Chemical of Potential Concern	Max. Conc.	95% UCL (Distribution) (1)		Value	Statistic (2)	Rationale (3)	Description	Mean
1,1,2-Trichloroethane	0.05	0.046564615	(NP)	0.046564615	95% UCL-NP	(d)	Chebyshev (Mean, Std)	0.041667
1,1-Dichloroethane	5	2.158088893	(NP)	2.158088893	95% UCL-NP	(d)	Jackknife	1.25
1,1-Dichloroethene	0.194	0.109393181	(NP)	0.109393181	95% UCL-NP	(d)	Chebyshev (Mean, Std)	0.053667
1,2,4-Trichlorobenzene	5	2.158088893	(NP)	2.158088893	95% UCL-NP	(d)	Jackknife	1.25
1,3-Dichlorobenzene	0.5	0.515808889	(NP)	0.5	Max	(d & e)	Jackknife	0.425
1,4-Dichlorobenzene	0.484	0.303828866	(NP)	0.303828866	95% UCL-NP	(d)	Chebyshev (Mean, Std)	0.116583
Benzene	0.32	0.177417068	(NP)	0.177417068	95% UCL-NP	(d)	Chebyshev (Mean, Std)	0.075833
Bromomethane	0.5	0.515808889	(NP)	0.5	Max	(d & e)	Jackknife	0.425
Chlorobenzene	5	2.158088893	(NP)	2.158088893	95% UCL-NP	(d)	Jackknife	1.25
Chlorodibromomethane	1.51	0.916293744	(NP)	0.916293744	95% UCL-NP	(d)	Chebyshev (Mean, Std)	0.315
Chloroethane	1	0.684232099	(NP)	0.684232099	95% UCL-NP	(d)	Jackknife	0.583333
cis-1,2-Dichloroethene	29	14.37254553	(NP)	14.37254553	95% UCL-NP	(d)	Bootstrap-t	5.416667
Ethylbenzene	1	0.684232099	(NP)	0.684232099	95% UCL-NP	(d)	Jackknife	0.583333
Methyl tert-butyl ether	14	7.350502914	(NP)	7.350502914	95% UCL-NP	(d)	Bootstrap-t	2.666667
Methylene chloride	1	0.684232099	(NP)	0.684232099	95% UCL-NP	(d)	Jackknife	0.583333
Tetrachloroethene	36	19.81869629	(NP)	19.81869629	95% UCL-NP	(d)	Bootstrap-t	6.955667
Toluene	1	0.684232099	(NP)	0.684232099	95% UCL-NP	(d)	Jackknife	0.583333
trans-1,2-Dichloroethene	5	2.158088893	(NP)	2.158088893	95% UCL-NP	(d)	Jackknife	1.25
Trichloroethene	160	189.4118951	(T)	160	Max	(c & e)	99% Chebyshev (MVUE) UCL	21.5875
Vinyl chloride	0.49	0.276435064	(NP)	0.276435064	95% UCL-NP	(d)	Chebyshev (Mean, Std)	0.104417
Xylenes (total)	5	2.473856794	(NP)	2.473856794	95% UCL-NP	(d)	Jackknife	1.666667
4-Methylphenol	5.5	N/A	(<4)	5.5	Max	(a)		5.5
Naphthalene	2.7	N/A	(<4)	2.7	Max	(a)		1.3185
2-Methylnaphthalene	5.5	N/A	(<4)	5.5	Max	(a)		2.683333
Acenaphthylene	5.5	N/A	(<4)	5.5	Max	(a)		2.166667
Phenanthrene	5.5	N/A	(<4)	5.5	Max	(a)		2.833333
Benzo(a)Pyrene	0.5	N/A	(<4)	0.5	Max	(a)		0.337
Dibenz(a,h) anthracene	0.5	N/A	(<4)	0.5	Max	(a)		0.337667
C9-C18 Aliphatic	25	N/A	(<4)	25	Max	(a)		25
C11-C22 Aromatic	25	N/A	(<4)	25	Max	(a)		25
C19-C36 Aliphatic	25	N/A	(<4)	25	Max	(a)		25
C5-C8 Aliphatic	25	N/A	(<4)	25	Max	(a)		25
Cyanide	7	2.90623054	(NP)	2.90623054	95% UCL-NP	(d)	Jackknife	2
Arsenic	2.5	1.550440236	(NP)	1.550440236	95% UCL-NP	(d)	Jackknife	1.266818
Chromium	13	7.989482219	(NP)	7.989482219	95% UCL-NP	(d)	Bootstrap-t	3.931818
Lead	10	5.714929491	(NP)	5.714929491	95% UCL-NP	(d)	Chebyshev (Mean, Std)	1.916545
Manganese	1800	1326.60668	(T)	1326.60668	95% UCL-T	(c)	95% Chebyshev (MVUE) UCL	421.1818
Nickel	6.8	4.40885406	(N)	4.40885406	95% UCL-N	(b)	Student's-t	3.337273
TEQ (no 170/193/180) Humans		N/A	(<4)	0				
Dieldrin	0.014	N/A	(<4)	0.014	Max	(a)		0.014
4,4'-DDD	0.005	N/A	(<4)	0.005				0.005
Acetophenone	5.5	N/A	(<4)	5.5		(a)		5.5

(1) T - Transformed; N - Normal; NP - Non-parametric; <4 - sample size too small to calculate 95% UCL
(2) Statistics: Maximum Detected Value (Max); 95% UCL of Transformed Data (95% UCL - T); 95% of Normal Data (95% UCL - N); 95% of Non-parametric Data (95% UCL - NP).
(3) Rationale

(a) Due to small sample size (<4), the maximum detected concentration is used.
(b) Shapiro-Wilk W Test indicates data are normally distributed.
(c) Shapiro-Wilk W Test indicates data are log-normally distributed.
(d) Shapiro-Wilk W Test indicates data are neither normally nor log-normally distributed.
(e) Recommended UCL exceeds maximum detected concentration. Therefore, maximum concentration is used for EPC.
(f) Due to high standard deviation, the maximum concentration is used.

From File

Summary Statistics for	1,1,2-Trichloroethane
Number of Samples	12
Minimum	0.04
Maximum	0.05
Mean	0.041666667
Median	0.04
Standard Deviation	0.003892495
Variance	1.52E-05
Coefficient of Variation	0.093419873
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	0.043684642

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.044227276
Modified-t	0.043795753

95 % Non-parametric UCL

CLT	0.043514933
Jackknife	0.043684642
Standard Bootstrap	0.043435006
Bootstrap-t	6669.374191
Chebyshev (Mean, Std)	0.046564615

From File

Summary Statistics for	1,1-Dichloroethane
Number of Samples	12
Minimum	0.5
Maximum	5
Mean	1.25
Median	0.5
Standard Deviation	1.751622624
Variance	3.068181818
Coefficient of Variation	1.401298099
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	2.158088893

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	2.402274413
Modified-t	2.208088893

95 % Non-parametric UCL

CLT		2.081720067
Jackknife		2.158088893
Standard Bootstrap		2.028311399
Bootstrap-t	1.#INF	
Chebyshev (Mean, Std)		3.454076801

From File

Summary Statistics for	1,1-Dichloroethene
Number of Samples	12
Minimum	0.04
Maximum	0.194
Mean	0.053666667
Median	0.04
Standard Deviation	0.044286943
Variance	0.001961333
Coefficient of Variation	0.825222543
Skewness	3.438794077

Shapiro-Wilk Test Statisitic	0.356008726
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	0.076626225

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.088256029
Modified-t	0.078741415

95 % Non-parametric UCL

CLT	0.074695362
Jackknife	0.076626225
Standard Bootstrap	0.074404247
Bootstrap-t	622219.9528
Chebyshev (Mean, Std)	0.109393181

From File

Summary Statistics for

	1,2,4-Trichlorobenzene
Number of Samples	12
Minimum	0.5
Maximum	5
Mean	1.25
Median	0.5
Standard Deviation	1.751622624
Variance	3.068181818
Coefficient of Variation	1.401298099
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	2.158088893

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	2.402274413
Modified-t	2.208088893

95 % Non-parametric UCL

CLT		2.081720067
Jackknife		2.158088893
Standard Bootstrap		2.047622599
Bootstrap-t	1.#INF	
Chebyshev (Mean, Std)		3.454076801

From File

Summary Statistics for	1,3-Dichlorobenzene
Number of Samples	12
Minimum	0.05
Maximum	0.5
Mean	0.425
Median	0.5
Standard Deviation	0.175162262
Variance	0.030681818
Coefficient of Variation	0.4121465
Skewness	-2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	0.515808889

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.476116572
Modified-t	0.510808889

95 % Non-parametric UCL

CLT	0.508172007
Jackknife	0.515808889
Standard Bootstrap	0.506812378
Bootstrap-t	0.484292706
Chebyshev (Mean, Std)	0.64540768

From File

Summary Statistics for	1,4-Dichlorobenzene
Number of Samples	12
Minimum	0.04
Maximum	0.484
Mean	0.116583333
Median	0.0525
Standard Deviation	0.14880766
Variance	0.02214372
Coefficient of Variation	1.276405948
Skewness	2.117930989

Shapiro-Wilk Test Statisitic	0.568011843
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t	0.193729279

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	0.215304568
Modified-t	0.198106561

95 % Non-parametric UCL
CLT	0.187241428
Jackknife	0.193729279
Standard Bootstrap	0.183169559
Bootstrap-t	0.705678548
Chebyshev (Mean, Std)	0.303828866

From File

Summary Statistics for	Benzene
Number of Samples	12
Minimum	0.04
Maximum	0.32
Mean	0.075833333
Median	0.04
Standard Deviation	0.080730566
Variance	0.006517424
Coefficient of Variation	1.064578889
Skewness	2.955369255

Shapiro-Wilk Test Statisitic	0.52046101
Shapiro-Wilk 5% Critical Value	0.859
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	0.117686258

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.135411112
Modified-t	0.120999989

95 % Non-parametric UCL

CLT	0.114166494
Jackknife	0.117686258
Standard Bootstrap	0.111910971
Bootstrap-t	0.209421242
Chebyshev (Mean, Std)	0.177417068

From File

Summary Statistics for	Bromomethane
Number of Samples	12
Minimum	0.05
Maximum	0.5
Mean	0.425
Median	0.5
Standard Deviation	0.175162262
Variance	0.030681818
Coefficient of Variation	0.4121465
Skewness	-2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t	0.515808889

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	0.476116572
Modified-t	0.510808889

95 % Non-parametric UCL
CLT	0.508172007
Jackknife	0.515808889
Standard Bootstrap	0.503313657
Bootstrap-t	0.484292706
Chebyshev (Mean, Std)	0.64540768

From File

Summary Statistics for	Chlorobenzene
Number of Samples	12
Minimum	0.5
Maximum	5
Mean	1.25
Median	0.5
Standard Deviation	1.751622624
Variance	3.068181818
Coefficient of Variation	1.401298099
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	2.158088893

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	2.402274413
Modified-t	2.208088893

95 % Non-parametric UCL

CLT	2.081720067
Jackknife	2.158088893
Standard Bootstrap	2.043362774
Bootstrap-t	1.#INF
Chebyshev (Mean, Std)	3.454076801

From File

Summary Statistics for	Chlorodibromomethane
Number of Samples	12
Minimum	0.04
Maximum	1.51
Mean	0.315
Median	0.05
Standard Deviation	0.477859812
Variance	0.22835
Coefficient of Variation	1.517015276
Skewness	1.932266839

Shapiro-Wilk Test Statisitic	0.66249667
Shapiro-Wilk 5% Critical Value	0.859
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)
Student's-t	0.562735546

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	0.624119358
Modified-t	0.575559889

95 % Non-parametric UCL
CLT	0.541901383
Jackknife	0.562735546
Standard Bootstrap	0.535600821
Bootstrap-t	0.953169217
Chebyshev (Mean, Std)	0.916293744

From File

Summary Statistics for	Chloroethane
Number of Samples	12
Minimum	0.5
Maximum	1
Mean	0.583333333
Median	0.5
Standard Deviation	0.194624736
Variance	0.037878788
Coefficient of Variation	0.333642405
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	0.684232099

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.711363824
Modified-t	0.689787655

95 % Non-parametric UCL

CLT	0.675746674
Jackknife	0.684232099
Standard Bootstrap	0.673438762
Bootstrap-t	1.#INF
Chebyshev (Mean, Std)	0.828230756

From File

Summary Statistics for	cis-1,2-Dichloroethene
Number of Samples	12
Minimum	0.5
Maximum	29
Mean	5.416666667
Median	0.75
Standard Deviation	8.341662504
Variance	69.58333333
Coefficient of Variation	1.539999232
Skewness	2.354125657

Shapiro-Wilk Test Statisitic	0.659923748
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t	9.741211785

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	11.12608801
Modified-t	10.01395236

95 % Non-parametric UCL
CLT	9.377524447
Jackknife	9.741211785
Standard Bootstrap	9.135992627
Bootstrap-t	14.37254553
Chebyshev (Mean, Std)	15.91302847

From File

Summary Statistics for	Ethylbenzene
Number of Samples	12
Minimum	0.5
Maximum	1
Mean	0.583333333
Median	0.5
Standard Deviation	0.194624736
Variance	0.037878788
Coefficient of Variation	0.333642405
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	0.684232099

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.711363824
Modified-t	0.689787655

95 % Non-parametric UCL

CLT		0.675746674
Jackknife		0.684232099
Standard Bootstrap		0.671280333
Bootstrap-t	1.#INF	
Chebyshev (Mean, Std)		0.828230756

