



Summary of Results

External Quality Assessment of Water Microbiology Recreational and Surface Water Scheme

Distribution Number: S89

Sample Numbers: S89A, S89B

Distribution Date:	March 2019
Results Due:	12 April 2019
Report Date:	17 April 2019
Samples prepared and quality control tested by:	Angela Appea Richard Borrill Thomas Harper Margaret Njenga Zak Prior Lili Tsegaye
Data analysed by:	Nita Patel Manchari Rajkumar
Report compiled by:	Nita Patel Manchari Rajkumar
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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 log₁₀ value)
 X_{pt} = assigned value (participants' consensus median (expressed as a log₁₀ 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, PHE 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.

PHE 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:

Repeat samples	Carmen Gomes or Kermin Daruwalla	Tel: +44 (0)20 8327 7119
Data Analysis	Manchari Rajkumar or Nita Patel	Fax: +44 (0)20 8200 8264
Microbiological advice	Nita Patel or Zak Prior	Email: foodeqa@phe.gov.uk
General comments and complaints	Nita Patel or Zak Prior	FEPTU's website
Scheme consultants	Julie E. Russell	
Scheme Co-ordinator	Nita Patel	

Accreditation: PHE 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: S89A

A water sample from bathing beach (marine)

Contents: *Escherichia coli* (5.8x10²) (wild strain), *Enterococcus faecalis* (1.3x10²) (wild strain), *Salmonella* Indiana 1,4,12:z:1,7 (70 per disc) (wild strain), *Pseudomonas fluorescens* (20) (NCTC 3756)

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	<i>Escherichia coli</i>	Enterococci	<i>Salmonella</i> spp.
FEPTU median	5.80x10 ² (2.76 log ₁₀)	1.25x10 ² (2.1 log ₁₀)	Detected in 1L
No. results returned	47	45	29
Assigned value (Participants median all results)	7.50x10 ² (2.88 log ₁₀)	1.30x10 ² (2.11 log ₁₀)	N/A
Uncertainty of assigned value*	0.05	0.02	N/A
Participants mean (all results)	6.54x10 ² (2.82 log ₁₀)	1.30x10 ² (2.11 log ₁₀)	N/A
Expected Range	2.26x10 ² - 2.37x10 ³	41 - 4.11x10 ²	N/A
Standard deviation**	0.28	0.1	N/A
No of outlying counts	5	1	N/A
False positives	N/A	N/A	N/A
False negatives	1	0	0
Your result			
Score for performance assessment			
Z-score			

* $U(X_{pt})$ is based on results transformed to a log₁₀ scale

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

Total sent samples	51
Not examined	3
Non returns	1
Late returns	0

Sample: S89B

A water sample from bathing beach (marine)

Contents: *Escherichia coli* (37) (NCTC 12950), *Enterococcus casseliflavus* (56) (NCIMB 11449), *Enterococcus faecium* (47) (NCTC 7171), *Kocuria kristinae* (5.6x10³ per disc) (NCTC 11038)

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.

