Summary of Results

External Quality Assessment of Water Microbiology

Recreational and Surface Water Scheme

Distribution Number: S121 **Sample Numbers: S121A, S121B**

Distribution Date:	**January 2025**
Results Due:	**07 February 2025**
Report Date:	**13 February 2025**
Samples prepared and quality control tested by:	**Divya George** **Nafeesa Hussain** **Afifa Halim** **Sabine Naujokat** **Zak Prior** **Jake Videlefsky**
Data analysed by:	**Nita Patel** **Hiten Pragji**
Report compiled by:	**Nita Patel** **Hiten Pragji**
Authorised by:	**Nita Patel**

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For further information on the scheme please refer to:

Scheme Guide: https://www.feptu.org.uk/schemes/scheme-guide/

Guide to Scoring and Statistics: https://www.feptu.org.uk/schemes/scoring/

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 $\log_{10}$ value)
X_{pt} = assigned value (participants' consensus median (expressed as a $\log_{10}$ value)
σ_{pt} = the fixed standard deviation for the examination (calculated by FEPTU)

The σ_{pt}-value expresses the acceptable difference between the individual participant's result and the participants' consensus median. The σ_{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 19.0 of the Scheme Guide if you have experienced difficulties with any of the examinations.

https://www.feptu.org.uk/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:

Repeat samples	Carmen Gomes or Kermin Daruwalla
Data Analysis	Nita Patel
Microbiological advice	Nita Patel or Zak Prior
General comments and complaints	Nita Patel or Zak Prior
Scheme consultants	Stephen Bullock
Scheme Co-ordinator	Nita Patel

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Email: foodeqa@ukhsa.gov.uk

FEPTU's website

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

UKAS PROFICIENCY TESTING
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Sample: S121A

Water sample from river, lake and stream

Contents: *Klebsiella pneumoniae* (30) (wild strain), *Escherichia coli* (56) (wild strain), *Enterococcus faecalis* (39) (wild strain), *Clostridium perfringens* (68) (wild strain), *Salmonella* Typhimurium 1,4,[5],12;i;1,2 (20 per disc) (wild strain), *Staphylococcus saprophyticus* (2 per mL) (wild strain)

Expected Results:

All counts are expressed as colony forming units (cfu) per 100mL.

The fixed standard deviation value (σpt value) used for calculation of the z-scores is **0.35** for all parameters.

Parameter	**Coliform bacteria**	***Escherichia coli***	**Enterococci**	**Faecal coliforms**	***Clostridium perfringens***	***Salmonella* spp.**
FEPTU median	86 (1.93 $\log_{10}$)	57	39	57	66	Detected in 1L
No. results returned	48	52	51	23	38	27
Assigned value (Participants median all	1.39x10^2 (2.14 $\log_{10}$)	64	42	66	76	N/A
Uncertainty of assigned value*	0.04	0.02	0.01	0.04	0.02	N/A
Participants mean (all results)	1.30x10^2 (2.11 $\log_{10}$)	65	42	69	73	N/A
Expected Range	44 - 4.38x10^2	20 - 201	13 - 133	21 - 209	24 - 240	N/A
Standard deviation**	0.19	0.1	0.08	0.15	0.11	N/A
No of outlying counts	0	1	0	0	2	N/A
False positives	N/A	N/A	N/A	N/A	N/A	N/A
False negatives	0	0	0	0	0	1
Your result						
Score for performance assessment						
Z-score						

* $U(X_{pt})$ is based on results transformed to a $\log_{10}$ scale

** Robust S^* based on median absolute deviation about the participants' median (*MADe*)

Total sent samples	58
Not examined	3
Non returns	0
Late returns	0

Sample: S121B

Water sample from river, lake and stream

Contents: *Enterococcus faecalis* (48) (NCTC 5957), *Clostridium perfringens* (38) (wild strain), *Pediococcus pentosaceus* (3.20×10^2 per mL) (wild strain)

Expected Results:

All counts are expressed as colony forming units (cfu) per 100mL.

The fixed standard deviation value (σ_{pt} value) used for calculation of the z-scores is **0.35** for all parameters.

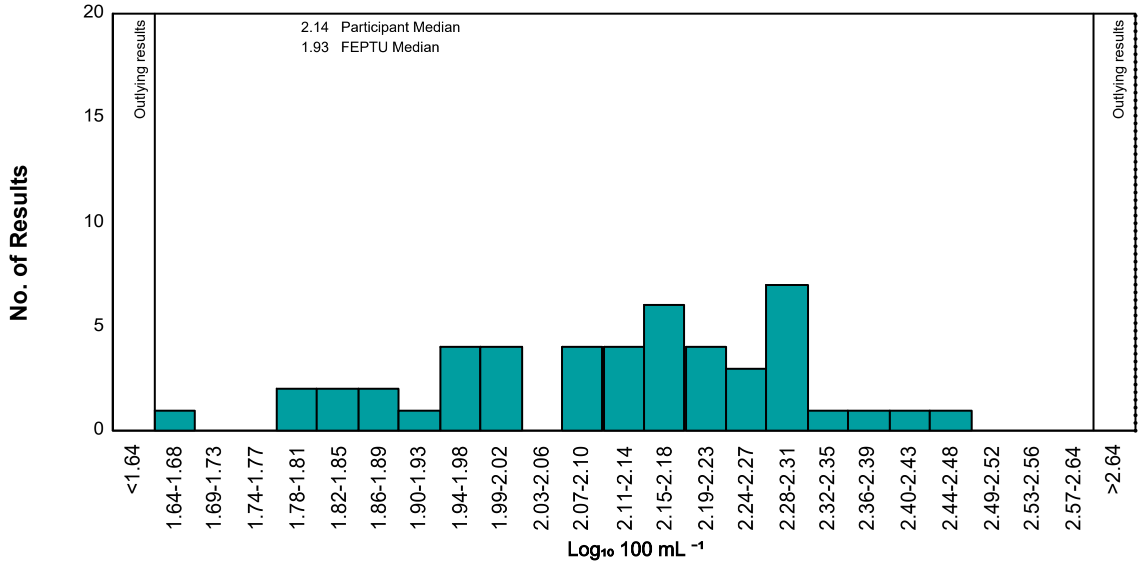
Parameter	**Coliform bacteria**	***Escherichia coli***	**Enterococci**	**Faecal coliforms**	***Clostridium perfringens***	***Salmonella* spp.**
FEPTU median	0	0	45	0	38	Not Detected in
No. results returned	48	52	51	23	38	25
Assigned value (Participants median all	0	0	58	0	42	N/A
Uncertainty of assigned value*	N/A	N/A	0.01	N/A	0.02	N/A
Participants mean (all results)	0	0	58	0	41	N/A
Expected Range	N/A	N/A	18 - 182	N/A	13 - 133	N/A
Standard deviation**	N/A	N/A	0.08	N/A	0.09	N/A
No of outlying counts	N/A	N/A	6	N/A	3	N/A
False positives	0	0	N/A	1	N/A	1
False negatives	N/A	N/A	2	N/A	0	N/A
Your result						
Score for performance assessment						
Z-score						

