Annex 5: Statistical data analysis

Group 7: Aqua regia extractable elements (SA11)

Cd, Cu, Pb and Zn
Extractable Cd
Dot plot sample B

7 - Extractable Cd - Sample B
Dot plot sample C

7 - Extractable Cd - Sample C

Location

Laboratory Number

0.1 0.2 0.3 0.4 0.5 0.6

5.7; 6.7; 6.7
1.327; 1.508; 1.689
1.02; 1.09; 1.21
Histogram of the means of samples A, B and C

7 - Extractable Cd - Sample A - mean

7 - Extractable Cd - Sample B - mean

7 - Extractable Cd - Sample C - mean

0.99(6); 1.266(63); 5.467(56)

0.8133(12); 6.567(56)

1.107(6); 1.508(63); 6.367(56)
Histogram of the means of samples D and E

7 - Extractable Cd - Sample D - mean

N: 28 NA: 0 Z: 0 E: 0,4 U: 24
a: 0.6603 m: 0.1273 s: 1.542
70.8% 16.7% 4.2% 0% 8.3%

1.603(6); 2.038(63); 2.271(55); 7.9(56)

7 - Extractable Cd - Sample E - mean

N: 29 NA: 0 Z: 0 E: 0.1 U: 28
a: 0.2352 m: 0.1937 s: 0.1303
14.3% 46.4% 17.9% 10.7% 3.6% 0%

0.7967(12)
Box plot of the means of samples A, B and C

A
0.033(42); 0.039(59); 0.04667(34); 0.06123(32)
0.15(13); 0.2(11); 0.2(77); 0.2283(84); 0.518(55); 0.5867(10)
O: 4,6 / U: 23

B
0.1333(77); 0.181(55); 0.32(6); 0.4667(10); 0.5843(63)
O: 0,5 / U: 21

C
0.04433(42)
0.2883(7); 0.5183(84); 0.5833(10); 0.6367(12)
O: 1,4 / U: 25

7 - Extractable Cd - mean
Box plot of the means of samples D and E

7 - Extractable Cd - mean
Histogram of the standard deviations of samples A, B and C

7 - Extractable Cd - Sample A - stdev

7 - Extractable Cd - Sample B - stdev

7 - Extractable Cd - Sample C - stdev
Histogram of the standard deviations of samples D and E

7 - Extractable Cd - Sample D - stdev

7 - Extractable Cd - Sample E - stdev

66.7% 4.8% 19% 4.8% 0% 0% 0% 4.8%

36.4% 36.4% 4.5% 4.5% 4.5% 4.5% 4.5% 4.5%

N: 23 NA: 0 Z: 0 E: 0 U: 21

N: 23 NA: 0 Z: 0 E: 0 U: 21

a: 0.1828 m: 0.01528 s: 0.5427

a: 0.03286 m: 0.01249 s: 0.05878

1.153(56); 2.422(55)

0.2861(55)
Box plot of the standard deviations of samples A, B and C

A
0.03606(6); 0.03786(10)
0.0 0.01 0.02 0.03
14;67;7;31;32<69;61;34<3>59;63;48;84>8;13

B
0.02(55); 0.03512(10); 0.05774(77); 0.0722(63)
0.0 0.02 0.04 0.06
61;14;69;7;34<40;3;8<84>67;59;6;48

C
0.05774(11); 0.08702(84); 0.09609(6)
0.0 0.02 0.04 0.06 0.08
67;14;31;61;69;32<3;36;40;55<34;7>42;59;54;48>8;12;10

7 - Extractable Cd - stdev
Box plot of the standard deviations of samples D and E

**D**
- 0.09891(63); 0.165(12)
- Data points: 31;61;7;69;34;54<32;14;40;67<84;13>8;42;59;10>48;6;11

**E**
- 0.02309(85); 0.04(3); 0.04735(59); 0.05774(42); 0.06028(12); 0.07506(10)
- Data points: 14;37;40;7;67;63<34;8;69;13<36;84>68;32;61;54

