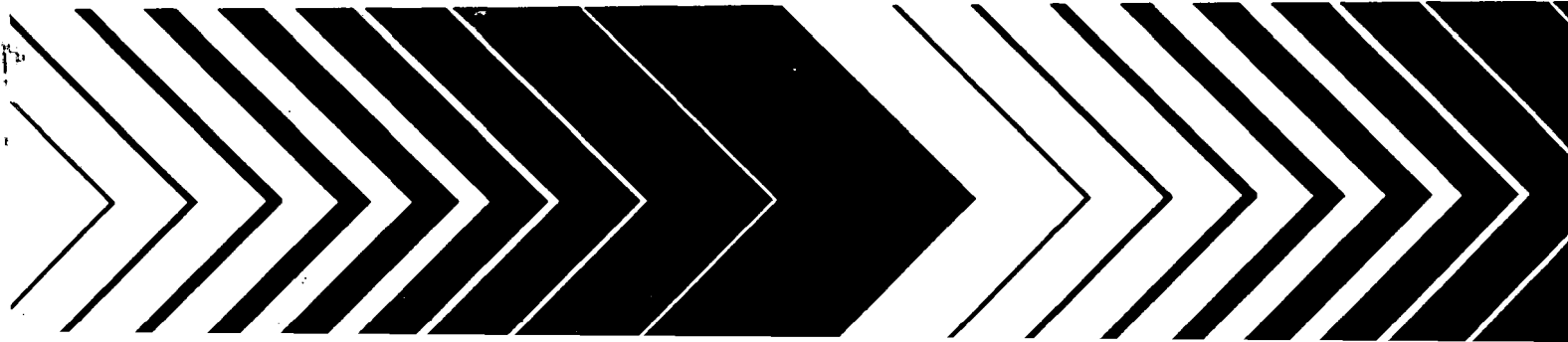


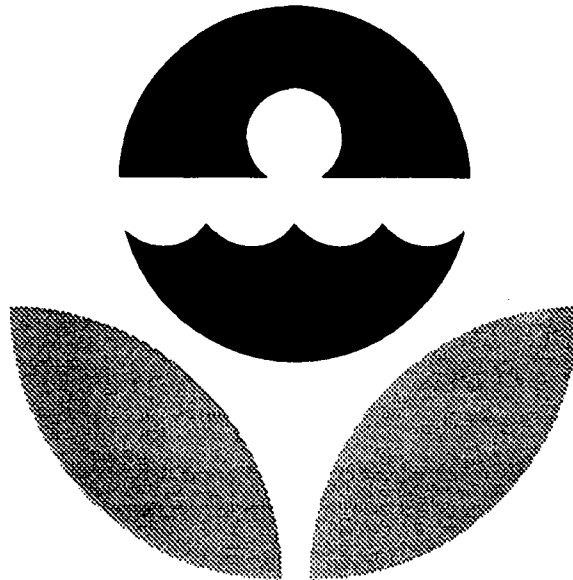


Radionuclides in Milk Intercomparison Study

A Statistical Evaluation of the September 25, 1992 Data



Radionuclides in Milk
Intercomparison Study
September 25, 1992



Environmental Protection Agency
Environmental Monitoring Systems Laboratory
Las Vegas, Nevada



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P.O. BOX 93478
LAS VEGAS, NEVADA 89193-3478
(702/798-2100)

Dear Participant,

Enclosed are the results of the Nuclear Radiation Assessment Division (EMSL-LV) Intercomparison Study for *Radionuclides in Milk; September 25, 1992*.

Please take a few minutes to review this report and the analytical data your laboratory submitted to us. If there are any apparent discrepancies, please notify us immediately.

We encourage you to make use of the computer-automated data-entry system that has been in place for some time now. As the number of participants increases, and it becomes unrealistic for us to receive results by mail or FAX, the computer system will be our only avenue for accepting data.

If you have any questions or comments, please send a message via the data-entry system or contact Frank Novielli at 702/798-2159 or Patricia Honsa at 702/798-2141.

Sincerely,

A handwritten signature in cursive script that reads "Frank Novielli".

Frank Novielli
Senior Chemist
Radioanalysis Branch

Enclosure

NOTICE

This material has been funded wholly by the U.S. Environmental Protection Agency. It has been subject to the Agency's review, and it has been approved for publication as an EPA document.

The following pages consist of separate sections for each of the nuclides in this study with four parts per section. After the first, each part is separated from the next by a new page or a thick horizontal bar. The first page of each section is a statistical summary for the nuclide and starts with a statement of the known value, the control limits, and the warning limits.

The warning limits are placed at two normalized standard deviations above and below the known value and the control limits are three normalized standard deviations above and below the known value. If you keep control charts, these values will be useful for anticipating problems with the accuracy of your analytical methods.

The coin shaped pie chart at the top of the summary page shows the fate of all the samples sent out in number and percentage terms. The pie chart starts at the top and rotates clockwise. The first sector represents those participants who submitted analytical results within both the warning and control limits. The next sector represents those who are in the warning region but not out of control. The third sector represents those who are out of control, but have passed the outlier test. The fourth sector represents those who have failed the outlier test. The last sector represents those participants who have failed to respond properly. This is the case if no analytical results were returned, or less than three determinations were reported, or if the results were received too late. The reeding on the edge of the coin is spaced at one percent intervals, and the sector shading becomes darker as the data reliability decreases. Sectors with zero width are not shown.

The table in the center shows a number of statistical quantities calculated from the submitted data based on the mean and median values in relation to the known value, both before and after outlier removal. The lower pie chart uses the same construction as the upper chart and shows the distribution of properly submitted data in terms of deviation from the known value divided into sectors representing one, two, three, and greater than three normalized standard deviations.

The second part is an alphabetical listing, in lab-code order, of submitted data and several calculated quantities. An entry that is shaded has been rejected because of one of the reasons listed above or failure of the outlier test. The fifth and sixth columns are a measure of laboratory precision. The Range analysis is a normalized value that you may use to keep precision control charts. If this value is between 2.0 and 3.0, your analytical process precision is in the warning zone; if it exceeds 3.0 it is out of control. The eighth and ninth columns are the differences from the mean of all non-outliers and from the known value, respectively. A tag symbol may appear in the last column. Each page with tags has a symbol definition summary at the bottom. If there is no tag symbol, the data is within the control limits, but it may be in the warning zone.

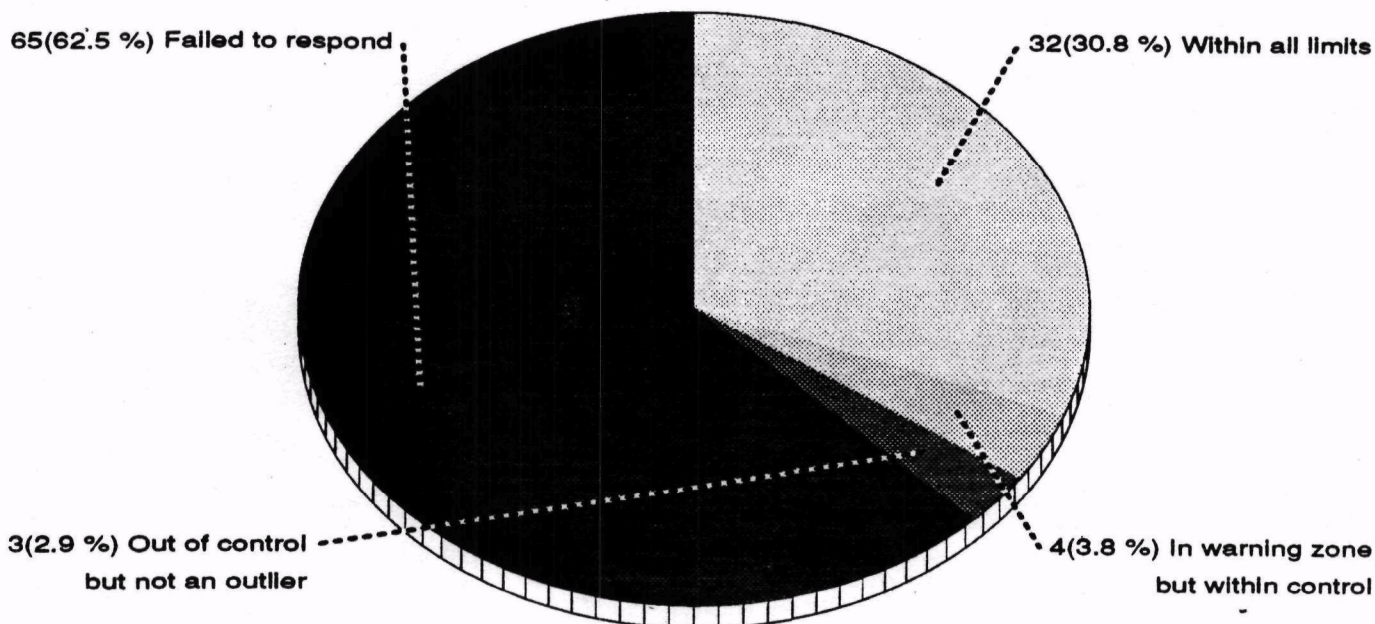
The third part is a three-column listing of result average, tag symbol, and lab-code in average order excluding those labs not responding properly. In this order, all outliers and out-of-control results appear at the top or bottom of the list.

The last part is two bar chart displays showing frequency distributions of responding participants. The first chart places the known value at the center and a bar at each 0.2 unit of expected precision. The second chart places the mean of the reported measurements at the center and a bar at each 0.2 unit of standard deviation. In both cases, a bar includes those results within 0.1 unit up to the maximum of six. Any results more than six units from the center value are shown cumulatively by a shaded bar one past the sixth unit. If the central tendency of the known value distribution falls away from the center, an error in accuracy is indicated. If the distribution is broad, poor precision is indicated. The mean value distribution is similar but uses the average and standard deviation of reported results as its basis.

