



«Tit» «Name» «Fam\_Nam»  
«Organization»  
«Address1»  
«Address\_2»  
«PO\_Box» «City». «Country»

Sevilla, September, 2016

### **Proficiency Test 2016-1**

Laboratory Code: «**Lab\_code**»

Dear participants,

Enclosed you will find the report of the Proficiency Test 2016-1 on Drugs of Abuse in Hair, organized by the Society of Hair Testing.

Each of the participating laboratories received an identifying code. Your particular code is «**Lab\_code**».

Sets of three samples were sent to fifty participating laboratories. Forty seven of them sent the report forms back.

Sample contents were as follows:

- \* Sample A contained opiates (6-MAM, morphine, codeine, acetylcodeine and heroin), cocaine, BE, norcocaine and traces of cocaethylene) and cannabis (THC, CBD, CBN and THC-COOH). It also contained methadone, diazepam, nordiazepam, tramadol, EME and AEME.
- \* Sample B contained contained traces of cocaine, BE). Median concentration of cocaine is below the cut-off proposed by SoHT.
- \* Sample C opiates (6-MAM, morphine, codeine, acetylcodeine and heroin), cocaine, BE, cocaethylene and norcocaine) traces of amphetamine compounds (amphetamine methamphetamine and MDMA) and cannabis (THC, CBD, CBN and THC-COOH). It also contained dihydrocodeine, diazepam, nordiazepam, tramadol, EME, AEME and traces of methadone.

**Z-score**

Z-score has been calculated based on robust estimators (median instead of mean and interquartile instead of standard deviation).

Z-score has been calculated as follows:

$$Z\text{-score} = (x - \chi) / IQR$$

Where:

x: Concentration reported by the participant

$\chi$ : Median concentration obtained from the participating laboratories

IQR: Interquartile range: It is calculated as: Q3-Q1 (the upper quartile minus the lower quartile)

Q3: Third quartile (percentile 75)

Q1: First quartile (percentile 25)

**Decision criteria**

The following criteria have been adopted:

Satisfactory results:  $Z\text{-score} \leq \pm 2$

Questionable results:  $2 < Z\text{-score} \leq 3$

Unsatisfactory results:  $Z\text{-score} \geq 3$

Yours faithfully,

Carmen Jurado

# QUALITATIVE RESULTS

Laboratory Code: **Lab**

Sample A				Sample B				Sample C			
Substances	A	T	F	Substances	A	T	F	Substances	A	T	F
MAM		P		MAM		P		MAM		P	
Morphine		P		Morphine**		P		Cocaine		P	
Codeine		P		Cocaine		P		BE		P	
Cocaine		P		BE		P		THC		P	
BE		P		THC		P		THC-COOH		P	
Amphetamine		P		THC-COOH		P					
MDMA*		P									
THC		P									
THC-COOH		P									

\* The median concentration of MDMA in Sample A is 0.10 ng/mg, which is lower than the cut-off proposed by SoHT (0.2 ng/mg).

\*\* The median concentration of Morphine in Sample B is 0.15 ng/mg, which is lower than the cut-off proposed by SoHT (0.2 ng/mg).

**A:** Your answer  
**T:** True answer  
**F:** False answer

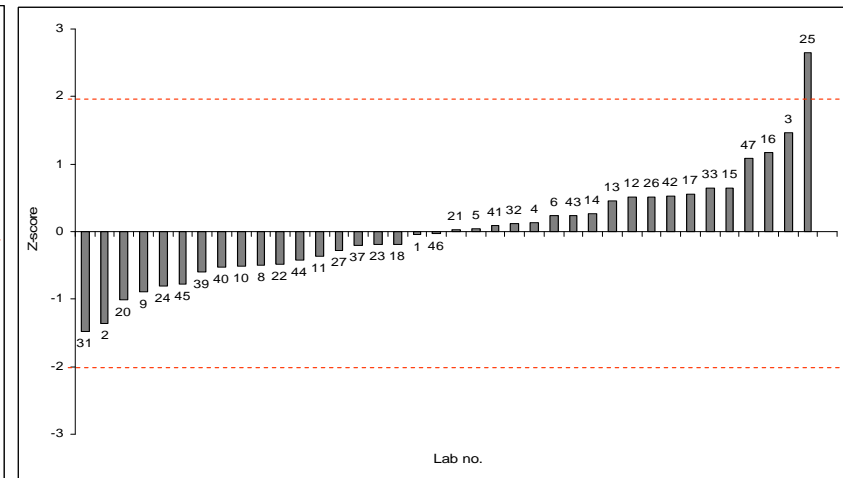
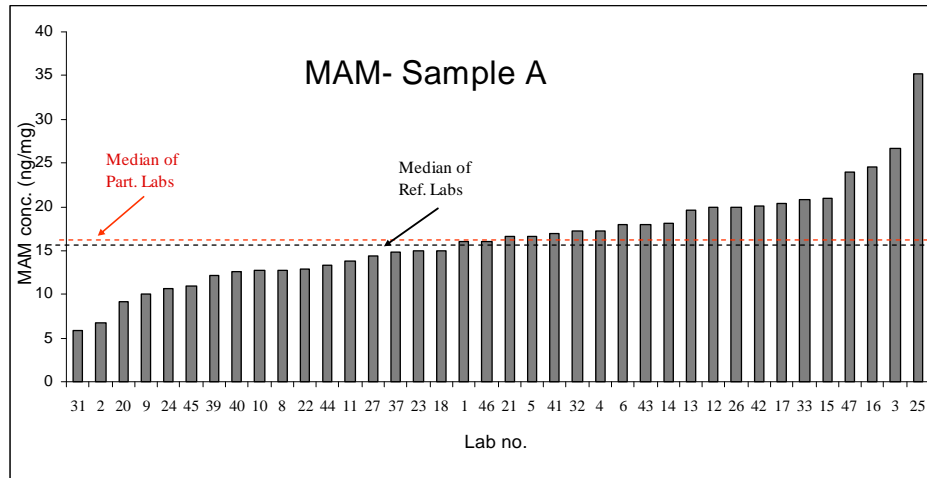
**P:** Positive  
**N:** Negative

**NR:** Not reported  
**NA:** Not analyzed

**FN:** False Negative  
**FP:** False Positive

### Comments:

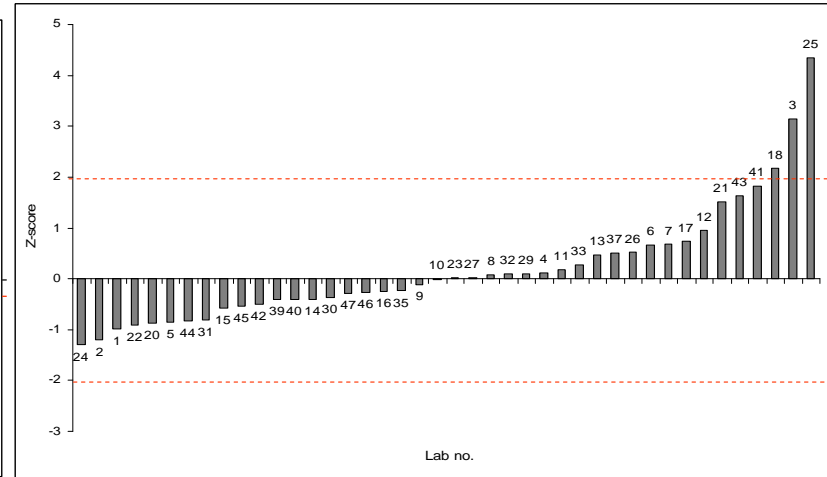
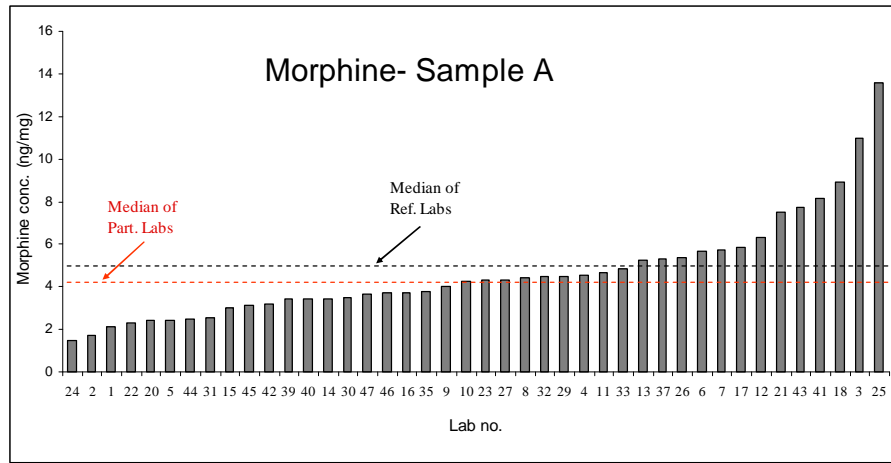
- Sample A contains methadone, CBD, CBN, norcocaine, diazepam, nordiazepam, tramadol and traces of cocaethylene (0.02 ng/mg, median concentration).
- Sample B contains CBD, CBN and traces of codeine ((0.04 ng/mg, median concentration), amphetamine ((0.08 ng/mg, median concentration), norcocaine (0.013 ng/mg, median concentration), cocaethylene (0.03 ng/mg, median concentration).
- Sample C contains CBD, CBN and traces of morphine (0.07 ng/mg), codeine (0.03 ng/mg), MDMA (0,04 ng/mg), methamphetamine (0.03 ng/mg) norcocaine (0.013 ng/mg), cocaethylene (0.03 ng/mg) and tramadol.



