

# Operator Quiz Summer 2023 – Test Your Knowledge on Digestion

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!

- When a digester is not being mixed, the solids normally settle to the bottom, leaving a liquid above the sludge known as:
  - Mixed liquor
  - Primary effluent
  - Supernatant
  - Waste-activated sludge
- Anaerobic digester gas is composed mainly of:
  - Carbon dioxide and hydrogen sulfide
  - Methane and carbon dioxide
  - Methane and carbon monoxide
  - Methane and oxygen
- Which of the following laboratory tests is most commonly used to determine the calculation for organic loading to a digester?
  - BOD
  - Total suspended solids
  - Percent volatile solids
  - pH
- What is the desired pH level for an anaerobic digester?
  - 5.9 – 6.3
  - 6.8 – 7.2
  - 7.7 – 8.3
  - 9.0 – 10.0
- What temperature would be best for a mesophilic anaerobic digester?
  - 105°F
  - 80°F
  - 120°F
  - 95°F
- Compared to a mesophilic digester, a thermophilic digester typically requires a:
  - Longer SRT
  - Higher pH
  - Shorter SRT
  - Lower operating temperature
- A volume of 40,000 gallons/day of waste-activated sludge is pumped to a dissolved air flotation thickener at a total solids concentration of 0.35%. How much digester volume would be saved if the sludge is concentrated to 5.5% before being sent to the digester?
  - 5,007 ft<sup>3</sup>
  - 1,168 lbs/day
  - 37,000 gal
  - 5,348 ft<sup>3</sup>
- The raw sludge pumped to an anaerobic digester has a volatile solids content of 70.2%. If the digested sludge leaving the digester has a volatile solids content of 55.5%, what is the percent volatile solids reduction of the digester?
  - 26.5%
  - 47.4%
  - 14.7%
  - 51.3%
- A digester has a diameter of 60 feet, a side wall depth of 14 feet and a cone depth of 8 feet. What would be the total volume if the liquid level was measured to be 5 feet from the top?
  - 195,883 gal
  - 301,576 gal
  - 246,052 gal
  - 190,246 gal
- If an anaerobic digester has a volume of 1,000,000 gal, what would be an acceptable organic load in volatile solids lbs/day?
  - 67,000 lbs/day
  - 32,000 lbs/day
  - 12,500 lbs/day
  - 150,000 lbs/day



Answers to the lower left.

**Answers:** 1. (c) Supernatant 2. (b) Methane and carbon dioxide 3. (c) Percent volatile solids 4. (b) 6.8-7.2 5. (d) 95°F 6. (c) Shorter SRT 7. (a) 5,007 ft<sup>3</sup> 8. (b) 47.4% 9. (c) 246,052 gal 10. (b) 32,000 lbs/day

For those who have questions concerning operator certification requirements and scheduling, please contact Carolyn Steinhauer at 315-422-7811 ext. 4, [carolyn@nywea.org](mailto:carolyn@nywea.org) or visit [www.nywea.org](http://www.nywea.org).