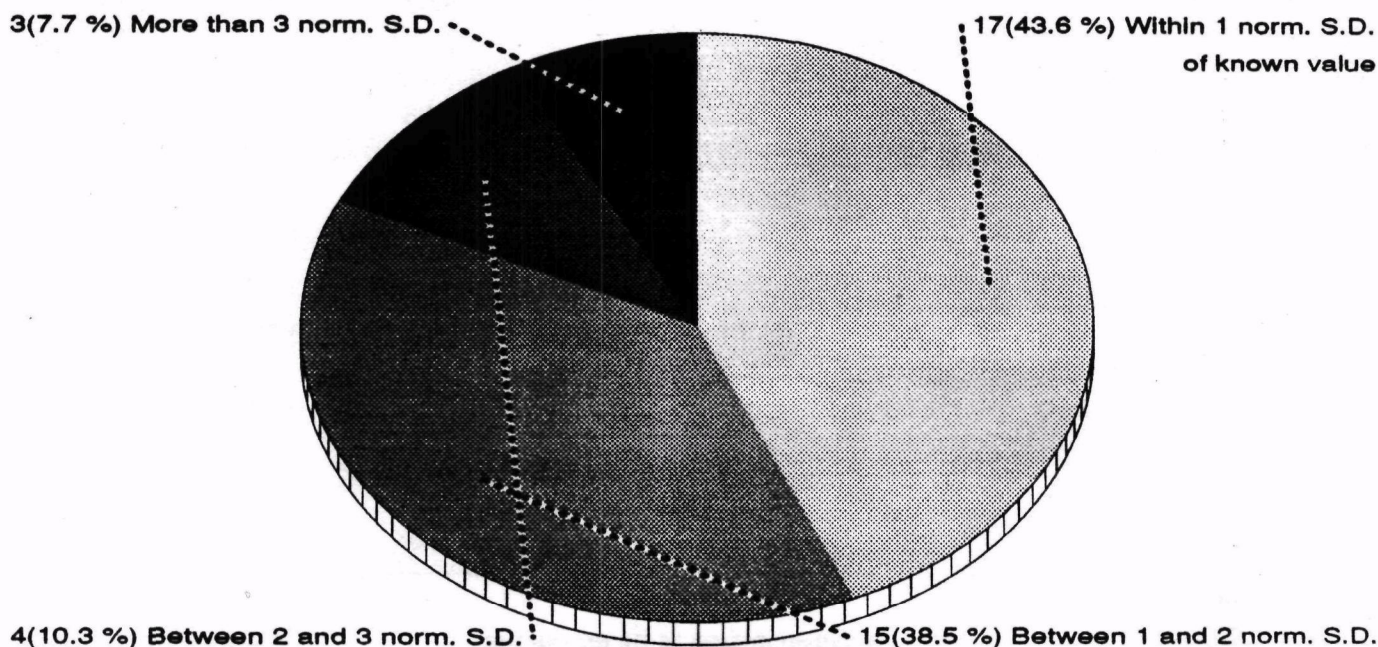
Strontium-89
Statistical Summary

104 Participants

The known value of this nuclide is 15.0 pCi/l with an expected precision of 5.0; the control limits are 6.3 to 23.7; the warning regions are 6.3 to 9.2 and 20.8 to 23.7



Statistic	Respondents	Non-outliers
Mean	13.71	Grand Avg 13.71
Std. Dev.	4.30	4.30
Variance	18.49	18.49
% Coef. of Var.	31.36	31.36
% deviation of mean from known value	-8.60	-8.60
Norm. dev. of mean from known value	-0.30	-0.30
Median	13.00	13.00
% deviation of median from known value	-13.33	-13.33
Norm. dev. of median from known value	-0.47	-0.47



Strontium-89

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
A	16.0	16.0	14.0	1.15	0.236	15.33	0.56	0.12	
AA									•
AE	19.0	18.0	16.0	1.53	0.354	17.67	1.37	0.92	
AF									•
AH									•
AI	19.0	19.0	35.0	9.24	2.695	24.33	3.68	3.23	↑
AK	20.0	21.0	19.0	1.00	0.236	20.00	2.18	1.73	
AL									•
AN									•
AP									•
AU									•
AY									•
AZ									•
BA	12.0	9.0	11.0	1.53	0.354	10.67	-1.05	-1.50	
BC									•
BG									•
BH	15.0	15.0	16.0	0.58	0.118	15.33	0.56	0.12	
BL	9.0	14.0	12.0	2.52	0.591	11.67	-0.71	-1.15	
BM									•
BO	14.0	16.0	15.0	1.00	0.236	15.00	0.45	0.00	
BW									•
C	18.0	18.0	17.0	0.58	0.118	17.67	1.37	0.92	
CA	13.0	10.0	10.0	1.73	0.354	11.00	-0.94	-1.39	
CJ	16.0	18.0	14.0	2.00	0.473	16.00	0.79	0.35	
CO									•
CP									•
CQ									•
D	12.0	12.0	13.0	0.58	0.118	12.33	-0.48	-0.92	
DD									•
DE	4.0	5.0	5.0	0.58	0.118	4.67	-3.13	-3.58	↓
DL									•
DM									•
DT	11.0	9.0	11.0	1.15	0.236	10.33	-1.17	-1.62	
DY									•
E	14.0	12.0	10.0	2.00	0.473	12.00	-0.59	-1.04	
EA									•
EB									•
EH									•
EL	15.0	13.0	14.0	1.00	0.236	14.00	0.10	-0.35	
EX									•
FE	12.0	12.0	12.0	0.00	0.000	12.00	-0.59	-1.04	
FL									•
GE									•
HU	6.0	6.0	6.0	0.00	0.000	6.00	-2.67	-3.12	↓
I									•

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

Strontium-89

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
IC									•
IU									•
J	11.0	13.0	13.0	1.15	0.236	12.33	-0.48	-0.92	
JR									•
JS									•
K									•
KL									•
KX	16.0	14.0	12.0	2.00	0.473	14.00	0.10	-0.35	
L									•
LF									•
LM									•
M									•
ME	16.0	17.0	16.0	0.58	0.118	16.33	0.91	0.46	
MP									•
MQ	12.0	12.0	10.0	1.15	0.236	11.33	-0.82	-1.27	
MS									•
MV									•
N									•
NJ	6.0	12.0	7.0	3.21	0.709	8.33	-1.86	-2.31	
O									•
PB	18.0	18.0	18.0	0.00	0.000	18.00	1.49	1.04	
PC									•
PE									•
PM									•
PP									•
PT									•
PV	25.0	13.0	21.0	6.11	1.795	19.67	2.06	1.62	
PW	8.0	8.0	8.0	0.00	0.000	8.00	-1.98	-2.42	
PY									•
Q	9.0	17.0	10.0	4.36	0.945	12.00	-0.59	-1.04	
QB									•
QK	18.0	21.0	17.0	2.08	0.473	18.67	1.72	1.27	
QL									•
QX									•
QZ	15.0	15.0	13.0	1.15	0.236	14.33	0.22	-0.23	
R	11.0	11.0	10.0	0.58	0.118	10.67	-1.05	-1.50	
RA									•
RC									•
RK	24.0	19.0	22.0	2.52	0.591	21.67	2.76	2.31	
RN	15.0	13.0	11.0	2.00	0.473	13.00	-0.25	-0.69	
S	16.0	13.0	12.0	2.08	0.473	13.67	-0.01	-0.46	
SI									•
SK									•
SM									•
SS	14.0	12.0	12.0	1.15	0.236	12.67	-0.36	-0.81	

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

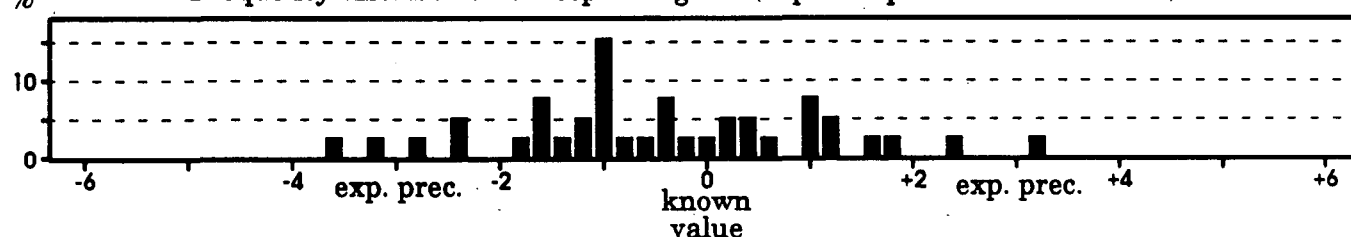
Strontium-89

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
T	13.0	12.0	12.0	0.58	0.118	12.33	-0.48	-0.92
TA								•
TB								•
TE								•
TI								•
TK								•
TP	19.0	18.0	18.0	0.58	0.118	18.33	1.60	1.15
TS								•
TV								•
TW								•
U	9.0	10.0	10.0	0.58	0.118	9.67	-1.40	-1.85
W	7.0	7.0	7.0	0.00	0.000	7.00	-2.32	-2.77
Y	17.0	17.0	16.0	0.58	0.118	16.67	1.02	0.58
Z								•

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
4.67	↓	DE	12.00		FE	15.33		A
6.00	↓	HU	12.00		E	16.00		CJ
7.00		W	12.33		T	16.33		ME
8.00		PW	12.33		J	16.67		Y
8.33		NJ	12.33		D	17.67		C
9.67		U	12.67		SS	17.67		AE
10.33		DT	13.00		RN	18.00		PB
10.67		R	13.67		S	18.33		TP
10.67		BA	14.00		KX	18.67		QK
11.00		CA	14.00		EL	19.67		PV
11.33		MQ	14.33		QZ	20.00		AK
11.67		BL	15.00		BO	21.67		RK
12.00		Q	15.33		BH	24.33	↑	AI

Frequency distribution of responding labs(expected prec. vs known value)