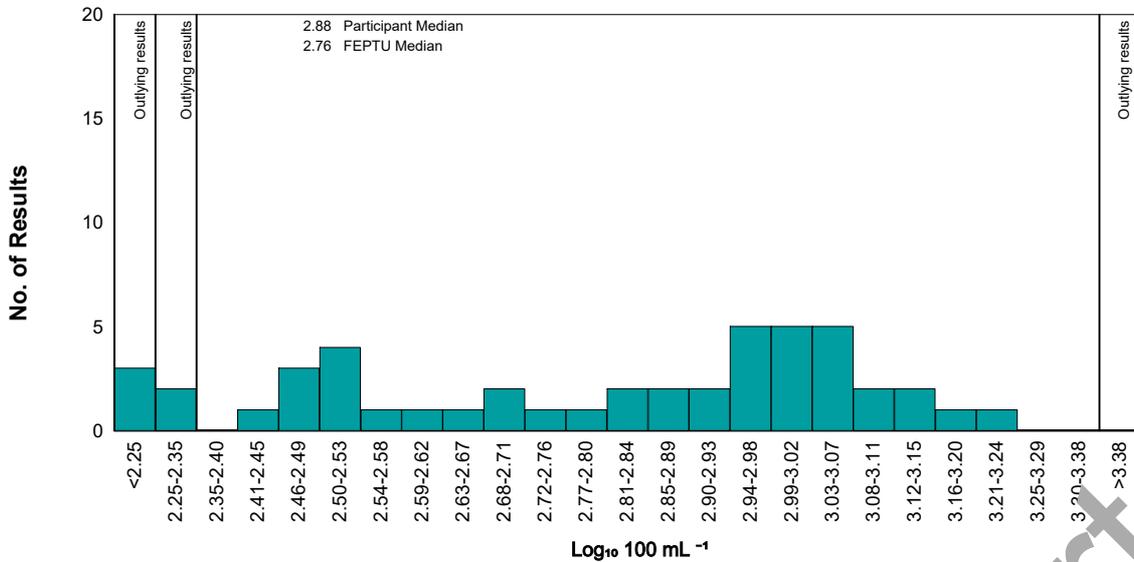
Parameter	<i>Escherichia coli</i>	Enterococci	<i>Salmonella</i> spp.
FEPTU median	37	1.20x10 ² (2.08 log ₁₀)	Not Detected in 1L
No. results returned	47	45	29
Assigned value (Participants median all results)	73	1.07x10 ² (2.03 log ₁₀)	N/A
Uncertainty of assigned value*	0.04	0.03	N/A
Participants mean (all results)	67	99 (2 log ₁₀)	N/A
Expected Range	23 - 231	34 - 3.38x10 ²	N/A
Standard deviation**	0.19	0.15	N/A
No of outlying counts	3	5	N/A
False positives	N/A	N/A	0
False negatives	1	0	N/A
Your result			
Score for performance assessment			
Z-score			

* $U(X_{pt})$ is based on results transformed to a log₁₀ scale

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

Total sent samples	51
Not examined	3
Non returns	1
Late returns	0

S89A: *Escherichia coli*



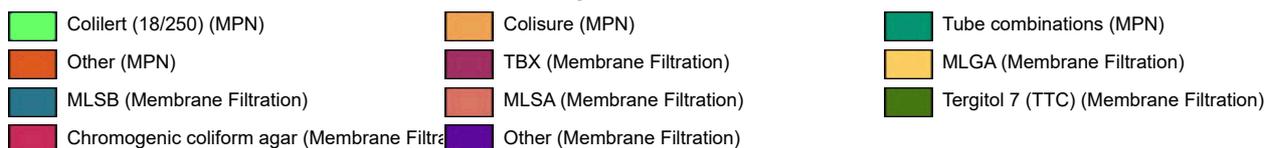
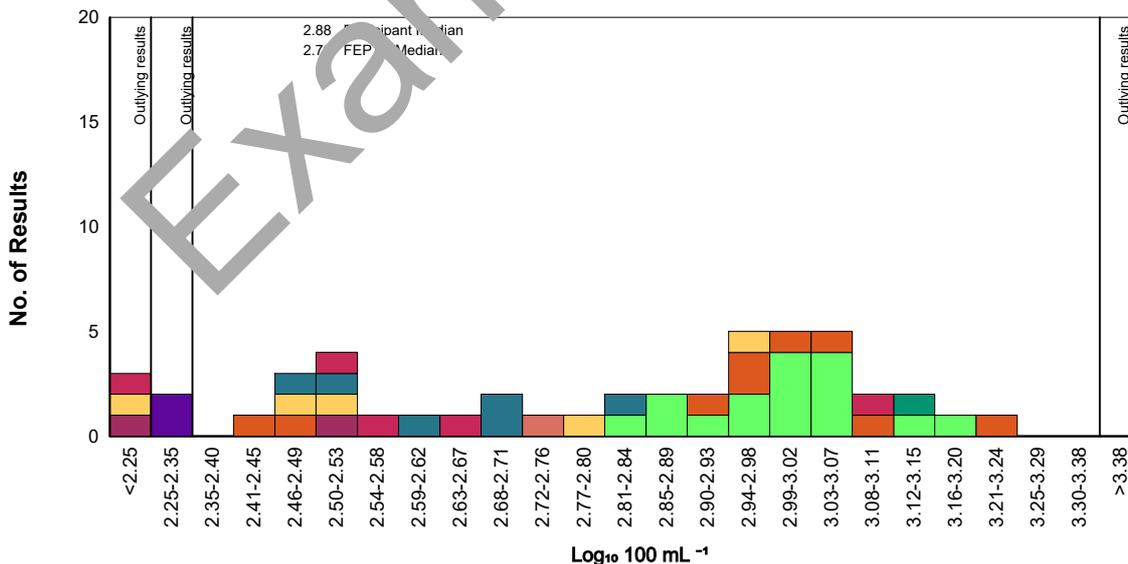
Method based presentation