Lab.	MAM (ng/mg)	Z-score	Result
31	5,91	-1,47	Satisfactory
2	6,70	-1,36	Satisfactory
20	9,20	-1,01	Satisfactory
9	10,01	-0,90	Satisfactory
24	10,70	-0,80	Satisfactory
45	10,90	-0,77	Satisfactory
39	12,1	-0,60	Satisfactory
40	12,60	-0,53	Satisfactory
10	12,70	-0,51	Satisfactory
8	12,80	-0,50	Satisfactory
22	12,90	-0,49	Satisfactory
44	13,30	-0,43	Satisfactory
11	13,80	-0,36	Satisfactory
27	14,39	-0,28	Satisfactory
37	14,90	-0,20	Satisfactory
23	14,99	-0,19	Satisfactory
18	15,00	-0,19	Satisfactory
1	16,01	-0,05	Satisfactory
46	16,10	-0,03	Satisfactory
21	16,60	0,03	Satisfactory
5	16,70	0,05	Satisfactory
41	16,96	0,09	Satisfactory
32	17,20	0,12	Satisfactory
4	17,25	0,13	Satisfactory
6	18,00	0,23	Satisfactory
43	18,00	0,23	Satisfactory

Lab.	MAM (ng/mg)	Z-score	Result
14	18,20	0,261484099	Satisfactory
13	19,60	0,459363958	Satisfactory
12	20,00	0,51590106	Satisfactory
26	20,00	0,51590106	Satisfactory
42	20,10	0,530035336	Satisfactory
17	20,30	0,558303887	Satisfactory
33	20,86	0,63745583	Satisfactory
15	20,91	0,644522968	Satisfactory
47	24,00	1,081272085	Satisfactory
16	24,60	1,166077739	Satisfactory
3	26,72	1,465724382	Satisfactory
25	35,14	2,655830389	Questionable
38	>1,20		
35	>10,00		
7	>3		
19	>5		
29	>5		
30	>5		
28	P		
34	P		
36	P		

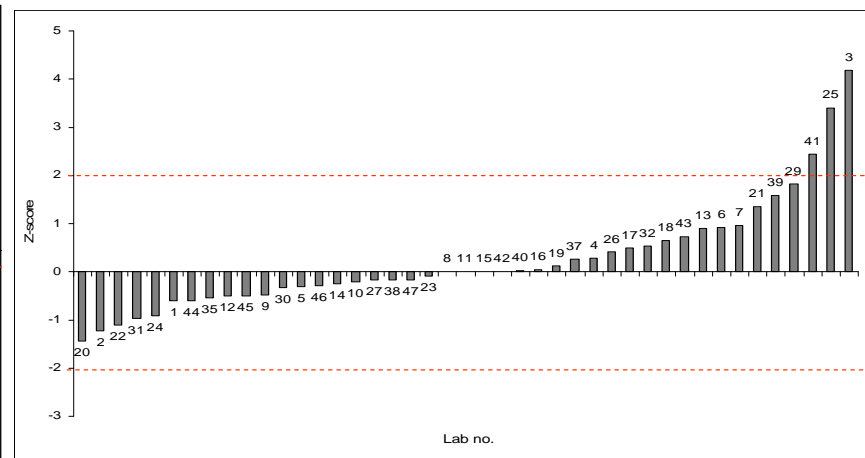
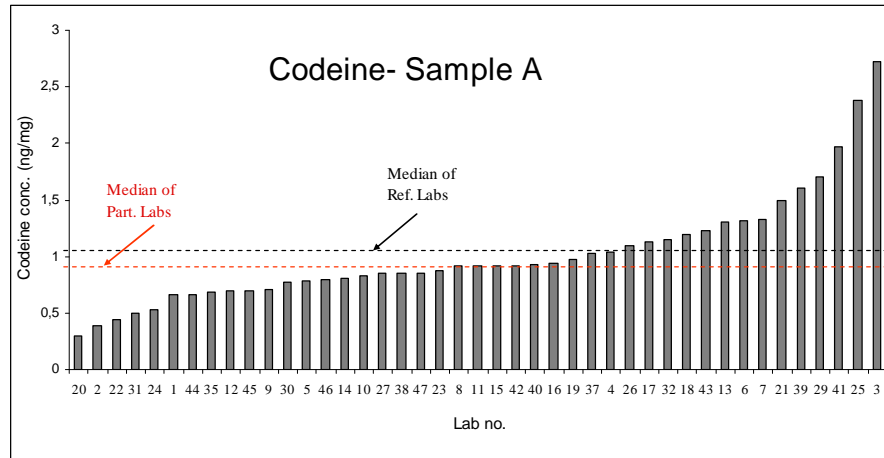
Average	16,475
SD	5,51
CV%	33,47
Median	16,35
Minimum	5,91
Quartile 25	12,825
Quartile 75	19,9
Maximum	35,14
Iqr	7,075



Lab.	Morphine (ng/mg)	Z-score	Result
24	1,50	-1,30	Satisfactory
2	1,70	-1,20	Satisfactory
1	2,15	-0,99	Satisfactory
22	2,32	-0,91	Satisfactory
20	2,40	-0,87	Satisfactory
5	2,44	-0,86	Satisfactory
44	2,48	-0,84	Satisfactory
31	2,55	-0,80	Satisfactory
15	3,04	-0,58	Satisfactory
45	3,10	-0,55	Satisfactory
42	3,20	-0,50	Satisfactory
39	3,40	-0,41	Satisfactory
40	3,40	-0,41	Satisfactory
14	3,42	-0,40	Satisfactory
30	3,50	-0,36	Satisfactory
47	3,66	-0,28	Satisfactory
46	3,70	-0,27	Satisfactory
16	3,72	-0,26	Satisfactory
35	3,76	-0,24	Satisfactory
9	4,03	-0,11	Satisfactory
10	4,24	-0,01	Satisfactory
23	4,30	0,01	Satisfactory
27	4,33	0,03	Satisfactory
8	4,43	0,07	Satisfactory
32	4,47	0,09	Satisfactory
29	4,50	0,11	Satisfactory

Lab.	Morphine (ng/mg)	Z-score	Result
4	4,53	0,12	Satisfactory
11	4,66	0,18	Satisfactory
33	4,86	0,28	Satisfactory
13	5,28	0,47	Satisfactory
37	5,34	0,50	Satisfactory
26	5,4	0,53	Satisfactory
6	5,68	0,66	Satisfactory
7	5,72	0,68	Satisfactory
17	5,85	0,74	Satisfactory
12	6,3	0,95	Satisfactory
21	7,5	1,51	Satisfactory
43	7,74	1,62	Satisfactory
41	8,16	1,82	Satisfactory
18	8,9	2,17	Questionable
3	10,99	3,15	Unsatisfactory
25	13,55	4,35	Unsatisfactory
38	>1,2		
19	>5		
28	P		
34	P		
36	P		

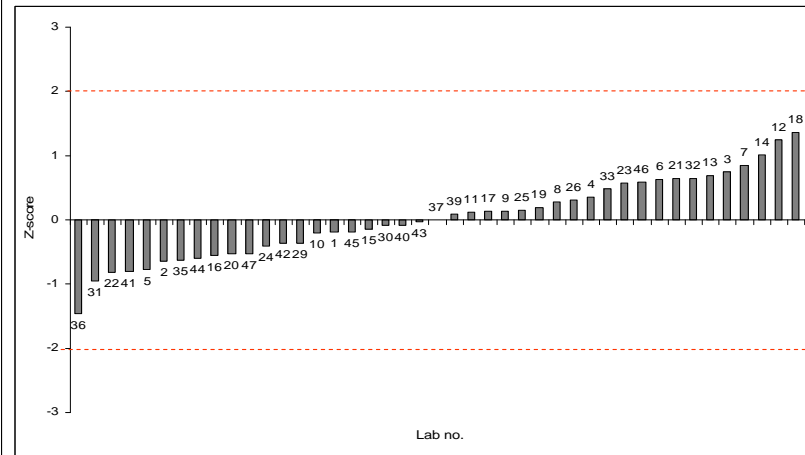
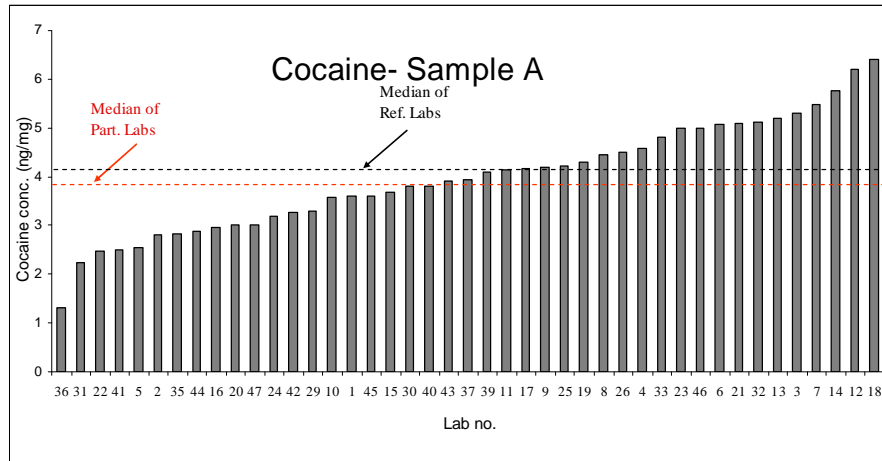
Average	4,67
SD	2,40
CV%	51,40
Median	4,27
Minimum	1,50
Quartile 25	3,25
Quartile 75	5,385
Maximum	13,55
Iqr	2,135



Lab.	Codeine (ng/mg)	Z-score	Result
20	0,30	-1,44	Satisfactory
2	0,39	-1,23	Satisfactory
22	0,44	-1,12	Satisfactory
31	0,50	-0,98	Satisfactory
24	0,53	-0,91	Satisfactory
1	0,66	-0,60	Satisfactory
44	0,66	-0,60	Satisfactory
35	0,69	-0,53	Satisfactory
12	0,70	-0,51	Satisfactory
45	0,70	-0,51	Satisfactory
9	0,71	-0,49	Satisfactory
30	0,78	-0,32	Satisfactory
5	0,79	-0,30	Satisfactory
46	0,80	-0,28	Satisfactory
14	0,81	-0,25	Satisfactory
10	0,83	-0,21	Satisfactory
27	0,85	-0,16	Satisfactory
38	0,85	-0,16	Satisfactory
47	0,85	-0,16	Satisfactory
23	0,88	-0,09	Satisfactory
8	0,92	0	Satisfactory
11	0,92	0	Satisfactory
15	0,92	0	Satisfactory
42	0,92	0	Satisfactory
40	0,93	0,023	Satisfactory
16	0,94	0,05	Satisfactory

Lab.	Codeine (ng/mg)	Z-score	Result
19	0,97	0,12	Satisfactory
37	1,03	0,25	Satisfactory
4	1,04	0,28	Satisfactory
26	1,1	0,42	Satisfactory
17	1,13	0,49	Satisfactory
32	1,15	0,53	Satisfactory
18	1,2	0,65	Satisfactory
43	1,23	0,72	Satisfactory
13	1,31	0,91	Satisfactory
6	1,32	0,93	Satisfactory
7	1,33	0,95	Satisfactory
21	1,5	1,35	Satisfactory
39	1,6	1,58	Satisfactory
29	1,7	1,81	Satisfactory
41	1,97	2,44	Questionable
25	2,38	3,39	Unsatisfactory
3	2,72	4,19	Unsatisfactory
28	P		
34	P		
36	P		

