-Darling Test Statistic	0.338	95% Bootstrap-t UCL	18.09
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	18.12
Kolmogorov-Smirnov Test Statistic	0.0827	95% Percentile Bootstrap UCL	18.04
Kolmogorov-Smirnov 5% Critical Value	0.125	95% BCA Bootstrap UCL	18.05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.38
		97.5% Chebyshev(Mean, Sd) UCL	20.28
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.06
95% Approximate Gamma UCL	18.12		
95% Adjusted Gamma UCL	18.15		
Potential UCL to Use		Use 95% Student's-t UCL	18.09

Result or 1/2 SDL (phenanthrene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	41

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0030	Minimum of Log Data	-5.783
Maximum	1.3	Maximum of Log Data	0.262
Mean	0.0761	Mean of log Data	-4.26
Median	0.0070	SD of log Data	1.508
SD	0.248		
Coefficient of Variation	3.26		
Skewness	4.606		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.84
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.136	95% H-UCL	0.0837
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0947
95% Adjusted-CLT UCL	0.16	97.5% Chebyshev (MVUE) UCL	0.118
95% Modified-t UCL	0.14	99% Chebyshev (MVUE) UCL	0.162
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.381	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.2		
nu star	36.62		
Approximate Chi Square Value (.05)	23.77	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	0.135
Adjusted Chi Square Value	23.45	95% Jackknife UCL	0.136
		95% Standard Bootstrap UCL	0.136
Anderson-Darling Test Statistic	5.99	95% Bootstrap-t UCL	0.472
Anderson-Darling 5% Critical Value	0.84	95% Hall's Bootstrap UCL	0.43
Kolmogorov-Smirnov Test Statistic	0.276	95% Percentile Bootstrap UCL	0.139

Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	0.161
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.232
		97.5% Chebyshev(Mean, Sd) UCL	0.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.432
95% Approximate Gamma UCL	0.117		
95% Adjusted Gamma UCL	0.119		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.432

Result or 1/2 SDL (pyrene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	38
Raw Statistics		Log-transformed Statistics	
Minimum	0.0040	Minimum of Log Data	-5.502
Maximum	1.64	Maximum of Log Data	0.495
Mean	0.154	Mean of log Data	-3.58
Median	0.0113	SD of log Data	1.729
SD	0.355		
Coefficient of Variation	2.305		
Skewness	3.1		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.48	Shapiro Wilk Test Statistic	0.843
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.24	95% H-UCL	0.279
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.29
95% Adjusted-CLT UCL	0.263	97.5% Chebyshev (MVUE) UCL	0.366
95% Modified-t UCL	0.244	99% Chebyshev (MVUE) UCL	0.514
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.377	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.408		
nu star	36.18		
Approximate Chi Square Value (.05)	23.41	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.238
Adjusted Chi Square Value	23.1	95% Jackknife UCL	0.24
		95% Standard Bootstrap UCL	0.236
Anderson-Darling Test Statistic	4.849	95% Bootstrap-t UCL	0.29
Anderson-Darling 5% Critical Value	0.841	95% Hall's Bootstrap UCL	0.247
Kolmogorov-Smirnov Test Statistic	0.256	95% Percentile Bootstrap UCL	0.242
Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	0.272
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.377
		97.5% Chebyshev(Mean, Sd) UCL	0.474
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.663
95% Approximate Gamma UCL	0.238		

95% Adjusted Gamma UCL	0.241		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.663

Result or 1/2 SDL (strontium)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	47
Raw Statistics		**Log-transformed Statistics**	
Minimum	18.8	Minimum of Log Data	2.934
Maximum	330	Maximum of Log Data	5.799
Mean	67	Mean of log Data	4.025
Median	54	SD of log Data	0.557
SD	52.81		
Coefficient of Variation	0.788		
Skewness	3.229		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.671	Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	79.79	95% H-UCL	76.38
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	89.28
95% Adjusted-CLT UCL	83.33	97.5% Chebyshev (MVUE) UCL	99.75
95% Modified-t UCL	80.38	99% Chebyshev (MVUE) UCL	120.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.764	Data appear Lognormal at 5% Significance Level	
Theta Star	24.24		
nu star	265.3		
Approximate Chi Square Value (.05)	228.6	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	79.53
Adjusted Chi Square Value	227.6	95% Jackknife UCL	79.79
		95% Standard Bootstrap UCL	79.52
Anderson-Darling Test Statistic	1.725	95% Bootstrap-t UCL	87.35
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	98.08
Kolmogorov-Smirnov Test Statistic	0.177	95% Percentile Bootstrap UCL	80.25
Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	84.92
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	100.2
		97.5% Chebyshev(Mean, Sd) UCL	114.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	142.8
95% Approximate Gamma UCL	77.76		
95% Adjusted Gamma UCL	78.12		
Potential UCL to Use		Use 95% H-UCL	76.38

Result or 1/2 SDL (tin)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	31

Raw Statistics		Log-transformed Statistics	
Minimum	0.2	Minimum of Log Data	-1.609
Maximum	4.61	Maximum of Log Data	1.528
Mean	0.638	Mean of log Data	-0.895
Median	0.3	SD of log Data	0.728
SD	0.991		
Coefficient of Variation	1.554		
Skewness	3.165		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.408	Shapiro Wilk Test Statistic	0.62
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.877	95% H-UCL	0.663
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.795
95% Adjusted-CLT UCL	0.943	97.5% Chebyshev (MVUE) UCL	0.911
95% Modified-t UCL	0.888	99% Chebyshev (MVUE) UCL	1.137
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.199	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.532		
nu star	115.1		
Approximate Chi Square Value (.05)	91.31	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.873
Adjusted Chi Square Value	90.65	95% Jackknife UCL	0.877
		95% Standard Bootstrap UCL	0.87
Anderson-Darling Test Statistic	9.6	95% Bootstrap-t UCL	1.091
Anderson-Darling 5% Critical Value	0.773	95% Hall's Bootstrap UCL	0.828
Kolmogorov-Smirnov Test Statistic	0.344	95% Percentile Bootstrap UCL	0.872
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	0.958
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.261
		97.5% Chebyshev(Mean, Sd) UCL	1.531
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.061
95% Approximate Gamma UCL	0.803		
95% Adjusted Gamma UCL	0.809		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.261

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	44

Raw Statistics		Log-transformed Statistics	
Minimum	8.15	Minimum of Log Data	2.098
Maximum	68.7	Maximum of Log Data	4.23
Mean	29.14	Mean of log Data	3.267
Median	28	SD of log Data	0.465
SD	13.88		
Coefficient of Variation	0.476		
Skewness	1.065		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	32.5	95% H-UCL	33.16
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	38.06
95% Adjusted-CLT UCL	32.77	97.5% Chebyshev (MVUE) UCL	41.92
95% Modified-t UCL	32.55	99% Chebyshev (MVUE) UCL	49.49
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.618	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.31		
nu star	443.3		
Approximate Chi Square Value (.05)	395.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	32.44
Adjusted Chi Square Value	394.1	95% Jackknife UCL	32.5
		95% Standard Bootstrap UCL	32.46
Anderson-Darling Test Statistic	0.49	95% Bootstrap-t UCL	32.95
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	32.98
Kolmogorov-Smirnov Test Statistic	0.109	95% Percentile Bootstrap UCL	32.54
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	32.94
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	37.87
		97.5% Chebyshev(Mean, Sd) UCL	41.65
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	49.08
95% Approximate Gamma UCL	32.66		
95% Adjusted Gamma UCL	32.78		
Potential UCL to Use		Use 95% Approximate Gamma UCL	32.66

