Section 6

Syllabus

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

Section		Time allocation
1	Setting up of microscope	10%
2	Filter preparation, fibre counting and set up of air sampling equipment	30%
3	Calculation of results, quality control, reporting and communication	10%
4	Practical work	50%

1. Setting up of microscope (10%)

Educational objectives
Candidates should understand how phase contrast microscopy works in principle, and how to set up all components of a phase contrast microscope.

1.0.1 Describe the theory of phase contrast microscopy.
1.0.2 Use of light microscopy, setting up of Koehler or Koehler type illumination, calibration of stage micrometer and use of test slides.
1.0.3 Demonstrate and use of the Walton-Beckett graticule, stage micrometer and NPL test slide.
1.0.4 Candidates 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, fibre counting and set up of air sampling equipment (30%)

Educational objectives
Candidates should be able to describe and carry out the approved methods for correctly setting up air sampling equipment, taking air samples and fibre counting. Candidates should also have an understanding of the accuracy and limitations of these methods.

2.0.1 Selection and set up of air sampling trains for monitoring of airborne fibre concentrations. Calibration of air sampling trains and minimisation of sampling error.

2.0.2 Air sampling strategies (e.g. requirements and locations for leak testing, background testing, reassurance sampling and personal monitoring).
2.0.3 Handling and preparation of filters, and counting of fibres in accordance with the recognised counting rules (i.e. the WHO method as specified in HSG248).
2.0.4 Discussion of the limitations of the methods together with understanding of accuracy, precision and systematic differences.

3. Calculation of results, quality control, reporting and communication (10%)

Educational objectives
Candidates should be able to accurately calculate fibre count results, in line with the requirements of internal and external quality control schemes. They should also understand how to present these results and communicate them to clients and contractors.

3.0.1 Calculation of airborne fibre concentrations from fibre count data and comparison of results with appropriate standards. Calculation of the limit of quantification.
3.0.2 Examination of the reliability of results, in relation to quality control schemes such as UKAS, RICE and ISO and European Standards for Good Laboratory Practice (GLP).
3.0.3 Necessity for internal quality schemes (i.e. counting of blank filters and counting audits.)
3.0.4 The requirements for formal reporting of and communication of analytical results.

4. Practical work (50%)

Practical work must be carried out to provide candidates with the skills in carrying out the following:

- Setting up and calibration of air sampling trains.
- Air sampling strategies for leak testing, background sampling, reassurance sampling and personal exposure monitoring,
- Preparation of microscope slides following sampling.
- Microscope set-up and an understanding of the counting rules,
- Fibre counting for a range of fibre densities and types, and interpretation of data.

