

Registration Form

Pretreatment 101 CEU Training Course \$200.00
48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00

Start and Finish Dates: _____
You will have 90 days from this date in order to complete this course

List number of hours worked on assignment must match State Requirement. _____

Name _____ Signature _____
I have read and understood the disclaimer notice on page 2. Digitally sign XXX

Address _____

City _____ State _____ Zip _____

Email _____ Fax (____) _____

Phone:
Home (____) _____ Work (____) _____

Operator ID # _____ Exp. Date _____

Class/Grade _____

Please circle/check which certification you are applying the course CEU's.

Pretreatment ___ Collection ___ Wastewater Treatment ___

Other _____

Technical Learning College TLC PO Box 3060, Chino Valley, AZ 86323
Toll Free (866) 557-1746 Fax (928) 272-0747 info@tlch2o.com

If you've paid on the Internet, please write your Customer# _____

Please invoice me, my PO# _____

Please pay with your credit card on our website under Bookstore or Buy Now. Or call us and provide your credit card information.

DISCLAIMER NOTICE

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable in any fashion for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error or my lack of submitting paperwork. It is my responsibility to call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

Professional Engineers; Most states will accept our courses for credit but we do not officially list the States or Agencies. Please check your State for approval.

You can obtain a printed version of the course manual from TLC for an additional \$69.95 plus shipping charges.

AFFIDAVIT OF EXAM COMPLETION

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

Grading Information

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Do not solely depend on TLC's Approval list for it may be outdated.

Some States and many employers require the final exam to be proctored.

<http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf>

A second certificate of completion for a second State Agency \$50 processing fee.

All downloads are electronically tracked and monitored for security purposes.

We will stop mailing the certificate of completion so we need either your fax number or e-mail address. We will e-mail the certificate to you, if no e-mail address; we will fax it to you.

Texas Students Only
Acknowledgement of Notice of Potential Ineligibility for License
You are required to sign and return to TLC or your credit will not be reported.

Name: _____

Date of Birth: _____

Email Address: _____

By signing this form, I acknowledge that Technical Learning College notified me of the following:

- the potential ineligibility of an individual who has been convicted of an offense to be issued an occupational license by the Texas Commission on Environmental Quality (TCEQ) upon completion of the educational program;
- the current TCEQ Criminal Conviction Guidelines for Occupational Licensing, which describes the process by which the TCEQ's Executive Director determines whether a criminal conviction:
 - renders a prospective applicant an unsuitable candidate for an occupational license;
 - warrants the denial of a renewal application for an existing license; or
 - warrants revocation or suspension of a license previously granted.
- the right to request a criminal history evaluation from the TCEQ under Texas Occupations Code Section 53.102; and
- that the TCEQ may consider an individual to have been convicted of an offense for the purpose of denying, suspending or revoking a license under circumstances described in Title 30 Texas Administrative Code Section 30.33.

Enrollee Signature: _____ Date: _____

Name of Training Provider/Organization: Technical Learning College

Contact Person: Melissa Durbin Role/Title: Dean

For Texas TCEQ Wastewater Licensed Operators Important Information

Wastewater/Collections Rule Changes (Texas Only)

Rule Changes and Updates for Domestic Wastewater Systems

On Nov. 4, 2014, TCEQ commissioners adopted revisions to 30 Texas Administrative Code (TAC), Chapter 217, Design Criteria for Domestic Wastewater Systems, and “re-adopted” previously repealed rules in 30 TAC, Chapter 317, Design Criteria Prior to 2008.

Some of the changes to Chapter 217 include:

- Adding new definitions and clarifying existing definitions;
- Adding design criteria and approval requirements for rehabilitation of existing infrastructure;
- Adding design criteria for new technologies, including cloth filters and air lift pumps;
- Making changes to reflect modern practices, standards and trends;
- Modifying rule language to improve readability and enforceability; and
- Modifying the design organic loadings and flows for a new wastewater treatment facility.

SUBCHAPTER A: ADMINISTRATIVE REQUIREMENTS §§217.1 - 217.18

Effective December 4, 2015 §217.1. Applicability. (a) Applicability. (1) This chapter applies to the design, operation, and maintenance of: (A) domestic wastewater treatment facilities that are constructed with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (B) treatment units that are altered, constructed, or re-rated with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (C) collection systems that are constructed with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (D) collection system units that are altered, constructed, or re-rated with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (E) existing domestic wastewater treatment facilities that do not have a current Texas Pollutant Discharge Elimination System permit or a Texas Land Application Permit and are required to have an active wastewater permit; (F) existing wastewater treatment facilities and collection systems that never received approval for plans and specifications from the executive director; and (G) collection system rehabilitation projects covered in §217.56(c) and §217.69 of this title (relating to Trenchless Pipe Installation; and Maintenance, Inspection, and Rehabilitation of the Collection System). (2) Domestic wastewater treatment facilities, treatment units, collection systems, and collection system units with plans and specifications approved by the executive director that were received on or after August 28, 2008 and before the effective date of this chapter must comply with the rules in this chapter, as they existed immediately before the effective date of the amendments to this chapter.

The rules in Texas Commission on Environmental Quality Page 2 Chapter 217 - Design Criteria for Domestic Wastewater Systems effect immediately before the effective date of the amendments to this chapter are continued in effect for that purpose. (3) This chapter does not apply to: (A) the design, installation, operation, or maintenance of domestic wastewater treatment facilities, treatment units, collection systems, or collection system units with plans and specifications that were approved by the executive director on or before August 27, 2008, which are governed by Chapter 317 of this title (relating to Design Criteria Prior to 2008) or design

criteria that preceded Chapter 317 of this title; and (B) systems regulated by Chapter 285 of this title (relating to On-Site Sewage Facilities); or collection systems or wastewater treatment facilities that collect, transport, treat, or dispose of wastewater that does not have the characteristics of domestic wastewater, although the wastewater may contain domestic wastewater.

(b) The executive director may grant variances from new requirements added by the amendments of this chapter to a person who proposes to construct, alter, or re-rate a collection system or wastewater treatment facility if the plans and specifications for the project are submitted within 180 days after the date the amendments to this chapter are effective, provided the plans and specifications comply with the rules in effect immediately prior to the amendment. Adopted November 4, 2015 Effective December 4, 2015

The link to the rules is available on the TCEQ website at <https://www.tceq.texas.gov/rules/indxpathdf.html>

For Texas Students Only....

Please sign and date this notice

Printed Name

Signature

Date

Pretreatment 101 Answer Key

Name _____

Phone _____

You are solely responsible in ensuring that this course is accepted for credit by your State. No refunds. Did you check with your State agency to ensure this course is accepted for credit?

Method of Course acceptance confirmation. Please fill this section

Website ___ Telephone Call ___ Email ___ Spoke to _____

Did you receive the approval number if Applicable? _____

What is the approval number if Applicable? _____

You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.

You can use Adobe Acrobat DC Program to complete the assignment.

Please circle, underline, bold or X only one correct answer

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This course contains general EPA's CWA federal rule requirements. Please be aware that each state implements wastewater/safety/environmental /building regulations that may be more stringent than EPA's regulations. Check with your state environmental/health agency for more information. These rules change frequently and are often difficult to interpret and follow. Be careful to not be in non-compliance and do not follow this course for proper compliance.

Additional certificate for another Agency – additional fee \$50

Please e-mail or fax this survey along with your final exam

**PRETREATMENT 101 CEU TRAINING COURSE
CUSTOMER SERVICE RESPONSE CARD**

NAME: _____

E-MAIL _____ PHONE _____

PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.

1. Please rate the difficulty of your course.
Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.
Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.
Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course? _____

5. What would you do to improve the Course? _____

How about the price of the course?

Poor _____ Fair _____ Average _____ Good _____ Great _____

How was your customer service?

Poor _____ Fair _____ Average _____ Good _____ Great _____

Any other concerns or comments.

**Please fax the answer key to TLC Western Campus
Fax (928) 272-0747.**

Always call us to confirm we received the paperwork.

Rush Grading Service

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line. *Thank you...*

Pretreatment 101 CEU Training Assignment

The Assignment (Exam) is also available in Word on the Internet for your Convenience, please visit www.ABCTLIC.com and download the assignment and e-mail it back to TLC.

