

Operator Quiz Test No. 113 – Nutrient Removal

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!

- Denitrification is accomplished by:
 - Converting ammonia to nitrite
 - Converting ammonium to nitrate
 - Converting nitrate and nitrite to nitrogen gas
 - Converting nitrate to nitrite
 - Denitrifying bacteria need which of the following conditions to denitrify:
 - Aerobic
 - Anoxic
 - Anaerobic
 - Acidic
 - Nitrogen can be removed from wastewater biologically by which of the following methods:
 - Gas Stripping
 - Activated Sludge
 - Breakpoint Chlorination
 - Ion Exchange
 - Kjeldahl nitrogen consists of:
 - Organic nitrogen and ammonia nitrogen
 - Inorganic nitrogen and ammonia nitrogen
 - Inorganic nitrogen and nitrite
 - Inorganic nitrogen and nitrate
 - In order to denitrify dissolved oxygen concentration should be:
 - 0.3 – 1.0 mg/l
 - Greater than 1.0 mg/l
 - Less than 0.3 mg/l
 - 0.0 mg/l
 - When ammonia stripping is used to remove nitrogen, the pH should be:
 - Less than 7.0
 - Between 7.5 and 8.5
 - Between 9.0 and 10.0
 - Between 10.5 and 11.5
 - Which of the following is least likely considered when applying chemical for phosphorus removal?:
 - Mixing zone
 - Flocculation zone
 - Injection point
 - Ambient air temperature
 - A stable inorganic form of phosphorus found in waste streams is called:
 - Orthophosphate
 - Polyphosphate
 - Organic phosphate
 - Paraphosphate
 - Which of the following is not commonly applied to wastewater for phosphorus removal?:
 - Ferrous Chloride
 - Ferric Chloride
 - Sodium Hypochlorite
 - Aluminum Sulfate
 - Which application is not typically considered when trying to remove phosphorus from wastewater?:
 - Tertiary filtration aided by the addition of chemicals
 - Enhanced biological nutrient removal
 - Chemical addition of aluminum or iron salts
 - Incineration of settled sludges
- Use the information below to answer the following questions.**
- Plant Flow: 4.5 MGD
Influent P concentration: 1.5 mg/l
Aeration tank volume: 2000 cu.ft.
Effluent P concentration: 0.5 mg/l
- What is the influent plant loading of phosphorus?:
 - 56 mg/l
 - 56 lbs/d
 - 5.6 mg/l
 - 5.6 lbs/d
 - What is the phosphorus removal efficiency?:
 - 34 percent
 - 66 percent
 - 1.0 percent
 - 10 percent

Answers from page 61: 1 C, 2 B, 3 B, 4 A, 5 C, 6 D, 7 D, 8 A, 9 C, 10 D, 11 B, 12 B

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.