Scheme Description

Cryptospridium (CRYPTS)
Proficiency Testing Scheme

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RECORD OF ISSUE STATUS AND MODIFICATIONS

Issue	Issue Date	Details	Authorised by
1	April 2019	First issue (based on previous CRYPTS Scheme Protocol issue 9)	T.Noblett
2	Dec 2019	Removed 'Standards' from page 1	A McCarthy
3	Sep 2020	Removed Fax number	A McCarthy
4	July 2021	Updated email address and UKAS logo	A Collins
5	Oct 2022	Added Giardia, change need for slides to be returned for countback and updated format for Portal	T.Noblett
6	Jul 2025	Included details regarding data entry and reports going onto Portal. Removed steering committee details.	T.Noblett
7	Aug 2025	Changed analyte descriptions to match with Portal	T.Noblett
8	Jul 2026	Included details for setting SDPA Added new sample PT-CY-06 UKAS logo update, remove ILAC Added new analte for sample 3	T.Noblett A. Collins

Notes: Where this document has been translated, the English version shall remain the definitive version

SCHEME INFORMATION

Scheme Aims and Organisation

The primary aim of the CRYPTS scheme is to promote quality in the measurement and enumeration of *Cryptosporidium* oocysts in treated water supplies to satisfy current drinking water legislation. CRYPTS also enables laboratories to monitor their performance and compare it with that of their peers and provides information to participants on technical issues and methodologies relating to these analyses.

The CRYPTS scheme year operates from January to December. Further information about CRYPTS, including test material availability, round despatch dates and reporting deadlines, are available on the current CRYPTS application form and on the website www.lgcstandards.com.

The scheme is carried out in collaboration with Moredun Scientific. Customer service, sales and marketing, administration, data processing and reporting is carried out by LGC. Sample preparation, dispatch, quality control and counting of slides is carried out by Moredun Scientific as well as provision of technical support and advice.

Test Materials

Details of test materials available are given in the 'Sample details' section. It is intended that the test materials used in the scheme reflect the types of materials generally encountered by participant laboratories. The materials may be blank or may contain *Cryptosporidium* oocysts (active or inactive) of various species including *parvum, baileyi, hominis* and *muris*. Slides may also contain *Giardia* species. Typical interferents or oocyst-like bodies may also be present of various size and antibody reactivity.

For quality control purposes, slide samples are individually counted at Moredun prior to distribution to participants. As each slide is prepared individually, homogeneity testing across the batch is not performed. Suspension samples are prepared using flow cytometry (at Scottish Water) and for quality control purposes, a number of sub-samples are enumerated on membrane filters to validate the batch against the target value and for homogeneity. The same suspension samples are used to spike the filters

Some aspects of PT schemes, such as test material production, homogeneity testing and stability assessment, can from time to time be subcontracted. When subcontracting occurs, it is placed with a competent subcontractor and LGC is responsible for this work. The planning of the scheme, the evaluation of performance and the authorisation of the final report will never be subcontracted.

Test Material Analysis

The slide test materials may contain oocysts of *Cryptosporidium parvum, Crytosporidium muris* and/or *Giardia lamblia*. Participants are required to count and correctly identify the oocysts present based on their appearance.

According to Paragraph 1.3. of the Standard Operating Protocol for the monitoring of Cryptosporidium oocysts in treated water supplies, participants are required to count the number of *Cryptosporidium* oocysts in samples with a size range of 4-6um . These should be reported as *Cryptosporidium parvum*. However, the current advice from DWI is that analysing laboratories should also report the presence of all oocysts confirmed as *Cryptosporidium* spp, irrespective of size, as well as details of any Cryptosporidium like bodies present. Participants should therefore separately report the presence and number of oocysts not identified as Cryptosporidium as *Cryptosporidium muris*/Other. Giardia may also be present in the sample and should be counted and reported as such.

For example, a slide containing 4 *Cryptosporidium parvum*, 5 *Cryptosporidium muris* and an excysted oocyst would be reported as shown below;

Crypt0sporidium parvum 4
Cryptosporidium muris/Other 6

Methods
Methods are listed in PORTAL Please select the method that most closely represents the method performed in your laboratory.

It is expected that participants use either of the methods specified below:

- The method specified in the Standard operating protocol for the monitoring of Cryptosporidium oocysts in treated water supplies to satisfy The Water Supply (water Quality) Regulations 2000 England and the Water Supply (Water Quality) Regulations 2001 Wales – part 2 Laboratory and Analytical Procedures
- Methods A & D from the Microbiology of Drinking Water Blue Book (2010) – Part 14

Assigned values and Performance Assessment
The slides are counted individually by Moredun before despatch. The participant's count is then compared to the Moredun count for that specific slide and converted to a z score.