From File

Summary Statistics for	Methyl tert-butyl ether
Number of Samples	12
Minimum	0.5
Maximum	14
Mean	2.666666667
Median	0.5
Standard Deviation	4.030189108
Variance	16.24242424
Coefficient of Variation	1.511320915
Skewness	2.336655658

Shapiro-Wilk Test Statisitic	0.616923983
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	4.756026506

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	5.418846042
Modified-t	4.886820453

95 % Non-parametric UCL

CLT	4.58031468
Jackknife	4.756026506
Standard Bootstrap	4.500832933
Bootstrap-t	7.350502914
Chebyshev (Mean, Std)	7.737876751

From File

Summary Statistics for	Methylene chloride
Number of Samples	12
Minimum	0.5
Maximum	1
Mean	0.583333333
Median	0.5
Standard Deviation	0.194624736
Variance	0.037878788
Coefficient of Variation	0.333642405
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	0.684232099

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.711363824
Modified-t	0.689787655

95 % Non-parametric UCL

CLT		0.675746674
Jackknife		0.684232099
Standard Bootstrap		0.673624693
Bootstrap-t	1.#INF	
Chebyshev (Mean, Std)		0.828230756

From File

Summary Statistics for	Tetrachloroethene
Number of Samples	12
Minimum	0.05
Maximum	36
Mean	6.955666667
Median	0.5
Standard Deviation	12.19203033
Variance	148.6456035
Coefficient of Variation	1.75281981
Skewness	1.748355928

Shapiro-Wilk Test Statisitic	0.624953735
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	13.27634737

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	14.64282687
Modified-t	13.57240304

95 % Non-parametric UCL

CLT	12.74478822
Jackknife	13.27634737
Standard Bootstrap	12.4311093
Bootstrap-t	19.81869629
Chebyshev (Mean, Std)	22.2969684

From File

Summary Statistics for	Toluene	
Number of Samples		12
Minimum		0.5
Maximum		1
Mean		0.583333333
Median		0.5
Standard Deviation		0.194624736
Variance		0.037878788
Coefficient of Variation	.	0.333642405
Skewness		2.055237213

Shapiro-Wilk Test Statisitic   0.46464
Shapiro-Wilk 5% Critical Value   0.859
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t   0.684232099

95 % UCL (Adjusted for Skewness)
Adjusted-CLT   0.711363824
Modified-t   0.689787655

95 % Non-parametric UCL
CLT   0.675746674
Jackknife   0.684232099
Standard Bootstrap   0.673213692
Bootstrap-t   1.#INF
Chebyshev (Mean, Std)   0.828230756

From File

Summary Statistics for   trans-1,2-Dichloroethen
Number of Samples   12
Minimum   0.5
Maximum   5
Mean   1.25
Median   0.5
Standard Deviation   1.751622624
Variance   3.068181818
Coefficient of Variation   1.401298099
Skewness   2.055237213

Shapiro-Wilk Test Statisitic   0.46464
Shapiro-Wilk 5% Critical Value   0.859
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

        95 % UCL (Assuming Normal Data)
Student's-t   2.158088893

        95 % UCL (Adjusted for Skewness)
Adjusted-CLT   2.402274413
Modified-t   2.208088893

        95 % Non-parametric UCL
CLT   2.081720067
Jackknife   2.158088893
Standard Bootstrap   2.031029063
Bootstrap-t   1.#INF
Chebyshev (Mean, Std)   3.454076801

From File

Summary Statistics for	Trichloroethene	Summary Statistics for	ln(Trichloroethene)
Number of Samples	12	Minimum	-2.995732274
Minimum	0.05	Maximum	5.075173815
Maximum	160	Mean	1.336452312
Mean	21.5875	Standard Deviation	2.157567146
Median	2.5	Variance	4.655095989
Standard Deviation	45.40500636		
Variance	2061.614602	Shapiro-Wilk Test Statisitic	0.96550564
Coefficient of Variation	2.103300816	Shapiro-Wilk 5% Critical Value	0.859
Skewness	3.026684706	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)		Estimates Assuming Lognormal Distribution	
Student's-t	45.1266924	MLE Mean	39.01711152
		MLE Standard Deviation	398.1261969
95 % UCL (Adjusted for Skewness)		MLE Coefficient of Variation	10.203887
Adjusted-CLT	55.38394672	MLE Skewness	1093.033333
Modified-t	47.03539571	MLE Median	3.805518737
		MLE 80% Quantile	23.56108831
95 % Non-parametric UCL		MLE 90% Quantile	60.88130171
CLT	43.14708391	MLE 95% Quantile	132.3765175
Jackknife	45.1266924	MLE 99% Quantile	575.3355833
Standard Bootstrap	41.70719989		
Bootstrap-t	101.4781346	MVU Estimate of Median	3.125179142
Chebyshev (Mean, Std)	78.72088009	MVU Estimate of Mean	24.79244215
		MVU Estimate of Std. Dev.	75.03851399
99 % Non-parametric UCL		MVU Estimate of SE of Mean	16.54487753
Chebyshev (Mean, Std)	152.0034517		

UCL Assuming Lognormal Distribution

95% H-UCL	1231.668554
95% Chebyshev (MVUE) UCL	96.90989134
99% Chebyshev (MVUE) UCL	189.4118951
Recommended UCL to use:	
99 % Chebyshev (MVUE) UCL	

From File

Summary Statistics for	Vinyl chloride
Number of Samples	12
Minimum	0.04
Maximum	0.49
Mean	0.104416667
Median	0.04
Standard Deviation	0.13670636
Variance	0.018688629
Coefficient of Variation	1.30923888
Skewness	2.460939753

Shapiro-Wilk Test Statisitic	0.565578692
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	0.175288968

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	0.199285069
Modified-t	0.179961553

95 % Non-parametric UCL

CLT	0.169328721
Jackknife	0.175288968
Standard Bootstrap	0.167159898
Bootstrap-t	0.332363622
Chebyshev (Mean, Std)	0.276435064

From File

Summary Statistics for	Xylenes (total)
Number of Samples	12
Minimum	1
Maximum	5
Mean	1.666666667
Median	1
Standard Deviation	1.556997888
Variance	2.424242424
Coefficient of Variation	0.934198733
Skewness	2.055237213

Shapiro-Wilk Test Statisitic	0.46464
Shapiro-Wilk 5% Critical Value	0.859

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)	
Student's-t	2.473856794

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	2.690910589
Modified-t	2.518301238

95 % Non-parametric UCL		
CLT		2.405973393
Jackknife		2.473856794
Standard Bootstrap		2.342667282
Bootstrap-t	1.#INF	
Chebyshev (Mean, Std)		3.625846045

From File

Summary Statistics for	4-Methylphenol
Number of Samples	1
Minimum	5.5
Maximum	5.5
Mean	5.5
Median	5.5

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	Naphthalene
Number of Samples	3
Minimum	0.0055
Maximum	2.7
Mean	1.3185
Median	1.25

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	2-Methylnaphthalene
Number of Samples	3
Minimum	0.5
Maximum	5.5
Mean	2.683333333
Median	2.05

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	Acenaphthylene
Number of Samples	3
Minimum	0.5
Maximum	5.5
Mean	2.166666667
Median	

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	Phenanthrene
Number of Samples	3
Minimum	0.9
Maximum	5.5
Mean	2.833333333
Median	2.1

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	Benzo(a)Pyrene
Number of Samples	3
Minimum	0.011
Maximum	0.5
Mean	0.337
Median	0.5

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	Dibenz(a,h) anthracene
Number of Samples	3
Minimum	0.013
Maximum	0.5
Mean	0.337666667
Median	0.5

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	C9-C18 Aliphatic	
Number of Samples		2
Minimum		25
Maximum		25
Mean		25
Median		25

Too Few Observations To Calculate UCLs

From File

Summary Statistics for   C11-C22 Aromatic

Number of Samples	2
Minimum	25
Maximum	25
Mean	25
Median	25

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	C19-C36 Aliphatic	
Number of Samples		2
Minimum		25
Maximum		25
Mean		25
Median		25

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	C5-C8 Aliphatic
Number of Samples	2
Minimum	25
Maximum	25
Mean	25
Median	25

Too Few Observations To Calculate UCLs

From File

Summary Statistics for	Cyanide
Number of Samples	11
Minimum	1.5
Maximum	7
Mean	2
Median	1.5
Standard Deviation	1.658312395
Variance	2.75
Coefficient of Variation	0.829156198
Skewness	3.31662479

Shapiro-Wilk Test Statisitic	0.345083211
Shapiro-Wilk 5% Critical Value	0.85
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	2.90623054

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3.356684057
Modified-t	2.989563873

95 % Non-parametric UCL

CLT	2.822426814
Jackknife	2.90623054
Standard Bootstrap	2.74164962
Bootstrap-t	1.#INF
Chebyshev (Mean, Std)	4.179449472

From File

Summary Statistics for   Arsenic
Number of Samples   11
Minimum   0.185
Maximum   2.5
Mean   1.266818182
Median   1.25
Standard Deviation   0.51900035
Variance   0.269361364
Coefficient of Variation   0.409688113
Skewness   0.532623037

Shapiro-Wilk Test Statisitic   0.624162732
Shapiro-Wilk 5% Critical Value   0.85
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

    95 % UCL (Assuming Normal Data)
Student's-t   1.550440236

    95 % UCL (Adjusted for Skewness)
Adjusted-CLT   1.551064187
Modified-t   1.554628593

    95 % Non-parametric UCL
CLT   1.524212269
Jackknife   1.550440236
Standard Bootstrap   1.509567983
Bootstrap-t   1.#INF
Chebyshev (Mean, Std)   1.948918275

From File

Summary Statistics for	Chromium
Number of Samples	11
Minimum	0.65
Maximum	13
Mean	3.931818182
Median	1.1
Standard Deviation	4.579807459
Variance	20.97463636
Coefficient of Variation	1.164806521
Skewness	1.19546594

Shapiro-Wilk Test Statisitic	0.738784249
Shapiro-Wilk 5% Critical Value	0.85

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	6.434580266

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	6.734966358
Modified-t	6.517534869

95 % Non-parametric UCL

CLT	6.203137186
Jackknife	6.434580266
Standard Bootstrap	6.13756226
Bootstrap-t	7.989482219
Chebyshev (Mean, Std)	9.950864398

From File

Summary Statistics for   Lead

Number of Samples	11
Minimum	0.032
Maximum	10
Mean	1.916545455
Median	0.75
Standard Deviation	2.890136895
Variance	8.352891273
Coefficient of Variation	1.507992878 .
Skewness	2.622988454

Shapiro-Wilk Test Statisitic	0.594394194
Shapiro-Wilk 5% Critical Value	0.85

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	3.495940463

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	4.086266722
Modified-t	3.610801004

95 % Non-parametric UCL

CLT	3.34988581
Jackknife	3.495940463
Standard Bootstrap	3.330859919
Bootstrap-t	8.621472698
Chebyshev (Mean, Std)	5.714929491

From File

Summary Statistics for	Manganese		Summary Statistics for	ln(Manganese)
Number of Samples	11		Minimum	2.564949357
Minimum	13		Maximum	7.495541944
Maximum	1800		Mean	5.422394779
Mean	421.1818182		Standard Deviation	1.300507669
Median	287		Variance	1.691320196
Standard Deviation	510.1262232			
Variance	260228.7636		Shapiro-Wilk Test Statisitic	0.945397627
Coefficient of Variation	1.211178169		Shapiro-Wilk 5% Critical Value	0.85
Skewness	2.310655269		Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)

Student's-t	699.9543607	

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	788.673547
Modified-t	717.8138432

95 % Non-parametric UCL

CLT	674.1748524
Jackknife	699.9543607
Standard Bootstrap	666.4786768
Bootstrap-t	1113.569817
Chebyshev (Mean, Std)	1091.619024

Estimates Assuming Lognormal Distribution

MLE Mean	527.4504236
MLE Standard Deviation	1109.733657
MLE Coefficient of Variation	2.103958224
MLE Skewness	15.62534074
MLE Median	226.4207013
MLE 80% Quantile	679.4772545
MLE 90% Quantile	1204.171591
MLE 95% Quantile	1923.169517
MLE 99% Quantile	4662.819637
MVU Estimate of Median	209.561388
MVU Estimate of Mean	467.7913544
MVU Estimate of Std. Dev.	694.1469954
MVU Estimate of SE of Mean	197.0257483

UCL Assuming Lognormal Distribution

95% H-UCL	2337.394858
95% Chebyshev (MVUE) UCL	1326.60668
99% Chebyshev (MVUE) UCL	2428.172798
Recommended UCL to use:	

95 % Chebyshev (MVUE) UCL

From File

Summary Statistics for	Nickel
Number of Samples	11
Minimum	0.61
Maximum	6.8
Mean	3.337272727
Median	2.6
Standard Deviation	1.960888018
Variance	3.845081818
Coefficient of Variation	0.587572002
Skewness	0.895131398

Shapiro-Wilk Test Statisitic	0.877963435
Shapiro-Wilk 5% Critical Value	0.85

Data are Normal at 5% Significance Level
Recommended UCL to use   Student's-t

95 % UCL (Assuming Normal Data)
Student's-t   4.40885406

95 % UCL (Adjusted for Skewness)
Adjusted-CLT   4.480260659
Modified-t   4.435448794