7 - Extractable Cd - stdev
Mandel’s h and k plot of sample A

7 - Extractable Cd - sample A

Step:3; Nlab:21; Mgen:0.1057; Fval:157.2; Pval:0; sRep:0.007063; sLab:0.05097; sRpr:0.05146; CV:48.68
Mandel's h and k plot of sample B

7 - Extractable Cd - sample B

Step: 7; Nlab: 15; Mgen: 0.0462; Fval: 100.1; Pval: 0; sRep: 0.004524; sLab: 0.026; sRpr: 0.02639; CV: 57.11
Mandel’s h and k plot of sample C

7 - Extractable Cd - sample C
Step: 7; Nlab: 21; Mgen: 0.1608; Fval: 48.52; Pval: 0; sRep: 0.01403; sLab: 0.05583; sRpr: 0.05756; CV: 35.8
Mandel’s h and k plot of sample D

7 - Extractable Cd - sample D

Step: 7; Nlab: 18; Mgen: 0.1155; Fval: 101.3; Pval: 0; sRep: 0.008777; sLab: 0.05075; sRpr: 0.0515; CV: 44.58
Mandel’s h and k plot of sample E

7 - Extractable Cd - sample E

Step: 6; Nlab: 22; Mgen: 0.1933; Fval: 63.04; Pval: 0; sRep: 0.01032; sLab: 0.04692; sRpr: 0.04804; CV: 24.85
Extractable Cu
Dot plot sample B

7 - Extractable Cu - Sample B

Location

Laboratory Number

49.8;60.4;71.3
20.19;21.54;25.58
Dot plot sample C

7 - Extractable Cu - Sample C
Dot plot sample D

7 - Extractable Cu - Sample D

Location

Laboratory Number

9959;10567;11079
49.6;63.3;70.5
26.0;26.7;30.9
24.22
Histogram of the means of samples A, B and C
Histogram of the means of samples D and E

7 - Extractable Cu - Sample D - mean

N: 41 NA: 0 Z: 0 E: 0,3 U: 38
a: 27.06 m: 12.7 s: 1643

7 - Extractable Cu - Sample E - mean

N: 35 NA: 0 Z: 0 E: 0,2 U: 33
a: 2.469 m: 1.8 s: 2217

27.87(12); 61.13(56); 10535(60)
9.223(32); 11.37(82)
Box plot of the means of samples A, B and C

A

3.767(81); 8.633(42)
15.37(82); 16.33(11)

B

1.333(81)
5.973(12)

C

9.633(42)
16.03(32); 17.47(11); 19.7(12)

7 - Extractable Cu - mean
Box plot of the means of samples D and E

D
3.833(81); 8.733(42); 9.283(31); 9.323(85) 17.97(11); 20.96(82)
84;10;23;7;55;13<77;71;48;18;67;34;45<54;69;37;36>30;59;68;6;14;61;64>3;26;35;83;32;63;40;8

E
0.1333(81); 0.5(11) 3.027(63); 3.59(68); 3.68(12); 3.7(42); 3.937(14); 4.11(48); 4.2(40)
10;71;18;77;69;60;84<3;45;85;13;8;34<59;26;67>31;54;55;30;61;6;64>7

O: 4.2 / U: 38
O: 2.7 / U: 33

7 - Extractable Cu - mean
Histogram of the standard deviations of samples A, B and C

7 - Extractable Cu - Sample A - stdev

N: 40 NA: 0 Z: 0 E: 0 U: 38
a: 0.7416 m: 0.3095 s: 2.116
23.7% 42.1% 21.1%
5.3% 2.6% 5.3%
2.03(82); 13.59(56)

7 - Extractable Cu - Sample B - stdev

N: 41 NA: 0 Z: 0 E: 0.3 U: 38
a: 0.5245 m: 0.1601 s: 1.697
26.3% 36.8% 18.4%
13.2% 0% 5.3%
1.099(32); 2.805(82); 10.75(56)