You will have 90 days from the start of this course to complete in order to receive your Professional Development Hours (**PDHs**) or Continuing Education Unit (**CEU**). A score of 70 % is necessary to pass this course. We prefer if this exam is proctored. No intentional trick questions. If you should need any assistance, please email all concerns and the completed manual to info@tlch2o.com.

We would prefer that you utilize the enclosed answer sheet in the front, but if you are unable to do so, type out your own answer key. Please include your name and address on your Answer Key and make copy for yourself. You can e-mail or fax your Answer Key along with the Registration Form to TLC. **(S) Means answer may be plural or singular. Multiple Choice Section, One answer per question and please use the answer key.**

Pretreatment Terms

Please select the best answer for the question.

- Which of the following terms is a POTW with an approved pretreatment program or the approval authority in the absence of a POTW pretreatment program?
A. Daily Maximum Limitations D. Control Authority
B. Continuous Discharge E. Conventional Pollutants
C. Concentration-based Limit F. None of the Above
- Which of the following terms is an application to the Control Authority, the industrial user must provide engineering, production, sampling and analysis, and such other information so the control authority can make its determination; or (b) sanitary wastestreams where such streams are not regulated by a categorical pretreatment standard; or (c) from any process wastestreams?
A. Detection Limit D. Effluent Limitations Guideline
B. Development Document E. None of the Above
C. Dilute Wastestream
- Which of the following terms is the pollutants of concern are not detectable in the effluent from the industrial user?
A. Detection Limit
B. Development Document
C. Dilute Wastestream
D. Effluent Limitations Guideline
E. None of the Above
- Which of the following terms is BOD, TSS, fecal coliform, oil and grease, and pH?
A. Daily Maximum Limitations
B. Continuous Discharge
C. Concentration-based Limit
D. Control Authority
E. Conventional Pollutants
F. None of the Above

5. Which of the following terms is a State with an NPDES permit program approved pursuant to section 402(b) of the Act and an approved State Pretreatment Program?
- A. Approved State Pretreatment Program
 - B. Approved/Authorized State
 - C. Act or "the Act"
 - D. Approval Authority
 - E. Approved POTW Pretreatment Program or Program
 - F. None of the Above
6. Which of the following terms is a report submitted by categorical industrial users (CIUs) within 180 days after the effective date of an applicable categorical standard?
- A. Best Professional Judgment (BPJ)
 - B. Baseline Monitoring Report (BMR)
 - C. Best Management Practices (BMPs)
 - D. Best Practicable Control Technology Currently Available (BPT)
 - E. None of the Above
7. Which of the following terms is the Federal Water Pollution Control Act, also known as the Clean Water Act?
- A. Approved State Pretreatment Program
 - B. Approved/Authorized State
 - C. Act or "the Act"
 - D. Approval Authority
 - E. Approved POTW Pretreatment Program or Program
 - F. None of the Above
8. Which of the following terms is an industrial user subject to National categorical pretreatment standards?
- A. Blowdown
 - B. Categorical Industrial User (CIU)
 - C. Bypass
 - D. Categorical Pretreatment Standards
 - E. Chain of Custody (COC)
 - F. None of the Above
9. Which of the following terms is a codification of Federal rules published annually by the Office of the Federal Register National Archives and Records Administration?
- A. Code of Federal Regulations (CFR)
 - B. Chronic
 - C. Combined Sewer Overflow (CSO)
 - D. Clean Water Act (CWA)
 - E. None of the Above
10. Which of the following terms is a discharge of untreated wastewater from a combined sewer system at a point prior to the headworks of a publicly owned treatment works?
- A. Code of Federal Regulations (CFR)
 - B. Chronic
 - C. Combined Sewer Overflow (CSO)
 - D. Clean Water Act (CWA)
 - E. None of the Above

11. Which of the following terms is a program administered by a POTW that meets the criteria established in 40 CFR Part 403?
- A. Approved State Pretreatment Program
 - B. Approved/Authorized State
 - C. Act or "the Act"
 - D. Approval Authority
 - E. Approved POTW Pretreatment Program or Program
 - F. None of the Above
12. Which of the following terms is a schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the U.S?
- A. Best Professional Judgment (BPJ)
 - B. Baseline Monitoring Report (BMR)
 - C. Best Management Practices (BMPs)
 - D. Best Practicable Control Technology Currently Available (BPT)
 - E. None of the Above
13. Which of the following terms is a program administered by a State that meets the criteria established in 40 CFR §403.10 and which has been approved by a Regional Administrator?
- A. Approved State Pretreatment Program
 - B. Approved/Authorized State
 - C. Act or "the Act"
 - D. Approval Authority
 - E. Approved POTW Pretreatment Program or Program
 - F. None of the Above
14. Which of the following terms is limitations on pollutant discharges to POTWs promulgated by the EPA in accordance with Section 307 of the Clean Water Act?
- B. Categorical Industrial User (CIU)
 - C. Bypass
 - D. Categorical Pretreatment Standards
 - E. Chain of Custody (COC)
 - F. None of the Above
15. Which of the following terms is a record of each person involved in the possession of a sample from the person who collects the sample to the person who analyzes the sample in the laboratory?
- A. Blowdown
 - B. Categorical Industrial User (CIU)
 - C. Bypass
 - D. Chain of Custody (COC)
 - E. None of the Above
16. Which of the following terms is a stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more?
- A. Code of Federal Regulations (CFR)
 - B. Chronic
 - C. Combined Sewer Overflow (CSO)
 - D. None of the Above

17. Which of the following terms is the common name for the Federal Water Pollution Control Act. Public law 92-500?

- A. Code of Federal Regulations (CFR)
- B. Chronic
- C. Combined Sewer Overflow (CSO)
- D. Clean Water Act (CWA)
- E. None of the Above

18. Which of the following terms is limit based upon the relative strength of a pollutant in a wastestream, usually expressed in mg/l?

- A. Daily Maximum Limitations
- B. Continuous Discharge
- C. Concentration-based Limit
- D. Control Authority
- E. Conventional Pollutants
- F. None of the Above

19. Which of the following terms is discharge that occurs without interruption during the operating hours of a facility, except for infrequent shutdowns for maintenance, process changes or similar activities?

- A. Daily Maximum Limitations
- B. Continuous Discharge
- C. Concentration-based Limit
- D. Control Authority
- E. Conventional Pollutants
- F. None of the Above

20. Which of the following terms is the maximum allowable discharge of pollutants during a 24-hour period?

- A. Daily Maximum Limitations
- B. Continuous Discharge
- C. Concentration-based Limit
- D. Control Authority
- E. Conventional Pollutants

21. Which of the following terms is the daily maximum limitations are expressed in terms of a concentration?

- A. Daily Maximum Limitations
- B. Continuous Discharge
- C. Concentration-based Limit
- D. Control Authority
- E. Conventional Pollutants
- F. None of the Above

22. Which of the following terms is the minimum concentration of an analyte that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero?

- A. Detection Limit
- B. Development Document
- C. Dilute Wastestream
- D. None of the Above

23. Which of the following terms is a detailed report of studies conducted by the U.S. EPA for the purpose of establishing effluent guidelines and categorical pretreatment standards?
- A. Detection Limit
 - B. Development Document
 - C. Dilute Wastestream
 - D. Effluent Limitations Guideline
 - E. None of the Above
24. Which of the following terms is the pollutants of concern are present only in trace amounts and are neither causing nor likely to cause toxic effects?
- A. Detection Limit
 - B. Development Document
 - C. Dilute Wastestream
 - D. Effluent Limitations Guideline
 - E. None of the Above
25. Which of the following terms is any effluent limitations guidelines issued by the EPA pursuant to Section 304(b) of the CWA?
- A. Detection Limit
 - B. Development Document
 - C. Dilute Wastestream
 - D. Effluent Limitations Guideline
 - E. None of the Above
26. Which of the following terms is a step-by-step enforcement procedures followed by Control Authority staff to identify, document, and respond to violations?
- A. Federal Water Pollution Control Act
 - B. Flow Weighted Average Formula (FWA)
 - C. Existing Source
 - D. Enforcement Response Plan
 - E. Flow Proportional Composite Sample
27. Which of the following terms is any source of discharge, the construction or operation of which commenced prior to the publication by the EPA of proposed categorical pretreatment standards?
- B. Flow Weighted Average Formula (FWA)
 - C. Existing Source
 - D. Enforcement Response Plan
 - E. Flow Proportional Composite Sample
 - F. None of the Above
28. Which of the following terms is a procedure used to calculate alternative limits where wastestreams regulated by a categorical pretreatment standard and nonregulated wastestreams combine after treatment but prior to the monitoring point?
- A. Federal Water Pollution Control Act
 - B. Flow Weighted Average Formula (FWA)
 - C. Existing Source
 - D. Enforcement Response Plan
 - E. None of the Above