95 % Non-parametric UCL
CLT   4.309759509
Jackknife   4.40885406
Standard Bootstrap   4.266741226
Bootstrap-t   4.895496169
Chebyshev (Mean, Std) 5.914384475

From File

Summary Statistics for	Dieldrin
Number of Samples	1
Minimum	0.014
Maximum	0.014
Mean	0.014
Median	0.014

Too Few Observations To Calculate UCLs

From File

Summary Statistics for   4,4'-DDD

Number of Samples	1
Minimum	0.005
Maximum	0.005
Mean	0.005
Median	0.005

Too Few Observations To Calculate UCLs
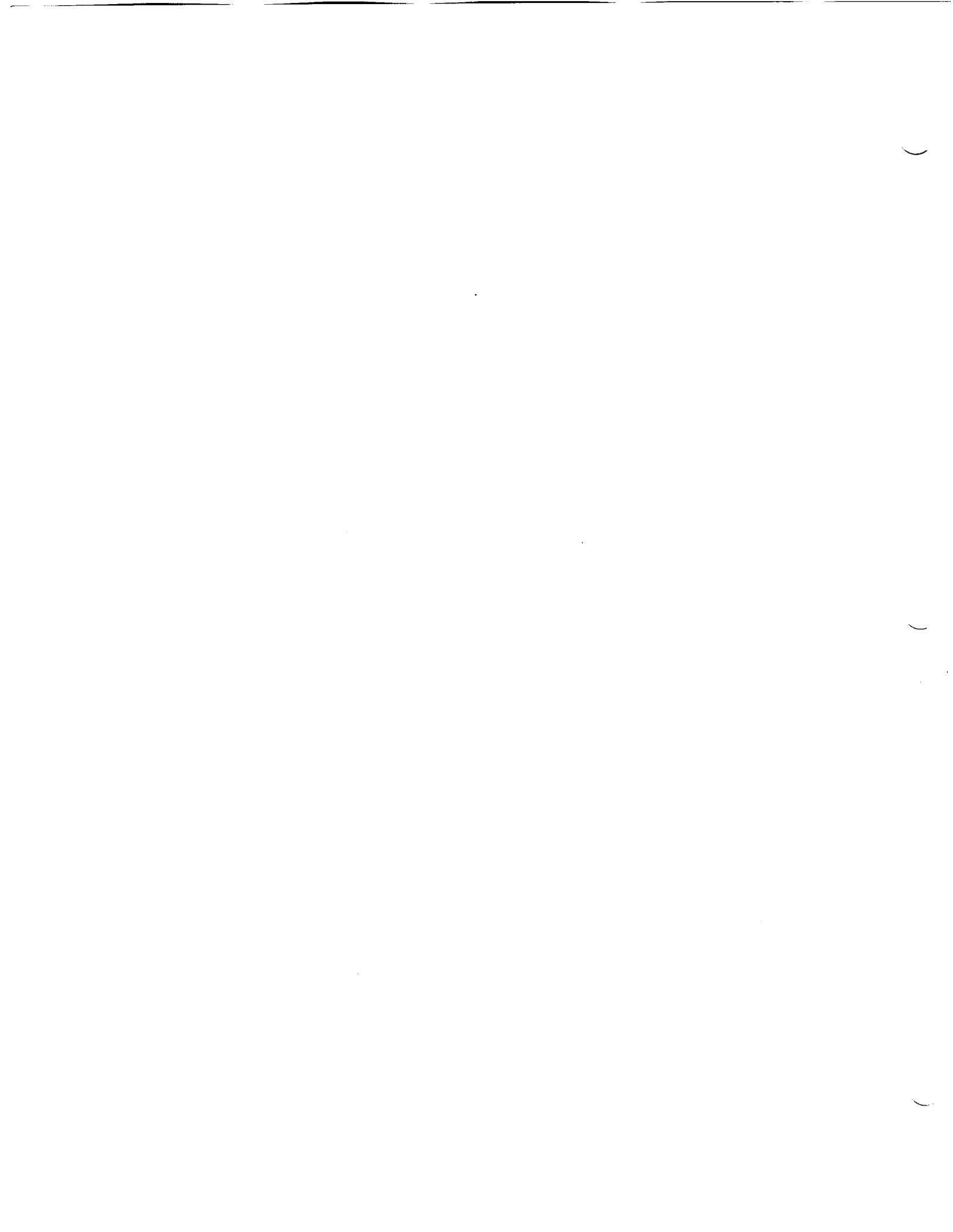
Chemical of Potential Concern	Max. Conc.	95% UCL (Distribution) (1)	Value	Statistic (2)	Rationale (3)	Description	Mean
1,1,2-Trichloroethane	5	3.045396938 (NP)	3.045396938	95% UCL-NP	(d)	Bootstrap-t	1.529
1,1-Dichloroethane	120	65.58188981 (NP)	65.58188981	95% UCL-NP	(d)	Chebyshev (Mean, Std)	14.3
1,1-Dichloroethene	5	3.045396938 (NP)	3.045396938	95% UCL-NP	(d)	Bootstrap-t	1.529
1,2,4-Trichlorobenzene	23	13.0677965 (NP)	13.0677965	95% UCL-NP	(d)	Bootstrap-t	4.55
1,3-Dichlorobenzene	19	26.80237318 (T)	19	Max	(c & e)	99% Chebyshev (MVUE) UCL	3.655
1,4-Dichlorobenzene	197	106.6048061 (NP)	106.6048061	95% UCL-NP	(d)	Chebyshev (Mean, Std)	21.589
Benzene	86	116.0757885 (T)	86	Max	(c & e)	99% Chebyshev (MVUE) UCL	11.138
Bromomethane	5	3.228418606 (NP)	3.228418606	95% UCL-NP	(d)	Bootstrap-t	1.805
Chlorobenzene	18	9.502653351 (NP)	9.502653351	95% UCL-NP	(d)	Bootstrap-t	4.05
Chlorodibromomethane	5	3.255910408 (NP)	3.255910408	95% UCL-NP	(d)	Bootstrap-t	1.6555
Chloroethane	5	3.331825219 (NP)	3.331825219	95% UCL-NP	(d)	Bootstrap-t	1.9
Chloroethane	480	258.2261359 (NP)	258.2261359	95% UCL-NP	(d)	Chebyshev (Mean, Std)	49.9
cis-1,2-Dichloroethene	5.5	5.891727617 (NP)	5.50	Max	(d & e)	Jackknife	4.533333
Acetophenone	40	22.56380881 (NP)	22.56380881	95% UCL-NP	(d)	Chebyshev (Mean, Std)	5.75
Ethylbenzene	540	325.06131489 (T)	325.0613489	95% UCL-T	(c)	99% Chebyshev (MVUE) UCL	65.5
Methyl tert-butyl ether	5	4.058211181 (NP)	4.058211181	95% UCL-NP	(d)	Chebyshev (Mean, Std)	1.5
Methylene chloride	5	3.228418606 (NP)	3.228418606	95% UCL-NP	(d)	Bootstrap-t	1.805
Tetrachloroethene	1200	645.0337692 (NP)	645.0337692	95% UCL-NP	(d)	Chebyshev (Mean, Std)	123.7
Toluene	15	7.719626747 (NP)	7.719626747	95% UCL-NP	(d)	Bootstrap-t	3.75
trans-1,2-Dichloroethene	9	4.559274168 (N)	4.559274168	95% UCL-N	(b)	Student's-t	3.005
Trichloroethene	420	225.8886273 (NP)	225.8886273	95% UCL-NP	(d)	Chebyshev (Mean, Std)	43.525
Vinyl chloride	42.5	20.08018399 (T)	20.08018399	95% UCL-T	(c)	95% Chebyshev (MVUE) UCL	8.05
Xylenes (total)	5.5	5.792837526 (NP)	5.5	Max	(d & e)	Jackknife	4.633333
4-Methylphenol	13.6	8.574996996 (NP)	8.574996996	95% UCL-NP	(d)	Bootstrap-t	3.93875
Naphthalene	5	4.88183028 (NP)	4.88183028	95% UCL-NP	(d)	Bootstrap-t	4.16875
2-Methylnaphthalene	5	5.30228707 (NP)	5	Max	(d & e)	Jackknife	4.2125
Acenaphthylene	5	5.146329848 (NP)	5	Max	(d & e)	Jackknife	4.4375
Phenanthrene	5	53.62254457 (NP)	5	Max	(d & e)	99% Chebyshev (MVUE) UCL	2.003125
Benzo(a)Pyrene	5	3.79948409 (NP)	3.79948409	95% UCL-NP	(d)	Bootstrap-t	2.002063
Dibenz(a,h) anthracene	59	56.78251403 (NP)	56.78251403	95% UCL-NP	(d)	Jackknife	41.9
C9-C18 Aliphatic	85	92.33160848 (NP)	85	Max	(d & e)	Jackknife	61
C11-C22 Aromatic	150	157.8276206 (NP)	150	Max	(d & e)	Chebyshev (Mean, Std)	63.5
C19-C36 Aliphatic	448	288.5647583 (NP)	288.5647583	95% UCL-NP	(d)	Jackknife	106.6
C5-C8 Aliphatic	16	9.211081905 (NP)	9.211081905	95% UCL-NP	(d)	Chebyshev (Mean, Std)	3.481818
Cyanide	3.5	2.055697674 (N)	2.055697674	95% UCL-N	(b)	Student's-t	1.511364
Arsenic	23	14.4474565 (T)	14.4474565	95% UCL-T	(c)	95% Chebyshev (MVUE) UCL	5.622727
Chromium	2.1	1.375666986 (N)	1.375666986	95% UCL-N	(b)	Student's-t	1.077909
Lead	2635	6030.13413 (T)	2635	Max	(c & e)	99% Chebyshev (MVUE) UCL	552.9
Manganese	19	14.0652472 (T)	14.0652472	95% UCL-T	(c)	95% Chebyshev (MVUE) UCL	4.965455
Nickel	1.40E-06	N/A (<4)	1.40223E-06	Max	(a)		8.92E-07
TEQ (no 170/193/180) Humans	0.558	N/A (<4)	0.558	Max	(a)		0.2815
Dieldrin		N/A (<4)					
4,4-DDD							

(1) T - Transformed; N - Normal; NP - Non-parametric; <4 - sample size too small to calculate 95% UCL

(2) Statistics: Maximum Detected Value (Max); 95% UCL of Transformed Data (95% UCL - T); 95% UCL of Normal Data (95% UCL - N); 95% of Non-parametric Data (95% UCL - NP).

(3) Rationale

(a) Due to small sample size (<4), the maximum detected concentration is used.
(b) Shapiro-Wilk W Test indicates data are normally distributed.
(c) Shapiro-Wilk W Test indicates data are log-normally distributed.
(d) Shapiro-Wilk W Test indicates data are neither normally nor log-normally distributed.
(e) Recommended UCL exceeds maximum detected concentration. Therefore, maximum concentration is used for EPC.
(f) Due to high standard deviation, the maximum concentration is used.

From File

Summary Statistics for	1,1,2-Trichloroethane
Number of Samples	10
Minimum	0.04
Maximum	5
Mean	1.529
Median	0.04
Standard Deviation	2.395219545
Variance	5.737076667
Coefficient of Variation	1.566526844
Skewness	1.035091902

Shapiro-Wilk Test Statisitic	0.594848196
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t	2.917463664

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	3.039783428
Modified-t	2.95878487

95 % Non-parametric UCL
CLT	2.774869585
Jackknife	2.917463664
Standard Bootstrap	2.734371433
Bootstrap-t	3.045396938
Chebyshev (Mean, Std)	4.830582297

From File

Summary Statistics for	1,1-Dichloroethane
Number of Samples	10
Minimum	0.5
Maximum	120
Mean	14.3
Median	3
Standard Deviation	37.20379312
Variance	1384.122222
Coefficient of Variation	2.601663854
Skewness	3.14178011

Shapiro-Wilk Test Statisitic	0.413100334
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	35.86633826

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	46.1409461
Modified-t	37.81444055

95 % Non-parametric UCL

CLT	33.65149302
Jackknife	35.86633826
Standard Bootstrap	32.57137464
Bootstrap-t	234.1271267
Chebyshev (Mean, Std)	65.58188981

From File

Summary Statistics for	1,1-Dichloroethene
Number of Samples	10
Minimum	0.04
Maximum	5
Mean	1.529
Median	0.04
Standard Deviation	2.395219545
Variance	5.737076667
Coefficient of Variation	1.566526844
Skewness	1.035091902

Shapiro-Wilk Test Statisitic	0.594848196
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	2.917463664

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3.039783428
Modified-t	2.95878487

95 % Non-parametric UCL

CLT	2.774869585
Jackknife	2.917463664
Standard Bootstrap	2.690171594
Bootstrap-t	3.045396938
Chebyshev (Mean, Std)	4.830582297

From File

Summary Statistics for	1,2,4-Trichlorobenzene
Number of Samples	10
Minimum	0.5
Maximum	23
Mean	4.55
Median	2.75
Standard Deviation	6.85747767
Variance	47.025
Coefficient of Variation	1.50713795
Skewness	2.562075859

Shapiro-Wilk Test Statisitic	0.611513158
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level

Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	8.525150668

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	9.994219446
Modified-t	8.817973635

95 % Non-parametric UCL

CLT	8.116905957
Jackknife	8.525150668
Standard Bootstrap	7.948181432
Bootstrap-t	13.0677965
Chebyshev (Mean, Std)	14.00238065

