Operator Quiz

Test No. 103 – Biological Treatment

The following questions are designed for trainees as they prepare to take the ABC wastewater operator test. It is also designed for existing operators to test their knowledge. Each issue of *Clear Waters* will have more questions from a different section of wastewater treatment. Good luck!

1. Distribution of flow over a trickling filter can best be determined using which method?
   a. Dye testing
   b. Flooding
   c. Pan test
   d. Measuring rotational speed of the arm

2. Which activated sludge mode is best able to treat high flows due to Inflow/Infiltration?
   a. Complete mix
   b. Extended aeration
   c. Kraus process
   d. Step feed

3. The main purpose of covering trickling filters is to:
   a. Prevent algae growth on the media
   b. Control odors
   c. Control growth of flies and snails
   d. Prevent heat loss and increase efficiency

4. Your MLSS level is 1,800 mg/L and your return sludge suspended solids value is 2,300 mg/L in a conventional activated sludge plant. What change would typically be made to the return sludge flow?
   a. Decrease the flow rate
   b. Increase the flow rate
   c. Keep the flow rate steady
   d. Keep the flow rate steady but increase the sludge wasting rate

5. Which of the following biological processes can produce alkalinity?
   a. Carbonaceous BOD removal
   b. Denitrification
   c. Nitrification
   d. Phosphorus removal by chemical addition with ferrous chloride

6. The nitrification process is controlled by temperature and what other factor?
   a. SRT
   b. Sludge settling rate
   c. Phosphorus levels
   d. Hydraulic loading

7. The conventional activated sludge process:
   a. Is a physical/chemical process
   b. Is a suspended growth process that is primarily anoxic and recycles solids from the secondary clarifier
   c. Requires little or no oxygen
   d. Utilizes a living community of microorganisms

8. The biggest advantage of a pure oxygen activated sludge process is:
   a. Requiring less tank volume
   b. Improving the nitrification process
   c. Reducing chlorine demand
   d. Requiring less mechanical equipment

9. A low respiration rate value (less than 4 mg O_2/hr/gm MLSS) indicates:
   a. Rapidly biodegradable organic matter
   b. Over-stabilized organic matter
   c. Normal rate for conventional activated sludge process
   d. Typical rate for high rate processes

10. The first indication that your treatment plant is receiving a high organic load is:
    a. Flow increases by 20 percent
    b. BOD result of the influent composite sample is 50 percent higher than normal
    c. DO residual drops in the aeration tank
    d. Effluent more turbid than usual

11. What is the main reason why MCRT is increased during the winter season?
    a. To improve sludge settling
    b. To increase DO levels in the aeration tank
    c. To reduce straggler floc in the effluent
    d. To increase solids inventory since bacteria activity is slower

12. Sludge wasting rates affect:
    a. Nitrification ability
    b. Growth rate of microorganisms
    c. Aeration tank solids inventory
    d. All of the above

Answers: 1c, 2d, 3d, 4a, 5b, 6a, 7d, 8a, 9b, 10c, 11d, 12d

For those who have questions concerning operator certification requirements and scheduling, please contact Tanya May Jennings at 315-422-7811 ext. 4, tmj@nywea.org, or visit www.nywea.org/OpCert.