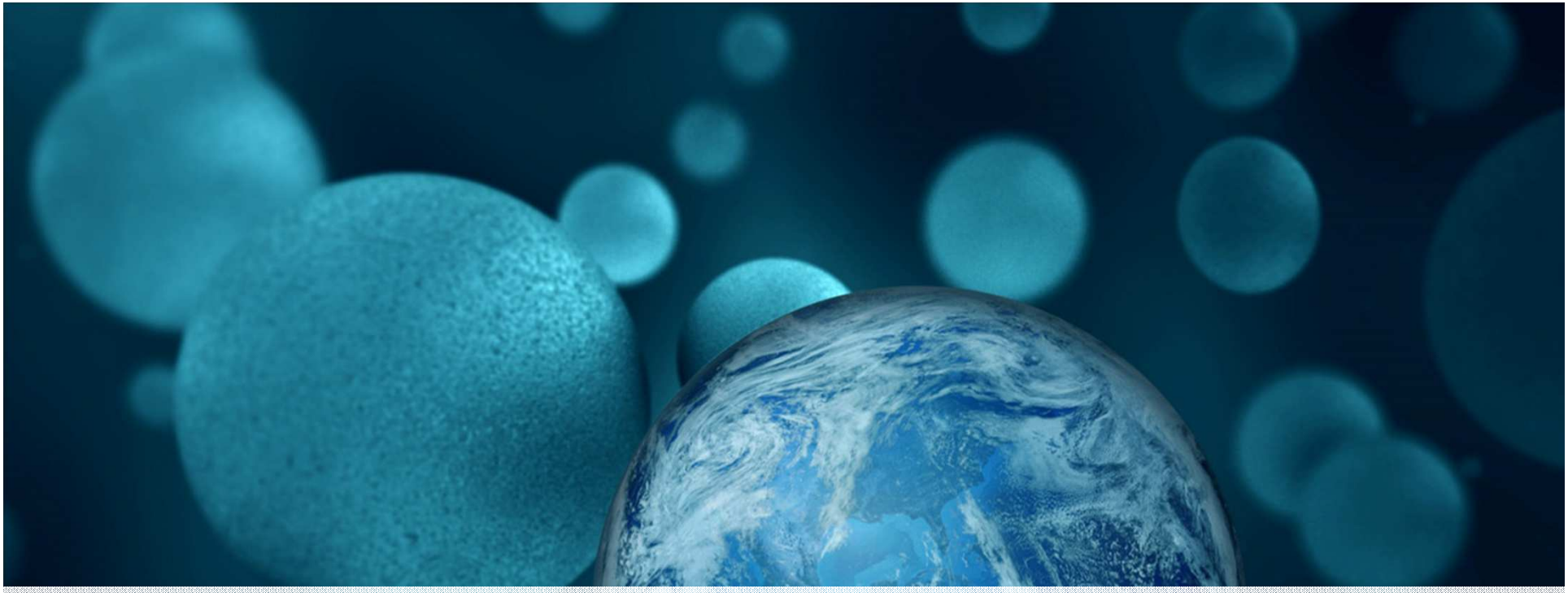

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Food and Water Proficiency Tests
Public Health England Schemes

External quality assurance programme: the key indicator of quality in the lab

Overview: Some Definitions

- Food and Water **Proficiency Tests** Public Health England Schemes
- *External quality assurance programme: the key indicator of quality in the lab*

- **Proficiency tests:**
- An exam which test how proficiency or skilled someone is is a particular activity, field of study, etc

- **External quality assessment** (**EQA**) is the challenge of the effectiveness of a laboratories quality management system.
- The term **external** refers to the fact that an organizer outside of the laboratories organisation provides a statement of quality to the laboratory.

Overview: Organization

- Typically, an EQA scheme consists of several rounds per year. In each round several (or many) participants receive test items, which are also called **samples**.
- The EQA organizer is also called the provider.
- The organizer ensures that the test items are sufficiently similar and homogeneous, typically according to ISO 13528.
- Often the test items' properties and analyte concentrations are known to the organizer, but not disclosed to participants before the final report.
- The participants' results are then compared to check if any participant had a bias towards e.g. higher values, or an unexpected imprecision.
- At the end of each round, the EQA organizer sends out reports and/or certificates to the participating laboratories.

https://en.wikipedia.org/wiki/External_quality_assessment

Overview - Why laboratories do PT?

- To demonstrate competence as part of accreditation requirement – ISO/IEC 17025 - *General requirements for the competence of testing and calibration laboratories*
- Helps to provide assurance of the results obtained provided they are treated and processed the same as other samples
- Helps improve laboratory processes and understanding of regulation/legislation
- To remain up to date with new and emerging organisms - educational
- To challenge processes/media/training with difficult or atypical organisms
- To allow Inter-laboratory comparison of performance
- To support work tendered for as an accredited laboratory
- Because you enjoy the challenge and the educational value that participating in PT brings!

Impact of incorrect results – food microbiology

FALSE NEGATIVE

Reporting incorrectly that a sample <u>does not</u> contain a pathogen

- Unsafe product released for sale
- People become ill/die
- Negative publicity
- Loss of reputation
- Financial cost

FALSE POSITIVE

Reporting incorrectly that a sample <u>does</u> contain a pathogen

- Product recall
- Incorrect product withdrawal
- Ban on export
- Loss of contracts
- Financial cost

Sources of error

- sample handling and/or processing errors
- inadequate staff training
- lack of understanding of legislation/guidelines
- incorrect methods or inappropriate media used
- equipment and culture media failures
- calculation and reporting errors

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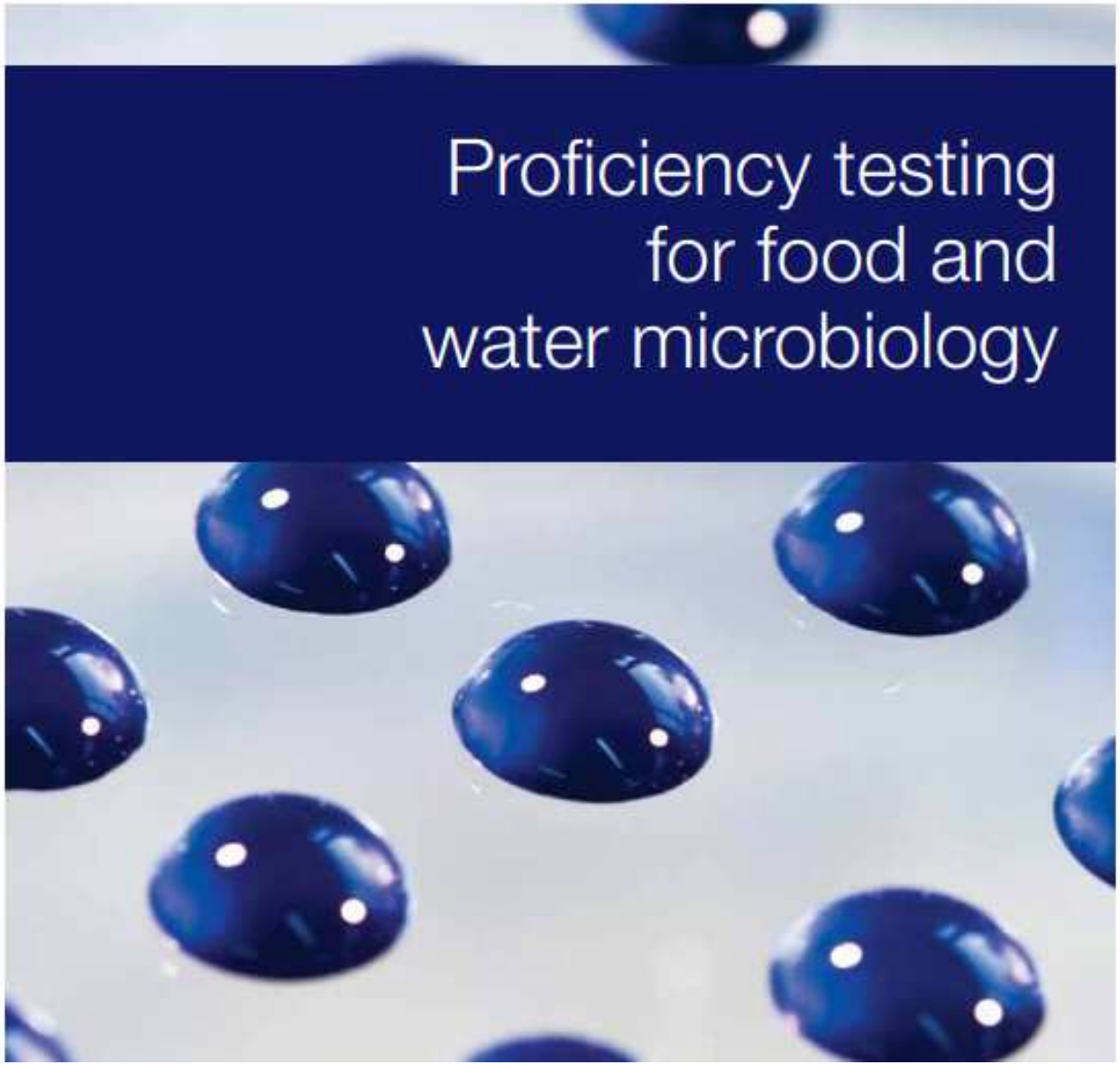
Why you benefit?

- **You**, the laboratory that examines food and water samples **need to produce test results that are reliable, accurate and clear**
- This helps to ensure that **the public is protected** from harm as you have assurance from PT your ability to confirm that the food or water released onto the market for sale is safe to consume or the water is safe to use
- Helps you to **identify gaps** in your processes, highlighting where quality improvements can be made
- It provides an opportunity to **improve staffs knowledge and experience** with organisms not frequently encountered

•Satisfactory performance with your PT provides assurance that your laboratory is **compliant with testing standards**, thereby meeting and maintaining accreditation requirements

Food and Water Proficiency Tests: Public Health England Schemes

Public Health England



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Public Health England's Proficiency Testing (PT) Schemes

- Public Health England Public Health England (PHE) is an executive agency of the United Kingdom's Department of Health.
- PHE is the expert national public health agency which fulfils the Secretary of State for Health's statutory duty to protect health and address inequalities, and executes his power to promote the health and wellbeing of the nation.
- Our mission is to protect and improve the nation's health and to address inequalities, working with national and local government, the NHS, industry, academia, the public and the voluntary and community sector

Public Health England's Proficiency Testing (PT) Schemes

- Food and water examination laboratories play a vital role in protecting people's health by ensuring that food and waters are safe and do not pose a threat to health.
- One of PHE's goal is protecting the country from infectious diseases and environmental hazards, including the growing problem of infections that resist treatment with antibiotics.
- In support of this goal, PHE provides tools such as proficiency testing (PT) schemes and reference materials to support food and water microbiology laboratories in assuring their results.
- The PT schemes are used by laboratories that take quality seriously and understand the impact of the work they undertake.

Public Health England's Proficiency Testing (PT) Schemes

- **The vision** for the Food and Environmental Proficiency Testing Unit (FEPTU) aims to be: the leader in providing international PT schemes for food and water microbiology, supporting public health and raising awareness of:
  - the importance of producing accurate laboratory results
  - the impact of incorrect laboratory results on public health

- **The mission** for FEPTU is: 'To provide microbiology testing laboratories with reliable and robust proficiency testing samples to help to safeguard the public from potential harm that may be encountered from food and water sources. Our services will be exemplary, our resources will be used effectively and our experience and knowledge will be used to develop and foster success with our participants

Public Health England's Proficiency Testing (PT) Schemes

- Proficiency testing schemes are sometimes referred to as external quality assessment (EQA) schemes.
- FEPTU has been providing international PT schemes for food and water microbiology for more than 20 years.
- All the schemes are accredited by the United Kingdom Accreditation Service (UKAS) to the international standard ISO 17043: 2010 Competency assessment – General requirement for proficiency testing.
- PHE PT schemes are suitable for food and water microbiology laboratories worldwide in the food and water industries, private sector, and the public health and environmental health sectors.
- The schemes are provided by experts and driven by impact on public health and quality of service. These are uncompromised by commercial pressures.

Sample Type

- **Freeze-dried samples**
- Freeze-drying is a well-established process for preserving a wide range of micro-organisms and is used by many culture collections such as the United Kingdom's National Collection of Type Cultures (NCTC®). FEPTU use a freeze-drying process to prepare samples for a range of food EQA schemes.
- The samples are stable at ambient temperature although storage in refrigerated conditions is normally recommended

- **LENTICULE® discs**
- LENTICULE discs consist of control-dried cultures of viable micro-organisms that require storage at -20ºC. They can be prepared to contain a wide range of micro-organisms, in pure or mixed cultures, at levels between 10 and 108 cfu per LENTICULE disc. LENTICULE discs are used by PHE to prepare EQA samples for food and water microbiology schemes.

What Is a LENTICULE DISC?

- Small disc that contains control-dried cultures of viable micro-organisms
- A preservation method unique to PHE and used in FEPTU for producing PT samples, reference materials and control strains

PT Sample Design

- Samples are designed to identify problems that may impact on people's health
- Wild-type strains used, **not** NCTC or ATCC cultures
- All strains fully characterised
- Samples provide a realistic challenge for routine examinations

Schemes Focus On:

- variations of methods used
- atypical organisms
- enumeration challenges associated with low levels
- limitation of confirmation tests

Statistic and Scoring

- Robust statistics used to evaluate enumeration results
- Scoring systems used for most schemes
- Provide Z-scores for some schemes
- Long-term evaluation of performance for all schemes with scoring systems
- Comparison of participants' results included
- Trend analyses available

PHE PT Participants

- Food and water industry
- Private testing laboratories
- Public health laboratories
- Government laboratories
- Hospital laboratories

Public Health England

Participating Countries

Albania
Angola
Argentina
Austria
Belgium
Bosnia
Botswana
Brazil
Bulgaria
Canada
Cape Verde
Channel Islands
China
Colombia
Costa Rica
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Falkland Islands
Finland
France
Germany
Greece
Hong Kong
Hungary
India
Indonesia
Ireland
Israel
Italy
Jamaica
Japan
Korea
Kuwait
Latvia
Liechtenstein
Lithuania
Luxembourg
Macedonia
Malta
Namibia
Netherlands
Antilles
Northern Ireland
Norway
Peru
Philippines
Poland
Portugal
Romania
Saudi Arabia
Serbia
Singapore
Slovakia
Slovenia
South Africa
Spain
St. Helena
Sweden
Switzerland
Taiwan
Thailand
Turkey
UAE
United Kingdom
USA
Vietnam

General Schemes Features (1)

- All schemes have a yearly schedule
- Every set of samples (round) for a single scheme is referred to as a ‘Distribution’
- Normally 2 to 6 distributions per year – depending on the scheme
- Every distribution has a unique distribution number
- Every distribution contains 2 or 3 samples each with a unique sample number
- Participants must receive all the samples from a distribution, but not all the distributions (minimum number required per year to give meaningful performance)

General Schemes Features (2)

- All schemes are accredited to 17043
- Samples that are stable and homogeneous
- All samples are designed, prepared and tested by in PHE microbiologists
- Quality control tests reflect commonly used methods
- Samples that challenge particular examinations e.g. isolation, identification, enumeration
- Micro-flora representative of real food and water samples

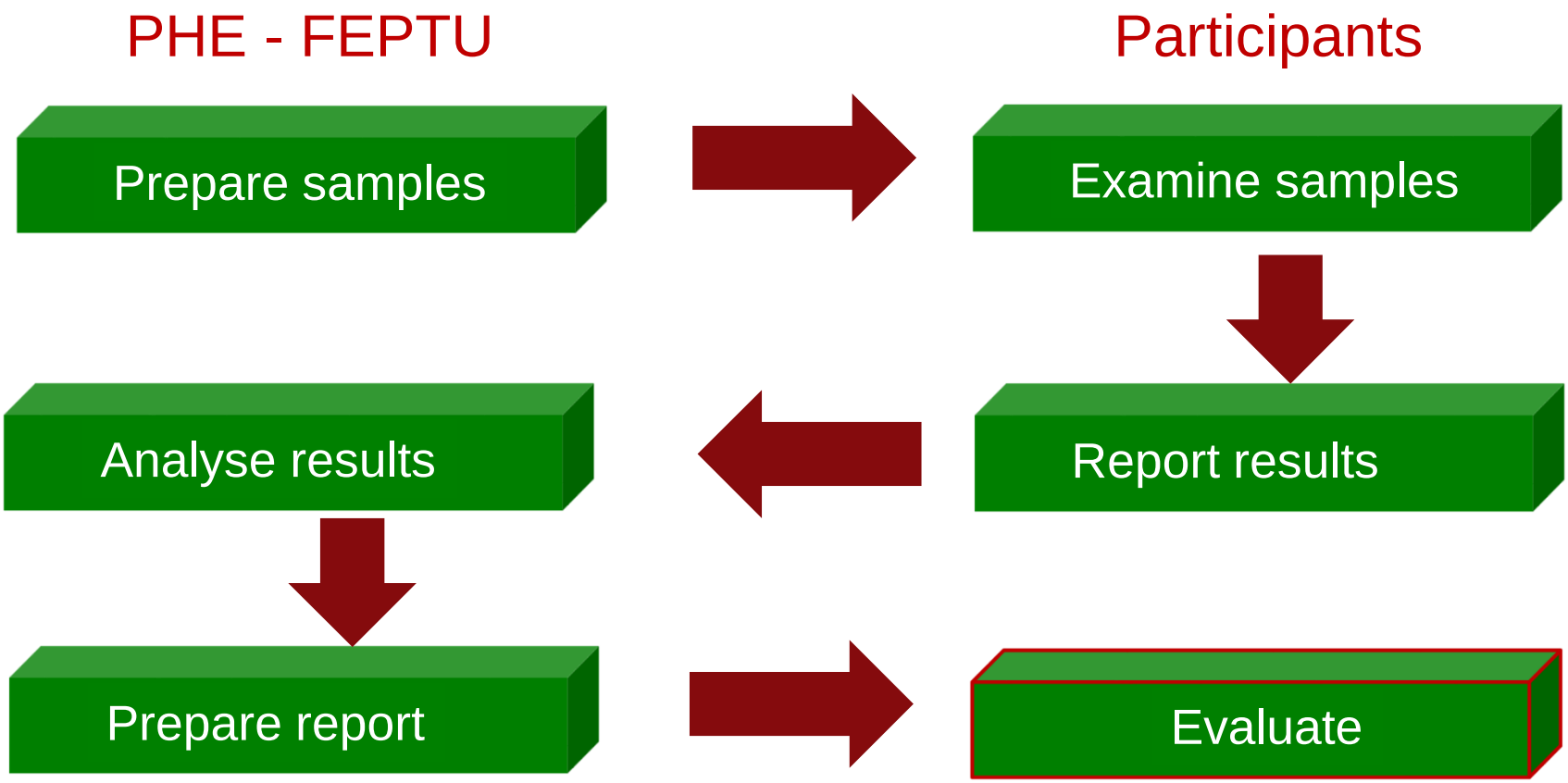
General Schemes Features (3)

- Significantly high proportion of positive samples
- Realistic levels of target organisms with background flora where appropriate
- Large numbers of participants (between 50 – 350 in each
- scheme) for robust data analyses
- High-level of international participation
- Efficient global sample delivery service
- Clear instructions and request forms

General Schemes Features (4)

- Easy-to-follow statistic and scoring systems
- Informative, educational and timely reports
- Continuous performance assessment reports
- Total confidentiality of performance
- Technical support from expert food and water microbiologists
- Informative web pages and on-line tools

Microbiology PT scheme - process



PHE Food and Water Schemes

- Environmental swab scheme
- European food microbiology legislation scheme
- Non-pathogen scheme
- Norovirus and hepatitis A virus scheme
- Pathogenic vibrio scheme
- Shellfish scheme
- Shiga toxin Escherichia coli scheme
- Standard scheme
- Staphylococcus aureus enterotoxin (SET) detection scheme

- Bottled and mineral water scheme
- Drinking water scheme
- Legionella isolation scheme
- Legionella molecular scheme
- Recreational and surface water scheme
- Mycobacterium sp in water scheme
- Hospital tap water scheme
- Dialysis water scheme
- Endoscope rinse water scheme

Food and Water Proficiency Tests: Public Health England Schemes

Public Health England

Protecting and improving the nation's health

Food schemes

Image by Zak Prior

Standard Scheme

Public Health England

Protecting and improving the nation's health

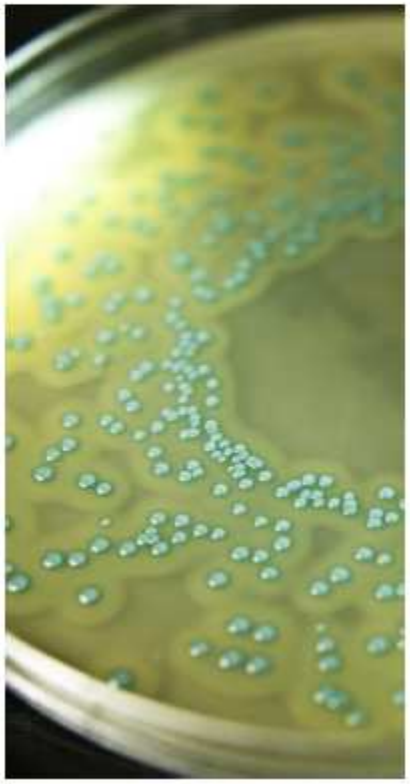
Standard Scheme

This microbiology scheme provides proficiency testing (PT) samples to food laboratories that routinely test for a range of food-borne pathogens and indicator organisms. To ensure that the public is protected from harm, food released onto the market for sale must be safe to be consumed.

This scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the variations of methods used which can highlight differences in PT results
- atypical organisms circulating in the environment that may challenge a laboratory's interpretation of the PT sample
- the challenges associated with enumerating food samples and limitation of confirmation tests



Standard Scheme

STANDARD SCHEME
food microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required Up to three sets of results can be reported
312	S0661 S0662	07/01/2019	15/02/2019	*Campylobacter* spp. detection *Campylobacter* spp. enumeration *Escherichia coli* O157 detection *Salmonella* spp. detection Aerobic colony count *Enterobacteriaceae* enumeration
314	S0665 S0666	18/02/2019	29/03/2019	Presumptive *Bacillus cereus* enumeration Coagulase-positive staphylococci enumeration *Listeria* spp. (including *L. mono)* enumeration *Listeria monocytogenes* enumeration Aerobic colony count Coliform enumeration
316	S0669 S0670	08/04/2019	17/05/2019	*Cronobacter* spp. detection *Listeria* spp. (including *L. mono*) detection *Listeria monocytogenes* detection *Clostridium perfringens* enumeration Aerobic colony count *Escherichia coli* enumeration
318	S0673 S0674	03/06/2019	12/07/2019	*Campylobacter* spp. detection *Campylobacter* spp. enumeration *Escherichia coli* O157 detection *Salmonella* spp. detection Aerobic colony count *Enterobacteriaceae* enumeration *Yersinia enterocolitica*
320	S0677 S0678	29/07/2019	06/09/2019	Presumptive *Bacillus cereus* enumeration Coagulase-positive staphylococci enumeration *Listeria* spp. (including *L. mono*) enumeration *Listeria monocytogenes* enumeration Aerobic colony count Coliform enumeration
322	S0681 S0682	30/09/2019	08/11/2019	*Listeria* spp. (including *L. mono*) detection *Listeria monocytogenes* detection *Salmonella* spp. detection *Clostridium perfringens* enumeration Sulfite-reducing anaerobic bacteria Aerobic colony count *Escherichia coli* enumeration

Note for this scheme molecular methods can used for pathogen examination or as a confirmation test

European Food Microbiology Legislation Scheme

Public Health England

Protecting and improving the nation's health

European Food Microbiology Legislation Scheme

This unique microbiological scheme provides proficiency testing samples to laboratories that examine foods products in accordance with European legislation specified in Regulation (EC) 2073/2005 Microbiological Criteria for Foodstuffs associated with Regulation (EC) 852/2004 and subsequent amendments.

The scheme assesses participants' ability to test and interpret laboratory results in accordance with EU food safety and process hygiene criteria. This scheme is of particular importance to nominated national reference and official control laboratories as part of compliance to Regulation (EC) 882/2004.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

This scheme focuses on raising awareness:

- of the test requirements for a particular food category and how to interpret microbiological results for batches
- of updates in legislation and testing requirements
- of the challenges associated with enumerating food samples
- of atypical organisms circulating in the environment that may challenge a laboratory's interpretation of the PT sample due to methods, media used and confirmation tests done

European Food Microbiology Legislation Scheme

EUROPEAN MICROBIOLOGY LEGISLATION SCHEME

food microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Dates results due by	Food category	Examinations and enumerations required
EFL47	EFL139 EFL140 EFL141	07/01/2019	08/02/2019	Meat	According to the Food Safety or Process Hygiene Criteria
EFL48	EFL142 EFL143 EFL144	18/02/2019	22/03/2019	Dairy	
EFL49	EFL145 EFL146 EFL147	03/06/2019	05/07/2019	Ready to eat product	
EFL50	EFL148 EFL149 EFL150	30/09/2019	01/11/2019	Miscellaneous	

Non-Pathogen Scheme

Public Health England

Protecting and improving the nation's health

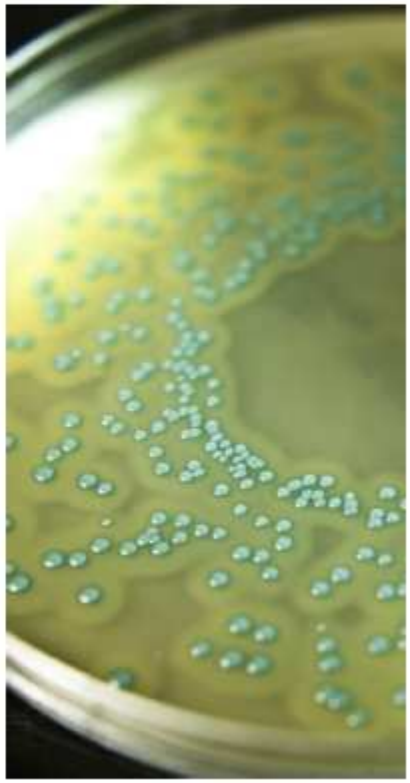
Non-Pathogen Scheme

This microbiology scheme provides proficiency testing (PT) samples to laboratories that examine food samples for spoilage and indicator organisms. This scheme is suitable for laboratories on food production sites that do not want to introduce pathogens and ensure products are contamination free.

This scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the variations of methods used which can highlight differences in PT results
- atypical organisms circulating in the environment that may challenge a laboratory's interpretation of the PT sample
- the challenges associated with enumerating food samples and limitation of confirmation tests



Non-Pathogen Scheme

NON-PATHOGEN SCHEME

food microbiology examinations

Sample schedule for 2019

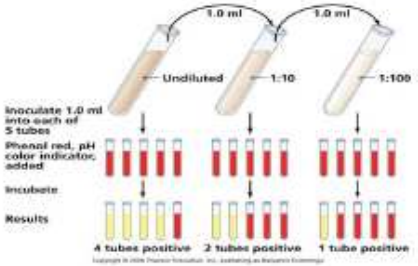
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required Up to three sets of results can be reported
NP062	NP0179 NP0180	07/01/2019	22/02/2019	*Pseudomonas* spp. Yeasts Moulds Coliforms *Enterobacteriaceae*
NP063	NP0181 NP0182	08/04/2019	24/05/2019	*Escherichia coli* Enterococci Lactic acid bacteria Aerobic colony count at 30°C
NP064	NP0183 NP0184	29/07/2019	13/09/2019	All the above enumerations are included for all samples An option to register for PYM (*Pseudomonas* spp., yeasts and moulds only) is available

Shellfish Scheme

Public Health England

Protecting and improving the nation's health

Shellfish Scheme



This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine raw bivalve molluscs from harvesting sites in accordance with Regulation (EC) No. 854/2004 and from the production chain between harvest and consumption, in accordance with Regulation (EC) 2073/2005 and subsequent amendments. This scheme is of particular importance to nominated national reference and official control laboratories as part of compliance to Regulation (EC) 882/2004.

The scheme is organised in collaboration with the Centre for Environment, Fisheries and Aquaculture Science (Cefas), Weymouth, United Kingdom (UK) and helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

PHE's Shellfish Scheme focuses on raising awareness of:

- interpreting tube combination results and the associated most probable numbers value per 100g for *Escherichia coli*
- updates in ISO methods

Shellfish Scheme

SHELLFISH SCHEME

food microbiology examinations

Sample schedule for 2019

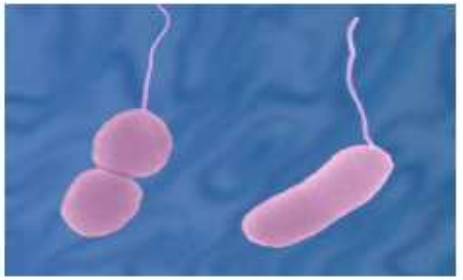
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
SF062	SF0132 SF0133	18/02/2019	22/03/2019	*Escherichia coli* MPN *Salmonella* spp. dection
SF063	SF0134 SF0135	03/06/2019	05/07/2019	
SF064	SF0136 SF0137	30/09/2019	01/11/2019	

Pathogenic Vibrio Scheme

Public Health England

Protecting and improving the nation's health

Pathogenic *Vibrio* Scheme



This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine *Vibrio* spp. in food and water samples. This scheme challenges the detection of predominant species of vibrio that are of public health concern. Also included as part of the scheme design is enumeration of *Vibrio parahaemolyticus*.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

PHE's Pathogenic *Vibrio* Scheme focuses on raising awareness of:

- the different *Vibrio* spp. that may be isolated from food or water samples
- the limitations of confirmation tests for *Vibrio* spp.
- culture media and batch to batch variations that may exist when analysing food or water samples
- the challenges associated with enumerating *V. parahaemolyticus* in food samples
- the increasing significance of other *Vibrio* spp. in food or water samples

Pathogenic Vibrio Scheme

PATHOGENIC *VIBRIO* SCHEME

food microbiology examinations

Sample schedule for 2019

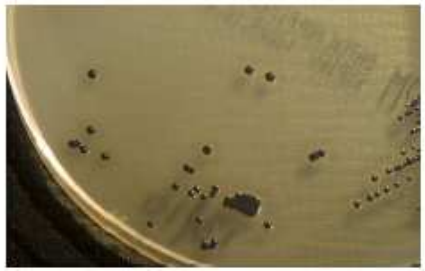
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
V055	V0150 V0151	18/02/2019	22/03/2019	Detection: *Vibrio cholerae* non-O1 and non-O139 strains *Vibrio vulnificus* Detection and enumeration: *Vibrio parahaemolyticus*
V056	V0152 V0153	03/06/2019	05/07/2019	
V057	V0154 V0155	30/09/2019	01/11/2019	

Staphylococcus aureus enterotoxin Scheme

Public Health England

Protecting and improving the nation's health

Staphylococcus aureus enterotoxin Scheme



This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine for *Staphylococcus aureus* enterotoxin in food samples. Staphylococcal food poisoning is caused by consumption of food or beverages containing pre-formed enterotoxins. The scheme is suitable for laboratories that test food for *Staphylococcus aureus* enterotoxins (A-E) using a range of kits and methods.

EC Regulation 2073/2005 lays down microbiological criteria for various combinations of food commodities and microorganisms, their toxins or metabolites. *Staphylococcus aureus* enterotoxins are extremely difficult to eliminate from foods, they are resistant to heat, freezing and irradiation. They will survive commercial pasteurisation processes and may even survive processes used for the sterilisation of canned foods.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

This scheme focuses on raising awareness of:

- the different methods used to detect enterotoxins in food samples
- the limitation and issues with some of the kit methods available

Staphylococcus aureus enterotoxin Scheme

STAPHYLOCOCCUS AUREUS ENTEROTOXIN SCHEME

food microbiology examinations

Sample schedule for 2019

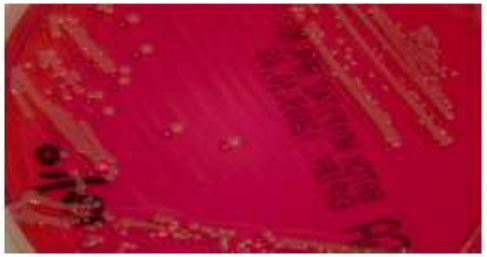
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations required
STA040	ST0079 ST0080	07/01/2019	08/02/2019	*Staphylococcus aureus* enterotoxin
STA041	ST0081 ST0082	08/04/2019	10/05/2019	
STA042	ST0083 ST0084	29/07/2019	30/08/2019	

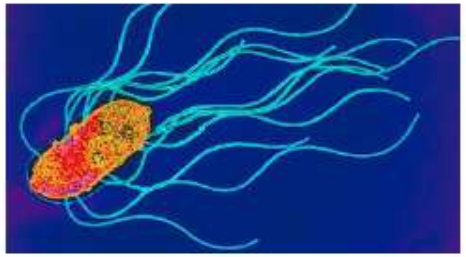
Environmental Swab Scheme

Public Health England

Protecting and improving the nation's health

Environmental Swab Scheme





This microbiology scheme provides proficiency testing (PT) samples to laboratories that examine swabs for microbial pathogens and/or hygiene indicator organisms. The scheme focuses on raising awareness of pathogens implicated in foodborne outbreaks, the challenges associated with enumerating samples and the accurate reporting of results from random/template area swab.

Determining that foodborne pathogens are absent in ready to eat food preparation area or retail setting is of particular importance to prevent public health incidents.

Determination of the number of aerobic viable micro-organisms, *Escherichia coli* and *Enterobacteriaceae* on a specified area of a surface can provide an indication of cleanliness/sanitation. This allows monitoring of cleaning procedures over time, providing useful information on general environmental conditions.

This scheme allows you to:

- assure your calculation ability for the different swab areas (random and template)
- have confidence in determining the pathogen/s likely to be implicated based on an outbreak scenario provided

Environmental Swab Scheme

ENVIRONMENTAL SWAB SCHEME

food microbiology examinations

Sample schedule for 2019

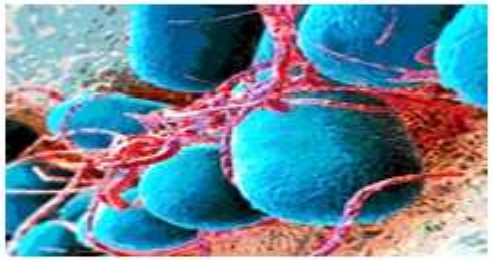
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations required
ES14	ES0027 ES0028	18/02/2019	15/03/2019	Relevant pathogen relating to outbreak details as provided on the request form *Campylobacter* spp. Coagulase-positive staphylococci *Escherichia coli* O157 *Listeria monocytogenes* *Salmonella* spp.
ES15	ES0029 ES0030	08/04/2019	03/05/2019	*Enumeration of hygiene indicator organisms* Aerobic colony count *Bacillus cereus* *Escherichia coli* *Enterobacteriaceae* *Listeria* spp.
ES16	ES0031 ES0032	29/07/2019	23/08/2019	Relevant pathogen relating to outbreak details as provided on the request form *Campylobacter* spp. Coagulase-positive staphylococci *Escherichia coli* O157 *Listeria monocytogenes* *Salmonella* spp.
ES17	ES0033 ES0034	30/09/2019	25/10/2019	*Enumeration of hygiene indicator organisms* Aerobic colony count *Bacillus cereus* *Escherichia coli* *Enterobacteriaceae* *Listeria* spp.

Shiga Toxin-Producing Escherichia coli Scheme

Public Health England

Protecting and improving the nation's health

Shiga toxin-producing *Escherichia coli* Scheme



This microbiology molecular scheme provides proficiency testing (PT) samples to laboratories that analyse food samples for Shiga toxin-producing *Escherichia coli (*STEC) in accordance with European legislation Commission Regulation (EU) No 209/2013 amending Regulation (EC) No 2073/2005 as regards microbiological criteria for sprouts and the sampling rules for poultry carcases and fresh poultry meat.

The scheme focuses on raising awareness of:

- the variations in the molecular methods used which can highlight differences in PT results obtained
- the limitation of molecular methods available on the market
- updates and compliance with ISO methods or other standards
- the correct interpretation to apply on PCR results obtained

Shiga Toxin-Producing Escherichia coli Scheme

SHIGA TOXIN-PRODUCING *ESCHERICHIA COLI* SCHEME

food microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations required Samples can only be examined using molecular methods
STX6	STX011 STX012	07/01/2019	01/02/2019	Detection of the major virulence genes associated with *Escherichia coli* serogroups O157, O111, O26, O103, O145 and O104:H4 (STEC) Includes detection of *stx*-coding genes and the presence of the intimin-coding gene *eae*
STX7	STX013 STX014	03/06/2019	28/06/2019	

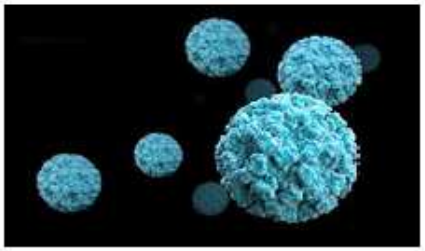
Norovirus & Hepatitis A Virus Scheme

Public Health England

Norovirus & Hepatitis A Virus Scheme

Cefas

Protecting and improving the nation's health



This scheme provides proficiency testing (PT) samples to laboratories that examine food products or waters for hepatitis A virus and norovirus GI and GII using the reverse-transcription polymerase chain reaction (RT-PCR). This PT challenges laboratories in detection and quantification (copies per sample) of both these viruses. Implementing Regulation (EU) 2017/1142 (amending Regulation (EC) 669/2009) requires virus testing of frozen raspberries imported from Serbia, while Regulation (EC) 2073/2005 recommends adoption of virus testing for live bivalve molluscs once methods are developed.

