

IAEA-TEL-2021-04 ALMERA Proficiency Test Exercise, Pie-charts, S-Shapes and Reported Results with Scores

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Abstract

This report contains the results and evaluation for the proficiency test conducted within the IAEA-TEL-2021-04 ALMERA proficiency test exercise. The data is evaluated by the Terrestrial Environment Laboratory (TEL) of the NA Environment Laboratories using its standard approach for proficiency test evaluations.

1 Introduction

The following figures show the results (displayed in pie charts, characteristic S-shape graphs and tables) for the ALMERA Proficiency Test. In the S-shape graphs, the vertical axis displays the activity in [Bq/kg] and the horizontal axis shows the labcodes for the participating laboratories. The range on the vertical axis is limited to ($\pm 2 \times$ Maximum acceptable relative bias(MARB)). The red line is the target value for the exercise, whereas the green lines are the assigned uncertainty for each analyte. The results are grouped by samples, then analytes. The data points are coloured in blue, yellow and red, corresponding to a result of "Accepted", "Warning", and "Not Accepted", respectively.

Disclaimer: This report has been generated automatically to provide information on-line to the participants. A more detailed evaluation will be published in the final report. If you find that any information provided in this report might be incorrect please contact us as soon as possible.

1.1 Evaluation criteria

The data is evaluated according to the following steps:

1. The relative bias between the reported and the target value (the best estimation of the true value) is expressed by the following equation:

$$Bias_{relative} = \frac{Value_{reported} - Value_{target}}{Value_{target}} * 100\%$$

2. The relative bias is compared to the Maximum Acceptable Relative Bias (MARB) which has been determined for each analyte, considering the radioanalytical methods, the level of radioactivity and the complexity of the analysis.

If the $|Bias_{relative}| \leq MARB$, the result will be "Accepted" for accuracy.

3. Based on fit-for-purpose and good laboratory practice principles, the expanded relative combined uncertainty should cover the relative bias:

$$P = \sqrt{\left(\frac{u_{target}}{A_{target}}\right)^2 + \left(\frac{u_{reported}}{A_{reported}}\right)^2} * 100$$

$$|Bias_{relative}| \leq k * P$$

where k is the coverage factor, for the 99% confidential level, $k = 2.58$. 4. If the result is between the $\pm MARB$ values, but it is not overlapping the target value within the uncertainty, this equation is used to decide if they are significantly different or not.

5. The P value is compared to the MARB also. If both the:

$$P \leq MARB$$

and

$$|Bias_{relative}| \leq k * P$$

are fulfilled, the reported results will be "Accepted" for precision. The result will be assigned "Not accepted" for precision if either conditions are not fulfilled.

6. The final score is assigned according to the detailed evaluation described above. The possible scores are listed below:

- "Accepted" when both, accuracy and precision achieved "Accepted" status
- "Not Accepted" when the accuracy is "Not accepted"
- "Warning" when accuracy is "Accepted" but the precision is "Not accepted"

7. As additional information, a z-score parameter is shown in the evaluation tables that is calculated by using the robust standard deviation described in [2]:

$$z = \left| \frac{Value_{reported} - Value_{target}}{robustsd} \right|$$

8. If the analyte is included in the proficiency test evaluation scheme, the stated target value is used to calculate the z-score. For those analytes, which are subject of an intercomparison only, the robust mean of the values reported is used instead.

2 Data Evaluation

A total of 118 laboratories from 59 different countries successfully reported data in the IAEA-TEL-2021-04 proficiency test exercise.

For each of the analytes evaluated, the target value, target uncertainty and the MARB are listed. A pie chart showing the distribution of accepted, warning, not acceptable and not reported results, the s-shape graph, and a detailed table listing all evaluation results for the analyte (sorted by the laboratory code) are provided.

For analytes evaluated by intercomparison (IC) parameters, the target value table lists the robust mean, robust standard deviation (SD) and MARB. A detailed table listing all evaluation results for the analyte (sorted by the laboratory code) are provided, where the Z-Scores are calculated using the robust mean as the $Value_{target}$ in the equation listed in 1.1 Evaluation criteria, point 7.

3 Proficiency Test Parameters

Reported Results for Co-60 Determination in Sample 1

TABLE 1. Target values

Parameter	Value
Target Value, Bq/kg	74.2
UNC, Bq/kg	3.3
MARB, %	20

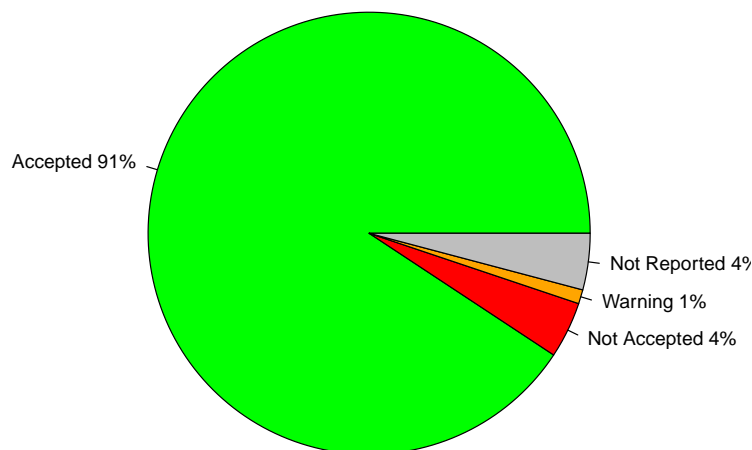


FIGURE 1. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

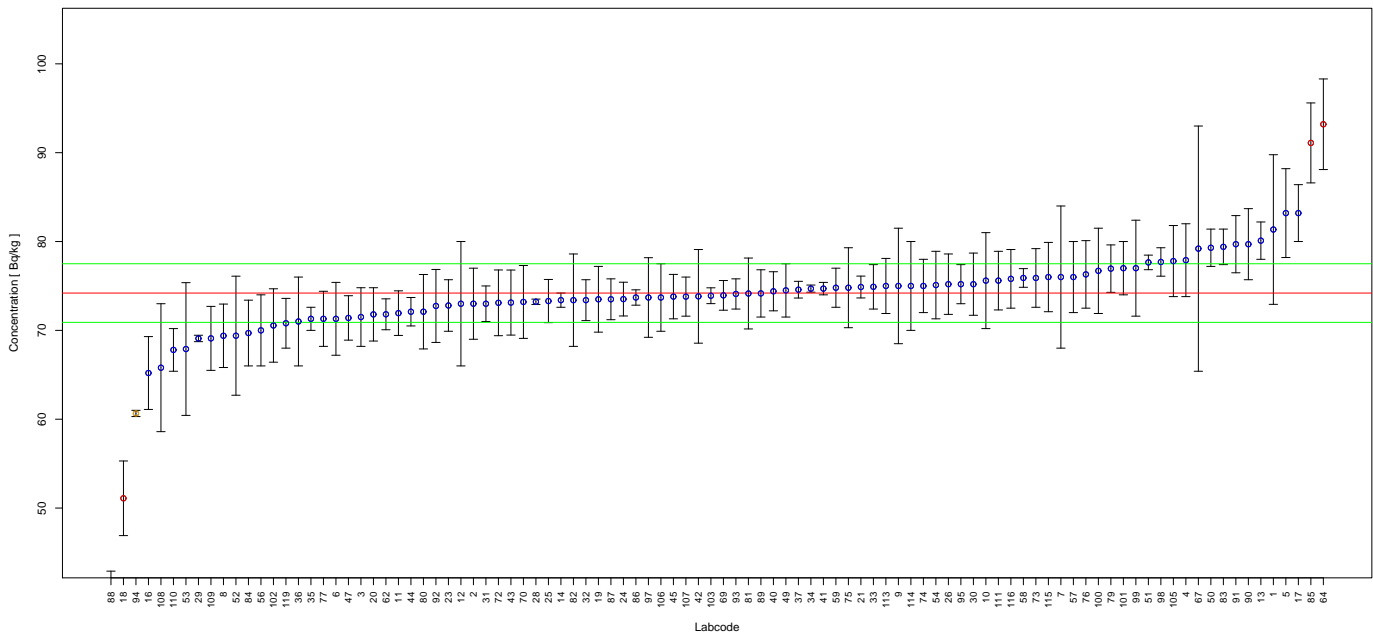


FIGURE 2. Reported results and evaluation parameters for Co-60. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 2. Evaluation Results for Co-60 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	81.35	8.42	9.64	11.27	A	A	A	2.16
2	73.0	4.0	-1.62	7.06	A	A	A	0.36
3	71.5	3.3	-3.64	6.41	A	A	A	0.82
4	77.9	4.1	4.99	6.89	A	A	A	1.12
5	83.2	5	12.13	7.48	A	A	A	2.72
6	71.30	4.1	-3.91	7.27	A	A	A	0.88
7	76	8	2.43	11.43	A	A	A	0.54
8	69.39	3.57	-6.48	6.80	A	A	A	1.45
9	75.0	6.5	1.08	9.74	A	A	A	0.24
10	75.6	5.4	1.89	8.41	A	A	A	0.42
11	71.94	2.51	-3.05	5.65	A	A	A	0.68
12	73	7	-1.62	10.57	A	A	A	0.36
13	80.1	2.1	7.95	5.16	A	A	A	1.78
14	73.4	0.8	-1.08	4.58	A	A	A	0.24
16	65.2	4.1	-12.13	7.70	A	A	A	2.72
17	83.2	3.2	12.13	5.88	A	A	A	2.72
18	51.1	4.2	-31.13	9.35	N	N	N	6.98
19	73.5	3.7	-0.94	6.72	A	A	A	0.21
20	71.8	3.0	-3.23	6.10	A	A	A	0.73
21	74.88	1.23	0.92	4.74	A	A	A	0.21
23	72.8	2.9	-1.89	5.97	A	A	A	0.42
24	73.52	1.90	-0.92	5.14	A	A	A	0.21
25	73.3	2.43	-1.21	5.55	A	A	A	0.27
26	75.2	3.4	1.35	6.34	A	A	A	0.30
28	73.22	0.3	-1.32	4.47	A	A	A	0.30
29	69.09	0.36	-6.89	4.48	A	A	A	1.54
30	75.2	3.5	1.35	6.44	A	A	A	0.30
31	73	2	-1.62	5.22	A	A	A	0.36
32	73.4	2.3	-1.08	5.44	A	A	A	0.24
33	74.9	2.5	0.94	5.56	A	A	A	0.21

TABLE 2. Evaluation Results for Co-60 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
34	74.7	0.4	0.67	4.48	A	A	A	0.15
35	71.3	1.3	-3.91	4.81	A	A	A	0.88
36	71	5	-4.31	8.33	A	A	A	0.97
37	74.58	0.94	0.51	4.62	A	A	A	0.11
40	74.4	2.2	0.27	5.34	A	A	A	0.06
41	74.7	0.7	0.67	4.55	A	A	A	0.15
42	73.83	5.27	-0.50	8.41	A	A	A	0.11
43	73.13	3.66	-1.44	6.70	A	A	A	0.32
44	72.1	1.6	-2.83	4.97	A	A	A	0.63
45	73.8	2.5	-0.54	5.59	A	A	A	0.12
47	71.4	2.5	-3.77	5.66	A	A	A	0.85
49	74.5	3	0.40	6.00	A	A	A	0.09
50	79.3	2.1	6.87	5.18	A	A	A	1.54
51	77.65	0.82	4.65	4.57	A	A	A	1.04
52	69.4	6.7	-6.47	10.63	A	A	A	1.45
53	67.90	7.47	-8.49	11.87	A	A	A	1.90
54	75.1	3.8	1.21	6.74	A	A	A	0.27
56	70	4	-5.66	7.24	A	A	A	1.27
57	76	4	2.43	6.89	A	A	A	0.54
58	75.9	1.05	2.29	4.66	A	A	A	0.51
59	74.8	2.2	0.81	5.33	A	A	A	0.18
62	71.81	1.74	-3.22	5.06	A	A	A	0.72
64	93.2	5.1	25.61	7.05	N	N	N	5.74
67	79.2	13.8	6.74	17.98	A	A	A	1.51
69	73.94	1.67	-0.35	4.99	A	A	A	0.08
70	73.2	4.1	-1.35	7.15	A	A	A	0.30
72	73.1	3.7	-1.48	6.74	A	A	A	0.33
73	75.9	3.3	2.29	6.22	A	A	A	0.51
74	75.0	3.0	1.08	5.98	A	A	A	0.24
75	74.8	4.5	0.81	7.48	A	A	A	0.18
76	76.3	3.8	2.83	6.68	A	A	A	0.63
77	71.3	3.1	-3.91	6.22	A	A	A	0.88
79	76.95	2.67	3.71	5.64	A	A	A	0.83
80	72.1	4.19	-2.83	7.32	A	A	A	0.63
81	74.15	3.99	-0.07	6.98	A	A	A	0.02
82	73.4	5.2	-1.08	8.36	A	A	A	0.24
83	79.4	2.0	7.01	5.11	A	A	A	1.57
84	69.7	3.7	-6.06	6.93	A	A	A	1.36
85	91.1	4.5	22.78	6.65	N	N	N	5.11
86	73.7	0.864	-0.67	4.60	A	A	A	0.15
87	73.5	2.3	-0.94	5.44	A	A	A	0.21
88	41.2	1.7	-44.47	6.07	N	N	N	9.97
89	74.16	2.66	-0.05	5.71	A	A	A	0.01
90	79.7	4.0	7.41	6.71	A	A	A	1.66
91	79.7	3.218	7.41	6.01	A	A	A	1.66
92	72.75	4.107	-1.95	7.19	A	A	A	0.44
93	74.1	1.7	-0.13	5.00	A	A	A	0.03
94	60.65	0.35	-18.26	4.48	A	N	W	4.09
95	75.2	2.2	1.35	5.32	A	A	A	0.30
97	73.70	4.48	-0.67	7.53	A	A	A	0.15
98	77.7	1.6	4.72	4.90	A	A	A	1.06
99	77	5.4	3.77	8.30	A	A	A	0.85
100	76.7	4.8	3.37	7.68	A	A	A	0.76
101	77	3	3.77	5.91	A	A	A	0.85

TABLE 2. Evaluation Results for Co-60 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
102	70.55	4.13	-4.92	7.35	A	A	A	1.10
103	73.90	0.89	-0.40	4.61	A	A	A	0.09
105	77.8	4.0	4.85	6.80	A	A	A	1.09
106	73.7	3.8	-0.67	6.81	A	A	A	0.15
107	73.8	2.2	-0.54	5.35	A	A	A	0.12
108	65.8	7.2	-11.32	11.81	A	A	A	2.54
109	69.1	3.6	-6.87	6.85	A	A	A	1.54
110	67.8	2.4	-8.63	5.68	A	A	A	1.93
111	75.6	3.3	1.89	6.23	A	A	A	0.42
113	75.0	3.1	1.08	6.07	A	A	A	0.24
114	75	5	1.08	8.01	A	A	A	0.24
115	76.0	3.9	2.43	6.79	A	A	A	0.54
116	75.8	3.3	2.16	6.22	A	A	A	0.48
119	70.8	2.8	-4.58	5.95	A	A	A	1.03

Reported Results for Cs-134 Determination in Sample 1

TABLE 3. Target values

Parameter	Value
Target Value, Bq/kg	113.2
UNC, Bq/kg	5.1
MARB, %	20

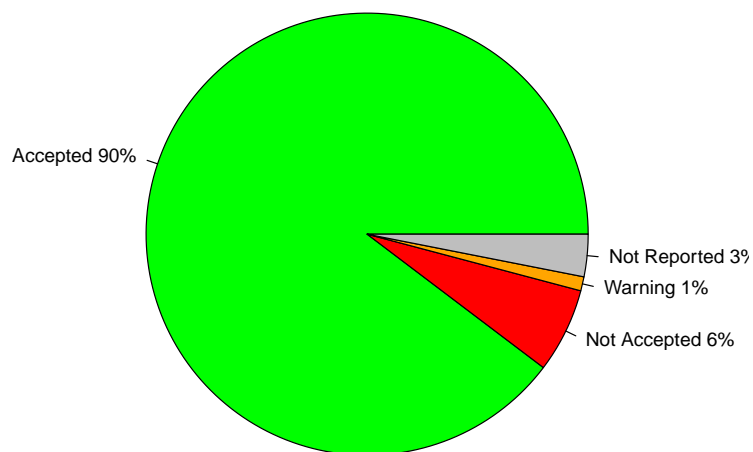


FIGURE 3. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

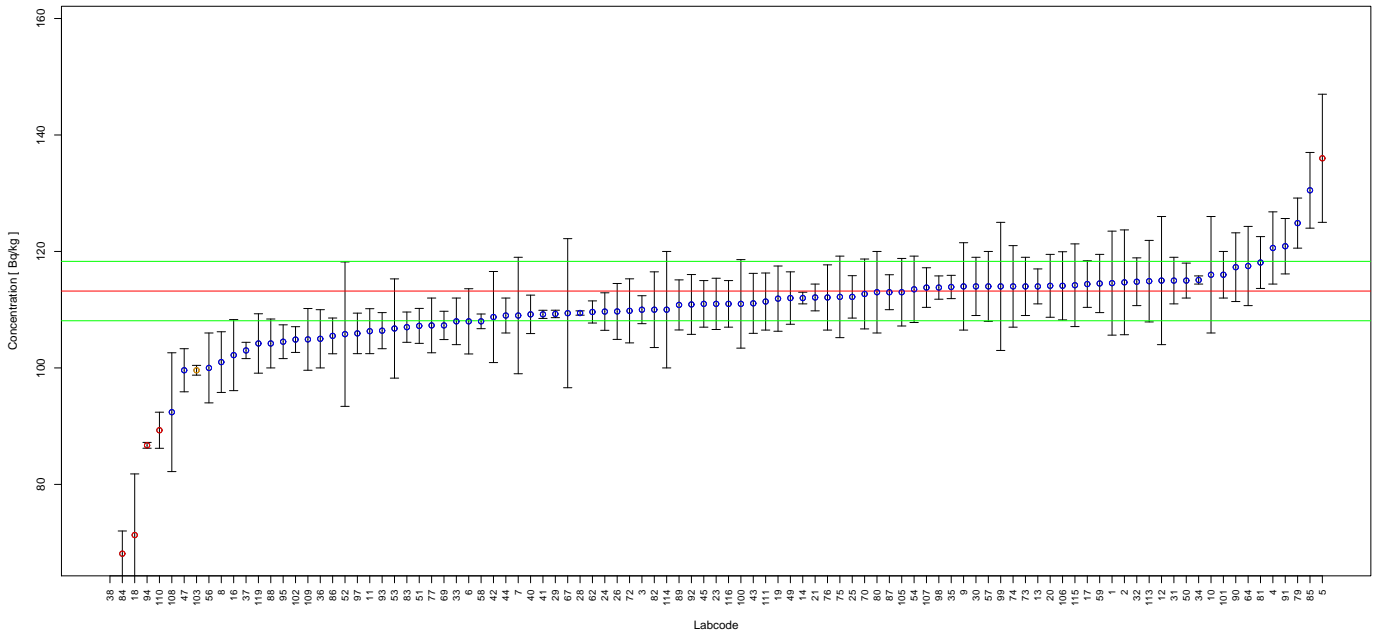


FIGURE 4. Reported results and evaluation parameters for Cs-134. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 4. Evaluation Results for Cs-134 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	114.56	8.93	1.20	9.00	A	A	A	0.22
2	114.7	9.0	1.33	9.05	A	A	A	0.25
3	110	2.4	-2.83	5.01	A	A	A	0.52
4	120.6	6.2	6.54	6.84	A	A	A	1.21
5	136	11	20.14	9.26	N	A	N	3.73
6	108	5.6	-4.59	6.87	A	A	A	0.85
7	109	10	-3.71	10.22	A	A	A	0.69
8	101	5.21	-10.78	6.85	A	A	A	1.99
9	114.0	7.5	0.71	7.97	A	A	A	0.13
10	116	10	2.47	9.73	A	A	A	0.46
11	106.31	3.86	-6.09	5.79	A	A	A	1.13
12	115	11	1.59	10.57	A	A	A	0.29
13	114	3	0.71	5.22	A	A	A	0.13
14	112	1	-1.06	4.59	A	A	A	0.20
16	102.2	6.1	-9.72	7.48	A	A	A	1.80
17	114.4	4.0	1.06	5.70	A	A	A	0.20
18	71.3	10.5	-37.01	15.40	N	A	N	6.85
19	111.9	5.6	-1.15	6.73	A	A	A	0.21
20	114.1	5.4	0.80	6.53	A	A	A	0.15
21	112.10	2.30	-0.97	4.95	A	A	A	0.18
23	111	4.4	-1.94	6.00	A	A	A	0.36
24	109.68	3.22	-3.11	5.38	A	A	A	0.58
25	112.2	3.64	-0.88	5.55	A	A	A	0.16
26	109.7	4.8	-3.09	6.28	A	A	A	0.57
28	109.43	0.37	-3.33	4.52	A	A	A	0.62
29	109.27	0.64	-3.47	4.54	A	A	A	0.64
30	114	5	0.71	6.29	A	A	A	0.13
31	115	4	1.59	5.69	A	A	A	0.29
32	114.8	4.1	1.41	5.75	A	A	A	0.26
33	108	4	-4.59	5.83	A	A	A	0.85

TABLE 4. Evaluation Results for Cs-134 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
34	115.1	0.7	1.68	4.55	A	A	A	0.31
35	113.9	2.0	0.62	4.84	A	A	A	0.11
36	105	5	-7.24	6.56	A	A	A	1.34
37	103.0	1.4	-9.01	4.71	A	A	A	1.67
38	17.853	0.2862	-84.23	4.78	N	N	N	15.58
40	109.2	3.3	-3.53	5.42	A	A	A	0.65
41	109.2	0.7	-3.53	4.55	A	A	A	0.65
42	108.74	7.82	-3.94	8.49	A	A	A	0.73
43	111.09	5.15	-1.86	6.46	A	A	A	0.34
44	109	3	-3.71	5.28	A	A	A	0.69
45	111	4	-1.94	5.77	A	A	A	0.36
47	99.6	3.7	-12.01	5.84	A	A	A	2.22
49	112	4.5	-1.06	6.04	A	A	A	0.20
50	115	3	1.59	5.21	A	A	A	0.29
51	107.22	3.00	-5.28	5.30	A	A	A	0.98
52	105.8	12.4	-6.54	12.56	A	A	A	1.21
53	106.77	8.52	-5.68	9.16	A	A	A	1.05
54	113.5	5.7	0.27	6.75	A	A	A	0.05
56	100	6	-11.66	7.50	A	A	A	2.16
57	114	6	0.71	6.93	A	A	A	0.13
58	108	1.26	-4.59	4.65	A	A	A	0.85
59	114.5	5	1.15	6.27	A	A	A	0.21
62	109.61	1.90	-3.17	4.83	A	A	A	0.59
64	117.5	6.8	3.80	7.33	A	A	A	0.70
67	109.4	12.8	-3.36	12.54	A	A	A	0.62
69	107.3	2.43	-5.21	5.04	A	A	A	0.96
70	112.7	6.0	-0.44	6.97	A	A	A	0.08
72	109.8	5.5	-3.00	6.74	A	A	A	0.56
73	114	5.0	0.71	6.29	A	A	A	0.13
74	114	7	0.71	7.62	A	A	A	0.13
75	112.2	7.0	-0.88	7.70	A	A	A	0.16
76	112.1	5.6	-0.97	6.73	A	A	A	0.18
77	107.3	4.7	-5.21	6.28	A	A	A	0.96
79	124.87	4.30	10.31	5.67	A	A	A	1.91
80	113	7.00	-0.18	7.66	A	A	A	0.03
81	118.1	4.45	4.33	5.87	A	A	A	0.80
82	110.0	6.5	-2.83	7.43	A	A	A	0.52
83	107	2.6	-5.48	5.12	A	A	A	1.01
84	68.1	3.9	-39.84	7.29	N	N	N	7.37
85	130.5	6.5	15.28	6.72	A	A	A	2.83
86	105.5	3.07	-6.80	5.36	A	A	A	1.26
87	113	3	-0.18	5.23	A	A	A	0.03
88	104.2	4.2	-7.95	6.05	A	A	A	1.47
89	110.82	4.3	-2.10	5.95	A	A	A	0.39
90	117.3	5.9	3.62	6.75	A	A	A	0.67
91	120.9	4.758	6.80	5.98	A	A	A	1.26
92	110.9	5.136	-2.03	6.46	A	A	A	0.38
93	106.4	3.1	-6.01	5.37	A	A	A	1.11
94	86.71	0.5	-23.40	4.54	N	N	N	4.33
95	104.5	2.9	-7.69	5.29	A	A	A	1.42
97	105.93	3.48	-6.42	5.58	A	A	A	1.19
98	113.8	2.0	0.53	4.84	A	A	A	0.10
99	114	11	0.71	10.65	A	A	A	0.13
100	111	7.6	-1.94	8.20	A	A	A	0.36

TABLE 4. Evaluation Results for Cs-134 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
101	116	4	2.47	5.67	A	A	A	0.46
102	104.87	2.21	-7.36	4.97	A	A	A	1.36
103	99.60	0.84	-12.01	4.58	A	N	W	2.22
105	113	5.8	-0.18	6.83	A	A	A	0.03
106	114.1	5.85	0.80	6.83	A	A	A	0.15
107	113.8	3.4	0.53	5.41	A	A	A	0.10
108	92.4	10.2	-18.37	11.92	A	A	A	3.40
109	104.9	5.3	-7.33	6.77	A	A	A	1.36
110	89.3	3.1	-21.11	5.69	N	N	N	3.91
111	111.4	4.9	-1.59	6.30	A	A	A	0.29
113	114.9	7.0	1.50	7.58	A	A	A	0.28
114	110	10	-2.83	10.15	A	A	A	0.52
115	114.2	7.1	0.88	7.68	A	A	A	0.16
116	111	4	-1.94	5.77	A	A	A	0.36
119	104.2	5.1	-7.95	6.65	A	A	A	1.47

