

Test Your Knowledge of Stormwater Management and Other Wastewater Treatment Topics



Roy Pelletier

- Given the following data, what is the volume of this stormwater retention pond?
 - 120 ft long
 - 27 ft wide
 - 1.75 ft deep

A. 21,600 gals
B. 0.161568 mg
C. 42,412 gals
D. 0.04675 mg
- Which of the following items can be considered as stormwater?

A. Storm runoff
B. Snowmelt runoff
C. Drainage
D. All of the above.
- A well-constructed and maintained stormwater management program consists of a pollution prevention plan, sampling program, periodic inspections, and which other component?

A. Sludge judge testing
B. Employee training
C. Alkalinity and acidity testing
D. Submerged aquatic vegetation
- What is created when chlorine reacts with ammonia in an effluent stream?

A. Chloramines
B. Free residual
C. Mono residual
D. Tri residual
- What type of chlorine comes in solid or dry form?

A. Sodium hypochlorite
B. Ferric chloride
C. Calcium hypochlorite
D. Aluminum sulfate
- Which chemical is most commonly used for odor control when dealing with ammonia odors from a solids handling process?

A. Polymer
B. Acid
C. Alum
D. Water
- One important component of an effective stormwater management program is ensuring that each facility employee understands the on-site stormwater drainage system.
True or False?
- Why are flow measurements important?

A. They help to determine dissolved oxygen.
B. They help to determine loading rates.
C. They help to determine nitrate levels.
D. They help to determine suspended solids removal.
- What action should never be performed with chlorine?

A. Spray water on a leaking container of chlorine
B. Feed 1 atmosphere gas through PVC pipes
C. Change chlorine containers using SCBA
D. Handle chlorinated effluent with gloves
- What is the term that describes the legal right to use the property of others for a specific purpose, such as installing or maintaining a sewer line?

A. Domain
B. Easement
C. Force main
D. Confined space

Answers on page 66

SEND US YOUR QUESTIONS

Readers are welcome to submit questions or exercises on water or wastewater treatment plant operations for publication in Certification Boulevard. Send your question (with the answer) or your exercise (with the solution) by email to roy.pelletier@cityoforlando.net, or by mail to:

Roy Pelletier
Wastewater Project Consultant
City of Orlando
Public Works Department
Environmental Services
Wastewater Division
5100 L.B. McLeod Road
Orlando, FL 32811
407-716-2971

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Certification Boulevard Answer Key

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1. **C) 42,412 gals**

$120 \text{ ft} \times 27 \text{ ft} \times 1.75 \text{ ft}$
 $= 5,670 \text{ ft}^3 \times 7.48 \text{ gal/ft}^3$
 $= 42,412 \text{ gals}$

2. **D) All of the above.**

3. **B) Employee Training**

4. **A) Chloramines**

Chlorine reacts with ammonia and creates chloramines. This combined residual has longer staying power, but weaker killing power when compared to breakpoint chlorination and free residual.

5. **C) Calcium hypochlorite**

High-test hypochlorite (HTH) is a solid, dry powder. Calcium hypochlorite is also used in solid tablet form (like the "hockey pucks" used in a swimming pool chlorinator).

6. **B) Acid**

Ammonia-related odors require low pH to drive the ammonia into solution, creating ammonium sulfate when using sulfuric acid.

7. **True**

Understanding the on-site drainage system allows employees to participate with development, implementation, and continual improvement of the program.

8. **B) They help to determine loading rates.**

Loading rates require knowledge of the particular flow rate entering the facility or a process unit. An accurate flow meter is an integral component in the calculation of plant and process loading rates. Flow measurement is also typically required in many facility operating permits.

9. **A) Spray water on a leaking container of chlorine**

Spraying water on a leaking container of chlorine will typically only worsen the leak. The only time water should be applied to a chlorine container is if the container is in a fire area and you are trying to keep it cool. However, if water is applied to a container that is already leaking, the application of water will typically compound the leaking condition.

10. **B) Easement**

An easement gives one party the right to go onto another party's property. Utilities often get easements that allow them to run pipes or phone lines beneath private property.