* $U(X_{pt})$ is based on results transformed to a $\log_{10}$ scale

** Robust S^* based on median absolute deviation about the participants' median (*MADe*)

Total sent samples	58
Not examined	3
Non returns	0
Late returns	0

S121A: Coliform bacteria



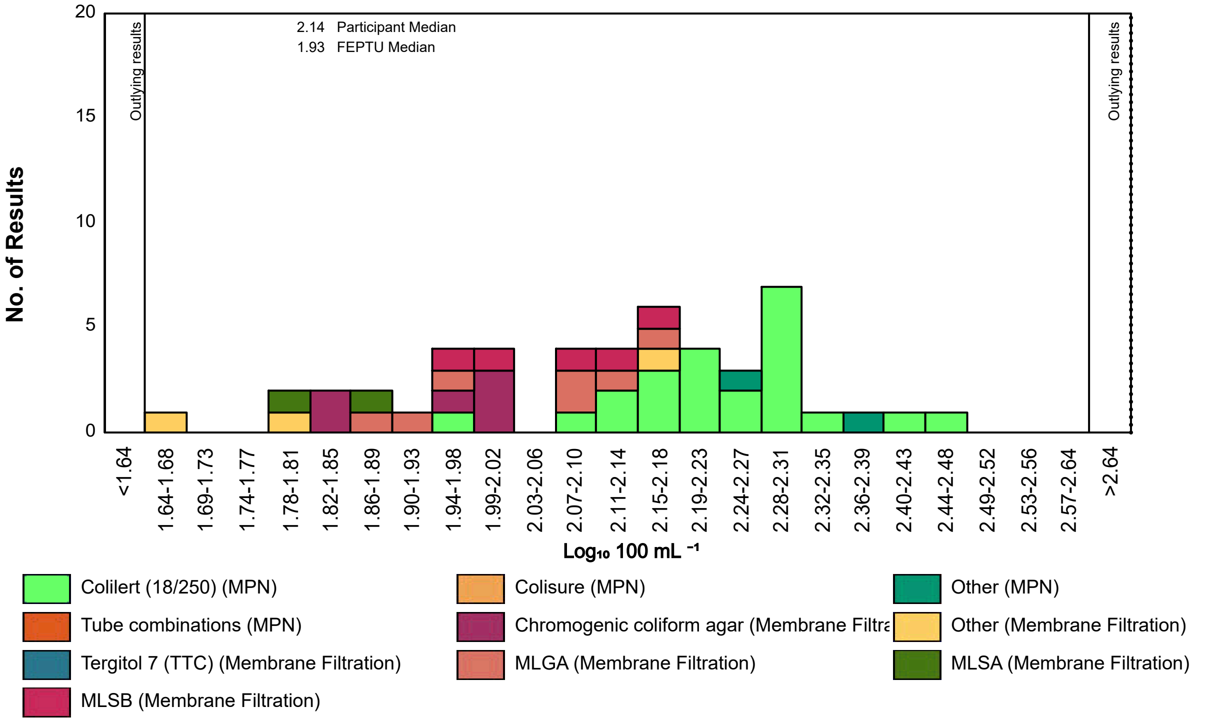
Method based presentation

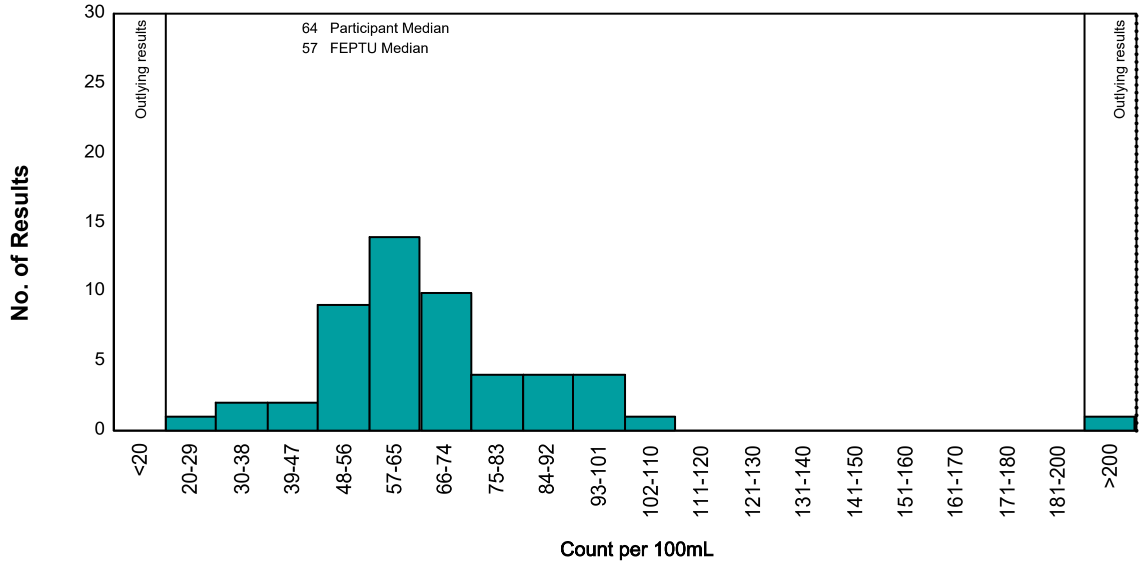
S121A : Coliform bacteria

FEPTU Method: Chromogenic coliform agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust *S** (Log₁₀)	Range Reported
Colilert (18/250)	23	0	47	179	0.08	91 - 276
Colisure	0	0	0			-
Other (MPN)	2	0	4			-
Tube combinations	0	0	0			-
Chromogenic coliform agar	6	0	12			-
Other (Membrane filtration)	3	0	6			-
Tergitol 7 (TTC)	0	0	0			-
MLGA	7	0	14			-
MLSA	2	0	4			-
MLSB	5	0	10			-