• = No data submitted

TAG SYMBOLS

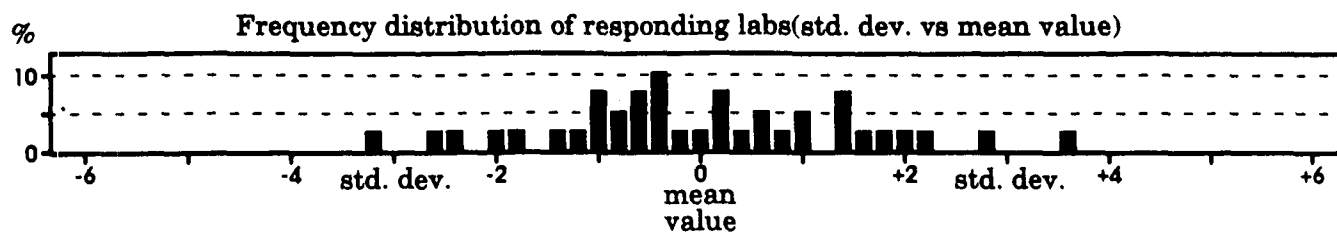
↑ = Above control limit

Ø = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

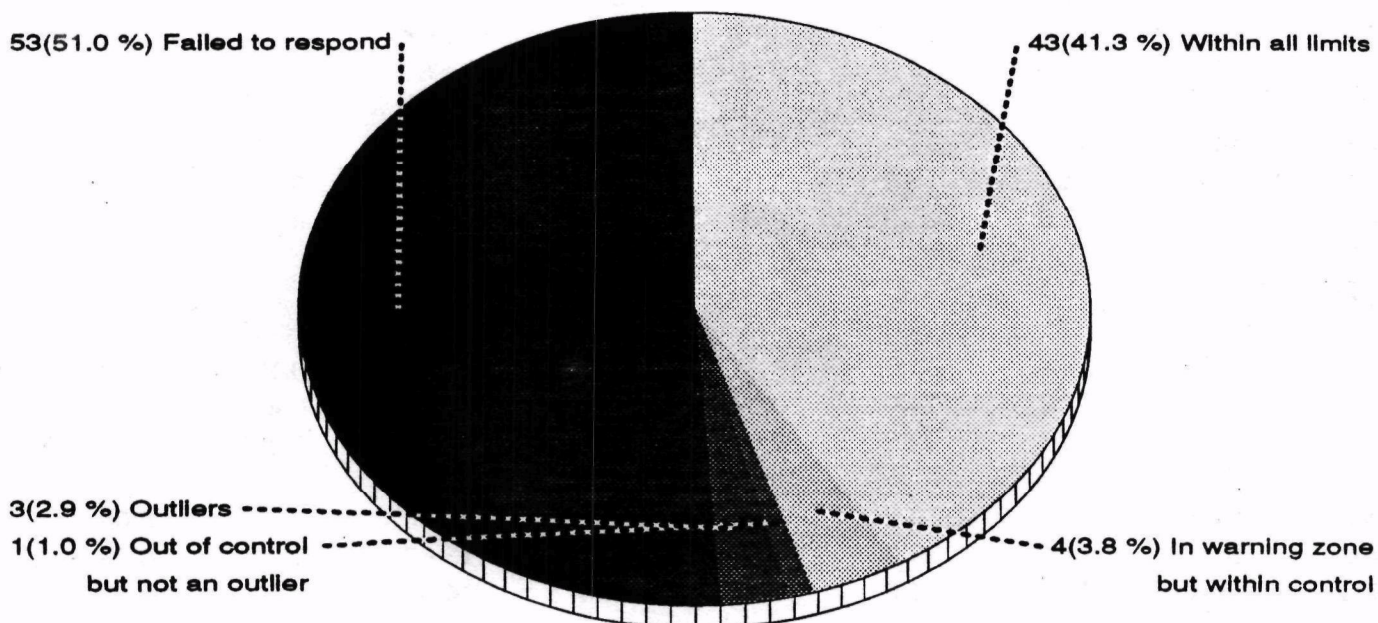
Strontium-89



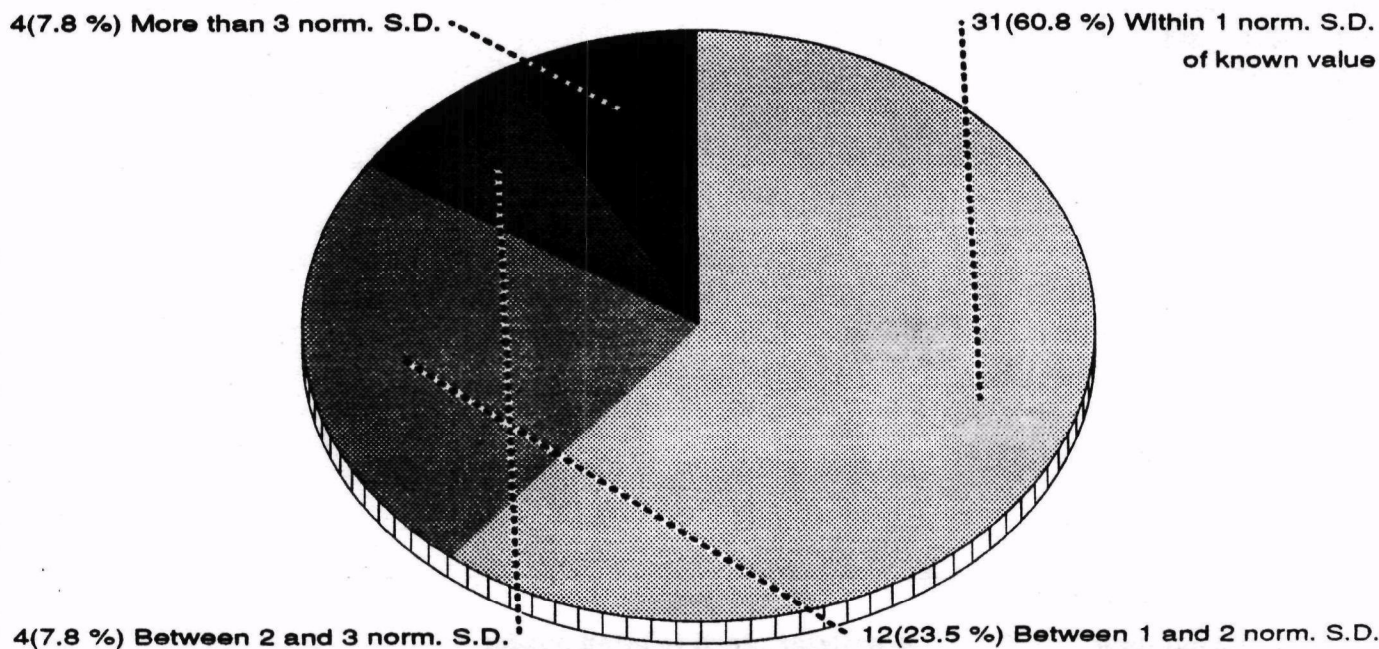
Strontium-90
Statistical Summary

104 Participants

The known value of this nuclide is 15.0 pCi/l with an expected precision of 5.0; the control limits are 6.3 to 23.7; the warning regions are 6.3 to 9.2 and 20.8 to 23.7



Statistic	Respondents	Non-outliers
Mean	13.22	Grand Avg 12.82
Std. Dev.	4.15	2.71
Variance	17.22	7.33
% Coef. of Var.	31.38	21.12
% deviation of mean from known value	-11.85	-14.54
Norm. dev. of mean from known value	-0.43	-0.81
Median	13.00	13.00
% deviation of median from known value	-13.33	-13.33
Norm. dev. of median from known value	-0.48	-0.74



Strontium-90

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
A	14.0	14.0	15.0	0.58	0.118	14.33	0.52	-0.23
AA	14.0	11.0	13.0	1.53	0.354	12.67	-0.05	-0.81
AE	8.0	15.0	10.0	3.61	0.827	11.00	-0.63	-1.39
AF	14.0	15.0	15.0	0.58	0.118	14.67	0.64	-0.12
AH								•
AI	14.0	14.0	11.0	1.73	0.354	13.00	0.06	-0.69
AK	15.0	14.0	13.0	1.00	0.236	14.00	0.41	-0.35
AL	16.0	15.0	16.0	0.58	0.118	15.67	0.99	0.23
AN								•
AP								•
AU								•
AY	12.0	12.0	13.0	0.58	0.118	12.33	-0.17	-0.92
AZ	14.0	14.0	14.0	0.00	0.000	14.00	0.41	-0.35
BA	12.0	12.0	12.0	0.00	0.000	12.00	-0.28	-1.04
BC								•
BG	14.0	15.0	16.0	1.00	0.236	15.00	0.76	0.00
BH	15.0	13.0	13.0	1.15	0.236	13.67	0.29	-0.46
BL	16.0	13.0	14.0	1.53	0.354	14.33	0.52	-0.23
BM								•
BO	13.0	13.0	12.0	0.58	0.118	12.67	-0.05	-0.81
BW								•
C	12.0	13.0	11.0	1.00	0.236	12.00	-0.28	-1.04
CA	13.0	13.0	12.0	0.58	0.118	12.67	-0.05	-0.81
CJ	14.0	12.0	12.0	1.15	0.236	12.67	-0.05	-0.81
CO	19.0	18.0	19.0	0.58	0.118	18.67	2.03	1.27
CP								•
CQ								•
D	14.0	14.0	14.0	0.00	0.000	14.00	0.41	-0.35
DD								•
DE	7.0	7.0	8.0	0.58	0.118	7.33	-1.90	-2.66
DL								•
DM								•
DT	7.0	8.0	8.0	0.58	0.118	7.67	-1.78	-2.54
DY								•
E	15.0	15.0	14.0	0.58	0.118	14.67	0.64	-0.12
EA								•
EB								•
EH								•
EL	15.0	15.0	16.0	0.58	0.118	15.33	0.87	0.12
EX								•
FE	13.0	14.0	15.0	1.00	0.236	14.00	0.41	-0.35
FL								•
GE								•
HU	10.0	13.0	13.0	1.73	0.354	12.00	-0.28	-1.04
I								•

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

Ø = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

Strontium-90

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
IC									•
IU									•
J	17.0	18.0	16.0	1.00	0.236	17.00	1.45	0.69	
JR									•
JS									•
K									•
KL									•
KX	16.0	13.0	14.0	1.53	0.354	14.33	0.52	-0.23	
L	16.0	13.0	15.0	1.53	0.354	14.67	0.64	-0.12	
LF									•
LM									•
M									•
ME	15.0	15.0	15.0	0.00	0.000	15.00	0.76	0.00	
MP									•
MQ	13.0	13.0	13.0	0.00	0.000	13.00	0.06	-0.69	
MS									•
MV									•
N									•
NJ	4.0	4.0	3.0	0.58	0.118	3.67	-3.17	-3.93	×
O									•
PB	14.0	15.0	14.0	0.58	0.118	14.33	0.52	-0.23	
PC									•
PE									•
PM	28.0	30.0	27.0	2.08	0.473	27.67	5.14	4.39	×
PP	15.0	17.0	18.0	1.53	0.354	16.67	1.33	0.58	
PT									•
PV	28.0	30.0	27.0	2.08	0.473	27.67	5.14	4.39	×
PW	10.0	10.0	10.0	0.00	0.000	10.00	-0.98	-1.73	
PY									•
Q	18.0	15.0	18.0	1.73	0.354	17.00	1.45	0.69	
QB									•
QK	14.0	14.0	15.0	0.58	0.118	14.33	0.52	-0.23	
QL	8.0	6.0	6.0	1.15	0.236	6.67	-2.13	-2.89	
QX									•
QZ	11.0	12.0	11.0	0.58	0.118	11.33	-0.51	-1.27	
R	11.0	12.0	11.0	0.58	0.118	11.33	-0.51	-1.27	
RA	5.0	5.0	6.0	0.58	0.118	5.33	-2.59	-3.35	↓
RC									•
RK	9.0	10.0	10.0	0.58	0.118	9.67	-1.09	-1.85	
RN	8.0	8.0	11.0	1.73	0.354	9.00	-1.32	-2.08	
S	10.0	11.0	12.0	1.00	0.236	11.00	-0.63	-1.39	
SI									•
SK									•
SM									•
SS	14.0	15.0	15.0	0.58	0.118	14.67	0.64	-0.12	

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

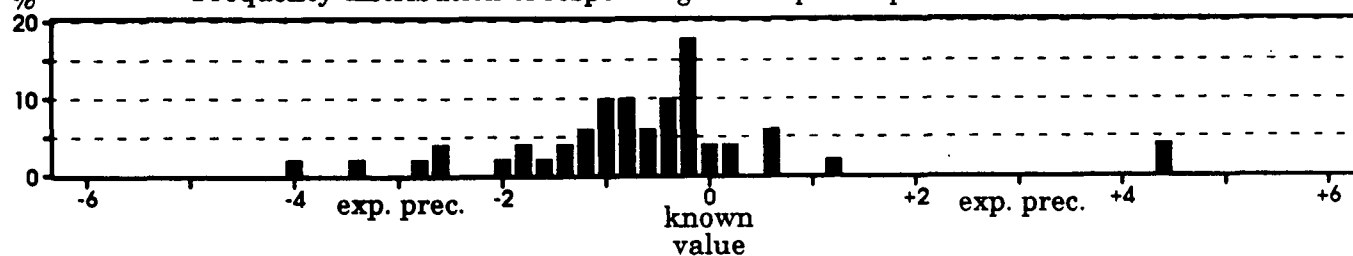
Strontium-90

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
T	11.0	12.0	11.0	0.58	0.118	11.33	-0.51	-1.27
TA								•
TB								•
TE								•
TH								•
TK								•
TP	13.0	12.0	12.0	0.58	0.118	12.33	-0.17	-0.92
TS								•
TV								•
TW								•
U	9.0	11.0	11.0	1.15	0.236	10.33	-0.86	-1.62
W	12.0	13.0	13.0	0.58	0.118	12.67	-0.05	-0.81
Y	13.0	13.0	13.0	0.00	0.000	13.00	0.06	-0.69
Z								•

