



Final Exam
Continuing Education Course #434
Biological Odor Control Systems

1. What type of treatment is a dry adsorption system?
 - ☐ a. Physical
 - ☐ b. Chemical
 - ☐ c. Biological
2. Which odor control system uses organic media?
 - ☐ a. Ionization
 - ☐ b. Biotrickling filter
 - ☐ c. Biofilter
3. What type of microorganisms are responsible for degrading odor compounds?
 - ☐ a. Protozoa
 - ☐ b. Algae
 - ☐ c. Bacteria
4. Which type of bacteria degrades hydrogen sulfide?
 - ☐ a. E. Coli
 - ☐ b. Thiobacillus
 - ☐ c. Monocytogenes
5. What is a byproduct of hydrogen sulfide removal?
 - ☐ a. Sulfuric acid
 - ☐ b. Sulfate
 - ☐ c. carbonyl sulfide
6. What is the most common media for a biofilter bed?
 - ☐ a. Peat moss
 - ☐ b. Plastic media
 - ☐ c. Wood chips
7. What does EBCT stand for?
 - ☐ a. Elevated biological contact time
 - ☐ b. Elevated bed contact time
 - ☐ c. Empty bed contact time
8. What is the formula for EBCT?
 - ☐ a. Bed volume / flow rate
 - ☐ b. Bed void space / flow rate
 - ☐ c. Bed volume / air velocity

9. What is the recommended minimum EBCT for removing hydrogen sulfide in a biofilter?

- ☐ a. 10 seconds
- ☐ b. 30 seconds
- ☐ c. 60 seconds

10. What is iron sponge media?

- ☐ a. Wood chips impregnated with ferric oxide
- ☐ b. Cast iron chips
- ☐ c. Ductile iron media

11. What is the recommended minimum relative humidity for biofilter bed?

- ☐ a. 50%
- ☐ b. 85%
- ☐ c. 100%

12. What velocity is common for air piping design?

- ☐ a. 20 fpm
- ☐ b. 200 fpm
- ☐ c. 2000 fpm

13. What is the recommended minimum ratio for orifice to pipe diameter?

- ☐ a. 10
- ☐ b. 20
- ☐ c. 100

14. What bed life can be assumed during design?

- ☐ a. 1 to 2 years
- ☐ b. 3 to 5 years
- ☐ c. 20 years

15. What makes biotrickling filters unique?

- ☐ a. Pre-fabricated vessel, synthetic media, and constant spray of water
- ☐ b. Pre-fabricated vessel, organic media, and constant spray of water
- ☐ c. Pre-fabricated vessel, synthetic media, and bioreactor

16. Typically, which system requires a longer EBCT?

- ☐ a. Biofilter
- ☐ b. Biotrickling filter
- ☐ c. Both the same

17. What makes bioscrubbers unique?

- ☐ a. Vertical vessel
- ☐ b. Recycling of water
- ☐ c. Recycling of bacteria with a bioreactor

18. Which system has the lowest capital cost?

- ☐ a. Biofilter
- ☐ b. Biotrickling filter
- ☐ c. Bioscrubber

19. Which system is considered the most reliable for odor removal?

- ☐ a. Biofilter
- ☐ b. Biotrickling filter
- ☐ c. Bioscrubber

20. What is the formula for calculating lifecycle cost?

- ☐ a. Lifecycle Cost = Capital Cost + Annual Maintenance * Years
- ☐ b. Lifecycle Cost = Capital Cost + Annual Maintenance * PWF - Salvage Value
- ☐ c. Lifecycle Cost = Capital Cost + Annual Maintenance - Salvage Value