S121A: Coliform bacteria





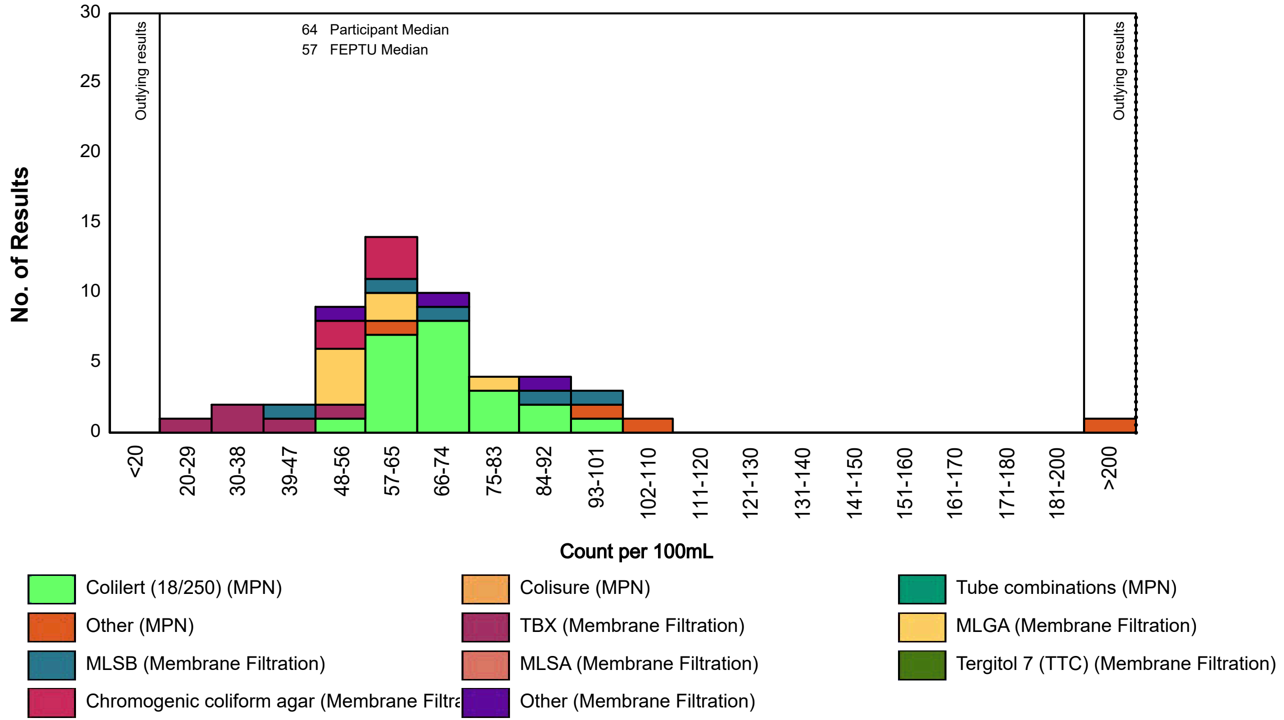
S121A: ***Escherichia coli***

Method based presentation

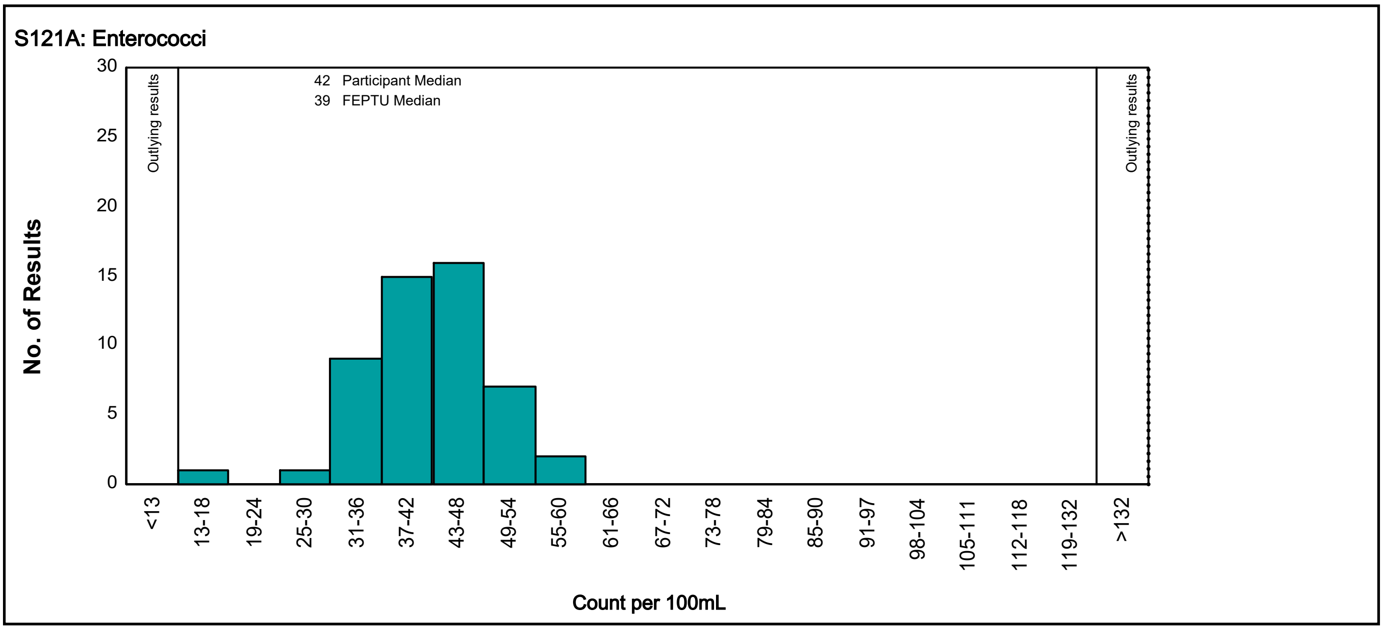
S121A : ***Escherichia coli***

FEPTU Method: Chromogenic coliform agar

Method	**Number of Results**	**Excluded Results**	**Percentage of the total**	**Median**	**Robust *S**** **(Log$_{10}$)**	**Range Reported**
Colilert (18/250)	22	0	43	71	0.07	56 - 93
Colisure	0	0	0			-
Tube combinations	0	0	0			-
Other (MPN)	4	0	7			-
TBX	5	0	9			-
MLGA	7	0	13			-
MLSB	5	0	9			-
MLSA	0	0	0			-
Tergitol 7 (TTC)	0	0	0			-
Chromogenic coliform agar	5	0	9			-
Other (Membrane filtration)	3	0	5			-



