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Continuing Education Course #529
PFAS in Biosolids

1. Which does PFAS stand for?
 - a. Post fluorinated substances
 - b. Per- and poly-fluoroalkyl substances
 - c. Persistent forever ashes
 - d. Pen-fluoroalkyl substances
2. What does AFFF stand for?
 - a. Ash Fluorinated Forming Foam
 - b. Aqueous Fluorinated Fast Foam
 - c. Aqueous Film Forming Foam
3. In which organs does PFAS tend to accumulate?
 - a. Lungs and Skin
 - b. Liver and Kidney
 - c. Bones and Teeth
4. Where does PFAS originate?
 - a. Chemical manufacturing facility
 - b. Landfill
 - c. Natural environment
5. Which is NOT a way PFAS can enter residential homes?
 - a. Drinking water
 - b. Consumer products
 - c. Food
 - d. Runoff
6. What makes PFAS last so long?
 - a. Fluoride-carbon bonds
 - b. End ion
 - c. Carbon backbone
7. Which is NOT a type of end ion (head) in PFAS?
 - a. CO₂
 - b. SiO₂
 - c. SO₃
8. Which describes PFOA, which has a backbone of 8 carbon atoms?
 - a. Short-chain
 - b. Long-chain

- c. Polymer
9. Which describes PFBS, which has a backbone of 4 carbon atoms?
- a. Short-chain
 - b. Long-chain
 - c. Polymer
10. Which is NOT another word for biosolids?
- a. Residuals
 - b. Filtrate
 - c. Biosludge
 - d. Dried sludge
11. Which type of sludge has the greatest percent solids?
- a. Dewatered
 - b. Raw
 - c. Primary
 - d. Secondary
12. Which is NOT a benefit to digesting sludge?
- a. Stabilizes
 - b. Easier to dewater
 - c. Reduces odor
 - d. Fast process
13. Which is the most common disposal method for municipal biosolids?
- a. Land Application
 - b. Incineration
 - c. Landfilling
 - d. Other
14. Which is NOT a benefit to land application for biosolids?
- a. Nutrient addition
 - b. Seasonal use
 - c. Improved soil structure
 - d. Reduced irrigation requirements
15. What is the "agronomic rate" for applying biosolids?
- a. Slightly less nutrients than crops need
 - b. Just enough nutrients for crop needs
 - c. Slightly more nutrients than crops need
16. What the three classes of biosolids?
- a. A-EQ, A, B
 - b. A, B, C
 - c. B, C, E,
17. Which unit of measure is conventional for biosolids?
- a. Wet volume
 - b. Wet weight
 - c. Dry weight

18. What is the main federal regulation for biosolids?
- a. 40 CFR 503
 - b. EPA 1533
 - c. 40 NPDES
19. Is there a federal limit on PFAS in biosolids?
- a. Yes
 - b. No
20. Which state has a total ban on land applying biosolids?
- a. Alaska
 - b. Maine
 - c. Vermont
21. Which state has a ban on land applying biosolids if PFOS is over 125 ppb?
- a. California
 - b. Massachusetts
 - c. Michigan
22. What is the EPA recommended test method for PFAS in biosolids?
- a. CFR 503
 - b. Method 1633
 - c. Method 160.2
23. Which is NOT a technique for removing PFAS from wastewater?
- a. Sedimentation
 - b. GAC
 - c. IX
 - d. NF
24. What is another term for complete destruction of PFAS?
- a. Conflagration
 - b. Mineralization
 - c. Fragmentation
25. Which is NOT a sorbent for PFAS stabilization?
- a. Biochar
 - b. RemBind
 - c. Hypochlorite
 - d. Activated carbon

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