29. Which of the following terms is a combination of individual samples proportional to the flow of the wastestream at the time of sampling.
- A. Federal Water Pollution Control Act
 - B. Flow Weighted Average Formula (FWA)
 - C. Existing Source
 - D. Enforcement Response Plan
 - E. Flow Proportional Composite Sample
 - F. None of the Above
30. Which of the following terms is a case-by-case variance from categorical pretreatment standards based on the factors considered by the EPA?
- A. Grab Sample
 - B. Fundamentally Different Factors
 - C. General Prohibitions
 - D. Indirect Discharge or Discharge
 - E. None of the Above
31. Which of the following terms is that no user shall introduce into a POTW any pollutant(s) which cause pass through or interference?
- A. Grab Sample
 - B. Fundamentally Different Factors
 - C. General Prohibitions
 - D. Indirect Discharge or Discharge
 - E. None of the Above
32. Which of the following terms is a level of technology represented by the average of the best existing wastewater treatment performance levels within an industrial category or subcategory?
- A. Best Professional Judgment (BPJ)
 - B. Baseline Monitoring Report (BMR)
 - C. Best Management Practices (BMPs)
 - D. Best Practicable Control Technology Currently Available (BPT)
 - E. None of the Above
33. Which of the following terms is the discharge of water with high concentrations of accumulated solids from boilers to prevent plugging of the boiler tubes?
- A. Blowdown
 - B. Categorical Industrial User (CIU)
 - C. Bypass
 - D. Categorical Pretreatment Standards
 - E. Chain of Custody (COC)
 - F. None of the Above
34. Which of the following terms is the intentional diversion of wastestreams from any portion of an Industrial User's treatment facility.
- A. Blowdown
 - B. Categorical Industrial User (CIU)
 - C. Bypass
 - D. Categorical Pretreatment Standards
 - E. Chain of Custody (COC)
 - F. None of the Above

35. A sample which is taken from a wastestream on a one-time basis with no regard to the flow of the wastestream and without consideration of time.

- A. Grab Sample
- B. Fundamentally Different Factors
- C. General Prohibitions
- D. Indirect Discharge or Discharge
- E. None of the Above

36. The introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c), or (d) of the Act.

- A. Grab Sample
- B. Fundamentally Different Factors
- C. General Prohibitions
- D. Indirect Discharge or Discharge
- E. None of the Above

37. Estimate of the toxicant concentration that would cause a given percent reduction (e.g., IC25) in a nonlethal biological measurement of the test organisms, such as reproduction or growth.

- A. Inhibition Concentration
- B. Interference
- C. Local Limits
- D. Monthly Average
- E. None of the Above

Clean Water Act (Rule) Summary

33 U.S.C. s/s 1251 et seq. (1977)

38. Which of the following terms has clarified and expanded permit requirements under the Clean Water Act for 19,000 municipal sanitary sewer collection systems in order to reduce sanitary sewer overflows?

- A. Clean Water Act or CWA
- B. Water quality levels
- C. Clean water legislation
- D. EPA still retains oversight responsibilities
- E. Environmental Protection Agency (EPA)
- F. None of the Above

39. The requirements will help communities improve some of water quality standards—by requiring facilities to develop and implement new capacity, management, operation, and maintenance programs and public notification programs.

- A. True
- B. False

40. The Clean Water Act is a 1977 amendment to the _____, which set the basic structure for regulating discharges of pollutants to waters of the United States.

- A. Clean Water Act or CWA
- B. Federal Water Pollution Control Act of 1972
- C. Clean water legislation
- D. EPA
- E. Valuable wetlands
- F. None of the Above

41. Which of the following terms gave the authority to set effluent standards on an industry basis and continued the requirements to set water quality standards for all contaminants in surface waters?

- A. Clean Water Act or CWA
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. Public notification program(s)
- F. None of the Above

42. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the?

- A. Act
- B. Water quality levels
- C. Clean water legislation
- D. EPA
- E. OSHA
- F. None of the Above

43. Which of the following terms focused on toxic pollutants?

- A. Clean Water Act or CWA
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. The 1977 amendments
- F. None of the Above

44. The CWA provisions for the delegation by which term of many permitting, administrative, and enforcement aspects of the law to state governments? In states with the authority to implement CWA programs, the EPA still retains oversight responsibilities.

- A. Clean Water Act or CWA
- B. Water quality levels
- C. Clean water legislation
- D. EPA
- E. Valuable wetlands and other aquatic habitats
- F. None of the Above

45. Which of the following terms is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers, and coastal areas. Lake Erie was dying?

- A. Clean Water Act
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. Public notification program(s)
- F. None of the Above

46. Which of the following terms primary objective is to restore and maintain the integrity of the nation's waters?

- A. Clean Water Act
- B. Water quality levels
- C. Clean water legislation
- D. EPA still retains oversight responsibilities
- E. Valuable wetlands and other aquatic habitats
- F. None of the Above

47. Which of the following terms focuses on improving the quality of the nation's waters?

- A. Clean Water Act
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. Public notification program(s)
- F. None of the Above

48. Which of the following terms requires major industries to meet performance standards to ensure pollution control; charges states and tribes with setting specific water quality criteria appropriate for their waters and developing pollution control programs?

- A. Clean Water Act
- B. Water quality levels
- C. Clean water legislation
- D. EPA still retains oversight responsibilities
- E. Valuable wetlands and other aquatic habitats
- F. None of the Above

The Future

49. All Americans will enjoy clean water that is safe for fishing and swimming. We will achieve a net gain of wetlands by preventing additional losses and restoring hundreds of thousands of acres of wetlands.

- A. True
- B. False

Chapter 1 What is a Pretreatment Program?

Prohibited Discharge Standards

50. Specific prohibitions forbid eight categories of pollutant discharges as follows: Discharges containing pollutants which create a fire or explosion hazard in the CMOM, including but not limited to, wastestreams with a closed cup flashpoint of more than 140°F using the test methods specified in 40 CFR §261.21.

A. True B. False

51. Discharges containing pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to accommodate such?

A. Categorical pretreatment standards D. Violation of the general prohibitions
B. Pass through E. Flow rate and/or concentration
C. Discharge(s) F. None of the Above

52. Which of the following terms containing pollutants in amounts causing obstruction to the flow in the POTW resulting in interference?

A. Interference or pass through D. Eight categories of pollutant discharges
B. Discharges E. Categorical pretreatment standards
C. POTW F. None of the Above

53. Which of the following terms of any pollutants released at a flow rate and/or concentration which will cause interference with the POTW?

A. Categorical pretreatment standards D. Violation of the general prohibitions
B. Pass through E. Flow rate and/or concentration
C. Discharge(s) F. None of the Above

54. Discharges of petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause?

A. Interference or pass through D. Eight categories of pollutant discharges
B. Discharge or discharges E. Categorical pretreatment standards
C. POTW F. None of the Above

55. Which of the following terms which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems?

A. Categorical pretreatment standards D. Violation of the general prohibitions
B. Pass through E. Flow rate and/or concentration
C. Discharge(s) F. None of the Above

56. Which of the following terms, except at discharge points designated by the POTW?

A. Interference or pass through D. Eight categories of pollutant discharges
B. Discharge or discharges E. Discharges of trucked or hauled pollutants
C. POTW F. None of the Above

Categorical Standards

57. Categorical pretreatment standards are national, uniform, technology-based standards that apply to discharges to POTWs from specific industrial categories and limit the?

A. Categorical pretreatment standards D. Violation of the general prohibitions
B. Pass through E. Flow rate and/or concentration
C. Discharge of specific pollutants F. None of the Above

58. Which of the following terms for both existing and new sources (are promulgated by the EPA pursuant to Section 307(b) and (c) of the CWA?

