

## P403 Air Sampling and Fibre Counting (PCM)

### Practical Assessment & Examination Guidance

This document provides advice and guidance with regards to the practical assessment which must be carried out during the P403 course and also the practical examination which is taken upon completion of the P403 course. The document is split into part A and part B. Part A deals with the practical assessment and part B the practical examination.

#### Part A – The Practical Assessment

##### 1. Introduction and Overview:

Candidates taking the P403 – Air Sampling and Fibre Counting (PCM) module are required to have the necessary skills to take air samples of atmospheres potentially containing airborne asbestos fibres, to carry out fibre counts using phase contrast microscopy (PCM) plus the calculation of results.

The practical assessment **MUST** be carried out by the Tutor **DURING** the relevant part of the course for all candidates. This is to ensure that every candidate can demonstrate their individual ability and correct method for:

1. Setting up a range of different types of air sampling equipment and collecting samples
2. Mounting and clarifying the filter on a microscope slide
3. Setting up the microscope and required quality checks
4. Analysing samples and providing accurate fibre counts
5. Understanding the full range of air sampling strategies that may be required in relation to asbestos work.

Candidates are permitted access to written reference materials and written procedures during these tasks.

Candidates are required to complete each aspect of the assessment before proceeding to take the written and practical examinations. The tutor should provide coaching to the candidate, at the required level, to ensure they are capable of demonstrating the correct ability and methods outlined above.

##### 2. Practical Requirements:

Candidates must demonstrate proficiency in ALL the following areas:

- Setting up the various different types of equipment for air sampling, (i.e. a clean filter correctly mounted in a sampling head and the setting and measurement of a suitable flow of air)

- Mounting filters, preparing slides, setting up the microscope and demonstrating an understanding of the counting rules
- Appreciation of different air sampling strategies, e.g. requirements and locations for leak testing, background testing, reassurance sampling and personal monitoring
- Carrying out all relevant calculations

### **3. Equipment**

- Microscope with Walton Beckett graticule
- Stage micrometer
- NPL test slide
- Air sampling equipment (e.g. sampling pumps, heads and filters)
- Filter clearing equipment (acetone vaporizer)
- Filters
- Acetone
- Glycerol triacetin
- Flat-headed tweezers
- Coverslips
- Slides

### **4. Marking and Reporting:**

The course tutor who assesses the candidate must complete a Practical Assessment Report Form for each candidate, provided as a separate document.

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 Report must be supplied to BOHS on completion of the course. A copy may also be given to the candidate.

### **5 Results:**

The results for each candidate must be sent electronically to BOHS upon completion of the course.

It is acceptable to scan and email the completed documents to BOHS and return as one set per course. The reports are necessary to confirm the candidate's suitability to proceed to take the formal examinations.

## **6 Quality Assurance:**

The assessment is a mandatory part of the assessment and examination process for P403 and is subject to BOHS external quality assurance arrangements, to ensure compliance with the above requirements and to promote consistency and continuing improvement.

### **Part A - Assessment Elements**

The following five elements must be included in the practical assessment:

#### **1 Set up and collection of air samples:**

- Filter handling and mounting in filter head
- Pump preparation and assembly of sampling train
- Flow calibration
- Sampling time and flow-rate recording
- Post-sampling transportation of filters
- Understanding of sampling strategies for personal exposure monitoring, background/reassurance monitoring and leak testing

#### **2 Filter Clearance Procedure:**

- Use of acetone hot block method to clear filters
- Preparation of microscope slides using glycerol triacetin as mounting medium

#### **3 Microscope Set Up:**

- Adjustment to obtain Köhler illumination
- Use of Walton-Beckett graticule
- Use of stage micrometer
- Evaluation of HSE NPL test slides

#### **4 Counting Fibres :**

- Knowledge and application of fibre counting rules

#### **5 Calculation of Results:**

- Use of formula to convert fibre counts into airborne fibre concentrations
- Knowledge and application of limits of quantification

## Part B – The Practical Examination

### 1 Introduction:

Candidates taking the P403 – Asbestos Fibre Counting (PCM) are required to count eight prepared microscope slides and achieve at least an equivalent to RICE category B performance or better on all slides with one exception. The WHO counting rules according to HSG248 must be used.

