

# The Chartered Society for Worker Health Protection

P401 Proficiency Qualification:

# Identification of Asbestos in Bulk Samples (PLM)

**Qualification Specification** 

www.bohs.org

Issue 1 | September 2018



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#### **About BOHS**

# BOHS - The Chartered Society for Worker Health Protection

BOHS is the Chartered Society for Worker Health Protection. Our vision is to create a healthy working environment for everyone by preventing exposure to hazardous substances in the workplace.

Founded in 1953, we have developed over the last 65 years into a highly respected and influential body on workplace health issues, working closely with organisations in the UK and overseas to promote our vision. We are a registered charity, professional society and a member of the International Occupational Hygiene Association which is recognised as a non-government organisation by the International Labour Organisation (ILO) and the World Health Organisation (WHO).

We were awarded a Royal Charter in 2013 in recognition of our pre-eminent role in protecting worker health.

BOHS is a membership organisation, open to anyone who has an interest in workplace health issues, and we have over 1,800 members in 57 countries.

#### BOHS courses and qualifications - the quality choice

We are the leading awarding body in our field. Our UK courses and qualifications are recognised and respected by independent agencies such as the Health and Safety Executive (HSE) and the United Kingdom Accreditation Service (UKAS), and further afield by industry and employers worldwide. Over 50,000 people have taken one of our qualifications through our network of training providers which offer engaging, challenging and practical courses.

Our training courses are overseen by a team of highly experienced professionals who are dedicated to developing the competence and career opportunities for the many thousands of people who play a key role in protecting worker health, in diverse fields such as asbestos, legionella and control technologies.

Information about all our courses and qualifications is available on our website: www.bohs.org/qualifications-training/bohs-qualifications/

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#### P401 at a glance

# What is the objective?

To provide candidates with theoretical and practical knowledge in the techniques of asbestos sample identification using polarised light microscopy (PLM) and dispersion staining techniques.

#### Who is it for?

- Asbestos bulk analysts and laboratory analysts.
- Anyone who manages asbestos analysts or requires a deeper understanding of the asbestos analysis process (e.g. laboratory quality manager).

# What are the entry requirements?

- At least one month's work experience in analysing asbestos bulk samples (desirable but not compulsory)
- An understanding of HSG248 Asbestos: The analysts' guide for sampling, analysis and clearance procedures

# What are the main subject areas?

- Asbestos fibres.
- Set-up and use of a polarised light microscope.
- Analysis of bulk samples.
- Practical work.

Note: This qualification does not cover analysis of asbestos in soils which is covered separately in P408. P401 is a pre-requisite course for P408.

# How long does it take?

Normally 3 days.

#### What level is it?

Level 4 in the BOHS qualifications framework.

# How do candidates pass it?

Candidates must pass three parts within 12 months:

- Formative practical assessment.
- Written Theory examination.
- Practical examination.

#### Who supports it?

UKAS and HSE.



#### Background to the qualification

BOHS has provided asbestos proficiency qualifications in the UK for over 15 years, working closely with globally recognised, well-respected bodies such as the HSE to set educational standards and to spread best practice. In that time, over 45,000 candidates have taken a BOHS asbestos examination.

Asbestos is still a big issue in the UK and is present in many buildings constructed before the year 2000. If disturbed by demolition or remediation work, it breaks down into small fibres, which can be inhaled deep into the lungs and cause life-threatening illnesses such as lung cancer and mesothelioma. According to the HSE, around 4,000 people die from an asbestos- related disease in the UK each year.

Asbestos bulk analysis plays a key role helping to identify asbestos in materials, to allow asbestos in buildings to be effectively detected and managed in line with the Control of Asbestos Regulations (CAR) 2012, Regulation 4. *P401 - Identification of Asbestos in Bulk Samples (PLM)* gives analysts the knowledge and skills required to safely analyse bulk samples containing asbestos, identifying the specific asbestos component(s) as required in CAR 2012, Regulation 5.