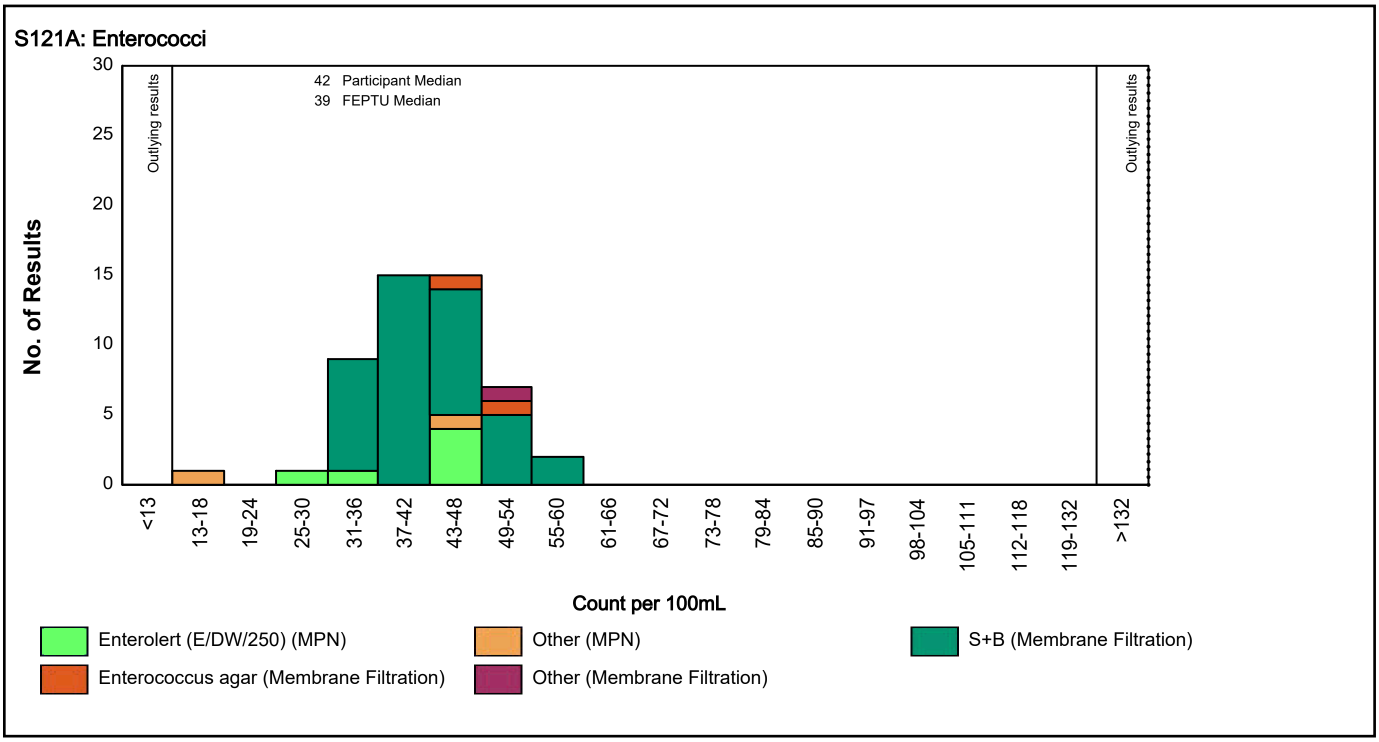
S121A: ***Escherichia coli***



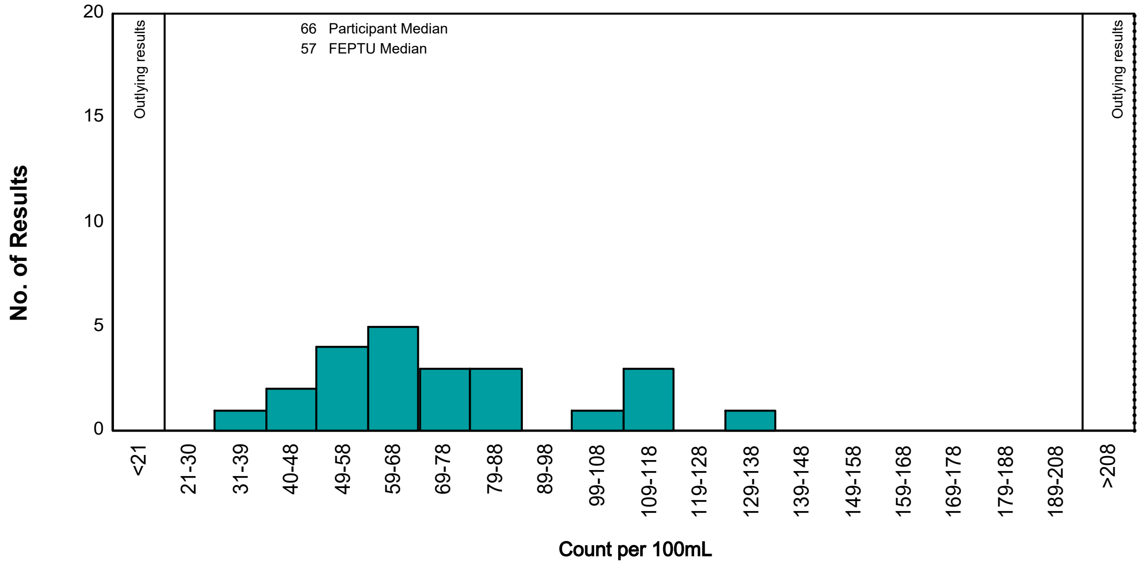
Method based presentation

S121A : Enterococci **FEPTU Method: S+B**

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust *S** (Log$_{10}$)	Range Reported
Enterolert (E/DW/250)	6	0	12			-
Other (MPN)	2	0	4			-
S+B	39	0	78	41	0.07	32 - 56
Enterococcus agar	2	0	4			-
Other (Membrane filtration)	1	0	2			-



S121A: Faecal coliforms



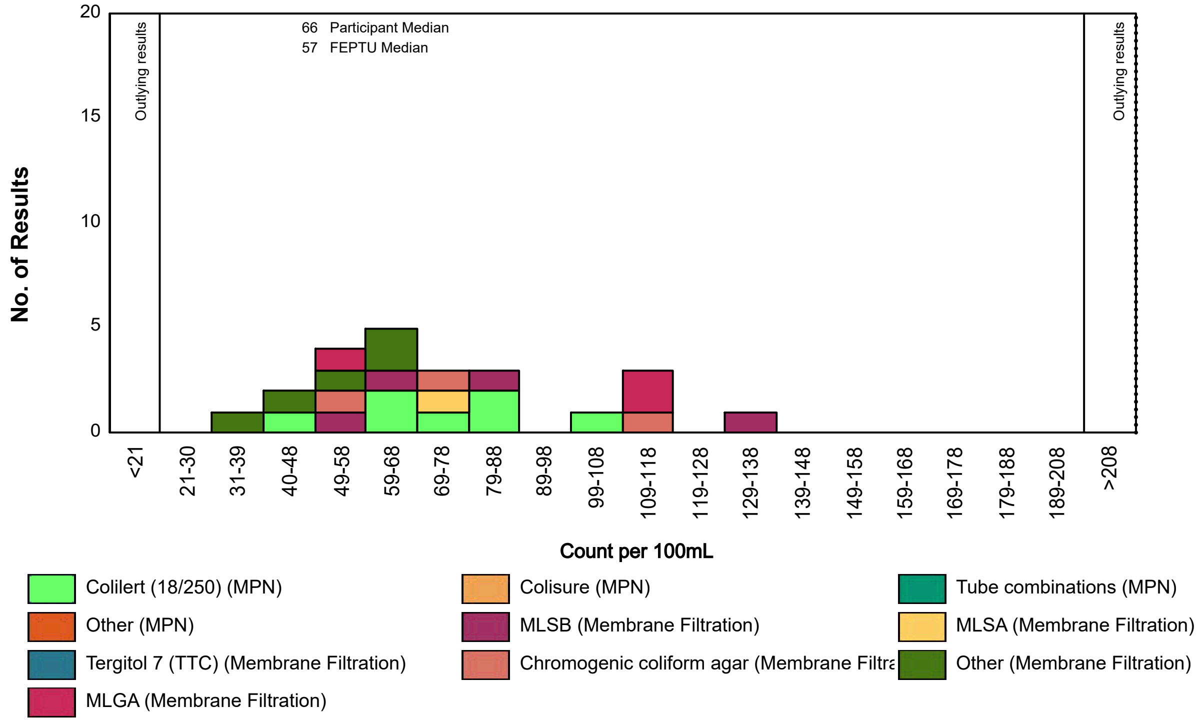
