Continuing Education Course #444
Industrial Pretreatment Design

1. Which discharge method sends wastewater to a POTW collection system?
- ○ a. Direct discharge
- ○ b. Indirect discharge
- ○ c. Reuse

2. Which discharge method often has a pretreatment system?
- ○ a. Direct
- ○ b. Indirect
- ○ c. Reuse

3. What is an Industrial User?
- ○ a. Industrial or commercial facility with indirect discharge
- ○ b. Facility with direct discharge
- ○ c. Facility with zero liquid discharge

4. What is a primary purpose of a pretreatment system?
- ○ a. Prevent overflows and bypasses
- ○ b. Make corrections after a violation
- ○ c. Modify the wastewater to meet permit conditions

5. Which POTW problems can occur without industrial pretreatment systems?
- ○ a. Sizing of collection systems
- ○ b. Interference and pass through
- ○ c. Reduced reporting

6. Which is NOT a type of pollutant normally found in IU permits?
- ○ a. Priority pollutants
- ○ b. Conventional pollutants
- ○ c. Non-priority pollutants

7. Where are the Industrial Categories defined?
- ○ a. 40 CFR 405 to 471
- ○ b. 1972 CWA
- ○ c. Sewer Use Ordinances

8. What is the goal of a wastewater assessment?
- ○ a. Value engineering
- ○ b. Gather information for compliance reporting
- ○ c. Gather information for design decisions

9. Which standards apply for a new facility?
- a. PSNS
- b. PSES
- c. PSSS

10. Which is the loading rate formula?
- a. Load (lb/d) = conc (mg/L) * flow (gpm) * 8.34
- b. Load (lb/d) = conc (mg/L) * flow (MGD) * 8.34
- c. Load (lb/d) = conc (mg/L) * flow (MGD) * 7.48

11. Which limits are more stringent?
- a. Categorical limits
- b. Local Limits
- c. Depends on each application and pollutant

12. Which flows are most important to define?
- a. Minimum and Maximum
- b. Average and Peak
- c. Minimum and Ultimate

13. Which is NOT a flow monitoring technique?
- a. CFD model
- b. Bucket and stopwatch
- c. Flow meter

14. What is a diagram showing the flow streams in a facility?
- a. Waste Network Diagram
- b. Flow stream legend
- c. Water Balance Diagram

15. What should be done with two incompatible waste streams?
- a. Mix slowly
- b. Treat before combining
- c. Discharge both to the sample manhole

16. Which is NOT a benefit to equalization?
- a. Consistent loads
- b. Odor reduction
- c. Consistent flows

17. What is diurnal flow?
- a. Flow rates for each hour of the day
- b. Flow rates from urinals
- c. Average daily flow

18. What type of process is flotation?
- a. Physical
- b. Chemical
- c. Biological

19. What type of process is a lagoon?

- a. Physical
- b. Chemical
- c. Biological

20. What type of process is coagulation?
- a. Physical
- b. Chemical
- c. Biological

21. Which method can efficiently remove BOD?
- a. Screening
- b. Ion exchange
- c. Activated sludge

22. Which method can efficiently remove heavy metals?
- a. Flotation
- b. Air stripping
- c. Electrodialysis

23. Which method can efficiently remove TSS?
- a. Sedimentation
- b. Ion Exchange
- c. Oxidation-Reduction

24. Anion and cation media are part of what treatment method?
- a. Attached growth
- b. Oil-water separator
- c. Ion exchange

25. What type of membrane is common for a membrane bioreactor?
- a. Ultrafiltration
- b. Nanofiltration
- c. Reverse Osmosis

26. What treatment method is a trickling filter?
- a. Membrane filtration
- b. Air stripping
- c. Attached growth

27. What is a treatment train?
- a. Solids removed by treatment
- b. Series of treatment processes
- c. Main path of wastewater through a tank

28. How are processes shown in a block flow diagram?
- a. Triangles
- b. Flow arrows
- c. Rectangles

29. In a process flow diagram, what are items in grey?
- a. Existing items
- b. New items

○ c. Future items

30. Which direction is shown to scale in a hydraulic profile?

○ a. Horizontal
○ b. Vertical
○ c. Both