The requirement to be formally trained in asbestos analysis work is outlined in *HSG248 Asbestos:* The analysts guide for sampling, surveying and analysis, which states that any workers who are liable to be exposed to asbestos should be sufficiently trained in their area of asbestos work, to ensure they are not put at risk when working with asbestos. CAR 2012, Regulation 21 also states that all persons who analyse materials must be proven competent within an ISO/IEC 17025 laboratory and this qualification is a step towards proving competence.

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# Key features of the qualification

# Objective

This qualification is designed to improve the knowledge and skills required by asbestos bulk analysts, up to a standard which is recognised as preventing ill health by minimising the risk of exposure to airborne asbestos fibres.

#### Target audience

The qualification is suitable for anyone who is:

- Required to analyse bulk asbestos samples as part of their work.
- Considering a career in asbestos analysis.
- Responsible for managing asbestos laboratory analysts.

#### Entry requirements

Before taking this qualification, candidates should have a basic awareness of the contents of *HSG248 Asbestos: The analysts' guide for sampling, analysis and clearance procedures* and in particular, Appendix 2: Asbestos in bulk materials: sampling and identification by polarised light microscopy (PLM).

Candidates are also recommended to have at least one month's work experience of analysing bulk samples, and may already be participating in an accredited asbestos quality control scheme. Candidates also need basic literacy and numeracy skills.

#### Age range

There is no age restriction on candidates taking the qualification. However, there are requirements within the *Management of Health at Safety at Work Regulations 1999* (*Regulation 19*) which specifies that people younger than 18 years old should not be employed in work which exposes them to carcinogens.

#### Level

The level of a qualification indicates the relative complexity and depth of knowledge and skills required to attain the qualification. This qualification is set at level 4 in the BOHS qualifications framework. This is equivalent to NVQ Level 4 (HNC).

#### Fees

The examination fee for each candidate is published on the BOHS website: www.bohs.org.



# Delivering the qualification

# Teaching and learning time

The P401 qualification normally runs over three consecutive days and includes at least 16 hours of learning time. This comprises 12 hours taught (teaching and formative practical assessment) and four hours of independent study (in the student's own time)

The course can be delivered more flexibly, such as on one day per week for three weeks, but should still include 12 hours of teaching.

#### **Tutors**

The course should be taught by tutors who are experienced and qualified/certified asbestos practitioners or occupational hygienists. As a guide, tutors will typically have:

- At least three years' current experience in bulk analysis of asbestos samples.
- A recognised asbestos qualification or a professional occupational hygiene qualification/certification such as:
  - > BOHS Certificate of Competence (Asbestos).
  - BOHS Certificate of Operational Competence.
  - > BOHS Diploma of Professional Competence.

This list is not necessarily exhaustive or definitive.

#### Teaching resources

Training providers must have the following facilities and equipment:

- Ventilated enclosure(s) with all suitable facilities for handling asbestos samples which should contain a stereomicroscope, slide-making facilities and sample-handling equipment.
- McCrone RI fluids, polarising light microscope.
- Projection microscope for teaching purposes.

# Support for teaching and learning

BOHS provides sample Written Theory examination questions for tutors.

#### Language

The examinations are provided in English only.



# **Syllabus**

The qualification is structured into four sections, each with an indicative time allocation:

	Section	Time allocation
1.	Asbestos Fibres	5%
2.	Set-up and use of a Polarised Light Microscope	15%
3.	Analysis of Bulk Samples	40%
4.	Practical work	40%

# 1. Asbestos fibres (5%)

# **Educational objectives**

Candidates should have a good knowledge of the types and forms of asbestos fibres, their health effects and their industrial uses.

#### 1.1 Asbestos

1.1.1 Describe the six regulated forms of asbestos in relation to the serpentine and amphibole groups of minerals. Discuss their characteristic properties, such as flexibility, tensile strength, combustibility, thermal conductivity and resistance to chemical attack. Describe the effects of thermal and other forms of degradation on asbestos minerals.