S89A : *Escherichia coli*

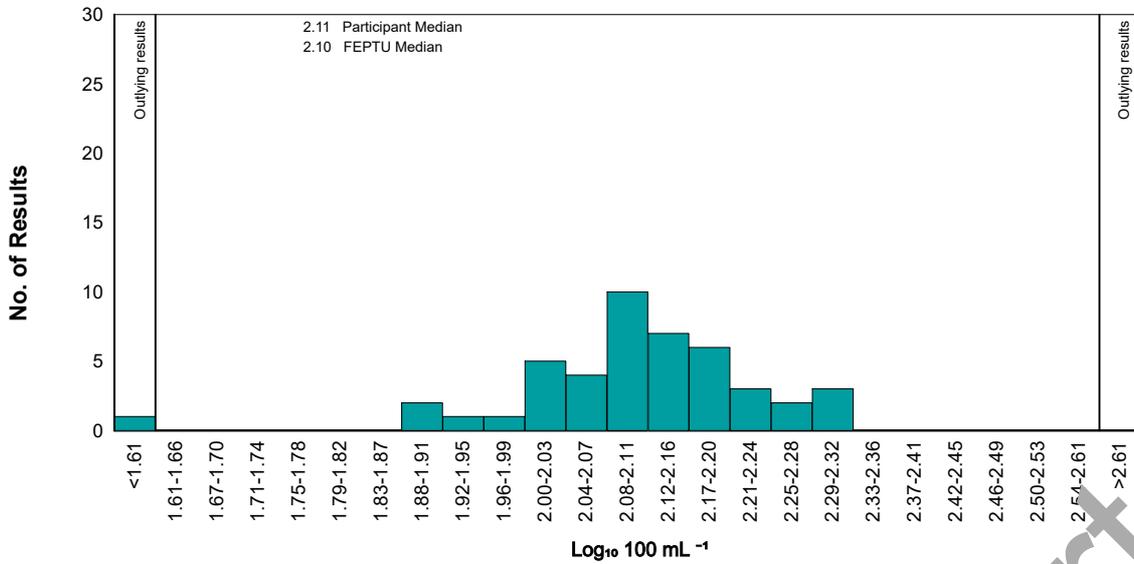
FEPTU Method: Chromogenic coliform agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log ₁₀)	Range Reported
Colilert (18/250)	16	0	34	2.95	0.08	687 - 1553
Colisure	0	0	0	-	-	-
Tube combinations	1	0	2	-	-	-
Other (MPN)	9	0	19	-	-	-
TBX	2	0	4	-	-	-
MLGA	5	0	10	-	-	-
MLSB	6	0	12	-	-	-
MLSA	1	0	2	-	-	-
Tergitol 7 (TTC)	0	0	0	-	-	-
Chromogenic coliform agar	5	0	10	-	-	-
Other (Membrane filtration)	2	0	4	-	-	-