- A. Categorical pretreatment standards
- B. Pass through
- C. Discharge(s)
- D. Violation of the general prohibitions
- E. Flow rate and/or concentration
- F. None of the Above

59. Effluent limitations guidelines developed in conjunction with categorical standards, limit the discharge from facilities directly to waters of the U.S. and do not apply to indirect dischargers.

- A. True
- B. False

pH Section

60. When an atom loses _____ and thus has more protons than electrons, the atom is a positively-charged ion or cation.

- A. A proton
- B. Charge
- C. Anti-matter
- D. An electron
- E. A cation
- F. None of the Above

61. Substances that have the ability to reduce other substances are said to be reductive and are known as reducing agents, reductants, or reducers. Because of this reaction, we call these?

- A. A proton
- B. An electron donor
- C. Anti-matter
- D. An electron
- E. A cation
- F. None of the Above

62. In chemistry, pH is a measure of the acidity or basicity of an aqueous solution. Solutions with a pH less than 7 are said to be acidic and solutions with a pH greater than 7 are basic or alkaline. Pure water has a pH very close to?

- A. 5
- B. 6
- C. 7
- D. 7.7
- E. 7.5
- F. None of the Above

63. Which of the following terms are determined using a concentration cell with transference, by measuring the potential difference between a hydrogen electrode and a standard electrode such as the silver chloride electrode?

- A. Primary pH standard values
- B. Alkalinity
- C. pH
- D. pH measurement(s)
- E. Measurement of pH
- F. None of the Above

64. Which of the following terms are important in medicine, biology, chemistry, agriculture, forestry, food science, environmental science, oceanography, civil engineering, chemical engineering, nutrition, water treatment & water purification, and many other applications?

- A. Primary pH standard values
- B. Alkalinity
- C. pH
- D. pH measurement(s)
- E. Measurement of pH
- F. None of the Above

65. Mathematically, pH is the negative logarithm of the activity of the (solvated) hydronium ion, more often expressed as the measure of the?

- A. Electrons
- B. Alkalinity
- C. Hydronium ion concentration
- D. Cation measurement(s)
- E. Ions
- F. None of the Above

66. Which of the following terms for aqueous solutions can be done with a glass electrode and a pH meter, or using indicators?

- A. Primary sampling
- B. Alkalinity
- C. pH
- D. Determining values
- E. Measurement of pH
- F. None of the Above

67. The pH scale is logarithmic and therefore pH is?

- A. Universal indicator
- B. A dimensionless quantity
- C. Spectrophotometer
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

68. There can be long-term changes in the _____ of rivers and streams in response to human disturbances.

- A. Acid
- B. Alkalinity
- C. pH
- D. pH measurement(s)
- E. Bond formation
- F. None of the Above

69. pH is defined as the decimal logarithm of the reciprocal of the _____, a_{H^+} , in a solution.

- A. Hydrogen ion activity
- B. Ion-selective electrode(s)
- C. Solvated hydronium ion
- D. Brønsted–Lowry acid–base theory
- E. Acid-base behavior
- F. None of the Above

70. Which of the following terms may be used to measure pH, by making use of the fact that their color changes with pH?

- A. Indicators
- B. pH
- C. Spectrophotometer
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

71. Alkalinity is the name given to the quantitative capacity of an aqueous solution to neutralize an?

- A. Acid
- B. Base
- C. pH
- D. pH measurement(s)
- E. Bond formation
- F. None of the Above

72. Which of the following terms of the color of a test solution with a standard color chart provides a means to measure pH accurate to the nearest whole number?

- A. Universal indicator
- B. Colorwheel measurement
- C. Spectrophotometer
- D. Visual comparison
- E. A test
- F. None of the Above

73. Which of the following terms is made from absorbent paper that has been impregnated with universal indicator?

- A. Universal indicator
- B. Colorimeter of spectrophotometer
- C. Spectrophotometer
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

74. The calculation of the pH of a solution containing acids and/or bases is an example of a chemical speciation calculation, that is, a mathematical procedure for calculating the concentrations of all chemical species that are present in the solution. The complexity of the procedure depends on the?

- A. Universal indicator
- B. pH
- C. Nature of the solution
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

75. Under normal circumstances this means that the concentration of hydrogen ions in acidic solution can be taken to be equal to the concentration of the acid. The pH is then equal to minus the logarithm of?

- A. The concentration value
- B. The pH
- C. The Spectrophotometer
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

76. Alkalinity of water is its acid-neutralizing capacity. It is the sum of all the titratable bases. The measured value may vary significantly with the?

- A. Acid
- B. Alkalinity
- C. pH
- D. pH measurement(s)
- E. End-point pH
- F. None of the Above

77. For strong acids and bases no calculations are necessary except in extreme situations. The pH of a solution containing a weak acid requires the solution of a quadratic equation. The pH of a solution containing a weak base may require the?

- A. Solution of a cubic equation
- B. pH
- C. Spectrophotometer
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

78. Alkalinity is a measure of which missing term and can be interpreted in terms of specific substances only when the chemical composition of the sample is known?

- A. Universal indicator
- B. pH
- C. An aggregate property of water
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

79. More precise measurements are possible if the color is measured spectrophotometrically, using a?

- A. Universal indicator
- B. Colorimeter or spectrophotometer
- C. Spectrophotometer
- D. Excess of alkaline earth metal concentrations
- E. A set of non-linear simultaneous equations
- F. None of the Above

80. Alkalinity is significant in many uses and treatments of natural waters and wastewaters. Because the alkalinity of this missing term it is taken as an indication of the concentration of these constituents.

- A. Acid
- B. Alkalinity
- C. pH
- D. pH measurement(s)
- E. Bond formation
- F. None of the Above

81. For strong acids and bases no calculations are necessary except in extreme situations. The pH of a solution containing a weak acid requires?

- A. The concentration value
- B. The solution of a quadratic equation
- C. The Spectrophotometer
- D. Excess of alkaline concentrations
- E. A set of simultaneous equations
- F. None of the Above

82. Alkalinity in excess of this term is significant in determining the suitability of water for irrigation.

- A. 8
- B. pH of 7
- C. 3
- D. Alkaline earth metal concentrations
- E. Non-linear simultaneous equations
- F. None of the Above

83. The calculation of the pH of a solution containing acids and/or bases is an example of a _____ calculation, that is, a mathematical procedure for calculating the concentrations of all chemical species that are present in the solution

- A. Universal indicator
- B. Colorwheel measurement
- C. Spectrophotometer
- D. Visual comparison
- E. Chemical speciation
- F. None of the Above

84. Since pH is a logarithmic scale, a difference of one pH unit is equivalent to this term difference in hydrogen ion concentration

- A. 1
- B. 2
- C. 5
- D. 10
- E. 100
- F. None of the Above

85. Which of the following terms measurements are used in the interpretation and control of water and wastewater treatment processes?

- A. Acid
- B. Alkalinity
- C. pH
- D. Chemical ion
- E. Hydrogen bond formation
- F. None of the Above

86. Which of the following terms are compounds that, for practical purposes, are completely dissociated in water.

- A. Strong acids and bases
- B. Strong bases
- C. Chemical ions in chains
- D. Strong bases and weak acids
- E. Weak acids and weak bases
- F. None of the Above

87. The pH of a solution containing a _____ may require the solution of a cubic equation. The general case requires the solution of a set of non-linear simultaneous equations.

- A. Strong acids and bases
- B. Strong bases
- C. Weak bases
- D. Strong bases and weak acids
- E. Weak acids and weak bases
- F. None of the Above

88. Sodium hydroxide, NaOH, is an example of a?

- A. Strong acids and bases
- B. Strong base
- C. Weak base
- D. Strong bases and weak acids
- E. Weak acids and weak bases
- F. None of the Above

FOG Introduction

Controlling Fats, Oils, and Grease Discharges from Food Service Establishments

All of the answers must be in accordance to the Course Manual.

89. Commercial food preparation establishments with inadequate grease controls is the primary method that FOG gets into our sewer collection system mainly from _____ pouring the substances down their drains.

