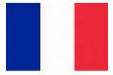
UK Health Security Agency

UK Health Security Agency Food and Water Proficiency Testing Schemes

Facts and Figures

Number of Schemes	18
Number of participants	852
Number of countries	62

Countries we provide PT samples to

- Albania 
- Aruba 
- Australia 
- Austria 
- Belgium 
- Bonnaire 
- Bosnia 
- Botswana 
- Brazil 
- Canada 
- Cape Verde 
- Chile 
- China 
- Croatia 
- Cyprus 
- Denmark 
- Domincan rep. 
- Egypt 
- Falkland Islands 
- Faroe Islands 
- Finland 
- France 
- Germany 
- Greece 
- Hong Kong 
- Hungary 
- India 
- Ireland 
- Israel 
- Italy 
- Jamaica 
- Japan 
- Jordan 
- Kuwait 
- Luxembourg 
- Morocco 
- Namibia 
- Netherlands 
- New Zealand 
- Norway 
- Oman 
- Peru 
- Portugal 
- Romania 
- Saudi Arabia 
- Serbia 
- Singapore 
- Slovenia 
- S. Africa 
- Spain 
- St Helena 
- St Maarten 
- Sweden 
- Switzerland 
- Thailand 
- Tunisia 
- Turkey 
- UAE 
- UK 
- USA 
- Vietnam 

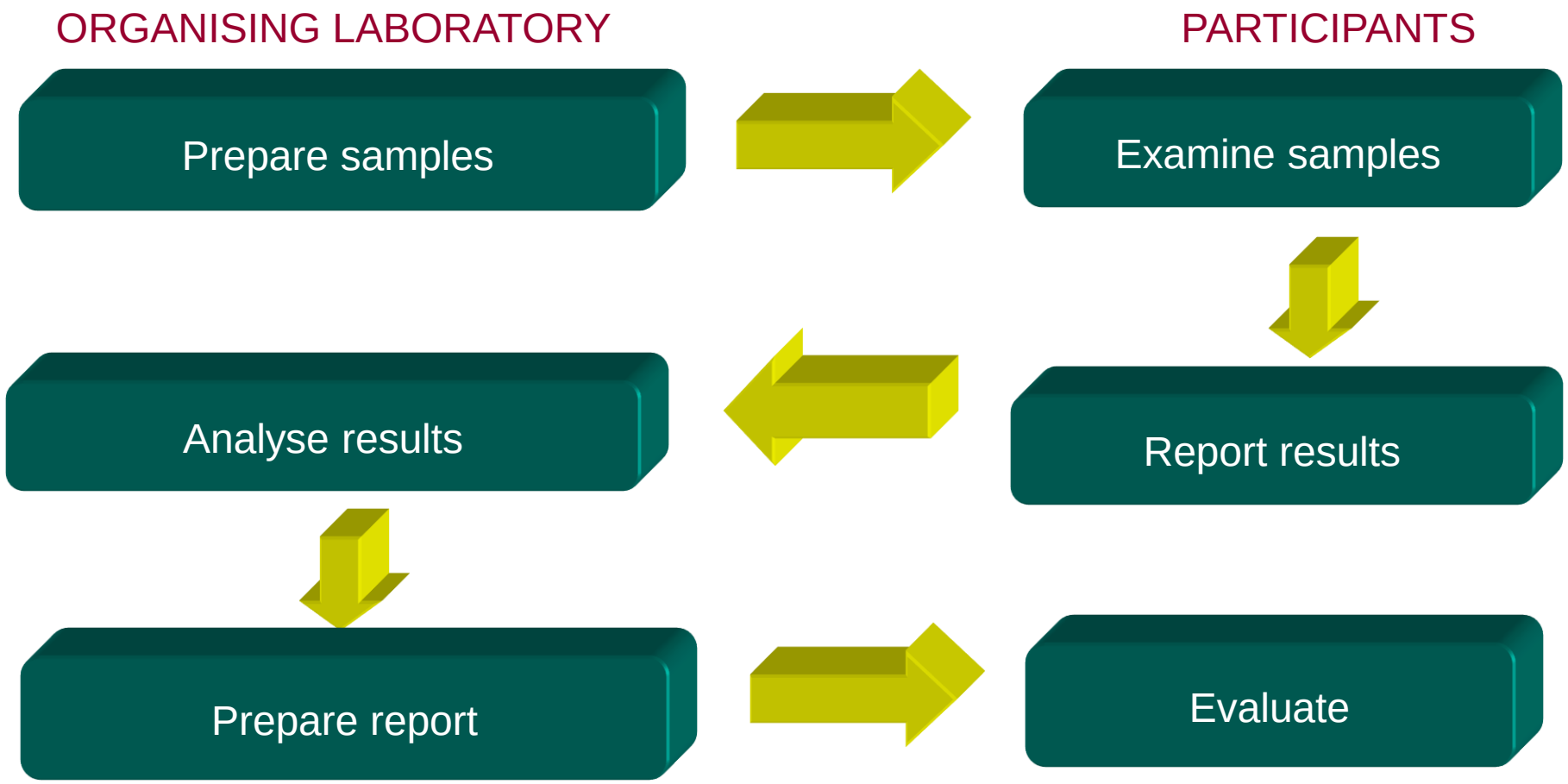
Proficiency Testing (PT) / External Quality Assessment (EQA)

- Samples of known but undisclosed content are introduced into a laboratory's routine testing procedure

Freeze-dried

LENTICULE® discs

Proficiency testing



Overview – why laboratories do PT?

