



# Summary of Results

## External Quality Assessment of Water Microbiology Recreational and Surface Water Scheme

Distribution Number: S113

Sample Numbers: S113A, S113B

Distribution Date:	July 2023
Results Due:	01 September 2023
Report Date:	07 September 2023
Samples prepared and quality control tested by:	Ellie Castello Divya George Nafeesa Hussain Cansev Katar Sabine Naujokat Zak Prior
Data analysed by:	Nita Patel Hiten Pragji
Report compiled by:	Nita Patel Hiten Pragji
Authorised by:	Nita Patel

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**UK Health Security Agency**  
**Food and Environmental Proficiency Testing Unit (FEPTU)**

61 Colindale Avenue  
London  
NW9 5EQ

Tel: +44 (0)20 8327 7119  
Fax:

For further information on the scheme please refer to:

**Scheme Guide:** <https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide>

### Guide to Scoring and Statistics:

<https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scoring-systems-and-statistics>

### General guidance for z-scores:

Participants' enumeration results are converted into z-scores using the following formula:

$$Z = \frac{(X_i - X_{pt})}{\sigma_{pt}}$$

$X_i$  = participants' result expressed (expressed as a log<sub>10</sub> value)  
 $X_{pt}$  = assigned value (participants' consensus median (expressed as a log<sub>10</sub> value)  
 $\sigma_{pt}$  = the fixed standard deviation for the examination (calculated by FEPTU)

The  $\sigma_{pt}$ -value expresses the acceptable difference between the individual participant's result and the participants' consensus median. The  $\sigma_{pt}$ -value used for calculating z-scores for all parameters in the Recreational and Surface Water Scheme is 0.35. A guide to interpreting z-scores follows, although laboratories must interpret their scores in the context of their own laboratory situation.

z = -1.99 to +1.99                      **satisfactory**  
z = -2 to -2.99 or +2 to +2.99      **questionable**  
z = < -3.00 or > + 3.00              **unsatisfactory**

It is usually recommended that z-scores exceeding +/-2 are investigated to establish the possible cause. As a general rule, UKHSA recommends that all questionable and unsatisfactory results are investigated.

**FEPTU Quality Control:** To demonstrate homogeneity of the sample, a minimum of 10 LENTICULE® discs, selected randomly from a batch, are tested in duplicate for parameters requiring enumeration.

To demonstrate stability of the sample, a minimum of six LENTICULE discs, selected randomly from a batch, are examined throughout the distribution period for enumeration parameters.

UKHSA uses methods stipulated in the Microbiology of Recreational and Environmental Waters (2000) and the DWI's series of documents: The Microbiology of Drinking Water (2002) - Methods for the Examination of Waters and Associated Materials.

The FEPTU results are used for guidance in the preliminary intended results notification, letters are posted on the website immediately after every distribution; electronic notification of their availability is sent to all participants.

Refer to section 17.0 of the Scheme Guide if you have experienced difficulties with any of the examinations.

<https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide>

Participants are reminded that reporting an incorrect or false negative results for water samples could have serious public health implications.

Please contact FEPTU staff for advice and information:

<b>Repeat samples</b>	Carmen Gomes or Kermin Daruwalla	<b>Tel: +44 (0)20 8327 7119</b>
<b>Data Analysis</b>	Nita Patel	<b>Fax:</b>
<b>Microbiological advice</b>	Nita Patel or Zak Prior	<b>Email: foodeqa@ukhsa.gov.uk</b>
<b>General comments and complaints</b>	Nita Patel or Zak Prior	<a href="#">FEPTU's website</a>
<b>Scheme consultants</b>	Stephen Bullock	
<b>Scheme Co-ordinator</b>	Nita Patel	

**Accreditation:** UKHSA Water EQA Scheme for Recreational and Surface Water is accredited by the United Kingdom Accreditation Service (UKAS) to ISO/IEC 17043:2010.



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Sample: S113A

A water sample from bathing beach (marine)

Contents: *Enterococcus faecalis* (74) (NCTC 5957), *Salmonella* Senftenberg 1 ,3,19:g.[s].t: – (100 per disc) (wild strain), *Pseudomonas aeruginosa* (30) (NCTC 12951)

Expected Results:

All counts are expressed as colony forming units (cfu) per 100mL.  
The fixed standard deviation value (*Opt* value) used for calculation of the z-scores is **0.35** for all parameters.