Result or 1/2 SDL (toluene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	44

Raw Statistics		Log-transformed Statistics	
Minimum	2.9700E-4	Minimum of Log Data	-8.122
Maximum	0.0064	Maximum of Log Data	-5.051
Mean	6.5492E-4	Mean of log Data	-7.638
Median	3.6725E-4	SD of log Data	0.612

SD	9.3955E-4		
Coefficient of Variation	1.435		
Skewness	5.23		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.385	Shapiro Wilk Test Statistic	0.676
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	8.8247E-4	95% H-UCL	6.9234E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.1723E-4
95% Adjusted-CLT UCL	9.8737E-4	97.5% Chebyshev (MVUE) UCL	9.2061E-4
95% Modified-t UCL	8.9953E-4	99% Chebyshev (MVUE) UCL	0.0011
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.68	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3.8993E-4		
nu star	161.2		
Approximate Chi Square Value (.05)	132.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	8.7798E-4
Adjusted Chi Square Value	132.1	95% Jackknife UCL	8.8247E-4
		95% Standard Bootstrap UCL	8.7005E-4
Anderson-Darling Test Statistic	7.505	95% Bootstrap-t UCL	0.0011
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	0.0016
Kolmogorov-Smirnov Test Statistic	0.27	95% Percentile Bootstrap UCL	8.8796E-4
Kolmogorov-Smirnov 5% Critical Value	0.13	95% BCA Bootstrap UCL	0.0010
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0012
		97.5% Chebyshev(Mean, Sd) UCL	0.0015
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.002
95% Approximate Gamma UCL	7.9468E-4		
95% Adjusted Gamma UCL	7.9947E-4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0012

Result or 1/2 SDL (vanadium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	39

Raw Statistics		Log-transformed Statistics	
Minimum	9.02	Minimum of Log Data	2.199
Maximum	32	Maximum of Log Data	3.466
Mean	21.65	Mean of log Data	3.05
Median	21.75	SD of log Data	0.233
SD	4.554		
Coefficient of Variation	0.21		
Skewness	-0.279		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.985	Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	22.75	95% H-UCL	23.03
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24.91
95% Adjusted-CLT UCL	22.7	97.5% Chebyshev (MVUE) UCL	26.31
95% Modified-t UCL	22.74	99% Chebyshev (MVUE) UCL	29.05
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	19.24	Data appear Normal at 5% Significance Level	
Theta Star	1.125		
nu star	1847		
Approximate Chi Square Value (.05)	1748	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	22.73
Adjusted Chi Square Value	1745	95% Jackknife UCL	22.75
		95% Standard Bootstrap UCL	22.71
Anderson-Darling Test Statistic	0.627	95% Bootstrap-t UCL	22.7
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	22.7
Kolmogorov-Smirnov Test Statistic	0.102	95% Percentile Bootstrap UCL	22.73
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	22.76
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	24.51
		97.5% Chebyshev(Mean, Sd) UCL	25.75
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.19
95% Approximate Gamma UCL	22.87		
95% Adjusted Gamma UCL	22.91		
Potential UCL to Use		Use 95% Student's-t UCL	22.75

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples	53	Number of Unique Samples	53
Raw Statistics		**Log-transformed Statistics**	
Minimum	31.5	Minimum of Log Data	3.45
Maximum	903	Maximum of Log Data	6.806
Mean	139.1	Mean of log Data	4.558
Median	84.3	SD of log Data	0.795
SD	160.9		
Coefficient of Variation	1.157		
Skewness	2.989		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.28	Lilliefors Test Statistic	0.133
Lilliefors Critical Value	0.122	Lilliefors Critical Value	0.122
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	176.1	95% H-UCL	165.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	199.2
95% Adjusted-CLT UCL	185.2	97.5% Chebyshev (MVUE) UCL	229.1
95% Modified-t UCL	177.6	99% Chebyshev (MVUE) UCL	288
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.4	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	99.32		
nu star	148.4		
Approximate Chi Square Value (.05)	121.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0455	95% CLT UCL	175.5
Adjusted Chi Square Value	120.6	95% Jackknife UCL	176.1
		95% Standard Bootstrap UCL	175
Anderson-Darling Test Statistic	2.607	95% Bootstrap-t UCL	193.4
Anderson-Darling 5% Critical Value	0.768	95% Hall's Bootstrap UCL	198.1
Kolmogorov-Smirnov Test Statistic	0.185	95% Percentile Bootstrap UCL	178.3
Kolmogorov-Smirnov 5% Critical Value	0.124	95% BCA Bootstrap UCL	187.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	235.5
		97.5% Chebyshev(Mean, Sd) UCL	277.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	359
95% Approximate Gamma UCL	170.2		
95% Adjusted Gamma UCL	171.2		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	235.5

APPENDIX A-9

POND SEDIMENT

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	J:\1352 - Gulfco RI\risk\eco\draft for PRP review\Appendices\Data\Pond sediment data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 SDL (2,4,6-trichlorophenol)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	7

Raw Statistics		Log-transformed Statistics	
Minimum	0.0125	Minimum of Log Data	-4.382
Maximum	0.0429	Maximum of Log Data	-3.149
Mean	0.0175	Mean of log Data	-4.145
Median	0.0135	SD of log Data	0.414
SD	0.0104		
Coefficient of Variation	0.595		
Skewness	2.728		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.534	Shapiro Wilk Test Statistic	0.62
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0244	95% H-UCL	0.0245
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.028
95% Adjusted-CLT UCL	0.0273	97.5% Chebyshev (MVUE) UCL	0.0328
95% Modified-t UCL	0.025	99% Chebyshev (MVUE) UCL	0.0421

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.43	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0050		
nu star	54.87		
Approximate Chi Square Value (.05)	38.85	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0235
Adjusted Chi Square Value	35.47	95% Jackknife UCL	0.0244
		95% Standard Bootstrap UCL	0.0231
Anderson-Darling Test Statistic	1.566	95% Bootstrap-t UCL	0.064
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	0.0513
Kolmogorov-Smirnov Test Statistic	0.368	95% Percentile Bootstrap UCL	0.0244
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	0.0254
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0334
		97.5% Chebyshev(Mean, Sd) UCL	0.0404
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.054
95% Approximate Gamma UCL	0.0246		
95% Adjusted Gamma UCL	0.027		

Potential UCL to Use		Use 95% Student's-t UCL	0.0244
		or 95% Modified-t UCL	0.025

Result or 1/2 SDL (4,4'-ddd)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	7

Raw Statistics		Log-transformed Statistics	
Minimum	2.2750E-4	Minimum of Log Data	-8.388
Maximum	0.013	Maximum of Log Data	-4.343
Mean	0.0069	Mean of log Data	-5.828
Median	0.01	SD of log Data	1.831
SD	0.0055		
Coefficient of Variation	0.794		
Skewness	-0.527		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.772	Shapiro Wilk Test Statistic	0.727
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0107	95% H-UCL	0.873
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0401
95% Adjusted-CLT UCL	0.0097	97.5% Chebyshev (MVUE) UCL	0.0529
95% Modified-t UCL	0.0106	99% Chebyshev (MVUE) UCL	0.0779
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.522	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0133		
nu star	8.359		
Approximate Chi Square Value (.05)	2.945	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0102
Adjusted Chi Square Value	2.195	95% Jackknife UCL	0.0107
		95% Standard Bootstrap UCL	0.0099
Anderson-Darling Test Statistic	1.169	95% Bootstrap-t UCL	0.0101
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	0.0092
Kolmogorov-Smirnov Test Statistic	0.388	95% Percentile Bootstrap UCL	0.0098
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0097
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0155
		97.5% Chebyshev(Mean, Sd) UCL	0.0192
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0264
95% Approximate Gamma UCL	0.0197		
95% Adjusted Gamma UCL	0.0265		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0264
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (4,4'-ddt)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	6

