Operator Quiz Winter 2020 – Secondary Treatment

The following questions are designed for individuals/trainees pursuing certification 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 process of wastewater treatment. Good luck!

1. A dark brown foam on over 30% of the aeration basin surface is most likely to be …
   a. Low F:M.
   b. High F:M.
   c. System start up.
   d. Normal.

2. White large sudsy foam on top of your aeration basins in most likely …
   a. Shock load from a local laundromat.
   b. Low MLSS.
   c. High MLSS.
   d. Nitrification.

3. What is the formula for Mean Cell Residence Time (MCRT)?
   a. Mass of total suspended solids in the system divided by mass of total suspended solids lost or removed by the system.
   b. Measurement of BOD entering the system divided by pounds in the system.
   c. Size of the clarifier divided by the flow.
   d. Solids in the system multiplied by pounds lost.

4. What is one advantage of using MCRT rather than SRT?
   a. All the sludge in the system is accounted for.
   b. The formula is shorter.
   c. It includes BOD removed in primary treatment.
   d. Less sampling is required.

5. What is the growth on an RBC or trickling filter?
   a. Filter flies.
   b. Zoogleal mass.
   c. Sloughing.
   d. RAS.

6. How many pounds of oxygen are required to treat 1 pound of BOD?
   a. 2.1-3.0
   b. 1.1-2.0
   c. 5.1-6.0
   d. 0.01-1.0

7. How many pounds of oxygen are needed to convert 1 pound of ammonia into nitrate?
   a. 4.6
   b. 6.2
   c. 2.0
   d. 3.5

8. What conditions allow for bacteria to denitrify?
   a. Aerobic.
   b. Anaerobic.
   c. Anoxic.
   d. Acidic.

9. When a WRRF is operated for nitrogen removal, where does the nitrogen go?
   a. RAS.
   b. Atmosphere.
   c. Effluent.
   d. WAS.

10. Which microorganisms are least wanted in an aeration system?
    a. Amoebas.
    b. Stalked ciliates.
    c. Nocardia.
    d. Rotifers.

Answers:

1. (a) Low F:M.
   Small amounts of dark brown foam are normal for extended aeration basins up to 25% of the tank's surface.
2. (b) Low MLSS.
3. (a) Mass of total suspended solids in the system divided by mass of total suspended solids lost or removed by the system.
4. (a) All the sludge in the system is accounted for.
5. (b) Zoogleal mass.
6. (b) 1.1-2.0
   The 10-state standard for aeration systems besides (extended 1.5) is 1.1.
7. (a) 4.6
8. (c) Anoxic.
9. (b) Atmosphere.
10. (c) Nocardia.

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.