- A. CSO/SSO
- B. POTWs
- C. Sewer collection system
- D. Honey dippers
- E. Residential customers
- F. None of the Above

90. Sewer backups and overflows on streets, properties and even in customers' homes and/or businesses are caused because of improper disposal of fats, oils and grease, FOG builds up in the _____ and eventually block collection pipes and sewer lines, resulting in

- A. Sewer system
- B. POTW's requirement(s)
- C. Customer(s)
- D. Least management practices (LMPs)
- E. Food Service Establishments (FSEs)
- F. None of the Above

91. Ponds, streams or rivers will be contaminated due to _____ and will also impact the environment negatively.

- A. Sewer backup(s)
- B. FOG
- C. Overflow(s)
- D. POTW Commercial FOG Program(s)
- E. Management Practices (MPs)
- F. None of the Above

Food Service Establishments (FSEs)

92. Because of the amount of grease used in cooking, _____ are a significant source of fats, oil and grease (FOG).

- A. Sewer system infiltration
- B. POTW's requirement(s)
- C. Customer(s) Inflow
- D. Septic Tanks
- E. Food Service Establishments (FSEs)
- F. None of the Above

93. To assist improper handling and disposal of their FOG _____ are generally developed to assist restaurants and other FSEs with instruction and compliance.

- A. CSO/SSO
- B. POTWs
- C. POTW Commercial FOG Program
- D. Customer service
- E. Capacity, Management, Operations, and Maintenance
- F. None of the Above

94. Through implementation of Best Management Practices (BMPs), these establishments should be able to significantly reduce the amount of FOG that goes down their drains. This will minimize back-ups and help business owners comply with the POTW's requirements.

- A. True
- B. False

95. According to the text, the _____ can handle properly disposed wastes, but to work effectively, sewer systems need to be properly maintained, from the drain to the treatment plant.

- A. Vactor
- B. POTW's requirement(s)
- C. POTW's sewer system
- D. Most management practices (MMPs)
- E. Honey pumpers
- F. None of the Above

96. Because our sewer system is fragile, _____ is an example of a waste that the sewer system cannot handle, and therefore should not be put down the drain.

- A. Liquid
- B. Grinder pump extract
- C. Overflow(s)
- D. Grease
- E. Solids
- F. None of the Above

97. Various businesses and individuals need to be responsible in maintaining the POTW system because repeated repairs are disruptive to residences and businesses alike. Proper sewer disposal by commercial establishments is required by _____.

- A. Law
- B. POTW's recommendations
- C. Sewer system
- D. Best management advice (BMAs)
- E. Food Service Establishments (FSEs)
- F. None of the Above

Environmental problem with FOG sewers

98. Grease balls are formed by _____ that enters the sewer system eventually solidifies. The various sizes of these grease balls can range in size from marbles to the size of cantaloupes and must be removed periodically.

- A. FOG
- B. Sewer backup(s)
- C. Overflow(s)
- D. Solids
- E. Liquid
- F. None of the Above

99. Which of the following terms with the maintenance of the collection systems and/or treatment plants that in turn lead to higher customer rates are because the sewer system is unable to handle or treat these substances effectively.

- A. Customer(s) complaints
- B. POTW's recommendations
- C. Administrative controls
- D. Least management practices (LMPs)
- E. Food Service Establishments (FSEs)
- F. None of the Above

100. The repair or replacement of their damaged property caused by FOG creating _____ can also cost customers thousands of dollars for the repair or replacement of their damaged property.

- A. Infiltration
- B. Sewer backup(s)
- C. Overflow(s)
- D. Jump joints
- E. Hydraulic under conditions
- F. None of the Above

Controlling FOG discharges

101. Food service establishment(s) collect and separate grease and from this procedure, _____ is derived from used cooking oil and waste greases.

- A. Interceptor grease
- B. Interceptor/collector device(s)
- C. Inflow
- D. Tallow
- E. Yellow grease
- F. None of the Above

102. Food service establishment(s) or FSE can adopt a variety of best management practices or install interceptor/collector devices to control and capture the _____ before discharge to the POTW collection system.

- A. BMPs
- B. Grease interceptor and trap
- C. FOG
- D. Interceptor/collector device(s)
- E. FOG material
- F. None of the Above

103. The POTW collection system(s) will require that certain food service establishments install interceptor/collector devices (e.g., grease traps) in order to accumulate grease on-site and prevent it from entering the?

- A. Kitchen drain(s)
- B. Interceptor/collector device(s)
- C. BMPs
- D. POTW collection system(s)
- E. Food service establishment(s) or FSE
- F. None of the Above

Keeping Fats, Oils, and Grease out of the Sewer System

104. Manholes can overflow into parks, yards, streets, and storm drains, allowing FOG to contaminate local waters, including drinking water. Exposure to untreated wastewater is a public-health hazard and is an EPA violation. FOG discharged into septic systems and drain fields can cause malfunctions, resulting in more frequent tank pump-outs and other expenses.

- A. True
- B. False

105. Which of the following terms will back up into homes and businesses, resulting in high costs for cleanup and restoration?

- A. Dye
- B. Interceptor/collector device(s)
- C. Camera
- D. Smoke
- E. Untreated wastewater
- F. None of the Above

POTWs control methods for FOG discharges from FSEs

106. There are many different devices, methods and procedures i.e., proper design, installation, and maintenance procedures are critical for these devices to?

- A. Control and capture the Yard waste
- B. Control and capture the FOG
- C. Control and capture the Water
- D. Petroleum-based oil(s)
- E. Your negligence
- F. None of the Above

107. FOG must be able to cool and separate in a non-turbulent environment, therefore, _____ must be designed and sized appropriately.

- A. Kitchen drain(s)
- B. Interceptor/collector device(s)
- C. BMPs
- D. POTW collection system(s)
- E. Food service establishment(s) or FSE
- F. None of the Above

108. Grease interceptor/ collector devices shall be serviced at regular intervals and _____ must be diligent in providing proper maintenance and records.

- A. BMPs
- B. Service crews
- C. Employees
- D. Honey Pumpers
- E. FSE
- F. None of the Above

Best Management Practices (BMPs)

109. The amount of FOG a facility generates as well as any best management practices (BMPs) that the establishment implements to reduce the FOG discharged into its sanitary sewer system.

- A. True
- B. False

110. Because of required grease interceptor and trap maintenance frequency, an establishment that implements BMPs will realize a _____ benefit.

- A. Financial
- B. Grease interceptor and trap
- C. FOG
- D. Interceptor/collector device(s)
- E. Odor reduction
- F. None of the Above

Residential and Commercial Guidelines

111. The major concern for _____ is the improper disposal of fats, oil and grease (FOG) found in food ingredients such as meat, cooking oil, shortening, butter, margarine, baked goods, sauces and dairy products.

- A. CSO/SSO
- B. BMPs
- C. POTW's sewers
- D. Customer service
- E. Capacity, Management, Operations, and Maintenance (CMOM)
- F. None of the Above

112. Which of the following terms in sewer lines has many harmful and costly effects?

- A. Yard waste
- B. FOG buildup
- C. Water
- D. Petroleum-based oil(s)
- E. Your negligence
- F. None of the Above

113. Which of the following terms into homes create a health hazard as well as an unpleasant mess that can cost hundreds and sometimes thousands of dollars to clean up?

- A. Sewage backflow
- B. Trash and debris
- C. Soap and oil residue(s)
- D. Sewer backups
- E. Health hazard(s)
- F. None of the Above

114. According to the text, serious environmental and health conditions are created and can enter certain parts of the POTW, _____ can enter storm drains and flow directly into water bodies and onto beaches creating problems.

- A. Sewage backups
- B. Trash and debris
- C. Soap and oil residue(s)
- D. FOG
- E. Health hazard(s)
- F. None of the Above

115. Which of the following terms and petroleum-based oils can also cause sewer-related problems?

- A. Yard waste
- B. Solids buildup
- C. Water
- D. Cooking oils
- E. Your negligence
- F. None of the Above

116. Storm sewers need to be kept clean and car washing can often result in _____ entering the storm sewers.

- A. Sewage backups
- B. Trash and debris
- C. Soap and oil residue(s)
- D. FOG
- E. Health hazard(s)
- F. None of the Above

117. Which of the following terms enters into storm sewers from run-off from your sprinkler, watering hose, or from the rain can carry yard waste?