Reported Results for Cs-137 Determination in Sample 1

TABLE 5. Target values

Parameter	Value
Target Value, Bq/kg	69.2
UNC, Bq/kg	3.1
MARB, %	20

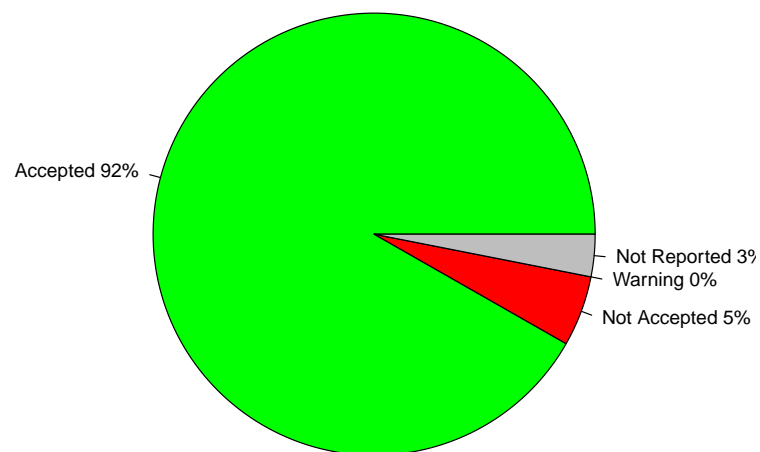


FIGURE 5. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

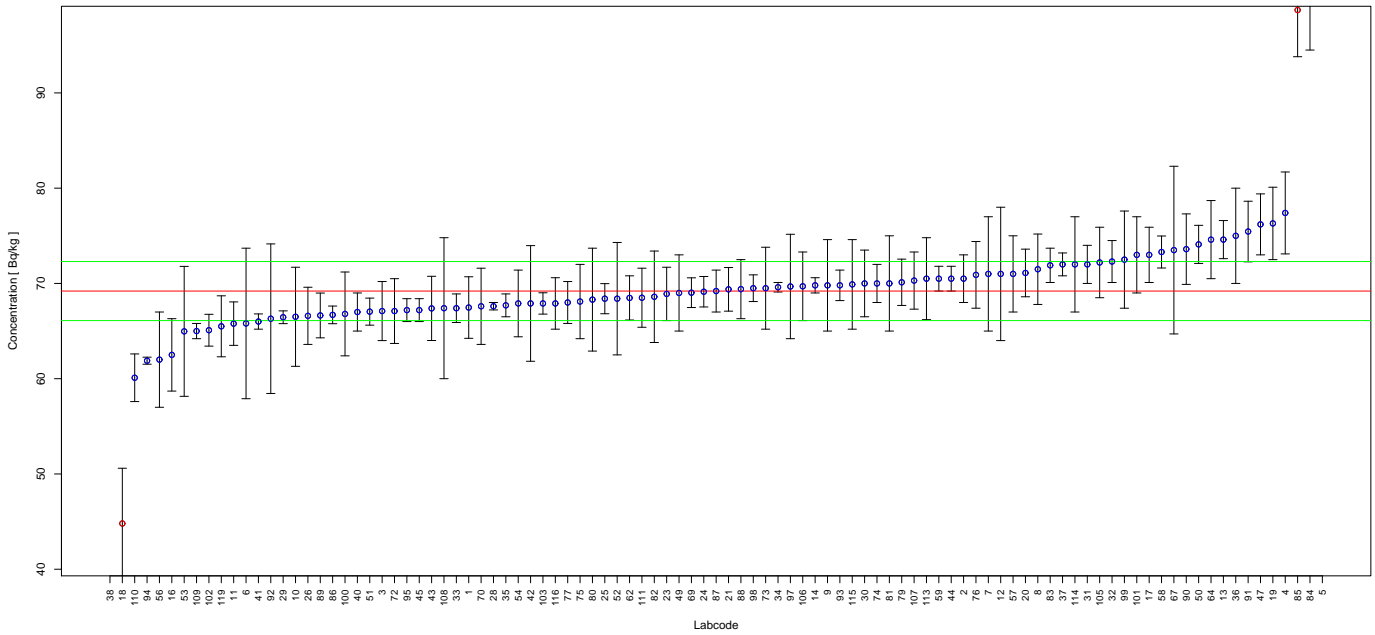


FIGURE 6. Reported results and evaluation parameters for Cs-137. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 6. Evaluation Results for Cs-137 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	67.47	3.23	-2.50	6.56	A	A	A	0.54
2	70.5	2.5	1.88	5.71	A	A	A	0.40
3	67.1	3.1	-3.03	6.44	A	A	A	0.65
4	77.4	4.3	11.85	7.14	A	A	A	2.54
5	109	6	57.51	7.10	N	N	N	12.32
6	65.8	7.9	-4.91	12.81	A	A	A	1.05
7	71	6	2.60	9.56	A	A	A	0.56
8	71.49	3.695	3.31	6.84	A	A	A	0.71
9	69.8	4.8	0.87	8.21	A	A	A	0.19
10	66.5	5.2	-3.90	9.01	A	A	A	0.84
11	65.78	2.28	-4.94	5.66	A	A	A	1.06
12	71	7	2.60	10.83	A	A	A	0.56
13	74.6	2.0	7.80	5.22	A	A	A	1.67
14	69.8	0.8	0.87	4.62	A	A	A	0.19
16	62.5	3.8	-9.68	7.55	A	A	A	2.07
17	73.0	2.9	5.49	5.99	A	A	A	1.18
18	44.8	5.8	-35.26	13.70	N	A	N	7.55
19	76.3	3.8	10.26	6.70	A	A	A	2.20
20	71.1	2.5	2.75	5.69	A	A	A	0.59
21	69.38	2.29	0.26	5.56	A	A	A	0.06
23	68.9	2.8	-0.43	6.05	A	A	A	0.09
24	69.13	1.60	-0.10	5.04	A	A	A	0.02
25	68.4	1.58	-1.16	5.04	A	A	A	0.25
26	66.6	3.0	-3.76	6.35	A	A	A	0.80
28	67.61	0.39	-2.30	4.52	A	A	A	0.49
29	66.45	0.67	-3.97	4.59	A	A	A	0.85
30	70	3.5	1.16	6.71	A	A	A	0.25
31	72	2	4.05	5.27	A	A	A	0.87
32	72.3	2.2	4.48	5.42	A	A	A	0.96
33	67.4	1.5	-2.60	5.00	A	A	A	0.56

TABLE 6. Evaluation Results for Cs-137 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
34	69.6	0.5	0.58	4.54	A	A	A	0.12
35	67.7	1.2	-2.17	4.82	A	A	A	0.46
36	75	5	8.38	8.03	A	A	A	1.80
37	72.0	1.2	4.05	4.78	A	A	A	0.87
38	27.1196	0.6240	-60.81	5.04	N	N	N	13.03
40	67.0	2.0	-3.18	5.38	A	A	A	0.68
41	66.0	0.8	-4.62	4.64	A	A	A	0.99
42	67.90	6.07	-1.88	10.00	A	A	A	0.40
43	67.38	3.37	-2.63	6.71	A	A	A	0.56
44	70.5	1.3	1.88	4.84	A	A	A	0.40
45	67.2	1.2	-2.89	4.82	A	A	A	0.62
47	76.2	3.2	10.12	6.14	A	A	A	2.17
49	69	4	-0.29	7.33	A	A	A	0.06
50	74.1	2.0	7.08	5.23	A	A	A	1.52
51	67.04	1.42	-3.12	4.96	A	A	A	0.67
52	68.4	5.9	-1.16	9.72	A	A	A	0.25
53	64.97	6.82	-6.11	11.41	A	A	A	1.31
54	67.9	3.5	-1.88	6.83	A	A	A	0.40
56	62	5	-10.40	9.23	A	A	A	2.23
57	71	4	2.60	7.20	A	A	A	0.56
58	73.3	1.68	5.92	5.03	A	A	A	1.27
59	70.5	1.3	1.88	4.84	A	A	A	0.40
62	68.48	2.32	-1.04	5.62	A	A	A	0.22
64	74.6	4.1	7.80	7.09	A	A	A	1.67
67	73.5	8.8	6.21	12.78	A	A	A	1.33
69	69.03	1.56	-0.25	5.02	A	A	A	0.05
70	67.6	4.0	-2.31	7.42	A	A	A	0.50
72	67.1	3.4	-3.03	6.76	A	A	A	0.65
73	69.5	4.3	0.43	7.64	A	A	A	0.09
74	70.0	2.0	1.16	5.31	A	A	A	0.25
75	68.1	3.9	-1.59	7.27	A	A	A	0.34
76	70.9	3.5	2.46	6.67	A	A	A	0.53
77	68.0	2.2	-1.73	5.53	A	A	A	0.37
79	70.12	2.43	1.33	5.66	A	A	A	0.28
80	68.3	5.4	-1.30	9.09	A	A	A	0.28
81	70.0	5	1.16	8.43	A	A	A	0.25
82	68.6	4.8	-0.87	8.31	A	A	A	0.19
83	71.9	1.8	3.90	5.13	A	A	A	0.84
84	99.9	5.4	44.36	7.02	N	N	N	9.50
85	98.7	4.9	42.63	6.69	N	N	N	9.13
86	66.7	0.926	-3.61	4.69	A	A	A	0.77
87	69.2	2.2	0.00	5.49	A	A	A	0.00
88	69.4	3.1	0.29	6.33	A	A	A	0.06
89	66.64	2.35	-3.70	5.70	A	A	A	0.79
90	73.6	3.7	6.36	6.73	A	A	A	1.36
91	75.45	3.18	9.03	6.15	A	A	A	1.93
92	66.3	7.85	-4.19	12.66	A	A	A	0.90
93	69.8	1.6	0.87	5.03	A	A	A	0.19
94	61.89	0.37	-10.56	4.52	A	A	A	2.26
95	67.2	1.2	-2.89	4.82	A	A	A	0.62
97	69.68	5.48	0.69	9.05	A	A	A	0.15
98	69.5	1.4	0.43	4.91	A	A	A	0.09
99	72.5	5.1	4.77	8.34	A	A	A	1.02
100	66.8	4.4	-3.47	7.97	A	A	A	0.74

TABLE 6. Evaluation Results for Cs-137 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
101	73	4	5.49	7.08	A	A	A	1.18
102	65.09	1.67	-5.94	5.16	A	A	A	1.27
103	67.90	1.12	-1.88	4.77	A	A	A	0.40
105	72.2	3.7	4.34	6.81	A	A	A	0.93
106	69.7	3.6	0.72	6.84	A	A	A	0.15
107	70.3	3.0	1.59	6.19	A	A	A	0.34
108	67.4	7.4	-2.60	11.86	A	A	A	0.56
109	65.0	0.8	-6.07	4.65	A	A	A	1.30
110	60.1	2.5	-13.15	6.11	A	A	A	2.82
111	68.5	3.1	-1.01	6.37	A	A	A	0.22
113	70.5	4.3	1.88	7.57	A	A	A	0.40
114	72	5	4.05	8.26	A	A	A	0.87
115	69.9	4.7	1.01	8.08	A	A	A	0.22
116	67.9	2.7	-1.88	5.99	A	A	A	0.40
119	65.5	3.2	-5.35	6.63	A	A	A	1.15

Reported Results for Am-241 Determination in Sample 1

TABLE 7. Target values

Parameter	Value
Target Value, Bq/kg	60.9
UNC, Bq/kg	2.7
MARB, %	20

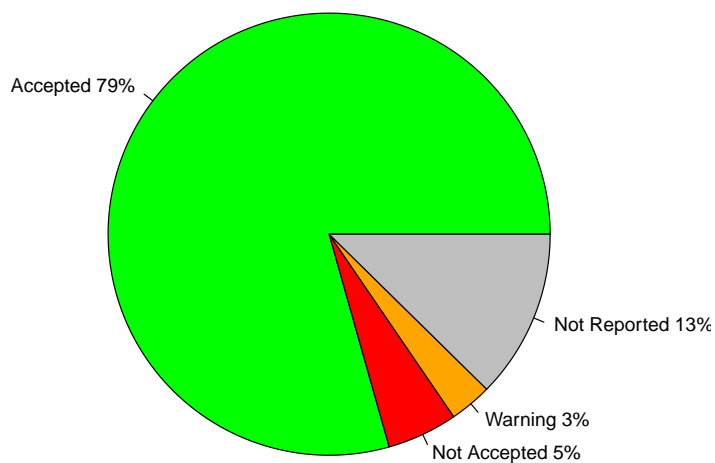


FIGURE 7. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

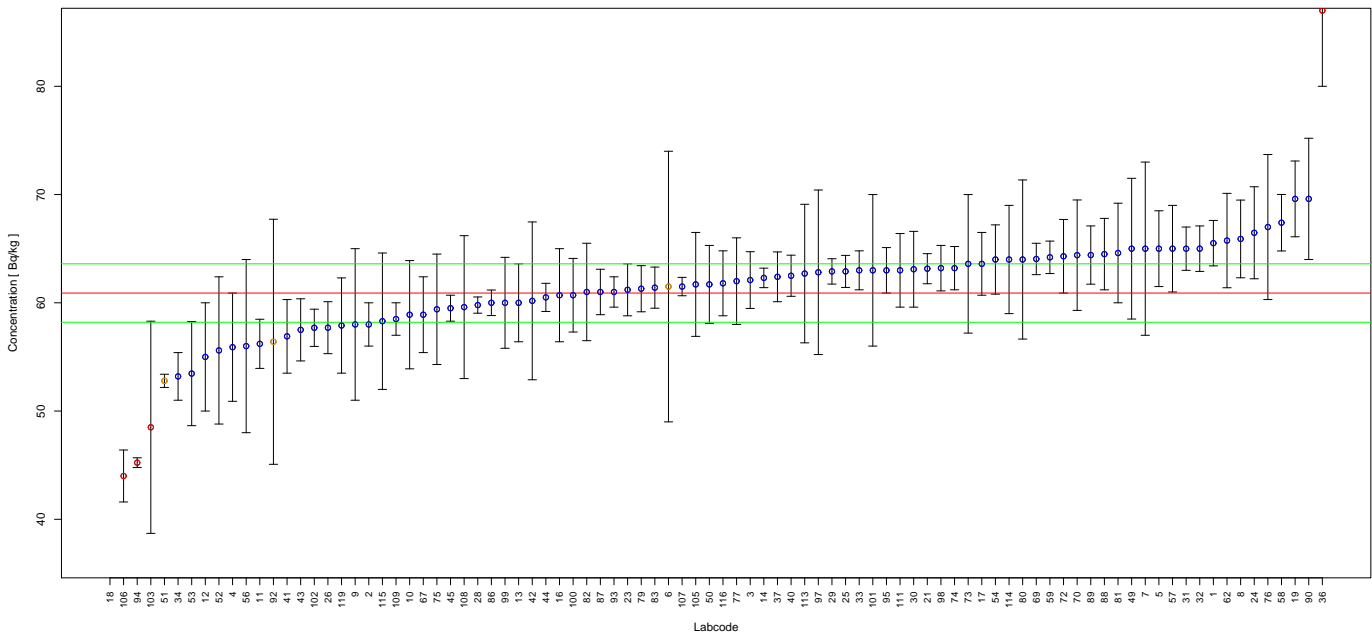


FIGURE 8. Reported results and evaluation parameters for Am-241. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 8. Evaluation Results for Am-241 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	65.51	2.10	7.57	5.47	A	A	A	1.16
2	58.0	2.0	-4.76	5.62	A	A	A	0.73
3	62.1	2.62	1.97	6.12	A	A	A	0.30
4	55.9	5.0	-8.21	9.98	A	A	A	1.26
5	65.0	3.5	6.73	6.97	A	A	A	1.03
6	61.50	12.50	0.99	20.80	A	N	W	0.15
7	65	8	6.73	13.08	A	A	A	1.03
8	65.9	3.59	8.21	7.02	A	A	A	1.26
9	58.0	7.0	-4.76	12.86	A	A	A	0.73
10	58.9	5.0	-3.28	9.58	A	A	A	0.50
11	56.21	2.27	-7.70	6.00	A	A	A	1.18
12	55	5	-9.69	10.11	A	A	A	1.48
13	60.0	3.6	-1.48	7.46	A	A	A	0.23
14	62.3	0.9	2.30	4.66	A	A	A	0.35
16	60.7	4.3	-0.33	8.36	A	A	A	0.05
17	63.6	2.9	4.43	6.36	A	A	A	0.68
18	8.4	1.0	-86.21	12.70	N	N	N	13.19
19	69.6	3.5	14.29	6.70	A	A	A	2.19
21	63.15	1.39	3.69	4.95	A	A	A	0.57
23	61.2	2.4	0.49	5.92	A	A	A	0.08
24	66.47	4.25	9.15	7.78	A	A	A	1.40
25	62.9	1.48	3.28	5.02	A	A	A	0.50
26	57.7	2.4	-5.25	6.08	A	A	A	0.80
28	59.79	0.75	-1.82	4.61	A	A	A	0.28
29	62.90	1.17	3.28	4.81	A	A	A	0.50
30	63.1	3.5	3.61	7.10	A	A	A	0.55
31	65	2	6.73	5.40	A	A	A	1.03
32	65.0	2.1	6.73	5.49	A	A	A	1.03
33	63.0	1.8	3.45	5.27	A	A	A	0.53
34	53.2	2.2	-12.64	6.06	A	A	A	1.93

TABLE 8. Evaluation Results for Am-241 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
36	87	7	42.86	9.19	N	N	N	6.56
37	62.4	2.3	2.46	5.77	A	A	A	0.38
40	62.5	1.9	2.63	5.38	A	A	A	0.40
41	56.9	3.4	-6.57	7.44	A	A	A	1.01
42	60.18	7.29	-1.18	12.90	A	A	A	0.18
43	57.50	2.87	-5.58	6.68	A	A	A	0.85
44	60.5	1.3	-0.66	4.93	A	A	A	0.10
45	59.5	1.2	-2.30	4.87	A	A	A	0.35
49	65	6.5	6.73	10.94	A	A	A	1.03
50	61.7	3.6	1.31	7.33	A	A	A	0.20
51	52.79	0.61	-13.32	4.58	A	N	W	2.04
52	55.6	6.8	-8.70	13.01	A	A	A	1.33
53	53.46	4.81	-12.22	10.03	A	A	A	1.87
54	64.0	3.2	5.09	6.68	A	A	A	0.78
56	56	8	-8.05	14.96	A	A	A	1.23
57	65	4	6.73	7.58	A	A	A	1.03
58	67.4	2.61	10.67	5.89	A	A	A	1.63
59	64.2	1.5	5.42	5.01	A	A	A	0.83
62	65.75	4.36	7.96	7.98	A	A	A	1.22
67	58.9	3.5	-3.28	7.41	A	A	A	0.50
69	64.05	1.45	5.17	4.98	A	A	A	0.79
70	64.4	5.1	5.75	9.08	A	A	A	0.88
72	64.3	3.4	5.58	6.90	A	A	A	0.85
73	63.6	6.4	4.43	11.00	A	A	A	0.68
74	63.2	2.0	3.78	5.45	A	A	A	0.58
75	59.4	5.1	-2.46	9.66	A	A	A	0.38
76	67.0	6.7	10.02	10.94	A	A	A	1.53
77	62.0	4.0	1.81	7.83	A	A	A	0.28
79	61.30	2.13	0.66	5.63	A	A	A	0.10
80	64.0	7.35	5.09	12.31	A	A	A	0.78
81	64.6	4.6	6.08	8.39	A	A	A	0.93
82	61.0	4.5	0.16	8.61	A	A	A	0.03
83	61.4	1.9	0.82	5.41	A	A	A	0.13
86	60.0	1.18	-1.48	4.85	A	A	A	0.23
87	61	2.1	0.16	5.61	A	A	A	0.03
88	64.5	3.3	5.91	6.77	A	A	A	0.90
89	64.41	2.69	5.76	6.09	A	A	A	0.88
90	69.6	5.6	14.29	9.19	A	A	A	2.19
92	56.4	11.32	-7.39	20.55	A	N	W	1.13
93	61.0	1.4	0.16	4.99	A	A	A	0.03
94	45.23	0.45	-25.73	4.54	N	N	N	3.94
95	63.0	2.1	3.45	5.55	A	A	A	0.53
97	62.82	7.60	3.15	12.88	A	A	A	0.48
98	63.2	2.1	3.78	5.54	A	A	A	0.58
99	60	4.2	-1.48	8.29	A	A	A	0.23
100	60.7	3.4	-0.33	7.14	A	A	A	0.05
101	63	7	3.45	11.96	A	A	A	0.53
102	57.69	1.72	-5.27	5.34	A	A	A	0.81
103	48.50	9.80	-20.36	20.69	N	N	N	3.12
105	61.7	4.8	1.31	8.95	A	A	A	0.20
106	44	2.4	-27.75	7.03	N	N	N	4.25
107	61.50	0.85	0.99	4.64	A	A	A	0.15
108	59.6	6.6	-2.13	11.93	A	A	A	0.33
109	58.5	1.5	-3.94	5.12	A	A	A	0.60

TABLE 8. Evaluation Results for Am-241 in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
111	63	3.4	3.45	6.98	A	A	A	0.53
113	62.7	6.4	2.96	11.13	A	A	A	0.45
114	64	5	5.09	8.98	A	A	A	0.78
115	58.3	6.3	-4.27	11.68	A	A	A	0.65
116	61.8	3	1.48	6.57	A	A	A	0.23
119	57.9	4.4	-4.93	8.80	A	A	A	0.75

Reported Results for Sr-90 Determination in Sample 2

TABLE 9. Target values

Parameter	Value
Target Value, Bq/kg	146.8
UNC, Bq/kg	8.4
MARB, %	30

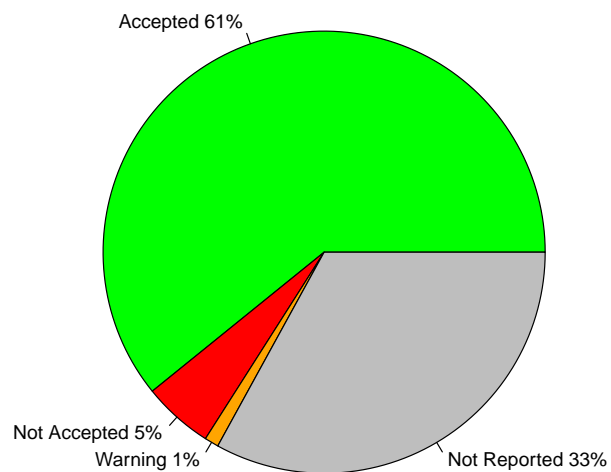


FIGURE 9. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

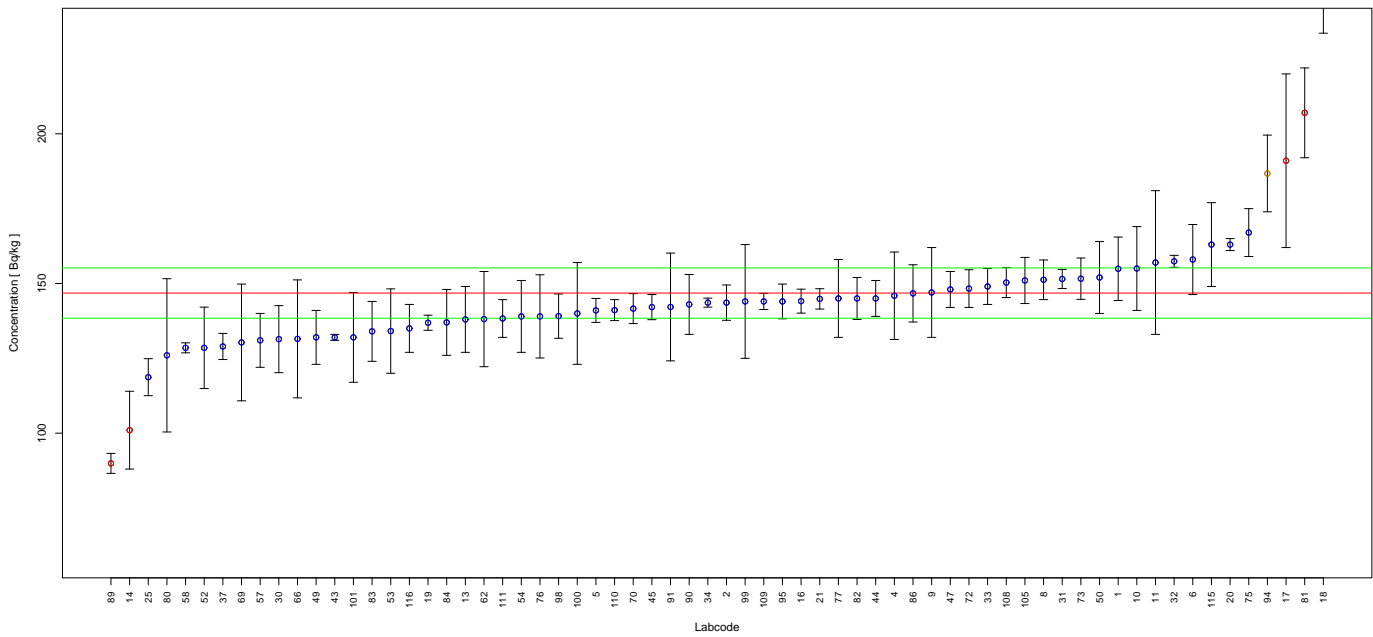


FIGURE 10. Reported results and evaluation parameters for Sr-90. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 10. Evaluation Results for Sr-90 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	154.91	10.60	5.52	8.92	A	A	A	0.75
2	143.6	5.9	-2.18	7.04	A	A	A	0.30
4	145.9	14.6	-0.61	11.53	A	A	A	0.08
5	141	4	-3.95	6.39	A	A	A	0.54
6	158	11.7	7.63	9.36	A	A	A	1.04
8	151.23	6.62	3.02	7.20	A	A	A	0.41
9	147	15	0.14	11.70	A	A	A	0.02
10	155	14	5.59	10.69	A	A	A	0.76
11	157	24	6.95	16.32	A	A	A	0.95
13	138	11	-5.99	9.81	A	A	A	0.82
14	101	13	-31.20	14.09	N	A	N	4.25
16	144.1	4.0	-1.84	6.36	A	A	A	0.25
17	191	29	30.11	16.23	N	A	N	4.10
18	248.5	14.9	69.28	8.29	N	N	N	9.43
19	136.89	2.52	-6.75	6.01	A	A	A	0.92
20	163.0	2.0	11.04	5.85	A	A	A	1.50
21	144.85	3.40	-1.33	6.18	A	A	A	0.18
25	118.7	6.18	-19.14	7.74	A	A	A	2.61
30	131.4	11.2	-10.49	10.27	A	A	A	1.43
31	151.5	3.2	3.20	6.10	A	A	A	0.44
32	157.4	2.0	7.22	5.86	A	A	A	0.98
33	149	6	1.50	7.00	A	A	A	0.20
34	143.6	1.5	-2.18	5.82	A	A	A	0.30
37	128.96	4.36	-12.15	6.65	A	A	A	1.65
43	132	1	-10.08	5.77	A	A	A	1.37
44	145	6	-1.23	7.06	A	A	A	0.17
45	142.1	4.2	-3.20	6.44	A	A	A	0.44
47	148	6	0.82	7.01	A	A	A	0.11
49	132	9	-10.08	8.90	A	A	A	1.37
50	152	12	3.54	9.75	A	A	A	0.48

TABLE 10. Evaluation Results for Sr-90 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
52	128.5	13.6	-12.47	12.03	A	A	A	1.70
53	134.1	14.1	-8.65	11.97	A	A	A	1.18
54	139	12	-5.31	10.36	A	A	A	0.72
57	131	9	-10.76	8.94	A	A	A	1.47
58	128.5	1.67	-12.47	5.87	A	A	A	1.70
62	138.1	15.9	-5.93	12.86	A	A	A	0.81
66	131.5	19.7	-10.42	16.04	A	A	A	1.42
69	130.3	19.5	-11.24	16.02	A	A	A	1.53
70	141.6	5.0	-3.54	6.72	A	A	A	0.48
72	148.3	6.3	1.02	7.13	A	A	A	0.14
73	151.6	6.9	3.27	7.31	A	A	A	0.45
75	167	8	13.76	7.46	A	A	A	1.87
76	139.0	13.9	-5.31	11.52	A	A	A	0.72
77	145	13	-1.23	10.64	A	A	A	0.17
80	126	25.6	-14.17	21.11	A	A	A	1.93
81	207	15	41.01	9.23	N	N	N	5.58
82	145	7	-1.23	7.49	A	A	A	0.17
83	134	10	-8.72	9.40	A	A	A	1.19
84	137	11	-6.68	9.86	A	A	A	0.91
86	146.69	9.56	-0.07	8.67	A	A	A	0.01
89	89.91	3.336	-38.75	6.82	N	N	N	5.28
90	143.0	10.0	-2.59	9.04	A	A	A	0.35
91	142.15	18.0	-3.17	13.90	A	A	A	0.43
94	186.75	12.81	27.21	8.93	A	N	W	3.71
95	144.0	5.8	-1.91	7.00	A	A	A	0.26
98	139.1	7.4	-5.25	7.81	A	A	A	0.71
99	144	19	-1.91	14.38	A	A	A	0.26
100	140	17	-4.63	13.42	A	A	A	0.63
101	132	15	-10.08	12.72	A	A	A	1.37
105	151	7.7	2.86	7.66	A	A	A	0.39
108	150.3	5.0	2.38	6.62	A	A	A	0.32
109	144.0	2.7	-1.91	6.02	A	A	A	0.26
110	141.1	3.5	-3.88	6.24	A	A	A	0.53
111	138.3	6.3	-5.79	7.31	A	A	A	0.79
115	163.0	14.0	11.04	10.32	A	A	A	1.50
116	135	8	-8.04	8.24	A	A	A	1.09