# 1.2 Uses of asbestos

1.2.1 Explain the physical and chemical properties of asbestos which have determined the use to which it has been put by industry. Discuss the three types of asbestos which have found significant commercial use (Amosite, Chrysotile and Crocidolite) and the types of materials they were added to. Describe the use and occurrence of the other types of asbestos, particularly as possible contaminants in other minerals.

#### 1.3 Health effects of asbestos

1.3.1 Describe the full range of health effects ranging from the benign (pleural plaques) to the terminal (asbestosis, lung cancer and mesothelioma) in the light of results from epidemiological studies carried out on asbestos workers, focusing on dose-response relationships.



# **2.** Set-up and use of a Polarised Light Microscope (15%)

# **Educational objectives**

Candidates should learn about the theory of polarised light and the practicalities involved in setting up and using a polarised light microscope.

# **2.1** Equipment and use

2.1.1 Identify the minimum equipment required. Discuss and demonstrate alignment of the optics and obtaining Koehler or Koehler type illumination. Discuss and demonstrate the alignment and use of the rotating stage, polarisers and analysers; first order red tint plate and cross-hair eyepieces, field and sub-stage diaphragms, phase and dispersion staining objectives.

# 2.2 Theory

2.2.1 Discuss the theory of polarised light and the effects produced on crystalline and amorphous or vitreous materials. Cover the basic physics behind colour, pleochroism, birefringence (interference colours), sign of elongation and extinction.

#### 2.3 Observations

2.3.1 Demonstrate the occurrence of colour, pleochroism, birefringence (interference colours), sign of elongation and extinction. Discuss and demonstrate the use and effects of refractive index oils and the use of Becke line and dispersion observations.

# **3.** Analysis of bulk samples (40%)

# **Educational objectives**

Candidates should be able to describe the approved methods for analysis of bulk fibre samples and have an understanding of the exposure controls and quality controls required during this activity.

#### **3.1** Macroscopic examination

3.1.1 Using *HSG248* as a basis, demonstrate examination by low power stereo microscope, including the recognition of the basic physical properties of the main asbestos types (i.e. colour, lustre, elasticity, tenacity, morphology and electrostatic characteristics).

#### **3.2** Sample preparation

3.2.1 Explain and demonstrate the options for sample preparation to segregate the asbestos for analysis. Using *HSG248* as a basis, demonstrate sample preparation



methods to remove matrix materials before PLM identification, including acid washing, solvent extraction and combustion.

# **3.3** Polarised Light Microscopy

3.3.1 Examine using polarised light microscopy characteristics such as morphology, colour, pleochroism, birefringence (interference colours), sign of elongation and extinction of different asbestos types.

#### 3.4 Dispersion staining

3.4.1 Describe and demonstrate dispersion stain microscopy using R.I. liquids (together with a dispersion staining objective or phase contrast microscopy with polariser) in relation to the assessment of refractive indices of asbestos and other fibres. Understanding the relevance of relief of fibres in the refractive index liquid.

#### **3.5** Safety during identification

3.5.1 Discuss the safety precautions required when working with asbestos and other fibres (for example, the use of glove boxes and ventilated cabinets, as well as the required precautions when using acids during sample preparation and when handling R.I. liquids). This must include the routine inspection/checking of ventilation and control systems as required under the Control of Asbestos/COSHH Regulations.

# 3.6 Quality control

3.6.1 Discuss quality control procedures, likely detection limits, and problems of cross-contamination during sampling and analysis, together with the handling of homogeneous and heterogeneous samples. Refer to external proficiency schemes such as AIMS.

Discuss the problems associated with fatigue and eye strain and how to minimise them.