This scheme is organised in collaboration with Cefas as the European Union Reference Laboratory (EURL) for monitoring bacteriological and viral contamination of bivalve molluscs. This scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the variations of methods used which can highlight differences in PT results
- the limitation of methods available on the market
- updates in ISO methods

Norovirus & Hepatitis A Virus Scheme

NOVOVIRUS AND HEPATITIS A VIRUS SCHEME

food and water microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations required Samples can only be examined using molecular methods
NHV005	NHV0009 NHV0010	18/02/2019	22/03/2019	Detection of Norovirus GI and GII and Hepatitis A Virus
NHV006	NHV0011 NHV0012	30/09/2019	01/11/2019	Optional: Quantification of Norovirus GI and GII and Hepatitis A Virus

Public Health England

Protecting and improving the nation's health

Water schemes

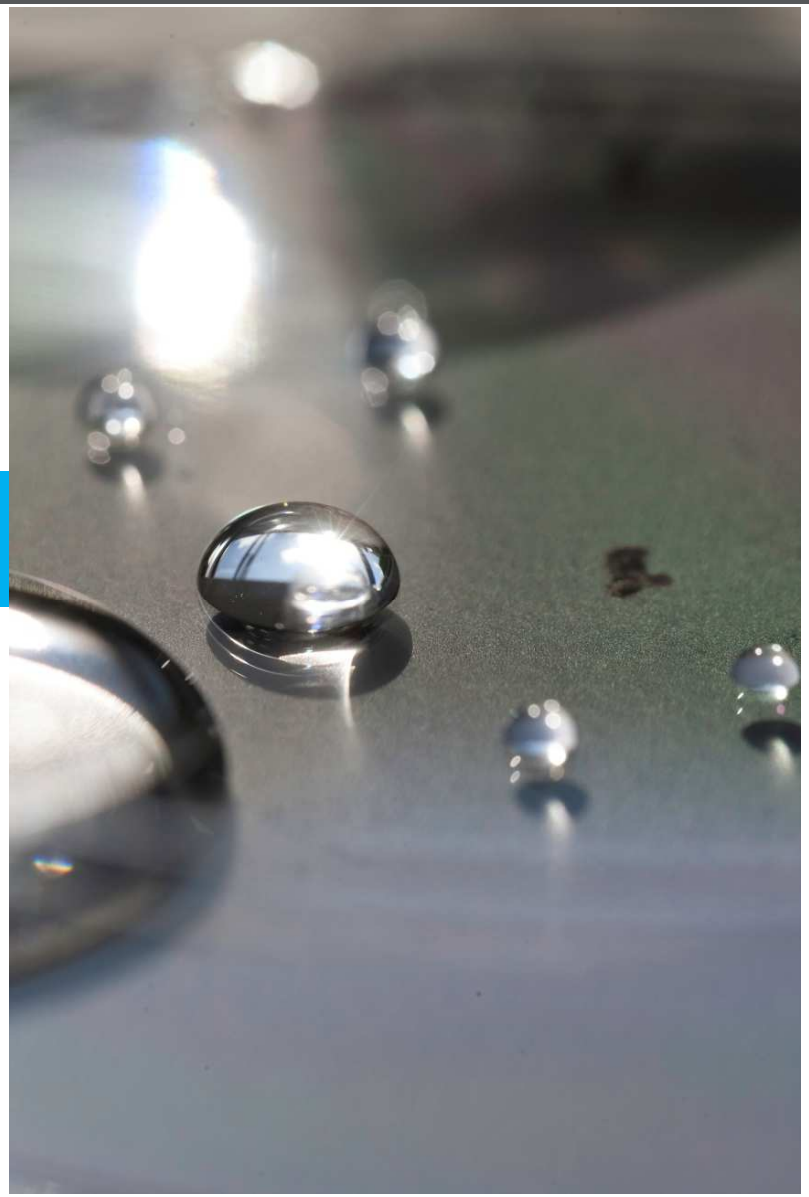


Image by Zak Prior

ThermoFisher SCIENTIFIC

Legionella Isolation Scheme

Public Health England

Protecting and improving the nation's health

Legionella Isolation Scheme

This microbiology scheme provides proficiency testing (PT) samples to laboratories that examine waters for legionellae. This scheme challenges the detection and accurate enumeration of different serogroups of *Legionella pneumophila*, and other *Legionella* spp..

Legionella spp. are the causative agent of legionellosis infections, varying in severity from a mild self-limiting febrile illness (Pontiac fever) to a potentially fatal atypical pneumonia (Legionnaires' disease). *Legionella* is recognised as a significant cause of sporadic and epidemic community-acquired and nosocomial-acquired pneumonia with many cases being associated with travel making it difficult to identify the source of infection.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

Legionella Isolation Scheme

LEGIONELLA ISOLATION SCHEME

water microbiology examinations

Sample schedule for 2019

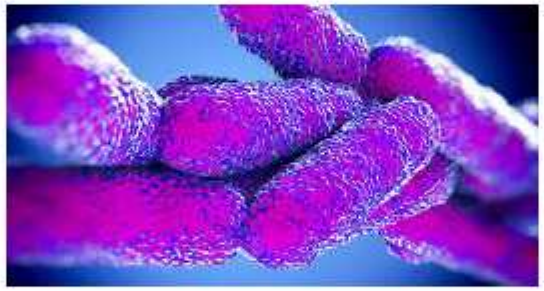
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
G114	G114A G114B	28/01/2019	08/03/2019	Detection, enumeration and identification of *Legionella* spp.
G115	G115A G115B	13/05/2019	21/06/2019	
G116	G116A G116B	01/07/2019	09/08/2019	
G117	G117A G117B	04/11/2019	13/12/2019	

Legionella Molecular Scheme

Public Health England

Protecting and improving the nation's health

Legionella Molecular Scheme


This unique microbiology scheme provides proficiency testing samples to laboratories that examine waters for legionellae using molecular platforms. Both detection and genomic quantification results are assessed.

Legionella spp. are the causative agent of legionellosis infections, varying in severity from a mild self-limiting febrile illness (Pontiac fever), to a potentially fatal atypical pneumonia (Legionnaires' disease). *Legionella* is recognised as a significant cause of sporadic and epidemic community-acquired and nosocomial-acquired pneumonia with many cases being associated with travel making it difficult to identify the source of infection.

Legionella Molecular Scheme

LEGIONELLA MOLECULAR SCHEME

water microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required Samples can only be examined using molecular methods
LM5	LM5A LM5B	11/03/2019	19/04/2019	Detection and quantification of *Legionella* spp.
LM6	LM6A LM6B	02/09/2019	11/10/2019	

Recreational and Surface Water Scheme

Public Health England

Protecting and improving the nation's health

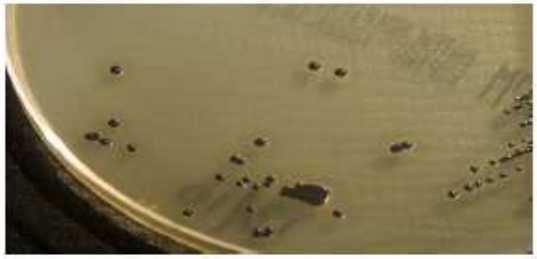
Recreational and Surface Water Scheme

This microbiology scheme provides proficiency testing (PT) samples to laboratories that examine recreational and surface waters routinely for microbial contents. This scheme challenges the accurate enumeration of micro-organisms and detection of pathogen that maybe present in these types of waters. Sample types included in this scheme design are river, lakes and streams, bathing beach (marine), swimming pool and hydrotherapy pool waters.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

PHE's Recreational and Surface Water Scheme focuses on raising awareness of:

- the challenges associated with enumerating samples containing low levels of organisms
- variations in the methods used which can highlight differences in results obtained
- issues with confirmatory tests carried out on isolates
- updates in local guidelines which maybe different to European ones



Recreational and Surface Water Scheme

RECREATIONAL AND SURFACE WATER SCHEME

water microbiology examinations

Sample schedule for 2019

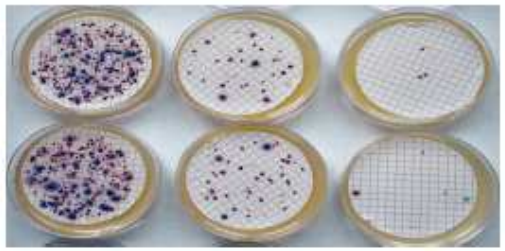
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
S88	S88A S88B	28/01/2019	01/03/2019	swimming pool / hydrotherapy pool waters: Coagulase-positive staphylococci Coliform bacteria *Escherichia coli* Enterococci *Pseudomonas aeruginosa* Total staphylococci Colony count (37°C/24 hours)
S89	S89A S89B	11/03/2019	12/04/2019	marine (bathing beach) waters: *Escherichia coli* Enterococci *Salmonella* spp.
S90	S90A S90B	13/05/2019	14/06/2019	river, lake or stream waters: Coliform bacteria *Escherichia coli* Enterococci Faecal coliforms *Clostridium perfringens* *Salmonella* spp.
S91	S91A S91B	01/07/2019	02/08/2019	swimming pool / hydrotherapy pool waters: Coagulase-positive staphylococci Coliform bacteria *Escherichia coli* Enterococci *Pseudomonas aeruginosa* Total staphylococci Colony count (37°C/24 hours)
S92	S92A S92B	02/09/2019	04/10/2019	marine (bathing beach) waters: *Escherichia coli* Enterococci *Salmonella* spp.
S93	S93A S93B	04/11/2019	06/12/2019	river, lake or stream waters: Coliform bacteria *Escherichia coli* Enterococci Faecal coliforms *Clostridium perfringens* *Salmonella* spp.

Drinking Water Scheme

Public Health England

Protecting and improving the nation's health

Drinking Water Scheme



This microbiology scheme provides proficiency testing (PT) samples to laboratories that examine drinking waters routinely. This scheme challenges the accurate enumeration of low levels of micro-organisms. Drinking water can contain many different bacteria that can be a risk to health, it is essential that all water intended for drinking is properly treated and routinely effectively monitored for safe consumption.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

PHE's Drinking Water Scheme focuses on raising awareness of:

- the challenges associated with enumerating samples containing low levels of organisms
- variations in the methods used which can highlight differences in results obtained
- issues with confirmatory tests carried out on isolates
- updates in local guidelines or polices

Drinking Water Scheme

DRINKING WATER SCHEME

water microbiology examinations

Sample schedule for 2019

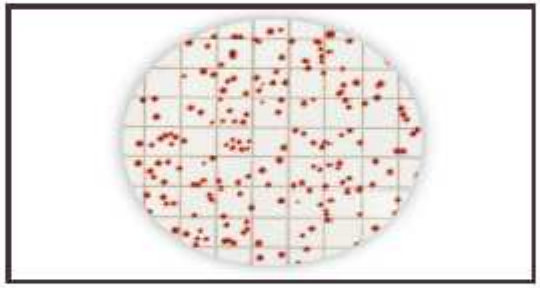
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required Up to three sets of results can be reported
W185	W185A W185B W185C	28/01/2019	01/03/2019	
W186	W186A W186B W186C	11/03/2019	12/04/2019	
W187	W187A W187B W187C	13/05/2019	14/06/2019	Coliform bacteria *Escherichia coli* Enterococci *Clostridium perfringens* *Pseudomonas aeruginosa* Colony count (37°C/48 hours) Colony count (22°C/72 hours)
W188	W188A W188B W188C	01/07/2019	02/08/2019	
W189	W189A W189B W189C	02/09/2019	04/10/2019	
W190	W190A W190B W190C	04/11/2019	06/12/2019	

Bottled and Mineral Water Scheme

Public Health England

Protecting and improving the nation's health

Bottled and Mineral Water Scheme



This microbiology scheme provides proficiency testing (PT) samples to laboratories that examine bottle and mineral waters routinely. Bottled and mineral water is a food product and therefore, must comply with strict safety requirements, as well as industry guides to good hygiene and manufacturing practices.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

PHE's Bottled and Mineral Water Scheme focuses on raising awareness of:

- the challenges associated with enumerating samples containing low levels of organisms
- issues with confirmatory tests carried out on isolates

Bottled and Mineral Water Scheme

BOTTLED AND MINERAL WATER SCHEME

water and food microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
BMW21	BMW21A BMW21B	28/01/2019	22/02/2019	Coliform bacteria *Escherichia coli* Enterococci *Pseudomonas aeruginosa* Sporulated sulphite-reducing anaerobes Colony count (37°C/24 hours) Colony count (22°C/72 hours)
BMW22	BMW22A BMW22B	13/05/2019	07/06/2019	
BMW23	BMW23A BMW23B	02/09/2019	27/09/2019	

Public Health England

Protecting and improving the nation's health

External Quality Assessment Schemes for 'Hospital Waters'

ThermoFisher SCIENTIFIC

Hospital Water

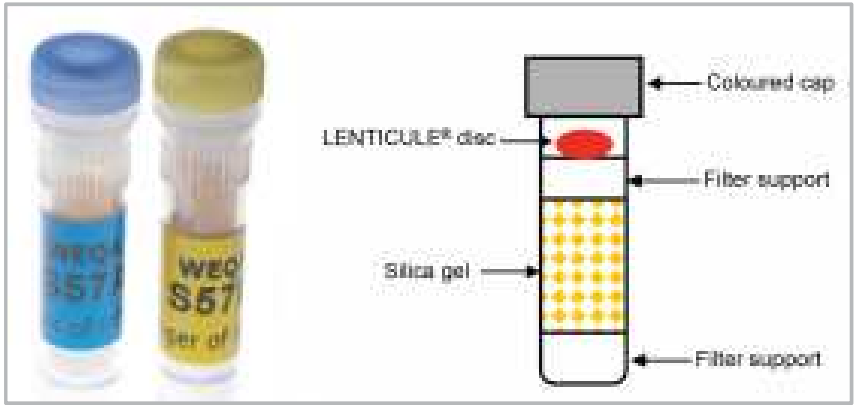
- Does your laboratory examine waters from a hospital environment, such as:
- • water used to rinse endoscopes
- • water used to prepare dialysis fluid
- • hydrotherapy pool water
- • tap water taken from augmented care units, such as neonatal and burns units?

- If so, participation in Public Health England's (PHE) 'Hospital Waters' external quality assessment (EQA) schemes will allow you to:
- • demonstrate competence with the microbiological examination of these samples
- • improve understanding of the interpretation of the results obtained.

- PHE provides EQA schemes specifically designed for laboratories that examine water samples. The schemes are very similar to those provided by the United Kingdom National External Quality Assessment Service (UK NEQAS). UK NEQAS specialises in schemes for laboratory medicine, whereas the PHE schemes focus on competence in testing water samples from a hospital environment; they are operated to the same rigorous quality standards as UK NEQAS.

Hospital Water

- The EQA test samples are provided in LENTICULE® disc format. The discs consist of a certified quantity of microorganisms in a water soluble matrix.
- They are easy to use and ideally suited for tests where accurate enumeration is paramount. On receipt of your EQA samples you can test immediately or store the discs at -20º C.

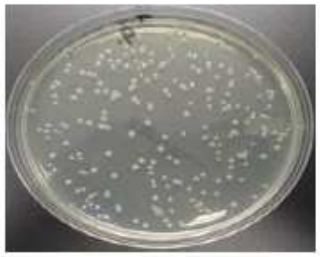


Endoscope Rinse Water Scheme

Public Health England

Protecting and improving the nation's health

Endoscope Rinse Water Scheme



This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine endoscope rinse waters routinely for microbial contents. This scheme challenges the accurate enumeration of low levels of micro-organisms that may be present in this type of water.

Polices and guidance recommend that total viable counts should be made on the final rinse water. This is because the most significant problem associated with the use of automatic re-processors is contaminated rinse water that comes into contact with the endoscope after the disinfection process, increasing the risk of infection to patients.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the variation of different methods and media used and highlighting subsequent impact on PT results
- interpreting the microbiological results obtained
- the importance of testing *Mycobacterium* spp. and highlighting the difficulties associated with isolating this organism

Endoscope Rinse Water Scheme

ENDOSCOPE RINSE WATER SCHEME

water microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
EW21	EW21A EW21B	28/01/2019	22/02/2019	Total viable counts (28°C - 32°C for 5 days) *Pseudomonas aeruginosa* Selected distribution: Yeasts/moulds (EW21)
EW22	EW22A EW22B	13/05/2019	07/06/2019	
EW23	EW23A EW23B	02/09/2019	27/09/2019	

Dialysis Water

Public Health England

Protecting and improving the nation's health

Dialysis Water Scheme

This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine water used to prepare dialysis fluid to confirm its safe use. This scheme challenges the accurate enumeration of low levels of micro-organisms which is critical for patient safety.

The European Renal Best Practice Guidelines recommends that the quality of water produced by the water treatment facility should meet the concentration limits for microbiological contaminants detailed in ISO 13959:2014: *Water for haemodialysis and related therapies*. This states that dialysis water shall contain a total viable microbial count of less than 100 colony forming units (cfu)/mL.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the variation of different methods and media used and highlighting subsequent impact on PT results
- interpreting the microbiological results obtained
- the requirement of microbiological testing as stated in the 'European Best Practice Guidelines for Haemodialysis'

Dialysis Water

DIALYSIS WATER SCHEME

water microbiology examinations

Sample schedule for 2019

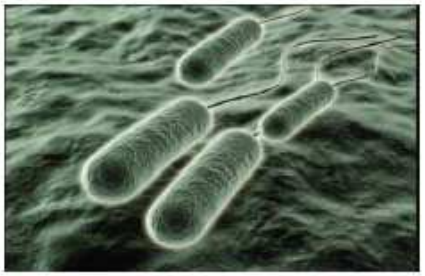
Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
DW18	DW18A DW18B	11/03/2019	05/04/2019	Total viable counts (17°C - 23°C for 7 days)
DW19	DW19A DW19B	01/07/2019	26/07/2019	
DW20	DW20A DW20B	04/11/2019	29/11/2019	

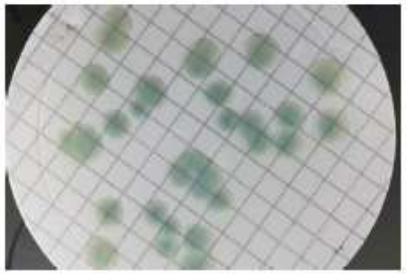
Hospital Tap Water Scheme

Public Health England

Protecting and improving the nation's health

Hospital Tap Water Scheme





This unique microbiology scheme is suitable for laboratories in the water testing and other microbiology sectors that examine hospital tap waters from augmented care units for *Pseudomonas aeruginosa* at low levels.

Hospital water is a recognised potential source of *Pseudomonas aeruginosa*, which is a microorganism that can act as an opportunistic pathogen and colonise and infect vulnerable patients. Several outbreaks of *P. aeruginosa* have been attributed to contaminated water systems in hospitals.