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
3.67	×	NJ	12.33		TP	14.33		KX
5.33	↓	RA	12.33		AY	14.33		BL
6.67		QL	12.67		W	14.33		A
7.33		DE	12.67		CJ	14.67		SS
7.67		DT	12.67		CA	14.67		L
9.00		RN	12.67		BO	14.67		E
9.67		RK	12.67		AA	14.67		AF
10.00		PW	13.00		Y	15.00		ME
10.33		U	13.00		MQ	15.00		BG
11.00		S	13.00		AI	15.33		EL
11.00		AE	13.67		BH	15.67		AL
11.33		T	14.00		FE	16.67		PP
11.33		R	14.00		D	17.00		Q
11.33		QZ	14.00		AZ	17.00		J
12.00		HU	14.00		AK	18.67		CO
12.00		C	14.33		QK	27.67	×	PV
12.00		BA	14.33		PB	27.67	×	PM

Frequency distribution of responding labs(expected prec. vs known value)



• = No data submitted

TAG SYMBOLS

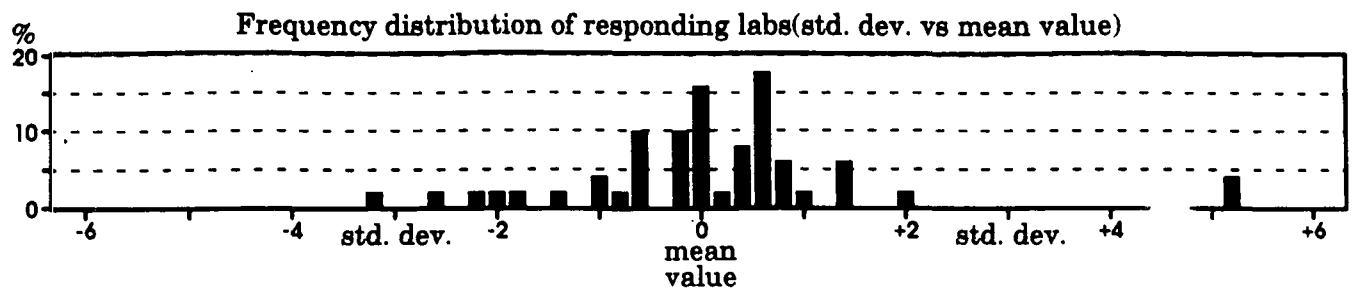
↑ = Above control limit

∅ = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

Strontium-90

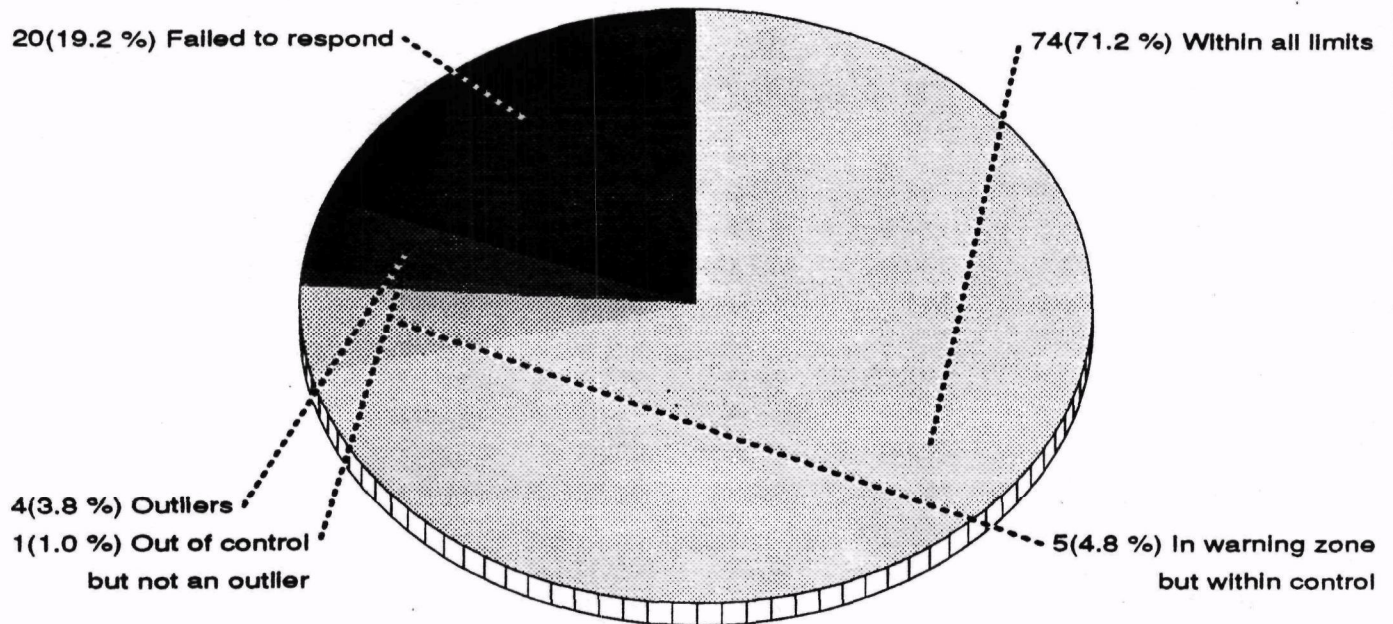


Iodine-131

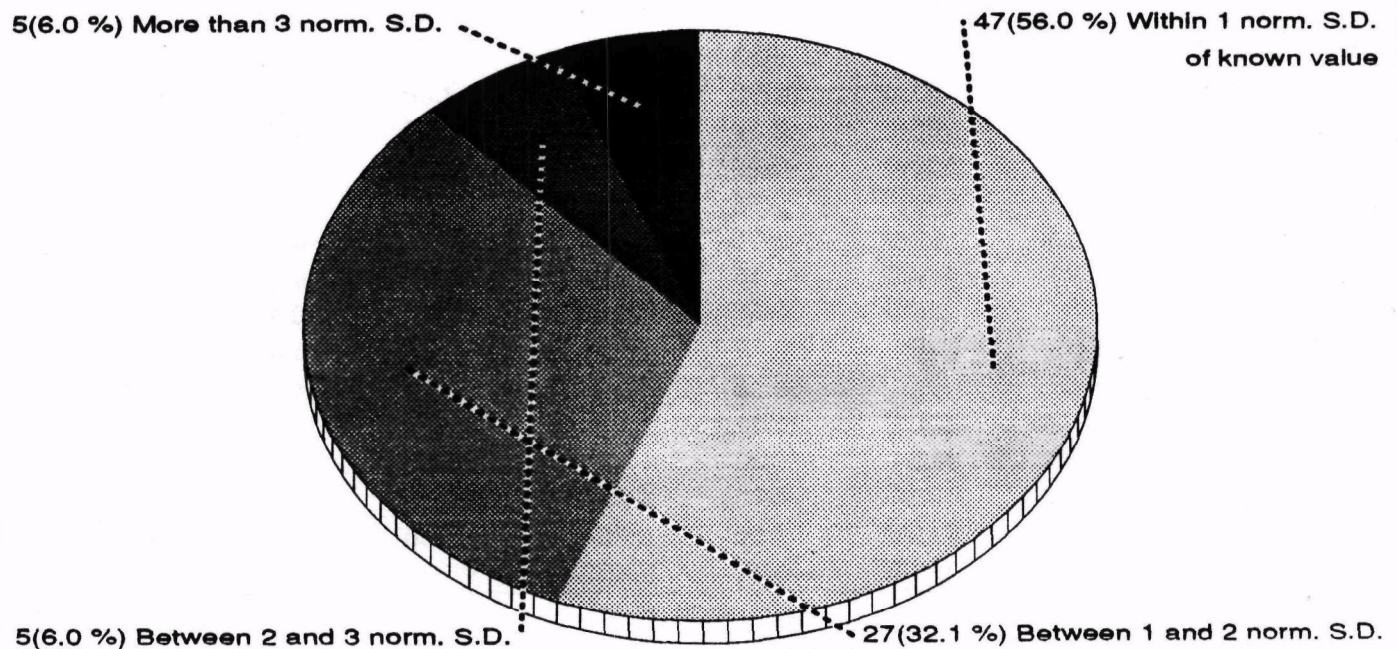
Statistical Summary

104 Participants

The known value of this nuclide is 100.0 pCi/l with an expected precision of 10.0; the control limits are 82.7 to 117.3; the warning regions are 82.7 to 88.4 and 111.6 to 117.3



Statistic	Respondents	Non-outliers
Mean	102.61	Grand Avg 100.98
Std. Dev.	14.33	6.67
Variance	205.26	44.45
% Coef. of Var.	13.96	6.60
% deviation of mean from known value	2.61	0.98
Norm. dev. of mean from known value	0.18	0.15
Median	100.67	100.67
% deviation of median from known value	0.67	0.67
Norm. dev. of median from known value	0.05	0.10