Reported Results for Ba-133 Determination in Sample 2

TABLE 11. Target values

Parameter	Value
Target Value, Bq/kg	147.3
UNC, Bq/kg	6.6
MARB, %	20

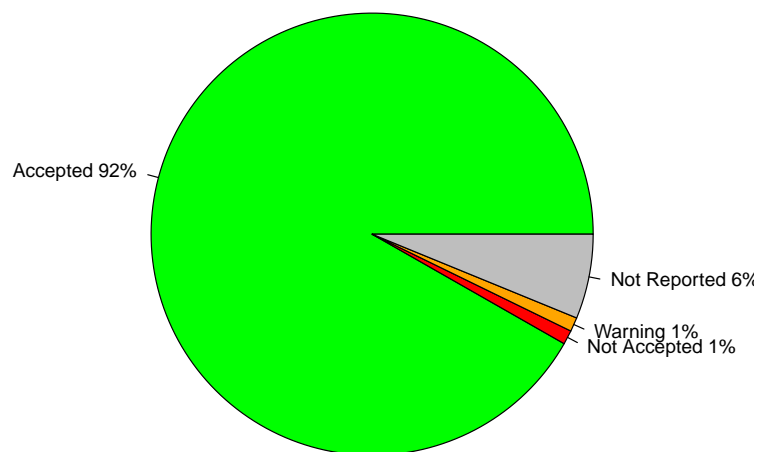


FIGURE 11. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

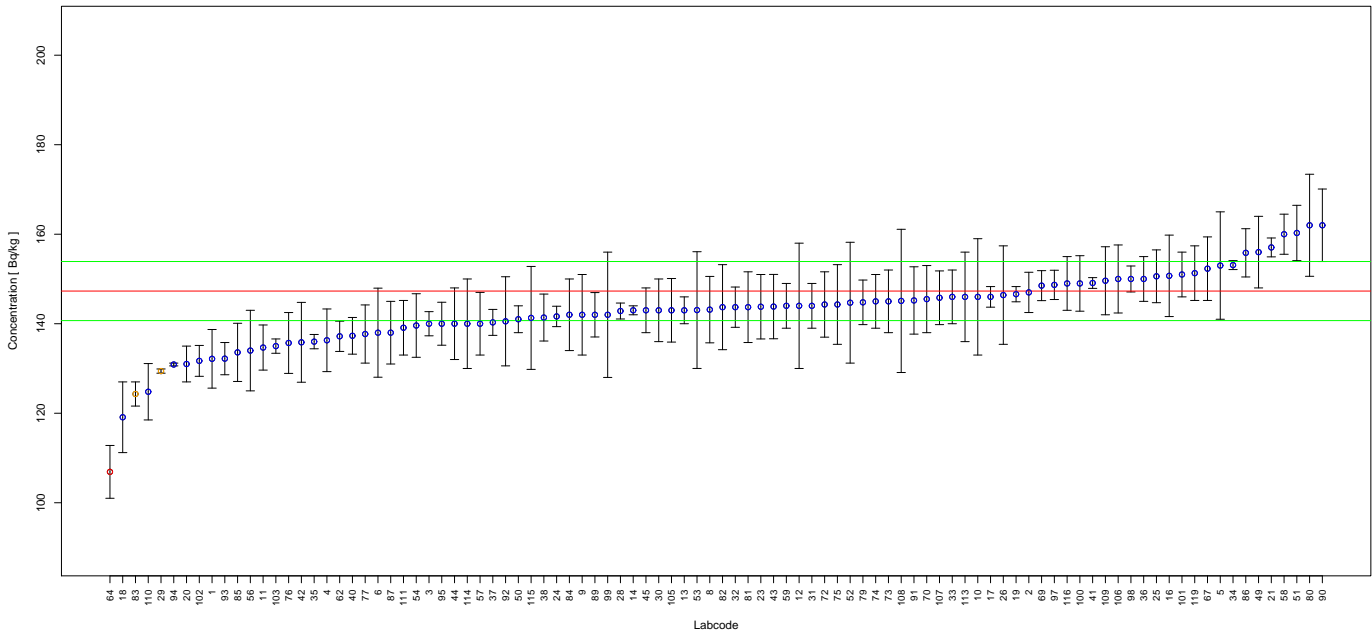


FIGURE 12. Reported results and evaluation parameters for Ba-133. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 12. Evaluation Results for Ba-133 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	132.16	6.55	-10.28	6.68	A	A	A	2.11
2	147.0	4.5	-0.20	5.43	A	A	A	0.04
3	140	2.7	-4.96	4.88	A	A	A	1.02
4	136.3	7.0	-7.47	6.82	A	A	A	1.53
5	153	12	3.87	9.03	A	A	A	0.79
6	138	9.95	-6.31	8.49	A	A	A	1.30
8	143.15	7.42	-2.82	6.85	A	A	A	0.58
9	142.0	9.0	-3.60	7.76	A	A	A	0.74
10	146	13	-0.88	9.97	A	A	A	0.18
11	134.68	5.04	-8.57	5.84	A	A	A	1.76
12	144	14	-2.24	10.71	A	A	A	0.46
13	143	3	-2.92	4.95	A	A	A	0.60
14	143	1	-2.92	4.53	A	A	A	0.60
16	150.7	9.1	2.31	7.52	A	A	A	0.47
17	146.0	2.3	-0.88	4.75	A	A	A	0.18
18	119.1	7.9	-19.14	8.00	A	A	A	3.93
19	146.6	1.7	-0.48	4.63	A	A	A	0.10
20	131.0	4.0	-11.07	5.42	A	A	A	2.27
21	157.05	2.11	6.62	4.68	A	A	A	1.36
23	143.8	7.2	-2.38	6.72	A	A	A	0.49
24	141.63	2.28	-3.85	4.76	A	A	A	0.79
25	150.6	5.9	2.24	5.95	A	A	A	0.46
26	146.4	11.0	-0.61	8.75	A	A	A	0.13
28	142.84	1.78	-3.03	4.65	A	A	A	0.62
29	129.42	0.47	-12.14	4.50	A	N	W	2.49
30	143	7	-2.92	6.64	A	A	A	0.60
31	144	5	-2.24	5.67	A	A	A	0.46
32	143.7	4.5	-2.44	5.47	A	A	A	0.50
33	146	6	-0.88	6.08	A	A	A	0.18
34	153.1	1.0	3.94	4.53	A	A	A	0.81

TABLE 12. Evaluation Results for Ba-133 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
35	136.0	1.6	-7.67	4.63	A	A	A	1.58
36	150	5	1.83	5.58	A	A	A	0.38
37	140.3	2.9	-4.75	4.93	A	A	A	0.98
38	141.381	5.2462	-4.02	5.82	A	A	A	0.83
40	137.3	4.1	-6.79	5.38	A	A	A	1.39
41	149.1	1.2	1.22	4.55	A	A	A	0.25
42	135.85	8.92	-7.77	7.95	A	A	A	1.60
43	143.83	7.19	-2.36	6.71	A	A	A	0.48
44	140	8	-4.96	7.26	A	A	A	1.02
45	143	5	-2.92	5.68	A	A	A	0.60
49	156	8	5.91	6.81	A	A	A	1.21
50	141	3	-4.28	4.96	A	A	A	0.88
51	160.28	6.18	8.81	5.91	A	A	A	1.81
52	144.7	13.5	-1.77	10.35	A	A	A	0.36
53	143.05	13.04	-2.89	10.16	A	A	A	0.59
54	139.6	7.1	-5.23	6.78	A	A	A	1.07
56	134	9	-9.03	8.07	A	A	A	1.85
57	140	7	-4.96	6.71	A	A	A	1.02
58	160	4.48	8.62	5.28	A	A	A	1.77
59	144	5	-2.24	5.67	A	A	A	0.46
62	137.19	3.38	-6.86	5.11	A	A	A	1.41
64	106.9	5.9	-27.43	7.11	N	N	N	5.63
67	152.3	7.1	3.39	6.47	A	A	A	0.70
69	148.51	3.35	0.82	5.02	A	A	A	0.17
70	145.5	7.5	-1.22	6.83	A	A	A	0.25
72	144.3	7.3	-2.04	6.76	A	A	A	0.42
73	145	7.0	-1.56	6.59	A	A	A	0.32
74	145	6	-1.56	6.10	A	A	A	0.32
75	144.3	8.9	-2.04	7.62	A	A	A	0.42
76	135.7	6.8	-7.88	6.72	A	A	A	1.62
77	137.7	6.5	-6.52	6.51	A	A	A	1.34
79	144.78	4.98	-1.71	5.65	A	A	A	0.35
80	162	11.4	9.98	8.34	A	A	A	2.05
81	143.7	7.9	-2.44	7.09	A	A	A	0.50
82	143.7	9.5	-2.44	7.99	A	A	A	0.50
83	124.3	2.7	-15.61	4.98	A	N	W	3.21
84	142	8	-3.60	7.20	A	A	A	0.74
85	133.6	6.5	-9.30	6.61	A	A	A	1.91
86	155.84	5.39	5.80	5.66	A	A	A	1.19
87	138	7	-6.31	6.77	A	A	A	1.30
89	142	4.96	-3.60	5.68	A	A	A	0.74
90	162	8.1	9.98	6.71	A	A	A	2.05
91	145.2	7.522	-1.43	6.85	A	A	A	0.29
92	140.54	9.957	-4.59	8.38	A	A	A	0.94
93	132.2	3.6	-10.25	5.24	A	A	A	2.11
94	130.89	0.31	-11.14	4.49	A	A	A	2.29
95	140.0	4.8	-4.96	5.64	A	A	A	1.02
97	148.68	3.27	0.94	4.99	A	A	A	0.19
98	150.0	2.9	1.83	4.88	A	A	A	0.38
99	142	14	-3.60	10.83	A	A	A	0.74
100	149	6.2	1.15	6.11	A	A	A	0.24
101	151	5	2.51	5.57	A	A	A	0.52
102	131.70	3.45	-10.59	5.19	A	A	A	2.18
103	135.0	1.6	-8.35	4.63	A	A	A	1.72

TABLE 12. Evaluation Results for Ba-133 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
105	143	7.1	-2.92	6.69	A	A	A	0.60
106	150	7.6	1.83	6.76	A	A	A	0.38
107	145.8	6.0	-1.02	6.08	A	A	A	0.21
108	145.1	16.0	-1.49	11.90	A	A	A	0.31
109	149.6	7.6	1.56	6.77	A	A	A	0.32
110	124.8	6.3	-15.27	6.75	A	A	A	3.14
111	139.1	6.1	-5.57	6.27	A	A	A	1.14
113	146	10	-0.88	8.18	A	A	A	0.18
114	140	10	-4.96	8.43	A	A	A	1.02
115	141.3	11.5	-4.07	9.29	A	A	A	0.84
116	149	6	1.15	6.02	A	A	A	0.24
119	151.3	6.1	2.72	6.03	A	A	A	0.56

Reported Results for Cs-137 Determination in Sample 2

TABLE 13. Target values

Parameter	Value
Target Value, Bq/kg	147.4
UNC, Bq/kg	6.6
MARB, %	20

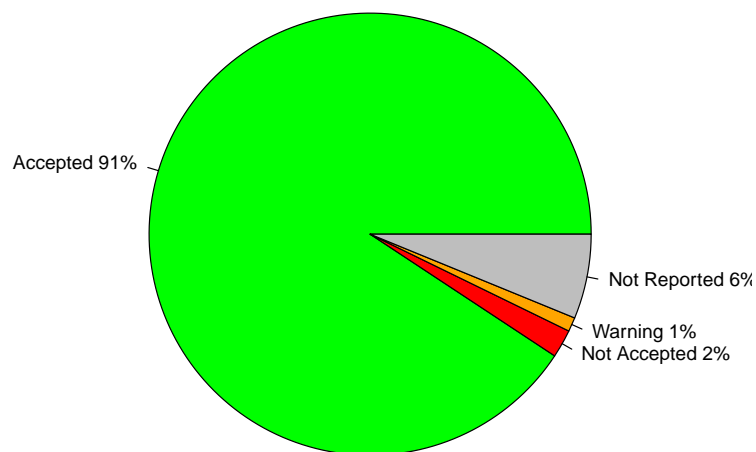


FIGURE 13. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

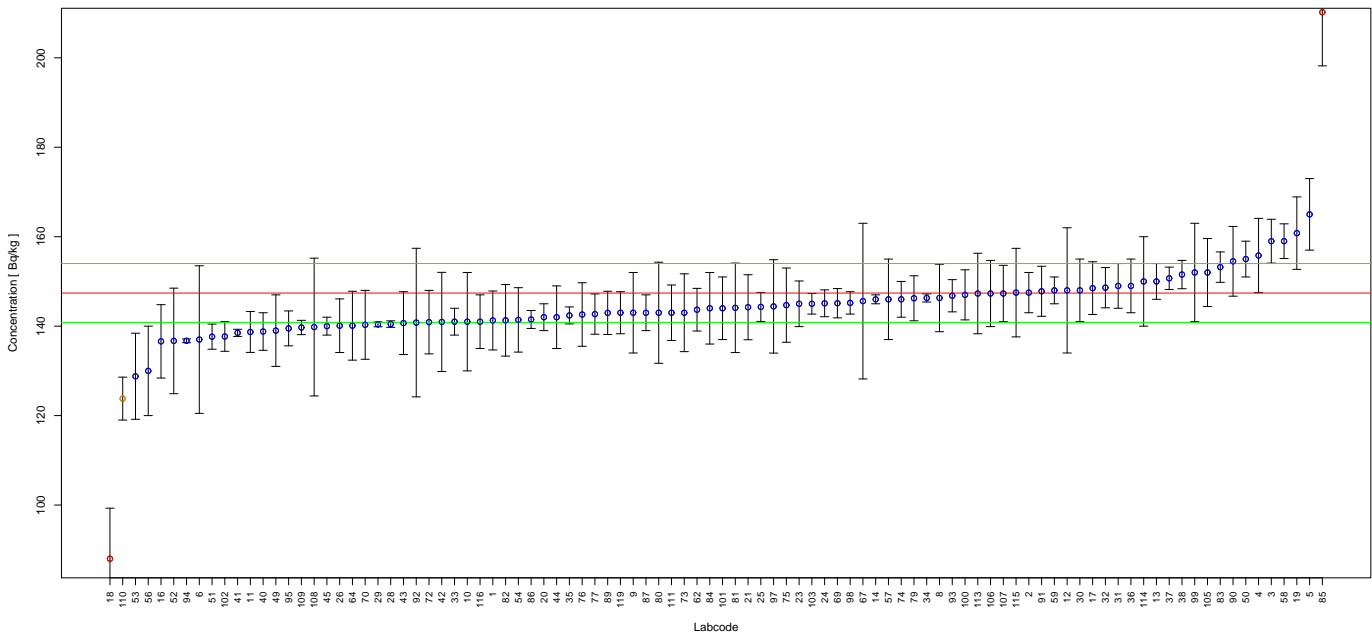


FIGURE 14. Reported results and evaluation parameters for Cs-137. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 14. Evaluation Results for Cs-137 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	141.27	6.59	-4.16	6.47	A	A	A	1.04
2	147.5	4.5	0.07	5.42	A	A	A	0.02
3	159	4.9	7.87	5.44	A	A	A	1.97
4	155.8	8.3	5.70	6.96	A	A	A	1.42
5	165	8	11.94	6.60	A	A	A	2.98
6	137	16.5	-7.06	12.85	A	A	A	1.76
8	146.3	7.54	-0.75	6.83	A	A	A	0.19
9	143.0	9.0	-2.99	7.72	A	A	A	0.75
10	141	11	-4.34	9.00	A	A	A	1.08
11	138.70	4.57	-5.90	5.56	A	A	A	1.47
12	148	14	0.41	10.47	A	A	A	0.10
13	150	4	1.76	5.21	A	A	A	0.44
14	146	1	-0.95	4.53	A	A	A	0.24
16	136.6	8.2	-7.33	7.49	A	A	A	1.83
17	148.5	5.9	0.75	5.99	A	A	A	0.19
18	88.0	11.3	-40.30	13.60	N	N	N	10.07
19	160.8	8.1	9.09	6.74	A	A	A	2.27
20	142.0	3.0	-3.66	4.95	A	A	A	0.92
21	144.23	7.27	-2.15	6.74	A	A	A	0.54
23	145	5.1	-1.63	5.69	A	A	A	0.41
24	145.11	3.00	-1.55	4.93	A	A	A	0.39
25	144.3	3.25	-2.10	5.01	A	A	A	0.53
26	140.1	6.0	-4.95	6.20	A	A	A	1.24
28	140.46	0.73	-4.71	4.51	A	A	A	1.18
29	140.40	0.55	-4.75	4.49	A	A	A	1.19
30	148	7	0.41	6.51	A	A	A	0.10
31	149	5	1.09	5.60	A	A	A	0.27
32	148.6	4.5	0.81	5.41	A	A	A	0.20
33	141	3	-4.34	4.96	A	A	A	1.08
34	146.3	0.9	-0.75	4.52	A	A	A	0.19

TABLE 14. Evaluation Results for Cs-137 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
35	142.4	1.9	-3.39	4.67	A	A	A	0.85
36	149	6	1.09	6.02	A	A	A	0.27
37	150.7	2.5	2.24	4.78	A	A	A	0.56
38	151.537	3.1706	2.81	4.94	A	A	A	0.70
40	138.8	4.2	-5.83	5.40	A	A	A	1.46
41	138.5	0.8	-6.04	4.51	A	A	A	1.51
42	140.94	11.09	-4.38	9.05	A	A	A	1.09
43	140.68	7.03	-4.56	6.71	A	A	A	1.14
44	142	7	-3.66	6.66	A	A	A	0.92
45	140	2	-5.02	4.70	A	A	A	1.25
49	139	8	-5.70	7.29	A	A	A	1.42
50	155	4	5.16	5.17	A	A	A	1.29
51	137.65	2.81	-6.61	4.92	A	A	A	1.65
52	136.7	11.8	-7.26	9.72	A	A	A	1.81
53	128.80	9.62	-12.62	8.71	A	A	A	3.15
54	141.4	7.2	-4.07	6.78	A	A	A	1.02
56	130	10	-11.80	8.90	A	A	A	2.95
57	146	9	-0.95	7.62	A	A	A	0.24
58	159	3.88	7.87	5.10	A	A	A	1.97
59	148	3	0.41	4.92	A	A	A	0.10
62	143.68	4.77	-2.52	5.57	A	A	A	0.63
64	140.1	7.7	-4.95	7.09	A	A	A	1.24
67	145.6	17.4	-1.22	12.76	A	A	A	0.31
69	145.13	3.27	-1.54	5.01	A	A	A	0.38
70	140.3	7.7	-4.82	7.08	A	A	A	1.20
72	140.9	7.1	-4.41	6.74	A	A	A	1.10
73	143	8.7	-2.99	7.55	A	A	A	0.75
74	146	4	-0.95	5.25	A	A	A	0.24
75	144.7	8.3	-1.83	7.28	A	A	A	0.46
76	142.6	7.1	-3.26	6.70	A	A	A	0.81
77	142.7	4.5	-3.19	5.48	A	A	A	0.80
79	146.23	5.03	-0.79	5.65	A	A	A	0.20
80	143	11.3	-2.99	9.08	A	A	A	0.75
81	144.1	10	-2.24	8.26	A	A	A	0.56
82	141.3	8.0	-4.14	7.22	A	A	A	1.03
83	153.2	3.4	3.93	5.00	A	A	A	0.98
84	144	8	-2.31	7.14	A	A	A	0.58
85	210.2	12.0	42.61	7.26	N	N	N	10.64
86	141.50	2.01	-4.00	4.70	A	A	A	1.00
87	143	4	-2.99	5.28	A	A	A	0.75
89	142.97	4.83	-3.01	5.61	A	A	A	0.75
90	154.5	7.8	4.82	6.75	A	A	A	1.20
91	147.8	5.594	0.27	5.86	A	A	A	0.07
92	140.8	16.61	-4.48	12.62	A	A	A	1.12
93	146.8	3.6	-0.41	5.11	A	A	A	0.10
94	136.73	0.43	-7.24	4.49	A	A	A	1.81
95	139.5	3.9	-5.36	5.28	A	A	A	1.34
97	144.42	10.44	-2.02	8.50	A	A	A	0.51
98	145.2	2.5	-1.49	4.80	A	A	A	0.37
99	152	11	3.12	8.51	A	A	A	0.78
100	147	5.6	-0.27	5.88	A	A	A	0.07
101	144	7	-2.31	6.61	A	A	A	0.58
102	137.69	3.31	-6.59	5.08	A	A	A	1.65
103	145.0	2.3	-1.63	4.75	A	A	A	0.41

TABLE 14. Evaluation Results for Cs-137 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
105	152	7.6	3.12	6.71	A	A	A	0.78
106	147.3	7.4	-0.07	6.73	A	A	A	0.02
107	147.3	6.3	-0.07	6.19	A	A	A	0.02
108	139.8	15.4	-5.16	11.89	A	A	A	1.29
109	139.7	1.6	-5.22	4.62	A	A	A	1.31
110	123.8	4.8	-16.01	5.92	A	N	W	4.00
111	143	6.2	-2.99	6.23	A	A	A	0.75
113	147.3	9.0	-0.07	7.58	A	A	A	0.02
114	150	10	1.76	8.03	A	A	A	0.44
115	147.5	9.9	0.07	8.07	A	A	A	0.02
116	141	6	-4.34	6.18	A	A	A	1.08
119	143.0	4.7	-2.99	5.55	A	A	A	0.75

Reported Results for Am-241 Determination in Sample 2

TABLE 15. Target values

Parameter	Value
Target Value, Bq/kg	108.3
UNC, Bq/kg	4.9
MARB, %	20

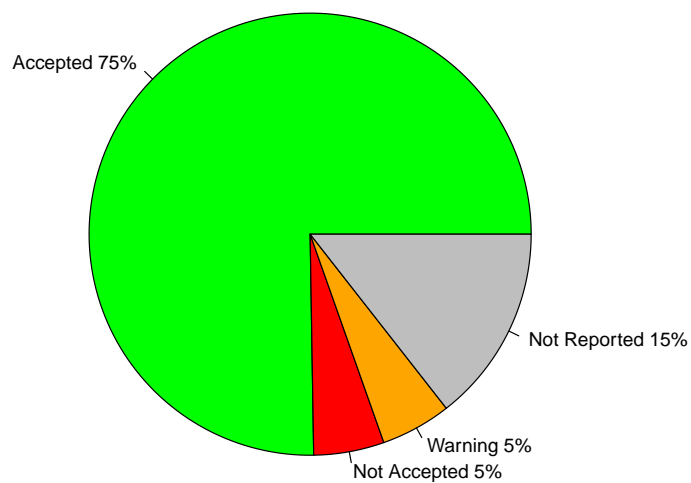


FIGURE 15. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

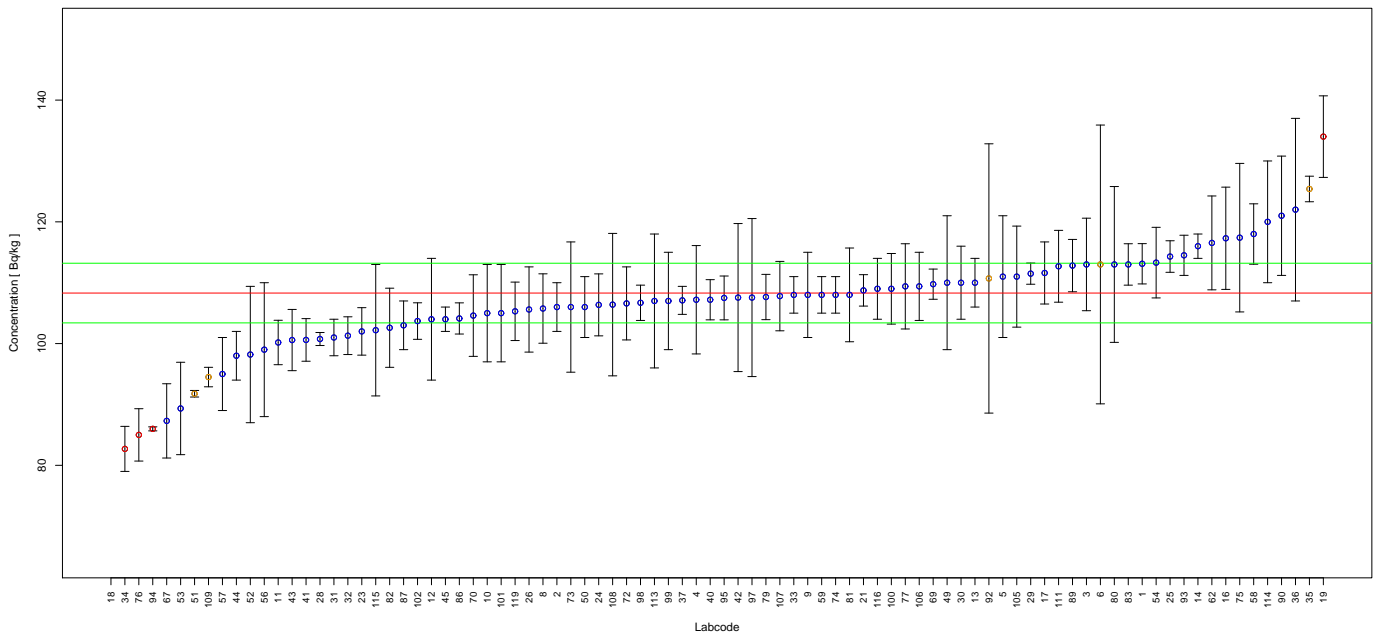


FIGURE 16. Reported results and evaluation parameters for Am-241. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 16. Evaluation Results for Am-241 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	113.11	3.31	4.44	5.39	A	A	A	0.60
2	106.0	4.0	-2.12	5.89	A	A	A	0.29
3	113	7.6	4.34	8.11	A	A	A	0.58
4	107.2	8.9	-1.02	9.46	A	A	A	0.14
5	111	10	2.49	10.08	A	A	A	0.34
6	113	22.9	4.34	20.76	A	N	W	0.58
8	105.76	5.70	-2.35	7.04	A	A	A	0.32
9	108.0	7.0	-0.28	7.90	A	A	A	0.04
10	105	8	-3.05	8.86	A	A	A	0.41
11	100.18	3.65	-7.50	5.81	A	A	A	1.01
12	104	10	-3.97	10.63	A	A	A	0.53
13	110	4	1.57	5.80	A	A	A	0.21
14	116	2	7.11	4.84	A	A	A	0.96
16	117.3	8.4	8.31	8.47	A	A	A	1.12
17	111.6	5.1	3.05	6.43	A	A	A	0.41
18	14.2	1.6	-86.89	12.14	N	N	N	11.69
19	134	6.7	23.73	6.74	N	N	N	3.19
21	108.74	2.58	0.41	5.11	A	A	A	0.05
23	102	3.9	-5.82	5.92	A	A	A	0.78
24	106.36	5.09	-1.79	6.59	A	A	A	0.24
25	114.3	2.59	5.54	5.06	A	A	A	0.75
26	105.6	7.0	-2.49	8.03	A	A	A	0.34
28	100.75	1.07	-6.97	4.65	A	A	A	0.94
29	111.49	1.74	2.95	4.79	A	A	A	0.40
30	110	6	1.57	7.09	A	A	A	0.21
31	101	3	-6.74	5.41	A	A	A	0.91
32	101.3	3.1	-6.46	5.46	A	A	A	0.87
33	108	3	-0.28	5.31	A	A	A	0.04
34	82.7	3.7	-23.64	6.36	N	N	N	3.18
35	125.4	2.1	15.79	4.82	A	N	W	2.12

