

Indoor Air

MEHA RS/REHS Study Session

Last updated 5/19/15

1. The _____ is/are the most common site of injury by airborne pollutants.
 - a. Eyes
 - b. Skin
 - c. Lungs

2. Frequent upper respiratory infections, otitis media, persistent middle-ear effusion, asthma onset and increased severity, recurrent pneumonia, and bronchitis are symptomatic of exposure to:
 - a. Environmental tobacco smoke
 - b. Pet dander, dust
 - c. Pollen
 - d. Asbestos dust

3. Studies from the United States and Europe show that persons in industrialized nations spend more than _____ percent of their time indoors.
 - a. 60
 - b. 75
 - c. 90

4. In investigating the cause of complaints related to indoor air pollution, a _____ or _____ of symptoms correlated with time and place may prove helpful. This can investigate further by matching the individual's _____ and _____ to those pollutants with which they may be associated by way of interview, such as *"Describe your work area. Has the place where you work been redecorated or refurnished, or have you recently started working with new materials or equipment?"*

5. **True or False:** While improved general ventilation of indoor spaces may decrease the odor of environmental tobacco smoke (ETS), health risks cannot be eliminated by generally accepted ventilation methods.

6. Animal studies using rats have found that some solvents are ototoxic. Also, epidemiological studies have shown that some volatile organic may act synergistically with noise and lead to _____ in exposed workers.
 - a. hearing loss
 - b. fever, chills
 - c. retinal hemorrhage
 - d. nasopharyngeal myiasis

7. In carbon monoxide (CO) poisoning, tissues with the highest _____ needs — myocardium, brain, and exercising muscle — are the first affected. Symptoms may mimic influenza and include fatigue, headache, dizziness, nausea and vomiting, cognitive impairment, and tachycardia. The affects are a result of CO's affinity for and combination with hemoglobin, forming carboxyhemoglobin (COHb) and disrupting _____ transport.
8. A number of factors allow biological agents to grow and be released into the air. Especially important is _____, which encourages house dust mite populations to increase and allows fungal growth on affected surfaces.
 - a. high humidity
 - b. accumulated dust
 - c. food debris
 - d. high heat
9. A pneumonia disease associated with indoor air contamination is _____ disease. It primarily attacks exposed people over 50 years old, especially those who are immunosuppressed, smoke, or abuse alcohol. The case fatality rate is high, ranging from five to 25 percent. Erythromycin is the most effective treatment. It has been found in association with cooling systems, whirlpool baths, humidifiers, food market vegetable misters, and other sources, including residential tap water.
10. Controlling _____ infestation includes covering mattresses, hot washing of bedding, and removing carpet from bedrooms. For mite allergic individuals, it is recommended that home relative humidity be lower than 45 percent, as these organisms desiccate in drier air.
 - a. bed bug
 - b. German cockroach
 - c. grain beetle
 - d. dust mite
11. Since _____ poisoning can mimic influenza, the health care provider should be suspicious when an entire family exhibits such symptoms at the start of the heating season and symptoms persist with medical treatment and time.
 - a. Botulism
 - b. carbon monoxide
 - c. lead
 - d. alcohol
12. _____ is not banned from art and craft materials but the U.S. Consumer Product Safety Commission (CPSC) requires its presence to be declared on the product label if it is present in toxic amounts.
 - a. radium
 - b. radon
 - c. lead
 - d. chromium

13. The term _____ describes a situation in which reported symptoms among a population of building occupants can be temporally associated with their presence in that building. Typically, though not always, the structure is an office building. Generally, a spectrum of specific and nonspecific complaints are involved. Typical symptoms include a host of common ailments, some ubiquitous and easily communicable. The key factors are commonality of symptoms and absence of symptoms among building occupants when the individuals are not in the building.
14. When radon decay products are inhaled and deposited in the lungs, the _____ emissions penetrate the cells of the epithelium lining the lung. Energy deposited in these cells during irradiation is believed to initiate the process of carcinogenesis.
- alpha
 - beta
 - gamma
 - delta
15. _____ is the second leading cause of lung cancer, following smoking. It is odorless, colorless, and tasteless. It is a naturally occurring radioactive gas resulting from the decay of radium, itself a decay product of uranium.
16. When asbestos-containing material is damaged or disintegrates with age, microscopic fibers may be dispersed into the air. The presence of these fibers within the lungs may result in _____ asbestos-caused fibrosis of the lung, seen as a result of heavy occupational exposure). For lung cancer, the effect of tobacco smoking in combination with asbestos exposure appears to increase _____, by approximately fivefold.
17. **True or False:** Under the Clean Air Act, the EPA has set National Ambient Air Quality standards for Criteria Air Pollutants (CO₂, SO₂, NO_x, Ozone, TSP/PM), as well as 187 Air Toxic pollutants (benzene, toluene, xylene, etc.).
18. In lieu of setting standards for Air Toxic pollutants, the EPA guidelines direct _____ be conducted to determine risk of cancer or other health endpoints for these pollutants.
19. In the troposphere, ozone is formed by the reaction of _____ with VOC's/HC's and sunlight.
- nitrogen oxide
 - carbon dioxide
 - radon
 - particulates
20. Of the two primary classes of particulate matter, PM/TSP, Inhalable coarse particles are between _____ micrometers, while fine particles are less than 2.5 μ m.

Answers

- 1) c
- 2) a
- 3) c
- 4) diary or log, signs and symptoms
- 5) True
- 6) a
- 7) oxygen
- 8) high humidity
- 9) Legionnaires' Disease/ Legionella pneumophila
- 10) dust mites
- 11) carbon monoxide
- 12) lead
- 13) Sick building syndrome (SBS); note a building related illness is a different problem, where signs and symptoms of diagnosable illness are identified and can be attributed directly to specific airborne building contaminants, such as Legionella.
- 14) alpha
- 15) Radon
- 16) asbestosis, synergistic
- 17) False, while the 187 Air Toxics are listed, no **standards** have been set.
- 18) risk assessments
- 19) nitrogen oxides
- 20) 2.5 - 10