Iodine-131

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
A	93.0	87.0	97.0	5.03	0.591	92.33	-1.50	-1.33
AA	99.0	103.0	105.0	3.06	0.354	102.33	0.23	0.40
AE	93.0	92.0	95.0	1.53	0.177	93.33	-1.33	-1.15
AF	103.0	99.0	95.0	4.00	0.473	99.00	-0.34	-0.17
AH	74.0	78.0						Ø
AI	103.0	89.0	113.0	12.06	1.795	101.67	0.12	0.29
AK	94.0	96.0	91.0	2.52	0.295	93.67	-1.27	-1.10
AL	101.0	100.0	94.0	3.79	0.413	98.33	-0.46	-0.29
AN	121.0	116.0	110.0	5.51	0.650	115.67	2.54	2.71
AP	97.0	101.0	101.0	2.31	0.236	99.67	-0.23	-0.06
AU	98.0	97.0	105.0	4.36	0.473	100.00	-0.17	0.00
AY	92.0	93.0	91.0	1.00	0.118	92.00	-1.56	-1.39
AZ	106.0	90.0	83.0	11.79	1.683	93.00	-1.38	-1.21
BA	108.0	96.0	103.0	6.03	0.709	102.33	0.23	0.40
BC	111.0	107.0	110.0	2.08	0.236	109.33	1.45	1.62
BQ								•
BH	99.0	104.0	99.0	2.89	0.295	100.67	-0.05	0.12
BL	101.0	100.0	96.0	2.65	0.295	99.00	-0.34	-0.17
BM	103.0	105.0	99.0	3.06	0.354	102.33	0.23	0.40
BO	96.0	96.0	97.0	0.58	0.059	96.33	-0.81	-0.64
BW	110.0	110.0	120.0	5.77	0.591	113.33	2.14	2.31
C	105.0	106.0	105.0	0.58	0.059	105.33	0.75	0.92
CA	112.0	99.0	118.0	9.71	1.233	109.67	1.50	1.67
CJ	93.0	107.0	97.0	7.21	0.827	99.00	-0.34	-0.17
CO	102.0	111.0	108.0	4.58	0.532	107.00	1.04	1.21
CP	102.0	105.0	102.0	1.73	0.177	103.00	0.35	0.52
CQ	97.0	101.0	101.0	2.31	0.236	99.67	-0.23	-0.06
D	97.0	95.0	95.0	1.15	0.118	95.67	-0.92	-0.75
DD	113.0	112.0	113.0	0.58	0.059	112.67	2.02	2.19
DE	99.0	99.0	100.0	0.58	0.059	99.33	-0.29	-0.12
DL	88.0	96.0	87.0	4.93	0.532	90.33	-1.84	-1.67
DM	99.0	98.0	97.0	1.00	0.118	98.00	-0.52	-0.35
DT	95.0	88.0	94.0	3.79	0.413	92.33	-1.50	-1.33
DY	100.0	100.0	100.0	0.00	0.000	100.00	-0.17	0.00
E	102.0	103.0	100.0	1.53	0.177	101.67	0.12	0.29
EA	100.0	101.0	99.0	1.00	0.118	100.00	-0.17	0.00
EB	100.0	100.0	102.0	1.15	0.118	100.67	-0.05	0.12
EH	109.0	100.0	96.0	6.66	0.768	101.67	0.12	0.29
EL	106.0	106.0	116.0	5.77	0.591	109.33	1.45	1.62
EX	76.0	74.0	82.0	4.16	0.473	77.33	-4.10	-3.93 ×
FE	110.0	110.0	100.0	5.77	0.591	106.67	0.98	1.15
FL	106.0	107.0	112.0	3.21	0.354	108.33	1.27	1.44
GE	87.0	96.0	88.0	4.93	0.532	90.33	-1.84	-1.67
HU	116.0	113.0	110.0	3.00	0.354	113.00	2.08	2.25
I	95.0	97.0	103.0	4.16	0.473	98.33	-0.46	-0.29

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

Ø = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

Iodine-131

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
IC	107.0	107.0	104.0	1.73	0.177	106.00	0.87	1.04
IU	99.0	98.0	99.0	0.58	0.059	98.67	-0.40	-0.23
J	102.0	97.0	100.0	2.52	0.295	99.67	-0.23	-0.06
JR	94.0	95.0	101.0	3.79	0.413	96.67	-0.75	-0.58
JS	113.0	109.0	102.0	5.57	0.650	108.00	1.22	1.39
K	114.0	114.0	94.0	11.55	1.345	107.33	1.10	1.27
KL	102.0	101.0	99.0	1.53	0.177	100.67	-0.05	0.12
KX	106.0	106.0	111.0	2.89	0.295	107.67	1.16	1.33
L	94.0	100.0	98.0	3.06	0.354	97.33	-0.63	-0.46
LF	96.0	95.0	96.0	0.58	0.059	95.67	-0.92	-0.75
LM								
M	109.0	107.0	108.0	1.00	0.118	108.00	1.22	1.39
ME	99.0	95.0	104.0	4.51	0.532	99.33	-0.29	-0.12
MP	96.0	107.0	106.0	6.08	0.650	103.00	0.35	0.52
MQ	111.0	100.0	106.0	5.51	0.650	105.67	0.81	0.98
MS	124.0	121.0	120.0	2.08	0.236	121.67	3.58	3.75 ↑
MV	100.0	101.0	102.0	1.00	0.118	101.00	0.00	0.17
N								
NJ	110.0	110.0	110.0	0.00	0.000	110.00	1.56	1.73
O	97.0	96.0	96.0	0.58	0.059	96.33	-0.81	-0.64
PB	99.0	105.0	102.0	3.00	0.354	102.00	0.18	0.35
PC								
PE								
PM								
PP	106.0	99.0	89.0	8.54	1.008	98.00	-0.52	-0.35
PT	103.0	105.0	97.0	4.16	0.473	101.67	0.12	0.29
PV	90.0	89.0	96.0	3.79	0.413	91.67	-1.61	-1.44
PW	100.0	101.0	101.0	0.58	0.059	100.67	-0.05	0.12
PY								
Q	92.0	88.0	87.0	2.65	0.295	89.00	-2.08	-1.91
QB								
QK	115.0	110.0	102.0	6.56	0.768	109.00	1.39	1.56
QL	81.0	83.0	101.0	11.02	1.345	88.33	-2.19	-2.02
QX	127.0	127.0	127.0	0.00	0.000	127.00	4.51	4.68 ×
QZ	111.0	104.0	98.0	6.51	0.768	104.33	0.58	0.75
R	97.0	97.0	98.0	0.58	0.059	97.33	-0.63	-0.46
RA								
RC								
RK								
RN	211.0	209.0	210.0	1.00	0.118	210.00	18.88	19.05 ×
S	109.0	98.0	95.0	7.37	0.827	100.67	-0.05	0.12
SI								
SK								
SM								
SS	97.0	100.0	101.0	2.08	0.236	99.33	-0.29	-0.12

• = No data submitted

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Iodine-131

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
T	103.0	100.0	102.0	1.53	0.177	101.67	0.12	0.29
TA	115.0	89.0	105.0	13.11	2.020	103.00	0.35	0.52
TB								•
TE	94.0	93.0	91.0	1.53	0.177	92.67	-1.44	-1.27
TI	113.0	124.0	94.0	15.18	2.470	110.33	1.62	1.79
TK								•
TP	86.0	85.0	97.0	6.66	0.709	89.33	-2.02	-1.85
TS	125.0	133.0	120.0	6.56	0.768	126.00	4.33	4.50 ×
TV								•
TW								•
U	95.0	98.0	109.0	7.37	0.827	100.67	-0.05	0.12
W	92.0	95.0	80.0	7.94	0.886	89.00	-2.08	-1.91
Y	102.0	103.0	98.0	2.65	0.295	101.00	0.00	0.17
Z								•

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
77.33	×	EX	99.00		BL	103.00		TA
88.33		QL	99.00		AF	103.00		MP
89.00		W	99.33		SS	103.00		CP
89.00		Q	99.33		ME	104.33		QZ
89.33		TP	99.33		DE	105.33		C
90.33		GE	99.67		J	105.67		MQ
90.33		DL	99.67		CQ	106.00		IC
91.67		PV	99.67		AP	106.67		FE
92.00		AY	100.00		EA	107.00		CO
92.33		DT	100.00		DY	107.33		K
92.33		A	100.00		AU	107.67		KX
92.67		TE	100.67		U	108.00		M
93.00		AZ	100.67		S	108.00		JS
93.33		AE	100.67		PW	108.33		FL
93.67		AK	100.67		KL	109.00		QK
95.67		LF	100.67		EB	109.33		EL
95.67		D	100.67		BH	109.33		BC
96.33		O	101.00		Y	109.67		CA
96.33		BO	101.00		MV	110.00		NJ
96.67		JR	101.67		T	110.33		TI
97.33		R	101.67		PT	112.67		DD
97.33		L	101.67		EH	113.00		HU
98.00		PP	101.67		E	113.33		BW
98.00		DM	101.67		AI	115.67		AN
98.33		I	102.00		PB	121.67	↑	MS
98.33		AL	102.33		BM	126.00	×	TS
98.67		IU	102.33		BA	127.00	×	QX
99.00		CJ	102.33		AA	210.00	×	RN

• = No data submitted

TAG SYMBOLS

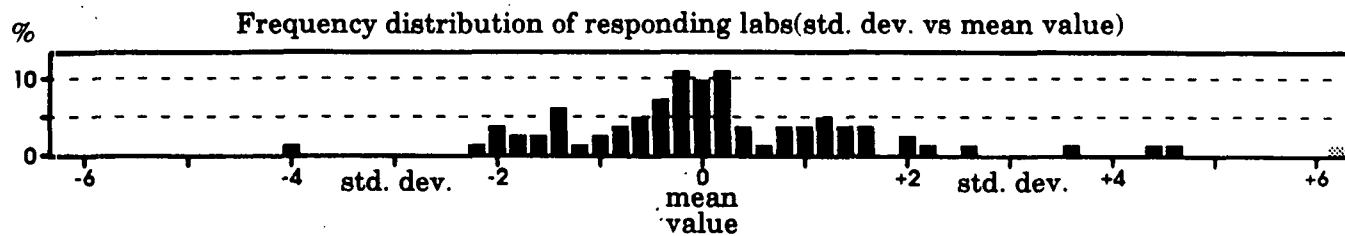
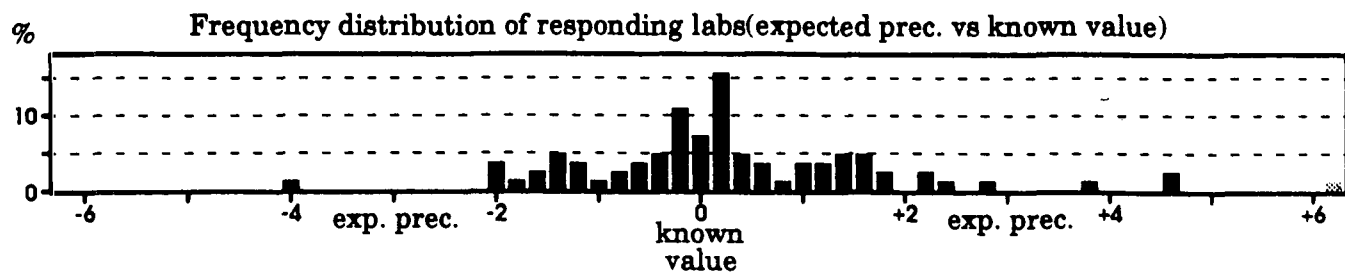
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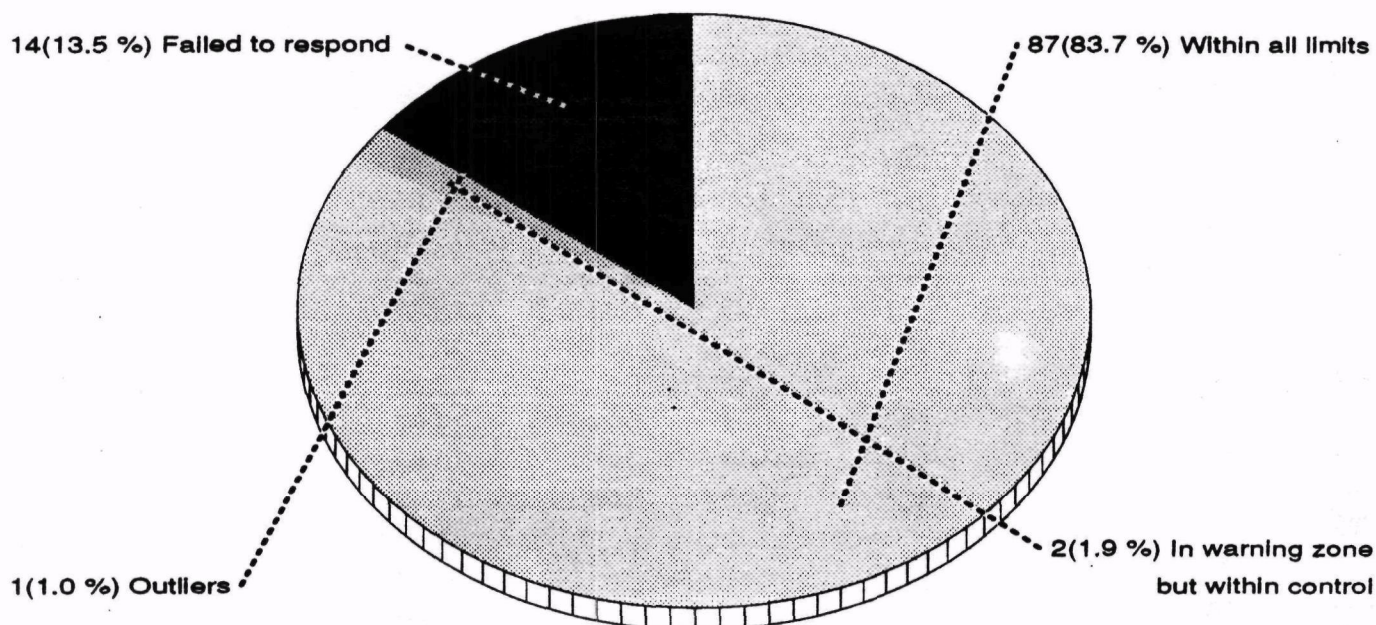
Iodine-131



