

## Issue Status

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**Note:** Latest issue supersedes all previous issues

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## 1. Purpose of the Scheme

The Asbestos in Soils Scheme (AISS) is intended to assess and help improve the performance of laboratories analysing soil-based materials for asbestos content. The scheme provides an externally verified indication of performance that analysts can use to satisfy themselves, their organisation, and their clients that their analyses are of an appropriate level of quality.

Laboratories in the UK offering the identification of asbestos in soils as a service are required to participate in such a proficiency testing scheme to gain accreditation from the United Kingdom Accreditation Service (UKAS).

The scheme is intended to be self-regulatory so that initiatives for improving analytical performance are taken by the individual laboratory and not imposed by an outside body. As the scheme alone cannot ensure day-to-day quality, each laboratory should devise its own internal quality system which will take into account other factors not included in the scheme, such as the choice of sampling location, the sampling method used and test method used, any of which may also affect the outcome of the test result.

## 2. Management of the Scheme

The scheme is managed by the Science Division of the Health and Safety Executive (SD HSE). The Fibre Proficiency Testing Steering Committee (FPTSC) oversees the operation of AISS and acts as an appeal panel in cases of dispute. The FPTSC committee has representatives from laboratories in the industry specialising in asbestos analysis, independent experts, HSE and UKAS.

In order to ensure confidentiality, each laboratory is identified by a code known only to the scheme administrators (PT Laboratory Number). Participation in the AISS scheme does not constitute recognition or approval of a laboratory by HSE.

## 3. Overview

AISS operates as follows:

- There are three rounds per year – approximately every four months.
- There are two samples in each round. One sample is suitable for qualitative analysis and the second is suitable for both qualitative and quantitative analysis.
- The deadline for results submission is given on the results sheet despatched with samples (also available on the website) and laboratories have approximately twenty working days to analyse the samples.
- Results received after the round deadline may not be processed. Laboratory results are processed by the PT Team and individual and group reports are produced. Reports are made available approximately one month after the results deadline.
- Laboratories receive a round score for qualitative analysis and a 'z' score for quantitative analysis.

## 4. Membership

AISS is open to any laboratory involved in the analysis of asbestos in soils. The membership fee covers one year (April to March) and includes three rounds each consisting of two samples. New participants joining the scheme part way through the year pay on a pro rata basis. Laboratories may withdraw from the scheme at any time by informing the scheme administrators in writing. The membership fee is non-refundable. Current participants are sent a renewal order form before the end of each financial year. It is the participant's responsibility to ensure all details are filled in correctly on the order form and that payment is promptly made in full. Failure to pay scheme fees will result in reports being withheld and ultimately exclusion from scheme participation.

## 5. Operation of the Scheme

### a. Samples

Samples are despatched to laboratories by courier service according to the schedule published on the website. This is subject to change at the discretion of the PT Team. Participants should contact the PT Team if they have not received their samples within ten days of the published despatch date.

AISS samples are packaged in sealed plastic bags which are placed inside a sealed plastic tub. The plastic tub is then placed within a cardboard box. It is recommended that the plastic tub is opened in a fume cupboard fitted with a HEPA filter. The samples themselves should only be handled in a HEPA filtered fume cupboard.

AISS samples are soil materials containing a variety of fragments or pieces of commercial asbestos containing materials and / or loose asbestos fibres. The samples are prepared by the PT Team in the laboratory environment. The samples are visually examined by the PT Team to assess homogeneity. All samples go through a preparation and validation process and at least 10 % of the samples are validated by a team of experienced independent analysts using microscopy and gravimetric techniques.

### b. Analysis

No test method is specified for the analysis of the AISS samples, although in the UK it is recommended that the qualitative analysis is based on the HSE publication HSG248 'Asbestos: The Analysts' Guide'.

The method for quantitative analysis should be capable of measuring loose asbestos fibres and asbestos bound within a matrix; for example, ISO 22262-2 2014. However, for scoring purposes in this scheme any asbestos containing materials will be allocated the following asbestos percentages by weight based on HSG264 and ISO 22262-2 namely **Asbestos Cement 25% and AIB 40%**.

This document uses the term 'trace' to define samples where only one or two fibres are seen and identified. All samples used in AISS are prepared in the laboratory and all will contain more than "trace" asbestos. Normally, but not always, samples will have significant amounts of asbestos present. It is not the intention of the AISS scheme to have any samples with asbestos fibres present at or near trace levels.

