

M501: MEASUREMENT OF HAZARDOUS SUBSTANCES INCLUDING RISK ASSESSMENT

OVERNIGHT REVISION QUESTIONS – DAY 2

1. List the four components commonly used when conducting risk-based monitoring surveys.
2. What information can the Geometric Standard Deviation provide about a particular exposure dataset?
3. What should an Occupational Hygienist do to minimise sampling errors during a survey?
4. What is the “breathing zone”?
5. What are the major sources of variation in exposure during air sampling surveys?

In Questions 6-9, what sampling strategy would you adopt? Consider factors such as:

- a) The type of samples you would take (personal, area, grab, full shift)
 - b) How long would you sample for?
 - c) When would you take the samples?
 - d) Any other issues you believe relevant.
6. A group of 8 workers operate a cement bagging plant. They work an 8 hour shift that includes break periods (1 hour in total).
 7. Workers operate a process where they can be exposed to a dust which has both long term and short term effects. It has a long term limit of 1 mg/m^3 and a short term exposure limit of 2.5 mg/m^3 . At the end of the shift they have to clean out the equipment which typically takes between 15 and 25 minutes to complete. During cleaning, the workers put their heads inside the machines and a dust cloud is generated.

8. A 250 litre drum containing dichloromethane has been knocked over by a forklift truck and the contents have been spilled over the floor inside a production area. Workers are concerned about whether it is safe to enter the area.
 9. Two workers are about to enter a chemical storage tank to carry out an internal inspection. The tank has been drained and previously contained a volatile solvent that has an exposure standard (TWA) of 50 ppm and a STEL of 100 ppm. It has also been assigned an Sk notation.
 10. Why is biological monitoring carried out?
 11. What is the difference between direct biological monitoring and biological effect monitoring?
 12. What problems can be encountered when taking urine samples? How can they be overcome?
 13. For what types of sample might breath sampling be undertaken?
 14. Biological monitoring for styrene is normally performed by taking measurements of what?
 15. Briefly discuss the reason why sampling times are critical in biological monitoring.
 16. What materials are typically analysed by Atomic Absorption Spectrometry?
 17. What is the preferred method for analysis of arsenic and selenium? Why?
 18. UV Visible Spectrophotometry is often used for what analyses?
 19. What is the principle of IR Spectrophotometry that allows it to identify a species fingerprint?
 20. What are some of the recognised sources of analytical methods used for occupational hygiene analysis?
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