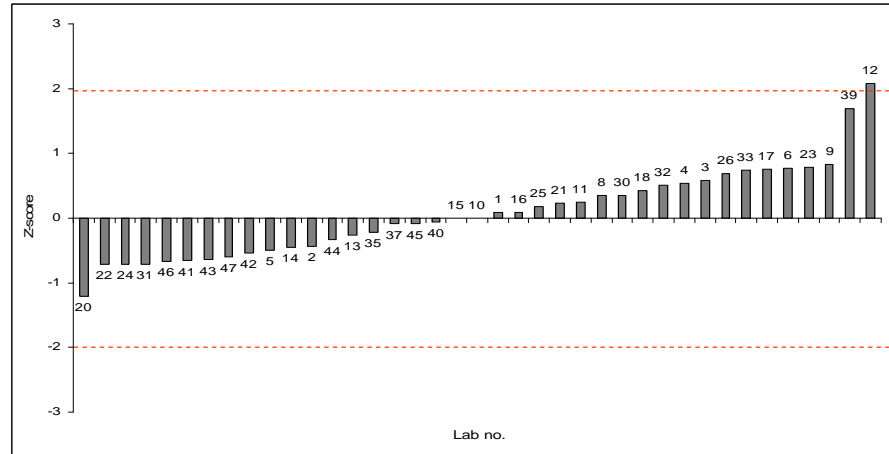
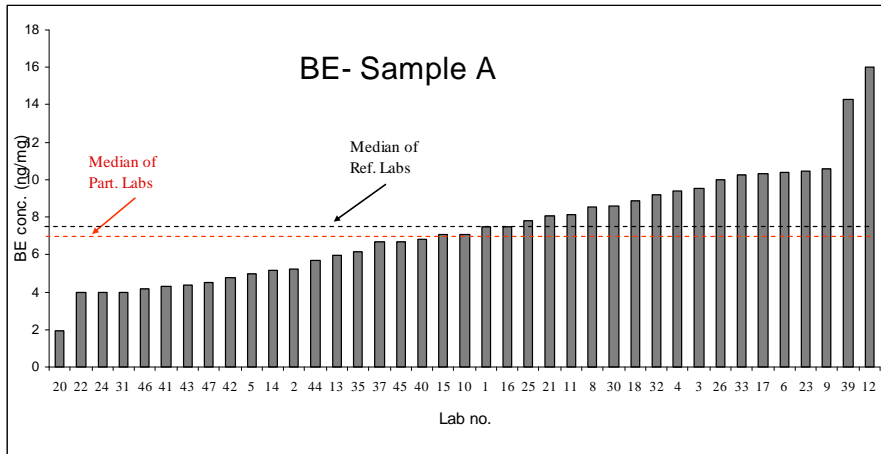
Average	1,02
SD	0,48
CV%	46,91
Median	0,92
Minimum	0,30
Quartile 25	0,745
Quartile 75	1,175
Maximum	2,72
Iqr	0,43



Lab.	Cocaine (ng/mg)	Z-score	Result
36	1,30	-1,47	Satisfactory
31	2,24	-0,95	Satisfactory
22	2,46	-0,82	Satisfactory
41	2,49	-0,81	Satisfactory
5	2,56	-0,77	Satisfactory
2	2,80	-0,64	Satisfactory
35	2,82	-0,63	Satisfactory
44	2,88	-0,59	Satisfactory
16	2,95	-0,55	Satisfactory
20	3,00	-0,53	Satisfactory
47	3,00	-0,53	Satisfactory
24	3,20	-0,41	Satisfactory
42	3,28	-0,37	Satisfactory
29	3,30	-0,36	Satisfactory
10	3,57	-0,21	Satisfactory
1	3,60	-0,19	Satisfactory
45	3,60	-0,19	Satisfactory
15	3,68	-0,15	Satisfactory
30	3,80	-0,08	Satisfactory
40	3,80	-0,08	Satisfactory
43	3,91	-0,02	Satisfactory
37	3,95	0	Satisfactory
39	4,10	0,08	Satisfactory
11	4,15	0,11	Satisfactory
17	4,18	0,13	Satisfactory
9	4,19	0,13	Satisfactory

Lab.	Cocaine (ng/mg)	Z-score	Result
25	4,21	0,14	Satisfactory
19	4,30	0,19	Satisfactory
8	4,44	0,27	Satisfactory
26	4,50	0,30	Satisfactory
4	4,59	0,35	Satisfactory
33	4,82	0,48	Satisfactory
23	4,99	0,58	Satisfactory
46	5,00	0,58	Satisfactory
6	5,08	0,63	Satisfactory
21	5,10	0,634	Satisfactory
32	5,11	0,64	Satisfactory
13	5,20	0,69	Satisfactory
3	5,31	0,75	Satisfactory
7	5,47	0,84	Satisfactory
14	5,76	1,00	Satisfactory
12	6,20	1,25	Satisfactory
18	6,40	1,36	Satisfactory
38	>2,00		
28	P		
34	P		

Average	3,98
SD	1,11
CV%	27,85
Median	3,95
Minimum	1,30
Quartile 25	3,10
Quartile 75	4,905
Maximum	6,40
Iqr	1,805

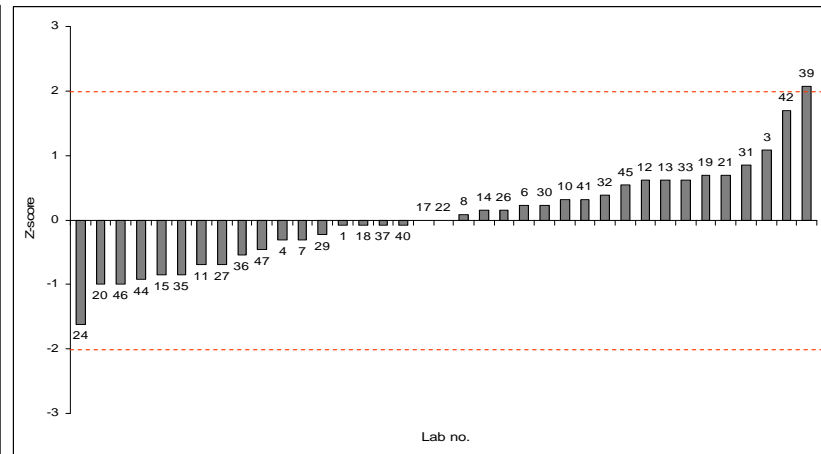
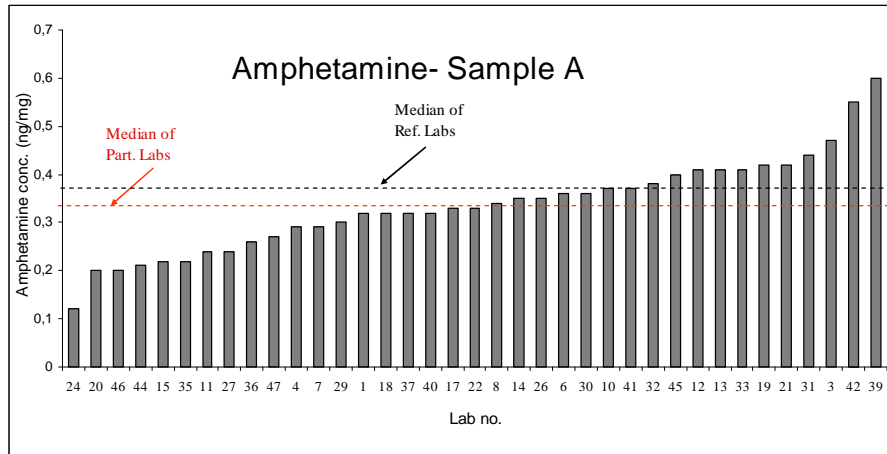


Lab.	BE (ng/mg)	Z-score	Result
20	1,90	-1,21	Satisfactory
22	4,00	-0,72	Satisfactory
24	4,00	-0,72	Satisfactory
31	4,00	-0,72	Satisfactory
46	4,20	-0,67	Satisfactory
41	4,30	-0,65	Satisfactory
43	4,36	-0,64	Satisfactory
47	4,53	-0,60	Satisfactory
42	4,77	-0,54	Satisfactory
5	4,96	-0,49	Satisfactory
14	5,13	-0,46	Satisfactory
2	5,20	-0,44	Satisfactory
44	5,66	-0,33	Satisfactory
13	5,97	-0,26	Satisfactory
35	6,13	-0,22	Satisfactory
37	6,68	-0,09	Satisfactory
45	6,68	-0,09	Satisfactory
40	6,80	-0,06	Satisfactory
15	7,07	0	Satisfactory
10	7,08	0	Satisfactory
1	7,47	0,09	Satisfactory
16	7,47	0,09	Satisfactory
25	7,83	0,17	Satisfactory
21	8,10	0,24	Satisfactory
11	8,14	0,25	Satisfactory
8	8,56	0,35	Satisfactory

Lab.	BE (ng/mg)	Z-score	Result
30	8,60	0,36	Satisfactory
18	8,90	0,42	Satisfactory
32	9,23	0,50	Satisfactory
4	9,41	0,54	Satisfactory
3	9,54	0,57	Satisfactory
26	10,00	0,68	Satisfactory
33	10,27	0,75	Satisfactory
17	10,30	0,75	Satisfactory
6	10,40	0,78	Satisfactory
23	10,45	0,79	Satisfactory
9	10,62	0,83	Satisfactory
39	14,30	1,69	Satisfactory
12	16,00	2,09	Questionable
38	>0,5		
7	>5		
19	>5		
29	>5		
36	>5		
28	P		
34	P		

Average	7,41
SD	2,89
CV%	38,97
Median	7,08
Minimum	1,90
Quartile 25	5,045
Quartile 75	9,32
Maximum	16,00
Iqr	4,275