- A. Fertilizer
- B. FOG buildup
- C. Water
- D. Petroleum-based oil(s)
- E. Negligence
- F. None of the Above

118. Littering can cause _____ to clog catch basins and storm drains.

- A. Sewage backups
- B. Trash and debris
- C. Soap and oil residue(s)
- D. FOG
- E. Health hazard(s)
- F. None of the Above

119. one million gallons of water can be easily contaminated by simply pouring _____ down a storm drain could contaminate up to
- A. A gallon of oil
 - B. Dye
 - C. Water
 - D. Liquids
 - E. Smoke
 - F. None of the Above

Using best management practices can:

120. Expensive bills for plumbing and _____ and losing revenue to emergency shutdowns caused by sewage backups and expensive bills for plumbing and Property repairs can be lessened by proper sewer maintenance and compliance.

- A. Sewage backups
- B. Trash and debris
- C. Property repairs
- D. FOG
- E. Health hazard(s)
- F. None of the Above

121. Which of the following terms is the primary cause of sewer problems, this in turn causes the likelihood of lawsuits by nearby businesses over sewer problems?

- A. Backup
- B. Violation(s)
- C. Problem
- D. Crime
- E. Negligence
- F. None of the Above

122. Workers or the public can be exposed to _____ during a problem, it is best to Reduce exposure, thus limiting some lawsuits.

- A. Backup
- B. FOG buildup
- C. Raw sewage
- D. Crime
- E. Negligence
- F. None of the Above

123. It is best that the customer increases the number of times you have to pump and clean their?

- A. Pipes
- B. FOG buildup
- C. Self
- D. Grease interceptors or traps
- E. Sewer
- F. None of the Above

124. In order to lessen the likelihood of surcharges from your local sewer authority, or chargebacks for repairs to sewer pipes attributable to customer's?

- A. Sewage backups
- B. Trash and debris
- C. Soap and oil residue(s)
- D. FOG
- E. Health hazard(s)
- F. None of the Above

IOC Section

Antimony

125. Antimony is a toxic chemical element with symbol **Sb** and atomic number 51.

- A. True
- B. False

126. The industrial methods to produce antimony are roasting and subsequent carbothermal reduction or direct reduction of?

- A. Sulfide mineral stibnite (Sb_2S_3)
- B. Copper
- C. Stibnite with iron
- D. Heat
- E. Lead
- F. None of the Above

What are EPA's drinking water regulations for antimony?

127. The Phase VI Rule, the regulation for antimony, became effective in 2001.

- A. True B. False

128. The Safe Drinking Water Act requires _____ to periodically review the national primary drinking water regulation for each contaminant and revise the regulation, if appropriate.

- A. OSHA D. Emergency Planning and Community Right to Know Act (EPCRA)
B. MCLs E. EPA
C. States F. None of the Above

129. Which of the following terms - reviewed antimony as part of the Six Year Review and determined that the 0.006 mg/L or 6 ppb MCLG and 0.006 mg/L or 6 ppb MCL for antimony?

- A. OSHA D. Emergency Planning and Community Right to Know Act (EPCRA)
B. MCLs E. EPA
C. States F. None of the Above

130. EPA has set an enforceable regulation for antimony, called a _____, at 0.006 mg/L or 6 ppb.

- A. MCLG D. Emergency Planning and Community Right to Know Act (EPCRA)
B. MCL E. EPA
C. CWA F. None of the Above

Applications

131. Which of the following terms - with antimony improves the properties of the alloys that are used in solders, bullets and plain bearings?

- A. Gray allotrope of arsenic D. Metallic antimony
B. Four allotropes E. Alloying lead and tin
C. Nitrogen group (group 15) F. None of the Above

132. Which of the following terms - are prominent additives for chlorine- and bromine-containing fire retardants found in many commercial and domestic products?

- A. Contaminants D. Metallic antimony
B. Gray allotrope of arsenic E. Prominent additives
C. Antimony compounds F. None of the Above

133. Antimony is in the nitrogen group (group 15) and it is _____, and less electronegative than tellurium or arsenic.

- A. A gray allotrope of arsenic D. A metallic antimony
B. Has four allotropes E. More electronegative than tin or bismuth
C. In the Nitrogen group F. None of the Above

134. Antimony is stable in air at room temperature, but reacts with oxygen if heated to form antimony trioxide, Sb₂O₃.

- A. True B. False

135. Antimony is a silvery, lustrous gray metal that has a Mohs scale hardness of 7.

- A. True B. False

136. The yellow allotrope of antimony is the most unstable. It has only been generated by oxidation of stibine (SbH_3) at -90°C .

- A. True B. False

137. Pure antimony is?

- A. High chemical reactivity D. A metallic antimony
B. Analytical methods E. Not used to make hard objects
C. High chemical reactivity F. None of the Above

138. Four allotropes of antimony are known, a stable metallic form and _____, explosive, black and yellow.

- A. Gray D. Liquid
B. Three metastable forms E. Its high chemical reactivity
C. In the Nitrogen group F. None of the Above

139. Metallic antimony is a brittle, silver-white shiny metal. When molten antimony is slowly cooled, metallic antimony crystallizes?

- A. In a trigonal cell D. Metallic
B. Four allotropes E. Its high chemical reactivity
C. Nitrogen group (group 15) F. None of the Above

140. A rare explosive form of antimony can be formed from the electrolysis of antimony (III) trichloride.

- A. True B. False

Asbestos

141. EPA has set an enforceable regulation for asbestos, called a maximum contaminant level (MCL), at .07 MFL.

- A. True B. False

142. EPA reviewed asbestos as part of the Six Year Review and determined that the .07 MFL MCLG.

- A. True B. False

Barium

143. The MCLG for barium is 20 mg/L or 20 ppm

- A. True B. False

144. When routine monitoring indicates that barium levels are above the MCL; your water supplier must take steps to reduce the amount of barium so that it is below that level. Water suppliers must notify their customers as soon as practical, but no later than 30 days after the system learns of the violation.

- A. True B. False

145. Which of the following terms such as providing alternative drinking water supplies, may be required to prevent serious risks to public health?

- A. MCLG D. Additional actions
B. MCL equals the MCLG E. 2 mg/L or 2 ppm
C. MFL F. None of the Above

146. Which of the following terms in which the regulation for barium, became effective in 1993?

- A. MCLG
- B. Phase IIB Rule
- C. Safe Drinking Water Act
- D. EPCRA
- E. EPA
- F. None of the Above

147. Major sources of barium in drinking water are discharge of drilling wastes; _____; and erosion of natural deposits.

- A. Discharge from metal refineries
- B. Barium
- C. Barium carbonate, BaCO₃
- D. Soluble barium compounds
- E. Its high chemical reactivity
- F. None of the Above

148. Which of the following terms requires facilities in certain industries, which manufacture, process, or use significant amounts of toxic chemicals?

- A. MCLG Rule
- B. Phase II Rule
- C. SDWA
- D. Emergency Planning and Community Right to Know Act (EPCRA)
- E. EPA
- F. None of the Above

Barium Explained

149. The most common naturally occurring minerals of barium are barite (barium sulfate, BaSO₄) and witherite (_____), both being insoluble in water.

- A. A natural deposit
- B. Baryta
- C. Barium carbonate, BaCO₃
- D. A soluble compound
- E. Highly reactive chemical
- F. None of the Above

150. Which of the following terms was identified as a new element in 1774, but not reduced to a metal until 1808?

- A. Beryllium
- B. Barium
- C. Barium carbonate, BaCO₃
- D. Soluble barium compound
- E. Its high chemical reactivity
- F. None of the Above

151. Which of the following terms has only a few industrial applications. The metal has been historically used to scavenge air in vacuum tubes?

- A. Beryllium
- B. Barium
- C. Barium carbonate, BaCO₃
- D. Soluble barium compound
- E. Its high chemical reactivity
- F. None of the Above

152. Barium is a _____ with symbol **Ba** and atomic number 56.

- A. Erosion of natural deposits
- B. Chemical element
- C. Carbonate, BaCO₃
- D. Soluble compounds
- E. Highly reactive chemical
- F. None of the Above

153. Barium is the fifth element in Group 3, a hard silvery metallic alkaline earth metal.

- A. True
- B. False

154. Because of its high chemical reactivity barium is easily found in nature as a free element.

- A. True
- B. False

Beryllium

155. Which of the following terms -for beryllium is 0.004 mg/L or 4 ppb.

- A. MCLG
- B. MCL
- C. EPA
- D. SDWA
- E. 2 mg/L or 2 ppm
- F. None of the Above

How does Beryllium get into my Drinking Water?