TABLE 16. Evaluation Results for Am-241 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
36	122	15	12.65	13.10	A	A	A	1.70
37	107.1	2.3	-1.11	5.01	A	A	A	0.15
40	107.2	3.3	-1.02	5.47	A	A	A	0.14
41	100.6	3.5	-7.11	5.71	A	A	A	0.96
42	107.56	12.16	-0.68	12.18	A	A	A	0.09
43	100.58	5.03	-7.13	6.74	A	A	A	0.96
44	98	4	-9.51	6.09	A	A	A	1.28
45	104	2	-3.97	4.92	A	A	A	0.53
49	110	11	1.57	10.98	A	A	A	0.21
50	106	5	-2.12	6.54	A	A	A	0.29
51	91.76	0.54	-15.27	4.56	A	N	W	2.05
52	98.2	11.2	-9.33	12.27	A	A	A	1.25
53	89.34	7.59	-17.51	9.63	A	A	A	2.36
54	113.3	5.8	4.62	6.83	A	A	A	0.62
56	99	11	-8.59	12.00	A	A	A	1.16
57	95	6	-12.28	7.77	A	A	A	1.65
58	118	4.96	8.96	6.18	A	A	A	1.20
59	108	3	-0.28	5.31	A	A	A	0.04
62	116.54	7.71	7.61	8.01	A	A	A	1.02
67	87.3	6.1	-19.39	8.32	A	A	A	2.61
69	109.76	2.48	1.35	5.06	A	A	A	0.18
70	104.6	6.7	-3.42	7.84	A	A	A	0.46
72	106.6	6.0	-1.57	7.22	A	A	A	0.21
73	106	10.7	-2.12	11.06	A	A	A	0.29
74	108	3	-0.28	5.31	A	A	A	0.04
75	117.4	12.2	8.40	11.33	A	A	A	1.13
76	85.0	4.3	-21.51	6.79	N	N	N	2.89
77	109.4	7.0	1.02	7.84	A	A	A	0.14
79	107.65	3.72	-0.60	5.69	A	A	A	0.08
80	113	12.8	4.34	12.20	A	A	A	0.58
81	108.0	7.7	-0.28	8.44	A	A	A	0.04
82	102.6	6.5	-5.26	7.79	A	A	A	0.71
83	113	3.4	4.34	5.43	A	A	A	0.58
86	104.13	2.56	-3.85	5.15	A	A	A	0.52
87	103	4	-4.89	5.96	A	A	A	0.66
89	112.81	4.3	4.16	5.92	A	A	A	0.56
90	121	9.8	11.73	9.28	A	A	A	1.58
92	110.7	22.12	2.22	20.49	A	N	W	0.30
93	114.5	3.3	5.72	5.36	A	A	A	0.77
94	85.99	0.33	-20.60	4.54	N	N	N	2.77
95	107.5	3.6	-0.74	5.63	A	A	A	0.10
97	107.56	12.98	-0.68	12.89	A	A	A	0.09
98	106.7	2.9	-1.48	5.28	A	A	A	0.20
99	107	8	-1.20	8.74	A	A	A	0.16
100	109	5.8	0.65	6.98	A	A	A	0.09
101	105	8	-3.05	8.86	A	A	A	0.41
102	103.70	3.00	-4.25	5.37	A	A	A	0.57
105	111	8.3	2.49	8.74	A	A	A	0.34
106	109.4	5.6	1.02	6.83	A	A	A	0.14
107	107.8	5.7	-0.46	6.96	A	A	A	0.06
108	106.4	11.7	-1.75	11.89	A	A	A	0.24
109	94.5	1.6	-12.74	4.83	A	N	W	1.71
111	112.7	5.9	4.06	6.92	A	A	A	0.55
113	107	11	-1.20	11.23	A	A	A	0.16

TABLE 16. Evaluation Results for Am-241 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
114	120	10	10.80	9.48	A	A	A	1.45
115	102.2	10.8	-5.63	11.50	A	A	A	0.76
116	109	5	0.65	6.44	A	A	A	0.09
119	105.3	4.8	-2.77	6.42	A	A	A	0.37

Reported Results for K-40 Determination in Sample 4

TABLE 17. Target values

Parameter	Value
Target Value, Bq/kg	97.9
UNC, Bq/kg	7.2
MARB, %	30

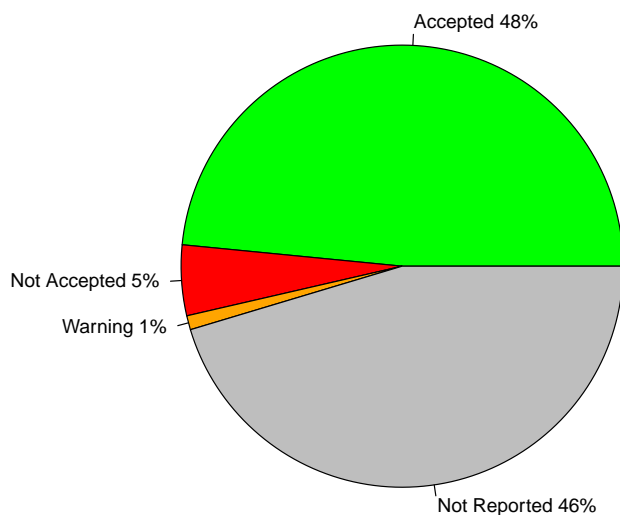


FIGURE 17. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

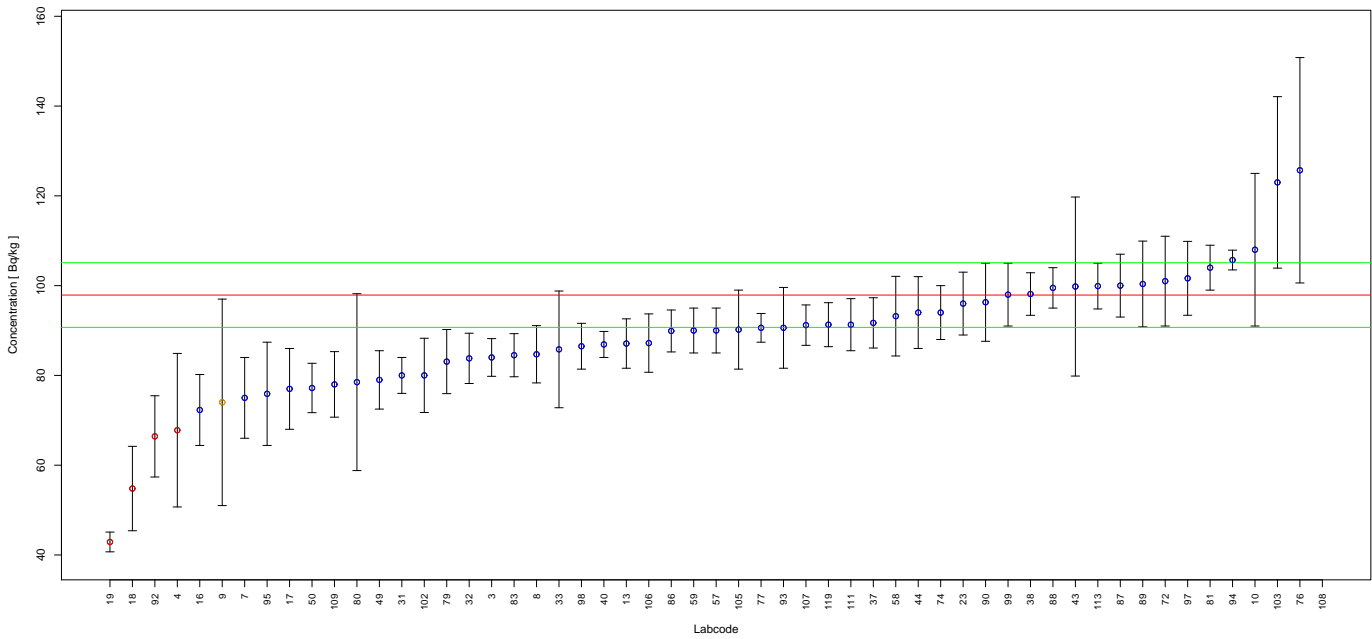


FIGURE 18. Reported results and evaluation parameters for K-40. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 18. Evaluation Results for K-40 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
3	84	4.2	-14.20	8.89	A	A	A	0.86
4	67.8	17.1	-30.75	26.27	N	A	N	1.86
7	75	9	-23.39	14.07	A	A	A	1.41
8	84.71	6.38	-13.47	10.53	A	A	A	0.81
9	74	23	-24.41	31.94	A	N	W	1.47
10	108	17	10.32	17.37	A	A	A	0.62
13	87.1	5.5	-11.03	9.69	A	A	A	0.67
16	72.3	7.9	-26.15	13.17	A	A	A	1.58
17	77	9	-21.35	13.81	A	A	A	1.29
18	54.8	9.4	-44.02	18.66	N	A	N	2.66
19	42.9	2.2	-56.18	8.97	N	N	N	3.39
23	96	7	-1.94	10.36	A	A	A	0.12
31	80	4	-18.28	8.89	A	A	A	1.10
32	83.8	5.6	-14.40	9.94	A	A	A	0.87
33	85.8	13	-12.36	16.84	A	A	A	0.75
37	91.7	5.6	-6.33	9.56	A	A	A	0.38
38	98.128	4.740	0.23	8.80	A	A	A	0.01
40	86.9	2.9	-11.24	8.08	A	A	A	0.68
43	99.80	19.94	1.94	21.29	A	A	A	0.12
44	94	8	-3.98	11.25	A	A	A	0.24
49	79	6.5	-19.31	11.04	A	A	A	1.17
50	77.2	5.5	-21.14	10.24	A	A	A	1.28
57	90	5	-8.07	9.22	A	A	A	0.49
58	93.2	8.87	-4.80	12.03	A	A	A	0.29
59	90	5	-8.07	9.22	A	A	A	0.49
72	101	10	3.17	12.33	A	A	A	0.19
74	94	6	-3.98	9.74	A	A	A	0.24
76	125.7	25.1	28.40	21.28	A	A	A	1.71
77	90.6	3.2	-7.46	8.16	A	A	A	0.45
79	83.08	7.14	-15.14	11.31	A	A	A	0.91

TABLE 18. Evaluation Results for K-40 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
80	78.5	19.7	-19.82	26.15	A	A	A	1.20
81	104.0	5	6.23	8.79	A	A	A	0.38
83	84.5	4.8	-13.69	9.29	A	A	A	0.83
86	89.9	4.67	-8.17	9.00	A	A	A	0.49
87	100	7	2.15	10.15	A	A	A	0.13
88	99.5	4.5	1.63	8.63	A	A	A	0.10
89	100.37	9.55	2.52	12.03	A	A	A	0.15
90	96.3	8.7	-1.63	11.65	A	A	A	0.10
92	66.42	9.048	-32.16	15.48	N	A	N	1.94
93	90.6	9.0	-7.46	12.36	A	A	A	0.45
94	105.7	2.2	7.97	7.64	A	A	A	0.48
95	75.9	11.5	-22.47	16.84	A	A	A	1.36
97	101.63	8.23	3.81	10.94	A	A	A	0.23
98	86.5	5.1	-11.64	9.43	A	A	A	0.70
99	98	7	0.10	10.25	A	A	A	0.01
102	80.01	8.27	-18.27	12.69	A	A	A	1.10
103	123.0	19.1	25.64	17.18	A	A	A	1.55
105	90.2	8.8	-7.87	12.22	A	A	A	0.47
106	87.2	6.5	-10.93	10.47	A	A	A	0.66
107	91.2	4.5	-6.84	8.86	A	A	A	0.41
108	318.4	47.8	225.23	16.72	N	N	N	13.59
109	78.0	7.3	-20.33	11.90	A	A	A	1.23
111	91.3	5.8	-6.74	9.72	A	A	A	0.41
113	99.9	5.1	2.04	8.95	A	A	A	0.12
119	91.3	4.9	-6.74	9.10	A	A	A	0.41

Reported Results for Cs-134 Determination in Sample 4

TABLE 19. Target values

Parameter	Value
Target Value, Bq/kg	86.6
UNC, Bq/kg	4
MARB, %	25

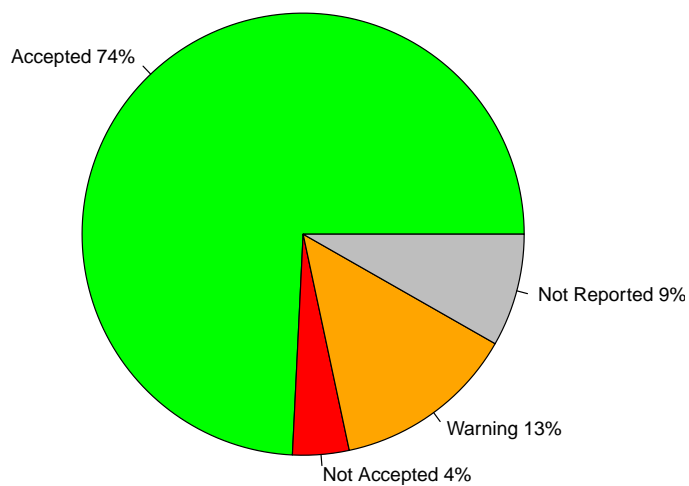


FIGURE 19. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

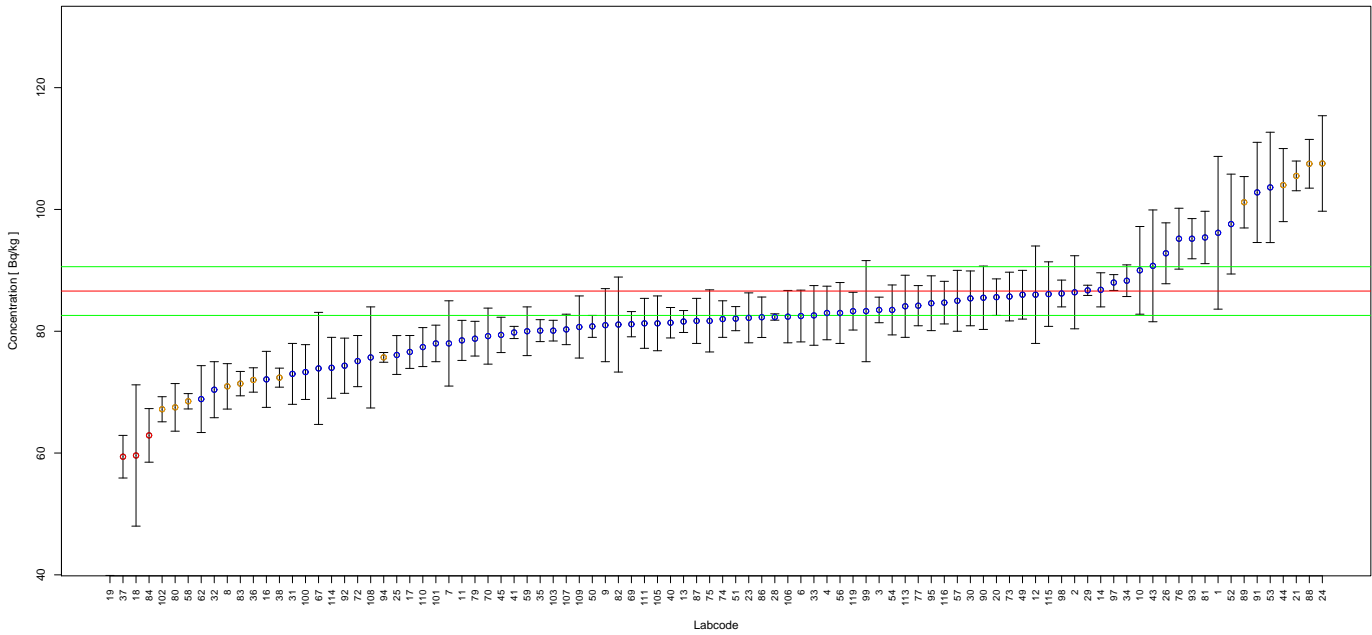


FIGURE 20. Reported results and evaluation parameters for Cs-134. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 20. Evaluation Results for Cs-134 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	96.17	12.54	11.05	13.83	A	A	A	0.96
2	86.4	6.0	-0.23	8.34	A	A	A	0.02
3	83.5	2.1	-3.58	5.26	A	A	A	0.31
4	83.0	4.4	-4.16	7.03	A	A	A	0.36
6	82.5	4.25	-4.73	6.92	A	A	A	0.41
7	78	7	-9.93	10.09	A	A	A	0.86
8	70.95	3.73	-18.07	7.00	A	N	W	1.56
9	81.0	6.0	-6.47	8.73	A	A	A	0.56
10	90.0	7.2	3.93	9.24	A	A	A	0.34
11	78.50	3.29	-9.35	6.24	A	A	A	0.81
12	86	8	-0.69	10.39	A	A	A	0.06
13	81.6	1.8	-5.77	5.12	A	A	A	0.50
14	86.8	2.8	0.23	5.63	A	A	A	0.02
16	72.1	4.6	-16.74	7.88	A	A	A	1.45
17	76.6	2.7	-11.55	5.81	A	A	A	1.00
18	59.6	11.6	-31.18	20.00	N	A	N	2.70
19	38.0	1.9	-56.12	6.81	N	N	N	4.86
20	85.6	3.0	-1.15	5.80	A	A	A	0.10
21	105.51	2.44	21.84	5.17	A	N	W	1.89
23	82.2	4.1	-5.08	6.80	A	A	A	0.44
24	107.55	7.84	24.19	8.63	A	N	W	2.10
25	76.1	3.19	-12.12	6.24	A	A	A	1.05
26	92.8	5.0	7.16	7.10	A	A	A	0.62
28	82.34	0.52	-4.92	4.66	A	A	A	0.43
29	86.72	0.84	0.14	4.72	A	A	A	0.01
30	85.4	4.5	-1.39	7.01	A	A	A	0.12
31	73	5	-15.70	8.26	A	A	A	1.36
32	70.4	4.6	-18.71	8.00	A	A	A	1.62
33	82.6	4.9	-4.62	7.52	A	A	A	0.40
34	88.3	2.6	1.96	5.48	A	A	A	0.17

TABLE 20. Evaluation Results for Cs-134 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
35	80.1	1.8	-7.51	5.14	A	A	A	0.65
36	72	2	-16.86	5.39	A	N	W	1.46
37	59.4	3.5	-31.41	7.49	N	N	N	2.72
38	72.381	1.562	-16.42	5.10	A	N	W	1.42
40	81.4	2.5	-6.00	5.55	A	A	A	0.52
41	79.8	1.0	-7.85	4.79	A	A	A	0.68
43	90.74	9.18	4.78	11.12	A	A	A	0.41
44	104	6	20.09	7.39	A	N	W	1.74
45	79.4	2.9	-8.31	5.89	A	A	A	0.72
49	86	4	-0.69	6.55	A	A	A	0.06
50	80.8	1.8	-6.70	5.13	A	A	A	0.58
51	82.07	1.98	-5.23	5.21	A	A	A	0.45
52	97.6	8.2	12.70	9.59	A	A	A	1.10
53	103.62	9.06	19.65	9.89	A	A	A	1.70
54	83.5	4.1	-3.58	6.74	A	A	A	0.31
56	83	5	-4.16	7.59	A	A	A	0.36
57	85	5	-1.85	7.48	A	A	A	0.16
58	68.5	1.26	-20.90	4.97	A	N	W	1.81
59	80	4	-7.62	6.81	A	A	A	0.66
62	68.86	5.49	-20.48	9.21	A	A	A	1.77
67	73.9	9.2	-14.67	13.28	A	A	A	1.27
69	81.16	2.07	-6.28	5.28	A	A	A	0.54
70	79.2	4.6	-8.55	7.42	A	A	A	0.74
72	75.1	4.2	-13.28	7.25	A	A	A	1.15
73	85.7	4.0	-1.04	6.57	A	A	A	0.09
74	82	3	-5.31	5.89	A	A	A	0.46
75	81.7	5.1	-5.66	7.77	A	A	A	0.49
76	95.2	5.0	9.93	6.99	A	A	A	0.86
77	84.2	3.3	-2.77	6.06	A	A	A	0.24
79	78.78	2.85	-9.03	5.87	A	A	A	0.78
80	67.5	3.91	-22.06	7.41	A	N	W	1.91
81	95.4	4.3	10.16	6.45	A	A	A	0.88
82	81.1	7.8	-6.35	10.67	A	A	A	0.55
83	71.4	2.0	-17.55	5.40	A	N	W	1.52
84	62.9	4.4	-27.37	8.38	N	N	N	2.37
86	82.3	3.32	-4.97	6.13	A	A	A	0.43
87	81.7	3.7	-5.66	6.47	A	A	A	0.49
88	107.5	4.0	24.13	5.93	A	N	W	2.09
89	101.18	4.22	16.84	6.22	A	N	W	1.46
90	85.5	5.2	-1.27	7.64	A	A	A	0.11
91	102.798	8.227	18.70	9.24	A	A	A	1.62
92	74.34	4.531	-14.16	7.65	A	A	A	1.23
93	95.2	3.3	9.93	5.77	A	A	A	0.86
94	75.71	0.8	-12.58	4.74	A	N	W	1.09
95	84.6	4.5	-2.31	7.04	A	A	A	0.20
97	88.00	1.30	1.62	4.85	A	A	A	0.14
98	86.2	2.2	-0.46	5.28	A	A	A	0.04
99	83.3	8.3	-3.81	10.98	A	A	A	0.33
100	73.3	4.5	-15.36	7.68	A	A	A	1.33
101	78	3	-9.93	6.01	A	A	A	0.86
102	67.19	2.06	-22.41	5.54	A	N	W	1.94
103	80.1	1.7	-7.51	5.08	A	A	A	0.65
105	81.3	4.5	-6.12	7.21	A	A	A	0.53
106	82.4	4.3	-4.85	6.97	A	A	A	0.42

TABLE 20. Evaluation Results for Cs-134 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
107	80.3	2.5	-7.27	5.57	A	A	A	0.63
108	75.7	8.3	-12.59	11.90	A	A	A	1.09
109	80.7	5.1	-6.81	7.83	A	A	A	0.59
110	77.4	3.2	-10.62	6.20	A	A	A	0.92
111	81.3	4.1	-6.12	6.84	A	A	A	0.53
113	84.1	5.1	-2.89	7.62	A	A	A	0.25
114	74	5	-14.55	8.18	A	A	A	1.26
115	86.1	5.3	-0.58	7.70	A	A	A	0.05
116	84.7	3.5	-2.19	6.20	A	A	A	0.19
119	83.3	3.1	-3.81	5.93	A	A	A	0.33

Reported Results for Cs-137 Determination in Sample 4

TABLE 21. Target values

Parameter	Value
Target Value, Bq/kg	2063
UNC, Bq/kg	93
MARB, %	20

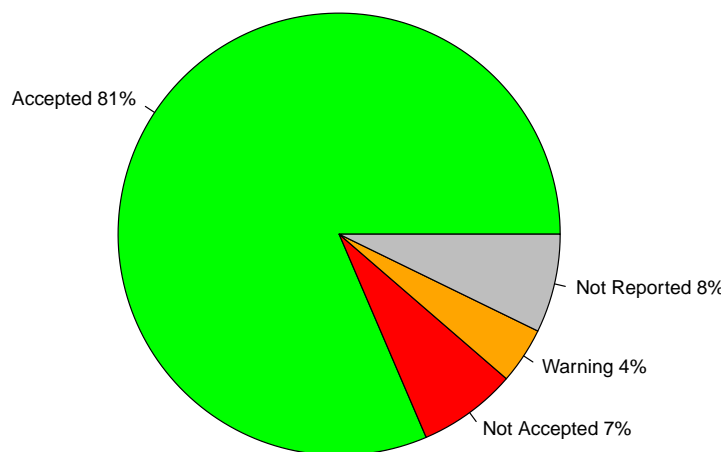


FIGURE 21. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

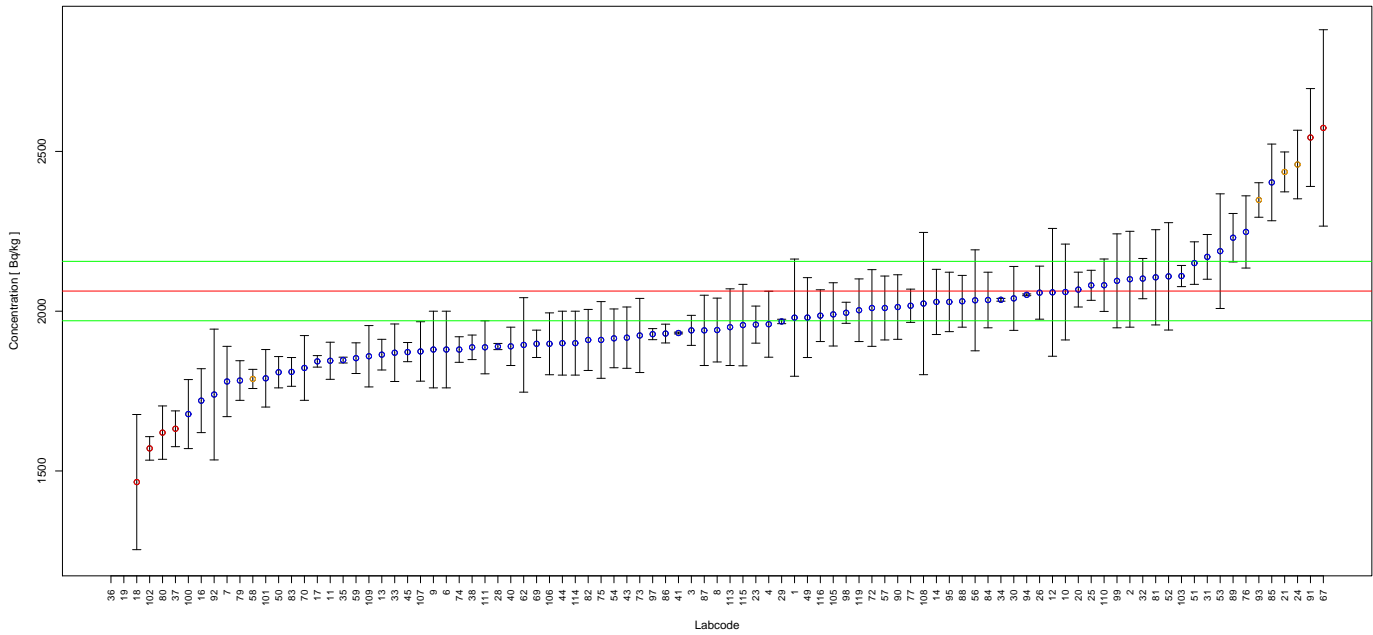


FIGURE 22. Reported results and evaluation parameters for Cs-137. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 22. Evaluation Results for Cs-137 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	1979.78	183.38	-4.03	10.30	A	A	A	0.46
2	2100.0	150.0	1.79	8.45	A	A	A	0.21
3	1940	47	-5.96	5.12	A	A	A	0.68
4	1959.2	103.2	-5.03	6.93	A	A	A	0.58
6	1880	120	-8.87	7.81	A	A	A	1.01
7	1780	110	-13.72	7.65	A	A	A	1.57
8	1941	99.9	-5.91	6.84	A	A	A	0.68
9	1880	120	-8.87	7.81	A	A	A	1.01
10	2060	150	-0.15	8.56	A	A	A	0.02
11	1844.85	58.05	-10.57	5.50	A	A	A	1.21
12	2059	200	-0.19	10.71	A	A	A	0.02
13	1864	48	-9.65	5.19	A	A	A	1.10
14	2029	102	-1.65	6.75	A	A	A	0.19
16	1720	100	-16.63	7.36	A	A	A	1.90
17	1843	18	-10.66	4.61	A	A	A	1.22
18	1465.2	211.5	-28.98	15.12	N	A	N	3.31
19	943	47	-54.29	6.72	N	N	N	6.21
20	2067.6	54.5	0.22	5.22	A	A	A	0.03
21	2435.87	62.42	18.07	5.19	A	N	W	2.07
23	1958	58	-5.09	5.39	A	A	A	0.58
24	2458.99	107.31	19.19	6.27	A	N	W	2.20
25	2081	47	0.87	5.04	A	A	A	0.10
26	2058	83	-0.24	6.05	A	A	A	0.03
28	1889.40	9.69	-8.41	4.54	A	A	A	0.96
29	1967.86	6.94	-4.61	4.52	A	A	A	0.53
30	2040	100	-1.11	6.66	A	A	A	0.13
31	2170	70	5.19	5.54	A	A	A	0.59
32	2102	63	1.89	5.41	A	A	A	0.22
33	1870	90	-9.36	6.59	A	A	A	1.07
34	2035.7	4.4	-1.32	4.51	A	A	A	0.15