Method based presentation

S121A : Faecal coliforms

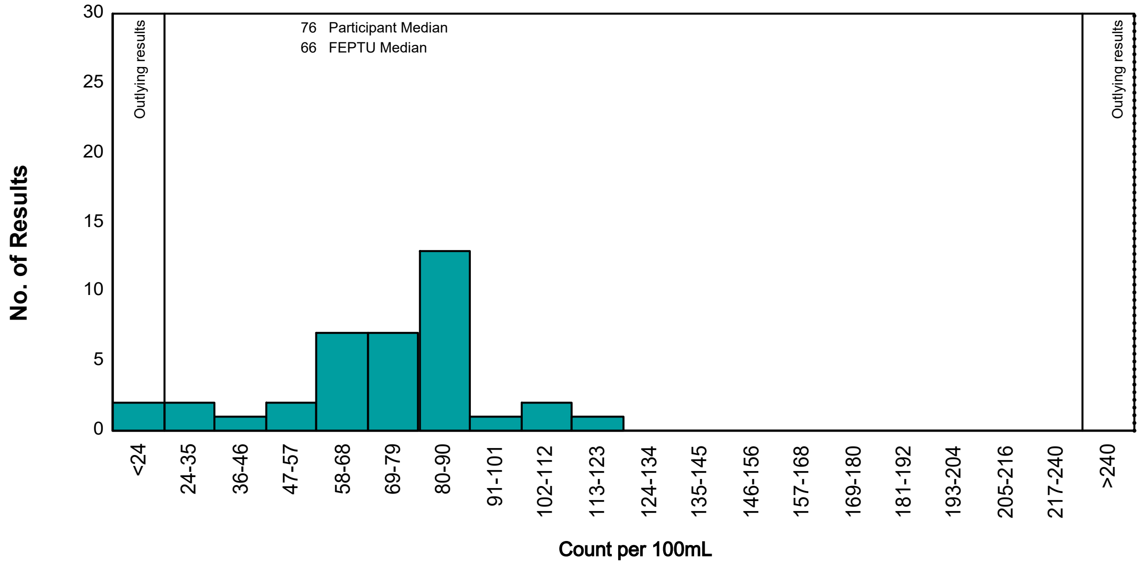
FEPTU Method: Chromogenic coliform agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust *S** (Log₁₀)	Range Reported
Colilert (18/250)	7	0	30			-
Colisure	0	0	0			-
Tube combinations	0	0	0			-
Other (MPN)	0	0	0			-
MLSB	4	0	17			-
MLSA	1	0	4			-
Tergitol 7 (TTC)	0	0	0			-
Chromogenic coliform agar	3	0	13			-
Other (Membrane filtration)	5	0	21			-
MLGA	3	0	13			-