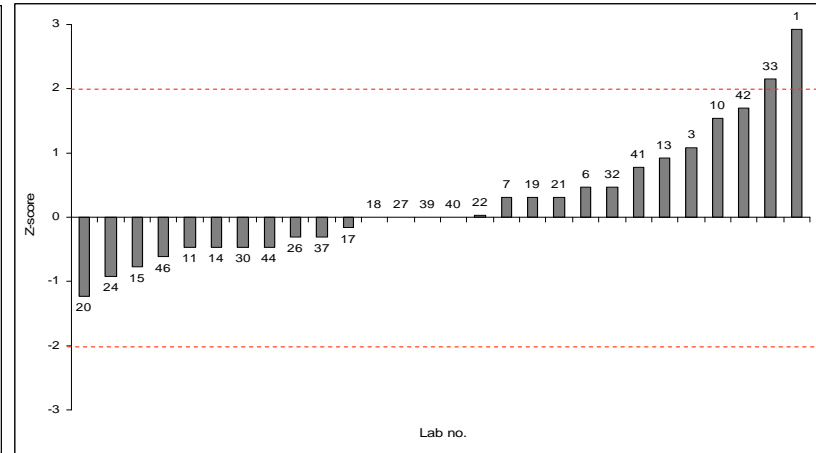
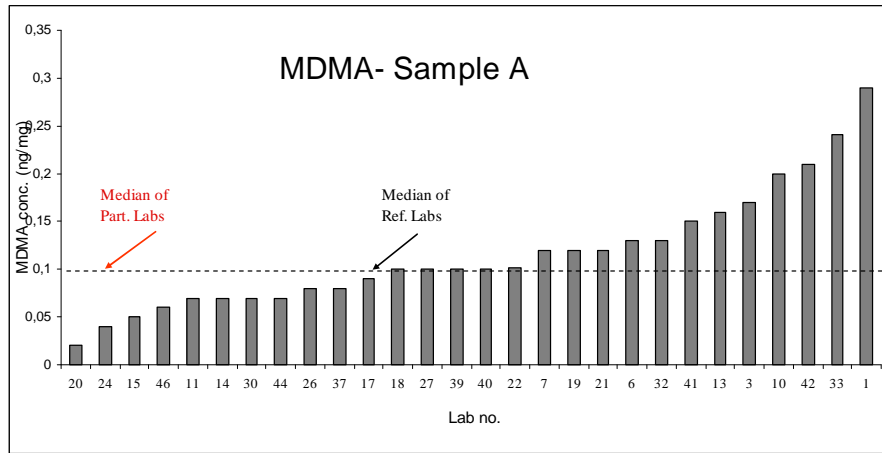




Lab.	Amphetamine (ng/mg)	Z-score	Result
24	0,12	-1,61	Satisfactory
20	0,20	-1,00	Satisfactory
46	0,20	-1,00	Satisfactory
44	0,21	-0,92	Satisfactory
15	0,22	-0,85	Satisfactory
35	0,22	-0,85	Satisfactory
11	0,24	-0,69	Satisfactory
27	0,24	-0,69	Satisfactory
36	0,26	-0,54	Satisfactory
47	0,27	-0,46	Satisfactory
4	0,29	-0,31	Satisfactory
7	0,29	-0,31	Satisfactory
29	0,30	-0,23	Satisfactory
1	0,32	-0,08	Satisfactory
18	0,32	-0,08	Satisfactory
37	0,32	-0,08	Satisfactory
40	0,32	-0,08	Satisfactory
17	0,33	0	Satisfactory
22	0,33	0	Satisfactory
8	0,34	0,08	Satisfactory
14	0,35	0,15	Satisfactory
26	0,35	0,15	Satisfactory
6	0,36	0,23	Satisfactory
30	0,36	0,23	Satisfactory
10	0,37	0,31	Satisfactory
41	0,37	0,30	Satisfactory

Lab.	Amphetamine (ng/mg)	Z-score	Result
32	0,38	0,38	Satisfactory
45	0,40	0,54	Satisfactory
12	0,41	0,61	Satisfactory
13	0,41	0,61	Satisfactory
33	0,41	0,61	Satisfactory
19	0,42	0,69	Satisfactory
21	0,42	0,69	Satisfactory
31	0,44	0,85	Satisfactory
3	0,47	1,08	Satisfactory
42	0,55	1,69	Satisfactory
39	0,60	2,08	Questionable
28	P		
34	P		
5	N		
9	N		
25	N		
2	N		
16	N		
38	N		
43	N		

Average	0,33
SD	0,097
CV%	28,84
Median	0,33
Minimum	0,12
Quartile 25	0,27
Quartile 75	0,40
Maximum	0,60
Iqr	0,13

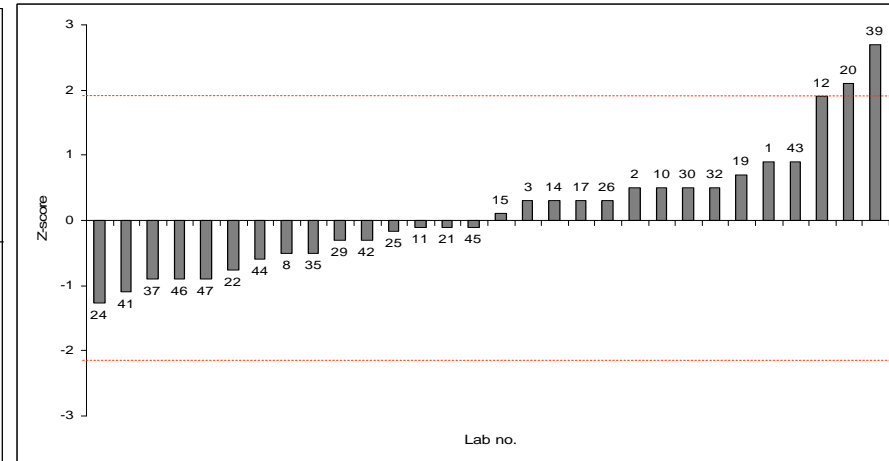
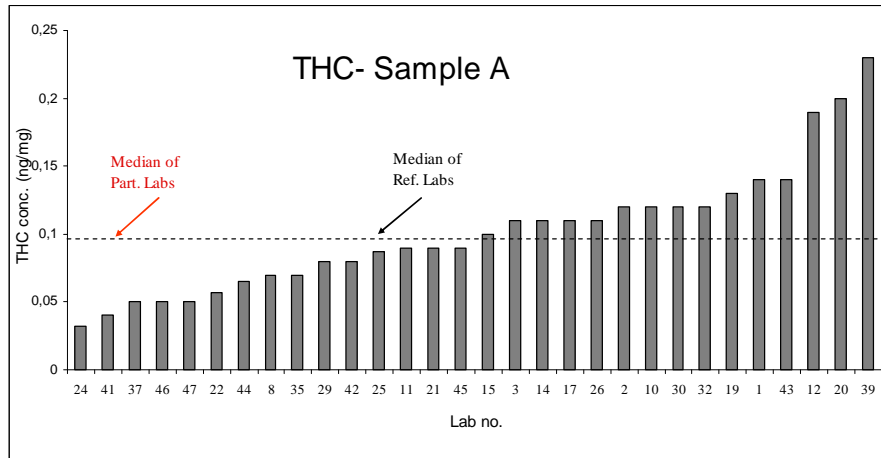


Lab.	MDMA (ng/mg)	Z-score	Result
20	0,02	-1,23	Satisfactory
24	0,04	-0,92	Satisfactory
15	0,05	-0,77	Satisfactory
46	0,06	-0,61	Satisfactory
11	0,07	-0,46	Satisfactory
14	0,07	-0,46	Satisfactory
30	0,07	-0,46	Satisfactory
44	0,07	-0,46	Satisfactory
26	0,08	-0,31	Satisfactory
37	0,08	-0,31	Satisfactory
17	0,09	-0,15	Satisfactory
18	0,10	0	Satisfactory
27	0,10	0	Satisfactory
39	0,10	0	Satisfactory
40	0,10	0	Satisfactory
22	0,102	0,03	Satisfactory
7	0,12	0,31	Satisfactory
19	0,12	0,31	Satisfactory
21	0,12	0,31	Satisfactory
6	0,13	0,46	Satisfactory
32	0,13	0,46	Satisfactory
41	0,15	0,77	Satisfactory
13	0,16	0,92	Satisfactory
3	0,17	1,08	Satisfactory
10	0,20	1,54	Satisfactory
42	0,21	1,69	Satisfactory

Lab.	MDMA (ng/mg)	Z-score	Result
33	0,24	2,15	Questionable
1	0,29	2,92	Questionable
35	<0,05		
28	U		

Average	0,116
SD	0,0608
CV%	52,49
Median	0,10
Minimum	0,02
Quartile 25	0,07
Quartile 75	0,135
Maximum	0,29
Iqr	0,065

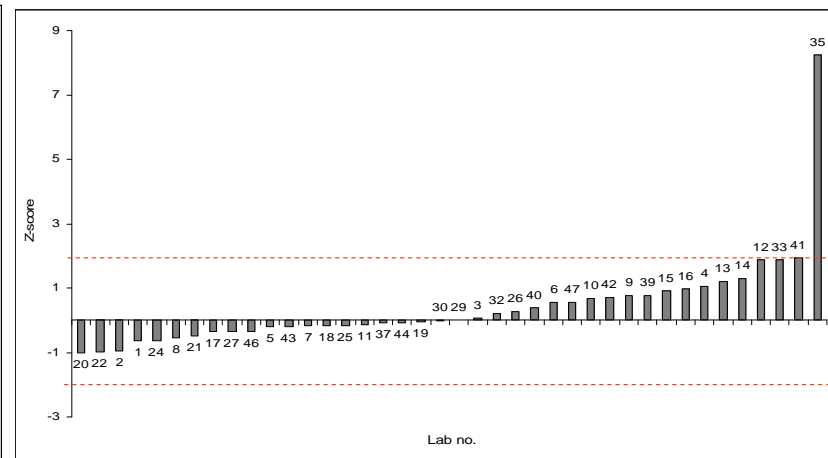
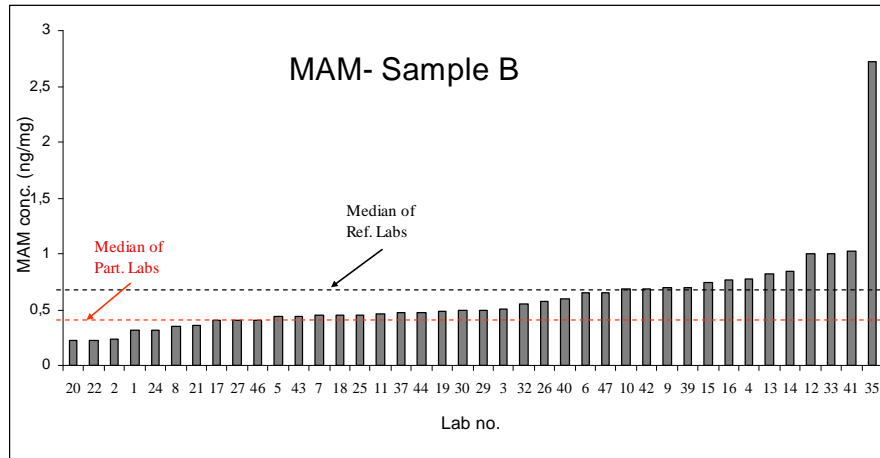
The median MDMA concentration is below the cut-off proposed by SoHT (0.20 ng/mg)