#### **3.7** Interfering fibres and products

3.7.1 Describe the other types of fibres which may interfere with asbestos identification (e.g. leather swarf, skin cells, polyethylene). Describe problems with analysing products such as floor tiles, and those caused by the effects of heat on asbestos fibres.



# **4.** Practical work (40%)

Practical work must be carried out to enable candidates to apply their learning, by carrying out the following using safe working methods:

- Microscope set-up.
- Sample preparation.
- PLM typing of unknown samples.
- Identification of asbestos using polarised light dispersion staining techniques.



# References and further reading

•	1.	HSG248 (2005), Asbestos: The analyst's guide for sampling, analysis and clearance procedures, HSE
	2.	L143 (2013), Managing and working with asbestos. Control of Asbestos Regulations 2012. Approved Code of Practice and guidance, HSE
,	3.	Telford, Thomas DETR (1999), Asbestos and man-made mineral fibres in buildings: Practical Guidance

HSE guidance is reviewed and revised periodically. Training providers should check that the publications listed above are the current versions.

# Useful websites

All the Health and Safety Executive (HSE) publications listed above are available as free downloads from the HSE website: <a href="https://www.hse.gov.uk/asbestos">www.hse.gov.uk/asbestos</a>.



# Achieving the qualification

Candidates are required to pass three mandatory components in order to be awarded the qualification:

- Formative practical assessment.
- Written Theory examination.
- Practical examination.

# Formative practical assessment

#### Overview

Candidates taking the *P401 – Identification of Asbestos in Bulk Samples (PLM)* module are required to have the requisite skills to safely manipulate samples and to prepare slides for identification purposes. The formative practical assessment is designed to enable candidates to demonstrate that they have achieved the relevant skills by carrying out a number of practical tasks. Candidates must demonstrate proficiency in all of the following areas:

- Safely operate at a fume cupboard with the appropriate tools and use a stereo microscope to examine samples.
- Undertake all required pre-treatment of samples to allow extraction of fibres.
- Correctly prepare slides with the appropriate Refractive Index (RI) liquid.
- Set up and use a polarising microscope.

All candidates must undertake the tasks at an appropriate time during the course under the supervision of the course tutor. The tutor may be assisted by other appropriately qualified and experienced people, if necessary.

The assessment is open book; candidates are permitted to access written reference materials and written procedures during the tasks, but not electronic databases.

The course tutor is permitted to support candidates who are experiencing difficulties in carrying out one or more of the tasks, for example, by providing verbal feedback or by demonstrating correct techniques. However, to complete the assessment, candidates must demonstrate a satisfactory level of proficiency in all tasks independently and without support.



#### The practical tasks

The following six elements must be included in the formative practical assessment.

# Task 1: Sample handling

Candidates must demonstrate:

- Understanding of fume cupboard characteristics.
- Safe opening of sealed bags or containers inside fume cupboard.
- Initial visual examination of samples.

# Task 2: Pre-treatment of samples and extraction of fibres Candidates must demonstrate:

- Use of tools to break samples and/or extract fibres.
- Use of dilute acids to dissolve inorganic binders.
- Use of solvents to remove organic binders.

# Task 3: Use of stereo microscope Candidates should demonstrate:

- Understanding of the aim of stereo microscopy.
- Use of tools to separate different fibrous components.
- Knowledge of asbestos fibre morphology.

# Task 4: Preparation of slides for polarising light microscopy Candidates should demonstrate that they can carry out the following:

- Selection of RI mounting liquid.
- Preparation of microscope slides for PLM examination.
- Procedure for samples that showed no fibres under stereo microscope.



# Task 5: Set up of polarising light microscope Candidates must demonstrate the following:

- Adjustment to give Köhler illumination.
- · Stage centring.
- Insertion of polariser and analyser.

# Task 6: Use of polarising light microscope Candidates must satisfactorily demonstrate:

- Observation of fibre morphology, colour and pleochroism.
- Observation of birefringence and extinction characteristics.
- Determination of sign of elongation.
- Assessment of fibre RI by dispersion staining.

