

Exposure to tungsten carbide dust can result in interstitial fibrosis of the alveoli. Sampling for this material should be done using

- a. inspirable mass sampler
- b. naso-pharyngeal mass sampler
- c. thoracic mass sampler
- d. respirable mass sampler

Which of the following parameters would be used in modeling the equilibrium concentration at a receptor due to dispersion from a continuous release over an urban area?

- a. the Pasquill-Gifford vertical dispersion parameter
- b. the Briggs horizontal dispersion parameter
- c. the Slade vertical dispersion parameter
- d. the time since the start of the release

For which of the following compounds would charcoal be a suitable solid sorbent for air sample collection:

- a. Methane
- b. Toluene
- c. Chlorine
- d. Benzo(a)pyrene

For microscopic analysis of collected aerosol, which filter type would be most appropriate

- a. 0.8 μm pore, silver metal membrane
- b. glass fiber filter
- c. 0.45 μm pore, mixed cellulose ester membrane
- d. Whatman 40 paper filter

An aerosol cloud is found to be log-normally distributed with a geometric standard deviation of 3.5 and 84% of the particles less than 7 μm in diameter. Estimate the geometric mean size for this aerosol cloud.

- a. 24.5 μm
- b. 5.88 μm
- c. 2.0 μm
- d. 0.50 μm

A stack sample is collected for silica determination. The sampling probe inlet velocity is 300 fpm. However the stack velocity at the sampling point is 400 fpm. Which of the following statements is true.

- a. The measured MMAD is too large and the measured concentration of silica is too high
- b. The measured MMAD is too small and the measured concentration of silica is too low
- c. The measured MMAD is too large and the measured concentration of silica is too low
- d. The measured MMAD is too small and the measured concentration of silica is too high

The standardized concentration of a full-shift compliance sample was found to be 0.8 with a UCL of 1.05 and a LCL of 0.55. Which of the following statements is correct?

- a. OSHA would find this sample out of compliance
- b. further sampling is required by the plant IH since the sample is above the action level
- c. the plant IH would find the sample definitely in compliance
- d. a method with a higher CV_T would give a higher LCL and lower UCL

A looping plume occurs under what atmospheric conditions?

- a. stable conditions
- b. neutral conditions
- c. unstable conditions
- d. inversion layer aloft

An aerosol sample is examined under the microscope and the particles are sized and counted. The geometric mean size is $0.8 \mu\text{m}$. This size is equal to:

- a. the count median diameter
- b. the mass median diameter
- c. the mass median aerodynamic diameter
- d. the mass median diffusional diameter

An aerosol cloud is sampled with an Andersen impactor. 50% of the particle mass is less than $4 \mu\text{m}$; 84% of the particle mass is less than $8 \mu\text{m}$; 16% of the particle mass is less than $0.5 \mu\text{m}$. This particle size distribution

- a. has a geometric standard deviation of 1.5
- b. is probably multimodal
- c. indicates that the median aerosol size is 7.5 μm
- e. indicates that most of the aerosol will deposit in the naso-pharyngeal compartment

Which of the following particles will settle fastest in still air:

- a. $D_{\text{Stokes}} = 3.5 \mu\text{m}$, density = 1 gm/cm^3
- b. $D_{\text{Stokes}} = 3.5 \mu\text{m}$, density = 2 gm/cm^3
- c. $D_{\text{Stokes}} = 10 \mu\text{m}$, density = 1 gm/cm^3
- d. $D_{\text{Stokes}} = 10 \mu\text{m}$, density = 2 gm/cm^3

Which of the following is **not** a source of potential bias in the gravimetric analysis of particulate that has been collected on a filter:

- a. ambient relative humidity
- b. the MMAD of the aerosol cloud is 4.5 μm
- c. the friability of the filter
- d. electrostatic charge buildup on the filter

The D_{50} for respirable dust according to the ACGIH-ISO-CEN criteria is:

- a. 1 μm
- b. 4 μm
- c. 2.5 μm
- d. 10 μm

Which of the following minerals is a form of crystalline silica?

- a. tremolite
- b. chrysotile
- c. anthophyllite
- d. cristobalite

The velocity pressure inside a duct is found to be 1 inch water. The air inside the duct is hot, about 42°C. What would be the corrected velocity in the duct?

- a. 4005 ft/min
- b. > 4005 ft/min
- c. < 4005 ft/min