Lab.	THC (ng/mg)	Z-score	Result
24	0,032	-1,26	Satisfactory
41	0,04	-1,10	Satisfactory
37	0,05	-0,90	Satisfactory
46	0,05	-0,90	Satisfactory
47	0,05	-0,90	Satisfactory
22	0,057	-0,76	Satisfactory
44	0,065	-0,60	Satisfactory
8	0,07	-0,50	Satisfactory
35	0,07	-0,50	Satisfactory
29	0,08	-0,30	Satisfactory
42	0,08	-0,30	Satisfactory
25	0,087	-0,16	Satisfactory
11	0,09	-0,10	Satisfactory
21	0,09	-0,10	Satisfactory
45	0,09	-0,10	Satisfactory
15	0,10	0,10	Satisfactory
3	0,11	0,30	Satisfactory
14	0,11	0,30	Satisfactory
17	0,11	0,30	Satisfactory
26	0,11	0,30	Satisfactory
2	0,12	0,50	Satisfactory
10	0,12	0,50	Satisfactory
30	0,12	0,50	Satisfactory
32	0,12	0,50	Satisfactory
19	0,13	0,70	Satisfactory
1	0,14	0,90	Satisfactory

Lab.	THC (ng/mg)	Z-score	Result
43	0,14	0,90	Satisfactory
12	0,19	1,90	Satisfactory
20	0,20	2,10	Questionable
39	0,23	2,70	Questionable
31	N		
34	N		
38	N		
16	N		
28	U		

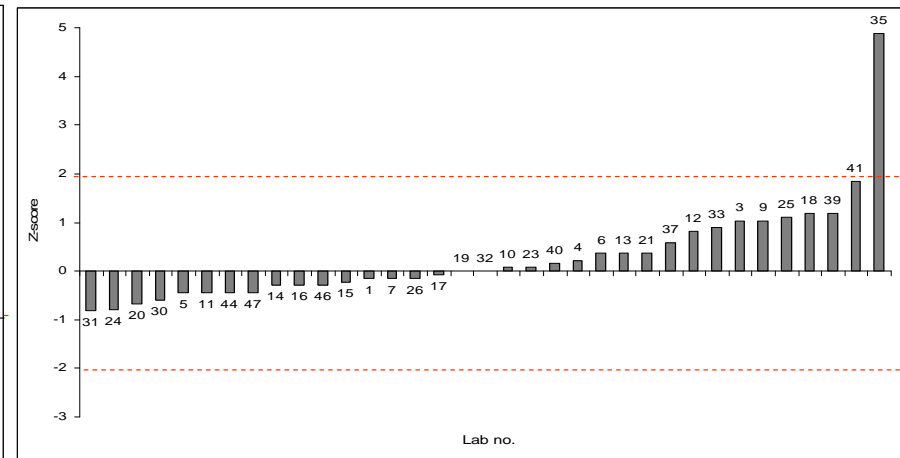
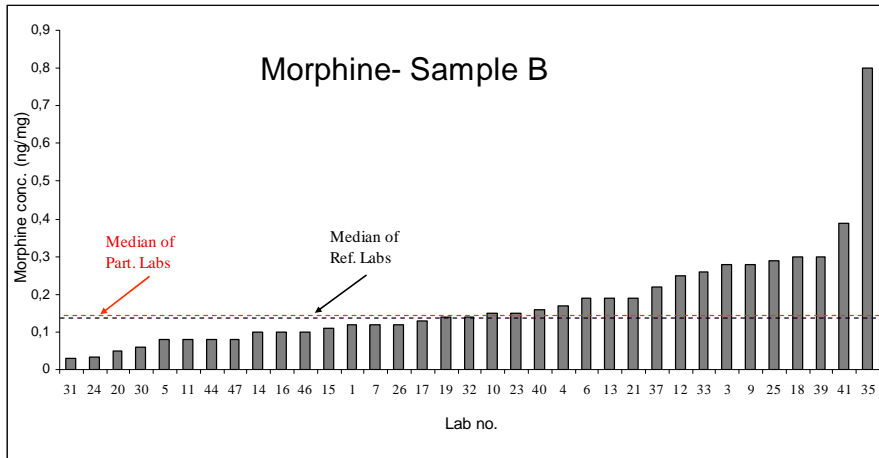
Average	0,10
SD	0,040
CV%	45,02
Median	0,095
Minimum	0,032
Quartile 25	0,07
Quartile 75	0,12
Maximum	0,23
Iqr	0,05



Lab.	MAM (ng/mg)	Z-score	Result
20	0,22	-1,02	Satisfactory
22	0,23	-0,98	Satisfactory
2	0,24	-0,94	Satisfactory
1	0,32	-0,65	Satisfactory
24	0,32	-0,65	Satisfactory
8	0,35	-0,54	Satisfactory
21	0,36	-0,50	Satisfactory
17	0,40	-0,35	Satisfactory
27	0,40	-0,35	Satisfactory
46	0,40	-0,35	Satisfactory
5	0,44	-0,20	Satisfactory
43	0,44	-0,20	Satisfactory
7	0,45	-0,17	Satisfactory
18	0,45	-0,17	Satisfactory
25	0,45	-0,17	Satisfactory
11	0,46	-0,13	Satisfactory
37	0,47	-0,09	Satisfactory
44	0,47	-0,09	Satisfactory
19	0,48	-0,06	Satisfactory
30	0,49	-0,02	Satisfactory
29	0,50	0,02	Satisfactory
3	0,51	0,06	Satisfactory
32	0,55	0,20	Satisfactory
26	0,57	0,28	Satisfactory
40	0,60	0,39	Satisfactory
6	0,65	0,57	Satisfactory

Lab.	MAM (ng/mg)	Z-score	Result
47	0,65	0,57	Satisfactory
10	0,68	0,68	Satisfactory
42	0,69	0,72	Satisfactory
9	0,70	0,76	Satisfactory
39	0,70	0,76	Satisfactory
15	0,74	0,91	Satisfactory
16	0,76	0,98	Satisfactory
4	0,78	1,06	Satisfactory
13	0,82	1,20	Satisfactory
14	0,84	1,28	Satisfactory
12	1,00	1,87	Satisfactory
33	1,00	1,87	Satisfactory
41	1,02	1,94	Satisfactory
35	2,72	8,24	Unsatisfactory
28	P		
34	P		
36	P		
23	U		
31	N		
38	N		
45	N		

Average	0,608
SD	0,39
CV%	64,958
Median	0,495
Minimum	0,22
Quartile 25	0,43
Quartile 75	0,70
Maximum	2,72
Iqr	0,27

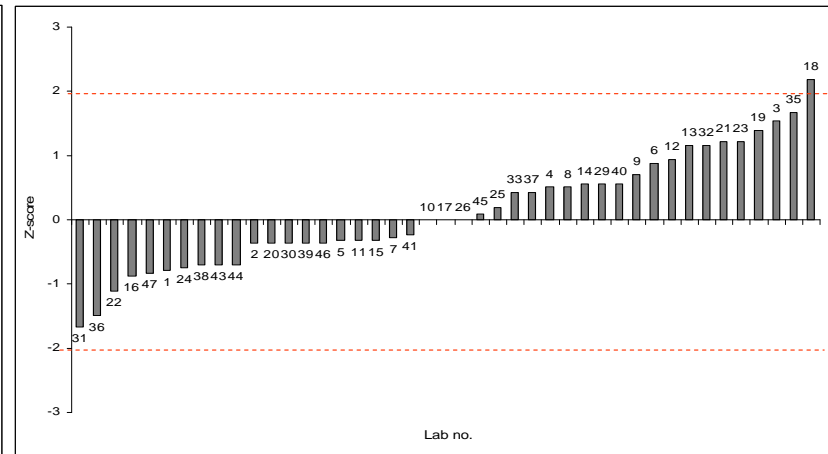
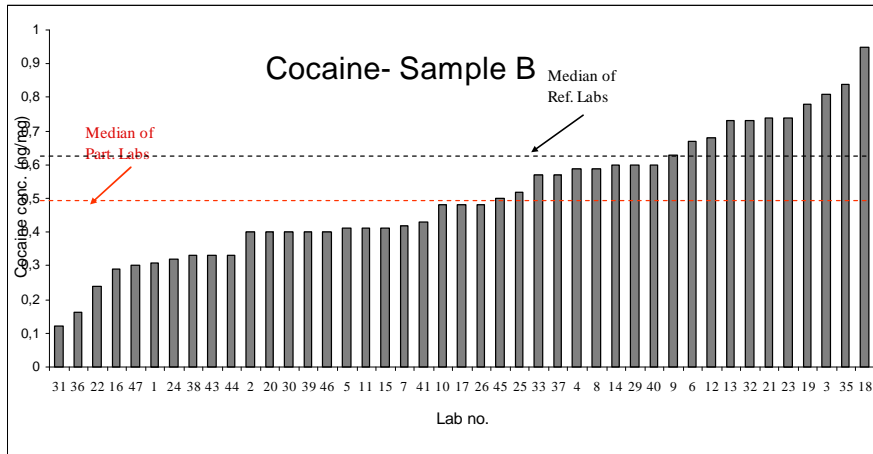


Lab.	Morphine (ng/mg)	Z-score	Result
31	0,03	-0,81	Satisfactory
24	0,034	-0,78	Satisfactory
20	0,05	-0,67	Satisfactory
30	0,06	-0,59	Satisfactory
5	0,08	-0,44	Satisfactory
11	0,08	-0,44	Satisfactory
44	0,08	-0,44	Satisfactory
47	0,08	-0,44	Satisfactory
14	0,10	-0,30	Satisfactory
16	0,10	-0,30	Satisfactory
46	0,10	-0,30	Satisfactory
15	0,11	-0,22	Satisfactory
1	0,12	-0,15	Satisfactory
7	0,12	-0,15	Satisfactory
26	0,12	-0,15	Satisfactory
17	0,13	-0,07	Satisfactory
19	0,14	0	Satisfactory
32	0,14	0	Satisfactory
10	0,15	0,07	Satisfactory
23	0,15	0,07	Satisfactory
40	0,16	0,15	Satisfactory
4	0,17	0,22	Satisfactory
6	0,19	0,37	Satisfactory
13	0,19	0,37	Satisfactory
21	0,19	0,37	Satisfactory
37	0,22	0,59	Satisfactory