TABLE 22. Evaluation Results for Cs-137 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
35	1847.0	9.1	-10.47	4.53	A	A	A	1.20
36	190	49	-90.79	26.18	N	N	N	10.38
37	1632	56	-20.89	5.67	N	N	N	2.39
38	1886.9	38.415	-8.54	4.95	A	A	A	0.98
40	1890	60	-8.39	5.51	A	A	A	0.96
41	1931.7	2.7	-6.36	4.51	A	A	A	0.73
43	1917.19	95.93	-7.07	6.73	A	A	A	0.81
44	1900	100	-7.90	6.93	A	A	A	0.90
45	1872	30	-9.26	4.78	A	A	A	1.06
49	1980	125	-4.02	7.76	A	A	A	0.46
50	1809	49	-12.31	5.26	A	A	A	1.41
51	2150.52	66.53	4.24	5.47	A	A	A	0.49
52	2109	168	2.23	9.15	A	A	A	0.26
53	2187.84	179.40	6.05	9.36	A	A	A	0.69
54	1915	92	-7.17	6.59	A	A	A	0.82
56	2034	158	-1.41	8.98	A	A	A	0.16
57	2010	100	-2.57	6.71	A	A	A	0.29
58	1788	30.0	-13.33	4.81	A	N	W	1.52
59	1853	48	-10.18	5.20	A	A	A	1.16
62	1894.46	147.83	-8.17	9.01	A	A	A	0.93
67	2573.5	307.3	24.75	12.76	N	A	N	2.83
69	1897.9	42.80	-8.00	5.04	A	A	A	0.92
70	1822.4	101.3	-11.66	7.16	A	A	A	1.33
72	2010	120	-2.57	7.48	A	A	A	0.29
73	1924	116	-6.74	7.53	A	A	A	0.77
74	1880	40	-8.87	4.98	A	A	A	1.01
75	1910	120	-7.42	7.73	A	A	A	0.85
76	2248.0	113.0	8.97	6.75	A	A	A	1.03
77	2017	52	-2.23	5.19	A	A	A	0.26
79	1783	62	-13.57	5.69	A	A	A	1.55
80	1620	83.5	-21.47	6.85	N	N	N	2.46
81	2106	149	2.08	8.39	A	A	A	0.24
82	1910.0	95.5	-7.42	6.73	A	A	A	0.85
83	1810	45	-12.26	5.15	A	A	A	1.40
84	2035	87	-1.36	6.21	A	A	A	0.16
85	2403	120	16.48	6.73	A	A	A	1.88
86	1930	29.4	-6.45	4.76	A	A	A	0.74
87	1940	110	-5.96	7.24	A	A	A	0.68
88	2031	81	-1.55	6.02	A	A	A	0.18
89	2229.98	75.82	8.09	5.65	A	A	A	0.93
90	2013	101	-2.42	6.75	A	A	A	0.28
91	2543.5	153.1	23.29	7.52	N	N	N	2.66
92	1739.2	204.65	-15.70	12.60	A	A	A	1.79
93	2348	54	13.81	5.06	A	N	W	1.58
94	2051.2	2.73	-0.57	4.51	A	A	A	0.07
95	2029.0	93.0	-1.65	6.43	A	A	A	0.19
97	1928.18	17.33	-6.54	4.60	A	A	A	0.75
98	1995	33	-3.30	4.80	A	A	A	0.38
99	2095	147	1.55	8.34	A	A	A	0.18
100	1678	108	-18.66	7.86	A	A	A	2.13
101	1790	90	-13.23	6.75	A	A	A	1.51
102	1570.6	36.8	-23.87	5.08	N	N	N	2.73
103	2110.0	33.1	2.28	4.77	A	A	A	0.26
105	1990	99	-3.54	6.71	A	A	A	0.40

TABLE 22. Evaluation Results for Cs-137 in Sample 4, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
106	1897.9	96.8	-8.00	6.81	A	A	A	0.92
107	1874	93	-9.16	6.70	A	A	A	1.05
108	2023.9	222.6	-1.90	11.89	A	A	A	0.22
109	1859	96	-9.89	6.85	A	A	A	1.13
110	2081.3	82	0.89	5.99	A	A	A	0.10
111	1887	83	-8.53	6.30	A	A	A	0.98
113	1950	120	-5.48	7.63	A	A	A	0.63
114	1900	100	-7.90	6.93	A	A	A	0.90
115	1956.5	127.5	-5.16	7.92	A	A	A	0.59
116	1986	81	-3.73	6.08	A	A	A	0.43
119	2003	98	-2.91	6.65	A	A	A	0.33

Reported Results for Cs-134 Determination in Sample 5

TABLE 23. Target values

Parameter	Value
Target Value, Bq/kg	19.05
UNC, Bq/kg	0.86
MARB, %	30

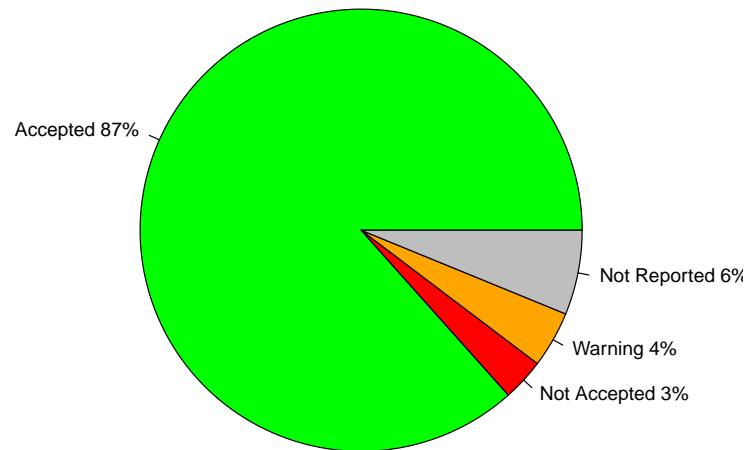


FIGURE 23. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

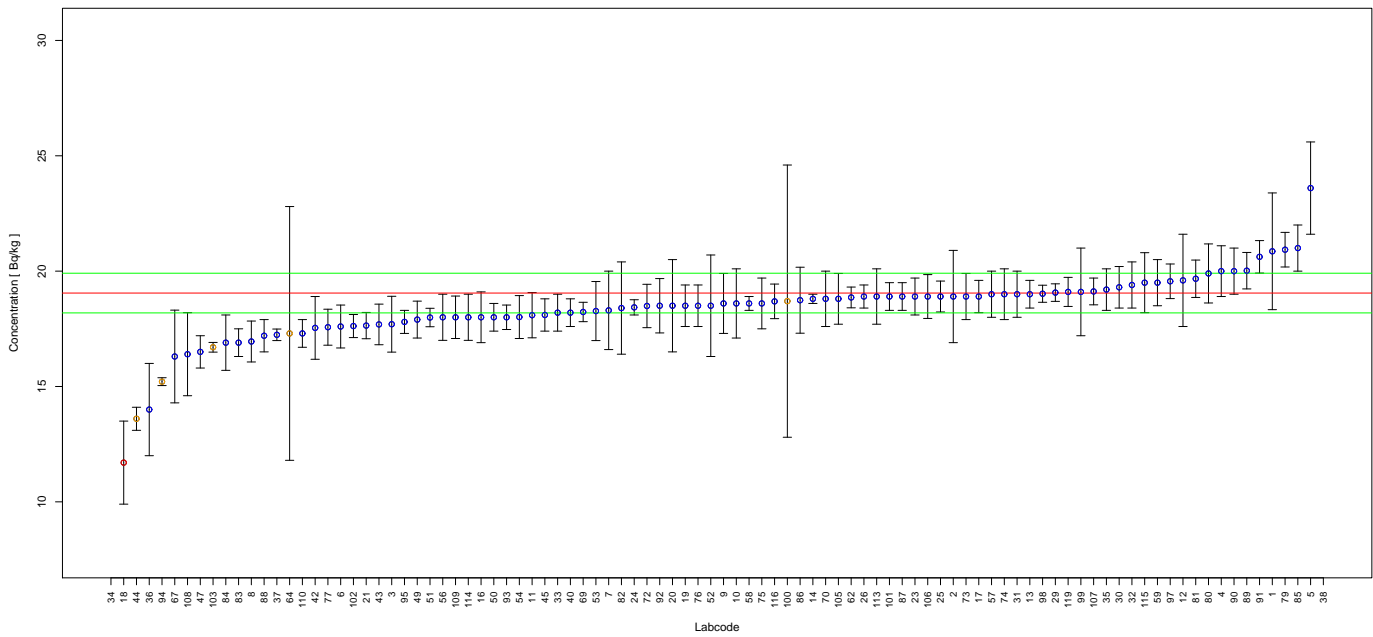


FIGURE 24. Reported results and evaluation parameters for Cs-134. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 24. Evaluation Results for Cs-134 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	20.86	2.53	9.50	12.94	A	A	A	1.53
2	18.9	2.0	-0.79	11.50	A	A	A	0.13
3	17.7	1.21	-7.09	8.19	A	A	A	1.14
4	20.0	1.1	4.99	7.12	A	A	A	0.81
5	23.6	2.0	23.88	9.60	A	A	A	3.86
6	17.60	0.93	-7.61	6.95	A	A	A	1.23
7	18.3	1.7	-3.94	10.33	A	A	A	0.64
8	16.95	0.887	-11.02	6.91	A	A	A	1.78
9	18.6	1.3	-2.36	8.32	A	A	A	0.38
10	18.6	1.5	-2.36	9.24	A	A	A	0.38
11	18.09	0.98	-5.04	7.05	A	A	A	0.81
12	19.6	2	2.89	11.16	A	A	A	0.47
13	19.0	0.6	-0.26	5.51	A	A	A	0.04
14	18.8	0.2	-1.31	4.64	A	A	A	0.21
16	18.0	1.1	-5.51	7.60	A	A	A	0.89
17	18.9	0.7	-0.79	5.84	A	A	A	0.13
18	11.7	1.8	-38.58	16.03	N	A	N	6.23
19	18.5	0.9	-2.89	6.64	A	A	A	0.47
20	18.5	2.0	-2.89	11.72	A	A	A	0.47
21	17.64	0.57	-7.40	5.55	A	A	A	1.19
23	18.9	0.8	-0.79	6.19	A	A	A	0.13
24	18.43	0.33	-3.25	4.86	A	A	A	0.53
25	18.9	0.67	-0.79	5.74	A	A	A	0.13
26	18.9	0.5	-0.79	5.23	A	A	A	0.13
29	19.07	0.38	0.10	4.93	A	A	A	0.02
30	19.3	0.9	1.31	6.49	A	A	A	0.21
31	19	1	-0.26	6.93	A	A	A	0.04
32	19.4	1.0	1.84	6.85	A	A	A	0.30
33	18.2	0.8	-4.46	6.30	A	A	A	0.72
34	5.0	0.2	-73.75	6.03	N	N	N	11.91

TABLE 24. Evaluation Results for Cs-134 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
35	19.2	0.9	0.79	6.51	A	A	A	0.13
36	14	2	-26.51	14.98	A	A	A	4.28
37	17.24	0.25	-9.50	4.74	A	A	A	1.53
38	104.27	1.2674	447.35	4.68	N	N	N	72.22
40	18.2	0.6	-4.46	5.59	A	A	A	0.72
42	17.54	1.36	-7.93	8.97	A	A	A	1.28
43	17.69	0.88	-7.14	6.72	A	A	A	1.15
44	13.6	0.5	-28.61	5.82	A	N	W	4.62
45	18.1	0.7	-4.99	5.94	A	A	A	0.81
47	16.5	0.7	-13.39	6.20	A	A	A	2.16
49	17.9	0.8	-6.04	6.35	A	A	A	0.97
50	18.0	0.6	-5.51	5.61	A	A	A	0.89
51	17.99	0.40	-5.56	5.03	A	A	A	0.90
52	18.5	2.2	-2.89	12.72	A	A	A	0.47
53	18.27	1.28	-4.09	8.33	A	A	A	0.66
54	18.01	0.93	-5.46	6.86	A	A	A	0.88
56	18	1	-5.51	7.16	A	A	A	0.89
57	19	1	-0.26	6.93	A	A	A	0.04
58	18.6	0.30	-2.36	4.79	A	A	A	0.38
59	19.5	1	2.36	6.83	A	A	A	0.38
62	18.86	0.45	-1.00	5.11	A	A	A	0.16
64	17.3	5.5	-9.19	32.11	A	N	W	1.48
67	16.3	2.01	-14.44	13.13	A	A	A	2.33
69	18.23	0.42	-4.30	5.07	A	A	A	0.69
70	18.8	1.2	-1.31	7.82	A	A	A	0.21
72	18.49	0.94	-2.94	6.80	A	A	A	0.47
73	18.9	1.0	-0.79	6.96	A	A	A	0.13
74	19.0	1.1	-0.26	7.34	A	A	A	0.04
75	18.6	1.1	-2.36	7.44	A	A	A	0.38
76	18.5	0.9	-2.89	6.64	A	A	A	0.47
77	17.57	0.78	-7.77	6.33	A	A	A	1.25
79	20.93	0.75	9.87	5.76	A	A	A	1.59
80	19.9	1.28	4.46	7.86	A	A	A	0.72
81	19.67	0.81	3.25	6.11	A	A	A	0.53
82	18.4	2.0	-3.41	11.77	A	A	A	0.55
83	16.9	0.6	-11.29	5.74	A	A	A	1.82
84	16.9	1.2	-11.29	8.41	A	A	A	1.82
85	21.0	1.0	10.24	6.56	A	A	A	1.65
86	18.74	1.43	-1.63	8.87	A	A	A	0.26
87	18.9	0.6	-0.79	5.52	A	A	A	0.13
88	17.2	0.7	-9.71	6.08	A	A	A	1.57
89	20.02	0.79	5.09	6.00	A	A	A	0.82
90	20	1	4.99	6.74	A	A	A	0.81
91	20.62	0.704	8.24	5.66	A	A	A	1.33
92	18.5	1.178	-2.89	7.81	A	A	A	0.47
93	18.0	0.53	-5.51	5.39	A	A	A	0.89
94	15.21	0.17	-20.16	4.65	A	N	W	3.25
95	17.8	0.5	-6.56	5.32	A	A	A	1.06
97	19.56	0.75	2.68	5.92	A	A	A	0.43
98	19.02	0.37	-0.16	4.92	A	A	A	0.03
99	19.1	1.9	0.26	10.92	A	A	A	0.04
100	18.7	5.9	-1.84	31.87	A	N	W	0.30
101	18.9	0.6	-0.79	5.52	A	A	A	0.13
102	17.62	0.50	-7.51	5.33	A	A	A	1.21

TABLE 24. Evaluation Results for Cs-134 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
103	16.70	0.21	-12.34	4.69	A	N	W	1.99
105	18.8	1.1	-1.31	7.39	A	A	A	0.21
106	18.9	0.95	-0.79	6.76	A	A	A	0.13
107	19.12	0.58	0.37	5.44	A	A	A	0.06
108	16.4	1.8	-13.91	11.87	A	A	A	2.25
109	18.00	0.92	-5.51	6.82	A	A	A	0.89
110	17.3	0.6	-9.19	5.69	A	A	A	1.48
113	18.9	1.2	-0.79	7.79	A	A	A	0.13
114	18	1	-5.51	7.16	A	A	A	0.89
115	19.5	1.3	2.36	8.05	A	A	A	0.38
116	18.69	0.75	-1.89	6.04	A	A	A	0.31
119	19.10	0.63	0.26	5.59	A	A	A	0.04

Reported Results for Cs-137 Determination in Sample 5

TABLE 25. Target values

Parameter	Value
Target Value, Bq/kg	26.02
UNC, Bq/kg	1.17
MARB, %	25

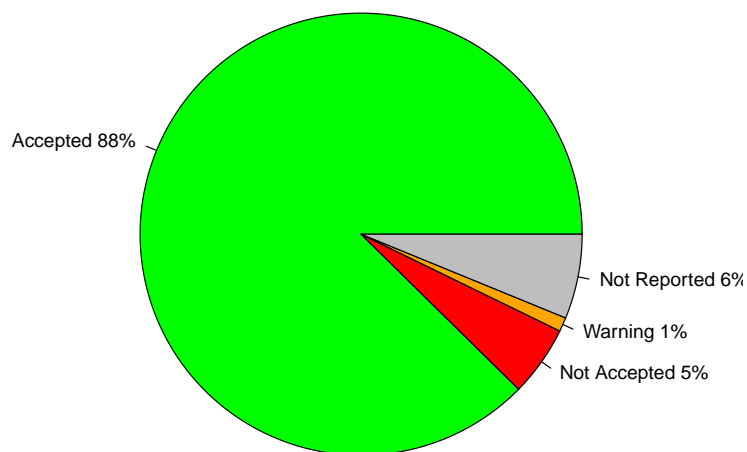


FIGURE 25. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

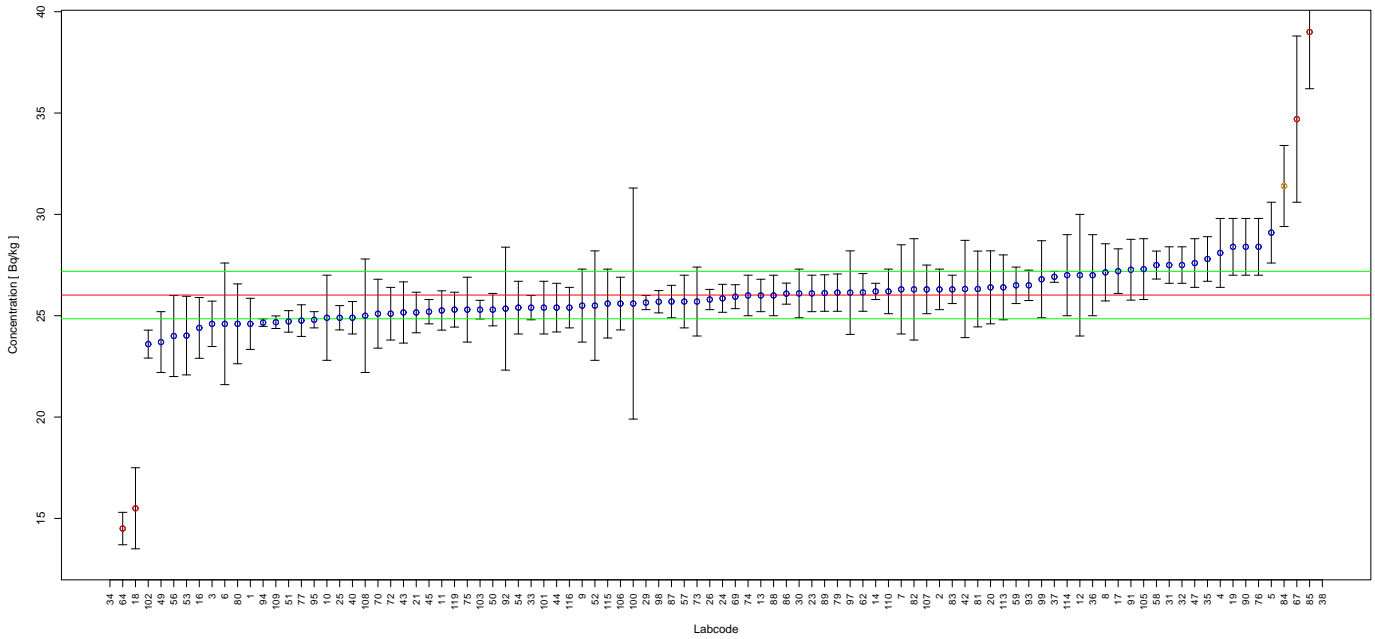


FIGURE 26. Reported results and evaluation parameters for Cs-137. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 26. Evaluation Results for Cs-137 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	24.60	1.26	-5.46	6.82	A	A	A	1.10
2	26.3	1.0	1.08	5.89	A	A	A	0.22
3	24.6	1.12	-5.46	6.40	A	A	A	1.10
4	28.1	1.7	7.99	7.54	A	A	A	1.61
5	29.1	1.5	11.84	6.84	A	A	A	2.39
6	24.6	3	-5.46	13.00	A	A	A	1.10
7	26.3	2.2	1.08	9.50	A	A	A	0.22
8	27.14	1.41	4.30	6.87	A	A	A	0.87
9	25.5	1.8	-2.00	8.37	A	A	A	0.40
10	24.9	2.1	-4.30	9.56	A	A	A	0.87
11	25.26	0.97	-2.92	5.91	A	A	A	0.59
12	27	3	3.77	11.99	A	A	A	0.76
13	26.0	0.8	-0.08	5.45	A	A	A	0.02
14	26.2	0.4	0.69	4.75	A	A	A	0.14
16	24.4	1.5	-6.23	7.62	A	A	A	1.26
17	27.2	1.1	4.53	6.05	A	A	A	0.91
18	15.5	2.0	-40.43	13.66	N	N	N	8.16
19	28.4	1.4	9.15	6.67	A	A	A	1.84
20	26.4	1.8	1.46	8.17	A	A	A	0.29
21	25.16	1.00	-3.31	6.00	A	A	A	0.67
23	26.1	0.9	0.31	5.67	A	A	A	0.06
24	25.86	0.69	-0.61	5.23	A	A	A	0.12
25	24.9	0.6	-4.30	5.10	A	A	A	0.87
26	25.8	0.5	-0.85	4.90	A	A	A	0.17
29	25.65	0.35	-1.42	4.70	A	A	A	0.29
30	26.1	1.2	0.31	6.43	A	A	A	0.06
31	27.5	0.9	5.69	5.56	A	A	A	1.15
32	27.5	0.9	5.69	5.56	A	A	A	1.15
33	25.4	0.6	-2.38	5.08	A	A	A	0.48
34	6.7	0.1	-74.25	4.74	N	N	N	14.98

TABLE 26. Evaluation Results for Cs-137 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
35	27.8	1.1	6.84	5.99	A	A	A	1.38
36	27	2	3.77	8.67	A	A	A	0.76
37	26.92	0.27	3.46	4.61	A	A	A	0.70
38	71.654	2.0502	175.38	5.33	N	N	N	35.38
40	24.9	0.8	-4.30	5.53	A	A	A	0.87
42	26.32	2.40	1.15	10.17	A	A	A	0.23
43	25.16	1.51	-3.31	7.50	A	A	A	0.67
44	25.4	1.2	-2.38	6.52	A	A	A	0.48
45	25.2	0.6	-3.15	5.09	A	A	A	0.64
47	27.6	1.2	6.07	6.25	A	A	A	1.22
49	23.7	1.5	-8.92	7.76	A	A	A	1.80
50	25.3	0.8	-2.77	5.50	A	A	A	0.56
51	24.72	0.53	-5.00	4.98	A	A	A	1.01
52	25.5	2.7	-2.00	11.50	A	A	A	0.40
53	24.02	1.94	-7.69	9.24	A	A	A	1.55
54	25.4	1.3	-2.38	6.81	A	A	A	0.48
56	24	2	-7.76	9.47	A	A	A	1.57
57	25.7	1.3	-1.23	6.77	A	A	A	0.25
58	27.5	0.69	5.69	5.15	A	A	A	1.15
59	26.5	0.9	1.84	5.64	A	A	A	0.37
62	26.15	0.93	0.50	5.73	A	A	A	0.10
64	14.5	0.8	-44.27	7.12	N	N	N	8.93
67	34.7	4.1	33.36	12.64	N	N	N	6.73
69	25.94	0.59	-0.31	5.04	A	A	A	0.06
70	25.1	1.7	-3.54	8.13	A	A	A	0.71
72	25.1	1.3	-3.54	6.86	A	A	A	0.71
73	25.7	1.7	-1.23	8.00	A	A	A	0.25
74	26.0	1.0	-0.08	5.92	A	A	A	0.02
75	25.3	1.6	-2.77	7.76	A	A	A	0.56
76	28.4	1.4	9.15	6.67	A	A	A	1.84
77	24.76	0.78	-4.84	5.49	A	A	A	0.98
79	26.14	0.92	0.46	5.71	A	A	A	0.09
80	24.6	1.97	-5.46	9.18	A	A	A	1.10
81	26.32	1.87	1.15	8.41	A	A	A	0.23
82	26.3	2.5	1.08	10.52	A	A	A	0.22
83	26.3	0.7	1.08	5.23	A	A	A	0.22
84	31.4	2.0	20.68	7.80	A	N	W	4.17
85	39.0	2.8	49.88	8.47	N	N	N	10.06
86	26.09	0.52	0.27	4.92	A	A	A	0.05
87	25.7	0.8	-1.23	5.47	A	A	A	0.25
88	26.0	1.0	-0.08	5.92	A	A	A	0.02
89	26.12	0.9	0.38	5.66	A	A	A	0.08
90	28.4	1.4	9.15	6.67	A	A	A	1.84
91	27.27	1.50	4.80	7.10	A	A	A	0.97
92	25.35	3.033	-2.57	12.78	A	A	A	0.52
93	26.5	0.75	1.84	5.31	A	A	A	0.37
94	24.66	0.185	-5.23	4.56	A	A	A	1.05
95	24.8	0.4	-4.69	4.78	A	A	A	0.95
97	26.14	2.06	0.46	9.07	A	A	A	0.09
98	25.69	0.55	-1.27	4.98	A	A	A	0.26
99	26.8	1.9	3.00	8.40	A	A	A	0.60
100	25.6	5.7	-1.61	22.72	A	A	A	0.33
101	25.4	1.3	-2.38	6.81	A	A	A	0.48
102	23.60	0.69	-9.30	5.36	A	A	A	1.88

TABLE 26. Evaluation Results for Cs-137 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
103	25.30	0.46	-2.77	4.85	A	A	A	0.56
105	27.3	1.5	4.92	7.10	A	A	A	0.99
106	25.6	1.3	-1.61	6.78	A	A	A	0.33
107	26.3	1.2	1.08	6.41	A	A	A	0.22
108	25	2.8	-3.92	12.07	A	A	A	0.79
109	24.68	0.31	-5.15	4.67	A	A	A	1.04
110	26.2	1.1	0.69	6.15	A	A	A	0.14
113	26.4	1.6	1.46	7.55	A	A	A	0.29
114	27	2	3.77	8.67	A	A	A	0.76
115	25.6	1.7	-1.61	8.02	A	A	A	0.33
116	25.4	1.0	-2.38	5.98	A	A	A	0.48
119	25.30	0.86	-2.77	5.64	A	A	A	0.56