Whenever a laboratory detects asbestos fibres at or below "trace" levels (<3 fibres seen), this should be recorded in the comments box on the AISS Round Result Form, but should not be formally reported in the tick box section of the results form.

The significance of the HSG 248 definition of "trace" is that it is used in the HSE guidance document L143, Work with materials containing asbestos (paragraph 10) to define an asbestos containing material.

In practice, the asbestos type(s) present should be easily detected using the strategy in HSG 248, (that is extraction of fibre components by stereo zoom and/or the taking of pinch samples for fine fibres, which are not easily observed in the stereo-zoom).

Reporting of quantitative analysis should include a breakdown of the percentage asbestos present in ACM fragments (when present) and the percentage asbestos present as loose unbound fibres.

### c. Reporting of Results

Laboratories have approximately twenty working days to analyse the samples and to report their results.

All laboratories should submit qualitative results for both samples.

Laboratories have the choice to submit quantitative results for the quantitative sample or submit qualitative results only.

Results will not be processed unless qualitative results are submitted for both samples in each round. Only one set of results is processed for each laboratory subscription. Results will be submitted online. It is the laboratory's responsibility to enter the correct data and check their results before the final submission date. Participants may change or amend their results up to the date of the deadline. Incomplete results will not be processed. Results will not be accepted after the deadline date.

## d. Processing of Results

Analytical results from laboratories are automatically processed as entered by the participant into the AISS section of the PT ODES. If a participant is unable to enter their own results (for example, if they encounter problems with computer access) data can be entered or amended by the PT Team on their behalf. This will only be carried out with written (email) consent from the participant affected. No changes can be made to the results submitted and received after the deadline date has passed, unless there is a technical accessibility or technical data processing problem. In this instance PT Team will inform the AISS participants by email.

Participant performance is assessed as described in section 12 and Annex 1 'AISS Scoring System'. Essentially, laboratories receive a score for each error in identification, for each sample analysed and a z score for quantification results (if submitted).

An individual "Laboratory Round" report and summary "Group Report" will be released approximately one month after the round has closed. The Group Report will summarise laboratory results by PT number.

## 6. Records and Confidentiality

Paper and computer records are maintained and include information such as laboratory name, contact name, e-mail address, postal address, laboratory performance and telephone numbers. It is the responsibility of the participant to notify the PT Team scheme administrators of any changes to contact details. This also includes any changes which may be required regarding online data entry user names and passwords. Participants requiring change of contact details should contact the PT Team who will administer a '**Change of Contact Details Form**', which should be fully completed and promptly returned to the PT Team.

Results and participant details are submitted to the PT Team in confidence and are not revealed to any third party except where required to do so by law, for example in association with a criminal prosecution or where accreditation bodies are informed of unsatisfactory performance.

## 7. Collusion and Falsification of Results

Laboratories must not submit results, which are false reflections of the performances of those laboratories' individual analysts, whether by collusion within or between laboratories, or by any other means. Falsification of results is regarded as an extremely serious matter. The following disciplinary procedures may be applied whenever there is clear documentary evidence of falsification of results or improper collusion.

- The relevant accreditation body will be informed
- The laboratory will revert to unclassified
- The membership of the laboratory may be suspended, subject to review by FPTSC.

Reinstatement after suspension for falsifying results

Lab must satisfy UKAS, or the relevant accreditation body, that appropriate corrective and preventive actions have been put in place to prevent recurrence. Evidence must be supplied to the PT Team, which will be reviewed by FPTSC.

Upon reinstatement, the laboratory will be treated as a new participant (i.e. they will be categorised as unclassified until the relevant numbers of rounds have been completed).

## 8. Queries

Routine administrative queries should be directed to the PT Team and these may be submitted by email or telephone.