Lab.	Morphine (ng/mg)	Z-score	Result
12	0,25	0,81	Satisfactory
33	0,26	0,89	Satisfactory
3	0,28	1,04	Satisfactory
9	0,28	1,04	Satisfactory
25	0,29	1,11	Satisfactory
18	0,30	1,18	Satisfactory
39	0,30	1,18	Satisfactory
41	0,39	1,85	Satisfactory
35	0,80	4,89	Satisfactory
43	<0.20		
36	P		
28	U		

Average	0,178
SD	0,137
CV%	77,00
Median	0,14
Minimum	0,03
Quartile 25	0,10
Quartile 75	0,235
Maximum	0,8
Iqr	0,135

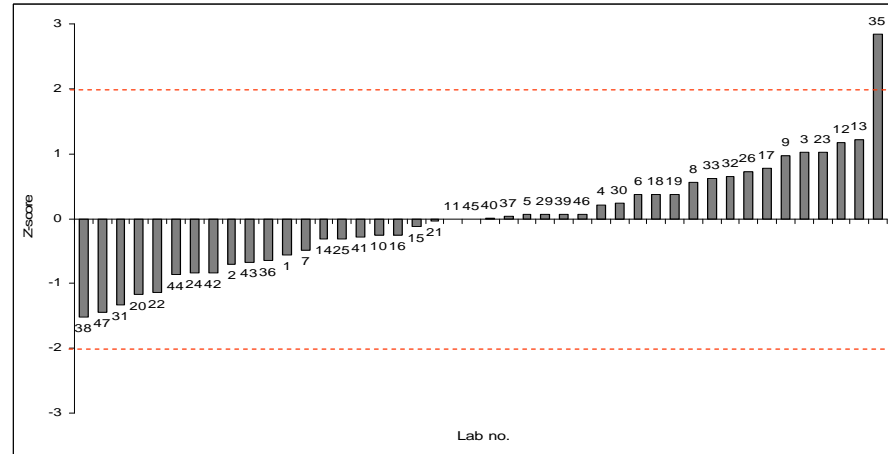
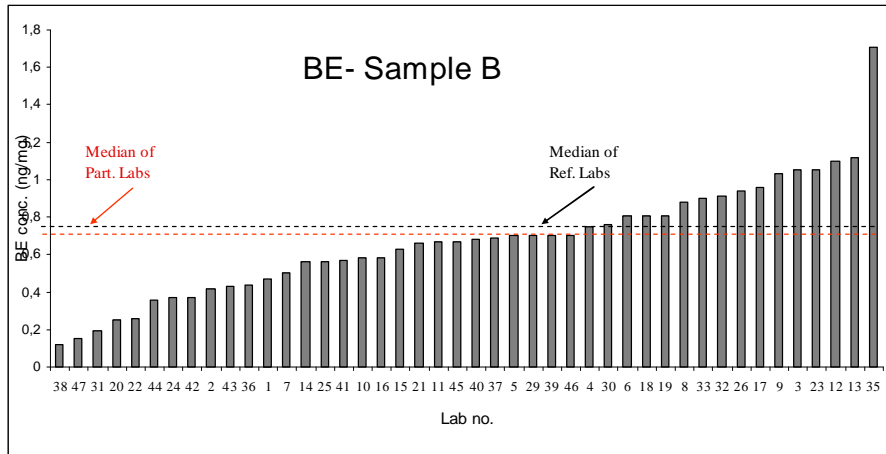
The median Morphine concentration is below the cut-off proposed by SoHT (0.20 ng/mg)



Lab.	Cocaine (ng/mg)	Z-score	Result
31	0,12	-1,67	Satisfactory
36	0,16	-1,49	Satisfactory
22	0,24	-1,12	Satisfactory
16	0,29	-0,88	Satisfactory
47	0,30	-0,84	Satisfactory
1	0,31	-0,79	Satisfactory
24	0,32	-0,74	Satisfactory
38	0,33	-0,70	Satisfactory
43	0,33	-0,70	Satisfactory
44	0,33	-0,70	Satisfactory
2	0,40	-0,37	Satisfactory
20	0,40	-0,37	Satisfactory
30	0,40	-0,37	Satisfactory
39	0,40	-0,37	Satisfactory
46	0,40	-0,37	Satisfactory
5	0,41	-0,32	Satisfactory
11	0,41	-0,32	Satisfactory
15	0,41	-0,32	Satisfactory
7	0,42	-0,28	Satisfactory
41	0,43	-0,23	Satisfactory
10	0,48	0	Satisfactory
17	0,48	0	Satisfactory
26	0,48	0	Satisfactory
45	0,50	0,09	Satisfactory
25	0,52	0,19	Satisfactory
33	0,57	0,42	Satisfactory

Lab.	Cocaine (ng/mg)	Z-score	Result
37	0,57	0,42	Satisfactory
4	0,59	0,51	Satisfactory
8	0,59	0,51	Satisfactory
14	0,6	0,56	Satisfactory
29	0,6	0,56	Satisfactory
40	0,6	0,56	Satisfactory
9	0,63	0,70	Satisfactory
6	0,67	0,88	Satisfactory
12	0,68	0,93	Satisfactory
13	0,73	1,16	Satisfactory
32	0,73	1,16	Satisfactory
21	0,74	1,21	Satisfactory
23	0,74	1,21	Satisfactory
19	0,78	1,39	Satisfactory
3	0,81	1,53	Satisfactory
35	0,84	1,67	Satisfactory
18	0,95	2,19	Questionable
28	U		
34	N		
42	N		

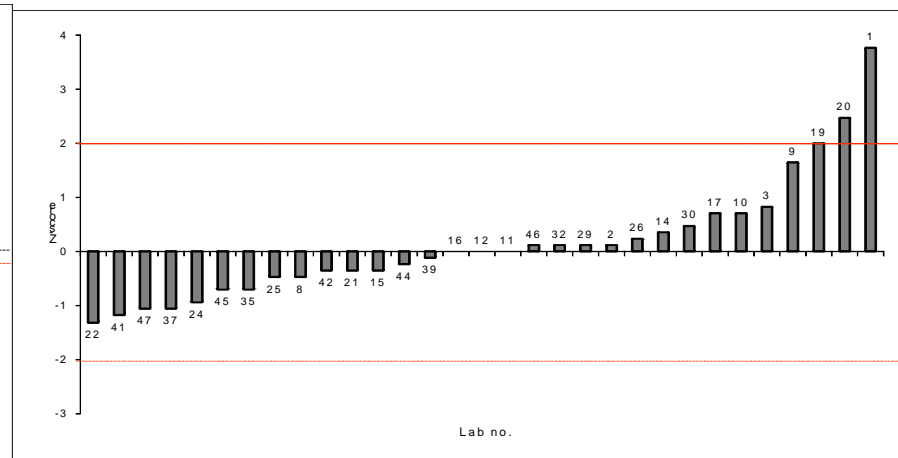
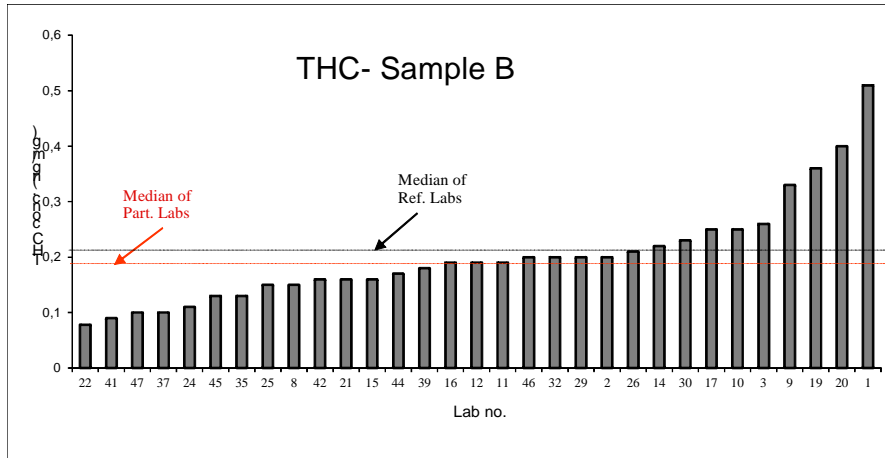
Average	0,504
SD	0,187
CV%	37,04
Median	0,48
Minimum	0,12
Quartile 25	0,40
Quartile 75	0,615
Maximum	0,95
Iqr	0,215



Lab.	BE (ng/mg)	Z-score	Result
38	0,12	-1,52	Satisfactory
47	0,15	-1,44	Satisfactory
31	0,19	-1,33	Satisfactory
20	0,25	-1,16	Satisfactory
22	0,26	-1,14	Satisfactory
44	0,36	-0,86	Satisfactory
24	0,37	-0,83	Satisfactory
42	0,37	-0,83	Satisfactory
2	0,42	-0,70	Satisfactory
43	0,43	-0,67	Satisfactory
36	0,44	-0,64	Satisfactory
1	0,47	-0,56	Satisfactory
7	0,50	-0,48	Satisfactory
14	0,56	-0,31	Satisfactory
25	0,56	-0,31	Satisfactory
41	0,57	-0,29	Satisfactory
10	0,58	-0,26	Satisfactory
16	0,58	-0,26	Satisfactory
15	0,63	-0,12	Satisfactory
21	0,66	-0,04	Satisfactory
11	0,67	-0,01	Satisfactory
45	0,67	-0,01	Satisfactory
40	0,68	0,01	Satisfactory
37	0,69	0,04	Satisfactory
5	0,70	0,07	Satisfactory
29	0,70	0,07	Satisfactory

Lab.	BE (ng/mg)	Z-score	Result
39	0,7	0,07	Satisfactory
46	0,7	0,07	Satisfactory
4	0,75	0,20	Satisfactory
30	0,76	0,23	Satisfactory
6	0,81	0,37	Satisfactory
18	0,81	0,37	Satisfactory
19	0,81	0,37	Satisfactory
8	0,88	0,56	Satisfactory
33	0,9	0,62	Satisfactory
32	0,91	0,64	Satisfactory
26	0,94	0,73	Satisfactory
17	0,96	0,78	Satisfactory
9	1,03	0,97	Satisfactory
3	1,05	1,03	Satisfactory
23	1,05	1,03	Satisfactory
12	1,1	1,16	Satisfactory
13	1,12	1,22	Satisfactory
35	1,71	2,83	Questionable
28	P		
34	P		