Parameter	<i>Escherichia coli</i>	Enterococci	<i>Salmonella</i> spp.
FEPTU median	0	68	Detected in 1L
No. results returned	58	57	28
Assigned value (Participants median all)	0	88	N/A
Uncertainty of assigned value*	N/A	0.01	N/A
Participants mean (all results)	0	87	N/A
Expected Range	N/A	28 - 278	N/A
Standard deviation**	N/A	0.07	N/A
No of outlying counts	N/A	1	N/A
False positives	2	N/A	N/A
False negatives	N/A	1	0
Your result			
Score for performance assessment			
Z-score			

\*  $U(X_{pt})$  is based on results transformed to a log<sub>10</sub> scale  
\*\* Robust  $S^*$  based on median absolute deviation about the participants' median (*MADe*)

Total sent samples	60
Not examined	1
Non returns	1
Late returns	0

Sample: S113B

A water sample from bathing beach (marine)

Contents: *Escherichia coli* (41) (wild strain), *Salmonella* Livingstone 6 ,7,14:d:l,w (100 per disc) (wild strain), *Staphylococcus saprophyticus* (50) (NCTC 7292)

Expected Results:

All counts are expressed as colony forming units (cfu) per 100mL.  
The fixed standard deviation value (*Opt* value) used for calculation of the z-scores is 0.35 for all parameters.

Parameter	<i>Escherichia coli</i>	Enterococci	<i>Salmonella</i> spp.
FEPTU median	41	0	Detected in 1L
No. results returned	58	57	28
Assigned value (Participants median all)	51	0	N/A
Uncertainty of assigned value*	0.02	N/A	N/A
Participants mean (all results)	50	0	N/A
Expected Range	16 - 160	N/A	N/A
Standard deviation**	0.13	N/A	N/A
No of outlying counts	4	N/A	N/A
False positives	N/A	1	N/A
False negatives	2	N/A	0
Your result			
Score for performance assessment			
Z-score			

\*  $U(X_{opt})$  is based on results transformed to a log<sub>10</sub> scale  
\*\* Robust  $S^*$  based on median absolute deviation about the participants' median (*MADe*)

Total sent samples	60
Not examined	1
Non returns	1
Late returns	0

S113A: *Escherichia coli*

No data for graph

Method based presentation

S113A : *Escherichia coli*

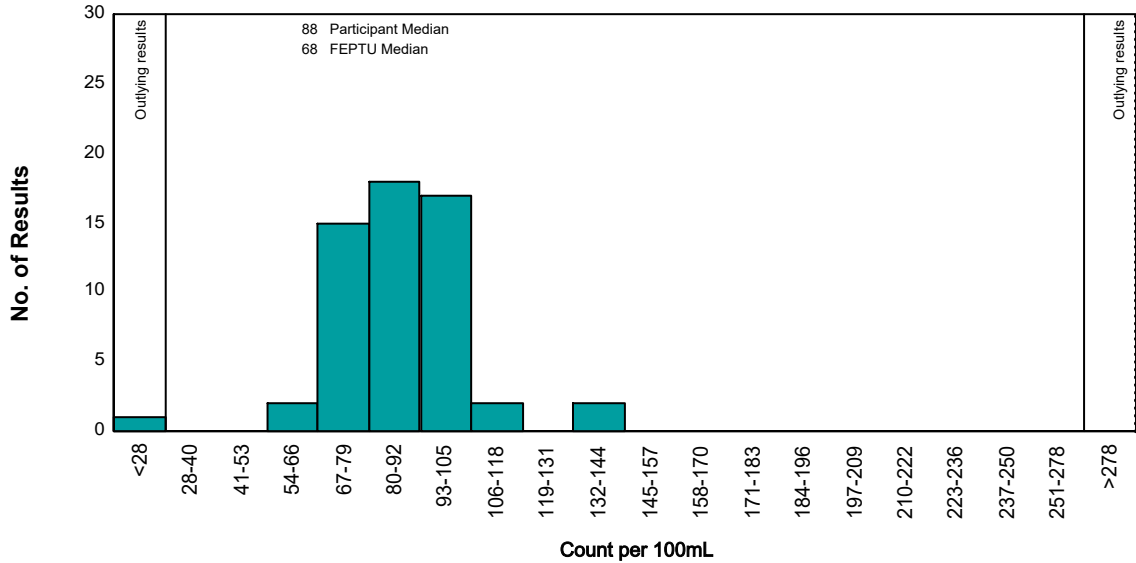
FEPTU Method: Chromogenic coliform  
agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log <sub>10</sub> )	Range Reported
Colilert (18/250)	14	10	35	0	0.00	0 - 0
Colisure	0	0	0			-
Tube combinations	0	1	0			-
Other (MPN)	2	3	5			-
TBX	6	1	15			-
MLGA	2	1	5			-
MLSB	7	0	17			-
MLSA	3	0	7			-
Tergitol 7 (TTC)	0	0	0			-
Chromogenic coliform agar	2	1	5			-
Other (Membrane filtration)	3	0	7			-