Queries that are not of a routine administrative nature (which may affect a laboratory's participation or performance in the scheme) should be sent in writing to the email/postal address given in annex 2. Any queries of a non-administrative nature must be written, either in letter or email format. All queries will be dealt with on an individual basis and will be considered and acted upon by the PT Team. If the PT Team is unable to resolve the query it will be forwarded to the FPTSC. Some examples of common queries are outlined below:

### a. Asbestos Content / Contamination of Samples and Scoring

All queries concerning the asbestos content of a sample, after the results have been published, should be sent in the appropriate format as outlined above. Appeals against penalty scores are only considered if contamination has been proved to be in the sample prior to despatch, and has been missed by the quality validation process. The outcome of the investigation will be brought before the FPTSC. If it is found that there was gross contamination then a penalty score will not be applied, and the score will be readjusted for all participants concerned. If it is concluded that the contamination could not have arisen during production/despatch, then the penalty scores are upheld. Queries received after the next AISS round has been despatched will not be accepted.

### b. Accreditation

All queries relating to performance in AISS and the laboratory's accreditation status or 'missing a round' should be taken up with the laboratory's accreditation body.

### c. Extensions

Extensions will not normally be considered. If samples are despatched later than published, then the same approximately twenty working day reporting period will be used and all participants will be contacted and given the new deadline date.

### d. Sample Despatch/Delivery

It is the laboratory's responsibility to provide the PT Team administrator with an up-to-date sample delivery location/address and contact details. It is also important that laboratories make appropriate arrangements to ensure that the sample delivery can be accepted. If samples are returned to the PT Team administrator and have to be re-despatched to a different address to that given then a charge may be levied.

Participants joining the scheme from overseas must ensure that they have the relevant documentation/ permit/ letter of exemption in place to allow asbestos in soil samples to pass through national border controls and on to their laboratory. A copy of any exemption should be emailed to the PT Team prior to samples being despatched so that it can be included with the package.

Failure to have the relevant exemption in place may result in the samples being delayed, additional fees being applied, or ultimately destruction of the samples by the national border controls. The PT Team accepts no responsibility for any delays and any or additional charges applied will be passed on to the participant.

### e. Return of Samples

Any samples returned to the PT Team for investigation regarding asbestos content, contamination or penalty scores **must** be sent via a courier, at the participants own expense. It is **strongly recommended** that any courier used is licensed to carry hazardous materials. Samples returned for investigation will be despatched back to participants with the next available round of AISS samples. The process is summarised below;

- (i) Contact PT Team
- (ii) Form Sent to Participant to Complete
- (iii) Courier Sample & Request Form Back to PT Team
- (iv) Investigation Undertaken
- (v) Outcome Delivered
- (vi) Sample Returned to Participant

## f. Timescales for Queries & Appeals

### Sample Scoring Query

The PT Team must be advised of the query, by email, within 10 working days from the issue date on the individual report. If the sample is to be returned to the PT Team for further investigation, this must be received within 20 working days from the issue date on the individual report (see section 8a).

### Appeal to FPTSC

If an appeal (see section 8) to the final decision of the PT Team is requested, participants have 10 working days from the date of the PT Team's final decision to notify the PT Team by email.

If no further communication from the participant has been received by the PT Team within the agreed timescales, the matter will be deemed completed.

## g. Re-issue of Reports

All reports will be available to download at any time from the PT Online data-entry system.

If a report is re-issued by the PT Team the online report will be labelled as a re-issue with a re-issue date, a unique reference number and will be signed by the AISS Coordinator or their deputy.

## 9. Complaints and Appeals Procedure

Complaints must be in writing and will be forwarded to and considered by the FPTSC at the next available meeting. The complaint will be acknowledged and the participant will be informed of receipt and date for consideration. The decision of the FPTSC will be sent to the complainant as soon as possible.

## 10. Advertising by Participants

It is recommended that any publicity and advertising material should describe the laboratory as an 'AISS participant'. Participants may wish to describe their level of performance but should state the year in which they achieved this status.

## 11. Quality Control and Training Products

A laboratory may wish to obtain extra sample sets, for example, for training purposes or to add to their internal quality control samples. If requested, these samples will be supplied as a set two samples. We are also able to provide a wide range of asbestos quality control and training products/materials, information on which can be found on the website or by contacting the PT Team.

## 12. AISS Scoring System

### a. Types of Error

Points are allocated to a participant for each analytical error made and the magnitude of the score is dependent on the seriousness of the error. For example, the failure to identify the asbestos component in a 'single asbestos matrix' would score higher, than incorrectly identifying the asbestos type in a sample where one asbestos type is present. 3 types of error are considered:

**A supercritical error-** An error which is analytically unacceptable and which would have serious consequences if committed in reality; such an error might be the failure to detect a single asbestos component in a matrix **scores 20 points**.