From File

Summary Statistics for	1,3-Dichlorobenzene	Summary Statistics for	ln(1,3-Dichlorobenzene)
Number of Samples	10	Minimum	-2.995732274
Minimum	0.05	Maximum	2.944438979
Maximum	19	Mean	0.131128454
Mean	3.655	Standard Deviation	1.752627307
Median	0.5	Variance	3.071702477
Standard Deviation	5.808635812		
Variance	33.74025	Shapiro-Wilk Test Statisitic	0.883333966
Coefficient of Variation	1.589230044	Shapiro-Wilk 5% Critical Value	0.842
Skewness	2.421315726	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)		Estimates Assuming Lognormal Distribution	
Student's-t	7.022156794	MLE Mean	5.296147622
		MLE Standard Deviation	24.02525935
95 % UCL (Adjusted for Skewness)		MLE Coefficient of Variation	4.536365121
Adjusted-CLT	8.17916916	MLE Skewness	106.9611772
Modified-t	7.256565815	MLE Median	1.140114224
		MLE 80% Quantile	5.013320793
95 % Non-parametric UCL		MLE 90% Quantile	10.84012517
CLT	6.676352555	MLE 95% Quantile	20.37279381
Jackknife	7.022156794	MLE 99% Quantile	67.20445702
Standard Bootstrap	6.509795716		
Bootstrap-t	10.62788997	MVU Estimate of Median	0.975630412
Chebyshev (Mean, Std)	11.66165192	MVU Estimate of Mean	3.960062486
		MVU Estimate of Std. Dev.	8.29106035
99 % Non-parametric UCL		MVU Estimate of SE of Mean	2.295738603
Chebyshev (Mean, Std)	21.93144591		

UCL Assuming Lognormal Distribution
95% H-UCL	87.52397377
95% Chebyshev (MVUE) UCL	13.96695506
99% Chebyshev (MVUE) UCL	26.80237318

Recommended UCL to use:
  99 % Chebyshev (MVUE) UCL

From File

Summary Statistics for	1,4-Dichlorobenzene
Number of Samples	10
Minimum	0.04
Maximum	197
Mean	21.589
Median	1.855
Standard Deviation	61.67694823
Variance	3804.045943
Coefficient of Variation	2.856869157
Skewness	3.153881929

Shapiro-Wilk Test Statisitic	0.396262638
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	57.34196541

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	74.45510265
Modified-t	60.58399562

95 % Non-parametric UCL

CLT	53.67016521
Jackknife	57.34196541
Standard Bootstrap	51.67310853
Bootstrap-t	603.5072505
Chebyshev (Mean, Std)	106.6048061

From File

Summary Statistics for	Benzene	Summary Statistics for	In(Benzene)
Number of Samples	10	Minimum	-3.218875825
Minimum	0.04	Maximum	4.454347296
Maximum	86	Mean	-0.26617984
Mean	11.138	Standard Deviation	2.781891564
Median	1.735	Variance	7.738920674
Standard Deviation	26.78178353		
Variance	717.2639289	Shapiro-Wilk Test Statisitic	0.871778405
Coefficient of Variation	2.404541527	Shapiro-Wilk 5% Critical Value	0.842
Skewness	2.9736107	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)

Estimates Assuming Lognormal Distribution

Student's-t	26.66289557	MLE Mean	36.718492
		MLE Standard Deviation	1759.039176
95 % UCL (Adjusted for Skewness)		MLE Coefficient of Variation	47.90608438
Adjusted-CLT	33.5780011	MLE Skewness	110087.8428
Modified-t	27.99020553	MLE Median	0.766301304
		MLE 80% Quantile	8.040719199
95 % Non-parametric UCL		MLE 90% Quantile	27.34546824
CLT	25.06850153	MLE 95% Quantile	74.44285492
Jackknife	26.66289557	MLE 99% Quantile	494.9713777
Standard Bootstrap	24.29622204		
Bootstrap-t	246.0353861	MVU Estimate of Median	0.512763883
Chebyshev (Mean, Std)	48.05414098	MVU Estimate of Mean	12.68010522
		MVU Estimate of Std. Dev.	49.48138755
99 % Non-parametric UCL		MVU Estimate of SE of Mean	10.39165716
Chebyshev (Mean, Std)	95.4049146		

UCL Assuming Lognormal Distribution

95% H-UCL	32555.32694
95% Chebyshev (MVUE) UCL	57.97628863
99% Chebyshev (MVUE) UCL	116.0757885

Recommended UCL to use:
Greater of

99 % Chebyshev (MVUE) UCL
99 % Chebyshev (Mean, Std)

From File

Summary Statistics for	Bromomethane
Number of Samples	10
Minimum	0.05
Maximum	5
Mean	1.805
Median	0.5
Standard Deviation	2.209128788
Variance	4.88025
Coefficient of Variation	1.223894065
Skewness	1.019064541

Shapiro-Wilk Test Statisitic	0.63597361
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	3.085590357

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3.194623548
Modified-t	3.123111104

95 % Non-parametric UCL

CLT	2.954074778
Jackknife	3.085590357
Standard Bootstrap	2.872345935
Bootstrap-t	3.228418606
Chebyshev (Mean, Std)	4.850073891

From File

Summary Statistics for   Chlorobenzene
Number of Samples   10
Minimum   0.5
Maximum   18
Mean   4.05
Median   2.75
Standard Deviation   5.387485499
Variance   29.025
Coefficient of Variation   1.330243333
Skewness   2.215553405

Shapiro-Wilk Test Statisitic   0.668831559
Shapiro-Wilk 5% Critical Value   0.842
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

     95 % UCL (Assuming Normal Data)
Student's-t   7.173023889

     95 % UCL (Adjusted for Skewness)
Adjusted-CLT   8.127698767
Modified-t   7.371961586

     95 % Non-parametric UCL
CLT   6.852291899
Jackknife   7.173023889
Standard Bootstrap   6.779024945
Bootstrap-t   9.502653351
Chebyshev (Mean, Std)   11.47613628

From File

Summary Statistics for	Chlorodibromomethane
Number of Samples	10
Minimum	0.04
Maximum	5
Mean	1.6555
Median	0.1675
Standard Deviation	2.327591089
Variance	5.417680278
Coefficient of Variation	1.405974684
Skewness	0.976211441

Shapiro-Wilk Test Statisitic	0.657810754
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	3.004760722

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3.108982864
Modified-t	3.042631073

95 % Non-parametric UCL

CLT	2.866192753
Jackknife	3.004760722
Standard Bootstrap	2.800274593
Bootstrap-t	3.255910408
Chebyshev (Mean, Std)	4.863862905

From File

Summary Statistics for	Chloroethane
Number of Samples	10
Minimum	0.5
Maximum	5
Mean	1.9
Median	0.5
Standard Deviation	2.144761059
Variance	4.6
Coefficient of Variation	1.12882161
Skewness	1.016126163

Shapiro-Wilk Test Statisitic	0.625344696
Shapiro-Wilk 5% Critical Value	0.842
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	3.143277597

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3.24846048
Modified-t	3.17960006

95 % Non-parametric UCL

CLT	3.015594008
Jackknife	3.143277597
Standard Bootstrap	2.958000288
Bootstrap-t	3.331825219
Chebyshev (Mean, Std)	4.8563491

From File

Summary Statistics for	cis-1,2-Dichloroethene
Number of Samples	10
Minimum	0.5
Maximum	480
Mean	49.9
Median	1
Standard Deviation	151.1356639
Variance	22841.98889
Coefficient of Variation	3.028770819
Skewness	3.161187057

Shapiro-Wilk Test Statisitic	0.376423008
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)	
Student's-t	137.5104982

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	179.563186
Modified-t	145.4732999

95 % Non-parametric UCL	
CLT	128.512972
Jackknife	137.5104982
Standard Bootstrap	123.5817026
Bootstrap-t	4088.786773
Chebyshev (Mean, Std)	258.2261359

From File

Summary Statistics for	Ethylbenzene
Number of Samples	10
Minimum	0.5
Maximum	40
Mean	5.75
Median	1.75
Standard Deviation	12.19801896
Variance	148.7916667
Coefficient of Variation	2.121394603
Skewness	3.014322437

Shapiro-Wilk Test Statisitic	0.487142899
Shapiro Wilk 5% Critical Value	0.842
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	12.82096189

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	16.02357541
Modified-t	13.43377459

95 % Non-parametric UCL

CLT	12.0947799
Jackknife	12.82096189
Standard Bootstrap	11.66075094
Bootstrap-t	64.46159364
Chebyshev (Mean, Std)	22.56380881

From File

Summary Statistics for	Methyl tert-butyl ether	Summary Statistics for	ln(Methyl tert-butyl ether
Number of Samples	10	Minimum	-0.693147181
Minimum	0.5	Maximum	6.29156914
Maximum	540	Mean	2.000794973
Mean	65.5	Standard Deviation	2.1079925
Median	5	Variance	4.44363238
Standard Deviation	168		
Variance	28224	Shapiro-Wilk Test Statisitic	0.895703552
Coefficient of Variation	2.564885496	Shapiro-Wilk 5% Critical Value	0.842
Skewness	3.077880631	Data are Lognormal at 5% Significance Level	

	95 % UCL (Assuming Normal Data)	Estimates Assuming Lognormal Distribution	
Student's-t	162.8864363	MLE Mean	68.21136294
		MLE Standard Deviation	625.4778772
	95 % UCL (Adjusted for Skewness)	MLE Coefficient of Variation	9.169702089
Adjusted-CLT	208.1360979	MLE Skewness	798.5291686
Modified-t	171.5045021	MLE Median	7.394932536
		MLE 80% Quantile	43.90589685
	95 % Non-parametric UCL	MLE 90% Quantile	111.0039
CLT	152.8849292	MLE 95% Quantile	237.0906685
Jackknife	162.8864363	MLE 99% Quantile	996.2373456
Standard Bootstrap	148.2574716		
Bootstrap-t	1823.164298	MVU Estimate of Median	5.893844769
Chebyshev (Mean, Std)	297.072019	MVU Estimate of Mean	41.95269331
		MVU Estimate of Std. Dev.	111.614269
	99 % Non-parametric UCL	MVU Estimate of SE of Mean	28.45349047
Chebyshev (Mean, Std)	594.0996595		

UCL Assuming Lognormal Distribution

95% H-UCL	3634.673561
95% Chebyshev (MVUE) UCL	165.9785829
99% Chebyshev (MVUE) UCL	325.0613489
Recommended UCL to use:	

99 % Chebyshev (MVUE) UCL

From File

Summary Statistics for	Methylene chloride
Number of Samples	10
Minimum	0.5
Maximum	5
Mean	1.5
Median	0.5
Standard Deviation	1.855921454
Variance	3.444444444
Coefficient of Variation	1.23728097
Skewness	1.727252602

Shapiro-Wilk Test Statisitic	0.577668002
Shapiro-Wilk 5% Critical Value	0.842
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	2.575842717

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	2.807882382
Modified-t	2.629270136

95 % Non-parametric UCL

CLT	2.465354553
Jackknife	2.575842717
Standard Bootstrap	2.413436838
Bootstrap-t	9.423067588
Chebyshev (Mean, Std)	4.058211181

From File

Summary Statistics for	Tetrachloroethene
Number of Samples	10
Minimum	0.05
Maximum	5
Mean	1.805
Median	0.5
Standard Deviation	2.209128788
Variance	4.88025
Coefficient of Variation	1.223894065
Skewness	1.019064541

Shapiro-Wilk Test Statisitic	0.63597361
Shapiro-Wilk 5% Critical Value	0.842
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	3.085590357

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3.194623548
Modified-t	3.123111104

95 % Non-parametric UCL

CLT	2.954074778
Jackknife	3.085590357
Standard Bootstrap	2.888618478
Bootstrap-t	3.228418606
Chebyshev (Mean, Std)	4.850073891

From File

Summary Statistics for	Toluene
Number of Samples	10
Minimum	0.5
Maximum	1200
Mean	123.7
Median	3
Standard Deviation	378.2152679
Variance	143046.7889
Coefficient of Variation	3.057520355
Skewness	3.160968992

Shapiro-Wilk Test Statisitic	0.376436375
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	342.9442684

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	448.1718254
Modified-t	362.869714

95 % Non-parametric UCL

CLT	320.428062
Jackknife	342.9442684
Standard Bootstrap	309.3833288
Bootstrap-t	21011.86621
Chebyshev (Mean, Std)	645.0337692

From File

Summary Statistics for	trans-1,2-Dichloroethen
Number of Samples	10
Minimum	0.5
Maximum	15
Mean	3.75
Median	2.75
Standard Deviation	4.541475531
Variance	20.625
Coefficient of Variation	1.211060142
Skewness	1.868302147

Shapiro-Wilk Test Statisitic	0.711999535
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	6.382607842

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	7.018859529
Modified-t	6.524021983

95 % Non-parametric UCL

CLT	6.112241178
Jackknife	6.382607842
Standard Bootstrap	5.946097688
Bootstrap-t	7.719626747
Chebyshev (Mean, Std)	10.00999201

From File

Summary Statistics for	Trichloroethene
Number of Samples	10
Minimum	0.05
Maximum	9
Mean	3.005
Median	2.5
Standard Deviation	2.681256961
Variance	7.189138889
Coefficient of Variation	0.892265212
Skewness	1.299527314

Shapiro-Wilk Test Statisitic	0.877489529
Shapiro-Wilk 5% Critical Value	0.842
Data are Normal at 5% Significance Level	
Recommended UCL to use	Student's-t