S113A: *Escherichia coli*

No data for graph

S113A: Enterococci



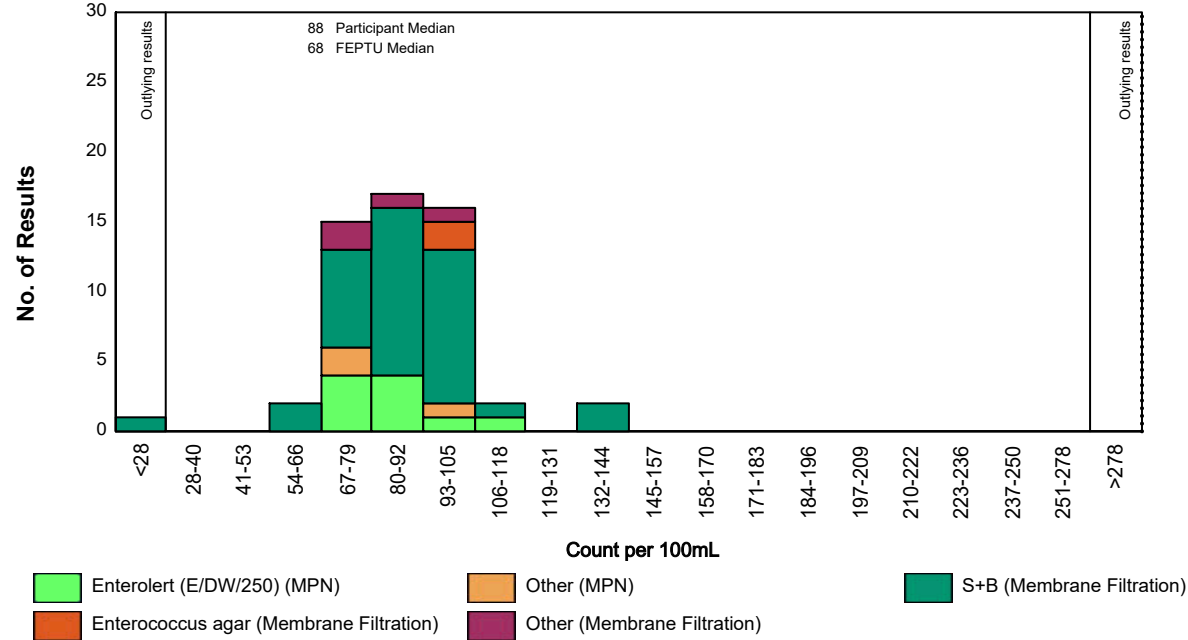
Method based presentation

S113A : Enterococci

FEPTU Method: S+B

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log <sub>10</sub> )	Range Reported
Enterolert (E/DW/250)	10	0	18	87	0.07	69 - 109
Other (MPN)	3	0	5			-
S+B	36	0	65	88	0.07	0 - 140
Enterococcus agar	2	0	3			-
Other (Membrane filtration)	4	0	7			-