### 2 Facilities and Equipment:

The P403 examination requires training providers to provide suitable facilities, including an appropriate examination room and counting microscopes. BOHS appoints a Specialist Invigilator for each examination who checks that the facilities and equipment are fully adequate for the purpose before and during each examination.

Specialist Invigilators are authorised to postpone an examination if the facilities and equipment are not adequate.

Specialist Invigilators will check equipment for this practical examination, especially equipment brought in by individual candidates for their own use.

Specialist Invigilators will check that all electrical equipment, including extension cables and microscopes, has received appropriate test and is appropriately labelled.

(Where PAT testing has not been carried out then a visual inspection (Plug and wires secure) may be acceptable especially for new equipment.)

### 3 The Examination:

The examination is open book which means that candidates may have access to relevant reference material during the examination.

However, candidates are not permitted access to electronic databases or electronic communication devices such as mobile phones, tablets etc.

In addition to this, candidates are not permitted to communicate with each other.

As the sample slides are provided by HSL and other sources are listed samples, candidates must not have access to any HSL or BOHS records during the practical examination.

Specialist Invigilators will ensure that candidates understand the examination requirements, and that candidates complete all relevant documentation, including:

- Examination Attendance Record
- Sample Access Record Sheet

- Candidate Practical Examination Answer Form
- Candidate Information Form (if required)

Specialist Invigilators are responsible for returning the completed documentation to BOHS.

Where the 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 slides will be used in order to maintain integrity of the examination. BOHS Head Office must be advised of this requirement in advance so that multiple sets of slides can be provided. These will be labelled for the relevant dates.

#### **4 Sample Slides:**

Slides are provided by BOHS for each examination, normally by courier to the training provider one week before the examination. The slides arrive in a single padded envelope containing a box with a set of eight slides. Training providers must keep the slides secure and only the Specialist Invigilators are authorised to open the envelope. Training providers are not permitted to open the envelope.

Each set of slides is suitable for examinations with up to eight candidates and will contain two each of slides designated as <<63.7, <63.7, >63.7 and >>63.7 fibres/mm<sup>2</sup>. These represent an appropriate diversity of fibre densities to fully test the candidates' abilities.

Where more than eight candidates are being examined at the same time, a second set of slides is normally supplied. Where this occurs the slide sets must be controlled to remain in their own set.

#### **5 Marking and Results:**

Grading of the slide counting results is carried out against a full and detailed marking scheme.

The counts are graded as being in band A or band B or outside band B. Errors where candidates record the wrong slide number, analyse the same slide twice or fail to analyse a slide are classified as a "supercritical" error and will be graded as outside band B.

Candidates must achieve 7 out of the 8 samples in band B or better to gain a satisfactory performance rating. Two or more samples which fall outside band B will automatically be marked as a failure.

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

**6 Feedback:**

Feedback is automatically provided to candidates and will indicate the grading of the results for individual samples.

**7 Broken Slides:**

If a slide is broken, the Specialist Invigilator should contact BOHS Head Office and advise them of the slide number which is no longer useable for the examination.

BOHS will advise the Specialist Invigilator of the category of the slide concerned. The Specialist Invigilator should then try and obtain a similar slide from the course provider (for example laboratory quality assurance slide). This slide must be returned with the remaining slides to BOHS who will arrange for them to be independently counted. This is to give a reference count so that the normal band widths for marking can be calculated. The slide will then be returned to the course provider.

This broken slide procedure may cause a delay in providing the examination results.

**8 Returning Slides:**

Training providers are responsible for returning P403 slides to BOHS by special delivery within two working days of the date of the examination. Slide sets are expensive to manufacture and maintain, therefore the loss or misappropriation of slide sets may result in a charge to cover the cost of a replacement slide set.