7 - Extractable Cu - Sample C - stdev

N: 41 NA: 0 Z: 0 E: 0.1 U: 40
a: 0.5245 m: 0.1601 s: 1.697
62.5% 20%
7.5% 5% 5%
12.61(82)
Histogram of the standard deviations of samples D and E

7 - Extractable Cu - Sample D - stdev

7 - Extractable Cu - Sample E - stdev

67.6% 18.9% 8.1% 2.7% 0% 2.7%

50% 33.3% 0% 0% 3.3% 3.3%

3.211(82); 10.62(56); 560.7(60)

0.8561(40); 1.856(32); 3.028(82)
Box plot of the standard deviations of samples A, B and C

Sample A:
- 0.9452(10); 1.153(12); 1.171(32)
- Values: 85; 30; 14; 26; 45; 7; 64; 13; 40; 81
- O: 0.3 / U: 38

Sample B:
- 0.5132(23); 0.5774(71)
- Values: 13; 14; 34; 59; 77; 83; 45; 30; 6; 67
- O: 0.2 / U: 38

Sample C:
- 1.116(85); 1.365(23); 1.464(11); 1.966(56); 1.996(32); 2.307(8); 2.359(55)
- Values: 3; 77; 59; 26; 81; 40; 67; 6; 35; 10
- O: 0.7 / U: 40

7 - Extractable Cu - stdev
Box plot of the standard deviations of samples D and E

**D**
- Standard deviations: 1.169(63); 1.185(18); 1.249(8); 1.813(32); 2.65(12)
- Outliers: 0, 5
- Upper limit: 37

**E**
- Standard deviations: 0.2931(12); 0.5292(42); 0.6555(48)
- Outliers: 0.3
- Upper limit: 30

7 - Extractable Cu - stdev
Mandel's h and k plot of sample B

S: 71
E: hk56; hk82; k32; h81
Mandel's h and k plot of sample C

Step: 4; Nlab: 34; Mgen: 13.24; Fval: 20.94; Pval: 0; sRep: 0.548; sLab: 1.413; sRpr: 1.515; CV: 11.45
Mandel's $h$ and $k$ plot of sample D

$E: hk60;hk56;hk12;hk82;h32;h81$

Step: 5; Nlab: 35; Mgen: 12.3; Fval: 33.65; Pval: 0; sRep: 0.5154; sLab: 1.7; sRpr: 1.777; CV: 14.44

7 - Extractable Cu - Sample D
Extractable Pb
Dot plot sample A

7 - Extractable Pb - Sample A
Dot plot sample C

7 - Extractable Pb - Sample C
Dot plot sample E

7 - Extractable Pb - Sample E
Histogram of the means of samples A, B and C

7 - Extractable Pb - Sample A - mean

7 - Extractable Pb - Sample B - mean

7 - Extractable Pb - Sample C - mean
Histogram of the means of samples D and E
Box plot of the means of samples A, B and C

7 - Extractable Pb - mean
Box plot of the means of samples D and E

7 - Extractable Pb - mean
Histogram of the standard deviations of samples A, B and C

7 - Extractable Pb - Sample A - stdev
- N: 40 NA: 0 Z: 0 E: 0 U: 38
- a: 1.149 m: 0.2171 s: 4.165
- 42.1% 28.9% 18.4% 5.3% 2.6% 0% 0% 0% 0% 0% 2.6%
- 7.821(82); 25.7(56)

7 - Extractable Pb - Sample B - stdev
- N: 40 NA: 0 Z: 0 E: 0 U: 38
- a: 1.189 m: 0.2815 s: 4.483
- 42.1% 26.3% 15.8% 10.5% 2.6% 0% 0% 0% 2.6%
- 6.306(82); 28.16(56)

7 - Extractable Pb - Sample C - stdev
- N: 40 NA: 0 Z: 0 E: 0 U: 37
- a: 0.7846 m: 0.431 s: 1.113
- 62.2% 32.4% 0% 0% 0% 0% 5.4%
- 3.055(56); 4.041(42); 5.454(82)
Histogram of the standard deviations of samples D and E