- To demonstrate competence as part of accreditation requirement – ISO/IEC 17025:2005 - *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
- 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!

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

General scheme 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

General Scheme features (2)

- All schemes are accredited
- 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

UKAS PROFICIENCY TESTING

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General 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 most scheme) for robust data analyses
- Efficient global sample delivery service – over 70 countries
- Clear instructions and request forms

Standard Scheme

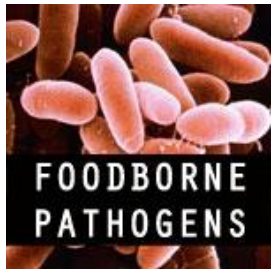
Laboratories that routinely test for a range of food-borne pathogens and indicator organisms

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.
Literia monocytogenes
Listeria spp.
Escherichia coli O157 (non-toxigenic strains)
Campylobacter spp.
Cronobacter spp.
Yersinia enterocolitica

Enumerations
Presumptive *Bacillus cereus*
Campylobacter spp.
Coliforms
Clostridium perfringens
Coagulase-positive staphylococci
Listeria monocytogenes
Listeria spp.
Aerobic colony count
Escherichia coli
Enterobacteriaceae
Sulfite-reducing anaerobic bacteria

Six distributions a year with two samples in each
Up to three sets of results can be reported



Standard Scheme

- The scheme focuses on raising awareness:
- of the methods used
- in the variations of the methods used which can subsequently highlight differences in EQA results obtained
- in limitation of methods available on the market
- of updates in ISO methods
- of atypical organisms circulating in the environment that may challenge a laboratory’s interpretation of the EQA sample due to methods/media used
- in limitation of confirmation tests done especially with unusual/atypical organisms

European Food Microbiology Legislation Scheme

Laboratories that examine foods for compliance with Regulation (EC) 2073/2005 and subsequent amendments

The scheme assesses participants' ability to test and interpret laboratory results in accordance with EU food safety and process hygiene criteria

Pathogens
Cronobacter spp.
Salmonella spp.
Listeria monocytogenes
Shiga toxin-producing *E. coli*

Enumerations
Presumptive *Bacillus cereus*
Coagulase-positive staphylococci
Campylobacter spp.
Listeria monocytogenes
Aerobic colony count
Escherichia coli
Escherichia coli MPN
Enterobacteriaceae
Staph enterotoxin

Four distributions a year with three samples in each

Non-Pathogen Scheme

To provide external quality assessment samples to challenge the enumeration of spoilage and indicator organisms encountered in food samples.

Suitable for laboratories on production sites that do not want to introduce pathogens.

The scheme focuses on raising awareness:

- of methods/media used
- in the variations of the methods/media used which can highlight differences in EQA results obtained
- of atypical organisms circulating in the environment that may challenge a laboratory's interpretation of results due to the methods/media used
- of testing samples in accordance with ISO methods

Three distributions a year with two samples in each

Up to three sets of results can be reported

Shellfish Scheme

This scheme provides external quality assessment samples for 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 as amended.

The Scheme is organised in collaboration with the Centre for Environment, Fisheries and Aquaculture Science (Cefas), Weymouth, United Kingdom (UK). Cefas have responsibility for organising comparative testing of methods.

The scheme focuses on raising awareness:

- of interpreting tube combination results and the associated MPN value per 100g for *Escherichia coli*
- of updates in the ISO method

Three distributions a year with two samples in each

Pathogenic *Vibrio* Scheme

To provide external quality assessment samples to challenge the detection pathogenic *vibrios* in food and water samples.

The scheme focuses on raising awareness:

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

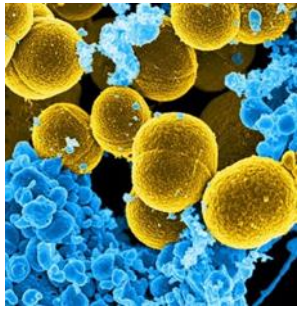
Detection of pathogenic vibrios - *. V. cholerae, V. parahaemolyticus and V. vulnificus*

Three distributions a year with two samples in each

Staphylococcus aureus enterotoxin Scheme

To provide external quality assessment samples to challenge the detection of *Staphylococcus* enterotoxin in food samples

S. aureus enterotoxins A-E are covered.



The scheme focuses on raising awareness:

- of the different methods used to detect enterotoxin in food samples

of the limitation and issues with some of the kit methods available

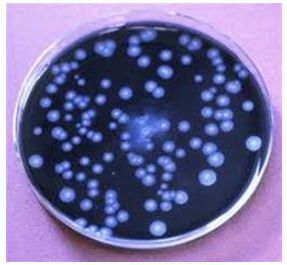
Two distributions a year with two samples in each

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 to confirm the *Legionella* spp. in the sample
- of the importance of following standardised methods that are internationally recognised



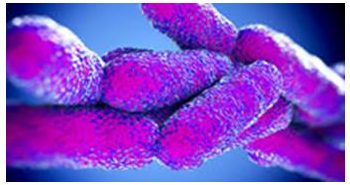
Four distributions a year with two samples in each

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.

This scheme focuses on raising awareness:

- of the different *Legionella* spp. that maybe isolated from water samples
- of the variation, performance and limitation of molecular methods used which can subsequently highlight differences in PT results
- of updates in ISO methods
- issues with quantifying legionellae in samples



Two distributions a year with two samples in each

Recreational and Surface Water Schemes

To provide external quality assessment samples for general routine examinations undertaken by routine water microbiology laboratories – covers river, lakes and streams, bathing beach (marine) and swimming pool waters

The scheme focuses on raising awareness:

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

Six distributions a year with two samples in each

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 the methods used
- of variations in the methods used which can highlight the differences in results obtained
- of issues with confirmatory tests carried out on isolates

Six distributions a year with three samples in each

Up to three sets of results can be reported

Bottled and Mineral Water Scheme

To provide external quality assessment (proficiency testing) samples to challenge the enumeration of micro-organisms in bottled and mineral waters

The scheme focuses on raising awareness:

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

Three distributions a year with two samples in each

Hospital Water Schemes

Endoscope Rinse Water - To provide external quality assessment samples to challenge the enumeration of micro-organisms in endoscope rinse waters and the interpretation of those results.

Dialysis Water Scheme - To provide external quality assessment samples to challenge the enumeration of micro-organisms in dialysis waters and the interpretation of those results.

Hospital Tap Water Scheme - To provide external quality assessment samples to challenge the isolation, enumeration and identification of *Pseudomonas aeruginosa* and the interpretation of those results.

Three distributions a year with two samples in each

Up to three sets of results can be reported

Environmental Swab Scheme

A scheme challenges a laboratory in the detection of pathogens and hygiene indicator organisms from swab samples.

For pathogen detection tests - an outbreak scenario will provided so the participant can consider and investigate up to four pathogens that could possibly be implicated.

The pathogen tests focuses on raising awareness:

- of pathogens implicated based on an outbreak scenario provided

For enumeration tests the scheme focuses on raising awareness:

- the challenges associated with enumerating samples
- ability to report accurate results based on a random or template area swab

Shiga toxin-producing *Escherichia coli* (STEC) Scheme

The scheme challenges laboratories in detection of the major virulence genes associated with *E. coli* serogroups O157, O111, O26, O103, O145 and O104:H4 (STEC). The scheme focuses on detection of stx-coding genes in *E. coli* cultures, for their identification as STEC. The determination of the presence of the intimin-coding gene eae is also included, since it is considered a hallmark of STEC strains pathogenic to humans.

The scheme focuses on raising awareness:

- 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

Two distributions a year with two samples in each

NB: The samples are prepared using killed STEC micro-organisms therefore the enrichment part of the test process is not included the scheme design and cannot be assessed

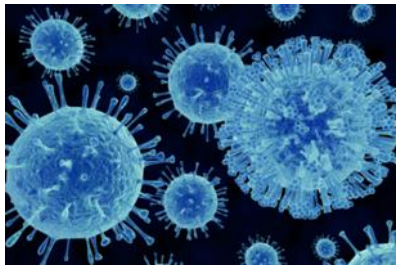
Norovirus and Hepatitis A Virus Scheme

This Scheme provides PT samples for laboratories that examine food products or waters for hepatitis A virus and norovirus using the reverse-transcription polymerase chain reaction (RT-PCR). Regulation (EC) No 669/2009 sets out specifications for an increased level of official controls on imports of certain feed and food of non-animal origin and via Implementing Regulation (EU) 2016/2107 currently applies to frozen raspberries imported from Serbia

This scheme challenges laboratories in detection and quantification (copies per sample) of hepatitis A virus (HAV) and Norovirus GI and GII.

The scheme focuses on raising awareness:

- 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



Two distributions a year with two samples in each

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.
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

Four distributions a year each containing two samples

Two distributions for Endoscope rinse water

Two distributions for Heather cooler water

Contact details

Email: foodeqa@ukhsa.gov.uk

Website: https://www.gov.uk/government/collections/external-quality-assessment-eqa-and-proficiency-testing-pt-for-food-water-and-environmental-microbiology