Average	0,67
SD	0,30
CV%	44,83
Median	0,675
Minimum	0,12
Quartile 25	0,462
Quartile 75	0,827
Maximum	1,71
Iqr	0,365

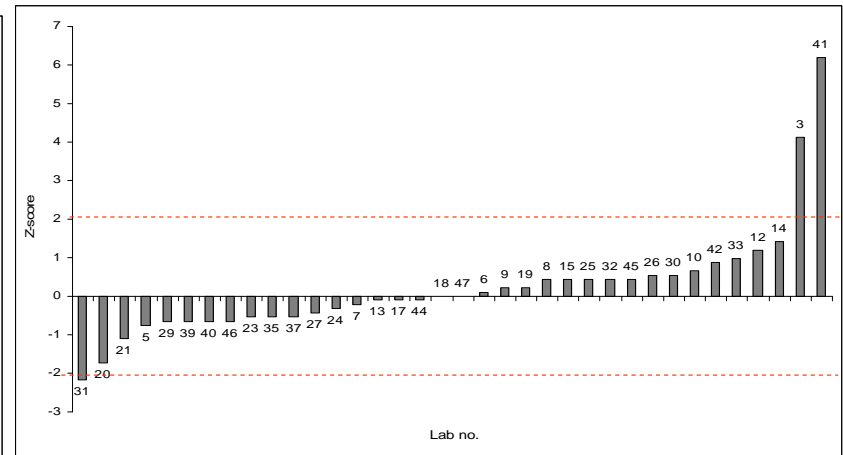
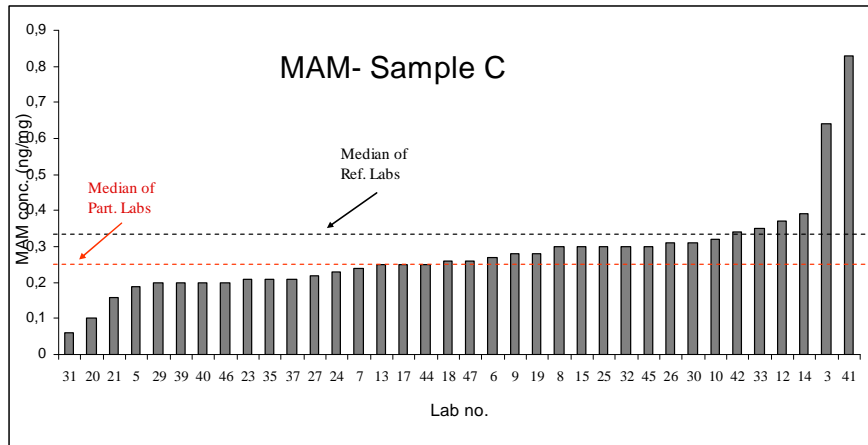


Lab.	THC (ng/mg)	Z-score	Result
22	0,078	-1,32	Satisfactory
41	0,09	-1,18	Satisfactory
47	0,10	-1,06	Satisfactory
37	0,10	-1,06	Satisfactory
24	0,11	-0,946	Satisfactory
45	0,13	-0,706	Satisfactory
35	0,13	-0,706	Satisfactory
25	0,15	-0,476	Satisfactory
8	0,15	-0,476	Satisfactory
42	0,16	-0,356	Satisfactory
21	0,16	-0,356	Satisfactory
15	0,16	-0,356	Satisfactory
44	0,17	-0,236	Satisfactory
39	0,18	-0,12	Satisfactory
16	0,19	0	Satisfactory
12	0,19	0	Satisfactory
11	0,19	0	Satisfactory
46	0,20	0,12	Satisfactory
32	0,20	0,12	Satisfactory
29	0,20	0,12	Satisfactory
2	0,20	0,12	Satisfactory
26	0,21	0,23	Satisfactory
14	0,22	0,35	Satisfactory
30	0,23	0,47	Satisfactory
17	0,25	0,70	Satisfactory
10	0,25	0,70	Satisfactory

Lab.	THC (ng/mg)	Z-score	Result
3	0,26	0,82	Satisfactory
9	0,33	1,65	Satisfactory
19	0,36	2,00	Questionable
20	0,4	2,47	Questionable
1	0,51	3,76	Unsatisfactory
43	N		
38	N		
34	N		
31	N		
28	P		

Average	0,203
SD	0,09
CV%	44,91
Median	0,19
Minimum	0,078
Quartile 25	0,15
Quartile 75	0,235
Maximum	0,51
Iqr	0,085

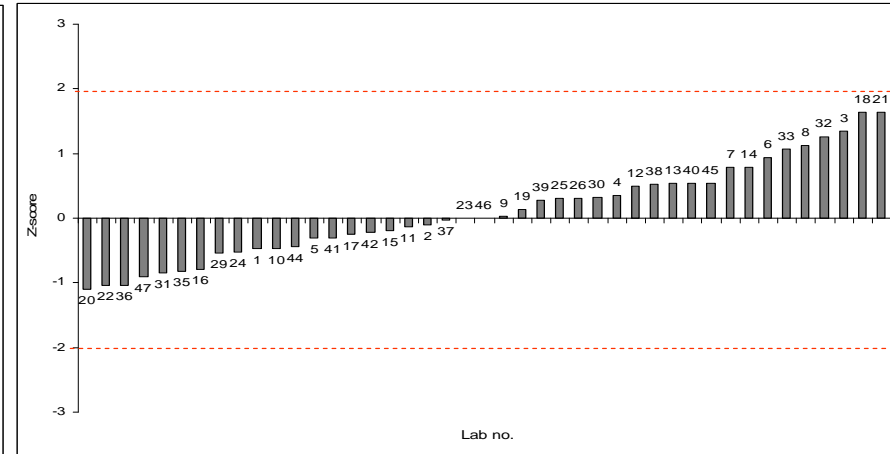
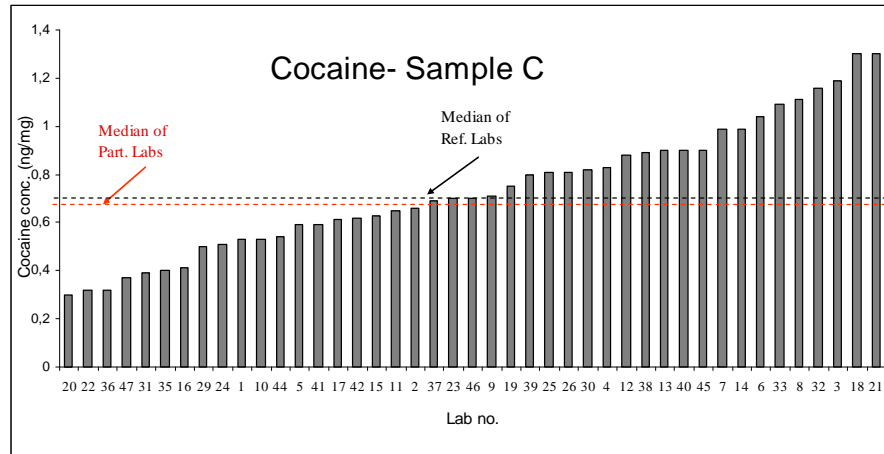




Lab.	MAM (ng/mg)	Z-score	Result
31	0,06	-2,17	Questionable
20	0,10	-1,74	Satisfactory
21	0,16	-1,09	Satisfactory
5	0,19	-0,76	Satisfactory
29	0,20	-0,65	Satisfactory
39	0,20	-0,65	Satisfactory
40	0,20	-0,65	Satisfactory
46	0,20	-0,65	Satisfactory
23	0,21	-0,54	Satisfactory
35	0,21	-0,54	Satisfactory
37	0,21	-0,54	Satisfactory
27	0,22	-0,43	Satisfactory
24	0,23	-0,33	Satisfactory
7	0,24	-0,22	Satisfactory
13	0,25	-0,11	Satisfactory
17	0,25	-0,11	Satisfactory
44	0,25	-0,11	Satisfactory
18	0,26	0	Satisfactory
47	0,26	0	Satisfactory
6	0,27	0,11	Satisfactory
9	0,28	0,22	Satisfactory
19	0,28	0,22	Satisfactory
8	0,30	0,43	Satisfactory
15	0,30	0,43	Satisfactory
25	0,30	0,43	Satisfactory
32	0,30	0,43	Satisfactory

Lab.	MAM (ng/mg)	Z-score	Result
45	0,3	0,43	Satisfactory
26	0,31	0,54	Satisfactory
30	0,31	0,54	Satisfactory
10	0,32	0,65	Satisfactory
42	0,34	0,87	Satisfactory
33	0,35	0,98	Satisfactory
12	0,37	1,19	Satisfactory
14	0,39	1,41	Satisfactory
3	0,64	4,13	Unsatisfactory
41	0,83	6,19	Unsatisfactory
36	P		
22	P		
28	P		
2	N		
1	N		
4	N		
11	N		
16	N		
34	N		
38	N		
43	N		