S89A: *Escherichia coli*



S89A: Enterococci



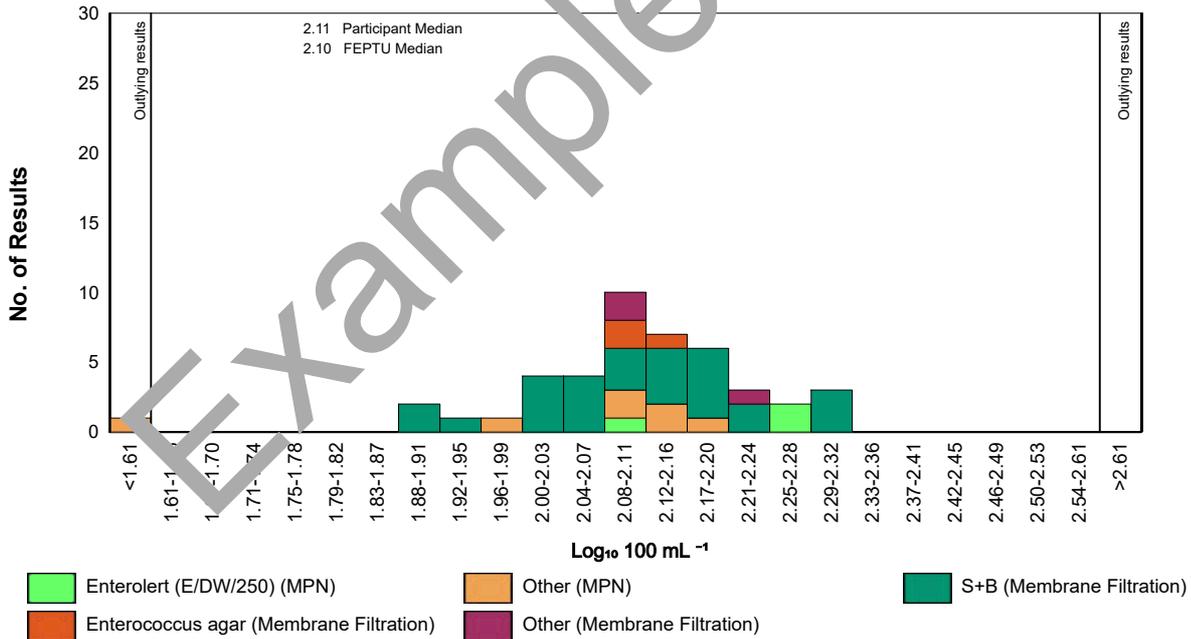
Method based presentation

S89A : 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)	3	0	6			-
Other (MPN)	7	0	1			-
S+B	28	0	63	131	0.11	80 - 200
Enterococcus agar	3	0				-
Other (Membrane filtration)	3	0	6			-

S89A: Enterococci



Method based presentation

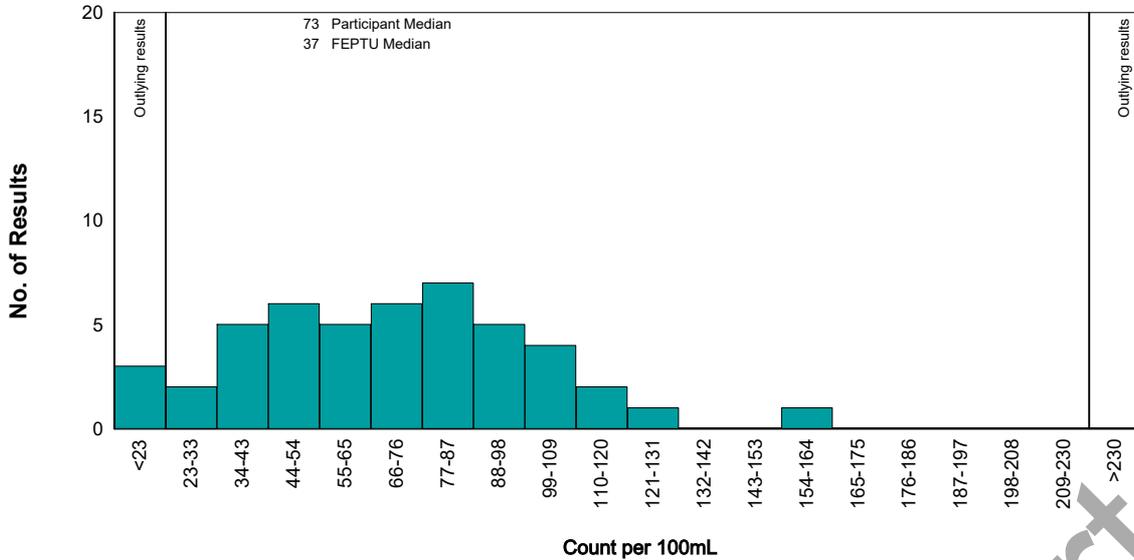
S89A : *Salmonella* spp.

FEPTU Method: Enrichment XLD

Method	No. Participants Detected	No. Participants Not Detected
VIDAS	0	0
PCR	1	0
Other	2	0
ISO 19250:2010	12	0
Enrichment XLD	11	0
Enrichment BGA	2	0
Enrichment other	1	0