156. Beryllium naturally enters surface water and ground water through the weathering of rocks and soils or from industrial wastewater discharges.

- A. True
- B. False

How will I know if Beryllium is in my Drinking Water?

157. When routine monitoring indicates that beryllium levels are above the _____, your water supplier must take steps to reduce the amount of beryllium so that it is below that level.

- A. MCLG
- B. MCL equals the MCLG
- C. EPA
- D. SDWA
- E. 2 mg/L or 2 ppm
- F. None of the Above

158. Water suppliers must notify their customers as soon as practical, but no later than 90 days after the system learns of the violation. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

- A. True
- B. False

Beryllium Explained

159. Beryllium is the chemical element with the symbol **Be** and atomic number 4. Because any beryllium synthesized in stars is short-lived, _____ in both the universe and in the crust of the Earth.

- A. It is a divalent element
- B. Brittle alkaline earth metal
- C. Is a relatively abundant element
- D. Hard and resistant to corrosion
- E. It is a relatively rare element
- F. None of the Above

Cadmium

160. The MCLG for cadmium is?

- A. 4.0
- B. .002
- C. 1.3
- D. .015
- E. 0.005 mg/L or 5 ppb
- F. None of the Above

161. EPA has set an enforceable regulation for cadmium, called a maximum contaminant level (MCL), at?

- A. 4.0
- B. .002
- C. 1.3
- D. .015
- E. 0.005 mg/L or 5 ppb
- F. None of the Above

How does cadmium get into my drinking water?

162. The major sources of cadmium in drinking water are corrosion of galvanized pipes; erosion of natural deposits; _____; runoff from waste batteries and paints.

- A. It is a divalent element
- B. Brittle alkaline earth metal
- C. Coal and fuel oil combustion
- D. It may burn and release toxic fumes
- E. Discharge from metal refineries
- F. None of the Above

How will I know if cadmium is in my drinking water?

163. When routine monitoring indicates that cadmium levels are above the _____, your water supplier must take steps to reduce the amount of cadmium so that it is below that level.

- A. MCLG
- B. MCL
- C. EPA standard
- D. SDWA limit
- E. 2 mg/L or 2 ppm
- F. None of the Above

How will cadmium be removed from my drinking water?

164. The following treatment method(s) have proven to be effective for removing cadmium to below _____: coagulation/filtration, ion exchange, lime softening, and reverse osmosis.

- A. 4.0
- B. .002
- C. 1.3
- D. .015
- E. 0.005 mg/L or 5 ppb
- F. None of the Above

Characteristics

Physical Properties

165. Cadmium is a soft, malleable, ductile, bluish-white divalent metal. It is similar in many respects to zinc but forms complex compounds.

- A. True
- B. False

166. Like other metals, cadmium is subject to corrosion.

- A. True
- B. False

167. As a bulk metal, cadmium is?

- A. Insoluble in water and is not flammable
- B. Is in making steel and other alloys
- C. Normal industrial waste disposal practices
- D. It may burn and release toxic fumes
- E. Reduces the amount of cadmium sulfate
- F. None of the Above

Chromium

168. Chromium is?

- A. An odorless and tasteless metallic element
- B. Used for making steel and other alloys
- C. Normally found in industrial waste disposal
- D. Flammable
- E. Fun to play with
- F. None of the Above

169. Chromium is found naturally in rocks, plants, soil and volcanic dust, humans and animals. The most common forms of chromium that occur in natural waters in the environment are trivalent chromium (chromium-3), and hexavalent chromium (chromium-6).

- A. True
- B. False

170. Chromium-5 is an essential human dietary element.

- A. True
- B. False

171. Chromium-6 occurs naturally in the environment from the erosion of natural chromium deposits but it can also be produced by?

- A. Reverse osmosis
- B. Making steel and other alloys
- C. Industrial processes
- D. Burning and releasing toxic fumes
- E. Chemistry
- F. None of the Above

172. There are demonstrated instances of chromium being released to the environment by leakage, poor storage, or inadequate industrial waste disposal practices.

- A. True B. False

What are Chromium's Health Effects?

173. Chromium has relatively high toxicity and would be a concern in drinking water only at very high levels of contamination.

- A. True B. False

174. Chromium-6 is less toxic and poses potential health risks.

- A. True B. False

175. People who use water containing total chromium in excess of the _____ over many years could experience allergic dermatitis.

- A. MCLG D. Rule
B. MCL E. Standard
C. Limit F. None of the Above

What are EPA's drinking water regulations for Chromium?

176. Which of the following terms - requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur?

- A. Safe Drinking Water Act D. EPCRA
B. OSHA E. EPA
C. CWA F. None of the Above

177. Which of the following terms - for total chromium is 0.1 mg/L or 100 parts per billion (ppb).

- A. MCLG D. Rule
B. MCL E. Standard
C. Limit F. None of the Above

178. EPA has set an enforceable regulation for total chromium, called a maximum contaminant level (MCL), at 10 mg/L or 1000 ppb.

- A. True B. False

Chromium Description

179. Chromium is a chemical element that has the symbol **Cr** and atomic number 24.

- A. True B. False

180. Chromium is the first element in?

- A. Group 6 D. The roasting and leaching processes
B. Trivalent chromium (Cr(III)) ion E. Forming stainless steel
C. Toxic chromium classification F. None of the Above

181. Chromium metal and ferrochromium alloy are commercially produced from chromite by silicothermic or aluminothermic reactions, or by?

- A. Adding copper D. Roasting and leaching processes
B. Adding trivalent chromium E. Adding metallic chromium to form stainless steel
C. Adding Aluminum F. None of the Above

182. Chromium metal has proven of high value due to?

- A. Group 6 treatments
- B. Adding trivalent chromium
- C. Adding Aluminum
- D. Roasting and leaching processes
- E. Its high corrosion resistance and hardness
- F. None of the Above

183. Which of the following terms along with chrome plating currently comprise 85% of the commercial use for the element?

- A. Group 6 treatments
- B. Adding trivalent chromium
- C. Adding Aluminum
- D. Roasting and leaching processes
- E. Its high corrosion resistance and hardness
- F. None of the Above

184. Trivalent chromium (Cr(III)) ion is possibly required in trace amounts for sugar and lipid metabolism, although the issue remains in debate. In larger amounts and in different forms, chromium can be?

- A. Toxic and carcinogenic
- B. Trivalent chromium (Cr(III)) ion
- C. Toxic chromium
- D. Part of the leaching processes
- E. Metallic chromium
- F. None of the Above

185. The most prominent example of toxic chromium is _____. Abandoned chromium production sites often require environmental cleanup.

- A. Stainless steel
- B. Trivalent chromium (Cr(III)) ion
- C. Toxic chromium
- D. Hexavalent chromium (Cr(VI))
- E. Metallic chromium
- F. None of the Above

Copper

What are Copper's Health Effects?

186. Some people who drink water containing copper in excess of the _____ may, with short term exposure, experience gastrointestinal distress, and with long-term exposure may experience liver or kidney damage.

- A. MCLG
- B. MCL
- C. Limit
- D. Standard
- E. Action level
- F. None of the Above

187. People with Zackery's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level.

- A. True
- B. False

What are EPA's Drinking Water Regulations for Copper?

188. Which of the following terms - for copper is 1.3 mg/L or 1.3 ppm?

- A. MCLG
- B. MCL
- C. Limit
- D. Standard
- E. Action level
- F. None of the Above

189. Which of the following terms - as feasible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies?

- A. MCLG
- B. MCL
- C. Limit
- D. Standard
- E. MCLs are set as close to the MCLGs
- F. None of the Above

190. An action technique is a guideline procedure or level of technological performance that water systems must follow to ensure control of a contaminant.

- A. True B. False

191. The treatment technique regulation for copper (referred to as the Lead and Copper rule) requires water systems to control the corrosivity of the water.