This proficiency testing scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the challenges associated with enumerating samples containing low levels of organisms
- interpreting the results obtained
- media issues (especially when non *P. aeruginosa* organisms are in the sample)

Hospital Tap Water Scheme

HOSPITAL TAP WATER SCHEME

water microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
HTW15	HTW15A HTW15B	11/03/2019	05/04/2019	*Pseudomonas aeruginosa*
HTW16	HTW16A HTW16B	01/07/2019	26/07/2019	
HTW17	HTW17A HTW17B	04/11/2019	29/11/2019	

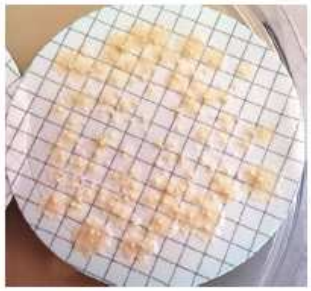
Mycobacterium sp in Water Scheme

Public Health England

Protecting and improving the nation's health

Mycobacterium spp. in Water Scheme






This unique microbiology scheme provides proficiency testing (PT) samples to laboratories that examine endoscope rinse and heater cooler unit (HCU) waters for *Mycobacterium* spp. This scheme challenges the detection, accurate enumeration and identification of this organism from these hospital water samples.

HCUs are used during open heart surgeries to warm or cool a patient as part of their care. It has recently been recognised that there is the potential for *Mycobacterium chimaera* or other species to grow in a water tank in the HCU. When the water evaporates, the mycobacteria may become dispersed into the environment as aerosols and may infect a patient during certain types of open heart surgery.

Flexible endoscopes are complex reusable instruments that require unique consideration with respect to decontamination. Their external surfaces and internal channels for air, water, aspiration and accessories are all potentially exposed to body fluids and other contaminants. Environmental non-pathogenic mycobacteria present a particular problem when they occur in the final rinse-water of some instruments used for diagnosis.

This PT scheme helps you to identify gaps in your processes, highlighting where quality improvements can be made. It also provides an opportunity to improve staffs knowledge and experience with organisms not frequently encountered.

The scheme focuses on raising awareness of:

- the variation of different methods and media used and highlighting subsequent impact on PT results
- interpreting the microbiological results obtained
- the importance of testing *Mycobacterium* spp. and highlighting the difficulties associated with isolating this organism

Mycobacterium sp in Water Scheme

MYCOBACTERIUM SPP. IN WATER SCHEME

water microbiology examinations

Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
MY001	MY001A MY001B	13/05/2019	02/08/2019	Endoscope rinse water
MY002	MY002A MY002B	01/07/2019	20/09/2019	Heater cooler water
MY003	MY003A MY003B	04/11/2019	24/01/2020	Endoscope rinse water

Learning from the Challenge

What can be learnt from challenging samples

- Exposure to **new organisms** of public health concern – raising awareness of their existence and allowing you to assess suitability of your current method/s or validating new ones
- Raising awareness of **atypical organisms** that exist in the environment and a greater understanding of the impact on laboratory testing and results
- Helps you to understand the **limitations of methods/media** used
- Helps you to understand the **limitations of confirmation tests**
- Allows you to understand **gaps in your procedures** – especially if an approved method is not followed
- Helps your laboratory understand how accurate your test results are

Water schemes

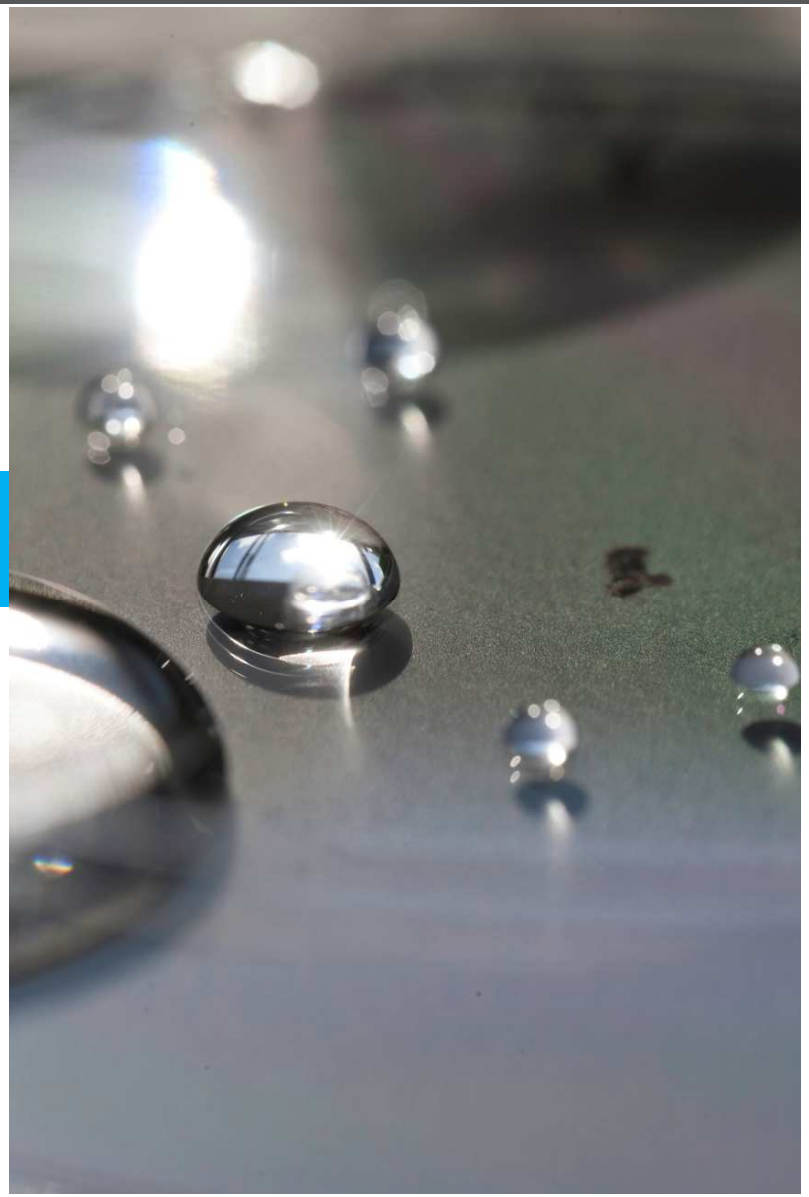


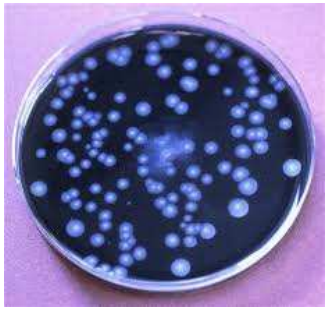
Image by Zak Prior

Legionella Isolation Scheme

- To provide external quality assessment samples to challenge the detection and enumeration of legionellae.

- The scheme focuses on raising awareness:
- of the different *Legionella* spp. that maybe isolated from water samples
- of the issues with batch to batch variations of the media used
- of the confirmatory tests done and their limitations
- of the importance of following standardised methods that are internationally recognised
- updates in local guidelines or polices

- Four distributions a year with two samples in each



Distribution G107A – May 2017

- Contents:
  - *Legionella pneumophila* sg1 (1.80×10^4) (wild strain)
  - *Acinetobacter junii* (1.60×10^5) (wild strain)
  - *Pseudomonas fluorescens* (4.00×10^6) (wild strain)

- *Acinetobacter junii* and *Pseudomonas fluorescens* formed colonies on glycine vancomycin polymyxin B cycloheximide (GVPC) medium after processing

- All levels are colony forming unit per disc

G107A - findings

- Only 103/156 (66%) of the participants correctly reported the presence of *Legionella pneumophila* in this sample
- Participants clearly experienced difficulties with isolating this organism amongst the high level of background flora included in this sample
- The participants' median was $7.00x10^3$ cfu L^{-1} and the expected range (statistically calculated*) was $4.34x10^2$ – $3.94x10^4$ cfu L^{-1}
- The standard deviation was 0.47 $\log_{10}$ cfu L^{-1}
- This sample was not scored

* Median ± 0.75 log10 or counts within 11th to 89th percentiles (whichever is greater)

G107A: FEPTU's results

GVPC agar: 400 µL of 1:10 acid treated sample following 10 days incubation at 36 °C

Legionella pneumophila colonies

FEPTU's median based on nine samples: 1.80×10^4 L^{-1}

1 litre of the sample using a Nylon membrane filter with a pore size of 0.22 µm
Membrane suspended in 5 mL of Page's saline, vortexed to disperse any *Legionella* into the saline
Dilutions of 1:10 and 1:100 were done
For the acid treatment 400 µL of the sample was treated with 400 µL Buffer acid at pH of 2.2 for 5 minutes

G107A – strain information

- *L. pneumophila* colonies were clearly visible on acid treated samples at both 1:10 and 1:100 dilutions on GVPC agar
- Colonies on GVPC were grey, circular, entire and smooth with a ground glass appearance
- Were between 1-3 mm
- As expected the strain did not grow following a sub-culture onto buffered charcoal yeast extract (BCYE) without cysteine agar
- Gave a positive reaction with Oxoid's *Legionella* latex test

Interesting or a nuisance?

- Interesting:
- To note the wide variations of methods followed – no two methods were the same
- The high level of background flora obviously challenged a laboratory process
- 50/119 (42%) still use ISO 11731:1998 (newer version available)
- 27/93 (29%) did not check the pH of acid prior to use

- Nuisance:
- It means if your quality policy states that failures with PT will be investigated:
  - then this is an action for you
  - resources such as time and consumables cost money
  - raise a non-conformance
  - explain to your accreditation body or service users

Drinking Water Scheme

•To provide external quality assessment samples for general routine examinations undertaken by routine water microbiology laboratories

- The scheme focuses on raising awareness:
- • of the challenges associated with enumerating samples containing low levels of organisms
- • of variations in the methods used which can highlight the differences in results obtained
- • of issues with confirmatory tests carried out on isolates
- • updates in local and national guidelines and policies

- Six distributions a year with three samples in each

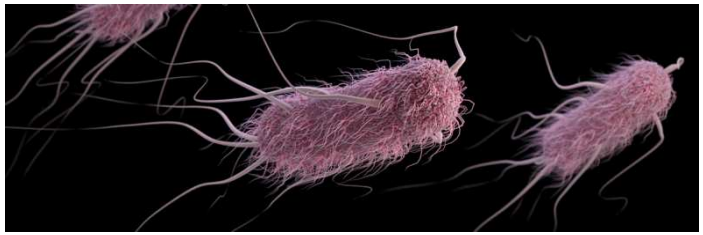
W176A – August 2017

- Contents
  - *Escherichia coli* (14 per 100 mL) (wild strain)
  - *Enterobacter cloacae* (8.0×10^2 per disc) (wild strain)
  - *Klebsiella oxytoca* (1.9×10^3 per disc) (wild strain)
  - *Enterococcus faecium* (43 per 100 mL) (NCTC 7171)
  - *Staphylococcus hyicus* (47 per mL) (NCTC 10350)

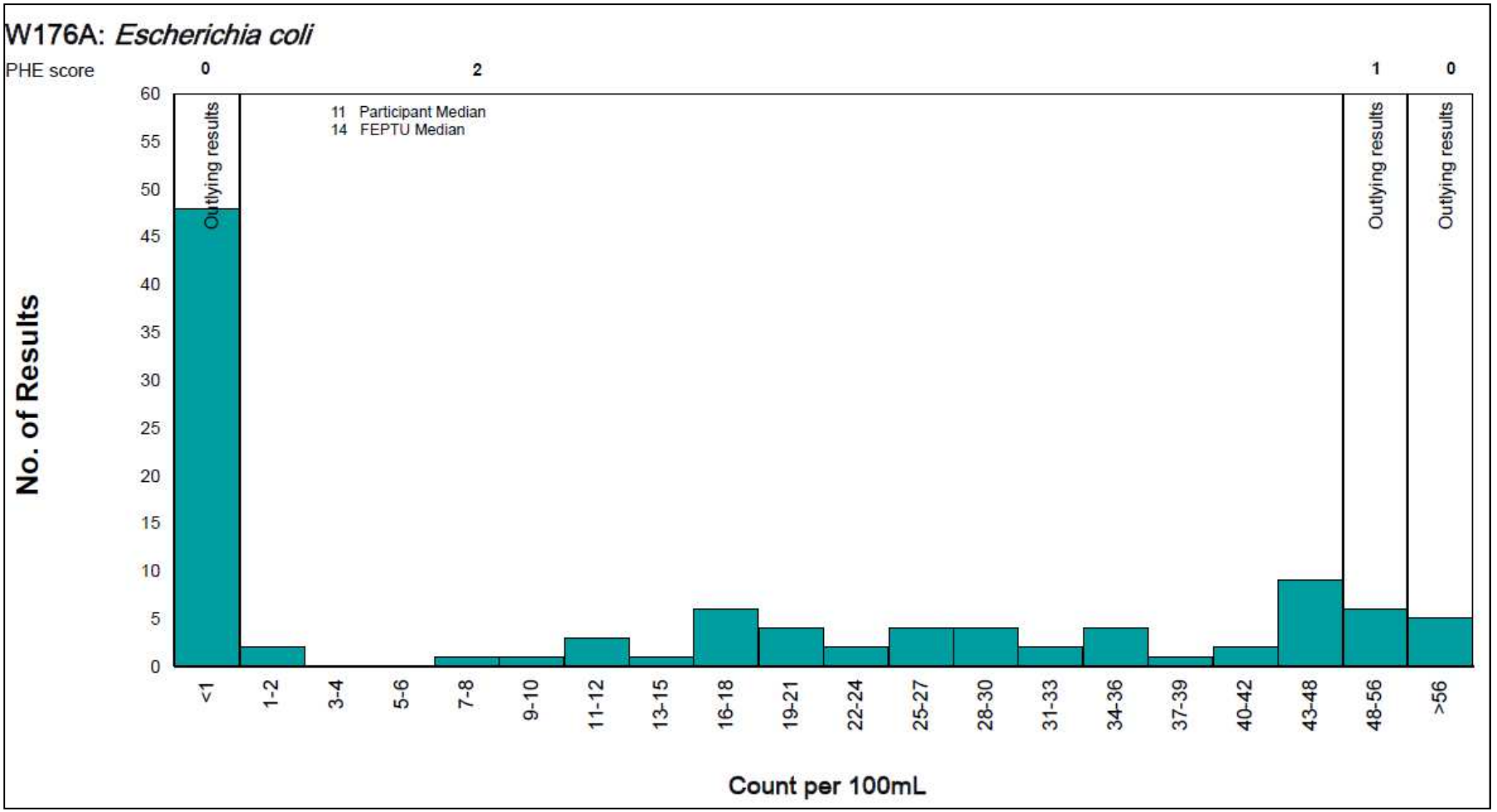
- *Escherichia coli* examination was not scored

W176A – *Escherichia coli*

- 55/112 (49%) of the participants reported a false negative result for this examination
- Sample contained an *E. coli* with participants' median being 11 colony forming units per 100mL
- The *E. coli* was a weak β-glucuronidase strain and therefore will have accounted for the false negative results by participants using a test that requires this enzyme to be metabolised to produce a positive result



W176A – Participants results



ThermoFisher SCIENTIFIC

W176A – method breakdown

Method	Number of laboratories reporting a false negative result by method (%)	Range of counts reported per 100mL
Colilert (18/250)	37/37 (100)	-
Chromogenic coliform agar (CCA)	9/26 (35)	1 - 94
MLGA	2/14 (14)	11-154
MLSA	1/3 (33)	28 - 56
MLSB	1/17 (6)	9 - 78
Tergitol	1/1 (100)	-
TBX	2/8 (25)	8 - 39
Other or no method provided	2/6 (33)	25 - 55

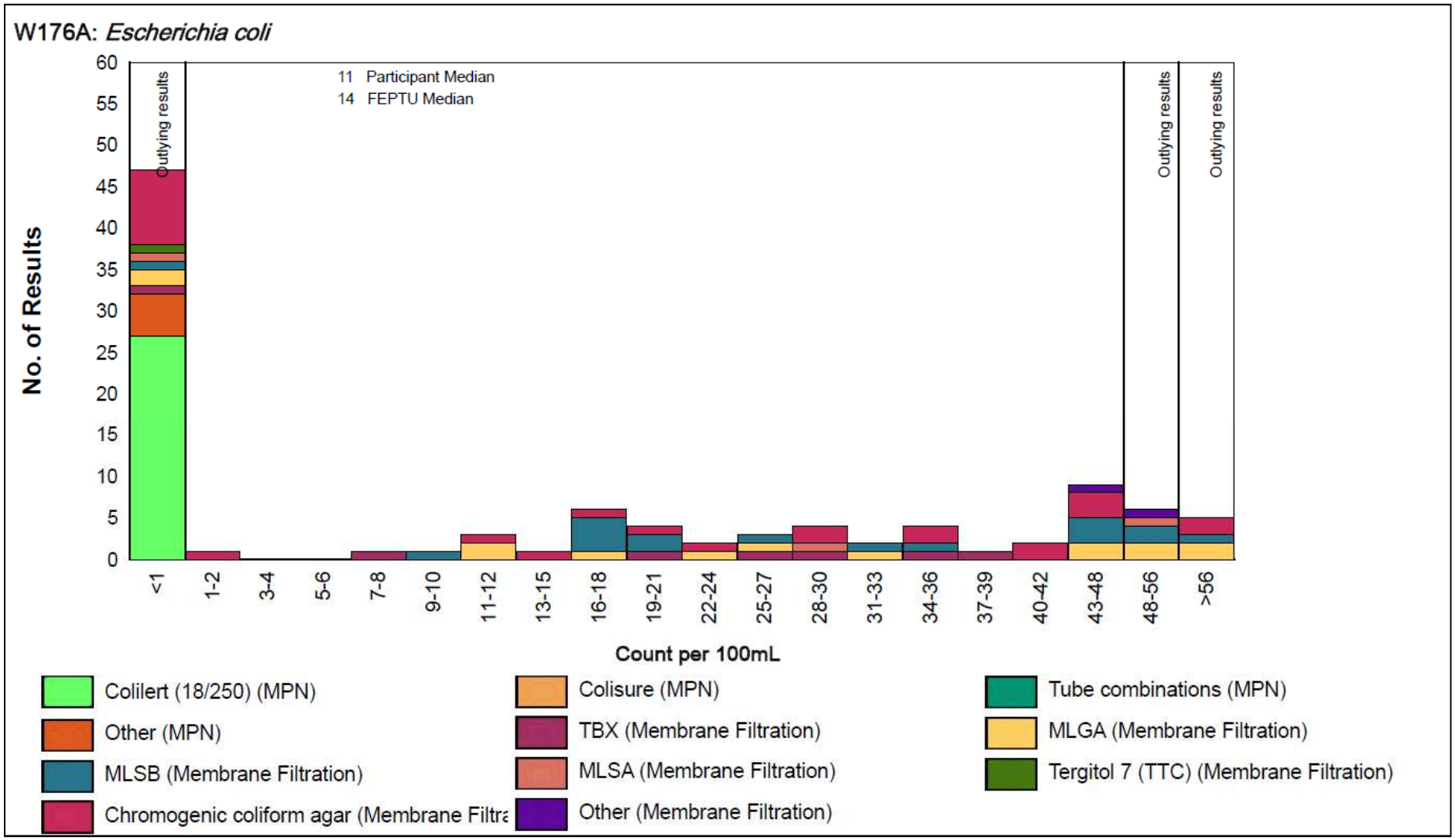
W176A – method breakdown

Method	Number of laboratories reporting a false negative result by method (%)	Range of counts reported per 100mL
Colilert (18/250)	37/37 (100)	-
Chromogenic coliform agar (CCA)	9/26 (35)	1 - 94
MLGA	2/14 (14)	11-154
MLSA	1/3 (33)	28 - 56
MLSB	1/17 (6)	9 - 78
Tergitol	1/1 (100)	-
TBX	2/8 (25)	8 - 39
Other or no method provided	2/6 (33)	25 - 55

W176A – method breakdown

Method	Number of laboratories reporting a false negative result by method (%)	Range of counts reported per 100mL
Colilert (18/250)	37/37 (100)	-
Chromogenic coliform agar (CCA)	9/26 (35)	1 - 94
MLGA	2/14 (14)	11-154
MLSA	1/3 (33)	28 - 56
MLSB	1/17 (6)	9 - 78
Tergitol	1/1 (100)	-
TBX	2/8 (25)	8 - 39
Other or no method provided	2/6 (33)	25 - 55

W176A – method breakdown



Interesting or a nuisance?