95 % UCL (Assuming Normal Data)

Student's-t	4.559274168

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	4.771961111
Modified-t	4.617346945

95 % Non-parametric UCL

CLT	4.399651486
Jackknife	4.559274168
Standard Bootstrap	4.357880365
Bootstrap-t	5.194367681
Chebyshev (Mean, Std)	6.700857666

From File

Summary Statistics for   Vinyl chloride

Number of Samples	10
Minimum	0.04
Maximum	420
Mean	43.525
Median	0.045
Standard Deviation	132.3004805
Variance	17503.41714
Coefficient of Variation	3.039643435
Skewness	3.160431999

Shapiro-Wilk Test Statisitic	0.378914634
Shapiro-Wilk 5% Critical Value	0.842

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	120.2170971

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	157.0183223
Modified-t	127.185875

95 % Non-parametric UCL

CLT	112.3408817
Jackknife	120.2170971
Standard Bootstrap	109.4515995
Bootstrap-t	2732.929243
Chebyshev (Mean, Std)	225.8886273

From File

Summary Statistics for	Xylenes (total)	Summary Statistics for	ln(Xylenes (total))
Number of Samples	10	Minimum	0
Minimum	1	Maximum	3.749504076
Maximum	42.5	Mean	1.344535226
Mean	8.05	Standard Deviation	1.220273688
Median	5	Variance	1.489067874
Standard Deviation	12.62372106		
Variance	159.3583333	Shapiro-Wilk Test Statisitic	0.889530108
Coefficient of Variation	1.568164107	Shapiro-Wilk 5% Critical Value	0.842
Skewness	2.735427303	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)

Student's-t	15.36773337

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.30592451
Modified-t	15.94325456

95 % Non-parametric UCL

CLT	14.61620816
Jackknife	15.36773337
Standard Bootstrap	14.34960353
Bootstrap-t	39.73697229
Chebyshev (Mean, Std)	25.45059865

Estimates Assuming Lognormal Distribution

MLE Mean	8.077392929
MLE Standard Deviation	14.9659978
MLE Coefficient of Variation	1.852825278
MLE Skewness	11.9191537
MLE Median	3.836403067
MLE 80% Quantile	10.75818105
MLE 90% Quantile	18.40434753
MLE 95% Quantile	28.55652462
MLE 99% Quantile	65.55515338

MVU Estimate of Median	3.559321894
MVU Estimate of Mean	7.23253371
MVU Estimate of Std. Dev.	9.753602922
MVU Estimate of SE of Mean	2.947453118

UCL Assuming Lognormal Distribution

95% H-UCL	34.54688717
95% Chebyshev (MVUE) UCL	20.08018399
99% Chebyshev (MVUE) UCL	36.55932195

Recommended UCL to use:

95 % Chebyshev (MVUE) UCL

From File

Summary Statistics for	4-Methylphenol
Number of Samples	6
Minimum	1.8
Maximum	5.5
Mean	4.633333333
Median	5
Standard Deviation	1.409491634
Variance	1.986666667
Coefficient of Variation	0.304206828
Skewness	-2.281511812

Shapiro-Wilk Test Statisitic	0.639185321
Shapiro-Wilk 5% Critical Value	0.788
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)	
Student's-t	5.792837526

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	5.007136075
Modified-t	5.703510531

95 % Non-parametric UCL	
CLT	5.579819202
Jackknife	5.792837526
Standard Bootstrap	5.508351146
Bootstrap-t	5.406764974
Chebyshev (Mean, Std)	7.141542079

From File

Summary Statistics for	Naphthalene
Number of Samples	8
Minimum	0.005
Maximum	13.6
Mean	3.93875
Median	3.7
Standard Deviation	4.501746288
Variance	20.26571964
Coefficient of Variation	1.142937807
Skewness	1.543568851

Shapiro-Wilk Test Statisitic	0.812854426
Shapiro-Wilk 5% Critical Value	0.818

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	6.954175654

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	7.484817358
Modified-t	7.09894139

95 % Non-parametric UCL

CLT	6.55671164
Jackknife	6.954175654
Standard Bootstrap	6.366132714
Bootstrap-t	8.574996996
Chebyshev (Mean, Std)	10.87640696

From File

Summary Statistics for 2-Methylnaphthalene

Number of Samples	8
Minimum	1.1
Maximum	5
Mean	4.16875
Median	5
Standard Deviation	1.56956261
Variance	2.463526786
Coefficient of Variation	0.376506773
Skewness	-1.60182273

Shapiro-Wilk Test Statisitic	0.605134477
Shapiro-Wilk 5% Critical Value	0.818

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	5.220097423

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	4.745716865
Modified-t	5.167719067

95 % Non-parametric UCL

CLT	5.081519055
Jackknife	5.220097423
Standard Bootstrap	5.015879475
Bootstrap-t	4.88183028
Chebyshev (Mean, Std)	6.587608432

From File

Summary Statistics for	Acenaphthylene
Number of Samples	8
Minimum	0.5
Maximum	5
Mean	4.2125
Median	5
Standard Deviation	1.62694938
Variance	2.646964286
Coefficient of Variation	0.386219437
Skewness	-2.179478773

Shapiro-Wilk Test Statisitic	0.585216063
Shapiro-Wilk 5% Critical Value	0.818
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)
Student's-t	5.30228707

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	4.685036054
Modified-t	5.228414119

95 % Non-parametric UCL
CLT	5.158641962
Jackknife	5.30228707
Standard Bootstrap	5.074528526
Bootstrap-t	4.936653703
Chebyshev (Mean, Std)	6.719797385

From File

Summary Statistics for   Phenanthrene
Number of Samples   8
Minimum   2.4
Maximum   5
Mean   4.4375
Median   5
Standard Deviation   1.058216154
Variance   1.119821429
Coefficient of Variation   0.238471246
Skewness   -1.572541353

Shapiro-Wilk Test Statisitic   0.6033147
Shapiro-Wilk 5% Critical Value   0.818
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

        95 % UCL (Assuming Normal Data)
Student's-t   5.146329848

        95 % UCL (Adjusted for Skewness)
Adjusted-CLT   4.830635952
Modified-t   5.111661334

        95 % Non-parametric UCL
CLT   5.052898808
Jackknife   5.146329848
Standard Bootstrap   5.016587348
Bootstrap-t   4.96005107
Chebyshev (Mean, Std)   6.068320619

From File

Summary Statistics for	Benzo(a)Pyrene	Summary Statistics for	ln(Benzo(a)Pyrene)
Number of Samples	8	Minimum	-5.298317367
Minimum	0.005	Maximum	1.609437912
Maximum	5	Mean	-1.419290054
Mean	2.003125	Standard Deviation	3.079855278
Median	0.5	Variance	9.485508531
Standard Deviation	2.489985567		
Variance	6.200028125	Shapiro-Wilk Test Statisitic	0.819980466
Coefficient of Variation	1.243050517	Shapiro-Wilk 5% Critical Value	0.818
Skewness	0.618653289	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)		Estimates Assuming Lognormal Distribution	
Student's-t	3.671003613	MLE Mean	27.75633802
		MLE Standard Deviation	3184.913799
95 % UCL (Adjusted for Skewness)		MLE Coefficient of Variation	114.7454609
Adjusted-CLT	3.656907622	MLE Skewness	1511142.734
Modified-t	3.703096067	MLE Median	0.241885682
		MLE 80% Quantile	3.264764578
95 % Non-parametric UCL		MLE 90% Quantile	12.65843735
CLT	3.451160114	MLE 95% Quantile	38.36217229
Jackknife	3.671003613	MLE 99% Quantile	312.4527699
Standard Bootstrap	3.366657403		
Bootstrap-t	3.801721895	MVU Estimate of Median	0.127702788
Chebyshev (Mean, Std)	5.840450474	MVU Estimate of Mean	5.507869035
		MVU Estimate of Std. Dev.	20.37238398
		MVU Estimate of SE of Mean	4.835706838

UCL Assuming Lognormal Distribution

95% H-UCL	1740780.889
95% Chebyshev (MVUE) UCL	26.58622646
99% Chebyshev (MVUE) UCL	53.62254457

Recommended UCL to use:
    Needs further investigation.

From File

Summary Statistics for	Dibenz(a,h) anthracene
Number of Samples	8
Minimum	0.005
Maximum	5
Mean	2.0020625
Median	0.5
Standard Deviation	2.490956704
Variance	6.2048653
Coefficient of Variation	1.244195275
Skewness	0.618388796

Shapiro-Wilk Test Statisitic 0.689803145
Shapiro-Wilk 5% Critical Value 0.818
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t 3.670591614

95 % UCL (Adjusted for Skewness)
Adjusted-CLT 3.656402127
Modified-t 3.702682858

95 % Non-parametric UCL
CLT 3.450662372
Jackknife 3.670591614
Standard Bootstrap 3.346739855
Bootstrap-t 3.79948409
Chebyshev (Mean, Std) 5.840884596

From File

Summary Statistics for	C9-C18 Aliphatic
Number of Samples	5
Minimum	30.5
Maximum	59
Mean	41.9
Median	30.5
Standard Deviation	15.61009289
Variance	243.675
Coefficient of Variation	0.372555916
Skewness	0.60858062

Shapiro-Wilk Test Statisitic	0.683879008
Shapiro-Wilk 5% Critical Value	0.762

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	56.78251403

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	55.41297598
Modified-t	57.0991807

95 % Non-parametric UCL

CLT	53.38279846
Jackknife	56.78251403
Standard Bootstrap	52.18750117
Bootstrap-t	1.#INF
Chebyshev (Mean, Std)	72.32967302

From File

Summary Statistics for	C11-C22 Aromatic
Number of Samples	5
Minimum	25
Maximum	85
Mean	61
Median	85
Standard Deviation	32.86335345
Variance	1080
Coefficient of Variation	0.538743499
Skewness	-0.60858062

Shapiro-Wilk Test Statisitic	0.683879008
Shapiro-Wilk 5% Critical Value	0.762

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	92.33160848

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	80.9002546
Modified-t	91.66494181

95 % Non-parametric UCL

CLT	85.17431254
Jackknife	92.33160848
Standard Bootstrap	82.64428889
Bootstrap-t	90.39387691
Chebyshev (Mean, Std)	125.0624695

From File

Summary Statistics for	C19-C36 Aliphatic
Number of Samples	5
Minimum	40.5
Maximum	150
Mean	63.5
Median	41
Standard Deviation	48.38904835
Variance	2341.5
Coefficient of Variation	0.762032257
Skewness	2.228298536

Shapiro-Wilk Test Statisitic	0.580549367
Shapiro-Wilk 5% Critical Value	0.762

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	109.6336583

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	122.1375951
Modified-t	113.2278331

95 % Non-parametric UCL

CLT	99.09502776
Jackknife	109.6336583
Standard Bootstrap	96.09095957
Bootstrap-t	4092.073544
Chebyshev (Mean, Std)	157.8276206

From File

Summary Statistics for   C5-C8 Aliphatic
Number of Samples   5
Minimum   20
Maximum   448
Mean   106.6
Median   20
Standard Deviation   190.8606822
Variance   36427.8
Coefficient of Variation   1.790437919
Skewness   2.235351481

Shapiro-Wilk Test Statisitic   0.560004656
Shapiro-Wilk 5% Critical Value   0.762
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

    95 % UCL (Assuming Normal Data)
Student's-t   288.5647583

    95 % UCL (Adjusted for Skewness)
Adjusted-CLT   338.171646
Modified-t   302.7861153

    95 % Non-parametric UCL
CLT   246.9972905
Jackknife   288.5647583
Standard Bootstrap   231.2014474
Bootstrap-t   1.#INF
Chebyshev (Mean, Std)   478.6559635

From File

Summary Statistics for	Cyanide
Number of Samples	11
Minimum	1.5
Maximum	16
Mean	3.481818182
Median	1.5
Standard Deviation	4.359316043
Variance	19.00363636
Coefficient of Variation	1.252022884
Skewness	2.831798438

Shapiro-Wilk Test Statisitic	0.536818576
Shapiro-Wilk 5% Critical Value	0.85
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	5.864086651

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	6.842922174
Modified-t	6.051127626

95 % Non-parametric UCL

CLT	5.643786225
Jackknife	5.864086651
Standard Bootstrap	5.54129368
Bootstrap-t	15.76051712
Chebyshev (Mean, Std)	9.211081905

From File

Summary Statistics for Arsenic

Number of Samples	11
Minimum	0.075
Maximum	3.5
Mean	1.511363636
Median	1.25
Standard Deviation	0.996077534
Variance	0.992170455
Coefficient of Variation	0.65905882 .
Skewness	0.388821509

Shapiro-Wilk Test Statisitic	0.905952055
Shapiro-Wilk 5% Critical Value	0.85

Data are Normal at 5% Significance Level

Recommended UCL to use   Student's-t

95 % UCL (Assuming Normal Data)

Student's-t	2.055697674

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	2.042981421
Modified-t	2.061565801

95 % Non-parametric UCL

CLT	2.00536035
Jackknife	2.055697674
Standard Bootstrap	1.98776261
Bootstrap-t	2.132713418
Chebyshev (Mean, Std)	2.820465988

From File

Summary Statistics for	Chromium		Summary Statistics for	In(Chromium)
Number of Samples	11		Minimum	-0.287682073
Minimum	0.75		Maximum	3.135494216
Maximum	23		Mean	1.215505795
Mean	5.622727273		Standard Deviation	1.096981729
Median	4.85		Variance	1.203368913
Standard Deviation	6.339888155			
Variance	40.19418182		Shapiro-Wilk Test Statisitic	0.931579947
Coefficient of Variation	1.127546802		Shapiro-Wilk 5% Critical Value	0.85
Skewness	2.328071607		Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)