S113A: Enterococci



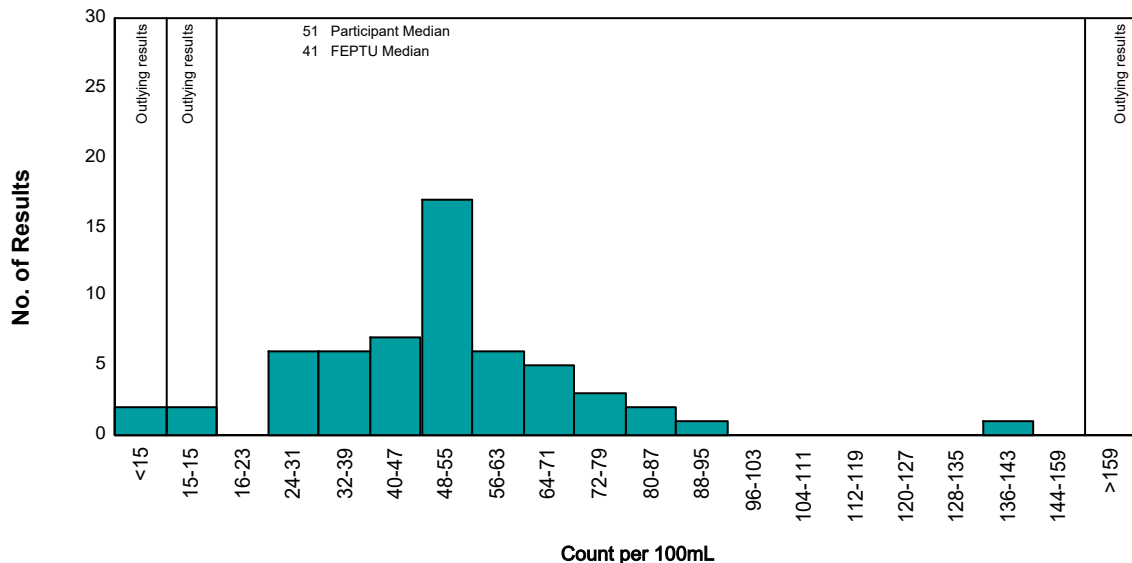
## Method based presentation

S113A : *Salmonella* spp.

FEPTU Method: Enrichment XLD

Method	No. Participants Detected	No. Participants Not Detected
VIDAS	1	0
PCR	3	0
Other	3	0
ISO 19250:2010	9	0
Enrichment XLD	8	0
Enrichment BGA	0	0
Enrichment other	2	0