Raw Statistics		Log-transformed Statistics	
Minimum	0.0011	Minimum of Log Data	-6.803
Maximum	0.007	Maximum of Log Data	-4.962
Mean	0.0041	Mean of log Data	-5.717
Median	0.0055	SD of log Data	0.81
SD	0.0024		
Coefficient of Variation	0.588		
Skewness	-0.488		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.798	Shapiro Wilk Test Statistic	0.754
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0058	95% H-UCL	0.0116
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0098
95% Adjusted-CLT UCL	0.0054	97.5% Chebyshev (MVUE) UCL	0.0123
95% Modified-t UCL	0.0057	99% Chebyshev (MVUE) UCL	0.017
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.507	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0027		
nu star	24.12		
Approximate Chi Square Value (.05)	13.94	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0055
Adjusted Chi Square Value	12.03	95% Jackknife UCL	0.0058
		95% Standard Bootstrap UCL	0.0054
Anderson-Darling Test Statistic	1.03	95% Bootstrap-t UCL	0.0056
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	0.0052
Kolmogorov-Smirnov Test Statistic	0.37	95% Percentile Bootstrap UCL	0.0054
Kolmogorov-Smirnov 5% Critical Value	0.297	95% BCA Bootstrap UCL	0.0053
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0079
		97.5% Chebyshev(Mean, Sd) UCL	0.0095
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0128
95% Approximate Gamma UCL	0.0072		
95% Adjusted Gamma UCL	0.0083		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0079

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (acetone)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	3.2850E-4	Minimum of Log Data	-8.021
Maximum	0.0798	Maximum of Log Data	-2.528
Mean	0.0238	Mean of log Data	-4.85
Median	0.0213	SD of log Data	2.123
SD	0.0264		
Coefficient of Variation	1.11		
Skewness	1.474		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk Test Statistic	0.849
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0415	95% H-UCL	15.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.17
95% Adjusted-CLT UCL	0.0444	97.5% Chebyshev (MVUE) UCL	0.226
95% Modified-t UCL	0.0423	99% Chebyshev (MVUE) UCL	0.335
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.434	Data appear Normal at 5% Significance Level	
Theta Star	0.0549		
nu star	6.942		
Approximate Chi Square Value (.05)	2.139	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0392
Adjusted Chi Square Value	1.53	95% Jackknife UCL	0.0415
		95% Standard Bootstrap UCL	0.0381
Anderson-Darling Test Statistic	0.394	95% Bootstrap-t UCL	0.0495
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	0.108
Kolmogorov-Smirnov Test Statistic	0.201	95% Percentile Bootstrap UCL	0.0394
Kolmogorov-Smirnov 5% Critical Value	0.308	95% BCA Bootstrap UCL	0.0428
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0645
		97.5% Chebyshev(Mean, Sd) UCL	0.0822
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.117
95% Approximate Gamma UCL	0.0773		
95% Adjusted Gamma UCL	0.108		
Potential UCL to Use		Use 95% Student's-t UCL	0.0415

Result or 1/2 SDL (aluminum)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	7990	Minimum of Log Data	8.986
Maximum	16300	Maximum of Log Data	9.699
Mean	11748	Mean of log Data	9.334

Median	11550	SD of log Data	0.293
SD	3382		
Coefficient of Variation	0.288		
Skewness	0.211		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.892	Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	14013	95% H-UCL	14847
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17068
95% Adjusted-CLT UCL	13810	97.5% Chebyshev (MVUE) UCL	19369
95% Modified-t UCL	14028	99% Chebyshev (MVUE) UCL	23889

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.618	Data appear Normal at 5% Significance Level	
Theta Star	1363		
nu star	137.9		
Approximate Chi Square Value (.05)	111.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	13714
Adjusted Chi Square Value	105.8	95% Jackknife UCL	14013
		95% Standard Bootstrap UCL	13557
Anderson-Darling Test Statistic	0.421	95% Bootstrap-t UCL	14142
Anderson-Darling 5% Critical Value	0.715	95% Hall's Bootstrap UCL	13477
Kolmogorov-Smirnov Test Statistic	0.224	95% Percentile Bootstrap UCL	13574
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	13561
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	16959
		97.5% Chebyshev(Mean, Sd) UCL	19214
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23644
95% Approximate Gamma UCL	14494		
95% Adjusted Gamma UCL	15310		
Potential UCL to Use		Use 95% Student's-t UCL	14013

Result or 1/2 SDL (antimony)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	7

Raw Statistics		Log-transformed Statistics	
Minimum	0.33	Minimum of Log Data	-1.109
Maximum	1.85	Maximum of Log Data	0.615
Mean	0.795	Mean of log Data	-0.487
Median	0.4	SD of log Data	0.75
SD	0.618		
Coefficient of Variation	0.778		
Skewness	0.887		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk Test Statistic	0.765
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.209	95% H-UCL	1.849
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.7
95% Adjusted-CLT UCL	1.228	97.5% Chebyshev (MVUE) UCL	2.098
95% Modified-t UCL	1.221	99% Chebyshev (MVUE) UCL	2.879
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.392	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.571		
nu star	22.27		
Approximate Chi Square Value (.05)	12.54	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	1.154
Adjusted Chi Square Value	10.74	95% Jackknife UCL	1.209
		95% Standard Bootstrap UCL	1.128
Anderson-Darling Test Statistic	1.02	95% Bootstrap-t UCL	1.349
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	1.025
Kolmogorov-Smirnov Test Statistic	0.33	95% Percentile Bootstrap UCL	1.158
Kolmogorov-Smirnov 5% Critical Value	0.297	95% BCA Bootstrap UCL	1.173
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.748
		97.5% Chebyshev(Mean, Sd) UCL	2.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.97
95% Approximate Gamma UCL	1.412		
95% Adjusted Gamma UCL	1.648		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.748

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.14	Minimum of Log Data	-1.966
Maximum	5.01	Maximum of Log Data	1.611
Mean	1.735	Mean of log Data	-0.633
Median	0.168	SD of log Data	1.74
SD	2.233		
Coefficient of Variation	1.287		
Skewness	0.794		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.706	Shapiro Wilk Test Statistic	0.695
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.231	95% H-UCL	92.47
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.274
95% Adjusted-CLT UCL	3.27	97.5% Chebyshev (MVUE) UCL	8.245
95% Modified-t UCL	3.268	99% Chebyshev (MVUE) UCL	12.12
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.415	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	4.176		
nu star	6.648		
Approximate Chi Square Value (.05)	1.979	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	3.034
Adjusted Chi Square Value	1.401	95% Jackknife UCL	3.231
		95% Standard Bootstrap UCL	2.918
Anderson-Darling Test Statistic	1.258	95% Bootstrap-t UCL	4.026
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	2.692
Kolmogorov-Smirnov Test Statistic	0.385	95% Percentile Bootstrap UCL	2.917
Kolmogorov-Smirnov 5% Critical Value	0.308	95% BCA Bootstrap UCL	3.081
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.176
		97.5% Chebyshev(Mean, Sd) UCL	6.665
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.59
95% Approximate Gamma UCL	5.827		
95% Adjusted Gamma UCL	8.231		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	9.59