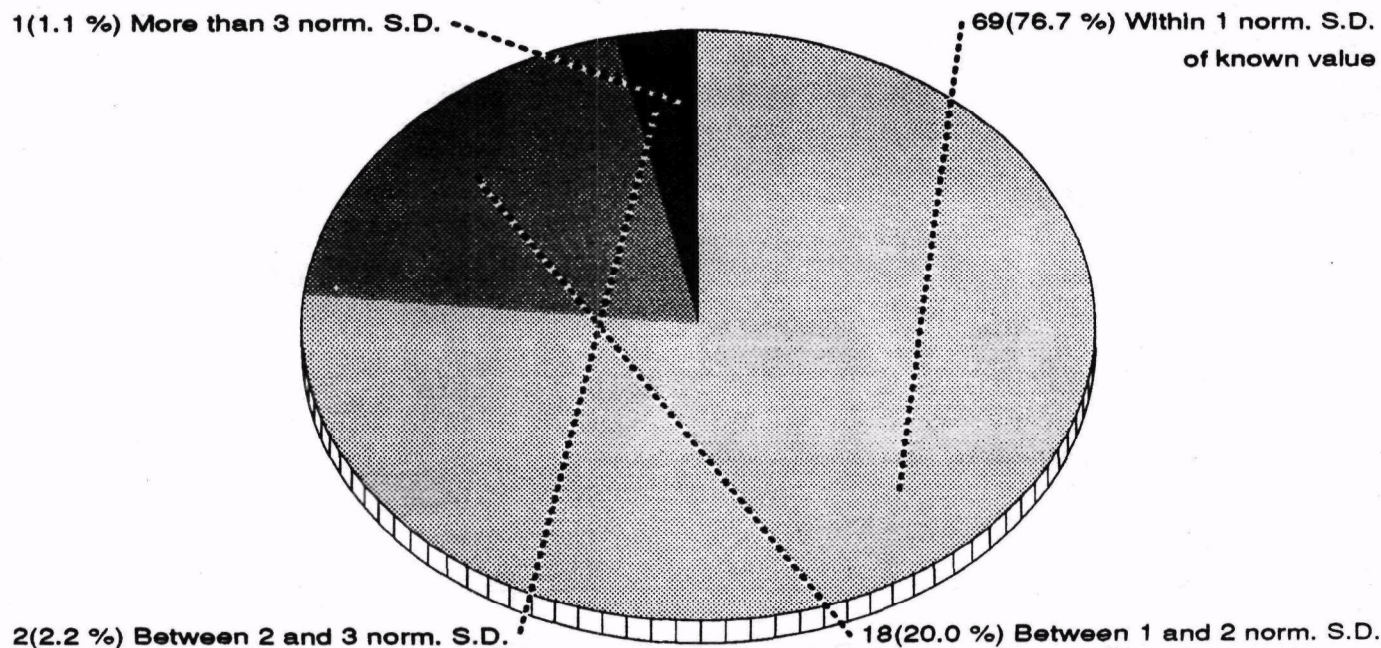
Cesium-137**Statistical Summary**

104 Participants

The known value of this nuclide is 15.0 pCi/l with an expected precision of 5.0; the control limits are 6.3 to 23.7; the warning regions are 6.3 to 9.2 and 20.8 to 23.7



Statistic	Respondents	Non-outliers
Mean	15.97	Grand Avg 16.10
Std. Dev.	2.30	1.93
Variance	5.29	3.71
% Coef. of Var.	14.41	11.96
% deviation of mean from known value	6.44	7.34
Norm. dev. of mean from known value	0.42	0.57
Median	15.83	16.00
% deviation of median from known value	5.56	6.67
Norm. dev. of median from known value	0.36	0.52



Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
A	14.0	15.0	16.0	1.00	0.236	15.00	-0.38	0.00
AA	13.0	12.0	12.0	0.58	0.118	12.33	-1.31	-0.92
AE	15.0	15.0	13.0	1.15	0.236	14.33	-0.61	-0.23
AF	14.0	18.0	17.0	2.08	0.473	16.33	0.08	0.46
AH	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00
AI	15.0	19.0	22.0	3.51	0.827	18.67	0.89	1.27
AK	14.0	14.0	13.0	0.58	0.118	13.67	-0.84	-0.46
AL	18.0	17.0	22.0	2.65	0.591	19.00	1.00	1.39
AN	20.0	20.0	19.0	0.58	0.118	19.67	1.24	1.62
AP	13.0	14.0	14.0	0.58	0.118	13.67	-0.84	-0.46
AU	16.0	15.0	16.0	0.58	0.118	15.67	-0.15	0.23
AY	13.0	13.0	11.0	1.15	0.236	12.33	-1.31	-0.92
AZ	18.0	10.0	16.0	4.16	0.945	14.67	-0.50	-0.12
BA	19.0	15.0	14.0	2.65	0.591	16.00	-0.04	0.35
BC	17.0	17.0	18.0	0.58	0.118	17.33	0.43	0.81
BG								
BH	20.0	16.0	16.0	2.31	0.473	17.33	0.43	0.81
BL	15.0	16.0	15.0	0.58	0.118	15.33	-0.27	0.12
BM	15.0	16.0	15.0	0.58	0.118	15.33	-0.27	0.12
BO	15.0	14.0	15.0	0.58	0.118	14.67	-0.50	-0.12
BW	19.0	17.0	14.0	2.52	0.591	16.67	0.20	0.58
C	12.0	12.0	12.0	0.00	0.000	12.00	-1.42	-1.04
CA	13.0	16.0	13.0	1.73	0.354	14.00	-0.73	-0.35
CJ	15.0	15.0	17.0	1.15	0.236	15.67	-0.15	0.23
CO	16.0	16.0	16.0	0.00	0.000	16.00	-0.04	0.35
CP	16.0	16.0	16.0	0.00	0.000	16.00	-0.04	0.35
CQ	16.0	17.0	18.0	1.00	0.236	17.00	0.31	0.69
D	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12
DD	16.0	18.0	16.0	1.15	0.236	16.67	0.20	0.58
DE	18.0	18.0	18.0	0.00	0.000	18.00	0.66	1.04
DL	15.0	14.0	14.0	0.58	0.118	14.33	-0.61	-0.23
DM	16.0	16.0	16.0	0.00	0.000	16.00	-0.04	0.35
DT	13.0	14.0	17.0	2.08	0.473	14.67	-0.50	-0.12
DY	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12
E	17.0	16.0	17.0	0.58	0.118	16.67	0.20	0.58
EA	13.0	16.0	16.0	1.73	0.354	15.00	-0.38	0.00
EB	18.0	18.0	15.0	1.73	0.354	17.00	0.31	0.69
EH	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12
EL	17.0	14.0	15.0	1.53	0.354	15.33	-0.27	0.12
EX	17.0	17.0	16.0	0.58	0.118	16.67	0.20	0.58
FE	16.0	19.0	19.0	1.73	0.354	18.00	0.66	1.04
FL	16.0	16.0	17.0	0.58	0.118	16.33	0.08	0.46
GE	14.0	14.0	15.0	0.58	0.118	14.33	-0.61	-0.23
HU	15.0	14.0	13.0	1.00	0.236	14.00	-0.73	-0.35
I	17.0	17.0	17.0	0.00	0.000	17.00	0.31	0.69

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
IC	15.0	15.0	13.0	1.15	0.236	14.33	-0.61	-0.23
IU	15.0	17.0	17.0	1.15	0.236	16.33	0.08	0.46
J	15.0	16.0	15.0	0.58	0.118	15.33	-0.27	0.12
JR	15.0	16.0	19.0	2.08	0.473	16.67	0.20	0.58
JS	18.0	18.0	18.0	0.00	0.000	18.00	0.66	1.04
K	18.0	18.0	18.0	0.00	0.000	18.00	0.66	1.04
KL	15.0	17.0	16.0	1.00	0.236	16.00	-0.04	0.35
KX	18.0	18.0	18.0	0.00	0.000	18.00	0.66	1.04
L	17.0	17.0	13.0	2.31	0.473	15.67	-0.15	0.23
LF	16.0	14.0	14.0	1.15	0.236	14.67	-0.50	-0.12
LM								•
M	14.0	17.0	15.0	1.53	0.354	15.33	-0.27	0.12
ME	14.0	17.0	17.0	1.73	0.354	16.00	-0.04	0.35
MP	19.0	17.0	18.0	1.00	0.236	18.00	0.66	1.04
MQ	20.0	16.0	18.0	2.00	0.473	18.00	0.66	1.04
MS	18.0	18.0	15.0	1.73	0.354	17.00	0.31	0.69
MV	16.0	16.0	17.0	0.58	0.118	16.33	0.08	0.46
N								•
NJ	16.0	17.0	16.0	0.58	0.118	16.33	0.08	0.46
O	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00
PB	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00
PC	6.0	2.0	4.0	2.00	0.473	4.00	-4.19	-3.81 ×
PE								•
PM	24.0	19.0	21.0	2.52	0.591	21.33	1.81	2.19
PP	22.0	20.0	20.0	1.15	0.236	20.67	1.58	1.96
PT	17.0	15.0	14.0	1.53	0.354	15.33	-0.27	0.12
PV	19.0	24.0	21.0	2.52	0.591	21.33	1.81	2.19
PW	14.0	16.0	16.0	1.15	0.236	15.33	-0.27	0.12
PY								•
Q	16.0	16.0	18.0	1.15	0.236	16.67	0.20	0.58
QB	18.0	22.0	16.0	3.06	0.709	18.67	0.89	1.27
QK	19.0	18.0	17.0	1.00	0.236	18.00	0.66	1.04
QL	16.0	16.0	18.0	1.15	0.236	16.67	0.20	0.58
QX	20.0	21.0	20.0	0.58	0.118	20.33	1.47	1.85
QZ	17.0	16.0	14.0	1.53	0.354	15.67	-0.15	0.23
R	17.0	16.0	15.0	1.00	0.236	16.00	-0.04	0.35
RA	18.0	19.0	18.0	0.58	0.118	18.33	0.77	1.15
RC								•
RK	18.0	20.0	19.0	1.00	0.236	19.00	1.00	1.39
RN	18.0	16.0	12.0	3.06	0.709	15.33	-0.27	0.12
S	14.0	14.0	15.0	0.58	0.118	14.33	-0.61	-0.23
SI								•
SK								•
SM								•
SS	17.0	17.0	17.0	0.00	0.000	17.00	0.31	0.69