- Interesting:
- To note that 17/26 (65%) participants that used CCA reported the presence of *E. coli* – unknown if they did a confirmation test
- All Colilert® users failed to detect the *E. coli*
- Media or methods using substrates for targeting specific organisms are not always 100% sensitive – be aware

- Nuisance:
- It means if your quality policy states that failures with PT will be investigated:
  - then this is an action for you
  - resources such as staffs' time and consumables cost money
  - raise a non-conformance
  - explain to your accreditation body or service users

Food schemes

Image by Zak Prior

Protecting and improving the nation's health

Standard Scheme

ThermoFisher SCIENTIFIC

Standard Scheme

- Laboratories that routinely test for a range of food-borne pathogens and indicator organisms
- Participants are often private laboratories that test foods for clients in the food industry who may submit products routinely for microbial assessment, end product testing and customer complaints

Pathogens

Salmonella spp.

Listeria monocytogenes

Listeria spp.

Escherichia coli O157 (non-toxigenic strains)

Campylobacter spp.

Cronobacter spp.

Enumerations

Presumptive *Bacillus cereus*

Campylobacter spp.

Coliforms

Clostridium perfringens

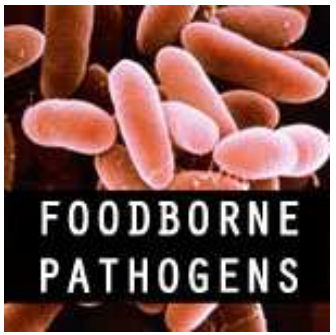
Coagulase-positive staphylococci

Listeria monocytogenes
Listeria spp.

Aerobic colony count

Escherichia coli

Enterobacteriaceae



Six distributions a year with two samples in each

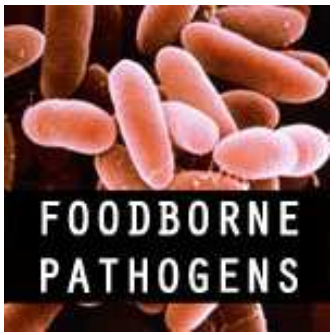
Standard Scheme

STANDARD SCHEME
food microbiology examinations

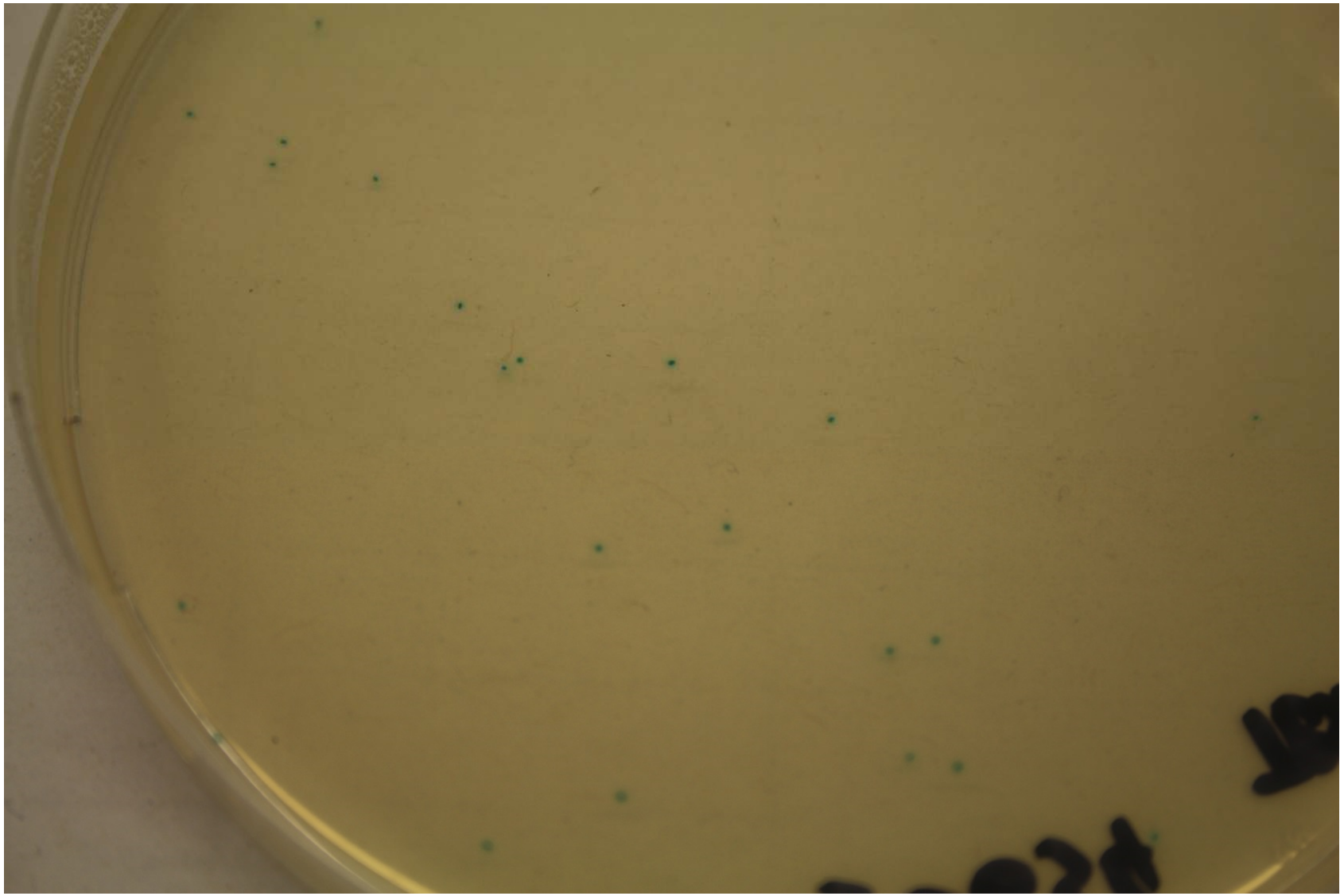
Sample schedule for 2019

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required Up to three sets of results can be reported
312	S0661 S0662	07/01/2019	15/02/2019	*Campylobacter* spp. detection *Campylobacter* spp. enumeration *Escherichia coli* O157 detection *Salmonella* spp. detection Aerobic colony count *Enterobacteriaceae* enumeration
314	S0665 S0666	18/02/2019	29/03/2019	Presumptive *Bacillus cereus* enumeration Coagulase-positive staphylococci enumeration *Listeria* spp. (including *L. mono)* enumeration *Listeria monocytogenes* enumeration Aerobic colony count Coliform enumeration
316	S0669 S0670	08/04/2019	17/05/2019	*Cronobacter* spp. detection *Listeria* spp. (including *L. mono*) detection *Listeria monocytogenes* detection *Clostridium perfringens* enumeration Aerobic colony count *Escherichia coli* enumeration
318	S0673 S0674	03/06/2019	12/07/2019	*Campylobacter* spp. detection *Campylobacter* spp. enumeration *Escherichia coli* O157 detection *Salmonella* spp. detection Aerobic colony count *Enterobacteriaceae* enumeration *Yersinia enterocolitica*
320	S0677 S0678	29/07/2019	06/09/2019	Presumptive *Bacillus cereus* enumeration Coagulase-positive staphylococci enumeration *Listeria* spp. (including *L. mono*) enumeration *Listeria monocytogenes* enumeration Aerobic colony count Coliform enumeration
322	S0681 S0682	30/09/2019	08/11/2019	*Listeria* spp. (including *L. mono*) detection *Listeria monocytogenes* detection *Salmonella* spp. detection *Clostridium perfringens* enumeration Sulfite-reducing anaerobic bacteria Aerobic colony count *Escherichia coli* enumeration

Note for this scheme molecular methods can used for pathogen examination or as a confirmation test



What is growing on this TBX plate?



Standard Scheme: Sample S0634

Distribution number	Sample numbers	Dispatch date	Date results due by	Examinations and enumerations required
	S0634			*L. monocytogenes* detection *Salmonella* detection *Clostridium perfringens* enumeration Aerobic colony count *E. coli* enumeration

Distribution 298 – October 2017

- Sample S0634
- Contents:
  - *Listeria seeligeri* (8.3×10^2)
  - *Listeria monocytogenes* (90)
  - *Salmonella* Crewe (37)
  - *Clostridium sporogenes* (5.4×10^3)
  - *Norcadia farcinica* (1.3×10^3)
  - *Staphylococcus capitis* (2.4×10^3)

- All levels are presented as colony forming units (cfu) per ml reconstituted sample

Escherichia coli

- 39/154 (25%) reported a count for *E. coli* when the sample did not have this organism – false positive
- Counts reported were from 1 – 1500 cfu per gram

- Methods used:
- 24/39 (61%) had used TBX plate
- 3/39 (8%) had used a chromogenic agar
- 12/39 (31%) has stated 'other' of which seven were TEMPO users

ISO 16649-2: 2001

- Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli -- Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide

- 3.1 – bacteria which at 44^{o}C form typical blue colony on tryptone-bile-glucuronide medium (TBX)

ISO 16649-2: 2001

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ISO 16649-2: 2001

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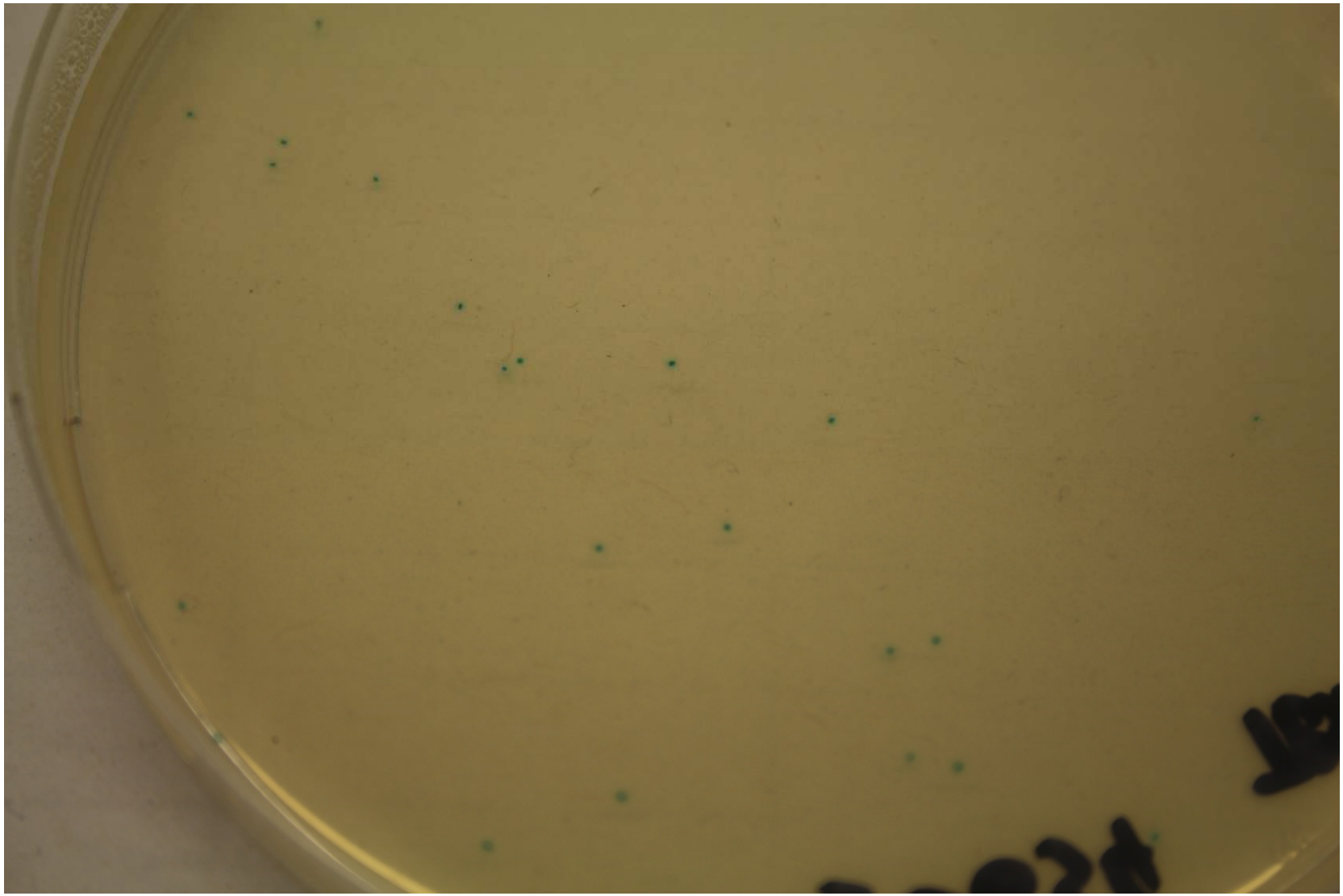
- 3.1 – bacteria which at 44^{o}C form **typical** blue colony on tryptone-bile-glucuronide medium (TBX)

- Only description found when various information sheets from different suppliers were analysed was: Blue/green

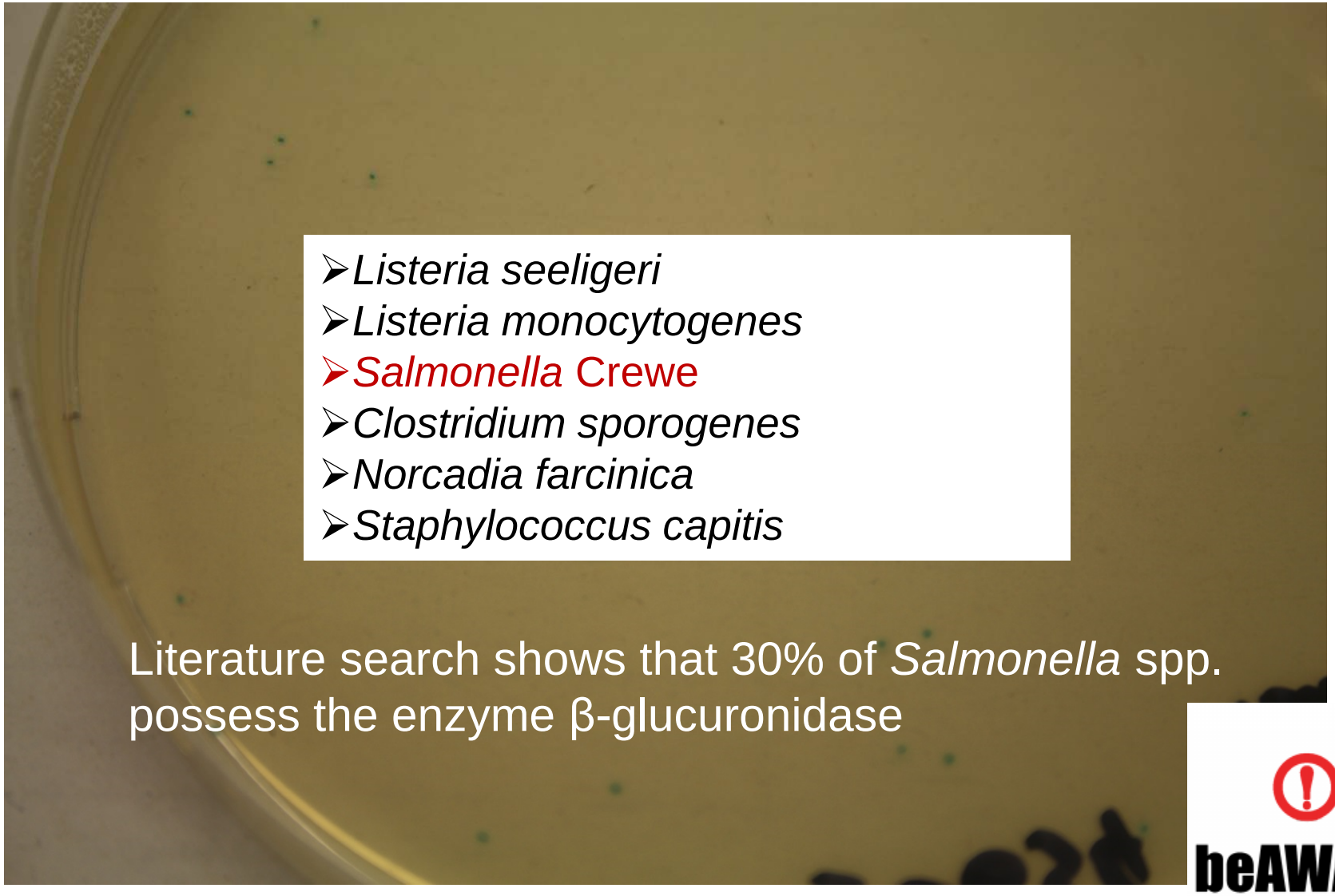
What is growing on this TBX plate?



What is growing on this TBX plate?

What is growing on this TBX plate?

What is growing on this TBX plate?