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (barium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	7
Raw Statistics		**Log-transformed Statistics**	
Minimum	108	Minimum of Log Data	4.682
Maximum	417	Maximum of Log Data	6.033
Mean	198.6	Mean of log Data	5.149
Median	128.5	SD of log Data	0.553
SD	119.4		
Coefficient of Variation	0.601		
Skewness	1.058		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.787	Shapiro Wilk Test Statistic	0.803
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	278.6	95% H-UCL	337.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	366.1

95% Adjusted-CLT UCL	284.9	97.5% Chebyshev (MVUE) UCL	439.5
95% Modified-t UCL	281.2	99% Chebyshev (MVUE) UCL	583.6
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.374	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	83.68		
nu star	37.98		
Approximate Chi Square Value (.05)	24.87	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	268
Adjusted Chi Square Value	22.22	95% Jackknife UCL	278.6
		95% Standard Bootstrap UCL	262.5
Anderson-Darling Test Statistic	0.846	95% Bootstrap-t UCL	326.6
Anderson-Darling 5% Critical Value	0.72	95% Hall's Bootstrap UCL	250.9
Kolmogorov-Smirnov Test Statistic	0.3	95% Percentile Bootstrap UCL	263.6
Kolmogorov-Smirnov 5% Critical Value	0.296	95% BCA Bootstrap UCL	275.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	382.6
		97.5% Chebyshev(Mean, Sd) UCL	462.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	618.5
95% Approximate Gamma UCL	303.4		
95% Adjusted Gamma UCL	339.5		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	382.6

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.005	Minimum of Log Data	-5.298
Maximum	0.106	Maximum of Log Data	-2.244
Mean	0.0477	Mean of log Data	-3.502
Median	0.0338	SD of log Data	1.186
SD	0.0385		
Coefficient of Variation	0.808		
Skewness	0.434		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Test Statistic	0.857
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0735	95% H-UCL	0.364
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.154
95% Adjusted-CLT UCL	0.0723	97.5% Chebyshev (MVUE) UCL	0.197
95% Modified-t UCL	0.0738	99% Chebyshev (MVUE) UCL	0.282
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.853	**Data appear Normal at 5% Significance Level**	

Theta Star	0.0559		
nu star	13.65		
Approximate Chi Square Value (.05)	6.332	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0701
Adjusted Chi Square Value	5.127	95% Jackknife UCL	0.0735
		95% Standard Bootstrap UCL	0.0679
Anderson-Darling Test Statistic	0.442	95% Bootstrap-t UCL	0.0754
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	0.0672
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	0.069
Kolmogorov-Smirnov 5% Critical Value	0.3	95% BCA Bootstrap UCL	0.0698
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.107
		97.5% Chebyshev(Mean, Sd) UCL	0.133
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.183
95% Approximate Gamma UCL	0.103		
95% Adjusted Gamma UCL	0.127		
Potential UCL to Use		Use 95% Student's-t UCL	0.0735

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.0075	Minimum of Log Data	-4.893
Maximum	0.135	Maximum of Log Data	-2.002
Mean	0.024	Mean of log Data	-4.466
Median	0.0079	SD of log Data	1
SD	0.0449		
Coefficient of Variation	1.871		
Skewness	2.826		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.433	Shapiro Wilk Test Statistic	0.495
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.054	95% H-UCL	0.0711
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0449
95% Adjusted-CLT UCL	0.067	97.5% Chebyshev (MVUE) UCL	0.0568
95% Modified-t UCL	0.0567	99% Chebyshev (MVUE) UCL	0.0802
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.587	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0408		
nu star	9.393		
Approximate Chi Square Value (.05)	3.566	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0501
Adjusted Chi Square Value	2.719	95% Jackknife UCL	0.054

		95% Standard Bootstrap UCL	0.0478
Anderson-Darling Test Statistic	2.272	95% Bootstrap-t UCL	2.081
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	0.889
Kolmogorov-Smirnov Test Statistic	0.49	95% Percentile Bootstrap UCL	0.0555
Kolmogorov-Smirnov 5% Critical Value	0.303	95% BCA Bootstrap UCL	0.0716
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0931
		97.5% Chebyshev(Mean, Sd) UCL	0.123
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.182
95% Approximate Gamma UCL	0.0632		
95% Adjusted Gamma UCL	0.0828		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.182
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (benzo(k)fluoranthene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.0115	Minimum of Log Data	-4.465
Maximum	0.13	Maximum of Log Data	-2.04
Mean	0.0527	Mean of log Data	-3.539
Median	0.0138	SD of log Data	1.174
SD	0.0557		
Coefficient of Variation	1.058		
Skewness	0.678		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.695	Shapiro Wilk Test Statistic	0.702
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.09	95% H-UCL	0.335
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.146
95% Adjusted-CLT UCL	0.0901	97.5% Chebyshev (MVUE) UCL	0.187
95% Modified-t UCL	0.0908	99% Chebyshev (MVUE) UCL	0.267
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.691	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0762		
nu star	11.06		
Approximate Chi Square Value (.05)	4.613	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0851
Adjusted Chi Square Value	3.619	95% Jackknife UCL	0.09
		95% Standard Bootstrap UCL	0.0828
Anderson-Darling Test Statistic	1.28	95% Bootstrap-t UCL	0.0975
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	0.071
Kolmogorov-Smirnov Test Statistic	0.371	95% Percentile Bootstrap UCL	0.0821

Kolmogorov-Smirnov 5% Critical Value	0.302	95% BCA Bootstrap UCL	0.0834
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.139
		97.5% Chebyshev(Mean, Sd) UCL	0.176
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.249
95% Approximate Gamma UCL	0.126		
95% Adjusted Gamma UCL	0.161		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.249
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (beryllium)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.58	Minimum of Log Data	-0.545
Maximum	1.13	Maximum of Log Data	0.122
Mean	0.834	Mean of log Data	-0.209
Median	0.865	SD of log Data	0.254
SD	0.206		
Coefficient of Variation	0.247		
Skewness	0.0408		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.926	Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.972	95% H-UCL	1.016
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.161
95% Adjusted-CLT UCL	0.954	97.5% Chebyshev (MVUE) UCL	1.303
95% Modified-t UCL	0.972	99% Chebyshev (MVUE) UCL	1.581
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.5	Data appear Normal at 5% Significance Level	
Theta Star	0.0725		
nu star	183.9		
Approximate Chi Square Value (.05)	153.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.953
Adjusted Chi Square Value	146.5	95% Jackknife UCL	0.972
		95% Standard Bootstrap UCL	0.944
Anderson-Darling Test Statistic	0.371	95% Bootstrap-t UCL	0.963
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	0.934
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	0.945
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	0.939
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.151
		97.5% Chebyshev(Mean, Sd) UCL	1.288
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.557

95% Approximate Gamma UCL	0.999		
95% Adjusted Gamma UCL	1.047		
Potential UCL to Use		Use 95% Student's-t UCL	0.972

Result or 1/2 SDL (beta-bhc)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	7

Raw Statistics		Log-transformed Statistics	
Minimum	2.4400E-4	Minimum of Log Data	-8.318
Maximum	0.015	Maximum of Log Data	-4.2
Mean	0.0079	Mean of log Data	-5.721
Median	0.0115	SD of log Data	1.87
SD	0.0063		
Coefficient of Variation	0.799		
Skewness	-0.521		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.771	Shapiro Wilk Test Statistic	0.725
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0122	95% H-UCL	1.231
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0475
95% Adjusted-CLT UCL	0.0112	97.5% Chebyshev (MVUE) UCL	0.0626
95% Modified-t UCL	0.0122	99% Chebyshev (MVUE) UCL	0.0924