### S113B: *Escherichia coli*



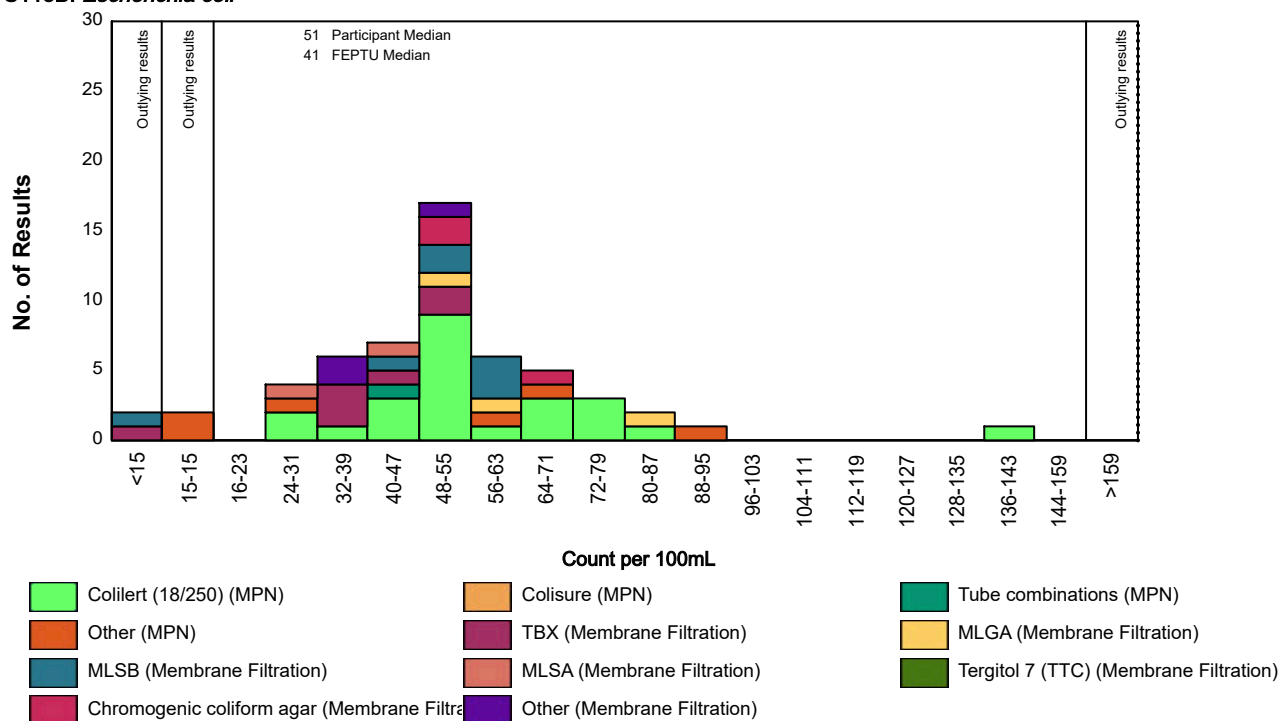
## Method based presentation

S113B : *Escherichia coli*

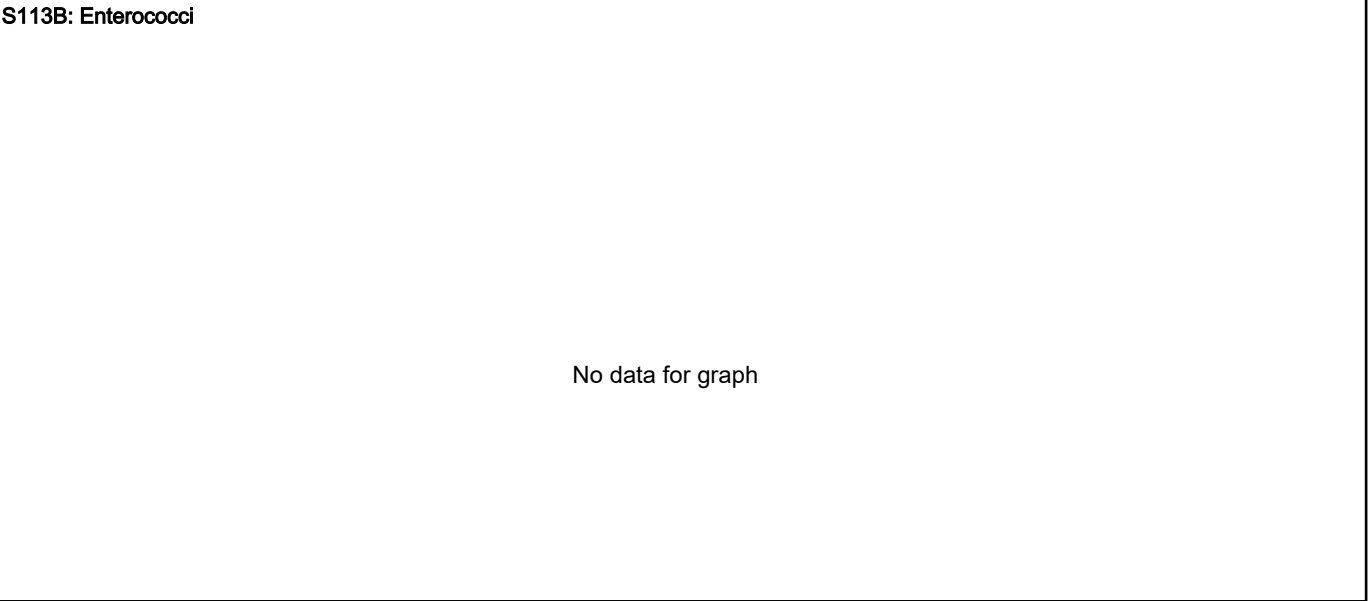
FEPTU Method: Chromogenic coliform  
agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log <sub>10</sub> )	Range Reported
Colilert (18/250)	24	0	42	52	0.11	30 - 138
Colisure	0	0	0			-
Tube combinations	1	0	1			-
Other (MPN)	6	0	10			-
TBX	7	0	12			-
MLGA	3	0	5			-
MLSB	7	0	12			-
MLSA	2	0	3			-
Tergitol 7 (TTC)	0	0	0			-
Chromogenic coliform agar	3	0	5			-
Other (Membrane filtration)	3	0	5			-