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

Ø = Insufficient data

× = Determined to be an outlier

↓ = Below control limit

Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
T	17.0	16.0	14.0	1.53	0.354	15.67	-0.15	0.23
TA	18.0	21.0	19.0	1.53	0.354	19.33	1.12	1.50
TB								•
TE	11.0	17.0	14.0	3.00	0.709	14.00	-0.73	-0.35
TI	12.0	16.0	12.0	2.31	0.473	13.33	-0.96	-0.58
TK								•
TP	14.0	14.0	14.0	0.00	0.000	14.00	-0.73	-0.35
TS	13.0	14.0	15.0	1.00	0.236	14.00	-0.73	-0.35
TV								•
TW								•
U	14.0	16.0	15.0	1.00	0.236	15.00	-0.38	0.00
W	13.0	12.0	14.0	1.00	0.236	13.00	-1.07	-0.69
Y	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00
Z								•

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
4.00	×	PC	15.00		A	16.33		AF
12.00		C	15.33		RN	16.67		QL
12.33		AY	15.33		PW	16.67		Q
12.33		AA	15.33		PT	16.67		JR
13.00		W	15.33		M	16.67		EX
13.33		TI	15.33		J	16.67		E
13.67		AP	15.33		EL	16.67		DD
13.67		AK	15.33		EH	16.67		BW
14.00		TS	15.33		DY	17.00		SS
14.00		TP	15.33		D	17.00		MS
14.00		TE	15.33		BM	17.00		I
14.00		HU	15.33		BL	17.00		EB
14.00		CA	15.67		T	17.00		CQ
14.33		S	15.67		QZ	17.33		BH
14.33		IC	15.67		L	17.33		BC
14.33		GE	15.67		CJ	18.00		QK
14.33		DL	15.67		AU	18.00		MQ
14.33		AE	16.00		R	18.00		MP
14.67		LF	16.00		ME	18.00		KX
14.67		DT	16.00		KL	18.00		K
14.67		BO	16.00		DM	18.00		JS
14.67		AZ	16.00		CP	18.00		FE
15.00		Y	16.00		CO	18.00		DE
15.00		U	16.00		BA	18.33		RA
15.00		PB	16.33		NJ	18.67		QB
15.00		O	16.33		MV	18.67		AI
15.00		EA	16.33		IU	19.00		RK
15.00		AH	16.33		FL	19.00		AL

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

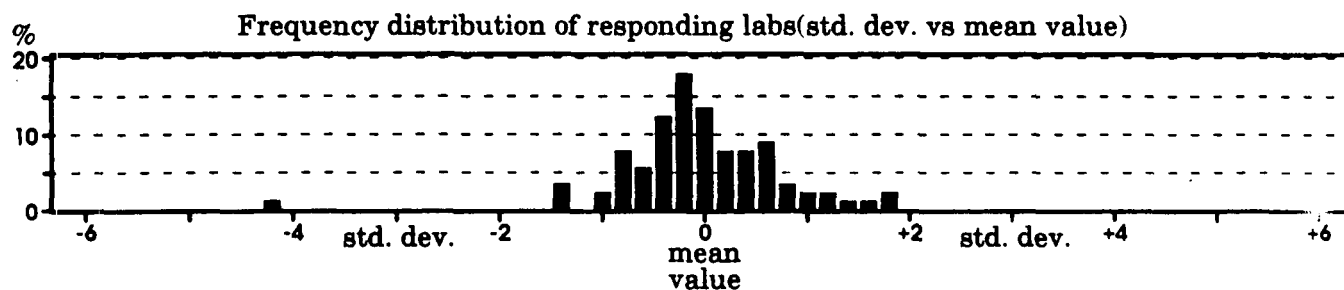
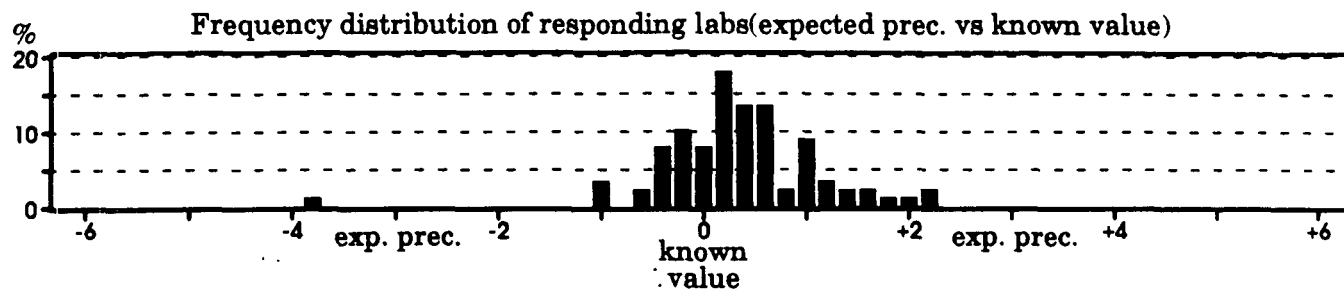
× = Determined to be an outlier

↓ = Below control limit

Cesium-137

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
19.33		TA	20.33		QX	21.33		PV
19.67		AN	20.67		PP	21.33		PM



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TAG SYMBOLS

× = Determined to be an outlier

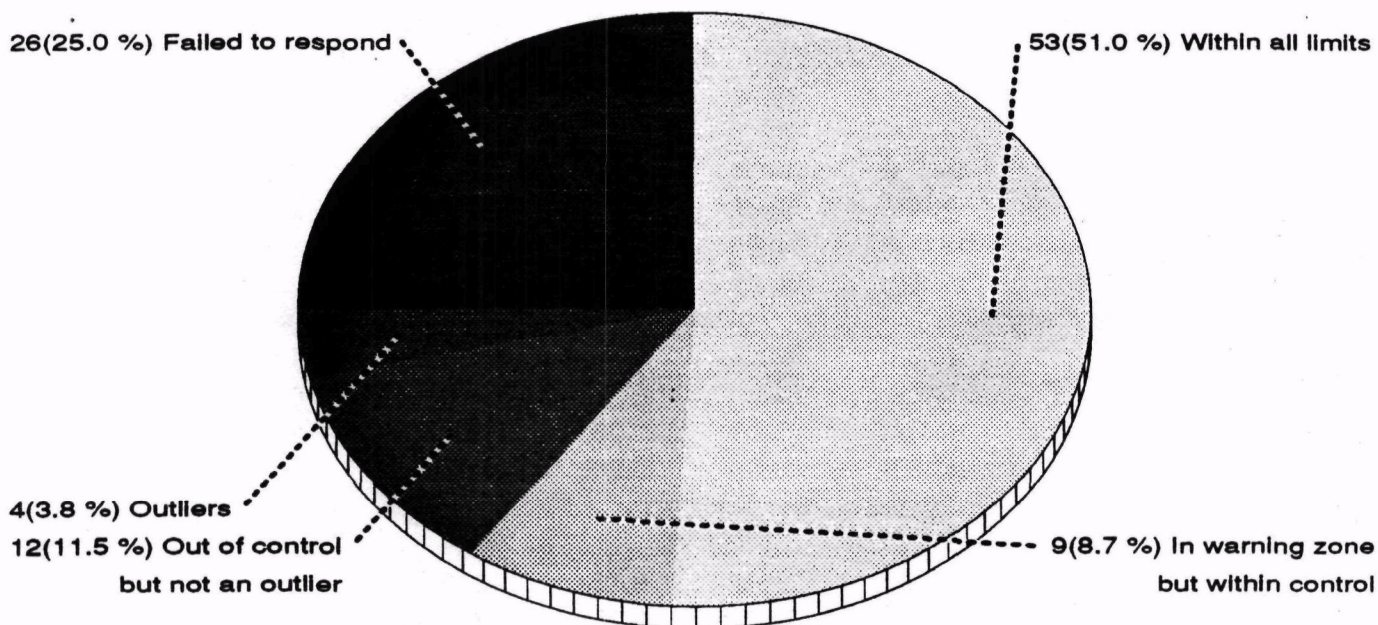
↑ = Above control limit

↓ = Below control limit

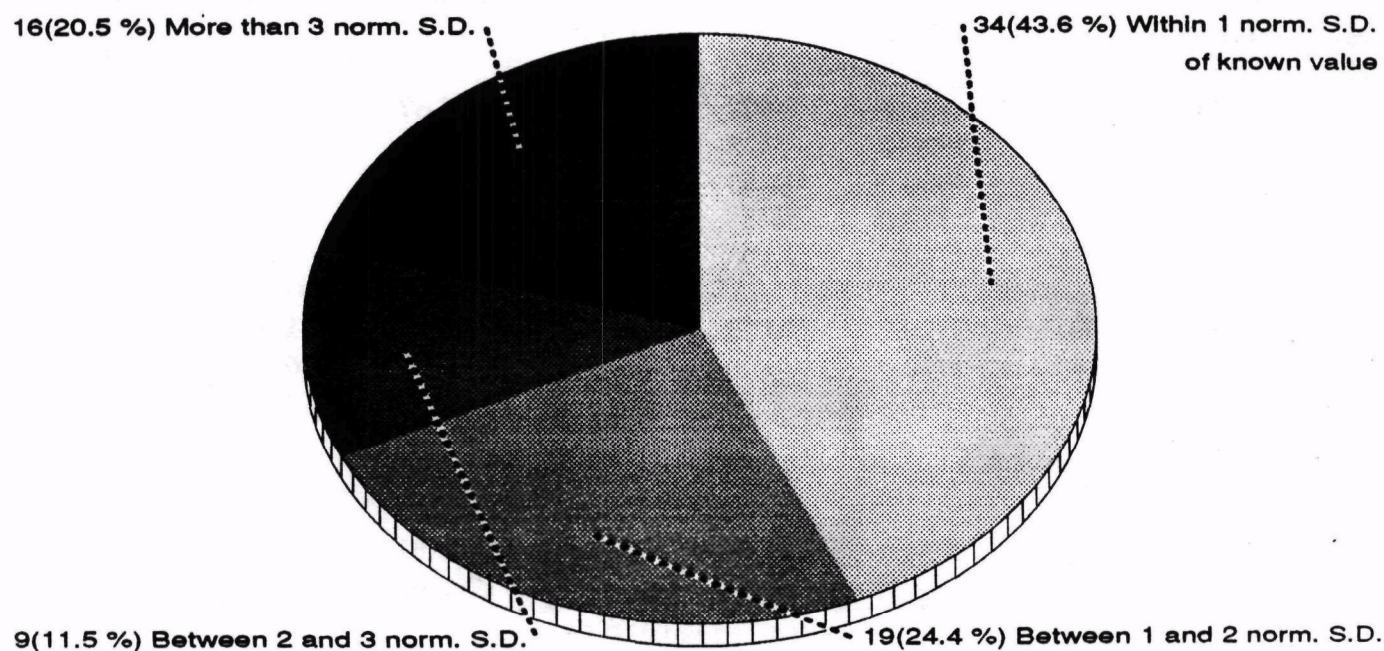
Total Potassium**Statistical Summary**

104 Participants

The known value of this nuclide is 1750.0 mg/l with an expected precision of 88.0; the control limits are 1597.3 to 1902.7; the warning regions are 1597.3 to 1648.1 and 1851.9 to 1902.7