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.51	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0156		
nu star	8.162		
Approximate Chi Square Value (.05)	2.829	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0117
Adjusted Chi Square Value	2.098	95% Jackknife UCL	0.0122
		95% Standard Bootstrap UCL	0.0114
Anderson-Darling Test Statistic	1.185	95% Bootstrap-t UCL	0.0116
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	0.0107
Kolmogorov-Smirnov Test Statistic	0.39	95% Percentile Bootstrap UCL	0.0113
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0112
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0178
		97.5% Chebyshev(Mean, Sd) UCL	0.022
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0303
95% Approximate Gamma UCL	0.023		
95% Adjusted Gamma UCL	0.031		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0303

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	4.26	Minimum of Log Data	1.449
Maximum	28.4	Maximum of Log Data	3.346
Mean	14.95	Mean of log Data	2.439
Median	12.4	SD of log Data	0.817
SD	10.5		
Coefficient of Variation	0.702		
Skewness	0.337		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Test Statistic	0.852
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	21.98	95% H-UCL	40.99
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.74
95% Adjusted-CLT UCL	21.53	97.5% Chebyshev (MVUE) UCL	43.18
95% Modified-t UCL	22.06	99% Chebyshev (MVUE) UCL	59.77
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.355	Data appear Normal at 5% Significance Level	
Theta Star	11.03		
nu star	21.69		
Approximate Chi Square Value (.05)	12.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.06
Adjusted Chi Square Value	10.34	95% Jackknife UCL	21.98
		95% Standard Bootstrap UCL	20.6
Anderson-Darling Test Statistic	0.562	95% Bootstrap-t UCL	22.63
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	19.35
Kolmogorov-Smirnov Test Statistic	0.236	95% Percentile Bootstrap UCL	20.79
Kolmogorov-Smirnov 5% Critical Value	0.297	95% BCA Bootstrap UCL	20.78
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	31.13
		97.5% Chebyshev(Mean, Sd) UCL	38.13
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	51.87
95% Approximate Gamma UCL	26.79		
95% Adjusted Gamma UCL	31.36		
Potential UCL to Use		Use 95% Student's-t UCL	21.98

Result or 1/2 SDL (bromomethane)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	0.0013	Minimum of Log Data	-6.63
Maximum	0.031	Maximum of Log Data	-3.474
Mean	0.0089	Mean of log Data	-5.269
Median	0.0067	SD of log Data	1.168
SD	0.0099		
Coefficient of Variation	1.115		
Skewness	1.87		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.777	Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0156	95% H-UCL	0.058
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0256
95% Adjusted-CLT UCL	0.0172	97.5% Chebyshev (MVUE) UCL	0.0328
95% Modified-t UCL	0.016	99% Chebyshev (MVUE) UCL	0.0469
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.737	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0121		
nu star	11.79		
Approximate Chi Square Value (.05)	5.091	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0147
Adjusted Chi Square Value	4.035	95% Jackknife UCL	0.0156
		95% Standard Bootstrap UCL	0.0142
Anderson-Darling Test Statistic	0.406	95% Bootstrap-t UCL	0.0234
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	0.0427
Kolmogorov-Smirnov Test Statistic	0.226	95% Percentile Bootstrap UCL	0.0148
Kolmogorov-Smirnov 5% Critical Value	0.301	95% BCA Bootstrap UCL	0.0166
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0242
		97.5% Chebyshev(Mean, Sd) UCL	0.0309
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0439
95% Approximate Gamma UCL	0.0206		
95% Adjusted Gamma UCL	0.0261		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0206

Result or 1/2 SDL (cadmium)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	7

Raw Statistics		Log-transformed Statistics	
Minimum	0.015	Minimum of Log Data	-4.2
Maximum	0.27	Maximum of Log Data	-1.309

Mean	0.147	Mean of log Data	-2.491
Median	0.19	SD of log Data	1.377
SD	0.112		
Coefficient of Variation	0.762		
Skewness	-0.424		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.802	Shapiro Wilk Test Statistic	0.716
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.222	95% H-UCL	2.239
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.561
95% Adjusted-CLT UCL	0.206	97.5% Chebyshev (MVUE) UCL	0.727
95% Modified-t UCL	0.221	99% Chebyshev (MVUE) UCL	1.052

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.711	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.207		
nu star	11.37		
Approximate Chi Square Value (.05)	4.814	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.212
Adjusted Chi Square Value	3.794	95% Jackknife UCL	0.222
		95% Standard Bootstrap UCL	0.207
Anderson-Darling Test Statistic	1.11	95% Bootstrap-t UCL	0.211
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	0.195
Kolmogorov-Smirnov Test Statistic	0.35	95% Percentile Bootstrap UCL	0.208
Kolmogorov-Smirnov 5% Critical Value	0.301	95% BCA Bootstrap UCL	0.206
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.32
		97.5% Chebyshev(Mean, Sd) UCL	0.395
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.541
95% Approximate Gamma UCL	0.348		
95% Adjusted Gamma UCL	0.441		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.541

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (carbon disulfide)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	9.5500E-5	Minimum of Log Data	-9.256
Maximum	0.0077	Maximum of Log Data	-4.865
Mean	0.0013	Mean of log Data	-7.554
Median	4.8175E-4	SD of log Data	1.364
SD	0.0025		
Coefficient of Variation	1.875		

Skewness	2.757		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.522	Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0031	95% H-UCL	0.0134
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0034
95% Adjusted-CLT UCL	0.0038	97.5% Chebyshev (MVUE) UCL	0.0045
95% Modified-t UCL	0.0032	99% Chebyshev (MVUE) UCL	0.0065
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.48	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.0028		
nu star	7.688		
Approximate Chi Square Value (.05)	2.555	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0028
Adjusted Chi Square Value	1.871	95% Jackknife UCL	0.0031
		95% Standard Bootstrap UCL	0.0027
Anderson-Darling Test Statistic	0.892	95% Bootstrap-t UCL	0.0142
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	0.0134
Kolmogorov-Smirnov Test Statistic	0.298	95% Percentile Bootstrap UCL	0.0031
Kolmogorov-Smirnov 5% Critical Value	0.306	95% BCA Bootstrap UCL	0.0033
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0053
		97.5% Chebyshev(Mean, Sd) UCL	0.0070
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0104
95% Approximate Gamma UCL	0.0041		
95% Adjusted Gamma UCL	0.0056		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0041

Result or 1/2 SDL (chromium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	8.29	Minimum of Log Data	2.115
Maximum	20.1	Maximum of Log Data	3.001
Mean	12.93	Mean of log Data	2.505
Median	11.55	SD of log Data	0.35
SD	4.611		
Coefficient of Variation	0.357		
Skewness	0.57		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk Test Statistic	0.895

Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.02	95% H-UCL	17.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.93
95% Adjusted-CLT UCL	15.97	97.5% Chebyshev (MVUE) UCL	22.96
95% Modified-t UCL	16.08	99% Chebyshev (MVUE) UCL	28.91
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.937	Data appear Normal at 5% Significance Level	
Theta Star	2.178		
nu star	94.99		
Approximate Chi Square Value (.05)	73.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	15.61
Adjusted Chi Square Value	68.75	95% Jackknife UCL	16.02
		95% Standard Bootstrap UCL	15.41
Anderson-Darling Test Statistic	0.448	95% Bootstrap-t UCL	16.66
Anderson-Darling 5% Critical Value	0.715	95% Hall's Bootstrap UCL	15.32
Kolmogorov-Smirnov Test Statistic	0.211	95% Percentile Bootstrap UCL	15.5
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	15.63
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.04
		97.5% Chebyshev(Mean, Sd) UCL	23.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	29.15
95% Approximate Gamma UCL	16.71		
95% Adjusted Gamma UCL	17.87		
Potential UCL to Use		Use 95% Student's-t UCL	16.02