**A critical error-** an error which is analytically unacceptable but which might not have significant consequences if committed in reality; such an error might be a failure to detect one asbestos component in the presence of an already detected asbestos, **scores 12 points**.

**A non-critical error-** an error which is analytically unacceptable but would have no significant consequences if committed in reality; such an error might be a false positive identification of one or more asbestos types in the presence of an already detected asbestos component, or the identification of Tremolite or Anthophyllite as Actinolite, or vice versa, **scores 7 points**.

**NB** – the identification of Tremolite as Anthophyllite, or vice versa, **scores 0 points**

### **b. Quantitative Scoring**

The quantitative results will be assessed using a “z” score approach. Many PT schemes convert the participant’s result into a ‘z-score’. This score takes into account two separate features, (a) the accuracy achieved (ie, the difference between the laboratory result and the assigned value), and (b) the scheme organiser’s judgement of what degree of accuracy is fit for purpose.

For AISS, the z-score will be calculated using the formula described in Annex 1.

### **c. Participant Reports**

Participants round results and reports are available by accessing the PT ODES. Previous and current reports can be accessed from the first screen following logon. Hard copies of AISS round reports can be printed off following the accessing of each individual round. Results can only be obtained when rounds have been scored and the results released by the PT Team. Failure to pay scheme fees will result in access to results and reports being withdrawn until fees have been paid in full.



## Annex 1 – AISS Scoring System

### Qualitative Scoring

Qualitative results are now scored using the same system of awarding penalty points that is used for AIMS. Criteria for satisfactory and unsatisfactory performance have not been set.

Sample Score	No Asbestos	1 Asbestos Type	2 Asbestos Types	3 Asbestos Types
0	No Asbestos Reported	Correct type reported	Both correct types reported	All correct types reported
7		Correct type reported + one or more types not present reported*	Both correct types reported + one or more types not present reported	All correct types reported + one or more types not present reported
12		Correct type not reported + one type not present reported	One correct type reported	Two correct types reported
14		Correct type not reported + where Actinolite is reported as Tremolite/ Anthophyllite (or vice versa) + one or more types not present reported	One correct type reported correctly + Actinolite is reported as Tremolite/ Anthophyllite (or vice versa) + one or more types not present reported	Two correct types reported correctly + Actinolite is reported as Tremolite/ Anthophyllite (or vice versa) + one or more types not present reported
19		Correct type not reported + 2 or more types not present reported	One correct type reported + one or more types not present reported	Two correct types reported + one or more types not present reported
20	Asbestos Reported	No Asbestos Reported		
24				One correct type reported
26			No correct type reported + Actinolite reported as Tremolite/ Anthophyllite (or vice versa) + one or more types not present reported	One type reported correctly + Actinolite reported as Tremolite/ Anthophyllite (or vice versa)
31				One correct type reported + one or more types not present reported
32	Ticked all asbestos types	Ticked all asbestos types	No Asbestos Reported <b>OR</b> No correct types reported <b>OR</b> Ticked all asbestos types	No Asbestos Reported <b>OR</b> No correct types reported <b>OR</b> Ticked all asbestos types

\* Note that the identification of Tremolite or Anthophyllite as Actinolite, or vice versa, **scores 7 points**.

## Quantitative Scoring

### **z score**

$$z = \frac{(l - a)}{\sigma}$$

Where:

$l$  = lab result

$a$  = assigned value

$\sigma$  = standard deviation for proficiency assessment (SDPA)

The SDPA has been set initially at 40% of the median value of all laboratory results (A mature PT scheme would typically use a value of 15% of the median). According to the Royal Society of Chemistry <sup>1</sup>, z-Scores should be interpreted as follows;

- *A score of zero implies a perfect result. This will happen quite rarely even in perfectly competent laboratories.*
- *Laboratories complying with the PT scheme's fit for purpose criterion will commonly produce scores falling between - 2 and 2. They might expect to produce a value somewhat outside this range occasionally by chance, roughly about one time in twenty, so an isolated event of this kind is not of great moment. The sign (i.e., + or -) of the score indicates a negative or positive error respectively.*
- *A score outside the range from -3 to 3 would be very unusual for a laboratory operating under the given fit for purpose criterion, and is taken to indicate that the cause of the event should be investigated and remedied.*