# Equipment

Equipment required for the assessment includes:

- Microscopes (stereo and polarised light).
- Fume cupboards.
- Sample pre-treatment re-agents.
- Appropriate tools.
- RI liquids, microscope slides and cover slips.

#### Marking and reporting

The course tutor who assesses the candidates must complete a Formative Practical Assessment Report Form for each candidate (see Appendix 1). The report must clearly show if each candidate has achieved a satisfactory or unsatisfactory level of proficiency for each assessment element.

Candidates are required to achieve a satisfactory level of proficiency for each element to complete the assessment. A copy of the relevant assessment form may be given to the candidate.



#### Results

The results for each candidate must be sent to BOHS within five working days of the end of the course.

#### Re-sits

The formative practical assessment is not time-constrained and it is expected that candidates who meet the entry requirements for the qualification will pass the assessment during the course. However, candidates are permitted to re-sit the assessment at a later date if required.

#### Quality assurance

The assessment is a mandatory part of the assessment and examination process for P401. It is subject to BOHS external quality assurance arrangements, to ensure compliance with requirements and to promote consistency and continuing improvement.

# Written Theory examination

The written theory examination enables candidates to demonstrate that they have attained the breadth and depth of knowledge which necessarily underpins good asbestos bulk analysis practice.

The examination comprises of 20 short-answer questions to be answered in an hour. Short- answer questions require candidates to give brief answers, sometimes as bullet points or calculations. All questions are worth 4 marks and candidates may be awarded between 0 and 4 marks per question. Candidates should attempt all questions as no marks are deducted for incorrect answers.

The pass mark is 50%.

The examination covers sections 1 to 3 of the content of the qualification in proportion to the time allocation given for each section. This gives a question allocation as follows:

	Section	Number of questions		
1	Asbestos Fibres	2		
2	Set-up and use of a Polarised Light Microscope	5		
3	Analysis of Bulk Samples	13		

The sections are clearly marked in the examination paper.

The written theory examination is a closed-book examination which means that candidates are not permitted to have access to any material.

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# Invigilation

The written examination is carried out in controlled conditions, to help ensure that all candidates demonstrate their true level of attainment. BOHS appoints an invigilator to ensure that the examination is conducted properly and fairly.

#### Marking and results

All examination papers are marked by BOHS. Candidates receive their results in writing from BOHS. The results are reported as pass or fail plus a percentage. Borderline fail results are automatically remarked by a second marker.

Training providers are sent a list of results for all candidates on a course.

#### Feedback

Candidates receive feedback on their examination performance for both examinations. For example, the feedback for a written theory examination in which a candidate scored 75% would be shown as follows:

Syllabus Area			Resul t	
1	Asbestos Fibres	0/4	(0%)	
2	Set-up and use of a Polarised Light Microscope	8/20	(40%)	
3	Analysis of Bulk Samples	52/52	(100%)	
Total		60/80	(75%)	

Training providers receive feedback on the performance of all candidates.

Written Exam Performance against syllabus		Number of candidates in each scoring band			
		0-	50-	76-	
		49%	75%	100%	
Written Theory	1: Asbestos Fibres	1	6	1	
Written Theory	2: Set-up and use of a Polarised Light Microscope	2	5	1	
Written Theory	3: Analysis of Bulk Samples	2	6	0	

#### Resits

Candidates may re-sit the written theory examination. The exam must have been passed within 12 months of the original sitting.

#### Practical examination

Candidates taking the P401 qualification are required to identify asbestos types in six different bulk samples of materials, in accordance with safe working practices.

The examination is open book, which means that candidates may have access to relevant reference material during the examination. However, candidates are not permitted to



access electronic databases or electronic communication devices such as mobile phones, tablets or computers. Additionally, candidates are not permitted to communicate with each other.