Result or 1/2 SDL (chrysene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	0.0257	Maximum of Log Data	-3.661
Mean	0.0094	Mean of log Data	-4.785
Median	0.007	SD of log Data	0.462
SD	0.0065		
Coefficient of Variation	0.697		
Skewness	2.777		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.501	Shapiro Wilk Test Statistic	0.577
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0139	95% H-UCL	0.0139

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0157
95% Adjusted-CLT UCL	0.0157	97.5% Chebyshev (MVUE) UCL	0.0186
95% Modified-t UCL	0.0143	99% Chebyshev (MVUE) UCL	0.0242
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.693	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0035		
nu star	43.09		
Approximate Chi Square Value (.05)	29.04	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0133
Adjusted Chi Square Value	26.16	95% Jackknife UCL	0.0139
		95% Standard Bootstrap UCL	0.013
Anderson-Darling Test Statistic	1.788	95% Bootstrap-t UCL	0.0588
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	0.037
Kolmogorov-Smirnov Test Statistic	0.395	95% Percentile Bootstrap UCL	0.014
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	0.0144
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0196
		97.5% Chebyshev(Mean, Sd) UCL	0.024
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0327
95% Approximate Gamma UCL	0.014		
95% Adjusted Gamma UCL	0.0156		
Potential UCL to Use		Use 95% Student's-t UCL	0.0139
		or 95% Modified-t UCL	0.0143

Result or 1/2 SDL (cobalt)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	5.19	Minimum of Log Data	1.647
Maximum	8.99	Maximum of Log Data	2.196
Mean	6.939	Mean of log Data	1.92
Median	6.945	SD of log Data	0.2
SD	1.378		
Coefficient of Variation	0.199		
Skewness	0.167		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.862	95% H-UCL	8.067
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9.086
95% Adjusted-CLT UCL	7.771	97.5% Chebyshev (MVUE) UCL	10.02
95% Modified-t UCL	7.866	99% Chebyshev (MVUE) UCL	11.84

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	18.1	Data appear Normal at 5% Significance Level	
Theta Star	0.383		
nu star	289.5		
Approximate Chi Square Value (.05)	251.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	7.74
Adjusted Chi Square Value	242	95% Jackknife UCL	7.862
		95% Standard Bootstrap UCL	7.683
Anderson-Darling Test Statistic	0.268	95% Bootstrap-t UCL	7.852
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	7.642
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	7.689
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	7.689
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9.062
		97.5% Chebyshev(Mean, Sd) UCL	9.981
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11.79
95% Approximate Gamma UCL	8		
95% Adjusted Gamma UCL	8.3		
Potential UCL to Use		Use 95% Student's-t UCL	7.862

Result or 1/2 SDL (copper)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	8.33	Minimum of Log Data	2.12
Maximum	26.8	Maximum of Log Data	3.288
Mean	15.2	Mean of log Data	2.623
Median	12.55	SD of log Data	0.467
SD	7.421		
Coefficient of Variation	0.488		
Skewness	0.836		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.17	95% H-UCL	23.17
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.14
95% Adjusted-CLT UCL	20.34	97.5% Chebyshev (MVUE) UCL	30.9
95% Modified-t UCL	20.3	99% Chebyshev (MVUE) UCL	40.26
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.353	Data appear Normal at 5% Significance Level	
Theta Star	4.533		
nu star	53.65		
Approximate Chi Square Value (.05)	37.82	Nonparametric Statistics	

Adjusted Level of Significance	0.0195	95% CLT UCL	19.51
Adjusted Chi Square Value	34.49	95% Jackknife UCL	20.17
		95% Standard Bootstrap UCL	19.15
Anderson-Darling Test Statistic	0.476	95% Bootstrap-t UCL	23.91
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	21.16
Kolmogorov-Smirnov Test Statistic	0.192	95% Percentile Bootstrap UCL	19.18
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	19.81
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.64
		97.5% Chebyshev(Mean, Sd) UCL	31.58
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	41.31
95% Approximate Gamma UCL	21.56		
95% Adjusted Gamma UCL	23.64		
Potential UCL to Use		Use 95% Student's-t UCL	20.17

Result or 1/2 SDL (iron)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	11300	Minimum of Log Data	9.333
Maximum	20100	Maximum of Log Data	9.908
Mean	15275	Mean of log Data	9.614
Median	15500	SD of log Data	0.214
SD	3227		
Coefficient of Variation	0.211		
Skewness	0.139		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17437	95% H-UCL	17970
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20327
95% Adjusted-CLT UCL	17212	97.5% Chebyshev (MVUE) UCL	22512
95% Modified-t UCL	17446	99% Chebyshev (MVUE) UCL	26805
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	15.92	Data appear Normal at 5% Significance Level	
Theta Star	959.6		
nu star	254.7		
Approximate Chi Square Value (.05)	218.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	17152
Adjusted Chi Square Value	210.3	95% Jackknife UCL	17437
		95% Standard Bootstrap UCL	16994
Anderson-Darling Test Statistic	0.298	95% Bootstrap-t UCL	17461
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	16993

Kolmogorov-Smirnov Test Statistic	0.203	95% Percentile Bootstrap UCL	17025
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	17050
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20249
		97.5% Chebyshev(Mean, Sd) UCL	22401
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26629
95% Approximate Gamma UCL	17786		
95% Adjusted Gamma UCL	18500		
Potential UCL to Use		Use 95% Student's-t UCL	17437

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	10.6	Minimum of Log Data	2.361
Maximum	30.5	Maximum of Log Data	3.418
Mean	17.54	Mean of log Data	2.798
Median	15.5	SD of log Data	0.384
SD	7.076		
Coefficient of Variation	0.403		
Skewness	0.923		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	22.28	95% H-UCL	24.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27.92
95% Adjusted-CLT UCL	22.52	97.5% Chebyshev (MVUE) UCL	32.44
95% Modified-t UCL	22.41	99% Chebyshev (MVUE) UCL	41.3
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.874	Data appear Normal at 5% Significance Level	
Theta Star	3.598		
nu star	77.99		
Approximate Chi Square Value (.05)	58.64	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.65
Adjusted Chi Square Value	54.42	95% Jackknife UCL	22.28
		95% Standard Bootstrap UCL	21.37
Anderson-Darling Test Statistic	0.324	95% Bootstrap-t UCL	23.69
Anderson-Darling 5% Critical Value	0.717	95% Hall's Bootstrap UCL	22.55
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	21.63
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	22.26
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.44
		97.5% Chebyshev(Mean, Sd) UCL	33.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	42.43

95% Approximate Gamma UCL	23.32		
95% Adjusted Gamma UCL	25.13		
Potential UCL to Use		Use 95% Student's-t UCL	22.28