Student's-t	9.087333991

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	10.20066861
Modified-t	9.310966015

95 % Non-parametric UCL

CLT	8.766944268
Jackknife	9.087333991
Standard Bootstrap	8.607083284
Bootstrap-t	12.02368844
Chebyshev (Mean, Std)	13.95497271

Estimates Assuming Lognormal Distribution

MLE Mean	6.154541417
MLE Standard Deviation	9.397162428
MLE Coefficient of Variation	1.526866389
MLE Skewness	8.140214796
MLE Median	3.371999173
MLE 80% Quantile	8.52033241
MLE 90% Quantile	13.80633184
MLE 95% Quantile	20.49212648
MLE 99% Quantile	43.25380885

MVU Estimate of Median	3.19170497
MVU Estimate of Mean	5.696525043
MVU Estimate of Std. Dev.	6.89573276
MVU Estimate of SE of Mean	2.007601362

UCL Assuming Lognormal Distribution

95% H-UCL	18.67239979
95% Chebyshev (MVUE) UCL	14.4474565
99% Chebyshev (MVUE) UCL	25.67190638

Recommended UCL to use:

95 % Chebyshev (MVUE) UCL

From File

Summary Statistics for   Lead

Number of Samples	11
Minimum	0.1135
Maximum	2.1
Mean	1.077909091
Median	1.05
Standard Deviation	0.544867544
Variance	0.296880641
Coefficient of Variation	0.505485619
Skewness	0.106444431

Shapiro-Wilk Test Statisitic	0.962524255
Shapiro-Wilk 5% Critical Value	0.85

Data are Normal at 5% Significance Level
Recommended UCL to use   Student's-t

95 % UCL (Assuming Normal Data)

Student's-t	1.375666986

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	1.353765609
Modified-t	1.376545746

95 % Non-parametric UCL

CLT	1.348131806
Jackknife	1.375666986
Standard Bootstrap	1.335340493
Bootstrap-t	1.396018833
Chebyshev (Mean, Std)	1.794005337

From File

Summary Statistics for	Manganese		Summary Statistics for	ln(Manganese)
Number of Samples	11		Minimum	0.832909123
Minimum	2.3		Maximum	7.876638461
Maximum	2635		Mean	5.217001286
Mean	552.9		Standard Deviation	1.936337184
Median	204		Variance	3.749401692
Standard Deviation	792.3754451			
Variance	627858.846		Shapiro-Wilk Test Statisitic	0.937518218
Coefficient of Variation	1.433126144		Shapiro-Wilk 5% Critical Value	0.85
Skewness	2.174345018		Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)

Student's-t	985.9154134

Estimates Assuming Lognormal Distribution

MLE Mean	1201.951941
MLE Standard Deviation	7742.627815

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	1113.230563
Modified-t	1012.019923

MLE Coefficient of Variation	6.441711643
MLE Skewness	286.6281395
MLE Median	184.3804501
MLE 80% Quantile	946.912041

95 % Non-parametric UCL

CLT	945.872286
Jackknife	985.9154134
Standard Bootstrap	915.6580713
Bootstrap-t	1730.433747
Chebyshev (Mean, Std)	1594.285357

MLE 90% Quantile	2219.849252
MLE 95% Quantile	4457.199596
MLE 99% Quantile	16662.59352

MVU Estimate of Median	155.1002228
MVU Estimate of Mean	841.7091508
MVU Estimate of Std. Dev.	2090.190773
MVU Estimate of SE of Mean	521.4563305

99 % Non-parametric UCL

Chebyshev (Mean, Std)	2930.026335

UCL Assuming Lognormal Distribution

95% H-UCL	26191.33708
95% Chebyshev (MVUE) UCL	3114.684599
99% Chebyshev (MVUE) UCL	6030.13413

Recommended UCL to use:
99 % Chebyshev (MVUE) UCL

From File

Summary Statistics for	Nickel	Summary Statistics for	ln(Nickel)
Number of Samples	11	Minimum	-0.765717873
Minimum	0.465	Maximum	2.944438979
Maximum	19	Mean	1.065237327
Mean	4.965454545	Standard Deviation	1.178384005
Median	3.8	Variance	1.388588863
Standard Deviation	5.331792595		
Variance	28.42801227	Shapiro-Wilk Test Statisitic	0.928390457
Coefficient of Variation	1.073777344	Shapiro-Wilk 5% Critical Value	0.85
Skewness	2.047816529	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)		Estimates Assuming Lognormal Distribution	
Student's-t	7.879159644	MLE Mean	5.809716407
		MLE Standard Deviation	10.07812251
95 % UCL (Adjusted for Skewness)		MLE Coefficient of Variation	1.734701284
Adjusted-CLT	8.670315554	MLE Skewness	10.42414708
Modified-t	8.044591963	MLE Median	2.901527514
		MLE 80% Quantile	7.853598317
95 % Non-parametric UCL		MLE 90% Quantile	13.19002383
CLT	7.609714583	MLE 95% Quantile	20.15956801
Jackknife	7.879159644	MLE 99% Quantile	44.97732717
Standard Bootstrap	7.558317133		
Bootstrap-t	10.35412433	MVU Estimate of Median	2.723134514
Chebyshev (Mean, Std)	11.97280285	MVU Estimate of Mean	5.294584952
		MVU Estimate of Std. Dev.	6.975088627
		MVU Estimate of SE of Mean	2.012127917

UCL Assuming Lognormal Distribution

95% H-UCL	20.35456504
95% Chebyshev (MVUE) UCL	14.0652472
99% Chebyshev (MVUE) UCL	25.31500494
Recommended UCL to use:	

95 % Chebyshev (MVUE) UCL

C.8-3.2 Surface Soil Current/Future Whitney Runs

From File

Summary Statistics for	TEQ (no 170/193/180) F
Number of Samples	3
Minimum	9.06E-09
Maximum	1.40E-06
Mean	8.92E-07
Median	1.26E-06

Too Few Observations To Calculate UCLs

C.8-3.3 Surface Soil Current/Future Murphy Summary Table

Chemical of Potential Concern	Max. Conc.	95% UCL (Distribution) (1)		Value	Statistic (2)	Rationale (3)	Description	Mean
1,1,2-Trichloroethane	100	25.79189787	(NP)	25.79189787	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.515714
1,1-Dichloroethane	220	56.42009182	(NP)	56.42009182	95% UCL-NP	(d)	Bootstrap-t	29.26786
1,1-Dichloroethene	100	22.85408473	(NP)	22.85408473	95% UCL-NP	(d)	Chebyshev (Mean, Std)	7.913571
1,2,4-Trichlorobenzene	100	25.90589732	(NP)	25.90589732	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.678571
1,3-Dichlorobenzene	100	25.80392026	(NP)	25.80392026	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.535714
1,4-Dichlorobenzene	100	25.7843092	(NP)	25.7843092	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.503036
Benzene	16	5.5277529	(NP)	5.5277529	95% UCL-NP	(d)	Chebyshev (Mean, Std)	3.032857
Bromomethane	100	25.47833956	(NP)	25.47833956	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.085714
Chlorobenzene	100	25.80392026	(NP)	25.80392026	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.535714
Chlorodibromomethane	100	25.78931187	(NP)	25.78931187	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.511429
Chloroethane	100	24.27648242	(NP)	24.27648242	95% UCL-NP	(d)	Bootstrap-t	11.35714
cis-1,2-Dichloroethene	1900	575.0357613	(NP)	575.0357613	95% UCL-NP	(d)	Chebyshev (Mean, Std)	176.5179
Acetophenone	5.5	5.26593244	(NP)	5.27	95% UCL-NP	(d)	Bootstrap-t	5.173077
Ethylbenzene	23	6.326697013	(NP)	6.326697013	95% UCL-NP	(d)	Chebyshev (Mean, Std)	3.089286
Methyl tert-butyl ether	7.5	5.305693244	(NP)	5.305693244	95% UCL-NP	(d)	Jackknife	4.857143
Methylene chloride	90	10.98041742	(T)	10.98041742	95%UCL-T	(c)	95% H-UCL	6.153571
Tetrachloroethene	100	25.78521825	(NP)	25.78521825	95% UCL-NP	(d)	Chebyshev (Mean, Std)	9.5
Toluene	52	14.26303331	(NP)	14.26303331	95% UCL-NP	(d)	Bootstrap-t	6.992857
trans-1,2-Dichloroethene	28	10.39856356	(NP)	10.39856356	95% UCL-NP	(d)	Bootstrap-t	6.691071
Trichloroethene	100	26.67390094	(NP)	26.67390094	95% UCL-NP	(d)	Chebyshev (Mean, Std)	10.80357
Vinyl chloride	600	144.1124011	(NP)	144.1124011	95% UCL-NP	(d)	Chebyshev (Mean, Std)	44.75143
Xylenes (total)	110	25.02274708	(NP)	25.02274708	95% UCL-NP	(d)	Chebyshev (Mean, Std)	8.571429
4-Methylphenol	25	9.227800889	(NP)	9.227800889	95% UCL-NP	(d)	Chebyshev (Mean, Std)	5.865385
Naphthalene	25	7.855192388	(NP)	7.855192388	95% UCL-NP	(d)	Bootstrap-t	5.237942
2-Methylnaphthalene	11	6.275130525	(NP)	6.275130525	95% UCL-NP	(d)	Chebyshev (Mean, Std)	5.269231
Acenaphthylene	5.5	5.083978247	(NP)	5.083978247	95% UCL-NP	(d)	Jackknife	5.038462
Phenanthrene	10	5.535724137	(NP)	5.535724137	95% UCL-NP	(d)	Bootstrap-t	5.053846
Benzo(a)Pyrene	5.5	5.180240667	(NP)	5.180240667	95% UCL-NP	(d)	Jackknife	4.846346
Dibenz(a,h) anthracene	5.5	5.180293917	(NP)	5.180293917	95% UCL-NP	(d)	Jackknife	4.846269
C9-C18 Aliphatic	3100	693.4737218	(NP)	693.4737218	95% UCL-NP	(d)	Chebyshev (Mean, Std)	158.82
C11-C22 Aromatic	1200	331.4642212	(NP)	331.4642212	95% UCL-NP	(d)	Chebyshev (Mean, Std)	137
C19-C36 Aliphatic	24000	5571.228236	(NP)	5571.228236	95% UCL-NP	(d)	Chebyshev (Mean, Std)	1312.22
C5-C8 Aliphatic	258	117.9201004	(NP)	117.9201004	95% UCL-NP	(d)	Chebyshev (Mean, Std)	54.548
Cyanide	1.5	1.5	(NP)	1.5	95% UCL-NP	(d)	Chebyshev (Mean, Std)	1.5
Arsenic	175	40.43249798	(NP)	40.43249798	95% UCL-NP	(d)	Chebyshev (Mean, Std)	11.48192
Chromium	133	43.10276186	(NP)	43.10276186	95% UCL-NP	(d)	Chebyshev (Mean, Std)	14.82308
Lead	148	36.8128145	(NP)	36.8128145	95% UCL-NP	(d)	Bootstrap-t	14.44942
Manganese	470	458.0602606	(N)	458.0602606	95%UCL-N	(b)	Student's-t	338.5
Nickel	93.1	96.50309654	(T)	93.1	Max	(c & e)	99% Chebyshev (MVUE) UCL	19.93
TEQ (no 170/193/180) Humans	2.90E-06	N/A	(<4)	0.0000029	Max	(a)		2.05E-06
Dieldrin		N/A	(<4)			(a)		
4,4'-DDD		N/A	(<4)			(a)		

(1) T - Transformed; N - Normal; NP - Non-parametric; <4 - sample size too small to calculate 95% UCL
(2) Statistics: Maximum Detected Value (Max); 95% UCL of Transformed Data (95% UCL - T); 95% of Normal Data (95% UCL - N); 95% of Non-parametric Data (95% UCL - NP).
(3) Rationale

(a) Due to small sample size (<4), the maximum detected concentration is used.
(b) Shapiro-Wilk W Test indicates data are normally distributed.
(c) Shapiro-Wilk W Test indicates data are log-normally distributed.
(d) Shapiro-Wilk W Test indicates data are neither normally nor log-normally distributed.
(e) Recommended UCL exceeds maximum detected concentration. Therefore, maximum concentration is used for EPC.
(f) Due to high standard deviation, the maximum concentration is used.