### S113B: *Escherichia coli*

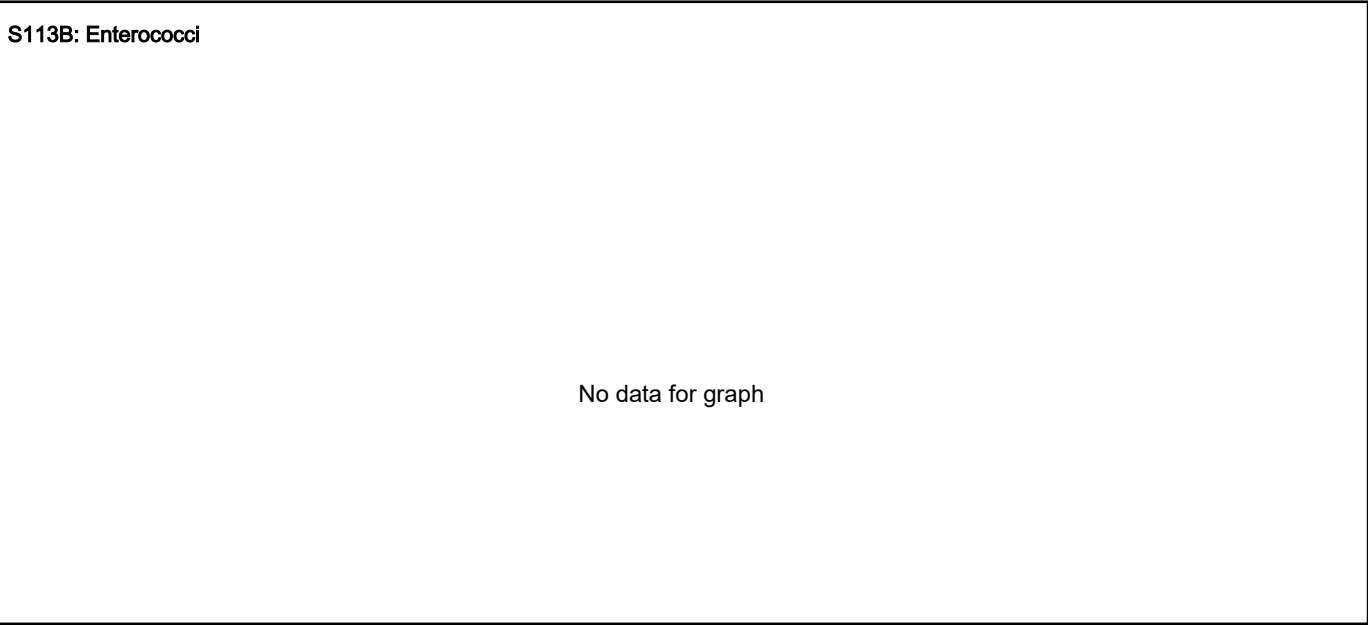






Method based presentation

S113B : Enterococci			FEPTU Method: S+B			
Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log <sub>10</sub> )	Range Reported
Enterolert (E/DW/250)	5	5	12			-
Other (MPN)	1	3	2			-
S+B	27	8	69	0	0.00	0 - 90
Enterococcus agar	2	0	5			-
Other (Membrane filtration)	4	0	10			-



## Method based presentation

S113B : *Salmonella* spp.

FEPTU Method: Enrichment XLD

Method	No. Participants Detected	No. Participants Not Detected
VIDAS	1	0
PCR	3	0
Other	1	0
ISO 19250:2010	11	0
Enrichment XLD	8	0
Enrichment BGA	0	0
Enrichment other	2	0

### General comments

#### **Method based presentation of enumeration results:**

Participants are advised if less than 10 laboratories report a result for a method, no data is shown for the Median, Robust SD and the Range Reported in the 'Method based presentation' tables.  
Numbers shown in the 'Excluded Results' column are laboratories that reported a censored value.

If you do not return a result for a distribution, you will not be able to view all the participants' results data in your individualised report. Please contact us if you require this information on [foodeqa@ukhsa.gov.uk](mailto:foodeqa@ukhsa.gov.uk).

End of report.