- *Listeria seeligeri*
- *Listeria monocytogenes*
- *Salmonella* Crewe
- *Clostridium sporogenes*
- *Norcadia farcinica*
- *Staphylococcus capitis*

Literature search shows that 30% of *Salmonella* spp. possess the enzyme β-glucuronidase

beAWARE

Interesting? Yes

- Can give you a better understanding of how suitable your processes are
- Can provide a useful insight into your laboratory's ability to accurately produce test results
- Gain more in depth information on the limitations of your media/methods used
- Exposure to 'unusual' organisms especially if they are not frequently encountered
- Create learning opportunities for your staff

Nuisance? Yes

- You have to investigate failures – this means you may have action/s (inconvenient)
- Might have to provide an explanation to your accreditation body or service users
- Additional cost implications for investigations
- Repeat testing of the PT sample to identify a root cause
- Might have to do a written report
- Might have to update documentation/s and then re-train staff

- You might not be awarded a score even if you got the right result

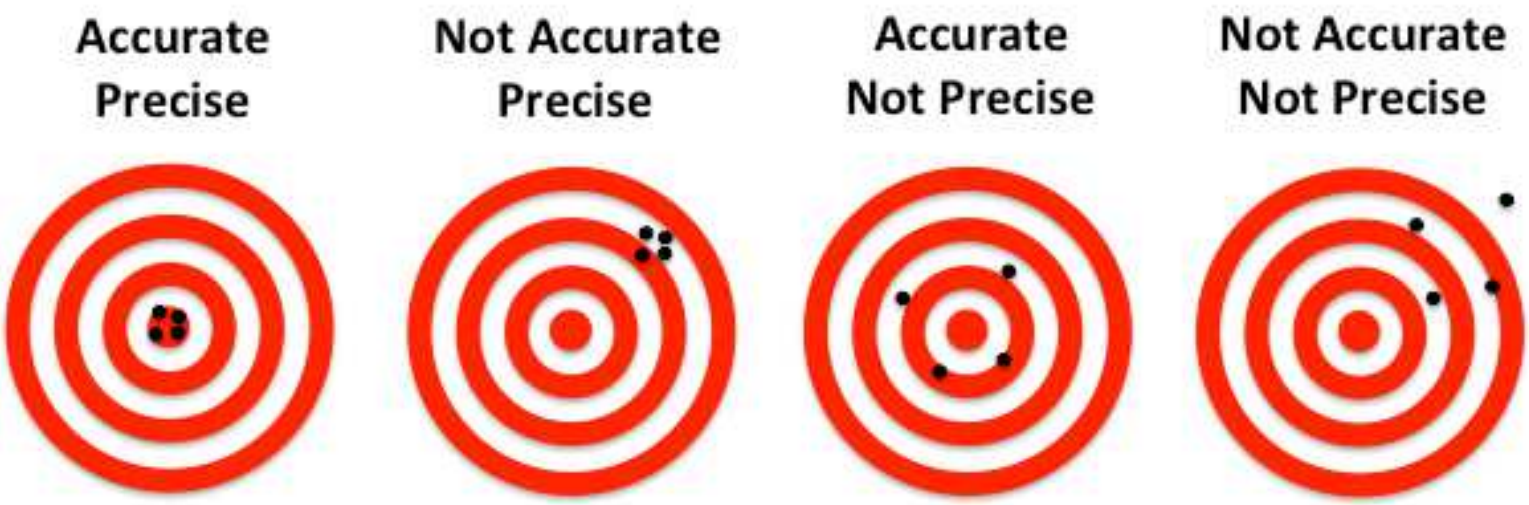
Distribution 284 – September 2016

- Samples S0605 and S0606 were exactly the same
- Contents:
  - *Staphylococcus aureus* (5.2×10^3) (wild strain)
  - *Listeria ivanovii* (7.2×10^2) (wild strain)
  - *Listeria monocytogenes* (3.8×10^2) (wild strain)
  - *Salmonella* Derby 1,4,[5],12:f,g:[1,2] (34) (wild strain)
  - *Enterobacter cloacae* (9.0×10^3) (wild strain)

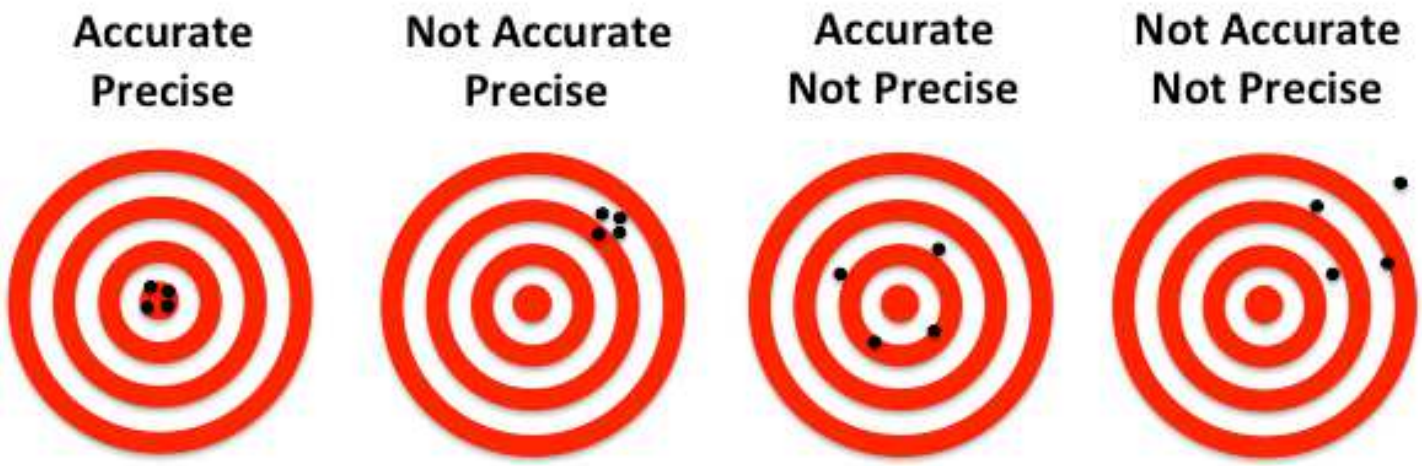
- **Therefore the expectation is that participants should obtain comparable enumeration results for the specific examinations**

- All levels are presented as colony forming units (cfu) per mL reconstituted sample

Comparable: accuracy and precision

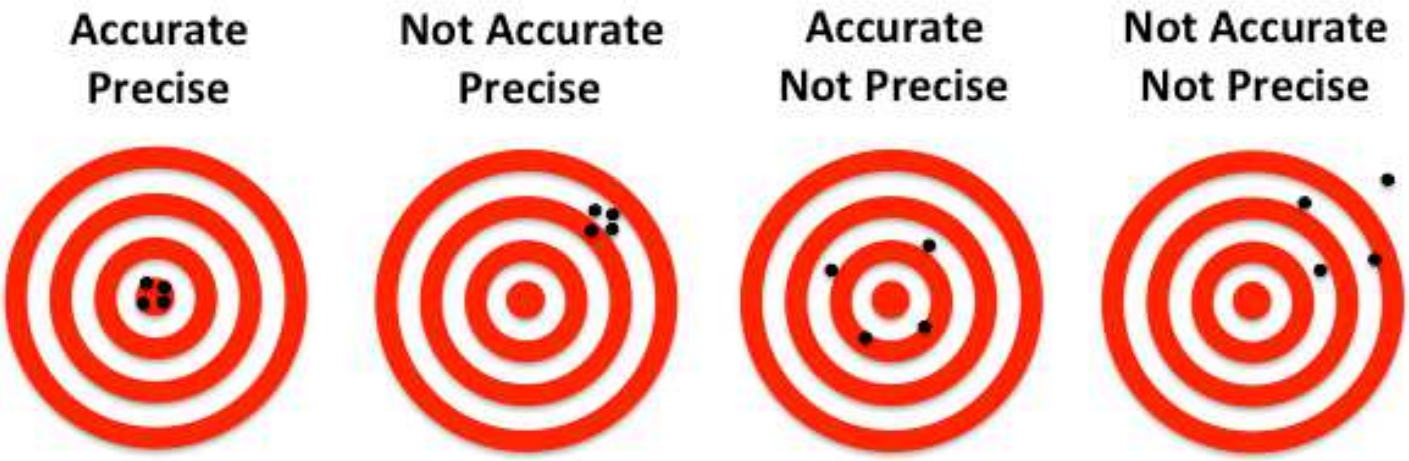


Comparable: accuracy and precision



Accuracy could be defined as how close your results are to the participants' median

Comparable: accuracy and precision



Accuracy could be defined as how close your results are to the participants' median

Precision could be defined as being in the expected range – but even this can be anywhere and wide for PT data

The expected precision of culture-based microbial methods is typically derived mathematically based on the assumption that bacteria are distributed randomly in a well-mixed sample and follow a Poisson distribution

Expected range

Examination	Expected range (cfu g^{-1})	
	S0605	S0606
Coagulase-positive staphylococci	$1.5x10^3 – 1.5x10^4$	$1.5x10^3 – 1.5x10^4$
Listeria spp. (including *L. monocytogenes*)	$3.5x10^2 – 3.5x10^3$	$3.5x10^2 – 3.5x10^3$
L. monocytogenes	$1.3x10^2 – 1.3x10^3$	$1.2x10^2 – 1.2x10^3$
Aerobic colony count	$1.2x10^4 – 1.2x10^5$	$1.1x10^4 – 1.1x10^5$
Coliform	$3.7x10^3 – 4.4x10^4$	$2.4x10^3 – 4.1x10^4$

Expected range: participants' median ±0.5 $\log_{10}$ units or counts within the 11^{th} to 89^{th} percentile

Expected range

Examination	Expected range (cfu g^{-1})	
	S0605	S0606
Coagulase-positive staphylococci	$1.5x10^3$ – $1.5x10^4$	$1.5x10^3$ – $1.5x10^4$
Listeria spp. (including *L. monocytogenes*)	$3.5x10^2$ – $3.5x10^3$	$3.5x10^2$ – $3.5x10^3$
L. monocytogenes	$1.3x10^2$ – $1.3x10^3$	$1.2x10^2$ – $1.2x10^3$
Aerobic colony count	$1.2x10^4$ – $1.2x10^5$	$1.1x10^4$ – $1.1x10^5$
Coliform	$3.7x10^3$ – $4.4x10^4$	$2.4x10^3$ – $4.1x10^4$

Reason for variations:

- Number examining is different
- Actual counts reported varies

→ Can impact the participants' median

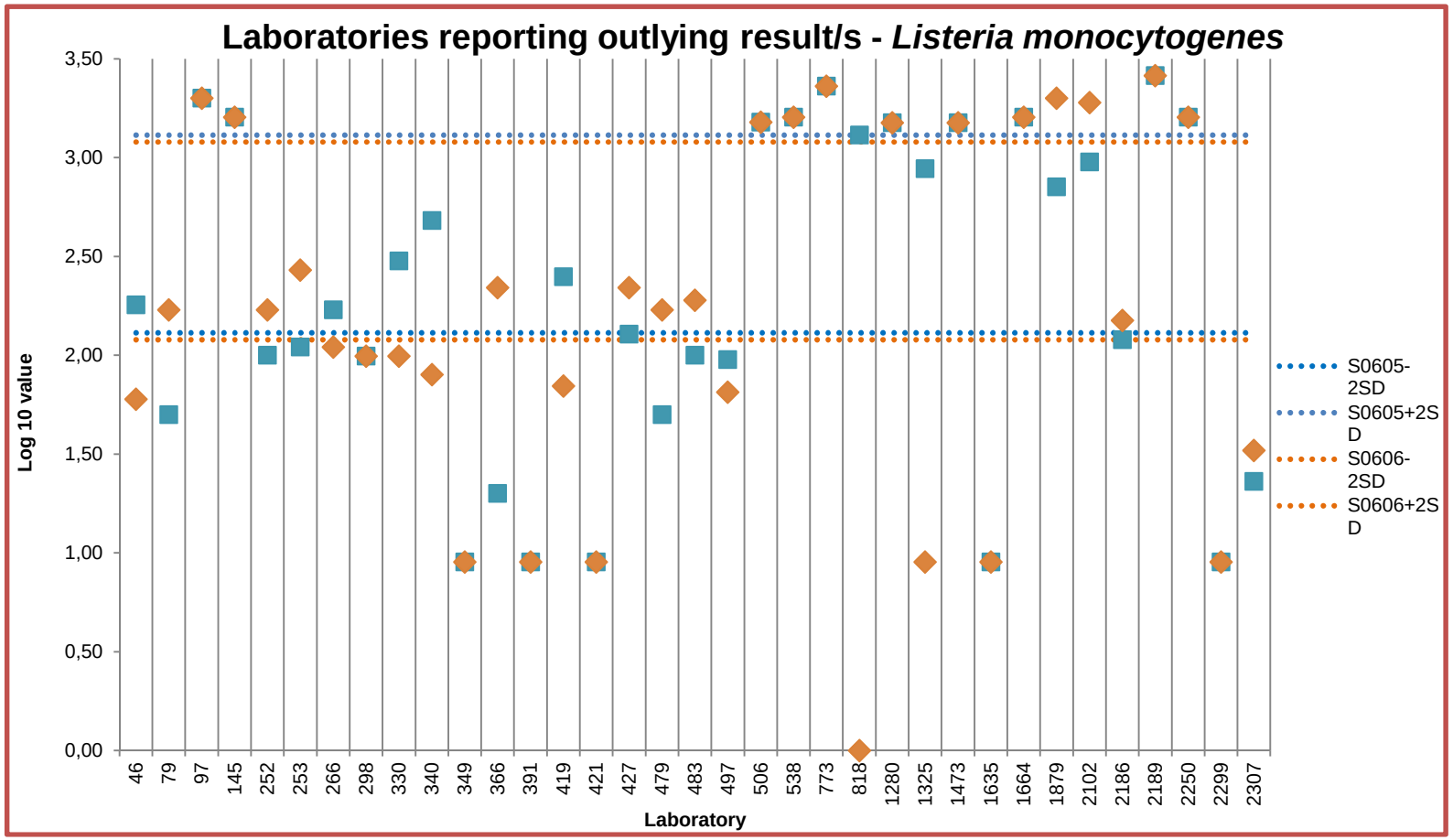
Results reported outside the range or a difference of >3SD

Examination (data sets analysed)	Number of results	
	S0605	S0606
Coagulase-positive staphylococci (143)	One	Four
	Two for both	
	Five reported a result with >3SD difference	
Listeria spp. (including *L. monocytogenes*) (97)	Two	Two
	Six for both	
	Six reported a result with >3SD difference (three in the expected range)	
Aerobic colony count (153)	Seven	Six
	Four for both	
	Ten reported a result with >3SD difference (three in the expected range)	

Results reported outside the range or a difference of >3SD

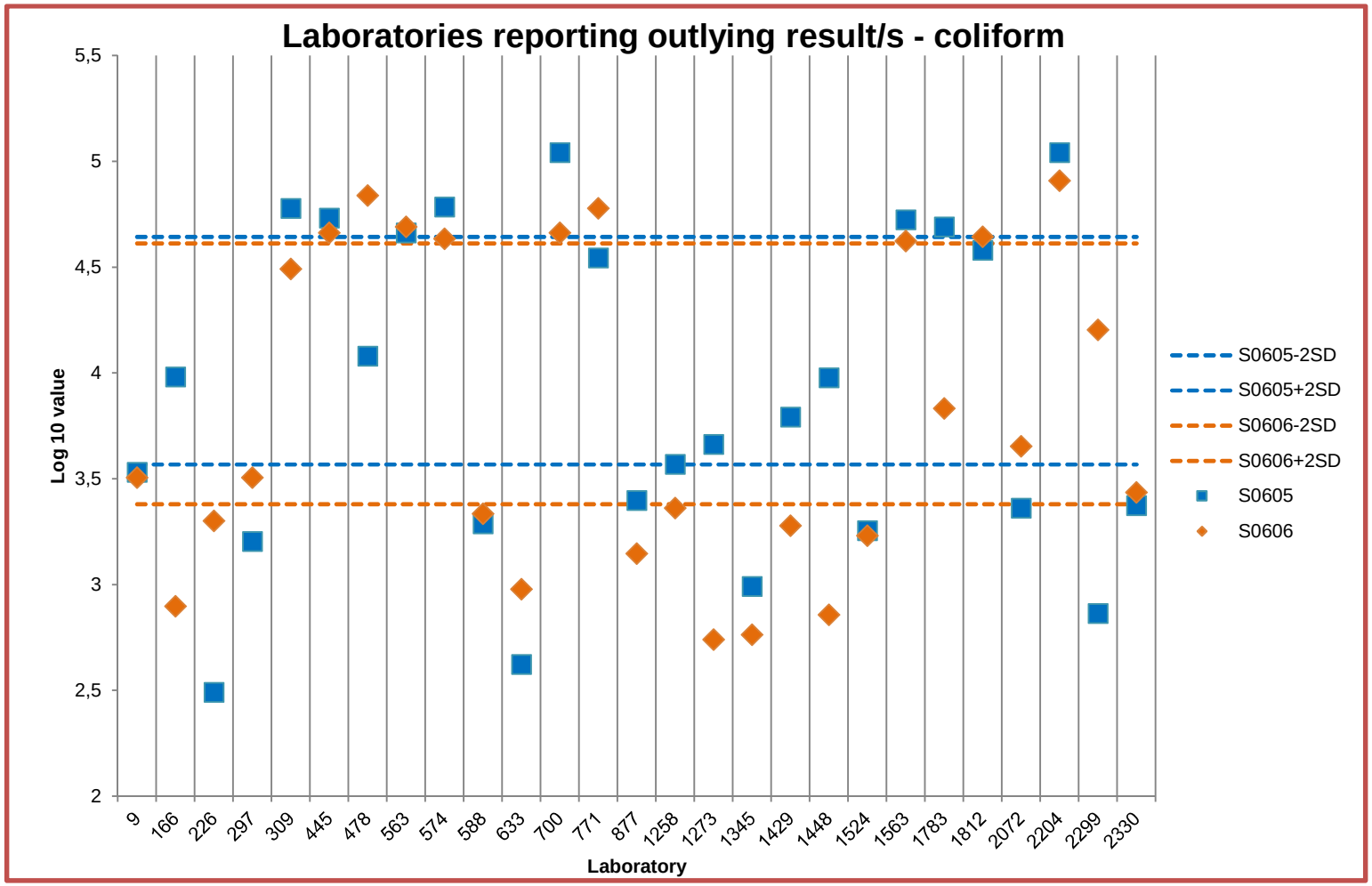
Examination (data sets analysed)	Number of results	
	S0605	S0606
L. monocytogenes (114)	Nine	Nine
	17 for both	
	Four reported a result with >3SD difference (one in the expected range)	
Coliform (112)	Seven	Eight
	12 for both	
	Nine reported a result with >3SD difference (two in the expected range)	

Listeria monocytogenes



- Nine laboratories reported a result outside the range for S0605 and nine for S0606.
- 17 laboratories reported a result outside the expected range for both samples.

Coliforms



- Seven laboratories reported a result outside the range for S0605 and eight for S0606.
- 12 laboratories reported a result outside the expected range for both samples.

