

# **M501: MEASUREMENT OF HAZARDOUS SUBSTANCES INCLUDING RISK ASSESSMENT**

## **OVERNIGHT REVISION QUESTIONS – DAY 1**

1. What does the respiratory system comprise of?
2. Where does most of the gas exchange occur in the respiratory system?
3. What are the main routes of entry of contaminants into the body?
4. What is meant by the term “dose” when applied to toxicology?
5. Explain what is meant by the term “threshold” when applied to toxicology.
6. Explain the difference between “hazard” and “risk” in regard to chemical substances.
7. What are the key steps to a successful risk assessment?
8. If a risk assessment indicates a significant risk, what actions could (or should) be taken to minimise that risk?
9. You are the Occupational Hygienist in a plant which is introducing a new chemical into the production process. The chemical “Parite” is imported from overseas and is supplied with a MSDS which has limited data but does indicate that the main ingredient is a chlorinated hydrocarbon.
  - a) Describe the processes you would undertake to establish the potential level of risk to the health of workers if this new product was introduced.
  - b) If the risk was established as being significant, what steps could be taken to minimise the risk?
10. What types of substances are given short term exposure limits?

11. If a substance has not been assigned a STEL, what criteria should be applied to short term exposures? (In your answer consider various countries' approaches.)
12. What actions should be taken if a substance is not assigned an occupational exposure limit?
13. What is the meaning of the Skin notation?
14. What is the formula that is used by the ACGIH when simultaneous exposure occurs to substances that have an additive interaction?
15. A worker is exposed to 1350 ppm for 1 hour, 220 ppm for 2 hours and 50 ppm for 5 hours of the same contaminant. What is his 8 hour TWA exposure?
16. The average concentration of an airborne contaminant measured over an 8 hour period is 12 ppm. It is assumed that a worker is exposed to this concentration for the whole of a 10 hour shift. Calculate his TWA using the simple approach (direct proportional). Explain why this may not be satisfactory for protecting the health of the worker.
17. A worker is exposed to  $10 \text{ mg/m}^3$  for 6 hours during a 12 hour shift. If there was not further exposure what is the 8 hour-TWA exposure?
18. The TLV for benzene, which has a molecular weight of 78.11, is 0.5 ppm. What is the concentration in  $\text{mg/m}^3$  at NTP?
19. What are some common names used for hygiene standards in different parts of the world?
20. Why are "Recommended Exposure Limit" proposed by NIOSH in the USA generally lower than those published by other standard-setting bodies?