Example Report

S89B: *Escherichia coli*



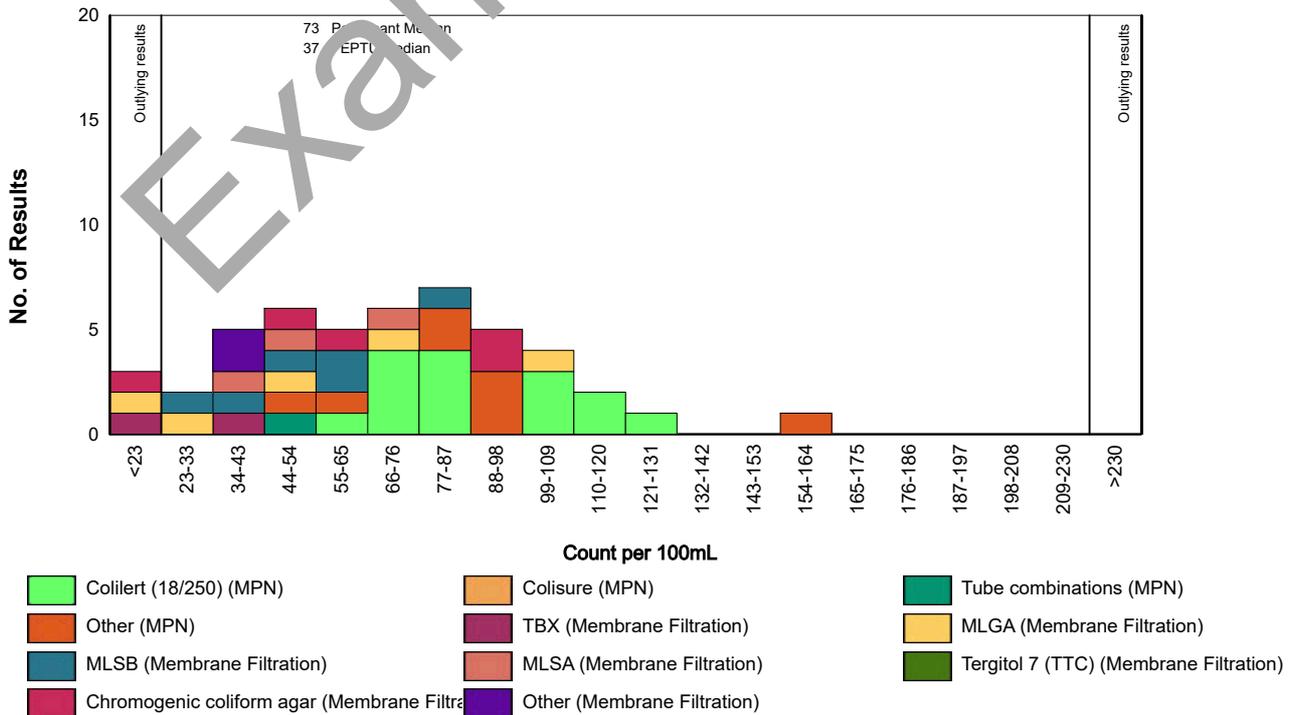
Method based presentation

S89B : *Escherichia coli*

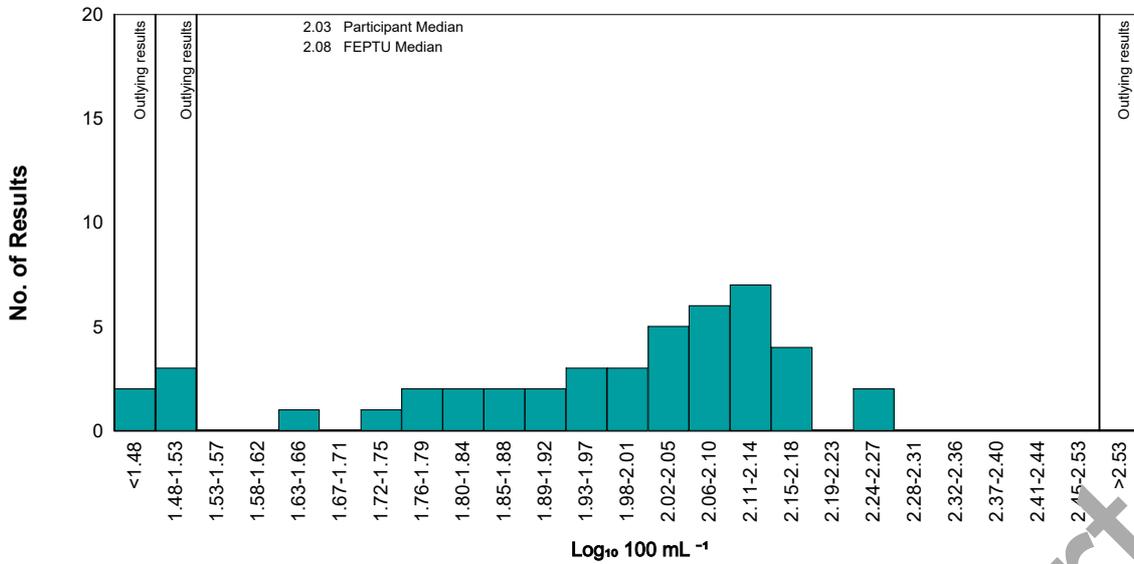
FEPTU Method: Chromogenic coliform agar

Method	Number of Results	Excluded Results	Percentage of the total	Median	Robust S* (Log ₁₀)	Range Reported
Colilert (18/250)	15	0	31	8	0.11	63 - 128
Colisure	0	0	0	-	-	-
Tube combinations	1	0	2	-	-	-
Other (MPN)	8	0	17	-	-	-
TBX	2	0	4	-	-	-
MLGA	5	0	10	-	-	-
MLSB	6	0	12	-	-	-
MLSA	3	0	6	-	-	-
Tergitol 7 (TTC)	0	0	0	-	-	-
Chromogenic coliform agar	5	0	10	-	-	-
Other (Membrane filtration)	2	0	4	-	-	-

S89B: *Escherichia coli*



S89B: Enterococci



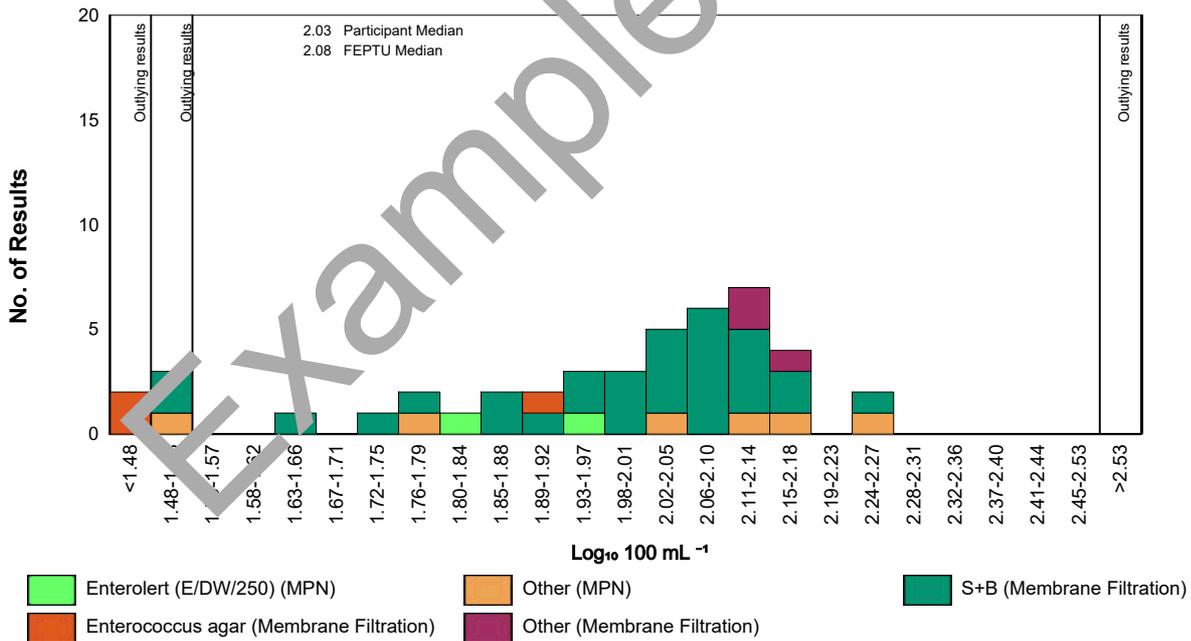
Method based presentation

S89B : 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)	2	0	4			-
Other (MPN)	6	0	11			-
S+B	30	0	68	108	0.12	30 - 180
Enterococcus agar	3	0	7			-
Other (Membrane filtration)	3	0	6			-

S89B: Enterococci



Method based presentation

S89B : *Salmonella* spp.

FEPTU Method: Enrichment XLD

Method	No. Participants Detected	No. Participants Not Detected
VIDAS	0	0
PCR	0	1
Other	0	2
ISO 19250:2010	0	12
Enrichment XLD	0	11
Enrichment BGA	0	2
Enrichment other	0	1

Example Report

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.

General comment:

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@phe.gov.uk.

End of report.

Example Report

Example Report