Overall performance

Total number of laboratories that reported a result outside the expected range or a difference of >3SD for the number of data sets analysed is shown below

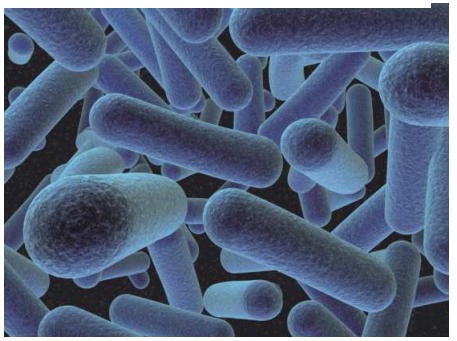
Examination	
Coagulase-positive staphylococci	5/143 (4%)
Listeria spp. (including *L. monocytogenes*)	13/97 (13%)
L. monocytogenes	36/114 (32%)
Aerobic colony count	20/153 (13%)
Coliform	29/112 (26%)

Challenging organism or failure to follow ISO method?

- Food distribution 274, sample S0586
- Contents: *Listeria monocytogenes* ($3.0x10^2$) (wild strain)
- *Listeria welshimeri* ($9.3x10^2$) (wild strain)
- *Clostridium paraputrificum* ($3.1x10^2$) (wild strain)

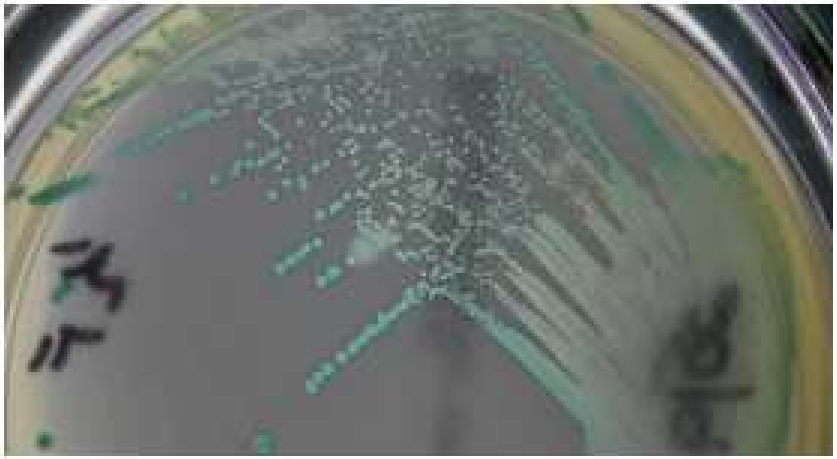
- Examination was for detection of *Listeria monocytogenes* in 25g

L.monocytogenes	
Total participants reporting for *L.monocytogenes*	113
Participants reporting correctly	82 (73%)

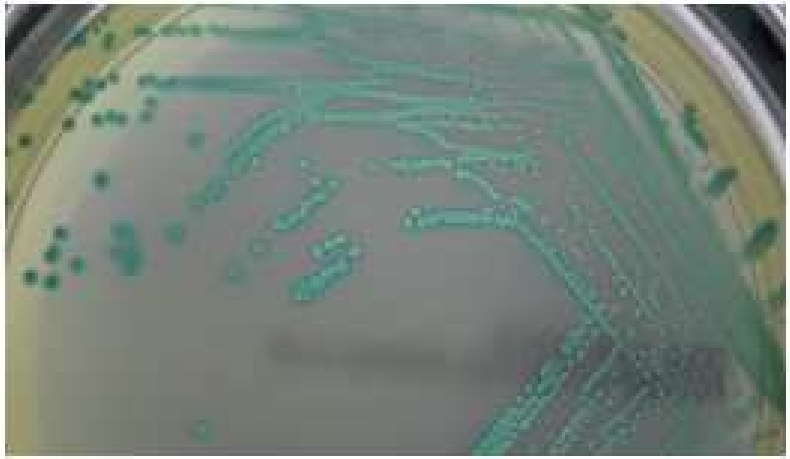


Findings - S0586

- 31/113 (27%) failed to detect the *L. monocytogenes* in this sample
- In the FEPTU laboratory the *L. monocytogenes* was isolated from a subculture of the half Fraser broth
- No *L. monocytogenes* was isolated following sub-culture of the full Fraser broth



Half Fraser sub on ALOA

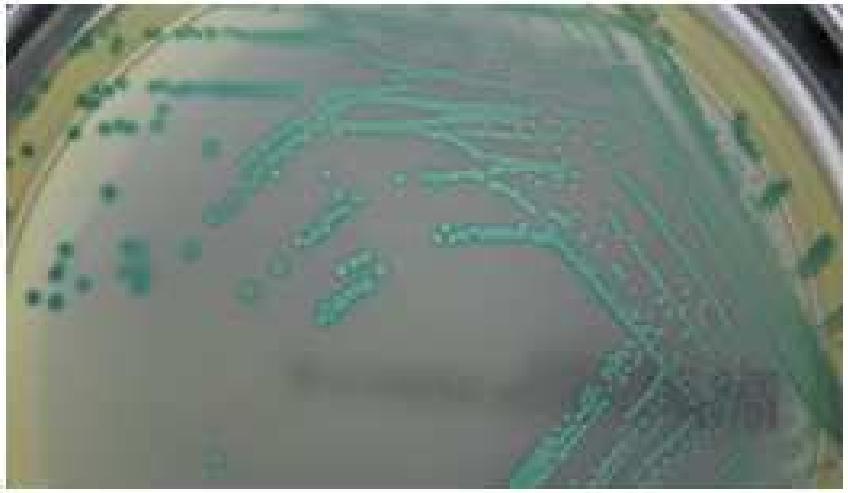


Full Fraser sub on ALOA

Findings - S0586

- 31/113 (27%) failed to detect the *L. monocytogenes* in this sample
- In the FEPTU laboratory the *L. monocytogenes* was isolated from a subculture of the half Fraser broth
- No *L. monocytogenes* was isolated following sub-culture of the full Fraser broth

Half Fraser sub on ALOA



Full Fraser sub on ALOA

ISO 11290-1 - method

- ISO 11290-1 Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of *Listeria monocytogenes* - Part 1:
- Detection method recommends that 'broths are sub-cultured after each enrichment stage onto Ottaviani and Agosti agar and a second selective media'

L.monocytogenes Method	*L.monocytogenes* Media	*L.monocytogenes* Enrichment	No. Participants detected	No. Participants not detected
ISO 11290 - 1	Ottaviani and Agosti agar (ALOA)	Fraser broth (half followed by full)	9	3
ISO 11290 - 1	Oxford Listeria selective agar; Ottaviani and Agosti agar (ALOA)	Fraser broth (half followed by full)	8	5
ISO 11290 - 1	PALCAM Listeria selective agar; Ottaviani and Agosti agar (ALOA)	Fraser broth (half followed by full)	6	4

Listeria spp. (including *L.mono*)	
Total participants reporting for *Listeria* spp. (including *L.mono*)	98
Participants reporting correctly	97 (99%)

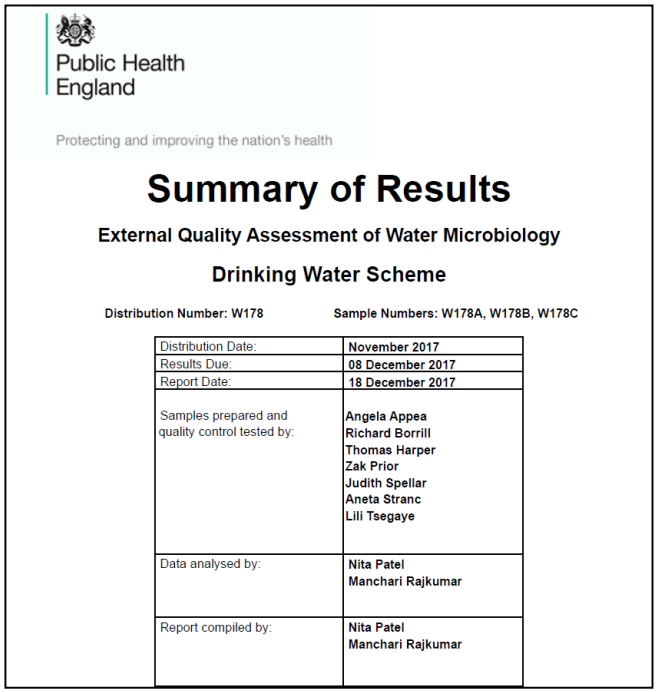
Points to note

- It is important to follow the ISO method as instructed – these methods have been extensively validated to increase the chance of isolating the target organism
- *Listeria* spp. other than *monocytogenes* in food samples can compete with *L. monocytogenes* if present in low numbers – therefore sub culturing of the half Fraser broth is extremely important
- If you deviate from an ISO method you must understand the impact on results – potentially at risk of not isolating the target organism

- New ISO 11290:2017 – detection method
  - incubation of the first enrichment has been changed from a minimum of 22 h to a minimum of 24 h
  - incubation of the second enrichment has been reduced to 24 h if only *L. monocytogenes* is sought

Personalised report will contain

- performance data including on-going performance over a year
- actions to take
- educational information on difficult and challenging samples
- PHE and z-scores
- contents and levels



Public Health England

Protecting and improving the nation's health

Summary of Results

External Quality Assessment of Water Microbiology

Drinking Water Scheme

Distribution Number: W178 **Sample Numbers: W178A, W178B, W178C**

Distribution Date:	November 2017
Results Due:	08 December 2017
Report Date:	18 December 2017
Samples prepared and quality control tested by:	Angela Appea Richard Borrill Thomas Harper Zak Prior Judith Spellar Aneta Stranc Lili Tsegaye
Data analysed by:	Nita Patel Manchari Rajkumar
Report compiled by:	Nita Patel Manchari Rajkumar

Swab Sample: ES0023

- **Sample type**: Swab sample from the inside of a milk bottle containing some milk residue. Late evening on 30 July 2018 the local health authority received complaints from 15 tourists who had violent vomiting, nausea and stomach cramps. All were staying in a local hotel that had served raw artisan milk cheese made by a small local diary. Food samples and swab were taken from the dairy.
- **Request**: Examine samples following your routine protocol for pathogens based on the outbreak scenario provided
- **Contents**: Staphylococcus aureus $1.4x10^4$ (wild strain), Aerococcus viridans $1.7x10^3$ (wild strain), Enterococcus faecalis $7.0x10^2$ (wild strain)

Expected Results:

Examination	Expected Result	Your Result	Score for performance assessment	Z-score
Listeria monocytogenes	Not Detected			
Salmonella spp.	Not Detected			
Coagulase-positive staphylococci	$9.9x10^2$ - $7.8x10^4$ cfu per swab			
Campylobacter spp.	Not Detected			

Swab Sample: ES0023

Comments on Performance:

Listeria monocytogenes	
Total participants reporting for *Listeria monocytogenes*	25
Participants reporting correctly	24 (96%)
***Salmonella* spp.**	
Total participants reporting for *Salmonella* spp.	27
Participants reporting correctly	26 (96%)
Coagulase-positive staphylococci	
Total participants reporting for Coagulase-positive staphylococci	28
Assigned value (participants' median)	8.8×10^3 cfu per swab (3.94 $\log_{10}$)
Uncertainty of assigned value (*U(Xpt)* = $\log_{10}$ cfu per swab)	0.11
No. of outlying counts	6 (6 low / 0 high)
Participants' mean	6.4×10^3 cfu per swab (3.81 $\log_{10}$)
*Standard deviation of participants' results	0.47 $\log_{10}$ cfu per swab
FEPTU QC median	1.4×10^4 cfu per swab (4.14 $\log_{10}$)
***Campylobacter* spp.**	
Total participants reporting for *Campylobacter* spp.	6
Participants reporting correctly	6 (100%)

Total sent samples	38
Non-returns	5
Not examined	1

Swab Sample: ES0023

Comments for distribution ES12

Sample ES0023

28 laboratories analysed the sample from this distribution. The pathogen in this sample was a coagulase positive staphylococci.

The table below shows the additional examinations carried out by the laboratories and the reported results.

Additional examinations	Number of laboratories examining	Reported results
Bacillus cereus	6	1100 (1) 0 (1) <100 (2) <200 (1) Not detected (1)
Clostridium perfringens	6	0 (2) <10 (2) <100 (2)
Escherichia coli O157	3	Not examined (1) Not detected (2)

Swab Sample: ES0023

It is important for participant to be aware that outbreaks relating to artisan cheese made from raw milk can occur with this organism.

https://www.journalofdairyscience.org/article/S0022-0302(18)30078-X/abstract

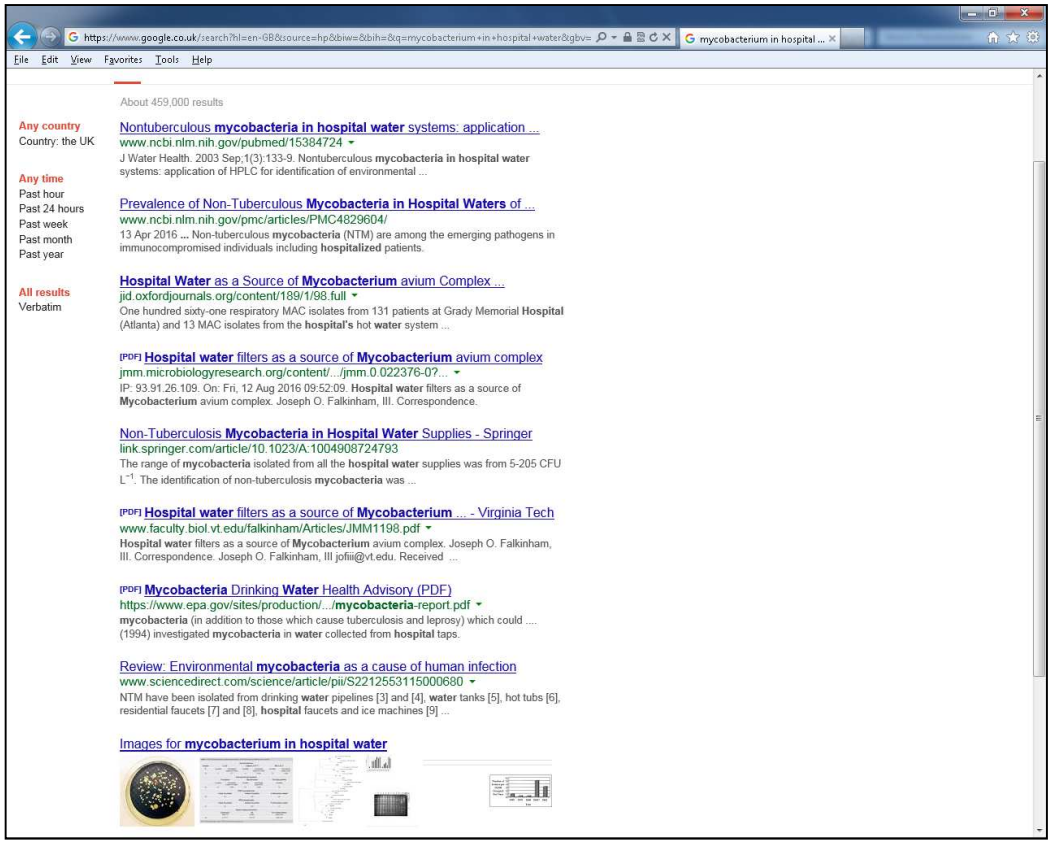
The word 'artisan' or 'artisanal' implies that a cheese is produced primarily by hand, in small batches, with particular attention paid to the tradition of the cheesemaker's art and thus using as little mechanisation as possible in production of the cheese. Artisan, or artisanal, cheese may be made from all types of milk including raw milk.

Read this article regarding a study undertaken about '*Staphylococcus aureus* Entrance into the Dairy Chain: Tracking *S. aureus* from Dairy Cow to Cheese'

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5061776/

New and emerging organism – *Mycobacterium* spp.

- If you did a search on the internet, you would find a long list of articles on *Mycobacterium* in hospital waters going back over 20 years



ThermoFisher SCIENTIFIC

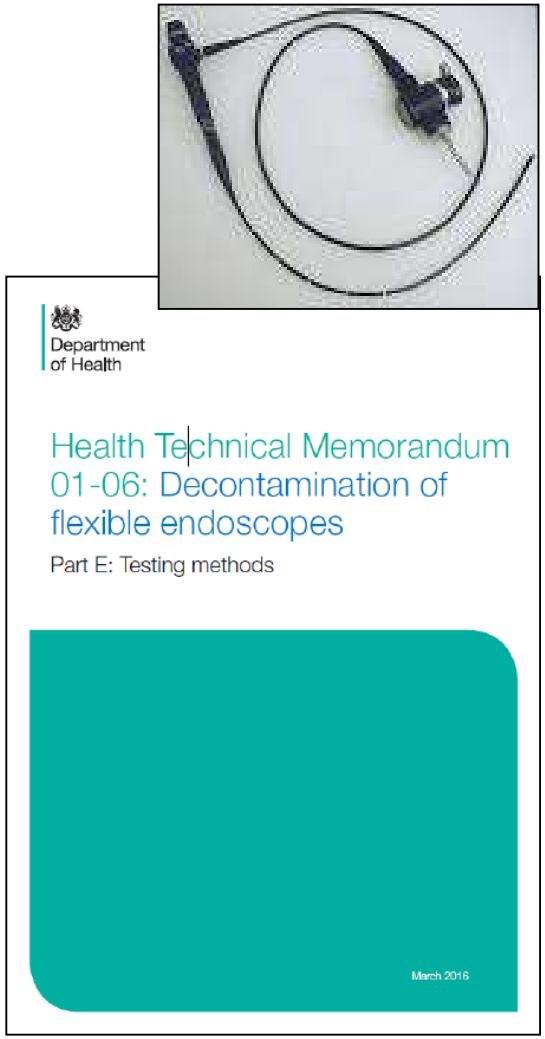
Rinse-water

Environmental non-pathogenic mycobacteria present a particular problem when they occur in the final rinse-water of some instruments used for diagnosis

Mycobacteria that occur in water, for example *Mycobacterium kansasii* and *Mycobacterium chelonae*, are opportunistic pathogens

For equipment rinsed after the disinfection stage, there should be no recovery of mycobacteria from 100 mL of final rinse-water

This group of organism is now included annually in the Endoscope Rinse Water Scheme

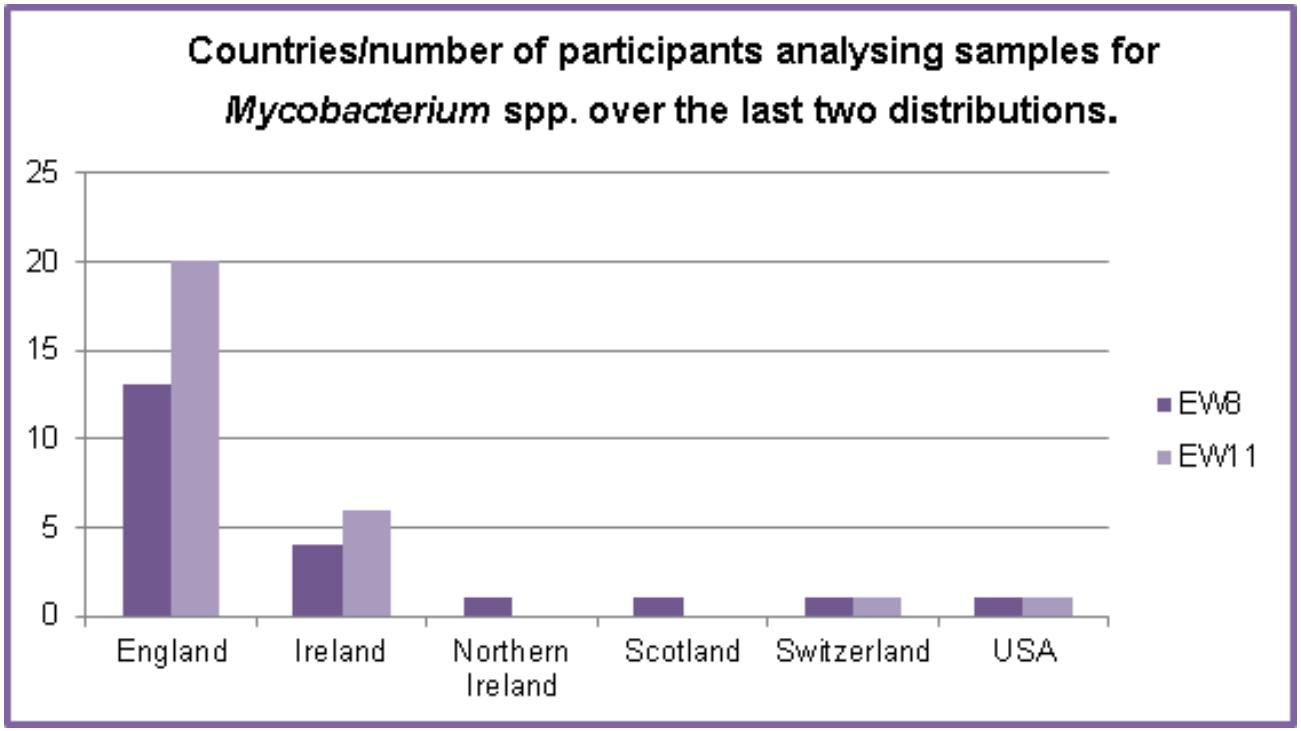


Mycobacterium spp.

