



Certification Boulevard

Roy Pelletier



Test Your Knowledge of Wastewater Disposal

Thanks to Certified Operator Brian Benjamin for providing questions 1, 5, and 9—Roy

- Which rule provides criteria for the use of reclaimed water and land application?
 - 62-610
 - 62-601
 - 62-611
 - 62-600
- What are the two principle nutrients that typically are required to be removed to low levels in the final effluent before it is discharged to Florida waters?
 - sulfate and carbon
 - nitrogen and carbon
 - phosphorus and sulfate
 - nitrogen and phosphorus
- What term is typically used to identify toxicity on wastewater effluent discharged to open bodies of water in Florida?
 - CBOD₅
 - TOC
 - TTHM
 - WET
- Given the following data, what is the pressure equivalent expressed in psi delivered by this effluent pump?
 - Pump discharges 1,500 gpm
 - Total dynamic head (TDH) of 95 feet
 - 16 psi
 - 41 psi
 - 12 psi
 - 73 psi
- Which FDEP rule governs the disposal of treated wastewater effluent for wetlands application in Florida?
 - 62-612
 - 62-601
 - 62-610
 - 62-611
- Given the following data, what is the annual budget for chlorination of reclaimed water at this plant?
 - Plant flow is 4.5 mgd
 - Chlorine residual is 2.9 mg/L
 - Chlorine demand is 5.4 mg/L
 - Cost of chlorine is \$0.14 per pound
 - \$4,794 per year
 - \$55,170 per year
 - \$15,918 per year
 - \$23,561 per year
- What is the volume of a reclaimed water storage tank if the flow entering is 1 mgd and the detention time is 3.5 hours?
 - 583,000 gals
 - 1.2 mg
 - 145,833 gals
 - 312,500 gals

- Which chemical is typically used to adjust effluent pH (between 6.0 to 8.5) before being discharged to a surface water outfall?
 - Lime
 - Polymer
 - Caustic
 - Alum
- Which Florida statute establishes the following? "No wastes are to be discharged to any waters of the state without first given the degree of treatment necessary to protect the beneficial use of such waters."
 - 403.021
 - 402.021
 - 401.021
 - 400.021
- What typically happens to the chlorine demand of reclaimed water when the nitrate (NO₃) concentration increases from 4 mg/L to 9 mg/L?
 - The chlorine demand increases.
 - The chlorine demand decreases.
 - The chlorine demand is fairly unaffected by nitrates.
 - Nitrates will cause the chlorine demand to increase by a factor of 5.

ANSWERS ON PAGE 66

SEND US YOUR QUESTIONS FOR CERTIFICATION BOULEVARD

Do you have a question or an exercise you would like to feature in "Certification Boulevard?" We'll be glad to publish it. Just send your question (with the answer) or your exercise (with the solution) to:

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There is no limit to the number of questions or exercises you may submit. Please include your name, city, and organization or company so we can give you credit.

Looking for Answers? Read 'Certification Boulevard Questions from Past Issues

Are you new to the water and wastewater field? Want to boost your knowledge about topics you'll face each day as a water/wastewater professional?

All past editions of Certification Boulevard back through July 2000 are available on the Florida Water Environment Association's Web site at <http://www.fwea.org/dynamics.asp?id=109>. Click the 'SITE MAP' button on the home page, then scroll down the list until you reach the Certification Boulevard Archives under the Operations Research Committee. The archives contain all Certification Boulevard questions and answers dating from 2007 back to July 2000.

Certification Boulevard Answer Key

From page 47

1. **A. 62-610**

2. **D. nitrogen and phosphorus**

3. **D. WET**

WET stands for Whole Effluent Toxicity

4. **B. 41 psi**

5 feet TDH x 0.433 psi per foot of head

= 41.135 psi OR

95 feet TDH ÷ 2.31 feet of head per psi

= 41.125 psi

5. **D. 62-611**

6. **C. \$15,918 per year**

Lbs/day of chlorine used

*= flow, mgd x (residual, mg/L + demand,
mg/L) x 8.34 lbs/gal*

*= 4.5 mgd x (2.9 mg/L + 5.4 mg/L) x
8.34 lbs/gal*

= 311.5 lbs/day

Cost per day

= lbs/day chlorine x cost per pound

= 311.5 lbs/day x \$0.14 per lb

= \$43.61 per day

Cost per year

= cost per day x 365 days/year

= \$43.61 per day x 365 days/year

= \$15,917.65 per year

7. **C. 145,833 gals**

Tank Volume

= 3.5 hrs D.T. ÷ 24 hrs/day x 1 mgd

= 0.145833 mg

= 145,833 gals

8. **C. caustic**

Caustic is the "operator name" for sodium hydroxide.

9. **A. 403.021**

10. **C. The chlorine demand is fairly unaffected by nitrates.**

Nitrates typically have no affect one way or another on the demand for chlorine; however, nitrites (NO₂) will consume about five times their weight in chlorine before a residual is detected.