S121A: Faecal coliforms



S121A: ***Clostridium perfringens***

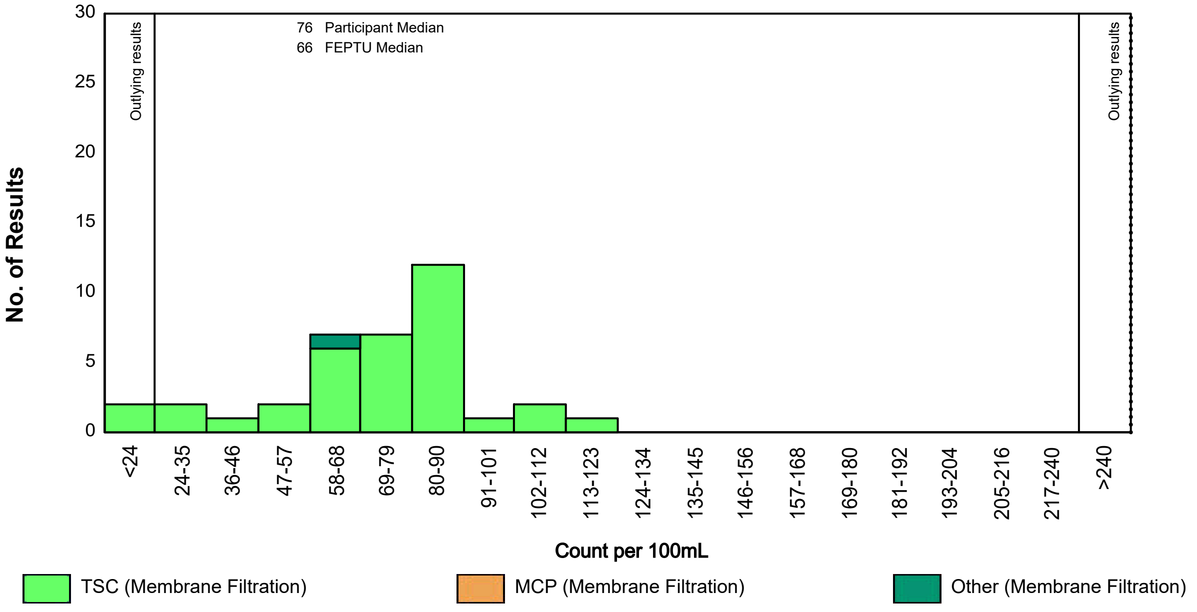


Method based presentation

S121A : ***Clostridium perfringens*** **FEPTU Method: TSC**

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust *S** (Log₁₀)	Range Reported
TSC	36	0	97	76	0.11	17 - 118
MCP	0	0	0			-
Other (Membrane filtration)	1	0	2			-

S121A: ***Clostridium perfringens***



Method based presentation

S121A : *Salmonella* spp. **FEPTU Method: Enrichment XLD**

Method	No. Participants Detected	No. Participants Not Detected
VIDAS	0	0
PCR	1	0
Other	0	0
Enrichment XLD	10	0
ISO 19250:2010	10	1
Enrichment BGA	1	0
Other (Membrane filtration)	4	0

S121B: Coliform bacteria

No data for graph

Method based presentation

S121B : Coliform bacteria

FEPTU Method: Chromogenic coliform agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log10)	Range Reported
Colilert (18/250)	18	5	46	0	0.00	0 - 0
Colisure	0	0	0			-
Other (MPN)	2	0	5			-
Tube combinations	0	0	0			-
Chromogenic coliform agar	3	3	7			-
Other (Membrane filtration)	2	1	5			-
Tergitol 7 (TTC)	0	0	0			-
MLGA	7	0	17			-
MLSA	2	0	5			-
MLSB	5	0	12			-