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	13.5	Minimum of Log Data	2.603
Maximum	23.7	Maximum of Log Data	3.165
Mean	18.48	Mean of log Data	2.895
Median	18.85	SD of log Data	0.225
SD	4.071		
Coefficient of Variation	0.22		
Skewness	0.0036		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.897
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	21.2	95% H-UCL	21.95
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24.92
95% Adjusted-CLT UCL	20.84	97.5% Chebyshev (MVUE) UCL	27.7
95% Modified-t UCL	21.2	99% Chebyshev (MVUE) UCL	33.17
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.45	Data appear Normal at 5% Significance Level	
Theta Star	1.278		
nu star	231.2		
Approximate Chi Square Value (.05)	197	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	20.84
Adjusted Chi Square Value	189	95% Jackknife UCL	21.2
		95% Standard Bootstrap UCL	20.67
Anderson-Darling Test Statistic	0.416	95% Bootstrap-t UCL	21.17
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	20.56
Kolmogorov-Smirnov Test Statistic	0.22	95% Percentile Bootstrap UCL	20.65
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	20.68
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	24.75
		97.5% Chebyshev(Mean, Sd) UCL	27.46
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.8
95% Approximate Gamma UCL	21.68		
95% Adjusted Gamma UCL	22.6		
Potential UCL to Use		Use 95% Student's-t UCL	21.2

Result or 1/2 SDL (m,p-cresol)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	7

Raw Statistics		Log-transformed Statistics	
Minimum	0.0105	Minimum of Log Data	-4.556
Maximum	0.0375	Maximum of Log Data	-3.283
Mean	0.0149	Mean of log Data	-4.31
Median	0.0117	SD of log Data	0.424
SD	0.0092		
Coefficient of Variation	0.619		
Skewness	2.758		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.523	Shapiro Wilk Test Statistic	0.61
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.021	95% H-UCL	0.0211
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0241
95% Adjusted-CLT UCL	0.0236	97.5% Chebyshev (MVUE) UCL	0.0282
95% Modified-t UCL	0.0216	99% Chebyshev (MVUE) UCL	0.0363
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.242	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0045		
nu star	51.87		
Approximate Chi Square Value (.05)	36.33	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0202
Adjusted Chi Square Value	33.07	95% Jackknife UCL	0.021
		95% Standard Bootstrap UCL	0.02
Anderson-Darling Test Statistic	1.626	95% Bootstrap-t UCL	0.0564
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	0.0455
Kolmogorov-Smirnov Test Statistic	0.401	95% Percentile Bootstrap UCL	0.0212
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	0.0244
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0291
		97.5% Chebyshev(Mean, Sd) UCL	0.0352
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0472
95% Approximate Gamma UCL	0.0212		
95% Adjusted Gamma UCL	0.0233		
Potential UCL to Use		Use 95% Student's-t UCL	0.021
		or 95% Modified-t UCL	0.0216

Result or 1/2 SDL (manganese)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	352	Minimum of Log Data	5.864
Maximum	711	Maximum of Log Data	6.567
Mean	487.6	Mean of log Data	6.162
Median	453	SD of log Data	0.247
SD	124.2		
Coefficient of Variation	0.255		
Skewness	0.739		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	570.8	95% H-UCL	590.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	673.6
95% Adjusted-CLT UCL	572.1	97.5% Chebyshev (MVUE) UCL	754.2
95% Modified-t UCL	572.7	99% Chebyshev (MVUE) UCL	912.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.66	Data appear Normal at 5% Significance Level	
Theta Star	41.81		
nu star	186.6		
Approximate Chi Square Value (.05)	156	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	559.8
Adjusted Chi Square Value	148.9	95% Jackknife UCL	570.8
		95% Standard Bootstrap UCL	556
Anderson-Darling Test Statistic	0.297	95% Bootstrap-t UCL	592.1
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	575
Kolmogorov-Smirnov Test Statistic	0.171	95% Percentile Bootstrap UCL	560.3
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	567
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	679
		97.5% Chebyshev(Mean, Sd) UCL	761.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	924.4
95% Approximate Gamma UCL	583.3		
95% Adjusted Gamma UCL	611		
Potential UCL to Use		Use 95% Student's-t UCL	570.8

Result or 1/2 SDL (methyl iodide)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics		Log-transformed Statistics	
Minimum	7.9500E-4	Minimum of Log Data	-7.137
Maximum	0.041	Maximum of Log Data	-3.194

Mean	0.0081	Mean of log Data	-5.689
Median	0.0039	SD of log Data	1.357
SD	0.0135		
Coefficient of Variation	1.669		
Skewness	2.624		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.587	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0172	95% H-UCL	0.0836
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0222
95% Adjusted-CLT UCL	0.0207	97.5% Chebyshev (MVUE) UCL	0.0288
95% Modified-t UCL	0.0179	99% Chebyshev (MVUE) UCL	0.0416

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.516	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0157		
nu star	8.249		
Approximate Chi Square Value (.05)	2.88	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.016
Adjusted Chi Square Value	2.141	95% Jackknife UCL	0.0172
		95% Standard Bootstrap UCL	0.0154
Anderson-Darling Test Statistic	0.64	95% Bootstrap-t UCL	0.0493
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	0.0518
Kolmogorov-Smirnov Test Statistic	0.232	95% Percentile Bootstrap UCL	0.0172
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0188
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.029
		97.5% Chebyshev(Mean, Sd) UCL	0.038
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0558
95% Approximate Gamma UCL	0.0232		
95% Adjusted Gamma UCL	0.0313		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0232

Result or 1/2 SDL (molybdenum)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	5

Raw Statistics		Log-transformed Statistics	
Minimum	0.055	Minimum of Log Data	-2.9
Maximum	0.6	Maximum of Log Data	-0.511
Mean	0.146	Mean of log Data	-2.382
Median	0.06	SD of log Data	0.881
SD	0.191		
Coefficient of Variation	1.312		
Skewness	2.461		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.569	Shapiro Wilk Test Statistic	0.673
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.274	95% H-UCL	0.395
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.306
95% Adjusted-CLT UCL	0.32	97.5% Chebyshev (MVUE) UCL	0.382
95% Modified-t UCL	0.283	99% Chebyshev (MVUE) UCL	0.533
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.857	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.17		
nu star	13.71		
Approximate Chi Square Value (.05)	6.372	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.257
Adjusted Chi Square Value	5.162	95% Jackknife UCL	0.274
		95% Standard Bootstrap UCL	0.25
Anderson-Darling Test Statistic	1.46	95% Bootstrap-t UCL	3.299
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	2.48
Kolmogorov-Smirnov Test Statistic	0.409	95% Percentile Bootstrap UCL	0.263
Kolmogorov-Smirnov 5% Critical Value	0.3	95% BCA Bootstrap UCL	0.328
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.44
		97.5% Chebyshev(Mean, Sd) UCL	0.568
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.818
95% Approximate Gamma UCL	0.313		
95% Adjusted Gamma UCL	0.387		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.44

Result or 1/2 SDL (nickel)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		**Log-transformed Statistics**	
Minimum	12.3	Minimum of Log Data	2.51
Maximum	20.6	Maximum of Log Data	3.025
Mean	16.33	Mean of log Data	2.777
Median	16.65	SD of log Data	0.193
SD	3.09		
Coefficient of Variation	0.189		
Skewness	-0.0427		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.928	Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818

Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.4	95% H-UCL	18.87
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.2
95% Adjusted-CLT UCL	18.1	97.5% Chebyshev (MVUE) UCL	23.31
95% Modified-t UCL	18.39	99% Chebyshev (MVUE) UCL	27.46
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	19.56	Data appear Normal at 5% Significance Level	
Theta Star	0.835		
nu star	312.9		
Approximate Chi Square Value (.05)	272.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	18.12
Adjusted Chi Square Value	263.5	95% Jackknife UCL	18.4
		95% Standard Bootstrap UCL	18.04
Anderson-Darling Test Statistic	0.362	95% Bootstrap-t UCL	18.49
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	17.89
Kolmogorov-Smirnov Test Statistic	0.218	95% Percentile Bootstrap UCL	17.96
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	17.91
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.09
		97.5% Chebyshev(Mean, Sd) UCL	23.15
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27.2
95% Approximate Gamma UCL	18.72		
95% Adjusted Gamma UCL	19.39		
Potential UCL to Use		Use 95% Student's-t UCL	18.4