Statistic	Respondents	Non-outliers
Mean	1706.83	Grand Avg 1711.91
Std. Dev.	282.96	93.26
Variance	80063.84	8697.15
% Coef. of Var.	16.58	5.45
% deviation of mean from known value	-2.47	-2.18
Norm. dev. of mean from known value	-0.15	-0.41
Median	1723.17	1723.17
% deviation of median from known value	-1.53	-1.53
Norm. dev. of median from known value	-0.09	-0.29



Total Potassium

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
A	1611.0	1836.0	1720.0	112.52	1.972	1722.33	0.21	-0.54
AA	1707.0	1710.0	1740.0	18.25	0.222	1719.00	0.14	-0.61
AE								•
AF	1645.0	1768.0	1768.0	71.01	0.826	1727.00	0.30	-0.45
AH	1759.0	1728.0	1721.0	20.22	0.255	1736.00	0.47	-0.28
AI	1860.0	1770.0	1810.0	45.09	0.604	1813.33	2.00	1.25
AK	1608.0	1605.0	1540.0	38.42	0.456	1584.33	-2.51	-3.26 ↓
AL	1790.0	1750.0	1810.0	30.55	0.403	1783.33	1.41	0.66
AN	1890.0	1780.0	1770.0	66.58	0.805	1813.33	2.00	1.25
AP								•
AU	1770.0	1780.0	1800.0	15.28	0.201	1783.33	1.41	0.66
AY	2122.0	2129.0	2184.0	33.96	0.416	2145.00	8.52	7.77 ×
AZ	1504.0	1636.0	1547.0	67.32	0.886	1562.33	-2.94	-3.69 ↓
BA	1612.0	1528.0	1648.0	61.58	0.805	1596.00	-2.28	-3.03 ↓
BC								•
BG								•
BH	1510.0	1500.0	1520.0	10.00	0.134	1510.00	-3.97	-4.72 ↓
BL	1785.0	1764.0	1675.0	58.40	0.738	1741.33	0.58	-0.17
BM	1710.0	1740.0	1670.0	35.12	0.470	1706.67	-0.10	-0.85
BO	1770.0	1710.0	1730.0	30.55	0.403	1736.67	0.49	-0.26
BW	3230.0	3110.0	3380.0	135.28	2.547	3240.00	30.08	29.33 ×
C	1732.0	1700.0	1740.0	21.17	0.268	1724.00	0.24	-0.51
CA	1600.0	1510.0	1510.0	51.96	0.604	1540.00	-3.38	-4.13 ↓
CJ	1740.0	1670.0	1570.0	85.44	1.269	1660.00	-1.02	-1.77
CO	1766.0	1803.0	1851.0	42.62	0.571	1806.67	1.87	1.12
CP								•
CQ	1716.0	1728.0	1676.0	27.23	0.349	1706.67	-0.10	-0.85
D	1838.0	1800.0	1833.0	20.65	0.255	1823.67	2.20	1.45
DD	1670.0	1610.0	1700.0	45.83	0.604	1660.00	-1.02	-1.77
DE	1770.0	1770.0	1770.0	0.00	0.000	1770.00	1.14	0.39
DL								•
DM	1700.0	1690.0	1730.0	20.82	0.268	1706.67	-0.10	-0.85
DT	1720.0	1760.0	1810.0	45.09	0.604	1763.33	1.01	0.26
DY	1644.0	1632.0	1655.0	11.50	0.154	1643.67	-1.34	-2.09
E	1737.0	1729.0	1776.0	25.15	0.315	1747.33	0.70	-0.05
EA	1730.0	1754.0	1710.0	22.03	0.295	1731.33	0.38	-0.37
EB								•
EH	1800.0	1760.0	1820.0	30.55	0.403	1793.33	1.60	0.85
EL	1740.0	1710.0	1770.0	30.00	0.403	1740.00	0.55	-0.20
EX								•
FE	1600.0	1800.0	1700.0	100.00	1.652	1700.00	-0.23	-0.98
FL								•
GE								•
HU	1745.0	1720.0	1700.0	22.55	0.302	1721.67	0.19	-0.56
I	1755.0	1748.0	1753.0	3.61	0.047	1752.00	0.79	0.04

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Total Potassium

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
IC	1649.0	1897.0	1806.0	125.46	2.266	1784.00	1.42	0.67
IU	1710.0	1680.0	1720.0	20.82	0.268	1703.33	-0.17	-0.92
J	1722.0	1737.0	1731.0	7.55	0.101	1730.00	0.36	-0.39
JR	1680.0	1640.0	1610.0	35.12	0.470	1643.33	-1.35	-2.10
JS	1755.0	1869.0	1860.0	63.38	0.765	1828.00	2.28	1.54
K	1931.0	1810.0	1837.0	63.52	0.812	1859.33	2.90	2.15
KL	1777.0	1766.0	1801.0	17.90	0.235	1781.33	1.37	0.62
KX	1780.0	1790.0	1770.0	10.00	0.134	1780.00	1.34	0.59
L	1795.0	1600.0	1640.0	103.00	1.588	1678.33	-0.66	-1.41
LF	1700.0	1700.0	1700.0	0.00	0.000	1700.00	-0.23	-0.98
LM								•
M	1560.0	1500.0	1660.0	80.83	1.141	1573.33	-2.73	-3.48 ↓
ME								•
MP	1560.0	1530.0	1480.0	40.41	0.537	1523.33	-3.71	-4.46 ↓
MQ	1619.0	1737.0	1965.0	175.89	3.519	1773.67	1.22	0.47
MS	1813.0	1773.0	1789.0	20.13	0.268	1791.67	1.57	0.82
MV	1824.0	1784.0	1800.0	20.13	0.268	1802.67	1.79	1.04
N								•
NJ								•
O	1690.0	1690.0	1690.0	0.00	0.000	1690.00	-0.43	-1.18
PB	1735.0	1720.0	1771.0	26.21	0.342	1742.00	0.59	-0.16
PC	207.0	180.0	194.0	13.50	0.181	193.67	-29.88	-30.63 ×
PE								•
PM	1650.0	1540.0	1580.0	55.68	0.738	1590.00	-2.40	-3.15 ↓
PP	1828.0	1806.0	1884.0	40.22	0.524	1839.33	2.51	1.76
PT	1592.0	1553.0	1535.0	29.14	0.383	1560.00	-2.99	-3.74 ↓
PV	1575.0	1650.0	1620.0	37.75	0.503	1615.00	-1.91	-2.66
PW	1676.0	1640.0	1654.0	18.15	0.242	1656.67	-1.09	-1.84
PY								•
Q	1633.0	1626.0	1663.0	19.66	0.248	1640.67	-1.40	-2.15
QB	1760.0	1830.0	1830.0	40.41	0.470	1806.67	1.87	1.12
QK	1891.0	1825.0	1760.0	65.50	0.879	1825.33	2.23	1.48
QL	1710.0	1640.0	1600.0	55.68	0.738	1650.00	-1.22	-1.97
QX	1577.0	1563.0	1581.0	9.45	0.121	1573.67	-2.72	-3.47 ↓
QZ								•
R	1639.0	1678.0	1663.0	19.67	0.262	1660.00	-1.02	-1.77
RA	1742.0	1860.0	1836.0	62.36	0.792	1812.67	1.98	1.23
RC								•
RK	1755.0	1968.0	1862.0	106.50	1.818	1861.67	2.95	2.20
RN	1965.0	1769.0	1932.0	104.94	1.601	1888.67	3.48	2.73
S	1660.0	1680.0	1710.0	25.17	0.336	1683.33	-0.56	-1.31
SI								•
SK								•
SM								•
SS	1653.0	1607.0	1715.0	54.20	0.725	1658.33	-1.05	-1.80

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Total Potassium

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
T	1732.0	1766.0	1684.0	41.20	0.550	1727.33	0.30	-0.45	
TA	1590.0	1630.0	1630.0	23.09	0.268	1616.67	-1.87	-2.62	
TB									•
TE	845.0	895.0	878.0	25.42	0.336	872.67	-16.52	-17.27	×
TI	1875.0	1824.0	1991.0	85.58	1.230	1896.67	3.64	2.89	
TK									•
TP	1530.0	1550.0	1560.0	15.28	0.201	1546.67	-3.25	-4.00	↓
TS	1510.0	1510.0	1500.0	5.77	0.067	1506.67	-4.04	-4.79	↓
TV									•
TW									•
U	1746.0	1685.0	1710.0	30.66	0.409	1713.67	0.03	-0.72	
W	1744.0	1634.0	1768.0	71.45	0.899	1715.33	0.07	-0.68	
Y	1760.0	1670.0	1750.0	49.33	0.604	1726.67	0.29	-0.46	
Z									•

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
193.67	×	PC	1683.33		S	1763.33		DT
872.67	×	TE	1690.00		O	1770.00		DE
1506.67	↓	TS	1700.00		LF	1773.67		MQ
1510.00	↓	BH	1700.00		FE	1780.00		KX
1523.33	↓	MP	1703.33		IU	1781.33		KL
1540.00	↓	CA	1706.67		DM	1783.33		AU
1546.67	↓	TP	1706.67		CQ	1783.33		AL
1560.00	↓	PT	1706.67		BM	1784.00		IC
1562.33	↓	AZ	1713.67		U	1791.67		MS
1573.33	↓	M	1715.33		W	1793.33		EH
1573.67	↓	QX	1719.00		AA	1802.67		MV
1584.33	↓	AK	1721.67		HU	1806.67		QB
1590.00	↓	PM	1722.33		A	1806.67		CO
1596.00	↓	BA	1724.00		C	1812.67		RA
1615.00		PV	1726.67		Y	1813.33		AN
1616.67		TA	1727.00		AF	1813.33		AI
1640.67		Q	1727.33		T	1823.67		D
1643.33		JR	1730.00		J	1825.33		QK
1643.67		DY	1731.33		EA	1828.00		JS
1650.00		QL	1736.00		AH	1839.33		PP
1656.67		PW	1736.67		BO	1859.33		K
1658.33		SS	1740.00		EL	1861.67		RK
1660.00		R	1741.33		BL	1888.67		RN
1660.00		DD	1742.00		PB	1896.67		TI
1660.00		CJ	1747.33		E	2145.00	×	AY
1678.33		L	1752.00		I	3240.00	×	BW

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Total Potassium