S121B: Coliform bacteria

No data for graph

S121B: ***Escherichia coli***

No data for graph

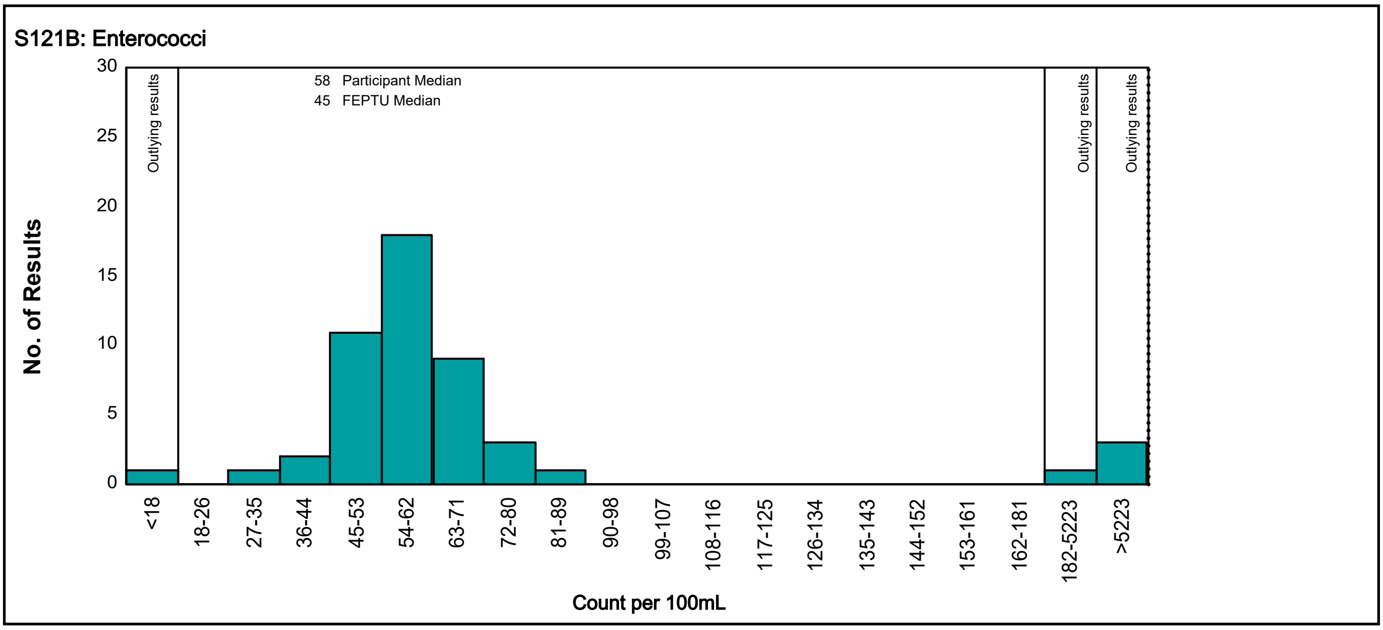
Method based presentation

S121B : ***Escherichia coli*** **FEPTU Method: Chromogenic coliform agar**

Method	**Number of Results**	**Excluded Results**	**Percentage of the total**	**Median**	**Robust *S**** **(Log_{10})**	**Range Reported**
Colilert (18/250)	17	4	44	0	0.00	0 - 0
Colisure	0	0	0			-
Tube combinations	0	0	0			-
Other (MPN)	2	3	5			-
TBX	3	2	7			-
MLGA	7	0	18			-
MLSB	5	0	13			-
MLSA	0	0	0			-
Tergitol 7 (TTC)	0	0	0			-
Chromogenic coliform agar	2	3	5			-
Other (Membrane filtration)	2	1	5			-

S121B: ***Escherichia coli***

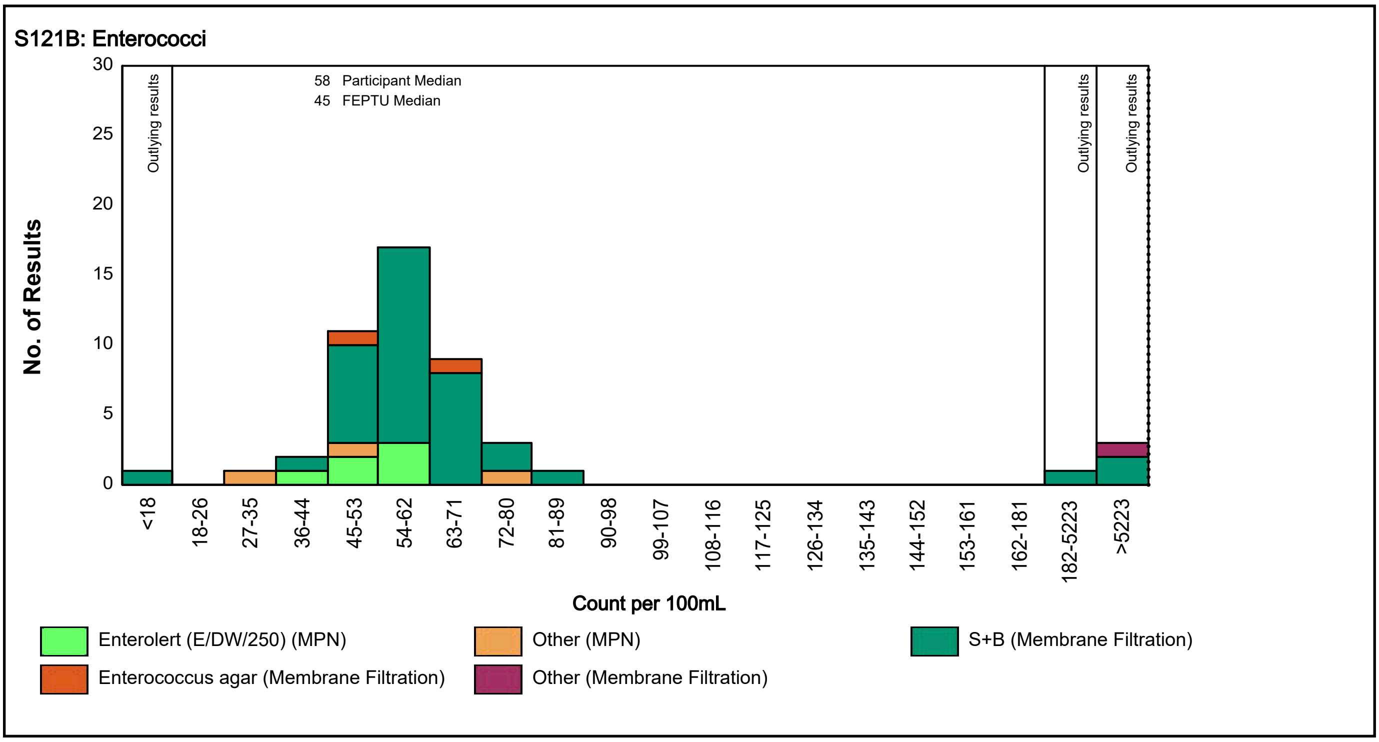
No data for graph



Method based presentation

S121B : Enterococci **FEPTU Method: S+B**

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log$_{10}$)	Range Reported
Enterolert (E/DW/250)	6	0	12			-
Other (MPN)	3	0	6			-
S+B	37	1	75	59	0.08	0 - 18000
Enterococcus agar	2	0	4			-
Other (Membrane filtration)	1	0	2			-