Reported Results for Cs-137 Determination in Sample 7

TABLE 27. Target values

Parameter	Value
Target Value, Bq/sample	11.2
UNC, Bq/sample	0.6
MARB, %	20

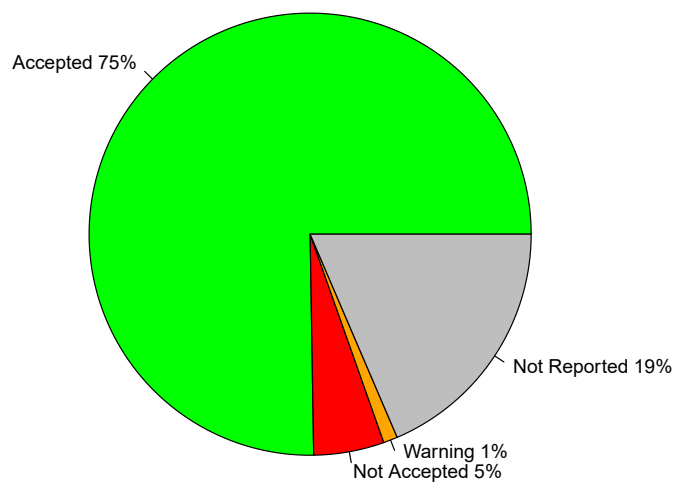


FIGURE 27. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

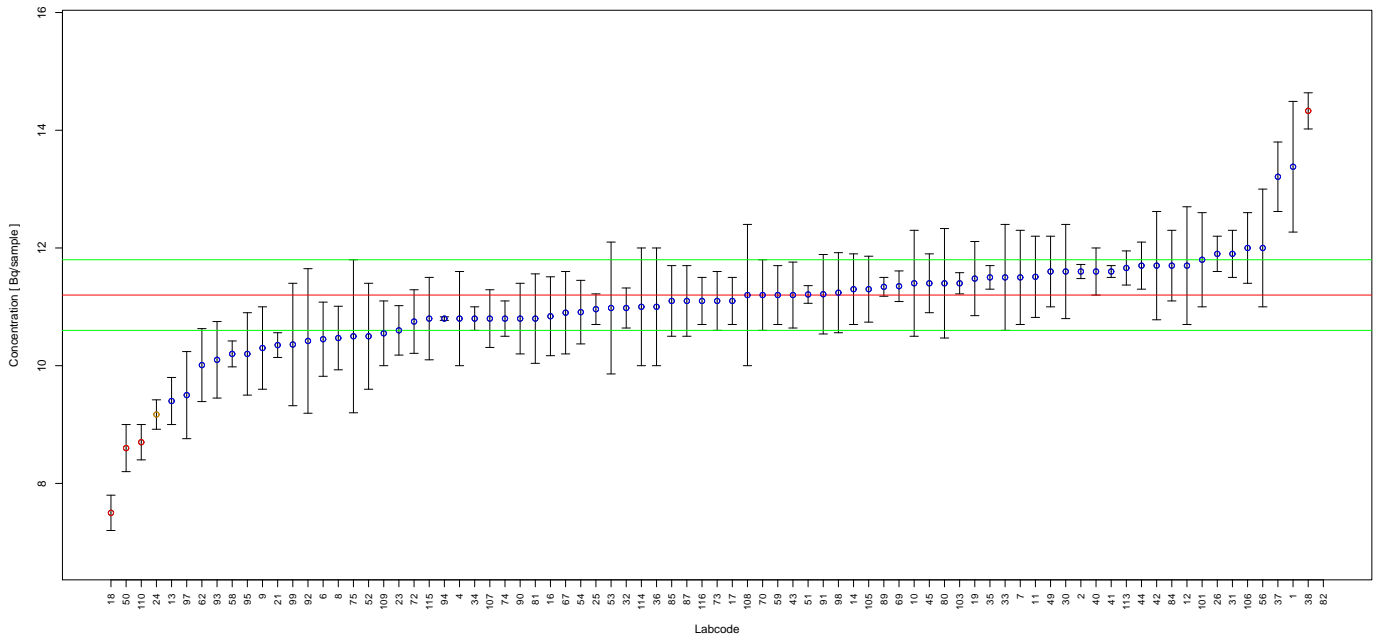


FIGURE 28. Reported results and evaluation parameters for Cs-137. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 28. Evaluation Results for Cs-137 in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
1	13.38	1.11	19.46	9.88	A	A	A	2.76
2	11.6	0.12	3.57	5.46	A	A	A	0.51
4	10.8	0.8	-3.57	9.14	A	A	A	0.51
6	10.45	0.63	-6.70	8.07	A	A	A	0.95
7	11.5	0.8	2.68	8.78	A	A	A	0.38
8	10.47	0.54	-6.52	7.44	A	A	A	0.92
9	10.30	0.70	-8.04	8.65	A	A	A	1.14
10	11.4	0.9	1.79	9.54	A	A	A	0.25
11	11.51	0.69	2.77	8.04	A	A	A	0.39
12	11.7	1	4.46	10.09	A	A	A	0.63
13	9.4	0.4	-16.07	6.84	A	A	A	2.28
14	11.3	0.6	0.89	7.54	A	A	A	0.13
16	10.84	0.67	-3.21	8.18	A	A	A	0.46
17	11.1	0.4	-0.89	6.46	A	A	A	0.13
18	7.5	0.3	-33.04	6.69	N	N	N	4.68
19	11.48	0.63	2.50	7.67	A	A	A	0.35
21	10.35	0.21	-7.59	5.73	A	A	A	1.08
23	10.6	0.42	-5.36	6.66	A	A	A	0.76
24	9.17	0.25	-18.12	6.01	A	N	W	2.57
25	10.96	0.26	-2.14	5.86	A	A	A	0.30
26	11.9	0.3	6.25	5.92	A	A	A	0.89
30	11.6	0.8	3.57	8.73	A	A	A	0.51
31	11.9	0.4	6.25	6.32	A	A	A	0.89
32	10.98	0.34	-1.96	6.19	A	A	A	0.28
33	11.5	0.9	2.68	9.48	A	A	A	0.38
34	10.8	0.2	-3.57	5.67	A	A	A	0.51
35	11.5	0.2	2.68	5.63	A	A	A	0.38
36	11	1	-1.79	10.55	A	A	A	0.25
37	13.21	0.59	17.95	6.97	A	A	A	2.54
38	14.329	0.30723	27.94	5.77	N	N	N	3.96

TABLE 28. Evaluation Results for Cs-137 in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
40	11.6	0.4	3.57	6.37	A	A	A	0.51
41	11.6	0.1	3.57	5.43	A	A	A	0.51
42	11.70	0.92	4.46	9.51	A	A	A	0.63
43	11.20	0.56	0.00	7.33	A	A	A	0.00
44	11.7	0.4	4.46	6.36	A	A	A	0.63
45	11.4	0.5	1.79	6.92	A	A	A	0.25
49	11.6	0.6	3.57	7.45	A	A	A	0.51
50	8.6	0.4	-23.21	7.09	N	N	N	3.29
51	11.21	0.15	0.09	5.52	A	A	A	0.01
52	10.5	0.9	-6.25	10.11	A	A	A	0.89
53	10.98	1.12	-1.96	11.52	A	A	A	0.28
54	10.91	0.54	-2.59	7.29	A	A	A	0.37
56	12	1	7.14	9.91	A	A	A	1.01
58	10.2	0.22	-8.93	5.78	A	A	A	1.27
59	11.2	0.5	0.00	6.97	A	A	A	0.00
62	10.01	0.62	-10.62	8.19	A	A	A	1.51
67	10.9	0.7	-2.68	8.36	A	A	A	0.38
69	11.35	0.26	1.34	5.83	A	A	A	0.19
70	11.2	0.6	0.00	7.58	A	A	A	0.00
72	10.75	0.54	-4.02	7.34	A	A	A	0.57
73	11.1	0.5	-0.89	7.00	A	A	A	0.13
74	10.8	0.3	-3.57	6.03	A	A	A	0.51
75	10.5	1.3	-6.25	13.49	A	A	A	0.89
80	11.4	0.93	1.79	9.76	A	A	A	0.25
81	10.80	0.76	-3.57	8.84	A	A	A	0.51
82	20.8	1.6	85.71	9.37	N	N	N	12.15
84	11.7	0.6	4.46	7.42	A	A	A	0.63
85	11.1	0.6	-0.89	7.61	A	A	A	0.13
87	11.1	0.6	-0.89	7.61	A	A	A	0.13
89	11.34	0.16	1.25	5.54	A	A	A	0.18
90	10.8	0.6	-3.57	7.72	A	A	A	0.51
91	11.214	0.675	0.13	8.06	A	A	A	0.02
92	10.42	1.228	-6.96	12.95	A	A	A	0.99
93	10.1	0.65	-9.82	8.37	A	A	A	1.39
94	10.8	0.03	-3.57	5.36	A	A	A	0.51
95	10.2	0.7	-8.93	8.71	A	A	A	1.27
97	9.50	0.74	-15.18	9.45	A	A	A	2.15
98	11.24	0.68	0.36	8.08	A	A	A	0.05
99	10.36	1.04	-7.50	11.38	A	A	A	1.06
101	11.8	0.8	5.36	8.64	A	A	A	0.76
103	11.40	0.18	1.79	5.58	A	A	A	0.25
105	11.3	0.56	0.89	7.30	A	A	A	0.13
106	12.0	0.6	7.14	7.33	A	A	A	1.01
107	10.80	0.49	-3.57	7.02	A	A	A	0.51
108	11.2	1.2	0.00	11.98	A	A	A	0.00
109	10.55	0.55	-5.80	7.48	A	A	A	0.82
110	8.7	0.3	-22.32	6.37	N	N	N	3.16
113	11.66	0.29	4.11	5.91	A	A	A	0.58
114	11	1	-1.79	10.55	A	A	A	0.25
115	10.8	0.7	-3.57	8.41	A	A	A	0.51
116	11.1	0.4	-0.89	6.46	A	A	A	0.13

Reported Results for Pu-239 Determination in Sample 7

TABLE 29. Target values

Parameter	Value
Target Value, Bq/sample	8.47
UNC, Bq/sample	0.5
MARB, %	40

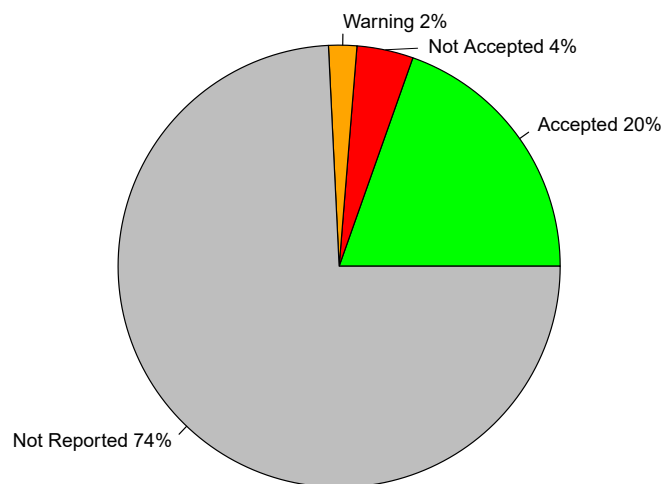


FIGURE 29. Percentage of Accepted vs. Warnings vs. Not Accepted vs. Not Reported results

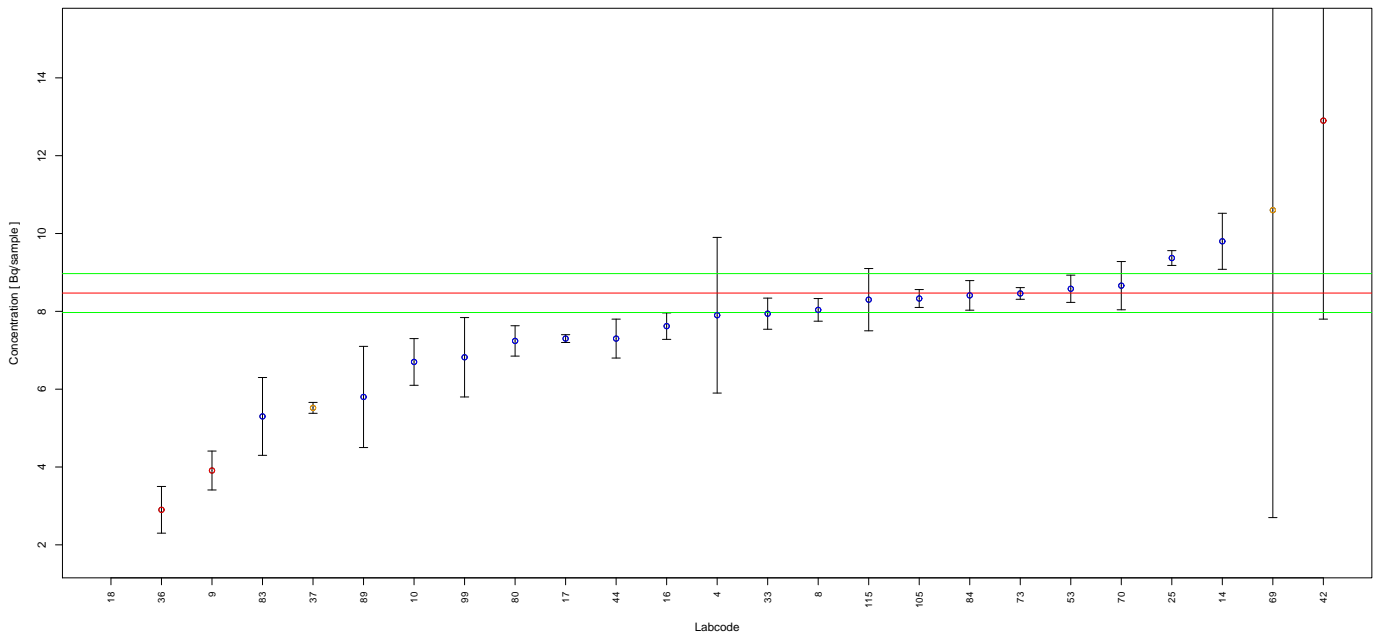


FIGURE 30. Reported results and evaluation parameters for Pu-239. Blue points represent accepted scores, whereas yellow and red represent warning and not accepted scores respectively.

TABLE 30. Evaluation Results for Pu-239 in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Rel. Bias	P Test	Accuracy	Precision	Final Score	Z-Score
4	7.9	2.0	-6.73	26.00	A	A	A	0.41
8	8.038	0.291	-5.10	6.92	A	A	A	0.31
9	3.91	0.50	-53.84	14.08	N	N	N	3.28
10	6.7	0.6	-20.90	10.73	A	A	A	1.27
14	9.80	0.72	15.70	9.42	A	A	A	0.96
16	7.62	0.34	-10.04	7.40	A	A	A	0.61
17	7.3	0.1	-13.81	6.06	A	A	A	0.84
18	0.53	0.04	-93.74	9.58	N	N	N	5.71
25	9.37	0.19	10.63	6.24	A	A	A	0.65
33	7.94	0.40	-6.26	7.76	A	A	A	0.38
36	2.9	0.6	-65.76	21.52	N	N	N	4.01
37	5.52	0.14	-34.83	6.42	A	N	W	2.12
42	12.9	5.1	52.30	39.97	N	A	N	3.19
44	7.3	0.5	-13.81	9.04	A	A	A	0.84
53	8.58	0.35	1.30	7.18	A	A	A	0.08
69	10.6	7.9	25.15	74.76	A	N	W	1.53
70	8.66	0.62	2.24	9.28	A	A	A	0.14
73	8.46	0.15	-0.12	6.16	A	A	A	0.01
80	7.24	0.39	-14.52	7.99	A	A	A	0.88
83	5.3	1	-37.43	19.77	A	A	A	2.28
84	8.41	0.38	-0.71	7.43	A	A	A	0.04
89	5.8	1.3	-31.52	23.18	A	A	A	1.92
99	6.82	1.02	-19.48	16.08	A	A	A	1.19
105	8.33	0.23	-1.65	6.52	A	A	A	0.10
115	8.3	0.8	-2.01	11.30	A	A	A	0.12

4 Intercomparison Parameters

Reported Results for Gross Alpha Determination in Sample 1

TABLE 31. Target values

Parameter	Value
Robust Mean, Bq/kg	105
Robust SD, Bq/kg	26
MARB, %	50

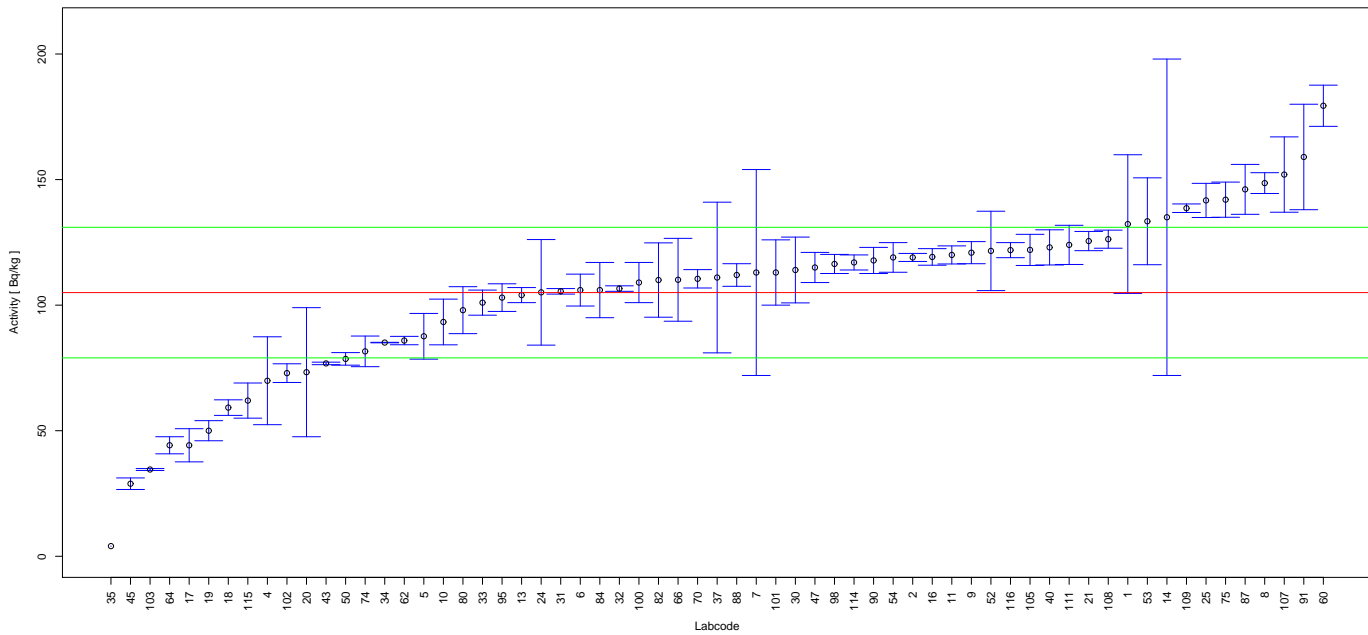


FIGURE 31. Reported results and evaluation parameters for Gross Alpha in Sample 1.

TABLE 32. IC Evaluation Results for Gross Alpha in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	132.28	27.61	1.05	A
2	119.0	1.6	0.54	A
4	69.9	17.5	1.35	A
5	87.6	9.1	0.67	A
6	106	6.35	0.04	A
7	113	41	0.31	A
8	148.6	4.142	1.68	A
9	120.9	4.4	0.61	A
10	93.3	9.1	0.45	A
11	120	3.6	0.58	A
13	104	3	0.04	A
14	135	63	1.15	A
16	119.2	3.3	0.55	A
17	44.2	6.6	2.34	W
18	59.2	3.1	1.76	A
19	50	4	2.12	W
20	73.3	25.7	1.22	A
21	125.52	3.83	0.79	A
24	105.10	21.02	0.00	A
25	141.7	6.80	1.41	A

TABLE 32. IC Evaluation Results for Gross Alpha in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
30	114.0	13.1	0.35	A
31	105.5	1.1	0.02	A
32	106.6	1.1	0.06	A
33	101	5	0.15	A
34	85.1	0.1	0.77	A
35	4.05	0.02	3.88	N
37	111	30	0.23	A
40	123	7	0.69	A
43	76.8	0.5	1.08	A
45	28.9	2.3	2.93	W
47	115	6	0.38	A
50	78.6	2.5	1.02	A
52	121.6	15.8	0.64	A
53	133.4	17.3	1.09	A
54	119.0	5.9	0.54	A
60	179.4	8.2	2.86	W
62	85.90	1.67	0.73	A
64	44.2	3.4	2.34	W
66	110.1	16.5	0.20	A
70	110.49	3.66	0.21	A
74	81.6	6.1	0.90	A
75	142	7	1.42	A
80	98.0	9.35	0.27	A
82	110.0	14.8	0.19	A
84	106	11	0.04	A
87	146.104	9.935	1.58	A
88	112.0	4.5	0.27	A
90	117.8	5.2	0.49	A
91	159	21	2.08	W
95	103.0	5.5	0.08	A
98	116.4	3.8	0.44	A
100	109	8	0.15	A
101	113	13	0.31	A
102	72.93	3.72	1.23	A
103	34.55	0.38	2.71	W
105	122	6.2	0.65	A
107	152	15	1.81	A
108	126.27	3.6	0.82	A
109	138.6	1.7	1.29	A
111	124	7.8	0.73	A
114	117	3	0.46	A
115	62.0	7.0	1.65	A
116	121.9	3	0.65	A

Reported Results for Gross Beta Determination in Sample 1

TABLE 33. Target values

Parameter	Value
Robust Mean, Bq/kg	159
Robust SD, Bq/kg	45
MARB, %	55

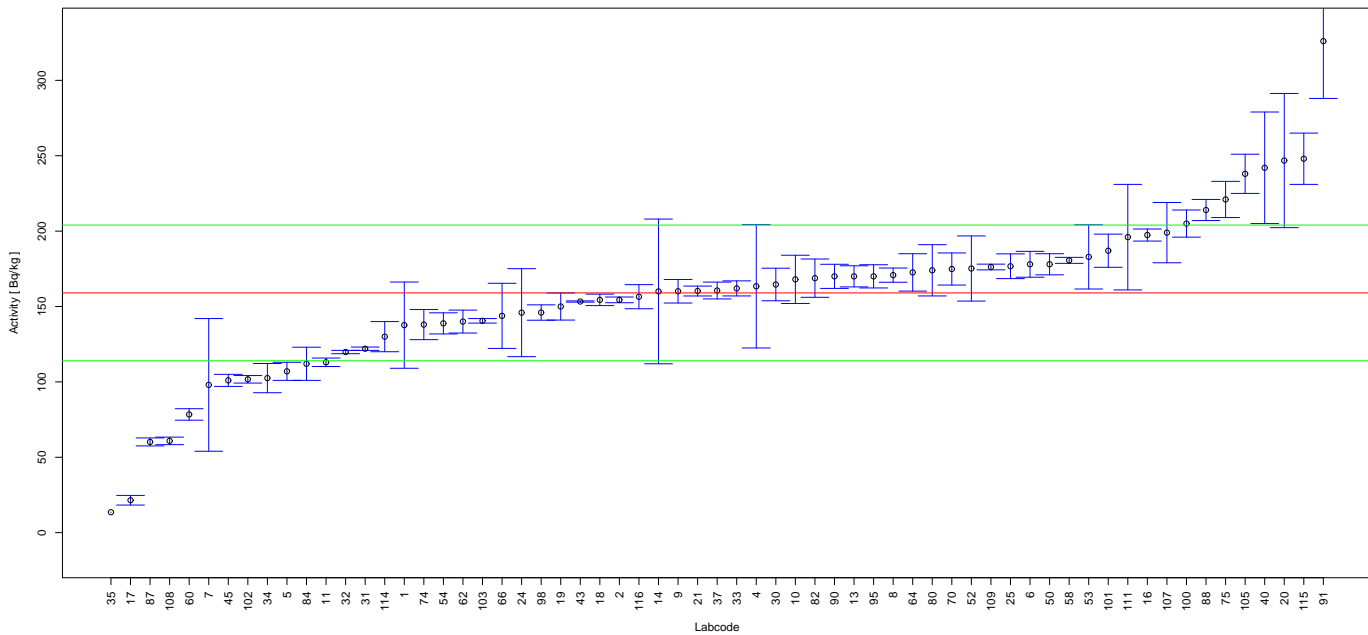


FIGURE 32. Reported results and evaluation parameters for Gross Beta in Sample 1.

TABLE 34. IC Evaluation Results for Gross Beta in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	137.63	28.60	0.47	A
2	154.4	1.9	0.10	A
4	163.4	40.9	0.10	A
5	107	6	1.16	A
6	178	8.58	0.42	A
7	98	44	1.36	A
8	170.8	4.713	0.26	A
9	160.1	7.8	0.02	A
10	168	16	0.20	A
11	113	2.8	1.02	A
13	170	7	0.24	A
14	160	48	0.02	A
16	197.4	4.0	0.85	A
17	21.5	3.2	3.06	N
18	154.4	3.8	0.10	A
19	150	9	0.20	A
20	246.8	44.5	1.95	A
21	160.26	3.28	0.03	A
24	145.91	29.18	0.29	A
25	176.7	8.21	0.39	A
30	164.6	10.8	0.12	A

TABLE 34. IC Evaluation Results for Gross Beta in Sample 1, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
31	122.0	1.1	0.82	A
32	119.8	1.1	0.87	A
33	162	5	0.07	A
34	102.5	9.7	1.26	A
35	13.56	0.04	3.23	N
37	160.60	5.58	0.04	A
40	242	37	1.84	A
43	153.3	0.4	0.13	A
45	101	4	1.29	A
50	178	7	0.42	A
52	175.2	21.6	0.36	A
53	182.9	21.3	0.53	A
54	138.8	7.0	0.45	A
58	180.6	1.99	0.48	A
60	78.4	3.8	1.79	A
62	140.0	7.6	0.42	A
64	172.6	12.4	0.30	A
66	143.8	21.6	0.34	A
70	174.87	10.65	0.35	A
74	138	10	0.47	A
75	221	12	1.38	A
80	174	17.0	0.33	A
82	168.8	12.7	0.22	A
84	112	11	1.04	A
87	60.172	2.648	2.20	W
88	214.0	7.0	1.22	A
90	170	8	0.24	A
91	326	38	3.71	N
95	170.0	7.7	0.24	A
98	146.0	5.1	0.29	A
100	205	9	1.02	A
101	187	11	0.62	A
102	101.71	2.49	1.27	A
103	140.5	1.5	0.41	A
105	238	13	1.76	A
107	199	20	0.89	A
108	60.86	2.5	2.18	W
109	176.2	1.9	0.38	A
111	196	35	0.82	A
114	130	10	0.64	A
115	248.0	17.0	1.98	A
116	156.5	8	0.06	A

Reported Results for Gross Alpha Determination in Sample 2

TABLE 35. Target values

Parameter	Value
Robust Mean, Bq/kg	97
Robust SD, Bq/kg	28
MARB, %	55

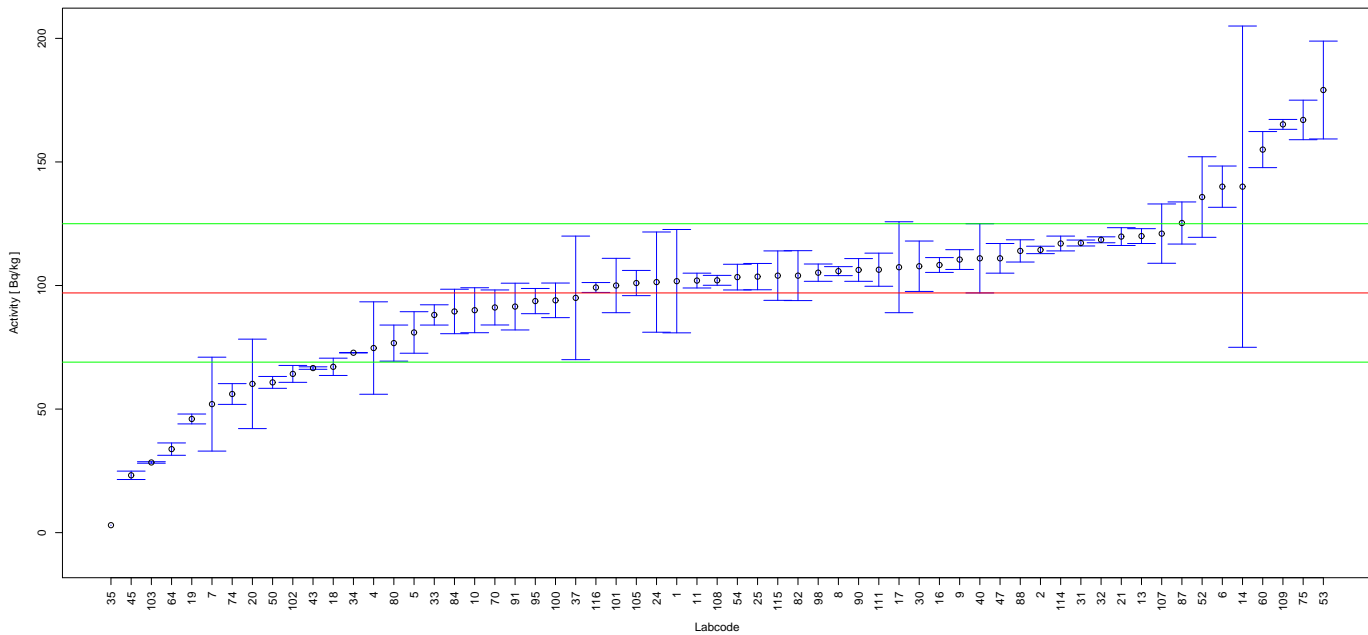


FIGURE 33. Reported results and evaluation parameters for Gross Alpha in Sample 2.