From File

Summary Statistics for	1,1,2-Trichloroethane
Number of Samples	28
Minimum	0.04
Maximum	100
Mean	9.515714286
Median	5
Standard Deviation	19.75853748
Variance	390.3998032
Coefficient of Variation	2.076411385
Skewness	4.151316984

Shapiro-Wilk Test Statisitic	0.331439754
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	15.87581365

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.7877535
Modified-t	16.36405146

95 % Non-parametric UCL

CLT	15.65761846
Jackknife	15.87581365
Standard Bootstrap	15.38128375
Bootstrap-t	80.45413781
Chebyshev (Mean, Std)	25.79189787

From File

Summary Statistics for	1,1-Dichloroethane
Number of Samples	28
Minimum	0.5
Maximum	220
Mean	29.26785714
Median	5
Standard Deviation	52.11747452
Variance	2716.231151
Coefficient of Variation	1.780706878
Skewness	2.469267477

Shapiro-Wilk Test Statisitic	0.580035369
Shapiro-Wilk 5% Critical Value	0.924
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	46.04401362

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	50.37952062
Modified-t	46.81003734

95 % Non-parametric UCL

CLT	45.46847598
Jackknife	46.04401362
Standard Bootstrap	45.33356481
Bootstrap-t	56.42009182
Chebyshev (Mean, Std)	72.1998598

From File

Summary Statistics for	1,1-Dichloroethene
Number of Samples	28
Minimum	0.04
Maximum	100
Mean	7.913571429
Median	5
Standard Deviation	18.13709524
Variance	328.9542238
Coefficient of Variation	2.291897584
Skewness	5.206148191

Shapiro Wilk Test Statisitic	0.256372276
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	13.7517428

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	17.15480495
Modified-t	14.31379284

95 % Non-parametric UCL

CLT	13.55145334
Jackknife	13.7517428
Standard Bootstrap	13.38463221
Bootstrap-t	49.42772535
Chebyshev (Mean, Std)	22.85408473

From File

Summary Statistics for   1,2,4-Trichlorobenzene

Number of Samples	28
Minimum	0.5
Maximum	100
Mean	9.678571429
Median	5
Standard Deviation	19.69922648
Variance	388.0595238
Coefficient of Variation	2.035344433
Skewness	4.16570262

Shapiro-Wilk Test Statisitic	0.319672214
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	16.0195791

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.93359228
Modified-t	16.50803815

95 % Non-parametric UCL

CLT	15.80203889
Jackknife	16.0195791
Standard Bootstrap	15.69038291
Bootstrap-t	93.13617108
Chebyshev (Mean, Std)	25.90589732

From File

Summary Statistics for	1,3-Dichlorobenzene
Number of Samples	28
Minimum	0.5
Maximum	100
Mean	9.535714286
Median	5
Standard Deviation	19.74885302
Variance	390.0171958
Coefficient of Variation	2.071040767
Skewness	4.154893983

Shapiro-Wilk Test Statisitic	0.329199054
Shapiro-Wilk 5% Critical Value	0.924
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	15.89269631

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.80590467
Modified-t	16.3811153

95 % Non-parametric UCL

CLT	15.67460807
Jackknife	15.89269631
Standard Bootstrap	15.57445617
Bootstrap-t	84.37380469
Chebyshev (Mean, Std)	25.80392026

From File

Summary Statistics for	1,4-Dichlorobenzene
Number of Samples	28
Minimum	0.04
Maximum	100
Mean	9.503035714
Median	5
Standard Deviation	19.76471638
Variance	390.6440136
Coefficient of Variation	2.079831853
Skewness	4.14902206

Shapiro-Wilk Test Statisitic	0.332424082
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	15.86512401

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.77624355
Modified-t	16.35324451

95 % Non-parametric UCL

CLT	15.64686059
Jackknife	15.86512401
Standard Bootstrap	15.46071084
Bootstrap-t	83.33899256
Chebyshev (Mean, Std)	25.7843092

From File

Summary Statistics for	Benzene
Number of Samples	28
Minimum	0.04
Maximum	16
Mean	3.032857143
Median	2.5
Standard Deviation	3.028688577
Variance	9.172954497
Coefficient of Variation	0.998625532
Skewness	3.524964984

Shapiro-Wilk Test Statisitic	0.475393847
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	4.007765347

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	4.381729402
Modified-t	4.071313092

95 % Non-parametric UCL

CLT	3.974319285
Jackknife	4.007765347
Standard Bootstrap	3.96713457
Bootstrap-t	6.189975009
Chebyshev (Mean, Std)	5.5277529

From File

Summary Statistics for	Bromomethane
Number of Samples	28
Minimum	0.5
Maximum	100
Mean	9.085714286
Median	5
Standard Deviation	19.89989232
Variance	396.0057143
Coefficient of Variation	2.190239721
Skewness	4.125350508

Shapiro-Wilk Test Statisitic	0.351083839
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	15.49131453

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.40436768
Modified-t	15.97996947

95 % Non-parametric UCL

CLT	15.27155835
Jackknife	15.49131453
Standard Bootstrap	15.19737943
Bootstrap-t	65.50412758
Chebyshev (Mean, Std)	25.47833956

From File

Summary Statistics for	Chlorobenzene
Number of Samples	28
Minimum	0.5
Maximum	100
Mean	9.535714286
Median	5
Standard Deviation	19.74885302
Variance	390.0171958
Coefficient of Variation	2.071040767
Skewness	4.154893983

Shapiro-Wilk Test Statisitic	0.329199054
Shapiro-Wilk 5% Critical Value	0.924
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	15.89269631

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.80590467
Modified-t	16.3811153

95 % Non-parametric UCL

CLT	15.67460807
Jackknife	15.89269631
Standard Bootstrap	15.46050294
Bootstrap-t	84.37380469
Chebyshev (Mean, Std)	25.80392026

From File

Summary Statistics for	Chlorodibromomethane
Number of Samples	28
Minimum	0.04
Maximum	100
Mean	9.511428571
Median	5
Standard Deviation	19.76060085
Variance	390.481346
Coefficient of Variation	2.077563923
Skewness	4.150560711

Shapiro-Wilk Test Statisitic	0.331773239
Shapiro-Wilk 5% Critical Value	0.924
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)
Student's-t	15.87219212

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	18.78386576
Modified-t	16.36039196

95 % Non-parametric UCL
CLT	15.65397414
Jackknife	15.87219212
Standard Bootstrap	15.55173735
Bootstrap-t	79.18784078
Chebyshev (Mean, Std)	25.78931187

From File

Summary Statistics for	Chloroethane
Number of Samples	28
Minimum	0.5
Maximum	100
Mean	11.35714286
Median	5
Standard Deviation	21.11338751
Variance	445.7751323
Coefficient of Variation	1.85904041
Skewness	3.402407717

Shapiro-Wilk Test Statisitic	0.424316753
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	18.15335653

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	20.66156331
Modified-t	18.58095386

95 % Non-parametric UCL

CLT	17.92019962
Jackknife	18.15335653
Standard Bootstrap	17.92877542
Bootstrap-t	24.27648242
Chebyshev (Mean, Std)	28.74939022

From File

Summary Statistics for	cis-1,2-Dichloroethene
Number of Samples	28
Minimum	1
Maximum	1900
Mean	176.5178571
Median	5
Standard Deviation	483.7823868
Variance	234045.3978
Coefficient of Variation	2.74069941
Skewness	3.276230831

Shapiro-Wilk Test Statisitic	0.403442038
Shapiro-Wilk 5% Critical Value	0.924
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)
Student's-t	332.2431508

95 % UCL (Adjusted for Skewness)
Adjusted-CLT	387.385596
Modified-t	341.677572

95 % Non-parametric UCL
CLT	326.9007013
Jackknife	332.2431508
Standard Bootstrap	323.7844857
Bootstrap-t	813.4676415
Chebyshev (Mean, Std)	575.0357613

From File

Summary Statistics for	Ethylbenzene
Number of Samples	28
Minimum	0.5
Maximum	23
Mean	3.089285714
Median	2.5
Standard Deviation	3.930068257
Variance	15.44543651
Coefficient of Variation	1.272160823
Skewness	5.165105301

Shapiro-Wilk Test Statisitic	0.255004079
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	4.354340107

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	5.085583132
Modified-t	4.475168776

95 % Non-parametric UCL

CLT	4.310940033
Jackknife	4.354340107
Standard Bootstrap	4.269646862
Bootstrap-t	12.00184278
Chebyshev (Mean, Std)	6.326697013

From File

Summary Statistics for	Methyl tert-butyl ether
Number of Samples	28
Minimum	0.5
Maximum	7.5
Mean	4.857142857
Median	5
Standard Deviation	1.393484461
Variance	1.941798942
Coefficient of Variation	0.28689386
Skewness	-1.893412272

Shapiro-Wilk Test Statisitic	0.500783738
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	5.305693244

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	5.189618736
Modified-t	5.289988241

95 % Non-parametric UCL

CLT	5.290304878
Jackknife	5.305693244
Standard Bootstrap	5.274298578
Bootstrap-t	5.192432572
Chebyshev (Mean, Std)	6.005031912

From File

Summary Statistics for	Methylene chloride	Summary Statistics for	ln(Methylene chloride)
Number of Samples	28	Minimum	-2.302585093
Minimum	0.1	Maximum	4.49980967
Maximum	90	Mean	0.532528465
Mean	6.153571429	Standard Deviation	1.431271604
Median	1.25	Variance	2.048538403
Standard Deviation	17.18503833		
Variance	295.3255423	Shapiro-Wilk Test Statisitic	0.940367325
Coefficient of Variation	2.792693402	Shapiro-Wilk 5% Critical Value	0.924
Skewness	4.682939744	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)		Estimates Assuming Lognormal Distribution	
Student's-t	11.68528406	MLE Mean	4.743606286
		MLE Standard Deviation	12.33023409
95 % UCL (Adjusted for Skewness)		MLE Coefficient of Variation	2.599337581
Adjusted-CLT	14.56659056	MLE Skewness	25.3605823
Modified-t	12.16431084	MLE Median	1.703233434
		MLE 80% Quantile	5.708481033
95 % Non-parametric UCL		MLE 90% Quantile	10.715727
CLT	11.49550824	MLE 95% Quantile	17.93887692
Jackknife	11.68528406	MLE 99% Quantile	47.54450475
Standard Bootstrap	11.35496285		
Bootstrap-t	45.61969603	MVU Estimate of Median	1.641977211
Chebyshev (Mean, Std)	20.30982359	MVU Estimate of Mean	4.433316158
		MVU Estimate of Std. Dev.	9.086263891
		MVU Estimate of SE of Mean	1.484749827

UCL Assuming Lognormal Distribution
95% H-UCL   10.98041742
95% Chebyshev (MVUE) UCL   10.90519061
99% Chebyshev (MVUE) UCL   19.20639041
Recommended UCL to use:
          H-UCL

From File

Summary Statistics for	Tetrachloroethene
Number of Samples	28
Minimum	0.5
Maximum	100
Mean	9.5
Median	5
Standard Deviation	19.76950514
Variance	390.8333333
Coefficient of Variation	2.081000541
Skewness	4.146393081

Shapiro-Wilk Test Statisitic	0.341439151
Shapiro-Wilk 5% Critical Value	0.924
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	15.86362976

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	18.77347125
Modified-t	16.35155916

95 % Non-parametric UCL

CLT	15.64531345
Jackknife	15.86362976
Standard Bootstrap	15.44777812
Bootstrap-t	76.03272581
Chebyshev (Mean, Std)	25.78521825

From File

Summary Statistics for	Toluene
Number of Samples	28
Minimum	0.3
Maximum	52
Mean	6.992857143
Median	5
Standard Deviation	9.916575296
Variance	98.33846561
Coefficient of Variation	1.418100655
Skewness	3.846694418

Shapiro-Wilk Test Statisitic	0.477144105
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level

Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	10.18491548

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	11.53110558
Modified-t	10.41197521

95 % Non-parametric UCL

CLT	10.0754059
Jackknife	10.18491548
Standard Bootstrap	10.0252298
Bootstrap-t	14.26303331
Chebyshev (Mean, Std)	15.16168038

From File

Summary Statistics for	trans-1,2-Dichloroethene
Number of Samples	28
Minimum	0.5
Maximum	28
Mean	6.691071429
Median	5
Standard Deviation	6.228370775
Variance	38.79260251
Coefficient of Variation	0.930848048
Skewness	2.543621509

Shapiro-Wilk Test Statisitic	0.605809485
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)	
Student's-t	8.695929179

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	9.231722568
Modified-t	8.790230476

95 % Non-parametric UCL	
CLT	8.627148758
Jackknife	8.695929179
Standard Bootstrap	8.580451732
Bootstrap-t	10.39856356
Chebyshev (Mean, Std)	11.8217197

From File

Summary Statistics for	Trichloroethene
Number of Samples	28
Minimum	2
Maximum	100
Mean	10.80357143
Median	5
Standard Deviation	19.26584931
Variance	371.1729497
Coefficient of Variation	1.783285226
Skewness	4.096026638

Shapiro-Wilk Test Statisitic	0.431003502
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	17.00507881

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	19.80375817
Modified-t	17.47480162

95 % Non-parametric UCL

CLT	16.79232442
Jackknife	17.00507881
Standard Bootstrap	16.74875653
Bootstrap-t	32.81611975
Chebyshev (Mean, Std)	26.67390094

From File

Summary Statistics for	Vinyl chloride
Number of Samples	28
Minimum	0.04
Maximum	600
Mean	44.75142857
Median	5
Standard Deviation	120.6196458
Variance	14549.09895
Coefficient of Variation	2.695325035
Skewness	4.012816887

Shapiro-Wilk Test Statisitic	0.39378529
Shapiro-Wilk 5% Critical Value	0.924

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	83.57783124

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	100.7167914
Modified-t	86.45892976

95 % Non-parametric UCL

CLT	82.24581837
Jackknife	83.57783124
Standard Bootstrap	81.48778188
Bootstrap-t	144.375139
Chebyshev (Mean, Std)	144.1124011

From File

Summary Statistics for	Xylenes (total)
Number of Samples	28
Minimum	1
Maximum	110
Mean	8.571428571
Median	5
Standard Deviation	19.9711432
Variance	398.8465608
Coefficient of Variation	2.329966707
Skewness	5.212881335