### **Further Information**

<sup>1</sup> [http://www.rsc.org/images/proficiency-testing-technical-brief-18A\\_tcm18-214885.pdf](http://www.rsc.org/images/proficiency-testing-technical-brief-18A_tcm18-214885.pdf)  
<https://www.eurachem.org/index.php/publications/guides/usingpt>

## **Annex 2**

### **Contacts and Advice**

For all AISS enquiries please contact:

By email: [proficiency.testing@hse.gov.uk](mailto:proficiency.testing@hse.gov.uk)

By Telephone: 00 44 (0) 203 028 3382

By Post:

Proficiency Testing Team

HSE Science & Research Centre

Harpur Hill

Buxton

Derbyshire

SK17 9JN

AISS Website page:

<http://www.hsl.gov.uk/proficiency-testing-schemes/aiss>

PT on-line data entry system web link;

<https://xnet.hsl.gov.uk/aims/>

### **Annex 3**

#### **Glossary of Terms**

**AISS** – Asbestos In Soils Scheme

**Despatch Day** – The working day that samples or reports are despatched by the PT Team

**False Positive** – Identification of a component that is not present

**False Negative** – Non-identification of a component that is present

**FPTSC** – Fibre Proficiency Testing Steering Committee

**HEPA** – High Efficiency Particulate Air

**HSE** – Health & Safety Executive

**PT Laboratory Number** – Laboratory identification number (unique and applied across all individual HSE asbestos PT schemes, formerly known as QuAD number)

**PT** – Proficiency Testing

**PT ODES** – Proficiency Testing Online Data Entry System

**Round Score** – Laboratory score for one round of AIMS

**Sample Score** – Individual sample score for one sample in a round of AIMS

**UKAS** – United Kingdom Accreditation Service

**Working Day** – A day other than a public holiday in the UK or a Saturday or Sunday

## Annex 4

### Responsibilities, Terms & Conditions

HSE will operate the Proficiency Testing (PT) schemes in accordance with its obligations as set out in the relevant Scheme Information Book for Participants, available on our website.

Participants must abide by the rules and responsibilities of the scheme set out in the information book and in particular as detailed below.

Participants should comply with the HSE's standard conditions of business, a copy of which is available upon request.

### Participant Responsibilities

Participant responsibilities are outlined below:

- Your PT Laboratory Number **must be quoted in all correspondence**.
- All queries should be directed to the proficiency testing email address and the PT Team will respond as soon as possible.
- To ensure participants are kept up to date with important information it is the participants' responsibility to inform the PT Team of any changes to contact details.
- Participants must ensure that any required paperwork / permits are in place to allow samples through national border controls / customs (additional charges from the courier will be passed on to participant should there be further fees payable). Failure to do so may result in delays or detainment of sample shipment and hence participation in the round.
- Participants must use the Proficiency Testing Online Data Entry System (PT ODES) to subscribe to the scheme.
- Samples **will not** be despatched until full payment has been received.
- The preferred method of payment is via Worldpay (online credit/ debit card system). A full VAT receipt is available immediately after the payment has been processed.
- If an invoice is required, the participant needs to allow 4-6 weeks for it to be issued and must pay, in full, within 30 days of the invoice date. An invoice shall not be regarded as paid until funds (GBP) are received into a UK sterling bank account operated by Health and Safety Executive.
- It is the participants' responsibility to ensure that scheme round results are submitted by the defined deadline dates. Participants must have access to certain mandatory IT facilities such as Microsoft Word and Excel, an email account and a web access facility in order to participate.
- Participants must submit round results via the PT ODES for each scheme. The PT Team reserves the right to refuse results submitted on reporting formats alternative to the online data entry system provided.
- Transcription errors and / or errors in reporting results in the correct format by participants is considered by the PT Team to be part of the proficiency testing assessment process. As such, the PT Team will not amend or correct any submitted results if requested. Participants can however, change their results, provided that any amendments are made by the close of the round and the before the predefined reporting deadline.

- For a copy of HSE's standard conditions of business, or for any queries regarding AIMS please email [proficiency.testing@hse.gov.uk](mailto:proficiency.testing@hse.gov.uk) or visit the website at <http://www.hsl.gov.uk/proficiency-testing-schemes>
- For urgent queries, please call 00 44 (0) 203 028 3382. Please remember to quote the allocated PT laboratory number in all correspondence.