Performance scores for suspensions and filters are calculated using an assigned value and z scores as detailed in the appendix.

Results and Reports
Crypts results are returned through our electronic reporting software, PORTAL, full instructions for which are provided by email.

Crypt reports will be available on the website within 10 working days of round closure. Participants will be emailed a link to the report when it is available.

DESCRIPTION OF ABBREVIATIONS USED

Assigned Value (AV)
The value to be used as the 'true' value in the statistical treatment of results. It is a practical estimate of the true value of the analyte in the matrix.The assigned value may be derived in the following ways:

- From the r obust mean (RMean). This is the median of participant results after the removal of test results that are inappropriate for statistical evaluation, e.g. miscalculations, transpositions and other gross errors. Generally, the assigned value will be set using results from all methods, unless the measurement is considered method-dependant, in which case the assigned value will be set by method as illustrated in the report tables.

  Traceability: Assigned values which are derived from the participant results, or a sub-set of the results are not traceable to an international measurement standard. The uncertainty of assigned values derived in this way is estimated from the participant results, according to ISO 13528.

- From a formulation value (Formulation). This denotes the use of an assigned value derived from sample preparation details, where known and exact quantities of analyte have been used to prepare the sample.

Traceability: Assigned values calculated from the formulation of the test sample are traceable, via an unbroken metrological traceability chain, to an international measurement standard. The measurement uncertainty of the assigned value is calculated using the contributions from each calibration in the traceability chain.

- From a qualitative formulation (Qual Form). This applies to qualitative tests where the assigned value is simply based on the presence/absence of the analyte in the test material.

  Traceability: Assigned values calculated from the qualitative formulation of the test sample are traceable to a certified reference standard or a microbiological reference strain.

- From expert labs (Expert). The assigned value for the analyte is provided by an 'expert' laboratory.

  Traceability: Assigned values provided by an 'expert' laboratory may be traceable to an international measurement standard, according to the laboratory and the method used. The uncertainty of measurement for an assigned value produced in this way will be provided by the laboratory undertaking the analysis. Details of traceability and the associated uncertainty will be provided in the report for the scheme/round.

Range
This indicates the concentration range at which the analyte may be present in the test material.

SDPA
The SDPA represents the 'standard deviation for proficiency assessment' which is used to assess participant performance for the measurement of each analyte. This may be a fixed value (as stated), a percentage (%) of the assigned value or based on the robust standard deviation of the participant measurement results, either across all methods or by method depending on whether the measurement made is method dependent (see assigned value).

Units
This indicates the units used for the assessment of data and in which participants should report their results. For some analytes in some schemes participants may have a choice of which units to report their results, however, the units stipulated in this scheme description are the default units to which any results reported using allowable alternative results will be converted to.

DP
This indicates the number of decimal places to which participants should report their measurement results.

SAMPLES AVAILABLE

Sample PT-CY-01 & 02 **Microscope slides**
Supplied as: Dynal (01) or Genera (02) slides

Analyte	Method	AV	Range (cells)	SDPA	Reporting units	DP
Enumeration of *Cryptosporidium parvum*	Microscopy	Expert	0 to 100	NA	Number/slide	0
Enumeration of *Cryptosporidium muris*	Microscopy	Expert	0 to 100	NA	Number/slide	0
Enumeration of Crypto-like bodies (CLB's)	Microscopy	Expert	0 to 100	NA	Number/slide	0
Enumeration of Giardia	Microscopy	Expert	0 to 100	NA	Number/slide	0

Sample PT-CY-03 **Suspension for enumeration**
Supplied as: Liquid suspension (volume between 1 to 2ml)

Analyte	Method	AV	Range (cells)	SDPA	Reporting units	DP
Enumeration of *Cryptosporidium* oocysts	ALL	Expert	0 to 200	30%	Number/ Suspension	0
Detection of *Cryptosporidium* oocysts	ALL	Expert	0 to 200	NA	Detected/ Suspension	0

Note: Sample 03 suspensions are intended for use to test the IMS procedure and subsequent steps only. They are not intended to use as spikes for filter units.

Sample PT-CY-04 & 05 **Filters**
Supplied as: Filta Max (04) or Filta Max Xpress (05) filter units

Analyte	Method	AV	Range (cells)	SDPA	Reporting units	DP
Enumeration of *Cryptosporidium* oocysts	ALL	Expert	0 to 200	30%	Number/filter	0

Sample PT-CY-06* **Suspension for spiking and filtration**
Supplied as: Liquid suspension for filtration using own filters

Analyte	Method	AV	Range (cells)	SDPA	Reporting units	DP
Enumeration of *Cryptosporidium* oocysts	ALL	Expert	0 to 200	30%	Number/ Suspension	0

* Sample not currently included in LGC's UKAS Scope of Accreditation