14 NANOMATERIALS IN THE WORKPLACE

QUIZ (20 POINTS TOTAL)

True/False (6 points)

1. Nanotechnology is the collection of technologies that deals with materials on the nanometer scale.
   a. true
   b. false

2. Nanomaterials pose few safety concerns because particles are difficult to see with an ordinary microscope.
   a. true
   b. false

3. Risk assessment is the key to a reasonable justification for the exposure of workers to nanomaterials.
   a. true
   b. false

4. On a nano-scale there may be different and perhaps more intense reactions that may lead to fire or explosive hazards.
   a. true
   b. false

5. In order to minimize the potential health effects to any workplace material, controls, such as engineering and administrative controls, and PPE should be considered.
   a. true
   b. false

6. Government has had a role in workplace safety involving nanomaterials for years.
   a. true
   b. false

7. Small particle sizes for most workplace materials have reached a peak and will not continue to get smaller.
   a. true
   b. false

Multiple Choice (6 points)

8. Steps for clearing nanomaterials in the workplace may include:
   a. creating models to assess possible hazards
   b. measuring the mass of the material to determine toxicity
   c. determining the short-term effect of nanoparticles on human tissues
   d. none of the above

9. The role of research and development must support the plant-level professional by
   a. evaluating and developing new controls to reduce exposure to nanomaterials
   b. evaluating and improving PPE
   c. evaluating the effectiveness of alternative materials
   d. all of the above

10. When measuring the consequences of nanomaterials use, one must
   a. evaluate existing epidemiological workplace studies where nanomaterials are used
   b. identify knowledge applications in epidemiological studies
   c. control the data and information about nanotechnology
   d. a and b

11. Nanotechnology includes materials in the length scale of
   a. 1,000 to 1,000,000 nanometers in any one direction
   b. 100 to 100,000 nanometers in any one direction
   c. 10 to 1,000 nanometers in any one direction
   d. 1 to 100 nanometers in any one direction

12. Subcategories of nanomaterials include those that
   a. arise naturally
   b. are engineered for a particular purpose
   c. are present in a conventional fiber
   d. all of the above

13. Areas of particular occupational health and safety concern include
   a. aerosol particles inhaled through the lungs
   b. nanomaterials that can attach to a virus
   c. free unbound nanoparticles and nanofibers
   d. none of the above

Short Answer (7 points)

14. Discuss the reasonable steps that might be taken to avoid fire and explosive hazards when working with nanoparticles.

15. List the regulatory agencies, which currently exist, that warrant keeping a close watch for emerging laws and regulations relating to nanomaterials issues.

16. Describe why it is important, from an occupational safety perspective, to examine toxicity and dose data from a vendor before introducing nanomaterials in the workplace.

17. Identify the necessary steps that should be taken to prepare the workplace for exposure to nanomaterials.

18. Discuss why risk assessment is key to a reasonable and defensible justification for exposure to nanomaterials.

19. Discuss the steps that may be taken to monitor the results of nanomaterial use in the workplace.

Short Essay (1 point)

20. Describe the legal duty and practical obligations employers have to protect their workers. Identify controls that should be in place where nanomaterials may or may not be in use.