

M504 Asbestos and Other Fibres – Answers to revision questions

Section 9 – Fibre counting

1. What type of microscopy is usually used to undertake fibre counting?
(Page 177)
 - Phase contrast optical microscopy
2. What checks need to be performed to verify the set-up of the microscope prior to undertaking fibre counting?
(Pages 177 – 180)
 - Use of test slide (HSE Mk 2 test slide) – 5 bands of lines visible
 - Determination of Walton-Beckett graticule
3. How is the filter prepared for analysis by optical microscopy?
(Pages 180 – 182)
 - Acetone / triacetin ‘hot-block’ method – as the practical!!!!
4. What are the counting rules used in the WHO method? (Pages 182 – 183)
 - Length > 5 micron, width < 3 micron, aspect ratio at least 3:1
 - Ends within graticule
 - Ignore particles attached to fibres
 - No more than 1/8 area covered by dust / debris
5. What are the potential problems and limitations associated with the phase contrast optical microscopy fibre counting method?
(Pages 186 – 190)
 - Can produce widely differing results
 - Does not positively identify asbestos fibre types
6. What procedures / systems should be in place to improve the reliability of results of asbestos fibre counting?
(Pages 186 – 192)
 - Trained competent staff
 - Routine internal quality assurance systems
 - External proficiency testing program
 - Accreditation to ISO 17025
 - Limit workload
7. What differences are there between electron microscopy and phase contrast optical microscopy? Give examples of when use of electron microscopy would be appropriate.
(Pages 194 – 196)
 - PCOM – total fibre count, light beam, quick, portable, cheap
 - Electron microscopy – discriminated fibre count, electron beam, time delay, not portable, expensive
 - High background or leak tests where non-asbestos fibres are thought to be a significant source of countable fibres