As the samples are provided from the Health and Safety Laboratory (HSL) and are listed samples, candidates must not have access to any HSL or BOHS records during the practical examination.

#### Facilities and equipment

The P401 examination requires training providers to provide suitable facilities, including an appropriate examination room and equipment with the necessary safety features. The equipment must include:

- Microscopes (stereo and polarised light).
- Fume cupboards.
- Sample pre-treatment re-agents.
- Appropriate tools.
- RI liquids, microscope slides and cover slips.

#### Invigilation

The practical examination must be carried out in controlled conditions, to help ensure that all candidates demonstrate their true level of attainment and to prevent communication between candidates. BOHS appoints a specialist invigilator for each examination who checks that the facilities and equipment are fully adequate for the purpose before each examination. Specialist invigilators are authorised to postpone an examination if the facilities and equipment are not adequate.

In addition to the safety check on facilities and equipment before the examination, specialist invigilators are responsible for all the safety arrangements during the examination and may postpone the examination if there are risks to health and safety.

#### Samples

Samples of materials are provided by BOHS for the examination. Training providers must keep the samples secure and only specialist invigilators are authorised to open the samples. Training providers must not open the samples.

Each sample set is designed to be sufficient for five to six candidates and should contain enough diversity to fully test the candidates' abilities. Each individual sample is labelled with its Asbestos in Materials Scheme (AIMS) round and sample number or other reference and



is sealed in a laminate pack. Six of these samples are then placed in a polythene bag and sealed. This constitutes a set of samples.

To control the consistency of the practical examination process, all the identification samples have been classified as follows:

- A More than two components present, usually three.
- B Contains rare type plus another common component or is more difficult to analyse.
- C Contains one component only [C(R) is used for single component of the less common types].
- D Contains two components. E
- Contains no asbestos.

To make up a sample set, the following samples are normally selected:

- One sample from category A or B.
- Two samples from category C.
- Two samples from category D.
- One sample from category E.

Therefore, all sample sets should normally have one sample with no asbestos.

Samples with C(R) designation may be used as normal category C samples but only one is normally used per sample set. These may be used in place of categories A or B, if necessary.

The number of samples in category D may be increased within a set from two to three, with a reduction in the number in category C from two to one, but this is normally only implemented when samples in categories A or B have also been substituted by a sample from C(R).

# Additional samples

Where more than eight candidates are being examined at the same time then a second set of samples is supplied. Where candidates are split into two or more groups and are examined sequentially, specialist invigilators will ensure that sample numbers and other



information is not passed from group to group. Where groups are examined on different days, different sets of samples are used in order to maintain security.

The BOHS head office must be advised of this requirement in advance so that multiple sets of samples can be provided. These will be labelled for the relevant dates.

#### Marking and results

Marking is carried out against a full and detailed marking scheme. Points are allocated to candidates for each analytical error made. The magnitude of the score is dependent on the seriousness of the error. For example, the failure to identify a non-significant component in a two asbestos component mixture would not score as high as the failure to identify a significant component in a two-component mixture, or a non-significant asbestos component where no other asbestos type is present.

Candidates are assessed as having satisfactory performance if their cumulative score over the six samples is less than or equal to 18. Scores of 19 or above will result in failure of the examination. Three types of error are considered as follows.

#### Supercritical error

A supercritical error scores 20 points. This is 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 of significant proportion <sup>1</sup> in a matrix that would not be expected to impair detection.

#### Critical error

A critical error scores 12 points. This an error, which though analytically unacceptable, might not have significant consequences if committed in reality. Such an error might be the failure to detect a significant proportion of one asbestos component in the presence of already detected asbestos or to report asbestos where none exists.

# Non-critical error

A non-critical error scores 7 points. This an error, which is analytically less unacceptable than the other two types, and 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 amphibole asbestos, or the failure to detect a non- significant proportion of asbestos in the presence of other asbestos species, or the misidentification of Tremolite, Anthophyllite as Actinolite or vice versa. The incorrect designation of Tremolite as Anthophyllite (or vice-versa) in a sample where either are present does not score as an error. In addition, the use of the term "Fibrous Grunerite" as an alternative to "Amosite" or vice-versa does not score as an error.