Shapiro-Wilk Test Statisitic 0.257968679
Shapiro-Wilk 5% Critical Value 0.924
Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)
Student's-t 14.99996385

95 % UCL (Adjusted for Skewness)
Adjusted-CLT 18.7522798
Modified-t 15.61964956

95 % Non-parametric UCL
CLT 14.77942084
Jackknife 14.99996385
Standard Bootstrap 14.7975468
Bootstrap-t 67.84967065
Chebyshev (Mean, Std) 25.02274708

From File

Summary Statistics for	4-Methylphenol
Number of Samples	26
Minimum	3
Maximum	25
Mean	5.865384615
Median	5
Standard Deviation	3.933338766
Variance	15.47115385
Coefficient of Variation	0.670602019
Skewness	4.964825495

Shapiro-Wilk Test Statisitic	0.282303225
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)	
Student's-t	7.183029128

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	7.936760793
Modified-t	7.308210799

95 % Non-parametric UCL	
CLT	7.134210224
Jackknife	7.183029128
Standard Bootstrap	7.10332002
Bootstrap-t	17.09077538
Chebyshev (Mean, Std)	9.227800889

From File

Summary Statistics for	Naphthalene
Number of Samples	26
Minimum	0.0865
Maximum	25
Mean	5.237942308
Median	5
Standard Deviation	4.300141636
Variance	18.49121809
Coefficient of Variation	0.820960099
Skewness	4.019017048

Shapiro-Wilk Test Statisitic	0.392097665
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	6.678463546

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	7.33533948
Modified-t	6.789247793

95 % Non-parametric UCL

CLT	6.625092043
Jackknife	6.678463546
Standard Bootstrap	6.60168926
Bootstrap-t	7.855192388
Chebyshev (Mean, Std)	8.913920166

From File

Summary Statistics for	2-Methylnaphthalene
Number of Samples	26
Minimum	5
Maximum	11
Mean	5.269230769
Median	5
Standard Deviation	1.176696811
Variance	1.384615385
Coefficient of Variation	0.223314723
Skewness	4.9944424

Shapiro-Wilk Test Statisitic	0.246824616
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	5.663417029

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	5.890335463
Modified-t	5.70108975

95 % Non-parametric UCL

CLT	5.648812376
Jackknife	5.663417029
Standard Bootstrap	5.642327276
Bootstrap-t	8.269230769
Chebyshev (Mean, Std)	6.275130525

From File

Summary Statistics for	Acenaphthylene
Number of Samples	26
Minimum	5
Maximum	5.5
Mean	5.038461538
Median	5
Standard Deviation	0.135873244
Variance	0.018461538
Coefficient of Variation	0.026967209
Skewness	3.373241998

Shapiro-Wilk Test Statisitic	0.300638542
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	5.083978247

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	5.10112784
Mcdified-t	5.086916281

95 % Non-parametric UCL

CLT		5.082291847
Jackknife		5.083978247
Standard Bootstrap		5.081521707
Bootstrap-t	1.#INF	
Chebyshev (Mean, Std)		5.154612837

From File

Summary Statistics for	Phenanthrene
Number of Samples	26
Minimum	0.4
Maximum	10
Mean	5.053846154
Median	5
Standard Deviation	1.365058466
Variance	1.863384615
Coefficient of Variation	0.270102893
Skewness	0.34727489

Shapiro-Wilk Test Statisitic	0.436534046
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	5.51113242

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	5.513671821
Modified-t	5.514171205

95 % Non-parametric UCL

CLT	5.494189903
Jackknife	5.51113242
Standard Bootstrap	5.492883473
Bootstrap-t	5.535724137
Chebyshev (Mean, Std)	6.220766949

From File

Summary Statistics for	Benzo(a)Pyrene
Number of Samples	26
Minimum	0.005
Maximum	5.5
Mean	4.846346154
Median	5
Standard Deviation	0.996718173
Variance	0.993447115
Coefficient of Variation	0.205663843
Skewness	-4.937866026

Shapiro-Wilk Test Statisitic	0.266724955
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	5.180240667

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	4.965605759
Modified-t	5.148691559

95 % Non-parametric UCL

CLT	5.167869831
Jackknife	5.180240667
Standard Bootstrap	5.153176012
Bootstrap-t	5.078850346
Chebyshev (Mean, Std)	5.698391097

From File

Summary Statistics for	Dibenz(a,h) anthracene
Number of Samples	26
Minimum	0.003
Maximum	5.5
Mean	4.846269231
Median	5
Standard Deviation	0.997106757
Variance	0.994221885
Coefficient of Variation	0.205747289
Skewness	-4.937994301

Shapiro-Wilk Test Statisitic	0.266699673
Shapiro-Wilk 5% Critical Value	0.92
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	5.180293917

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	4.965570075
Modified-t	5.14873169

95 % Non-parametric UCL

CLT	5.167918258
Jackknife	5.180293917
Standard Bootstrap	5.167363383
Bootstrap-t	5.078865492
Chebyshev (Mean, Std)	5.698646355

From File

Summary Statistics for	C9-C18 Aliphatic
Number of Samples	25
Minimum	30
Maximum	3100
Mean	158.82
Median	30.5
Standard Deviation	613.2898798
Variance	376124.4767
Coefficient of Variation	3.861540611
Skewness	4.98592093

Shapiro-Wilk Test Statisitic	0.219957429
Shapiro-Wilk 5% Critical Value	0.918
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	368.6733069

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	491.2671951
Modified-t	389.0587392

95 % Non-parametric UCL

CLT	360.5744168
Jackknife	368.6733069
Standard Bootstrap	355.1839078
Bootstrap-t	67628.98536
Chebyshev (Mean, Std)	693.4737218

From File

Summary Statistics for	C11-C22 Aromatic
Number of Samples	25
Minimum	85
Maximum	1200
Mean	137
Median	85
Standard Deviation	223.0657601
Variance	49758.33333
Coefficient of Variation	1.628217227
Skewness	4.891775681

Shapiro-Wilk Test Statisitic	0.24950766
Shapiro-Wilk 5% Critical Value	0.918

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	213.3278328

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	257.0200978
Modified-t	220.6024172

95 % Non-parametric UCL

CLT	210.382105
Jackknife	213.3278328
Standard Bootstrap	210.8254768
Bootstrap-t	3722.197364
Chebyshev (Mean, Std)	331.4642212

From File

Summary Statistics for	C19-C36 Aliphatic
Number of Samples	25
Minimum	40
Maximum	24000
Mean	1312.22
Median	40.5
Standard Deviation	4885.4175
Variance	23867304.15
Coefficient of Variation	3.723017101
Skewness	4.561398808

Shapiro-Wilk Test Statisitic	0.293422084
Shapiro-Wilk 5% Critical Value	0.918
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	2983.894442

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	3871.824839
Modified-t	3132.456693

95 % Non-parametric UCL

CLT	2919.37934
Jackknife	2983.894442
Standard Bootstrap	2905.351323
Bootstrap-t	93550.12012
Chebyshev (Mean, Std)	5571.228236

From File

Summary Statistics for	C5-C8 Aliphatic
Number of Samples	25
Minimum	20
Maximum	258
Mean	54.548
Median	20
Standard Deviation	72.6927846
Variance	5284.240933
Coefficient of Variation	1.332638861
Skewness	2.096501839

Shapiro-Wilk Test Statisitic	0.540912259
Shapiro-Wilk 5% Critical Value	0.918

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	79.4217534

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	84.97548619
Modified-t	80.43775711

95 % Non-parametric UCL

CLT	78.4617981
Jackknife	79.4217534
Standard Bootstrap	78.28399321
Bootstrap-t	94.5414479
Chebyshev (Mean, Std)	117.9201004

From File

Summary Statistics for	Cyanide	
Number of Samples		5
Minimum		1.5
Maximum		1.5
Mean		1.5
Median		1.5
Standard Deviation		0
Variance		0
Coefficient of Variation		0
Skewness	-1.#QNAN	

Shapiro-Wilk Test Statisitic	-1.#QNAN	
Shapiro-Wilk 5% Critical Value		0.762

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t		1.5

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	-1.#QNAN	
Modified-t	-1.#QNAN	

95 % Non-parametric UCL

CLT		1.5
Jackknife		1.5
Standard Bootstrap		1.5
Bootstrap-t	-1.#QNAN	
Chebyshev (Mean, Std)		1.5

From File

Summary Statistics for	Arsenic
Number of Samples	26
Minimum	0.68
Maximum	175
Mean	11.48192308
Median	2.3
Standard Deviation	33.86624656
Variance	1146.922656
Coefficient of Variation	2.949527386
Skewness	4.864202521

Shapiro-Wilk Test Statisitic	0.304158237
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	22.82690926

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	29.176531
Modified-t	23.88288543

95 % Non-parametric UCL

CLT	22.40657602
Jackknife	22.82690926
Standard Bootstrap	22.3801085
Bootstrap-t	81.18800465
Chebyshev (Mean, Std)	40.43249798

From File

Summary Statistics for	Chromium
Number of Samples	26
Minimum	0.45
Maximum	133
Mean	14.82307692
Median	1.625
Standard Deviation	33.08144263
Variance	1094.381846
Coefficient of Variation	2.231752746
Skewness	3.057419915

Shapiro-Wilk Test Statisitic	0.484201423
Shapiro-Wilk 5% Critical Value	0.92

Data not Normal at 5% Significance Level
Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)

Student's-t	25.90515857

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	29.65124602
Modified-t	26.55351666

95 % Non-parametric UCL

CLT	25.49456598
Jackknife	25.90515857
Standard Bootstrap	25.16035576
Bootstrap-t	53.48506495
Chebyshev (Mean, Std)	43.10276186

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Summary Statistics for	Lead	
Number of Samples		26
Minimum		1
Maximum		148
Mean		14.44942308
Median		1.15
Standard Deviation		31.69465805
Variance		1004.551349
Coefficient of Variation		2.193489517
Skewness		3.397209316

Shapiro-Wilk Test Statisitic	0.498162973
Shapiro-Wilk 5% Critical Value	0.92
Data not Normal at 5% Significance Level	
Data not Lognormal: Try Non-parametric UCL	

95 % UCL (Assuming Normal Data)

Student's-t	25.06694034

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	29.09858201
Modified-t	25.75715437

95 % Non-parametric UCL

CLT	24.67355992
Jackknife	25.06694034
Standard Bootstrap	24.14256835
Bootstrap-t	36.8128145
Chebyshev (Mean, Std)	41.54361464

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Summary Statistics for	Manganese
Number of Samples	5
Minimum	201
Maximum	470
Mean	338.5
Median	398
Standard Deviation	125.4053428
Variance	15726.5
Coefficient of Variation	0.370473686
Skewness	-0.400917047

Shapiro-Wilk Test Statisitic	0.834284773
Shapiro-Wilk 5% Critical Value	0.762
Data are Normal at 5% Significance Level	
Recommended UCL to use	Student's-t

95 % UCL (Assuming Normal Data)

Student's-t	458.0602606

95 % UCL (Adjusted for Skewness)

Adjusted-CLT	420.0039132
Modified-t	456.3843559

95 % Non-parametric UCL

CLT	430.7482836
Jackknife	458.0602606
Standard Bootstrap	420.5775936
Bootstrap-t	460.1291069
Chebyshev (Mean, Std)	582.9600172

From File

Summary Statistics for	Nickel		Summary Statistics for	ln(Nickel)
Number of Samples		5	Minimum	-0.430782916
Minimum		0.65	Maximum	4.533674184
Maximum		93.1	Mean	1.165702187
Mean		19.93	Standard Deviation	1.977120131
Median		2.4	Variance	3.909004014
Standard Deviation		40.91252253		
Variance		1673.8345	Shapiro-Wilk Test Statisitic	0.808430457
Coefficient of Variation		2.052810965	Shapiro-Wilk 5% Critical Value	0.762
Skewness		2.233540957	Data are Lognormal at 5% Significance Level	

95 % UCL (Assuming Normal Data)

Student's-t   58.9356097

95 % UCL (Adjusted for Skewness)

Adjusted-CLT   69.55341548
Modified-t   61.98160285

95 % Non-parametric UCL

CLT   50.0252886
Jackknife   58.9356097
Standard Bootstrap   45.53513522
Bootstrap-t   1025.053353
Chebyshev (Mean, Std)   99.68318865

99 % Non-parametric UCL

Chebyshev (Mean, Std)   201.9792326

Estimates Assuming Lognormal Distribution

MLE Mean	22.65100437
MLE Standard Deviation	158.3129854
MLE Coefficient of Variation	6.989225856
MLE Skewness	362.3863148
MLE Median	3.208174831
MLE 80% Quantile	17.05372573
MLE 90% Quantile	40.70299007
MLE 95% Quantile	82.93563319
MLE 99% Quantile	318.7743905

MVU Estimate of Median	2.107263948
MVU Estimate of Mean	11.63883883
MVU Estimate of Std. Dev.	20.58658027
MVU Estimate of SE of Mean	8.529178816

UCL Assuming Lognormal Distribution

95% H-UCL	218964.0034
95% Chebyshev (MVUE) UCL	48.81666736
99% Chebyshev (MVUE) UCL	96.50309654

Recommended UCL to use:
    99 % Chebyshev (MVUE) UCL

From File

Summary Statistics for	TEQ (no 170/193/180) Humans
Number of Samples	2
Minimum	1.20E-06
Maximum	2.90E-06
Mean	2.05E-06
Median	2.05E-06

Too Few Observations To Calculate UCLs