Result or 1/2 SDL (pyrene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.009	Minimum of Log Data	-4.711
Maximum	0.0265	Maximum of Log Data	-3.631
Mean	0.0147	Mean of log Data	-4.32
Median	0.0105	SD of log Data	0.469
SD	0.0073		
Coefficient of Variation	0.497		
Skewness	0.806		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk Test Statistic	0.788
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0196	95% H-UCL	0.0225
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0253

95% Adjusted-CLT UCL	0.0197	97.5% Chebyshev (MVUE) UCL	0.0299
95% Modified-t UCL	0.0197	99% Chebyshev (MVUE) UCL	0.039
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.283	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	0.0044		
nu star	52.53		
Approximate Chi Square Value (.05)	36.89	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.019
Adjusted Chi Square Value	33.6	95% Jackknife UCL	0.0196
		95% Standard Bootstrap UCL	0.0188
Anderson-Darling Test Statistic	0.881	95% Bootstrap-t UCL	0.0216
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	0.0178
Kolmogorov-Smirnov Test Statistic	0.279	95% Percentile Bootstrap UCL	0.019
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	0.0191
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.026
		97.5% Chebyshev(Mean, Sd) UCL	0.0308
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0404
95% Approximate Gamma UCL	0.021		
95% Adjusted Gamma UCL	0.023		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.021

Result or 1/2 SDL (strontium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		**Log-transformed Statistics**	
Minimum	63.3	Minimum of Log Data	4.148
Maximum	181	Maximum of Log Data	5.198
Mean	103.6	Mean of log Data	4.575
Median	89.45	SD of log Data	0.38
SD	41.82		
Coefficient of Variation	0.404		
Skewness	1		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.93
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	131.6	95% H-UCL	142.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	164.1
95% Adjusted-CLT UCL	133.5	97.5% Chebyshev (MVUE) UCL	190.5
95% Modified-t UCL	132.5	99% Chebyshev (MVUE) UCL	242.2
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.946	**Data appear Normal at 5% Significance Level**	

Theta Star	20.94		
nu star	79.14		
Approximate Chi Square Value (.05)	59.65	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	127.9
Adjusted Chi Square Value	55.38	95% Jackknife UCL	131.6
		95% Standard Bootstrap UCL	126.2
Anderson-Darling Test Statistic	0.349	95% Bootstrap-t UCL	145.3
Anderson-Darling 5% Critical Value	0.717	95% Hall's Bootstrap UCL	138.1
Kolmogorov-Smirnov Test Statistic	0.211	95% Percentile Bootstrap UCL	127.7
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	132.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	168.1
		97.5% Chebyshev(Mean, Sd) UCL	195.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	250.7
95% Approximate Gamma UCL	137.5		
95% Adjusted Gamma UCL	148		
Potential UCL to Use		Use 95% Student's-t UCL	131.6

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	19.1	Minimum of Log Data	2.95
Maximum	40.5	Maximum of Log Data	3.701
Mean	30	Mean of log Data	3.367
Median	32.65	SD of log Data	0.286
SD	8.035		
Coefficient of Variation	0.268		
Skewness	-0.263		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.883
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	35.38	95% H-UCL	37.72
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	43.33
95% Adjusted-CLT UCL	34.39	97.5% Chebyshev (MVUE) UCL	49.08
95% Modified-t UCL	35.34	99% Chebyshev (MVUE) UCL	60.37
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.311	Data appear Normal at 5% Significance Level	
Theta Star	3.222		
nu star	149		
Approximate Chi Square Value (.05)	121.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	34.67
Adjusted Chi Square Value	115.5	95% Jackknife UCL	35.38

		95% Standard Bootstrap UCL	34.35
Anderson-Darling Test Statistic	0.516	95% Bootstrap-t UCL	35.38
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	33.81
Kolmogorov-Smirnov Test Statistic	0.284	95% Percentile Bootstrap UCL	34.31
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	34.31
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	42.38
		97.5% Chebyshev(Mean, Sd) UCL	47.74
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	58.27
95% Approximate Gamma UCL	36.7		
95% Adjusted Gamma UCL	38.68		
Potential UCL to Use		Use 95% Student's-t UCL	35.38

Result or 1/2 SDL (vanadium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	16.8	Minimum of Log Data	2.821
Maximum	27.4	Maximum of Log Data	3.311
Mean	21.83	Mean of log Data	3.067
Median	21.8	SD of log Data	0.19
SD	4.107		
Coefficient of Variation	0.188		
Skewness	0.0796		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.908
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.58	95% H-UCL	25.16
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	28.24
95% Adjusted-CLT UCL	24.26	97.5% Chebyshev (MVUE) UCL	31.02
95% Modified-t UCL	24.58	99% Chebyshev (MVUE) UCL	36.47
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	20.05	Data appear Normal at 5% Significance Level	
Theta Star	1.089		
nu star	320.8		
Approximate Chi Square Value (.05)	280.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	24.21
Adjusted Chi Square Value	270.7	95% Jackknife UCL	24.58
		95% Standard Bootstrap UCL	24.07
Anderson-Darling Test Statistic	0.392	95% Bootstrap-t UCL	24.63
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	23.78
Kolmogorov-Smirnov Test Statistic	0.222	95% Percentile Bootstrap UCL	24.1
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	24.23

Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.15
		97.5% Chebyshev(Mean, Sd) UCL	30.89
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	36.27
95% Approximate Gamma UCL	24.98		
95% Adjusted Gamma UCL	25.87		
Potential UCL to Use		Use 95% Student's-t UCL	24.58

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	38.2	Minimum of Log Data	3.643
Maximum	999	Maximum of Log Data	6.907
Mean	332.3	Mean of log Data	4.894
Median	55.65	SD of log Data	1.489
SD	407.7		
Coefficient of Variation	1.227		
Skewness	0.879		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.737	Shapiro Wilk Test Statistic	0.746
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	605.4	95% H-UCL	6104
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1069
95% Adjusted-CLT UCL	617.3	97.5% Chebyshev (MVUE) UCL	1392
95% Modified-t UCL	612.9	99% Chebyshev (MVUE) UCL	2027
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.5	Data do not follow a Discernable Distribution (0.05)	
Theta Star	664.4		
nu star	8.002		
Approximate Chi Square Value (.05)	2.736	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	569.4
Adjusted Chi Square Value	2.021	95% Jackknife UCL	605.4
		95% Standard Bootstrap UCL	557.7
Anderson-Darling Test Statistic	1.087	95% Bootstrap-t UCL	766.5
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	474.6
Kolmogorov-Smirnov Test Statistic	0.365	95% Percentile Bootstrap UCL	570.5
Kolmogorov-Smirnov 5% Critical Value	0.306	95% BCA Bootstrap UCL	594.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	960.7
		97.5% Chebyshev(Mean, Sd) UCL	1233
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1767
95% Approximate Gamma UCL	971.8		
95% Adjusted Gamma UCL	1316		

Potential UCL to Use										Use 99% Chebyshev (Mean, Sd) UCL	1767
Recommended UCL exceeds the maximum observation											