<sup>&</sup>lt;sup>1</sup> A significant proportion is defined by the analysis frequency being in excess of 66.6% of all of that sample's AIMs results and all of the validators. Where the AIMs result is less than 66.6% (i.e. false positives and /or false negatives in excess of 33.3%) then the sample is deemed to have a less than a significant proportion, i.e. is non-significant. Thus a failure to detect a non-significant proportion of asbestos in a single sample would be regarded as only a critical error scoring 12 points.



# Results

Examination results are sent to candidates by post and results are sent to training providers after each examination.

#### Feedback

Feedback is provided to candidates on request which indicates the grading of the results produced by the candidate along with a series of error codes as relevant.

# Disposal of samples

Training providers are responsible for disposing of samples after the examination.

#### Certification

Candidates who pass all three assessments receive a certificate which shows they have been awarded a Proficiency Certificate in *P401 – Identification of Asbestos in Bulk Samples (PLM)*.



# **Quality Assurance**

# Internal quality assurance

Training providers must operate an internal quality assurance system which evaluates and improves the delivery of the qualification.

The system should include an internal verification process which ensures that the formative practical assessments are conducted in line with requirements and that fair and consistent decisions are made about the attainment of candidates.

# External quality assurance

BOHS undertakes desk-based reviews of documents, including teaching materials and formative practical assessment records, and conducts surveys of candidates. We also may inspect training providers.

This qualification is part of the mandatory asbestos training provider inspection scheme.

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# Offering the qualification

# **Approved Training Providers**

Please complete and return the 'Application to Offer Additional Qualifications' form to <a href="mailto:qualifications@bohs.org">qualifications@bohs.org</a>. The form is available on the BOHS website.

# New training providers

Please send an email to <a href="mailto:qualifications@bohs.org">qualifications@bohs.org</a> expressing your interest in offering the qualification and we will advise you about the approvals process.



#### Other qualifications for asbestos practitioners

Candidates who achieve this qualification may also wish to take one of the following qualifications:

# P403 - Asbestos Fibre Counting (PCM)

#### Objective

To provide candidates with theoretical and practical knowledge in the techniques of fibre counting of asbestos air samples using phase contrast microscopy (PCM).

#### Target audience

The qualification is suitable for anyone who:

- Carries out the approved methods of fibre count sampling as part of their work.
- Is considering a career as an asbestos analyst.
- Is responsible for managing asbestos analysts.

# P404 - Air Sampling of Asbestos and MMMF and Requirements for a Certificate of Reoccupation Following Clearance of Asbestos

# Objective

To provide candidates with theoretical and practical knowledge in the techniques of air sampling and clearance testing and the provisions for certification for reoccupation.

# Target audience

The qualification is suitable for anyone who:

- Undertakes clearance inspections and air monitoring of asbestos as part of their work (e.g. asbestos analyst).
- Issues certificates of reoccupation following asbestos clearance procedures.

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# Appendix 1: Formative Practical Assessment Report Form

Training provider								
Course start date					Course end Date			
Loc	ation of course							
Nar	ne of candidate					Date of bi	rth	
Dat	e of assessment							
Assessment element		Tutor comment on level of proficiency (please enter 'Satisfactory' or 'Unsatisfactory' for each element, with additional comments if necessary relating to the candidate's ability and expertise in that element.)						
1	Sampling handling							
2	Pre-treatment and extraction							
3	Use of stereo microscope							
4	Preparation of slides for PLM							
5	Set up of PLM							
6	Use of PLM							

I certify that the above candidate has been assessed in accordance with BOHS requirements and has achieved the level of proficiency for each element as shown.

Name of tutor	Signature of tutor	