S121B: Faecal coliforms

No data for graph

Method based presentation

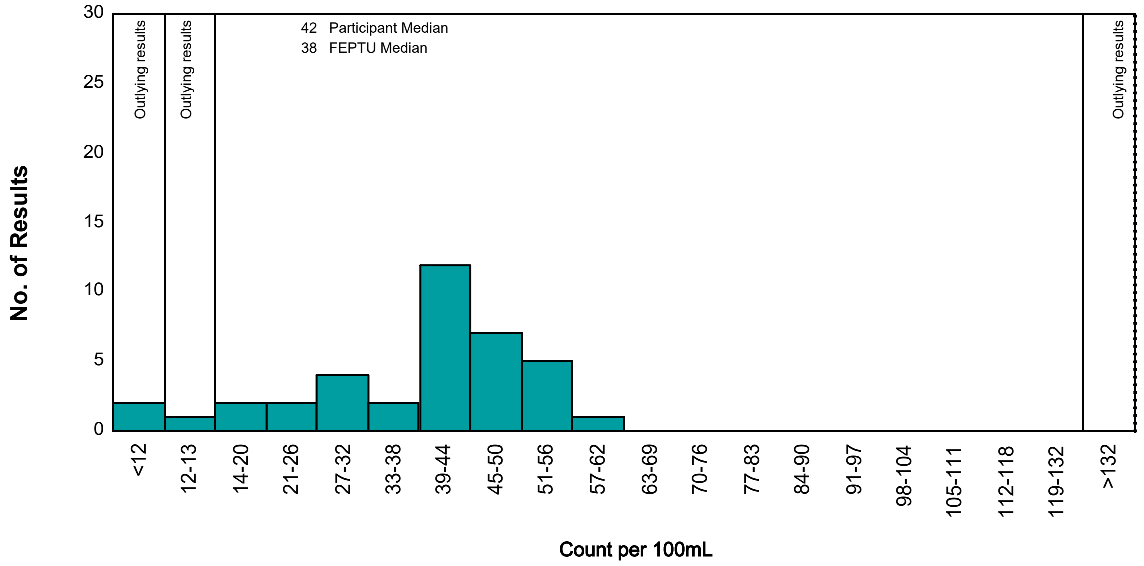
S121B : Faecal coliforms

FEPTU Method: Chromogenic coliform agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust *S** (Log$_{10}$)	Range Reported
Colilert (18/250)	6	1	31			-
Colisure	0	0	0			-
Tube combinations	0	0	0			-
Other (MPN)	0	0	0			-
MLSB	4	0	21			-
MLSA	1	0	5			-
Tergitol 7 (TTC)	0	0	0			-
Chromogenic coliform agar	1	2	5			-
Other (Membrane filtration)	4	1	21			-
MLGA	3	0	15			-

S121B: Faecal coliforms

No data for graph

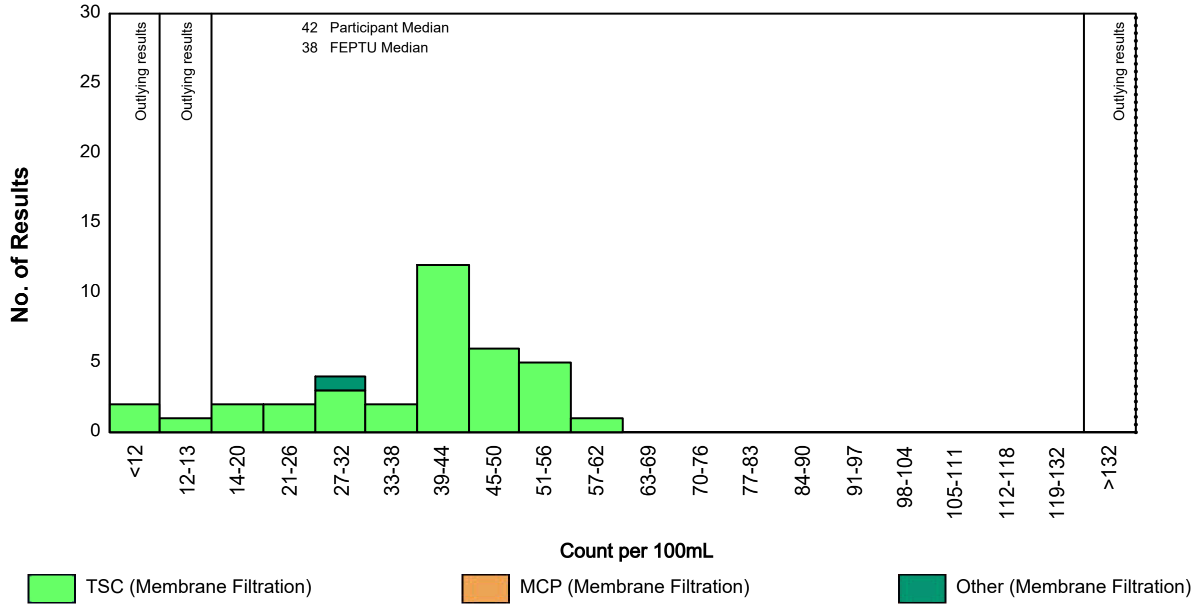


S121B: *Clostridium perfringens*

Method based presentation

S121B : ***Clostridium perfringens*** **FEPTU Method: TSC**

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust *S** (Log_{10})	Range Reported
TSC	36	0	97	42	0.09	7 - 57
MCP	0	0	0			-
Other (Membrane filtration)	1	0	2			-



S121B: *Clostridium perfringens*

Method based presentation

S121B : *Salmonella* spp. **FEPTU Method: Enrichment XLD**

Method	No. Participants Detected	No. Participants Not Detected
VIDAS	0	0
PCR	0	1
Other	0	0
Enrichment XLD	0	10
ISO 19250:2010	1	9
Enrichment BGA	0	1
Other (Membrane filtration)	0	3

General comments

Method based presentation of enumeration results:

Participants are advised if less than 10 laboratories report a result for a method, no data are 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.

New website

We are pleased to announce the launch of our new website: https://www.feptu.org.uk/. Please refer to this website to obtain the latest information for your proficiency testing.

Information of importance

To understand more about the proficiency testing schemes, please use the following links for information on:

1. Report format explained: Annotated report

2. Performance rating: Performance-over-time and Scheme guide (section 16.0)

3. Scoring and statistics used: Scoring information and stats

4. Homogeneity and stability: Scheme guide (section 9.0)

5. Complaints and appeal process: Scheme guide (section 20.0 and 21.0)

For further information about the operation of the service including confidentiality and terms of participation, please refer to the Scheme Guide: Scheme guide

End of report.