



WASTEWATER PDH WORKBOOK

Completion of this workbook will count for 5 PDHs

Arizona Department of Environmental Quality
Operator Certification Program
1110 West Washington Street
Phoenix, AZ 85007
www.azdeq.gov

NAME_____

OPCERT NUMBER OP0_____

DATE_____

Special Thanks to Amanda Lara and Gateway Community College

DIRECTIONS

A Professional Development Hour (PDH) is equal to one contact hour of continuing education. A total of 30 professional development hours are required for each 3-year renewal period regardless of the number of certificates that are held by an individual operator.

Answer the questions in the space provided with concise and accurate answers. Submit a copy of the completed workbook along with your renewal form when you renew your certificates. It is recommended that you keep a copy of the completed booklet for your records. Completion of this workbook will earn the operator five (5) PDHs. Please print clearly. Workbooks that are illegible will not receive PDHs.

The type of PDH acceptable to the Department for certificate renewal include, but are not limited to: An approved college course, a course offered by a Certified Environmental Trainer, regulatory and tribal agency training, certain types of in-house training, technical conferences, correspondence courses, and manufacturer product training. An accredited college course is usually recorded in credit hours. In general, 1 college credit hour = 10 PDHs. If an operator has a question about a specific type of training, please contact the Operator Certification Program for approval before attending the training.

For additional training/PDHs click on the link below. This course provides 16 hours of PDH-approved training for drinking-water operators in the State of Arizona. These are available as individual lessons for credit or as a whole course.

<http://www.waterhelp.org/index.php/client/arizona>

FOR MORE INFORMATION, CONTACT:

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1. A septic tank is considered as primary treatment?

- A. True
- B. False

2. Define the following abbreviations:

RBC _____

NPDES _____

RAS _____

WAS _____

NTU _____

ORP _____

SDI _____

SVI _____

TWA _____

UF _____

3. What is the purpose of a Differential Regulating (Reducing) Valve?

4. The destruction of hydrogen sulfide reduces the production of?

- A. Ammonium Sulfate
- B. Sodium Sulfate
- C. Sulfuric Acid
- D. A & C

5. Define Stabilization

6. What are some disadvantages of a weir?

7. Longer detention time will typically reduce which of the following.

- A. BOD
- B. Recirculation
- C. Specific Gravity

8. What is the purpose of Preliminary Treatment?

9. List the purpose of the following parts of a Rotating Biological Contactor:

Rotating Media:

Underdrains:

Influent lines with valves:

Effluent lines with valves:

Cover over Contactor:

10. Explain what billowing sludge is.

11. Referring to Activated Sludge, if the effluent appears to be turbid, this could be a result of?

- A. Abnormal Influent
- B. Improper Wasting
- C. Sludge pumping rate
- D. A&C

12. Describe the Nitrogen Cycle from effluent discharge:

13. In general, coliform group bacteria can be divided into two groups. What are the two groups?

14. There are three stages of coliform testing using the MPN method, what are they?

15. The total coliform bacteria analysis includes both Escherichia and Aerobacter coliform bacteria groups. Why is the total coliform analysis not an adequate measure of human waste in water?

16. Explain why samples for a BOD test should be collected before chlorination.

17. Protozoa are known as indicator organisms. Their presence or absence indicates the number of bacteria in the activated sludge, as well as the degree of treatment. List five types of protozoans that you typically observe for.

1. _____

4. _____

2. _____

5. _____

3. _____

18. During storms, treatment plants served by combined sewer systems will receive an increase in flow. List two problems that can occur.

19. Explain what Sludge Age is.

20. Identify the following chemical symbols:

A. CH₄ _____

B. CO₂ _____

C. NH₃ _____

D. H₂S _____

21. Define the following:

A. Positive pressure

B. Flocc

C. Jar Testing

D. F/M

E. Coagulation

22. Why is it important to have a water seal on a fixed roof of a digester?

23. Referring to a digestion tank, explain what a sampling well is and what it is used for.

24. (True or false) digester gas may become explosive when mixed with oxygen?

- A. True
- B. False

25. What is Olfactory Fatigue?

26. Referring to plant safety. What is an air gap and why is it important?

27. What is the difference between acute and chronic health effects?

28. (True or false) Hydrogen sulfide and chlorine both have a specific gravity that is greater than air (1.0).

- A. True
- B. False

29. Referring to noise. What does TWA stand for and what is the CFR number?

30. Define and provide examples for the following fire classes:

Class A

Class B

Class C

Class D

31. Three essential ingredients for all ordinary fires are:

32. Why must you never close the discharge valve on a positive displacement pump?

33. (True or false) Sulfur dioxide is not as harmful as chlorine.

- A. True
- B. False

34. Why should you never pour water on a chlorine leak?

35. When troubleshooting for a chlorine gas leak, is it acceptable to pour ammonia liquid directly onto the suspected leak? Explain.

36. Friction can be minimized in bearings and stuffing boxes by which of the following.

- A. Realigning
- B. Larger gaskets
- C. Lubrication
- D. A&C

37. What is the purpose of a suction bell on a pump?

38. Explain the following:

Single Phase Power:

Three Phase Power:

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