

# Operator Quiz Test No. 104 – Anaerobic Digestion

The following questions are designed for trainees as they prepare to take the ABC wastewater operator test. This quiz 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. What is the typical operating temperature of a Mesophilic anaerobic digester that is producing biogas at a higher rate?
  - a. 75 to 85 degrees F
  - b. 85 to 90 degrees F
  - c. 90 to 95 degrees F
  - d. 100 to 105 degrees F
2. What are the main byproducts produced by the acid forming bacteria during the initial digestion phase?
  - a. Water and methane
  - b. Carbon dioxide and organic acids
  - c. Struvite and hydrogen sulfide
  - d. Water and completely digested sludge
3. What best describes methane forming bacteria in an anaerobic digester?
  - a. Sensitive to environment and environmental changes
  - b. Fast growing organisms
  - c. Produce biogas at very low pH
  - d. They work best in the presence of oxygen
4. What is the best way to “feed” an anaerobic digester?
  - a. Once per day, all feeding within a one hour time span
  - b. Twice per day
  - c. High feed flow rate
  - d. Small, frequent feed, near continuous feed rate
5. What statement is most true about anaerobic digester mixing?
  - a. Need to bring food (VS) into contact with bacteria
  - b. Provide infrequent mixing
  - c. If the mixing system isn't working, increase feed rate
  - d. Proper mixing is not that important to efficient digester operation
6. What is a typical operating range for volatile acids in a moderately loaded anaerobic digester that is only treating primary and waste activated sludge?
  - a. 750 to 1,000 mg/L
  - b. 25 to 75 mg/L
  - c. 500 to 750 mg/L
  - d. 50 to 300 mg/L
7. What is the daily recommended maximum temperature change that should occur in an anaerobic digester?
  - a. 0.1 degrees F
  - b. 0.3 degrees F
  - c. 1.0 degrees F
  - d. 3.0 degrees F
8. Which one of the following will change first if you have an upset of your anaerobic digester?
  - a. Alkalinity
  - b. Methane production
  - c. pH
  - d. Volatile acids
9. What is the purpose of a vacuum relief valve on your anaerobic digester?
  - a. To add air to the digester
  - b. To remove excess air
  - c. To decrease the pressure
  - d. To prevent liquid from leaving the digester
10. Your digester has a liquid level of 30 feet. What is the pressure at the bottom most point of the digester in pounds per square inch (psi)?
  - a. 3.0 psi
  - b. 13.0 psi
  - c. 22.0 psi
  - d. 69.0 psi
11. An anaerobic digester has a diameter of 60 feet and a sludge depth of 20 feet. Calculate the volatile solids loading if 9,500 pounds of sludge with a 70 percent volatility are pumped to the tank daily?
  - a. 0.12 lbs/day/cu ft
  - b. 0.17 lbs/day/cu ft
  - c. 0.31 lbs/day/cu ft
  - d. 0.38 lbs/day/cu ft
12. Listed below are the sludge lab results. The primary and secondary sludges are pumped to the thickener: Primary sludge – 7% solids at 69% volatile; Secondary sludge – 1.5% solids at 75% volatile; Thickened sludge – 4% solids at 72% volatile; and Digested sludge effluent – 3.0% solids with 63% volatile. Calculate the volatile solids reduction through the digestion process.
  - a. 12%
  - b. 18%
  - c. 34%
  - d. 38%



1C, 2B, 3A, 4D, 5A, 6D, 7C, 8D, 9A, 10B, 11A, 12C  
**Answers:**

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](mailto:tmj@nywea.org), or visit [www.nywea.org/OpCert](http://www.nywea.org/OpCert).