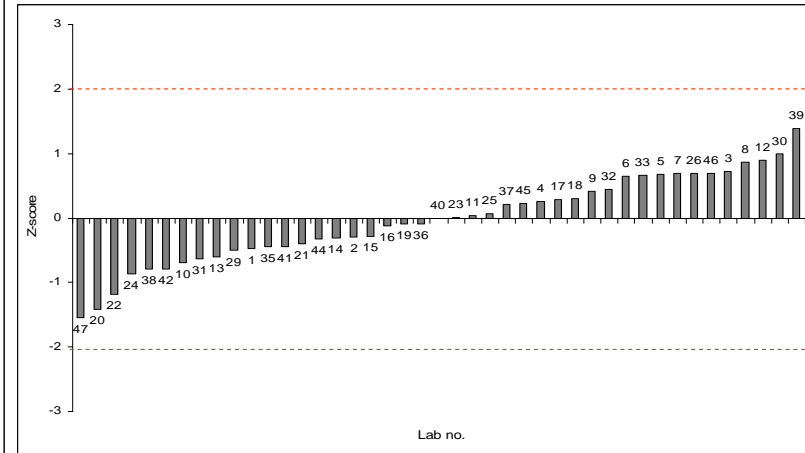
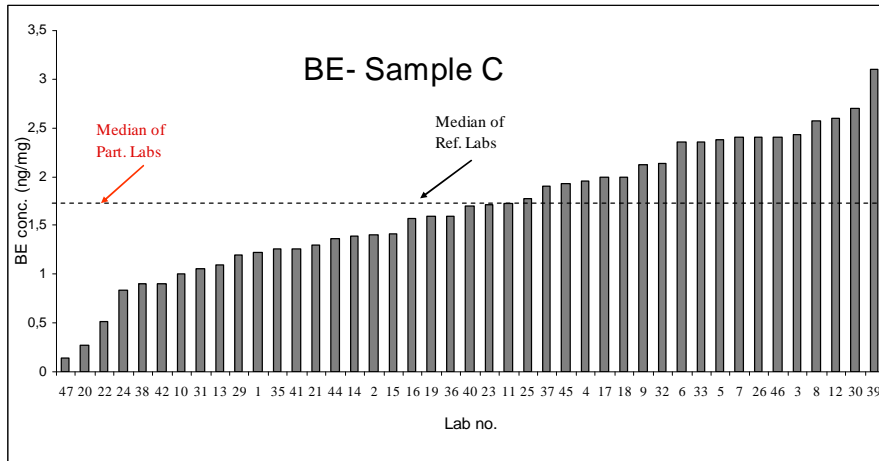
Average	0,28
SD	0,13
CV%	46,86
Median	0,26
Minimum	0,06
Quartile 25	0,21
Quartile 75	0,3025
Maximum	0,83
Iqr	0,0925



Lab.	Cocaine (ng/mg)	Z-score	Result
20	0,3	-1,09	Satisfactory
22	0,32	-1,04	Satisfactory
36	0,32	-1,04	Satisfactory
47	0,37	-0,90	Satisfactory
31	0,39	-0,85	Satisfactory
35	0,4	-0,82	Satisfactory
16	0,41	-0,79	Satisfactory
29	0,5	-0,55	Satisfactory
24	0,51	-0,52	Satisfactory
1	0,53	-0,46	Satisfactory
10	0,53	-0,46	Satisfactory
44	0,54	-0,44	Satisfactory
5	0,59	-0,30	Satisfactory
41	0,59	-0,30	Satisfactory
17	0,61	-0,25	Satisfactory
42	0,62	-0,22	Satisfactory
15	0,63	-0,19	Satisfactory
11	0,65	-0,14	Satisfactory
2	0,66	-0,11	Satisfactory
37	0,69	-0,03	Satisfactory
23	0,7	0	Satisfactory
46	0,7	0	Satisfactory
9	0,71	0,03	Satisfactory
19	0,75	0,14	Satisfactory
39	0,8	0,27	Satisfactory
25	0,81	0,30	Satisfactory

Lab.	Cocaine (ng/mg)	Z-score	Result
26	0,81	0,30	Satisfactory
30	0,82	0,33	Satisfactory
4	0,83	0,36	Satisfactory
12	0,88	0,49	Satisfactory
38	0,89	0,52	Satisfactory
13	0,9	0,55	Satisfactory
40	0,9	0,55	Satisfactory
45	0,9	0,55	Satisfactory
7	0,99	0,79	Satisfactory
14	0,99	0,79	Satisfactory
6	1,04	0,93	Satisfactory
33	1,09	1,07	Satisfactory
8	1,11	1,12	Satisfactory
32	1,16	1,26	Satisfactory
3	1,19	1,34	Satisfactory
18	1,3	1,64	Satisfactory
21	1,3	1,64	Satisfactory
34	P		
28	U		
43	N		

Average	0,738
SD	0,264
CV%	35,829
Median	0,70
Minimum	0,30
Quartile 25	0,535
Quartile 75	0,90
Maximum	1,30
Iqr	0,365

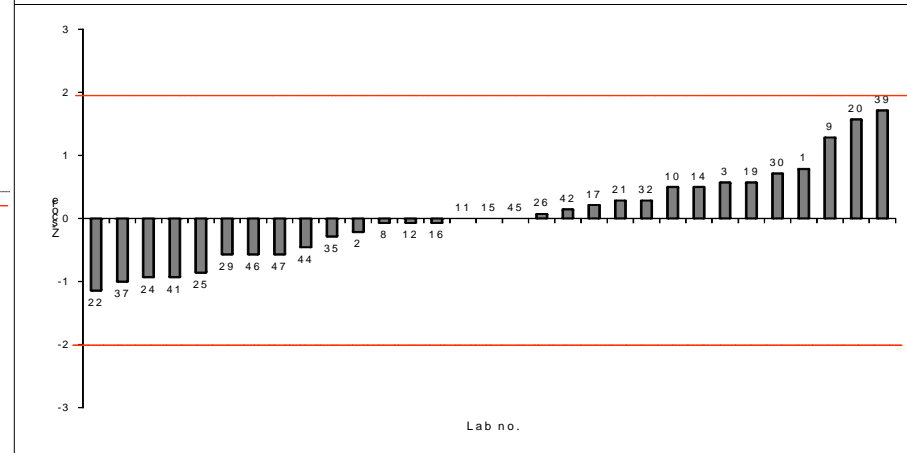
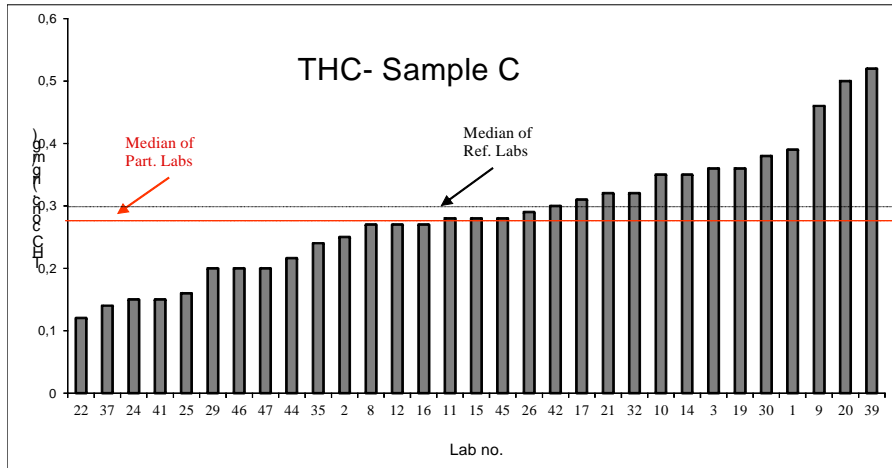


Lab.	BE (ng/mg)	Z-score	Result
47	0,14	-1,55	Satisfactory
20	0,27	-1,42	Satisfactory
22	0,51	-1,18	Satisfactory
24	0,83	-0,86	Satisfactory
38	0,9	-0,80	Satisfactory
42	0,9	-0,80	Satisfactory
10	1,01	-0,69	Satisfactory
31	1,06	-0,64	Satisfactory
13	1,09	-0,61	Satisfactory
29	1,2	-0,50	Satisfactory
1	1,22	-0,48	Satisfactory
35	1,26	-0,44	Satisfactory
41	1,26	-0,44	Satisfactory
21	1,3	-0,40	Satisfactory
44	1,37	-0,33	Satisfactory
14	1,39	-0,31	Satisfactory
2	1,4	-0,30	Satisfactory
15	1,42	-0,28	Satisfactory
16	1,57	-0,13	Satisfactory
19	1,6	-0,10	Satisfactory
36	1,6	-0,10	Satisfactory
40	1,7	0	Satisfactory
23	1,71	0,01	Satisfactory
11	1,73	0,03	Satisfactory
25	1,77	0,07	Satisfactory
37	1,91	0,21	Satisfactory

Lab.	BE (ng/mg)	Z-score	Result
45	1,93	0,23	Satisfactory
4	1,96	0,26	Satisfactory
17	1,99	0,29	Satisfactory
18	2	0,30	Satisfactory
9	2,12	0,42	Satisfactory
32	2,14	0,44	Satisfactory
6	2,35	0,65	Satisfactory
33	2,36	0,66	Satisfactory
5	2,38	0,68	Satisfactory
7	2,4	0,70	Satisfactory
26	2,4	0,70	Satisfactory
46	2,4	0,70	Satisfactory
3	2,43	0,73	Satisfactory
8	2,57	0,87	Satisfactory
12	2,6	0,90	Satisfactory
30	2,7	0,99	Satisfactory
39	3,1	1,39	Satisfactory
28	P		
34	P		
43	N		

Average	1,673
SD	0,667
CV%	39,895
Median	1,70
Minimum	0,14
Quartile 25	1,24
Quartile 75	2,245
Maximum	3,10
Iqr	1,005

Proficiency Test 2016-1 on Drugs of Abuse in hair



Lab.	THC (ng/mg)	Z-score	Result
22	0,12	-1,14	Satisfactory
37	0,14	-1,00	Satisfactory
24	0,15	-0,93	Satisfactory
41	0,15	-0,93	Satisfactory
25	0,16	-0,86	Satisfactory
29	0,2	-0,57	Satisfactory
46	0,2	-0,57	Satisfactory
47	0,2	-0,57	Satisfactory
44	0,216	-0,46	Satisfactory
35	0,24	-0,28	Satisfactory
2	0,25	-0,21	Satisfactory
8	0,27	-0,07	Satisfactory
12	0,27	-0,07	Satisfactory
16	0,27	-0,07	Satisfactory
11	0,28	0	Satisfactory
15	0,28	0	Satisfactory
45	0,28	0	Satisfactory
26	0,29	0,07	Satisfactory
42	0,3	0,14	Satisfactory
17	0,31	0,21	Satisfactory
21	0,32	0,26	Satisfactory
32	0,32	0,28	Satisfactory
10	0,35	0,50	Satisfactory
14	0,35	0,50	Satisfactory
3	0,36	0,57	Satisfactory
19	0,36	0,57	Satisfactory

Lab.	THC (ng/mg)	Z-score	Result
30	0,38	0,71	Satisfactory
1	0,39	0,78	Satisfactory
9	0,46	1,28	Satisfactory
20	0,50	1,57	Satisfactory
39	0,52	1,71	Satisfactory
31	N		
34	N		
38	N		
43	N		
28	P		

Average	0,289
SD	0,0986
CV%	34,12
Median	0,28
Minimum	0,12
Quartile 25	0,212
Quartile 75	0,352
Maximum	0,52
Iqr	0,14