- Main objectives of the scheme:
- To produce LENTICULE® discs at sufficient levels of *Mycobacterium* spp. to be isolated using membrane filtration methods
- To determine testing compliance with HTM 01-06 (CFPP 01-06):
  - media used
  - volume of water used for examination
  - incubation temperature and period
- To provide suitable samples that challenge a laboratory's ability to isolate and identify *Mycobacterium* spp. from waters
- To give a laboratory confidence in the method they use
- To confirm performance of culture media used such as Middlebrook 7H10
- To determine variability of the methods/media used
-

Mycobacterium spp.

- Number of participants examining for *Mycobacterium* in the Endoscope Rinse Water scheme over the last two distributions



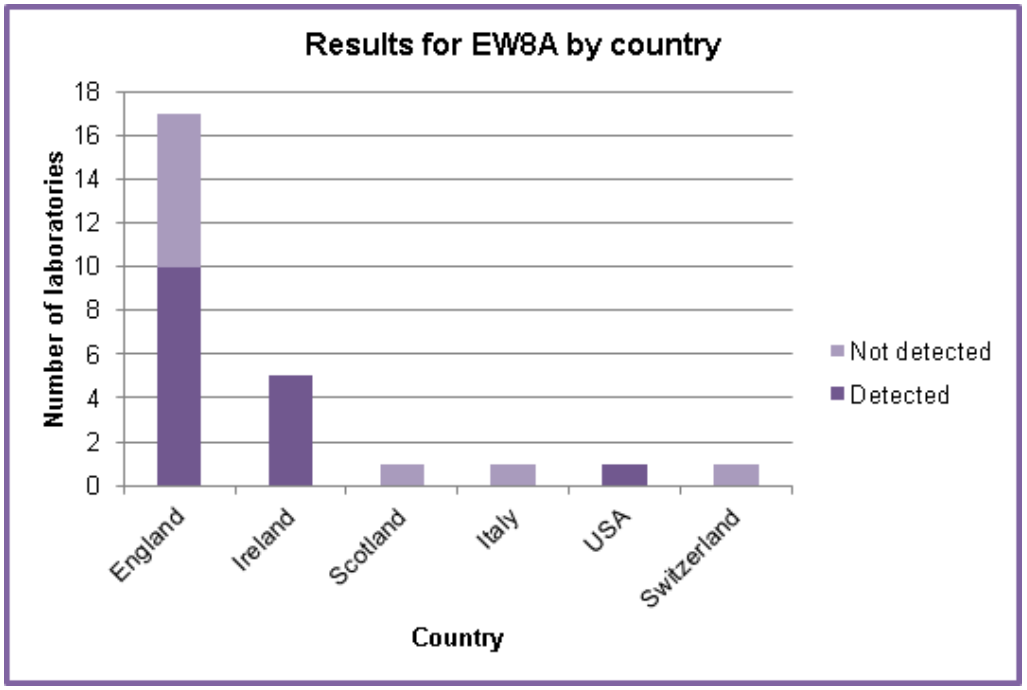
- EW8 – August 14
- EW11 – August 15
- EW14 – closes October 16

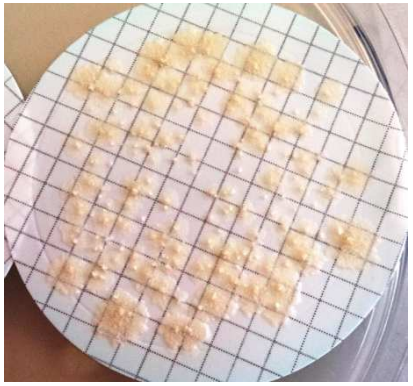
EW8A

26 / 60 (43%) laboratories examined the samples for *Mycobacterium* spp.

This sample contained *Mycobacterium chelonae* ($1.1x10^2$ cfu per 100mL) and *Pseudomonas aeruginosa*

16 / 26 (62%) laboratories correctly reported that *Mycobacterium* spp. was present in 100mL of this sample





26 / 26 (100%) laboratories correctly reported that there was no *Mycobacterium* spp. present in sample EW8B

EW8A – test conditions

Results for EW8A	Guideline followed	Culture medium used	Filter size	Incubation temperature	Incubation period
Not isolated	HTM2030	Middlebrooks	0.2	35	**16**
Negative	ISO 15883-4	7H11 Middlebrook	0.45	30	28
Not detected	HTM2030 and CFPP	7H10 Middlebrook	0.45	35	28
Negative	ISO 15883-4		0.45		
Not isolated		MP bottles bioMerieux	Not applicable		
Not isolated	CFPP 01-06	7H10 Middlebrook	0.45	37	28
Negative	Local guideline	LJ and MGIT (BD)		37	45
Negative		VCAT agar	0.45	30	**7**
Not detected	HTM2030	Middlebrooks	0.45	30	**22**
Not isolated	CFPP 01-06	7H10 Middlebrook	0.45	30	28

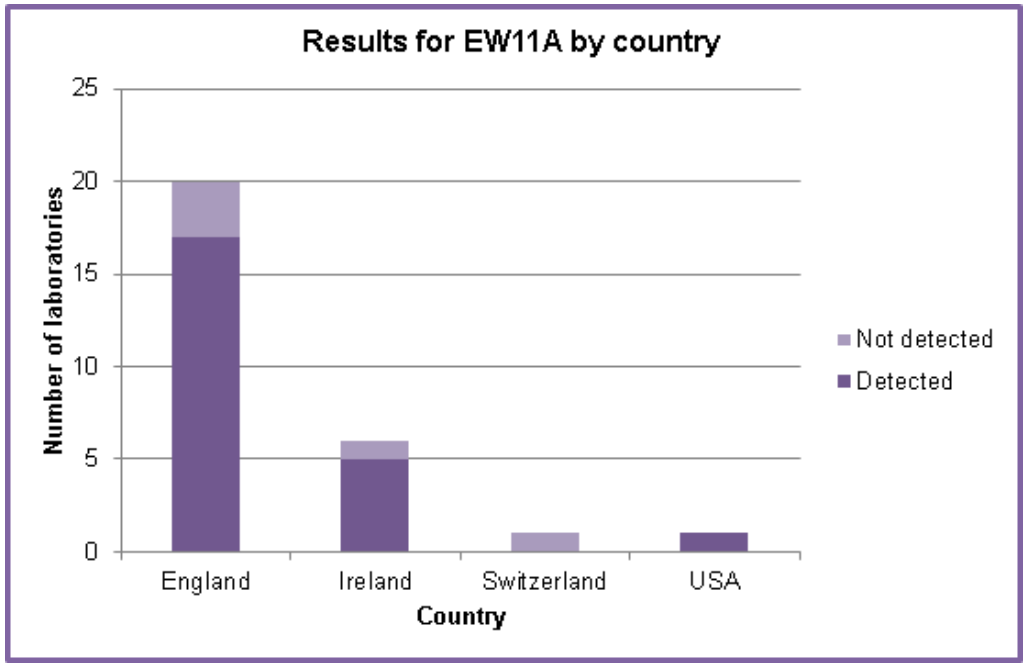
- Findings:
  - Non validated methods and media was used
  - Length of incubation was incorrect – should be up to 28 days (no growth)
  - Incorrect filter size used; mycobacteria rods are 1 -10um in length and 0.2 - 0.8um in width (varies depending on the species)
  - Temperature for incubation in CFPP is incorrect it should be 30^{o}C not 35^{o}C

EW11A

28 / 71 (39%) laboratories examined the samples for *Mycobacterium* spp.

This sample contained *Mycobacterium chelonae* (54 cfu per 100mL) and *Staphylococcus capitis*

23 / 28 (82%) laboratories correctly reported that *Mycobacterium* spp. was present in 100mL of this sample



22 / 24 (92%) laboratories correctly reported that there was no *Mycobacterium* spp. present in sample EW11B. Four laboratories reported that they were unable to report a result due to overgrowth of fungi on the culture plates

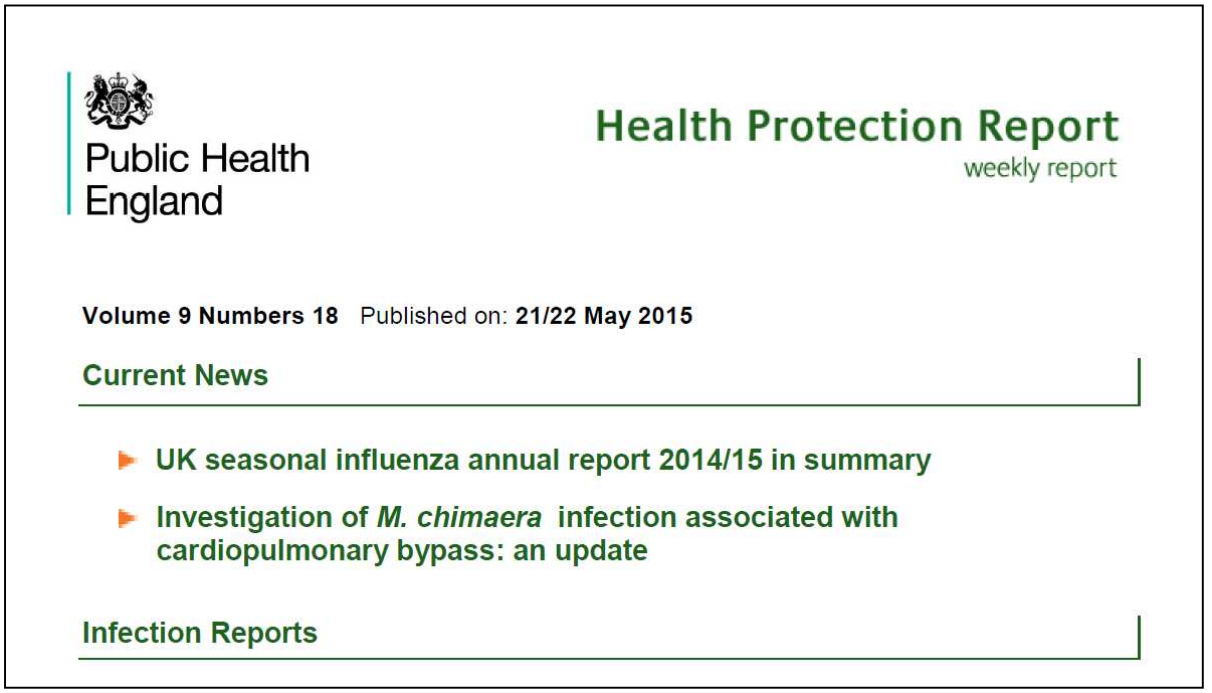
EW8 and EW11 methods used

Guideline or standard used	Number of laboratories using the guideline / standard	
	EW8A	EW11
CFPP 01-06*	6	13
HTM 2030	2	
HTM 2030 / CFPP 01-06	1	
HTM 2030 / CFPP 01-06 / ISO 15883-1:2006	2	2
HTM 2030 and ISO 15883	1	
In-house or local guideline	2	1
ISO 15883-1:2006	2	
ISO 15883-4:2008	3	8
ISO 15883-1:2006 and ISO 15883-4:2008	1	
ISO 15883-1:2006 and ISO 15668:2008		1
HTM 04-01		1
Public Health England Healthcare document	3	1
Not specified	3	1

- ISO 15883-4:2008 Washer-disinfectors - Part 4: Requirements and tests for washer-disinfectors employing chemical disinfection for thermolabile endoscopes
- *Replaced by Health Technical Memorandum 01-06: Decontamination of flexible endoscopes Part E: Testing methods

Mycobacterium chimaera ? A new problem

- As reported on 30 April, cases of invasive *Mycobacterium chimaera* infection have been reported in patients who have undergone cardiac surgery in Switzerland and the Netherlands. A Swiss investigation has been published attributing these infections to aerosol generated by contaminated heater cooler units (HCUs) used during cardiopulmonary bypass
- A case of similar infection has also been reported in Germany



Public Health England

Health Protection Report
weekly report

Volume 9 Numbers 18 Published on: **21/22 May 2015**

Current News

- **UK seasonal influenza annual report 2014/15 in summary**
- **Investigation of *M. chimaera* infection associated with cardiopulmonary bypass: an update**

Infection Reports

Mycobacterium spp.

Emerging *Mycobacteria* spp. in Cooling Towers

To the Editor: The importance of nontuberculous mycobacteria (NTM) in various clinical situations recently has increased. Membe
cobacterium avium c
cause a high percentag
in persons with acqui
ficiency syndrome. So
considered emerging

Available online at www.sciencedirect.com

Journal of Hospital Infection

journal homepage: www.elsevier.com/locate/jhin

ELSEVIER

Healthcare Infection Society

Detection limit of *Mycobacterium chimaera* in water samples for monitoring medical device safety: insights from a pilot experimental series

rvera [c], B. Hasse [a,b], H. Sax [a,b,†],

University Hospital Zurich, Zurich, Switzerland

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h, Zurich, Switzerland

Nosocomial pseudo-outbreak of *Mycobacterium gordonae* associated with a hospital's water supply contamination: a case series of 135 patients

Marija Zlojtro, Mateja Jankovic, Miroslav Samarzija, Ljiljana Zmak, Vera Katalinic Jankovic, Mihaela Obrovac, Igor Zlojtro and Marko Jakopovic

Ann Ist Super Sanità 2010 | Vol. 46, No. 3: 254-258
DOI: 10.4415/ANN_10_03_05

Prevalence of Non-Tuberculous Mycobacteria in Hospital Waters of Major Cities of Khuzestan Province, Iran

Azar Dokht Khosravi [1,2], Abdolrazagh Hashemi Shahraki [1,3], Mohammad Hashemzadeh [2,4], Rasa She*

*[1] Health Rese
Sciences, Ah
Ahvaz, Iran, [3]
Jundishapur
University of*

Non-tuberculous mycobacteria and microbial populations in drinking water distribution systems

Rossella Briancesco, Maurizio Semproni, Simonetta Della Libera, simo Sdanganelli and Lucia Bonadonna

rtimento di Ambiente e Connessa Prevenzione Primaria, Istituto Superiore di Sanità, e, Italy

mary. Data on the occurrence of non-tuberculous mycobacteria (NTM), in parallel with those ined for bacterial indicators and amoebae, are presented with the aim to collect information on pread of NTM in drinking water distribution systems in Italy. Samples were collected from taps ospitals and households in Central and Southern Italy. The concentration values obtained for nore traditional microbial parameters complied with the mandatory requirements for drinking r. Conversely, moderate-to-high microbial loads (till 300 CFU/L) were observed for the NTM. tive samples were obtained from 62% of the investigated water samples. Analogous results were rved for amoebae showing a higher percentage of positive samples (76%). In terms of public th, the presence of mycobacteria in water distribution systems may represent a potential risk especially for vulnerable people such as children, the elderly or immunocompromised individuals.

An Outbreak of Bacteremias Associated With *Mycobacterium mucogenicum* in a Hospital Water Supply

Susan Kline, MD, MPH; Sarah Cameron, MT; Andrew Streifel, MPH; Mitchell A. Yakrus, MS, MPH; Frank Kairis, MT; Keith Peacock, BA; John Besser, MS; Robert C. Cooksey, PhD

What can be learnt from challenging samples

- Exposure to **new organisms** of public health concern – raising awareness of their existence and allowing you to assess suitability of your current method/s or validating new ones
- Raising awareness of **atypical organisms** that exist in the environment and a greater understanding of the impact on laboratory testing and results
- Helps you to understand the **limitations of methods/media** used
- Helps you to understand the **limitations of confirmation tests**
- Allows you to understand **gaps in your procedures** – especially if an approved method is not followed
- Helps your laboratory understand how accurate your test results are

Why participate in PHE Schemes?

- PHE PT samples are designed to challenge your testing procedures therefore will include challenging organisms – so beware
- We extensively test the samples using ISO methods – so your results should align with our results including confirmatory test results
- Process PT samples the same as other routine samples. Otherwise nothing will be learnt about your quality system
- We are not here to trick you but to:
  - raise awareness of the limitation/s of your procedure or method
  - provide an insight into staffs' knowledge and experience
  - endorse the requirement to carry out confirmatory tests
  - encourage the use of approved methods
  - give you an opportunity to examine samples containing organisms less frequently encountered that are of public health concern

We are (possibly) the only ones that

- Use wild strains
- Investigate failures with PT samples properly – a supplementary report and support provided
- Give you access to technical and scientific experts

Public Health England

- Provide unique schemes that supports EU legislation
- Use a unique PHE scoring system to calculate performance as well as including z-scores in reports
- Robust statistic (a lot of participant of each scheme around the world)
- Free of charge repeats

Public Health England Proficiency Tests

Gracias – Thank you

ThermoFisher SCIENTIFIC