

**The British Occupational Hygiene Society  
Faculty of Occupational Hygiene**

**PROFICIENCY MODULE SYLLABUS**

**P403: ASBESTOS FIBRE COUNTING (PCM)**

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

**CONTENT:**

	<b>TOPIC</b>	<b>TIME ALLOCATION</b>
1.	<b>SETTING UP OF MICROSCOPE</b>	<b>10%</b>
2.	<b>FILTER PREPARATION and FIBRE COUNTING</b>	<b>30%</b>
3.	<b>CALCULATION OF RESULTS AND QUALITY CONTROL</b>	<b>10%</b>
4.	<b>PRACTICAL WORK</b>	<b>50%</b>

**Note:** Reference is made in this syllabus to HSE guidance and or documentation. This may not be the most up-to-date relevant publications from HSE/other sources and is intended as guidance for candidates only.

**1. SETTING UP MICROSCOPE (10%)**

Use of light microscopy, setting up of koehler or koehler type illumination, calibration of stage micrometer, test slides.

Describe the theory of phase contrast microscopy, with particular attention being paid to the microscope specifications outlined in the guidance material. Demonstrate and allow students to practice the use of the Walton Beckett graticule, stage micrometer and NPL test slide. Students must be given the opportunity to set up various makes of microscope used in this work as well as to count slides of known quality such as those used in the RICE scheme.

**2. FILTER PREPARATION and FIBRE COUNTING (30%)**

Make students familiar with the preparation of filters and counting of fibres in accordance with the recognised counting rules, the WHO method as specified in HSG248 (1). Discuss the limitations of the methods together with examination of accuracy, precision and systematic differences.

**3. CALCULATION OF RESULTS AND QUALITY CONTROL (10%)**

Examine the reliability of results in relation to quality control schemes such as UKAS, RICE and ISO and European Standards for GLP and internal schemes i.e. counting of blank filters and counting audits.

#### **4. PRACTICAL WORK (50%)**

Practical work must be carried out to provide the student with all practical knowledge in carrying out the following:

- microscope set-up
- slide preparation
- fibre counting for a range of fibre densities and types

#### **Educational Objectives**

The student must be able to describe the approved methods for fibre counting and have a understanding of their limitations and the requirements for quality control.

#### **COURSE LENGTH**

It is envisaged this course would be run over 2 days with ½ day for the course theory, 1 day for the course practical and a further ½ day for the examination/assessment.

#### **REFERENCES**

- (1) HSE Guidance HSG248 Asbestos: The Analyst's guide for sampling, analysis and clearance procedures

#### **Suggested Further Reading**

1. Royal Microscopical Society Microscope Handbooks  
No 01 An Introduction to the Optical Microscope, Savile Bradbury  
No 23 Basic Measurement Techniques for Light Microscopy, Savile Bradbury

#### **COURSE EXAMINATION/ASSESSMENT**

The students would be assessed as follows:

- A 45 minute MCQ BOHS examination (30 questions).
- A practical assessment carried out by the course provider as follows.

#### **PRACTICAL ASSESSMENT - FIBRE COUNTING**

##### **Assessment must include:**

- Practical demonstration of the candidate's ability to mount filters, prepare slides and set up the microscope.
- The candidate will count 8 slides formerly from the RICE scheme and provided to BOHS by HSL. The results will be assessed using a detailed marking schedule.
- The candidate's ability to carry out all the relevant calculations and a working knowledge of the WHO counting method will be assessed.

Full details of the practical assessment requirements requirement are provided as a separate document GC.2 P403 Practical Requirements.

Successful completion of the above and a RICE category A or B performance will lead to a:

#### **'PROFICIENCY CERTIFICATE' in ASBESTOS FIBRE COUNTING (PCM)**