TABLE 36. IC Evaluation Results for Gross Alpha in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	101.76	20.91	0.17	A
2	114.4	1.5	0.62	A
4	74.7	18.7	0.80	A
5	81.0	8.4	0.57	A
6	140	8.35	1.54	A
7	52	19	1.61	A
8	105.82	1.82	0.31	A
9	110.5	4.0	0.48	A
10	90.0	9.1	0.25	A
11	102	3.0	0.18	A
13	120	3	0.82	A
14	140	65	1.54	A
16	108.3	3.0	0.40	A
17	107.4	18.4	0.37	A
18	67.1	3.5	1.07	A
19	46	2	1.82	A
20	60.2	18.1	1.31	A
21	119.8	3.6	0.81	A
24	101.38	20.28	0.16	A
25	103.6	5.32	0.24	A
30	107.8	10.2	0.39	A

TABLE 36. IC Evaluation Results for Gross Alpha in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
31	117.2	1.2	0.72	A
32	118.5	1.2	0.77	A
33	88.1	4.1	0.32	A
34	72.8	0.1	0.86	A
35	3.02	0.01	3.36	N
37	95	25	0.07	A
40	111	14	0.50	A
43	66.6	0.5	1.09	A
45	23.2	1.7	2.64	W
47	111	6	0.50	A
50	60.8	2.4	1.29	A
52	135.8	16.3	1.39	A
53	179.1	19.8	2.93	W
54	103.4	5.2	0.23	A
60	155.0	7.3	2.07	W
64	33.8	2.5	2.26	W
70	91.12	7.09	0.21	A
74	56.1	4.2	1.46	A
75	167	8	2.50	W
80	76.7	7.30	0.72	A
82	104.0	10.1	0.25	A
84	89.5	9.0	0.27	A
87	125.296	8.520	1.01	A
88	114.0	4.5	0.61	A
90	106.3	4.6	0.33	A
91	91.48	9.46	0.20	A
95	93.7	5.1	0.12	A
98	105.2	3.5	0.29	A
100	94	7	0.11	A
101	100	11	0.11	A
102	64.24	3.42	1.17	A
103	28.4	0.3	2.45	W
105	101	5.1	0.14	A
107	121	12	0.86	A
108	102.10	2.00	0.18	A
109	165.2	2.0	2.44	W
111	106.4	6.7	0.34	A
114	117	3	0.71	A
115	104.0	10.0	0.25	A
116	99.2	2	0.08	A

Reported Results for Gross Beta Determination in Sample 2

TABLE 37. Target values

Parameter	Value
Robust Mean, Bq/kg	457
Robust SD, Bq/kg	112
MARB, %	50

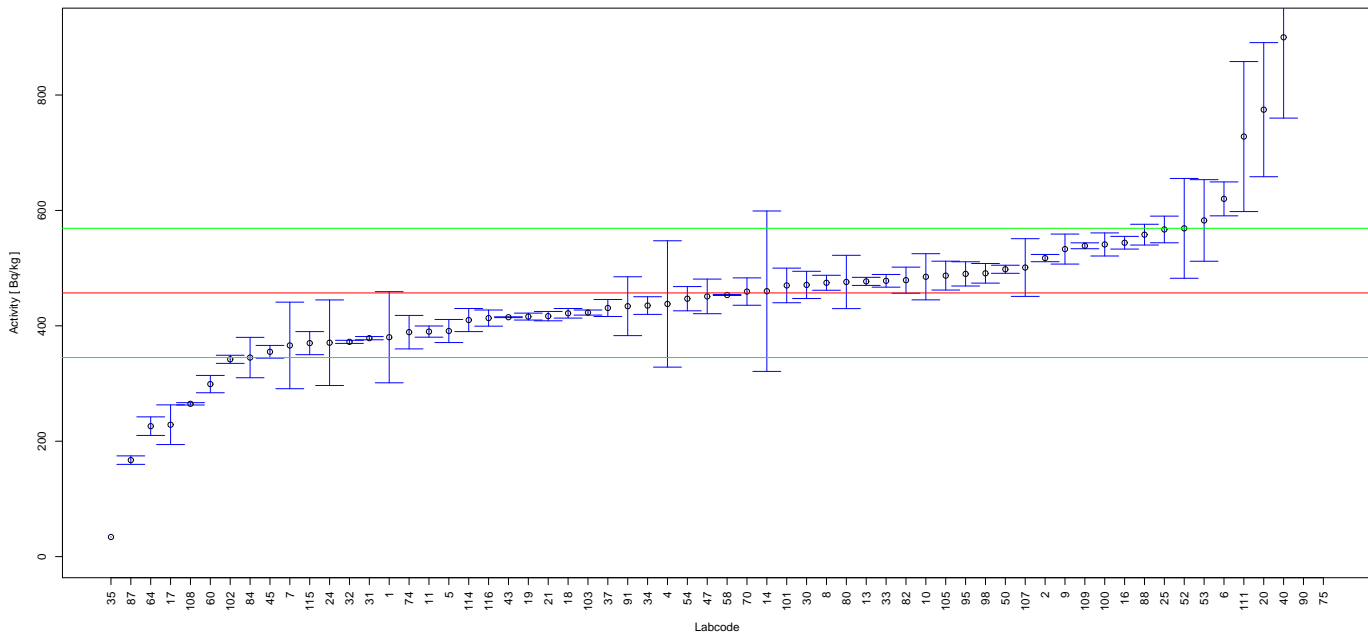


FIGURE 34. Reported results and evaluation parameters for Gross Beta in Sample 2.

TABLE 38. IC Evaluation Results for Gross Beta in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	380.21	78.98	0.69	A
2	517.4	6.3	0.54	A
4	437.9	109.5	0.17	A
5	391	20	0.59	A
6	620	29.40	1.46	A
7	366	75	0.81	A
8	474.6	12.98	0.16	A
9	533	26	0.68	A
10	485	40	0.25	A
11	390	9.7	0.60	A
13	477	7	0.18	A
14	460	139	0.03	A
16	544	11	0.78	A
17	228.6	34.4	2.04	W
18	421.7	8.3	0.32	A
19	416	6	0.37	A
20	774.6	116.2	2.84	W
21	416.77	8.1	0.36	A
24	370.72	74.14	0.77	A
25	567	23.1	0.98	A
30	470.9	23.6	0.12	A

TABLE 38. IC Evaluation Results for Gross Beta in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
31	378.6	2.8	0.70	A
32	372.2	2.7	0.76	A
33	478	11	0.19	A
34	435.1	15.3	0.20	A
35	34.0	0.12	3.78	N
37	430.90	14.73	0.23	A
40	900	140	3.96	N
43	414.9	0.7	0.38	A
45	355	11	0.91	A
47	451	30	0.05	A
50	498	7	0.37	A
52	568.9	86.5	1.00	A
53	582.6	70.7	1.12	A
54	447	21	0.09	A
58	453.4	0.80	0.03	A
60	299.0	15.0	1.41	A
64	226.1	16.1	2.06	W
70	459.36	23.71	0.02	A
74	389	29	0.61	A
75	1950	100	13.33	N
80	476	46.2	0.17	A
82	479.1	22.6	0.20	A
84	345	35	1.00	A
87	167.223	7.358	2.59	W
88	558	18	0.90	A
90	1168	60	6.35	N
91	434	51	0.21	A
95	490.0	21.0	0.29	A
98	491	17	0.30	A
100	541	20	0.75	A
101	470	30	0.12	A
102	341.94	7.03	1.03	A
103	423	4.4	0.30	A
105	487	25	0.27	A
107	501	50	0.39	A
108	264.80	2.00	1.72	A
109	538.7	5.1	0.73	A
111	728	130	2.42	W
114	410	20	0.42	A
115	370.0	20.0	0.78	A
116	413.4	14	0.39	A

Reported Results for H-3 Determination in Sample 2

TABLE 39. Target values

Parameter	Value
Robust Mean, Bq/kg	1653.6
Robust SD, Bq/kg	98.2
MARB, %	30

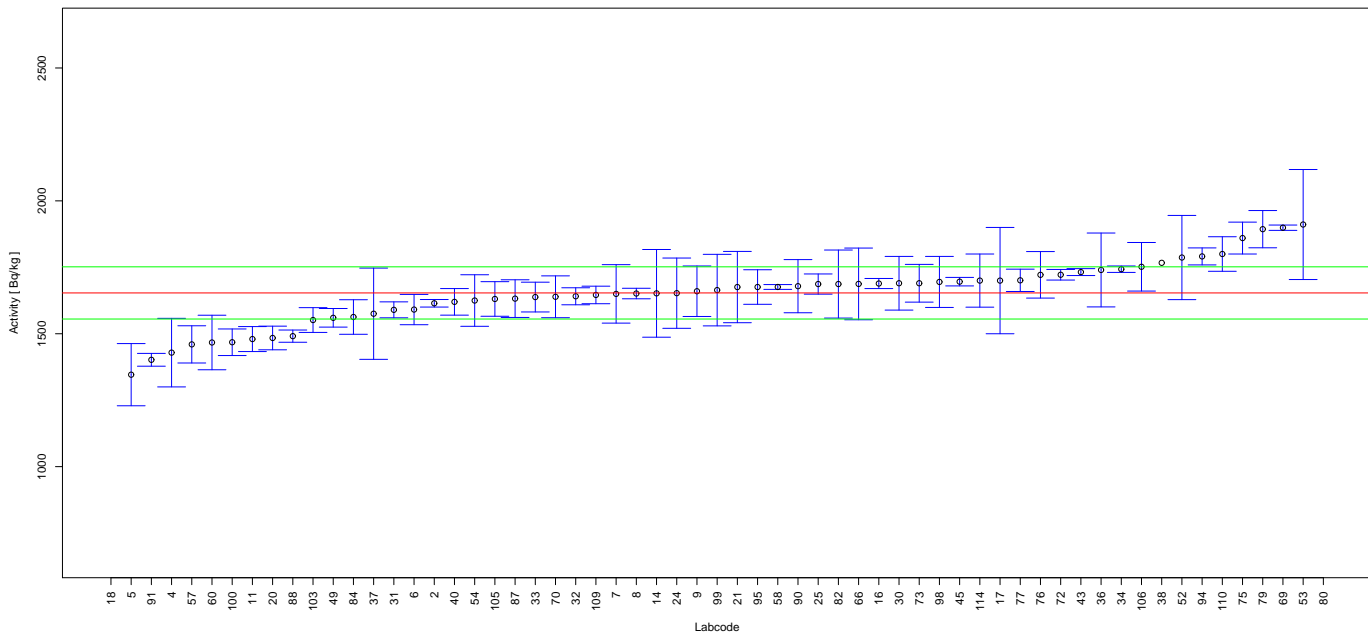


FIGURE 35. Reported results and evaluation parameters for H-3 in Sample 2.

TABLE 40. IC Evaluation Results for H-3 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
2	1614.6	14.2	0.40	A
4	1429	129	2.29	W
5	1346	117	3.13	N
6	1591	57	0.64	A
7	1650	110	0.04	A
8	1651.33	19.78	0.02	A
9	1660	95	0.07	A
11	1480	47	1.77	A
14	1652	165	0.02	A
16	1689	19	0.36	A
17	1700	200	0.47	A
18	20.6	2.1	16.63	N
20	1484.1	44.5	1.73	A
21	1675.68	134.12	0.22	A
24	1652.68	132.21	0.01	A
25	1687	38	0.34	A
30	1690	101	0.37	A
31	1590	30	0.65	A
32	1641	32	0.13	A
33	1638	56	0.16	A
34	1742.9	12.1	0.91	A

TABLE 40. IC Evaluation Results for H-3 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
36	1740	139	0.88	A
37	1575.4	171.7	0.80	A
38	1766.9		1.15	A
40	1620	50	0.34	A
43	1732	13	0.80	A
45	1696	16	0.43	A
49	1560	35	0.95	A
52	1786.8	158.4	1.36	A
53	1911	207	2.62	W
54	1625	97	0.29	A
57	1460	70	1.97	A
58	1676	9.05	0.23	A
60	1467.1	102.6	1.90	A
66	1687.5	134.9	0.35	A
69	1899	10	2.50	W
70	1639.1	78.7	0.15	A
72	1722	20	0.70	A
73	1690	71	0.37	A
75	1860	60	2.10	W
76	1721.7	87.5	0.69	A
77	1701	42	0.48	A
79	1893.51	70.06	2.44	W
80	2910	83.0	12.79	N
82	1687	128	0.34	A
84	1563	65	0.92	A
87	1632.2	70.9	0.22	A
88	1491	23	1.66	A
90	1679	100	0.26	A
91	1402	24.1	2.56	W
94	1791.00	32.00	1.40	A
95	1675.8	65	0.23	A
98	1695	96	0.42	A
99	1664.2	134.6	0.11	A
100	1468	50	1.89	A
103	1551.6	46.6	1.04	A
105	1630.9	65.1	0.23	A
106	1752	91.4	1.00	A
109	1646	33	0.08	A
110	1800	65	1.49	A
114	1700	100	0.47	A

Reported Results for Eu-152 Determination in Sample 2

TABLE 41. Target values

Parameter	Value
Robust Mean, Bq/kg	3.01
Robust SD, Bq/kg	0.37
MARB, %	30

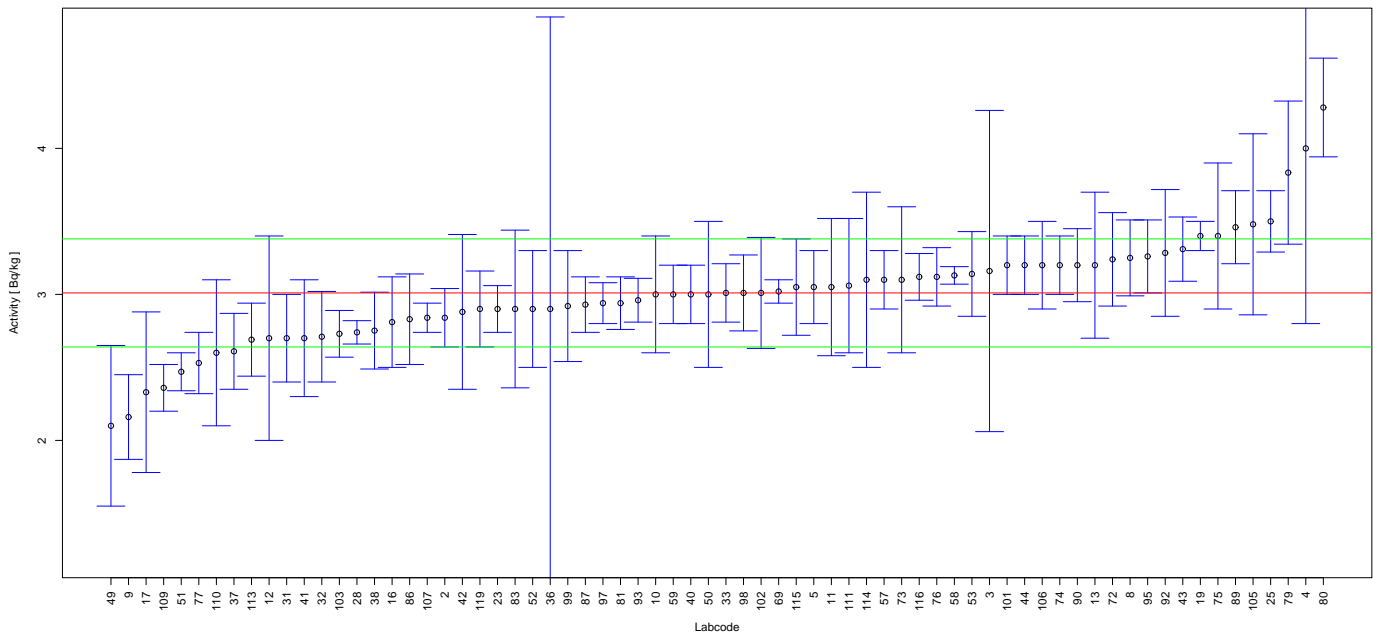


FIGURE 36. Reported results and evaluation parameters for Eu-152 in Sample 2.

TABLE 42. IC Evaluation Results for Eu-152 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
2	2.84	0.20	0.46	A
3	3.16	1.1	0.41	A
4	4.0	1.2	2.68	W
5	3.05	0.25	0.11	A
8	3.25	0.26	0.65	A
9	2.16	0.29	2.30	W
10	3.0	0.4	0.03	A
11	3.05	0.47	0.11	A
12	2.7	0.7	0.84	A
13	3.2	0.5	0.51	A
16	2.81	0.31	0.54	A
17	2.33	0.55	1.84	A
19	3.4	0.1	1.05	A
23	2.9	0.16	0.30	A
25	3.5	0.21	1.32	A
28	2.74	0.08	0.73	A
31	2.7	0.3	0.84	A
32	2.71	0.31	0.81	A
33	3.01	0.20	0.00	A
36	2.9	2	0.30	A
37	2.61	0.26	1.08	A

TABLE 42. IC Evaluation Results for Eu-152 in Sample 2, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
38	2.75198	0.263028	0.70	A
40	3.0	0.2	0.03	A
41	2.7	0.4	0.84	A
42	2.88	0.53	0.35	A
43	3.31	0.22	0.81	A
44	3.2	0.2	0.51	A
49	2.1	0.55	2.46	W
50	3.0	0.5	0.03	A
51	2.47	0.13	1.46	A
52	2.9	0.4	0.30	A
53	3.14	0.29	0.35	A
57	3.1	0.2	0.24	A
58	3.13	0.06	0.32	A
59	3.0	0.2	0.03	A
69	3.02	0.08	0.03	A
72	3.24	0.32	0.62	A
73	3.1	0.5	0.24	A
74	3.2	0.2	0.51	A
75	3.4	0.5	1.05	A
76	3.12	0.2	0.30	A
77	2.53	0.21	1.30	A
79	3.834	0.490	2.23	W
80	4.28	0.338	3.43	N
81	2.94	0.18	0.19	A
83	2.9	0.54	0.30	A
86	2.83	0.31	0.49	A
87	2.93	0.19	0.22	A
89	3.46	0.25	1.22	A
90	3.2	0.25	0.51	A
92	3.284	0.434	0.74	A
93	2.96	0.15	0.14	A
95	3.26	0.25	0.68	A
97	2.94	0.14	0.19	A
98	3.01	0.26	0.00	A
99	2.92	0.38	0.24	A
101	3.2	0.2	0.51	A
102	3.01	0.38	0.00	A
103	2.73	0.16	0.76	A
105	3.48	0.62	1.27	A
106	3.2	0.3	0.51	A
107	2.84	0.10	0.46	A
109	2.36	0.16	1.76	A
110	2.6	0.5	1.11	A
111	3.06	0.46	0.14	A
113	2.69	0.25	0.86	A
114	3.1	0.6	0.24	A
115	3.05	0.33	0.11	A
116	3.12	0.16	0.30	A
119	2.90	0.26	0.30	A

Reported Results for Gross Alpha Determination in Sample 5

TABLE 43. Target values

Parameter	Value
Robust Mean, Bq/kg	16.4
Robust SD, Bq/kg	5.4
MARB, %	60

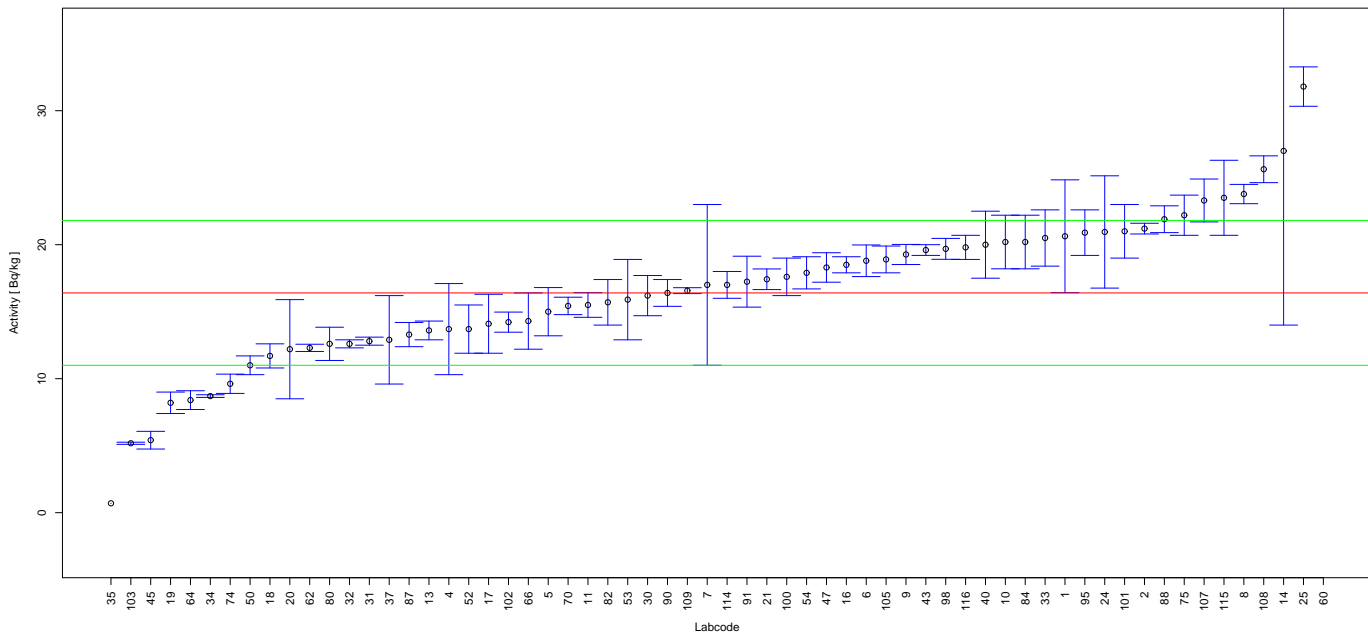


FIGURE 37. Reported results and evaluation parameters for Gross Alpha in Sample 5.

TABLE 44. IC Evaluation Results for Gross Alpha in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	20.63	4.21	0.78	A
2	21.2	0.4	0.89	A
4	13.7	3.4	0.50	A
5	15.0	1.8	0.26	A
6	18.8	1.18	0.44	A
7	17	6	0.11	A
8	23.78	0.72	1.37	A
9	19.27	0.75	0.53	A
10	20.2	2.0	0.70	A
11	15.5	0.92	0.17	A
13	13.6	0.7	0.52	A
14	27	13	1.96	A
16	18.5	0.6	0.39	A
17	14.1	2.2	0.43	A
18	11.7	0.9	0.87	A
19	8.2	0.8	1.52	A
20	12.2	3.7	0.78	A
21	17.42	0.77	0.19	A
24	20.95	4.19	0.84	A
25	31.8	1.47	2.85	W
30	16.2	1.5	0.04	A

TABLE 44. IC Evaluation Results for Gross Alpha in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
31	12.8	0.3	0.67	A
32	12.6	0.3	0.70	A
33	20.5	2.1	0.76	A
34	8.7	0.1	1.43	A
35	0.7	0.001	2.91	W
37	12.9	3.3	0.65	A
40	20	2.5	0.67	A
43	19.6	0.4	0.59	A
45	5.41	0.66	2.04	W
47	18.3	1.1	0.35	A
50	11.0	0.7	1.00	A
52	13.7	1.8	0.50	A
53	15.9	3.0	0.09	A
54	17.9	1.2	0.28	A
60	43.6	3.0	5.04	N
62	12.3	0.27	0.76	A
64	8.4	0.7	1.48	A
66	14.3	2.1	0.39	A
70	15.43	0.65	0.18	A
74	9.62	0.72	1.26	A
75	22.2	1.5	1.07	A
80	12.6	1.24	0.70	A
82	15.70	1.7	0.13	A
84	20.2	2.0	0.70	A
87	13.292	0.904	0.58	A
88	21.9	1.0	1.02	A
90	16.4	1.0	0.00	A
91	17.24	1.90	0.16	A
95	20.9	1.7	0.83	A
98	19.69	0.78	0.61	A
100	17.6	1.4	0.22	A
101	21	2	0.85	A
102	14.22	0.75	0.40	A
103	5.18	0.08	2.08	W
105	18.9	1.0	0.46	A
107	23.3	1.6	1.28	A
108	25.63	1.00	1.71	A
109	16.57	0.22	0.03	A
114	17	1	0.11	A
115	23.5	2.8	1.31	A
116	19.8	0.9	0.63	A

Reported Results for Gross Beta Determination in Sample 5

TABLE 45. Target values

Parameter	Value
Robust Mean, Bq/kg	33
Robust SD, Bq/kg	9
MARB, %	50

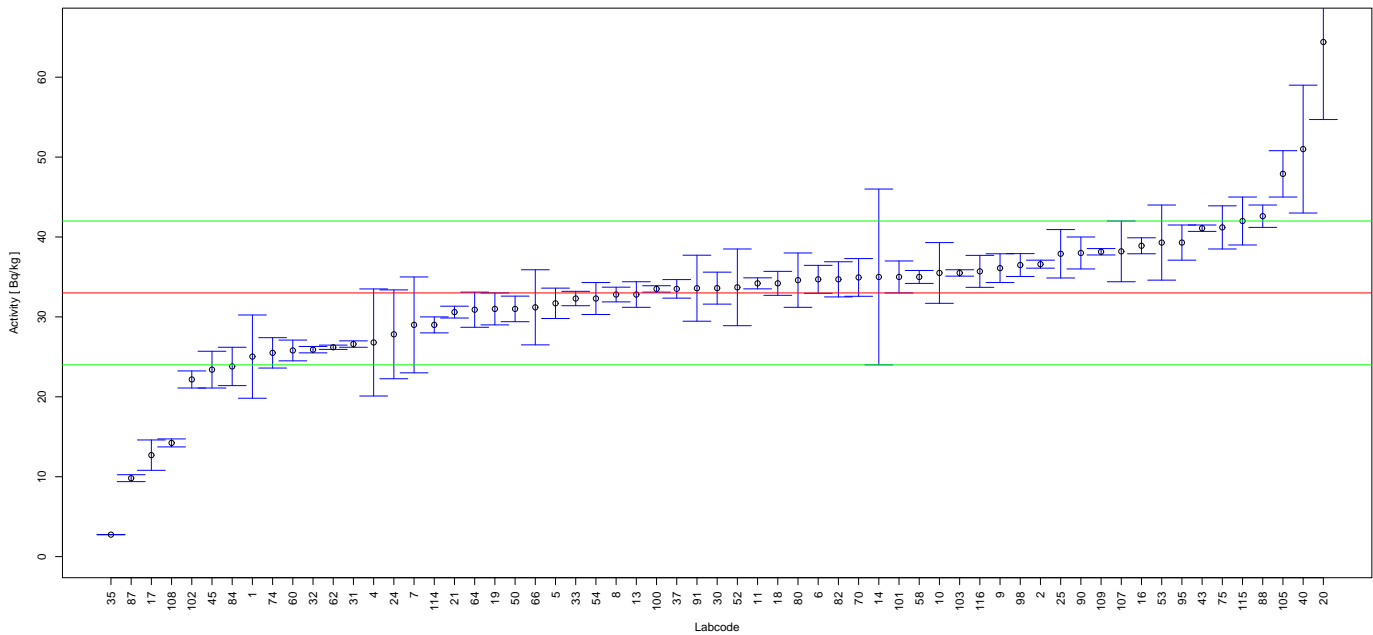


FIGURE 38. Reported results and evaluation parameters for Gross Beta in Sample 5.