7 - Extractable Pb - Sample D - stdev

- 34.2%
- 28.9%
- 13.2%
- 10.5%
- 7.9%
- 2.6%
- 2.6%

7 - Extractable Pb - Sample E - stdev

- 35.1%
- 29.7%
- 16.2%
- 5.4%
- 5.4%
- 2.7%
- 2.7%
- 0%
- 0%
- 0%
- 0%
- 2.7%

N: 41 NA: 0 Z: 0 E: 0 U: 38
a: 1.516 m: 0.2571 s: 4.992
5.064(60); 10.65(82); 30.66(56)

N: 39 NA: 0 Z: 0 E: 0 U: 37
a: 0.6733 m: 0.3215 s: 1.147
4.951(82); 5.443(59)
Mandel's h and k plot of sample A

Step 4: Lab: 38; Mgen: 8,028; Pval: 149.8; sRep: 0.3506; sLab: 2.47; CV: 31.07

7 - Extractable Pb - Sample A

E: hk56; hk82; k60
Mandel's h and k plot of sample B
Mandel's h and k plot of sample C

Step 4: Lab: 34, Mgen: 13.25, Eval: 69.49, Pr: 0, sRep: 0.487, sLab: 2.327, CV: 17.94

E: k42; hk56; hk82; k6; k60; h81
Mandel's h and k plot of sample D
Mandel's h and k plot of sample E

S: 42.63

E: k59h;k82;k68;h81;h11;12k
Extractable Zn
Dot plot sample A

7 - Extractable Zn - Sample A

Location
Laboratory Number

302.9;309.7;380.3
9.0;9.2;9.2
Dot plot sample B

7 - Extractable Zn - Sample B
Dot plot sample D

7 - Extractable Zn - Sample D
Histogram of the means of samples A, B and C
Histogram of the means of samples D and E

7 - Extractable Zn - Sample D - mean

7 - Extractable Zn - Sample E - mean
Box plot of the means of samples A, B and C

A

44.33(42); 46.67(77); 46.87(63); 50.06(85); 50.27(23); 51.87(84)

71.77(60); 72.36(32); 77(10); 82.67(11)

B

13.7(64); 15.24(85)

24.2(56); 24.53(32); 24.77(11); 25.27(60)

C

6.5(81); 23.67(10); 27.11(85); 27.3(23); 27.33(42)

46.8(60); 47.6(12); 48.87(11)

7 - Extractable Zn - mean
Box plot of the means of samples D and E

7 - Extractable Zn - mean
Histogram of the standard deviations of samples A, B and C

7 - Extractable Zn - Sample A - stdev

7 - Extractable Zn - Sample B - stdev

7 - Extractable Zn - Sample C - stdev
Box plot of the standard deviations of samples A, B and C

A

2.747(55); 3.464(8); 3.523(60); 4.007(7); 5.133(63); 6.286(10)

B

1.365(55); 1.528(71); 2.079(10); 2.452(63); 2.55(60); 2.646(69); 2.66(7)

C

2.517(8); 3.5(12); 3.608(60); 4.067(11); 4.157(55)

7 - Extractable Zn - stdev
Box plot of the standard deviations of samples D and E

Sample D:
- Median: 6.075
- Mean: 10.97
- Spread values: 6.075(35); 10.97(55)

Sample E:
- Median: 1.844
- Mean: 2.367
- Spread values: 1.844(32); 2.367(7); 2.517(71); 3.005(55); 4.041(42)

7 - Extractable Zn - stdev
Mandel's h and k plot of sample A
Mandel's h and k plot of sample B
Mandel's h and k plot of sample C

S: 55
E: hk82;h81

Step:3; Nlab:39; Mgen:37.17; Fval:35.51; Pval:0; sRep:1.653; sLab:5.607; sRpr:5.846; CV:15.73

7 - Extractable Zn - Sample C
Mandel's h and k plot of sample D

Step 3: Lab:38, Mgen:97.28, Fval:75.57, Pval:0, sRep:2.792, sLab:13.92, CV:14.59

7 - Extractable Zn - sample D

E: hk82;k55;h81
Mandel's h and k plot of sample E