TABLE 46. IC Evaluation Results for Gross Beta in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	25.03	5.21	0.89	A
2	36.6	0.5	0.40	A
4	26.8	6.7	0.69	A
5	31.7	1.9	0.14	A
6	34.7	1.75	0.19	A
7	29	6.0	0.44	A
8	32.8	0.92	0.02	A
9	36.1	1.8	0.34	A
10	35.5	3.8	0.28	A
11	34.2	0.69	0.13	A
13	32.8	1.6	0.02	A
14	35	11	0.22	A
16	38.9	1.0	0.66	A
17	12.7	1.9	2.26	W
18	34.2	1.5	0.13	A
19	31	2	0.22	A
20	64.4	9.7	3.49	N
21	30.6	0.74	0.27	A
24	27.82	5.56	0.58	A
25	37.9	3.03	0.54	A
30	33.6	2.0	0.07	A

TABLE 46. IC Evaluation Results for Gross Beta in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
31	26.6	0.4	0.71	A
32	25.9	0.4	0.79	A
33	32.3	0.9	0.08	A
35	2.75	0.02	3.36	N
37	33.51	1.16	0.06	A
40	51	8	2.00	A
43	41.1	0.4	0.90	A
45	23.4	2.3	1.07	A
50	31.0	1.6	0.22	A
52	33.7	4.8	0.08	A
53	39.3	4.7	0.70	A
54	32.3	2.0	0.08	A
58	35.0	0.81	0.22	A
60	25.8	1.3	0.80	A
62	26.2	0.27	0.76	A
64	30.9	2.2	0.23	A
66	31.2	4.7	0.20	A
70	34.94	2.36	0.22	A
74	25.5	1.9	0.83	A
75	41.2	2.7	0.91	A
80	34.6	3.40	0.18	A
82	34.7	2.2	0.19	A
84	23.8	2.4	1.02	A
87	9.817	0.432	2.58	W
88	42.6	1.4	1.07	A
90	38.0	2.0	0.56	A
91	33.59	4.13	0.07	A
95	39.3	2.2	0.70	A
98	36.49	1.43	0.39	A
100	33.5	0.4	0.06	A
101	35	2	0.22	A
102	22.17	1.07	1.20	A
103	35.5	0.4	0.28	A
105	47.9	2.9	1.66	A
107	38.2	3.8	0.58	A
108	14.23	0.5	2.09	W
109	38.15	0.40	0.57	A
114	29	1	0.44	A
115	42.0	3.0	1.00	A
116	35.7	2	0.30	A

Reported Results for Pu-239 Determination in Sample 5

TABLE 47. Target values

Parameter	Value
Robust Mean, Bq/kg	5.93
Robust SD, Bq/kg	2.27
MARB, %	25

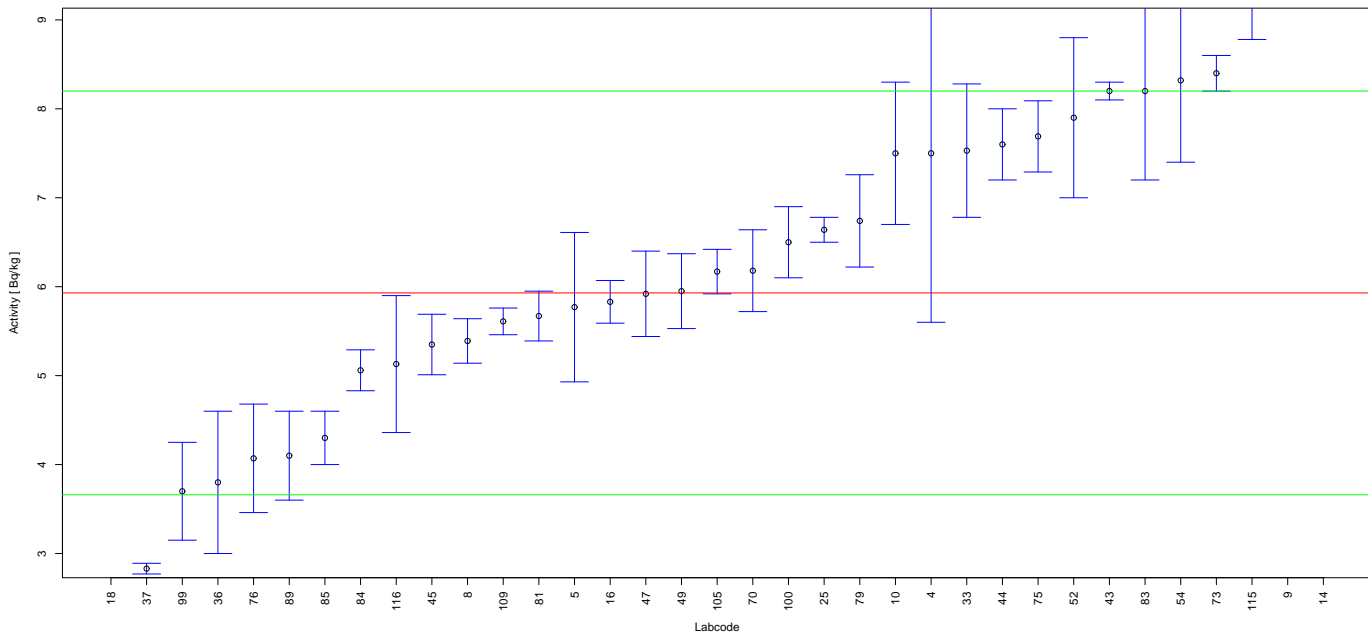


FIGURE 39. Reported results and evaluation parameters for Pu-239 in Sample 5.

TABLE 48. IC Evaluation Results for Pu-239 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
4	7.5	1.90	0.69	A
5	5.77	0.84	0.07	A
8	5.39	0.25	0.24	A
9	13.2	1.2	3.20	N
10	7.5	0.8	0.69	A
14	22.7	1.6	7.39	N
16	5.83	0.24	0.04	A
18	1.56	0.11	1.93	A
25	6.64	0.14	0.31	A
33	7.53	0.75	0.70	A
36	3.8	0.8	0.94	A
37	2.83	0.06	1.37	A
43	8.2	0.1	1.00	A
44	7.6	0.4	0.74	A
45	5.35	0.34	0.26	A
47	5.92	0.48	0.00	A
49	5.95	0.4208	0.01	A
52	7.9	0.9	0.87	A
54	8.32	0.92	1.05	A
70	6.18	0.46	0.11	A
73	8.4	0.2	1.09	A

TABLE 48. IC Evaluation Results for Pu-239 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
75	7.69	0.40	0.78	A
76	4.07	0.61	0.82	A
79	6.74	0.519	0.36	A
81	5.67	0.28	0.11	A
83	8.2	1.0	1.00	A
84	5.06	0.23	0.38	A
85	4.3	0.3	0.72	A
89	4.1	0.5	0.81	A
99	3.7	0.55	0.98	A
100	6.5	0.4	0.25	A
105	6.17	0.25	0.11	A
109	5.61	0.15	0.14	A
115	9.34	0.56	1.50	A
116	5.13	0.77	0.35	A

Reported Results for Am-241 Determination in Sample 5

TABLE 49. Target values

Parameter	Value
Robust Mean, Bq/kg	4.85
Robust SD, Bq/kg	0.57
MARB, %	30

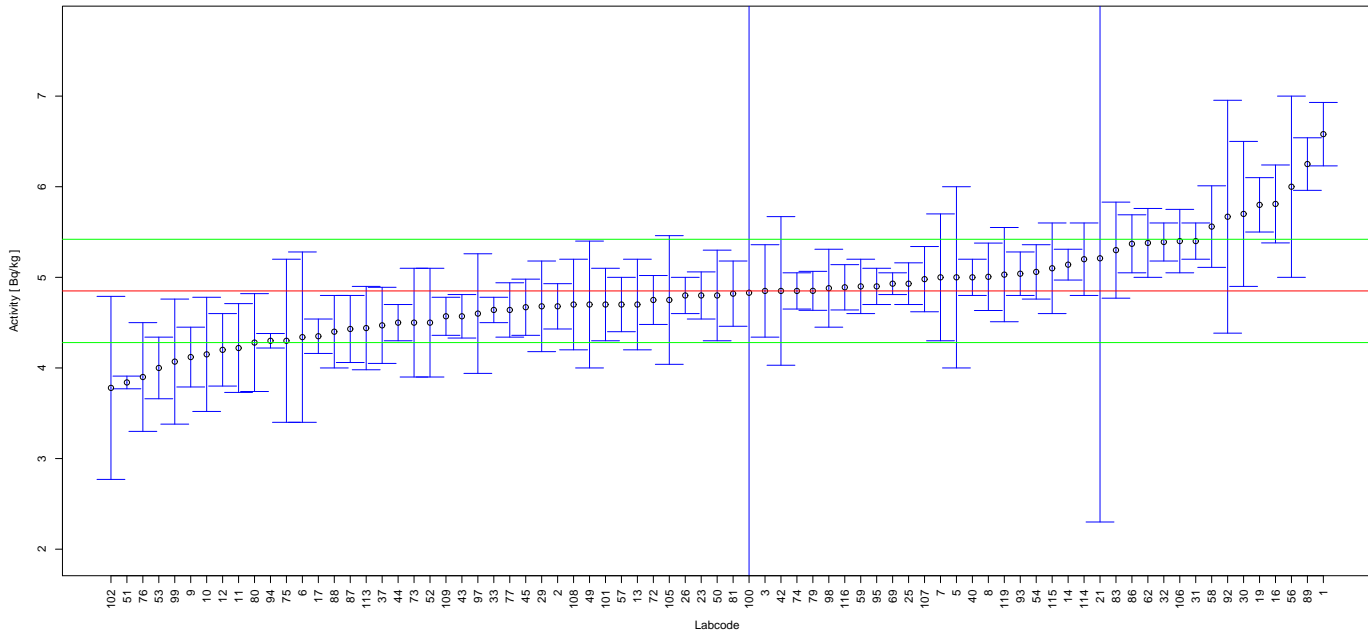


FIGURE 40. Reported results and evaluation parameters for Am-241 in Sample 5.

TABLE 50. IC Evaluation Results for Am-241 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	6.58	0.35	3.04	N
2	4.68	0.25	0.30	A
3	4.85	0.51	0.00	A
5	5	1	0.26	A
6	4.34	0.94	0.89	A
7	5.0	0.7	0.26	A
8	5.006	0.372	0.27	A
9	4.12	0.33	1.28	A
10	4.15	0.63	1.23	A
11	4.22	0.49	1.11	A
12	4.2	0.4	1.14	A
13	4.7	0.5	0.26	A
14	5.14	0.17	0.51	A
16	5.81	0.43	1.68	A
17	4.35	0.19	0.88	A
19	5.8	0.3	1.67	A
21	5.21	2.91	0.63	A
23	4.8	0.26	0.09	A
25	4.93	0.23	0.14	A
26	4.8	0.2	0.09	A
29	4.68	0.50	0.30	A

TABLE 50. IC Evaluation Results for Am-241 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
30	5.7	0.8	1.49	A
31	5.4	0.2	0.96	A
32	5.39	0.21	0.95	A
33	4.64	0.14	0.37	A
37	4.47	0.42	0.67	A
40	5.0	0.2	0.26	A
42	4.85	0.82	0.00	A
43	4.57	0.24	0.49	A
44	4.5	0.2	0.61	A
45	4.67	0.31	0.32	A
49	4.7	0.7	0.26	A
50	4.8	0.5	0.09	A
51	3.84	0.07	1.77	A
52	4.5	0.6	0.61	A
53	4.00	0.34	1.49	A
54	5.06	0.30	0.37	A
56	6	1	2.02	W
57	4.7	0.3	0.26	A
58	5.56	0.45	1.25	A
59	4.9	0.3	0.09	A
62	5.38	0.38	0.93	A
69	4.93	0.12	0.14	A
72	4.75	0.27	0.18	A
73	4.5	0.6	0.61	A
74	4.85	0.2	0.00	A
75	4.3	0.9	0.96	A
76	3.9	0.6	1.67	A
77	4.64	0.3	0.37	A
79	4.851	0.215	0.00	A
80	4.28	0.54	1.00	A
81	4.82	0.36	0.05	A
83	5.3	0.53	0.79	A
86	5.37	0.32	0.91	A
87	4.43	0.37	0.74	A
88	4.4	0.4	0.79	A
89	6.25	0.29	2.46	W
92	5.669	1.285	1.44	A
93	5.04	0.24	0.33	A
94	4.3	0.08	0.96	A
95	4.9	0.2	0.09	A
97	4.60	0.66	0.44	A
98	4.88	0.43	0.05	A
99	4.07	0.69	1.37	A
100	4.83	6.6	0.04	A
101	4.7	0.4	0.26	A
102	3.78	1.01	1.88	A
105	4.75	0.71	0.18	A
106	5.4	0.35	0.96	A
107	4.98	0.36	0.23	A
108	4.7	0.5	0.26	A
109	4.57	0.21	0.49	A
113	4.44	0.46	0.72	A
114	5.2	0.4	0.61	A
115	5.1	0.5	0.44	A

TABLE 50. IC Evaluation Results for Am-241 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
116	4.89	0.25	0.07	A
119	5.03	0.52	0.32	A

Reported Results for Cm-244 Determination in Sample 5

TABLE 51. Target values

Parameter	Value
Robust Mean, Bq/kg	7.02
Robust SD, Bq/kg	2
MARB, %	25

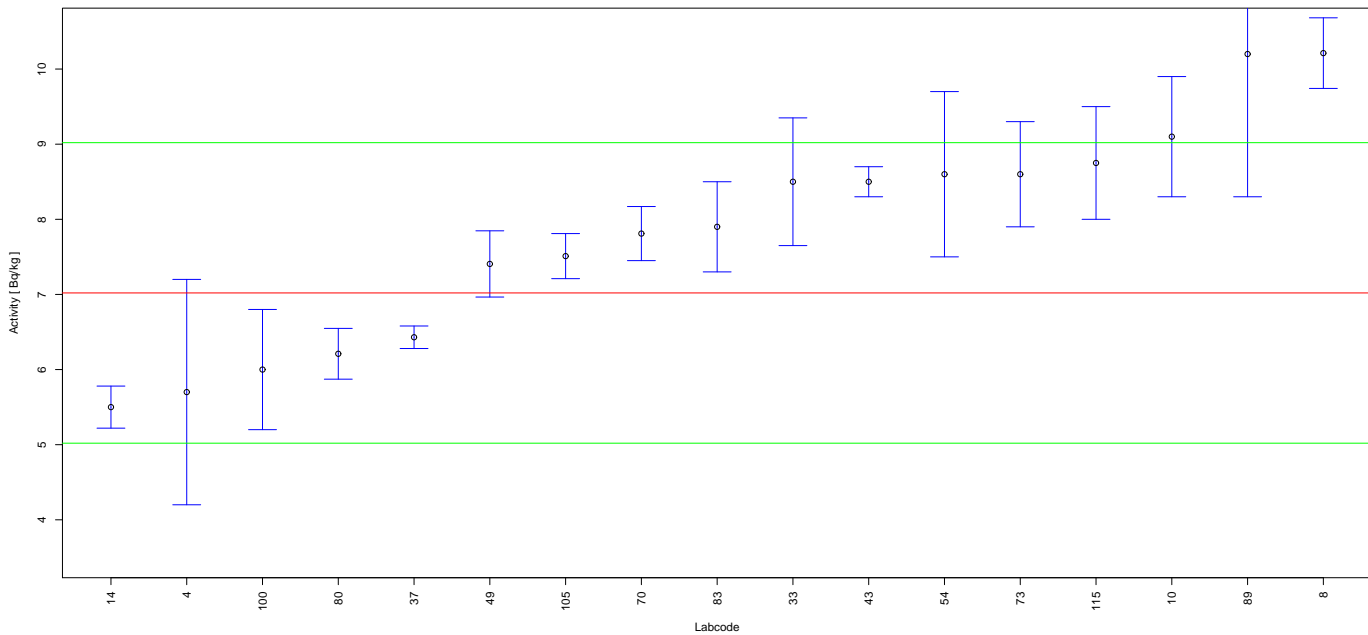


FIGURE 41. Reported results and evaluation parameters for Cm-244 in Sample 5.

TABLE 52. IC Evaluation Results for Cm-244 in Sample 5, Rep. Value and Rep. Unc. in Bq/kg

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
4	5.7	1.5	0.66	A
8	10.212	0.47	1.60	A
10	9.1	0.8	1.04	A
14	5.50	0.28	0.76	A
33	8.50	0.85	0.74	A
37	6.43	0.15	0.29	A
43	8.5	0.2	0.74	A
49	7.406	0.4408	0.19	A
54	8.6	1.1	0.79	A
70	7.81	0.36	0.40	A
73	8.6	0.7	0.79	A
80	6.210	0.338	0.40	A
83	7.9	0.6	0.44	A
89	10.2	1.9	1.59	A
100	6.0	0.8	0.51	A
105	7.51	0.300	0.25	A
115	8.75	0.75	0.87	A

Reported Results for Gross Alpha Determination in Sample 7

TABLE 53. Target values

Parameter	Value
Robust Mean, Bq/sample	7.64
Robust SD, Bq/sample	1.34
MARB, %	40

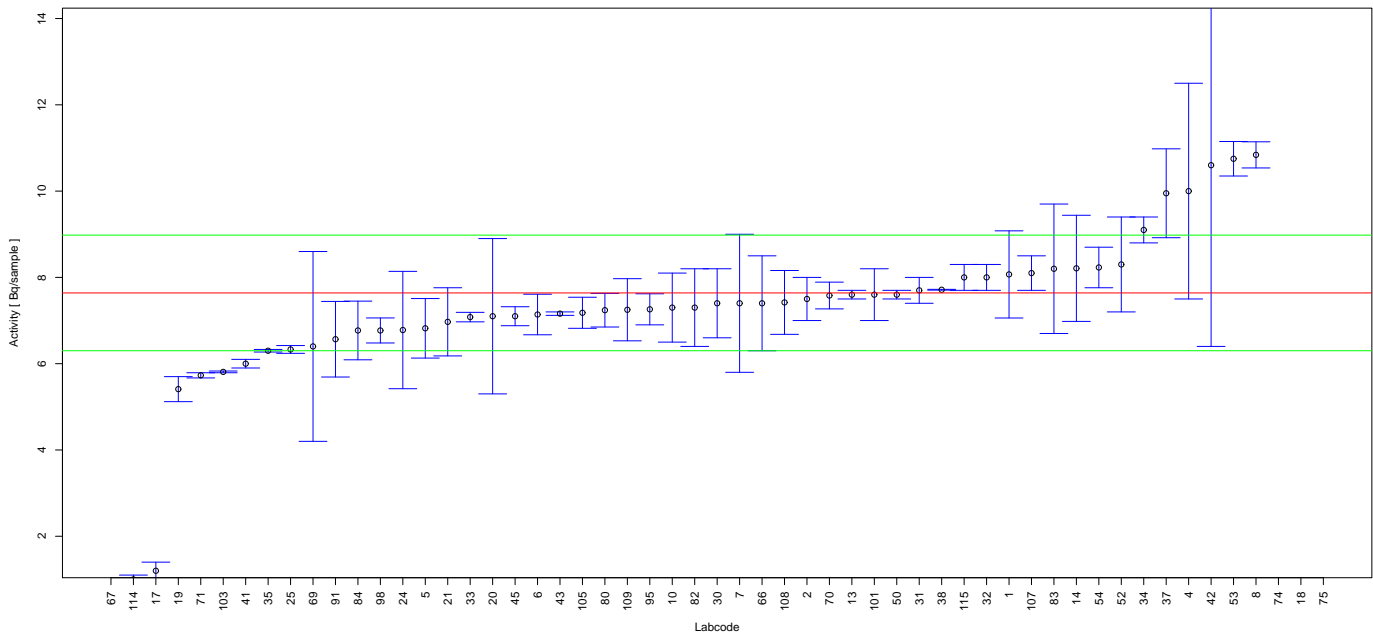


FIGURE 42. Reported results and evaluation parameters for Gross Alpha in Sample 7.

TABLE 54. IC Evaluation Results for Gross Alpha in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	8.069	1.010	0.32	A
2	7.5	0.5	0.10	A
4	10.0	2.5	1.76	A
5	6.82	0.69	0.61	A
6	7.14	0.47	0.37	A
7	7.4	1.6	0.18	A
8	10.84	0.303	2.39	W
10	7.3	0.8	0.25	A
13	7.6	0.1	0.03	A
14	8.21	1.23	0.43	A
17	1.2	0.2	4.81	N
18	41.5	2.1	25.27	N
19	5.41	0.29	1.66	A
20	7.1	1.8	0.40	A
21	6.97	0.79	0.50	A
24	6.78	1.36	0.64	A
25	6.33	0.09	0.98	A
30	7.4	0.8	0.18	A
31	7.7	0.3	0.04	A
32	8.0	0.3	0.27	A
33	7.08	0.11	0.42	A

TABLE 54. IC Evaluation Results for Gross Alpha in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
34	9.1	0.3	1.09	A
35	6.3	0.03	1.00	A
37	9.95	1.03	1.72	A
38	7.714	0.009	0.06	A
41	6.0	0.1	1.22	A
42	10.6	4.2	2.21	W
43	7.16	0.04	0.36	A
45	7.10	0.22	0.40	A
50	7.6	0.1	0.03	A
52	8.3	1.1	0.49	A
53	10.75	0.4	2.32	W
54	8.23	0.47	0.44	A
66	7.4	1.1	0.18	A
67	0.0		5.70	N
69	6.4	2.2	0.93	A
70	7.58	0.31	0.04	A
71	5.73	0.06	1.43	A
74	26.5	3.2	14.07	N
75	57.7	1.9	37.36	N
80	7.24	0.39	0.30	A
82	7.3	0.9	0.25	A
83	8.2	1.5	0.42	A
84	6.77	0.68	0.65	A
91	6.567	0.876	0.80	A
95	7.26	0.36	0.28	A
98	6.77	0.29	0.65	A
101	7.6	0.6	0.03	A
103	5.81	0.02	1.37	A
105	7.18	0.36	0.34	A
107	8.10	0.40	0.34	A
108	7.42	0.74	0.16	A
109	7.25	0.72	0.29	A
114	1.0	0.1	4.96	N
115	8.0	0.3	0.27	A

Reported Results for Gross Beta Determination in Sample 7

TABLE 55. Target values

Parameter	Value
Robust Mean, Bq/sample	10.18
Robust SD, Bq/sample	2.69
MARB, %	40

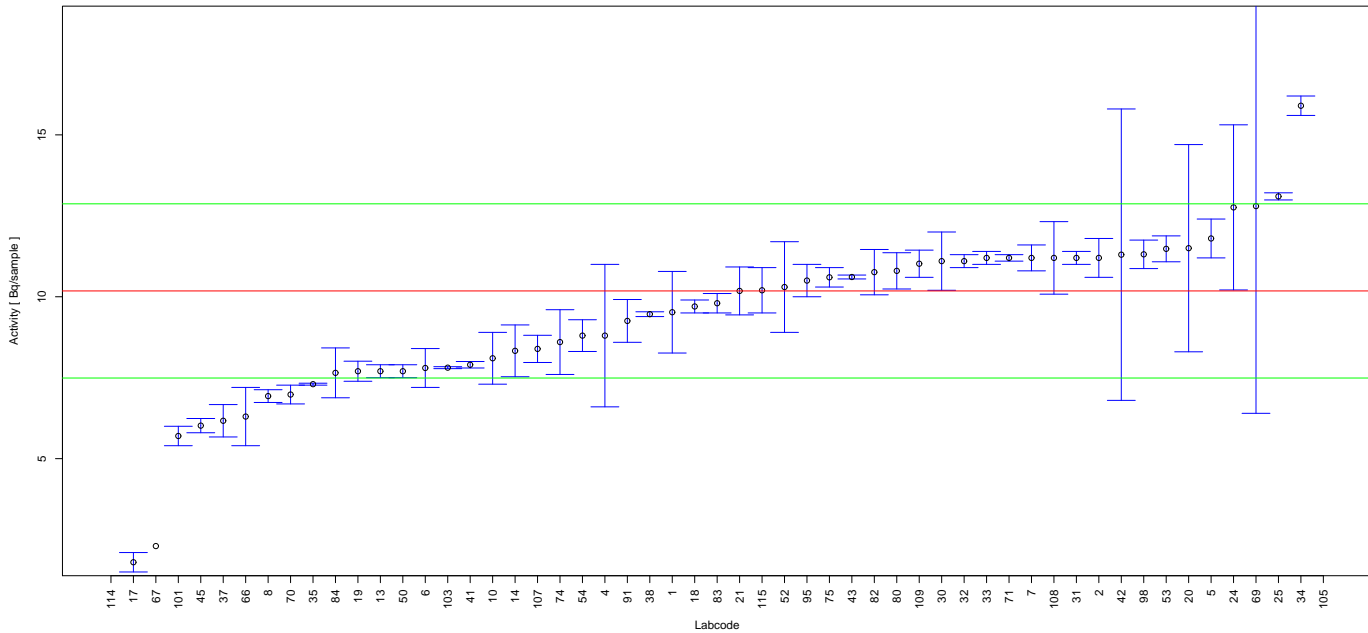


FIGURE 43. Reported results and evaluation parameters for Gross Beta in Sample 7.

TABLE 56. IC Evaluation Results for Gross Beta in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
1	9.522	1.260	0.24	A
2	11.2	0.6	0.38	A
4	8.8	2.2	0.51	A
5	11.8	0.6	0.60	A
6	7.80	0.6	0.88	A
7	11.2	0.4	0.38	A
8	6.932	0.197	1.21	A
10	8.1	0.8	0.77	A
13	7.7	0.2	0.92	A
14	8.33	0.80	0.69	A
17	1.8	0.3	3.12	N
18	9.7	0.2	0.18	A
19	7.70	0.31	0.92	A
20	11.5	3.2	0.49	A
21	10.18	0.74	0.00	A
24	12.76	2.55	0.96	A
25	13.1	0.11	1.09	A
30	11.10	0.9	0.34	A
31	11.2	0.2	0.38	A
32	11.1	0.2	0.34	A
33	11.2	0.2	0.38	A

TABLE 56. IC Evaluation Results for Gross Beta in Sample 7, Rep. Value and Rep. Unc. in Bq/sample

Labcode	Rep. Value	Rep. Unc.	Z-Score	Z-Score Evaluation
34	15.9	0.3	2.13	W
35	7.3	0.03	1.07	A
37	6.17	0.50	1.49	A
38	9.462	0.074	0.27	A
41	7.9	0.1	0.85	A
42	11.3	4.5	0.42	A
43	10.61	0.06	0.16	A
45	6.02	0.22	1.55	A
50	7.7	0.2	0.92	A
52	10.3	1.4	0.04	A
53	11.48	0.4	0.48	A
54	8.80	0.49	0.51	A
66	6.3	0.9	1.44	A
67	2.3		2.93	W
69	12.8	6.4	0.97	A
70	6.98	0.29	1.19	A
71	11.2	0.1	0.38	A
74	8.6	1.0	0.59	A
75	10.6	0.3	0.16	A
80	10.8	0.56	0.23	A
82	10.76	0.70	0.22	A
83	9.8	0.3	0.14	A
84	7.65	0.77	0.94	A
91	9.254	0.661	0.34	A
95	10.5	0.5	0.12	A
98	11.31	0.44	0.42	A
101	5.7	0.3	1.67	A
103	7.81	0.03	0.88	A
105	19.6	0.61	3.50	N
107	8.39	0.42	0.67	A
108	11.2	1.12	0.38	A
109	11.02	0.42	0.31	A
114	0.84	0.03	3.47	N
115	10.2	0.7	0.01	A

5 References

References

- [1] International Organization for Standardization (ISO). (2010). Conformity assessment - General requirements for proficiency testing, ISO/IEC 17043:2010. Geneva: Switzerland.
- [2] International Organization for Standardization (ISO). (2015). Statistical methods for use in proficiency testing by interlaboratory comparison, ISO 13528:2015. Geneva: Switzerland.
- [3] OSVATH, I., TARJAN, S., PITOIS, A., GROENING, M., OSBORN, D., IAEA's ALMERA network: Supporting the quality of environmental radioactivity measurements, Applied Radiation and Isotopes (2015) DOI: 10.1016/j.arpsido.2015.12.062

6 Contributors to drafting and review

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