- A. True B. False

192. The regulation also requires systems to collect piping samples from sites served by the system that are more likely to have plumbing materials containing plastic.

- A. True B. False

193. If more than 10 percent of tap water samples exceed the copper action level of 1.3 _____, water systems must take additional steps to reduce corrosiveness.

- A. MCLG D. Milligrams per Liter (mg/L)
B. MCL E. Action level
C. Limit F. None of the Above

194. Which of the following terms promulgated the Lead and Copper Rule in 1991, and revised the regulation in 2000 and in 2007?

- A. CWA D. Emergency Planning and Community Right to Know Act (EPCRA)
B. SDWA E. EPA
C. OSHA F. None of the Above

Copper Explained

195. Pure copper is?

- A. Known also as Lead D. Related to turquoise
B. Soft and malleable E. A liquid like Mercury
C. A carbon-nitrogen chemical F. None of the Above

196. Its compounds are commonly encountered as _____, which often impart blue or green colors to minerals such as turquoise and have been widely used historically as pigments.

- A. Copper (II) salts D. A mixture of gold and copper
B. Element E. Salts
C. Carbon-nitrogen chemical F. None of the Above

Cyanide - Inorganic Contaminant 0.2 mg/L MCL

197. Cyanide is a carbon-nitrogen chemical unit which combines with many?

- A. Copper (II) salts D. Nitrogen atoms
B. Organic and inorganic compounds E. Salts
C. Carbon-nitrogen chemicals F. None of the Above

Uses for Cyanide.

198. The most commonly used form, _____, is mainly used to make compounds and other synthetic fibers and resins.

- A. Copper (II) salts D. The nitrogen atom
B. Cyanide (II) E. Salts of the anion CN^-
C. Carbon-nitrogen chemical F. None of the Above

What are EPA's Drinking Water Regulations for Cyanide?

199. Which of the following terms - for cyanide is 0.2 mg/L or 200 ppb?

- A. MCLG
- B. MCL
- C. Limit
- D. Standard
- E. MCLs are set as close to the MCLGs
- F. None of the Above

200. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for cyanide, called a maximum contaminant level (MCL), at 0.2 mg/L or 200 ppb.

- A. True
- B. False

201. Which of the following terms are any physical, chemical, biological or radiological substances or matter in water?

- A. Naked contaminants
- B. Halides
- C. Contaminants
- D. Solutions of inorganic contaminants
- E. Cyanides
- F. None of the Above

Cyanide Explained

202. A cyanide is a chemical compound that contains the _____, which consists of a carbon atom triple-bonded to a nitrogen atom.

- A. Naked contaminants
- B. Halides
- C. Contaminants
- D. Solutions of inorganic contaminants
- E. Cyanides
- F. None of the Above

203. Cyanides most commonly refer to _____ which is isoelectronic with carbon monoxide and with molecular nitrogen.

- A. Cyanide salts
- B. Salts of the anion CN^- ,
- C. Carbon-nitrogen chemical
- D. Solutions of salts of the anion CN^- ,
- E. Cyanides solutions
- F. None of the Above

204. Most cyanides are not toxic.

- A. True
- B. False

Fluoride

205. The _____ for fluoride is 4.0 mg/L or 4.0 ppm.

- A. MCLG
- B. MCL
- C. Limit
- D. Standard
- E. MCLs are set as close to the health goals as possible
- F. None of the Above

206. EPA has set an enforceable regulation for fluoride, called a maximum contaminant level (MCL), at 4.0 mg/L or 4.0 ppm.

- A. True
- B. False

207. The secondary standard of 4.0 mg/L is intended as a guideline for an upper bound level in areas which have high levels of naturally occurring fluoride.

- A. True
- B. False

208. The level of the _____ was set based upon a balancing of the beneficial effects of protection from tooth decay and the undesirable effects of excessive exposures leading to discoloration.

- A. MCLG
- B. MCL
- C. Limit
- D. Secondary standard (SMCL)
- E. MCL equals the MCLG
- F. None of the Above

209. Which of the following terms is voluntarily added to some drinking water systems as a public health measure for reducing the incidence of cavities among the treated population?

- A. Naked fluoride
- B. Halides
- C. Fluoride
- D. Solutions of inorganic fluorides
- E. Fluorite and fluorapatite
- F. None of the Above

210. In the case for Fluoride, the _____, because analytical methods or treatment technology do not pose any limitation.

- A. MCLG
- B. MCL
- C. Limit
- D. Standard
- E. MCL equals the MCLG
- F. None of the Above

211. EPA has also set a _____ for fluoride at 2.0 mg/L or 2.0 ppm.

- A. MCLG
- B. MCL
- C. Limit
- D. Secondary standard (SMCL)
- E. MCL equals the MCLG
- F. None of the Above

212. Tooth strengthening is caused by excess fluoride exposures during the formative period prior to eruption of the teeth in children.

- A. True
- B. False

Fluoride Explained

213. Structurally Fluoride and to some extent chemically, the _____ resembles the hydroxide ion.

- A. Naked fluoride
- B. Halides
- C. Fluoride
- D. Solutions of inorganic fluorides
- E. Fluoride ion
- F. None of the Above

214. Fluoride is the cation F^+ , the reduced form of fluorine when as an ion and when bonded to another element. Inorganic fluorine containing compounds are called fluorides.

- A. True
- B. False

215. Fluoride, like other halides, is a monovalent ion (-1 charge). Its compounds often have properties that are distinct relative to other halides.

- A. True
- B. False

216. The presence of fluoride and its compounds can be detected by F NMR spectroscopy.

- A. True
- B. False

Occurrence

217. According to the text, solutions of inorganic fluorides in water contain F^- and bifluoride HF_2^- .

- A. True
- B. False

218. Few inorganic fluorides are soluble in water without undergoing significant hydrolysis. In terms of its reactivity, fluoride differs significantly from chloride and other halides, and is more strongly solvated due to its smaller radius/charge ratio. Its closest chemical relative is hydroxide.

A. True B. False

219. When relatively unsolvated, fluoride anions are called?

- A. Naked D. Solutions of inorganic fluorides
B. Halides E. Fluorite and fluorapatite
C. Fluoride F. None of the Above

220. Which of the following terms is a very strong lewis base?

- A. Naked fluoride D. Solutions of inorganic fluorides
B. Halides E. Fluorite and fluorapatite
C. Fluoride F. None of the Above

Natural Occurrence

221. Which of the following terms are known, but of paramount commercial importance are fluorite and fluorapatite?

- A. Naked fluoride D. Solutions of inorganic fluorides
B. Halides E. Fluorite and fluorapatite
C. Many fluoride minerals F. None of the Above

222. Which of the following terms is usually found naturally in low concentration in drinking water and foods? The concentration in seawater averages 1.3 parts per million (ppm).

- A. Naked fluoride D. Solutions of inorganic fluorides
B. Halides E. Fluorite and fluorapatite
C. Fluoride F. None of the Above

223. Fresh water may contains dangerously high levels of _____, leading to serious health problems.

- A. Naked fluoride D. Solutions of inorganic fluorides
B. Halides E. Fluorite and fluorapatite
C. Fluoride F. None of the Above

Mercury - Inorganic Contaminant

224. Mercury is a liquid metal found in natural deposits such as ores containing?

- A. Aluminum D. Mercury-aluminum amalgam
B. Ultraviolet light E. Other elements
C. Cinnabar (mercuric sulfide) F. None of the Above

Uses for Mercury

225. According to the text, electrical products such as dry-cell batteries, fluorescent light bulbs, switches, and other control equipment account for 50 percent of?

- A. Aluminum D. Mercury-aluminum amalgams
B. Mercury E. Lead
C. Cinnabar (mercuric sulfide) F. None of the Above

What are Mercury's Health Effects?

226. Some people who drink water containing mercury well in excess of the maximum contaminant level (MCL) for many years could experience liver damage.
A. True B. False

What are EPA's Drinking Water Regulations for Mercury?

227. The MCLG for mercury is 0.002 mg/L or 2 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems.
A. True B. False

228. EPA reviewed mercury as part of the Six Year Review and determined that the 0.002 mg/L or 2 ppb MCLG and 0.002 mg/L or 2 ppb MCL for mercury are still protective of human health.
A. True B. False

How will Mercury be removed from my Drinking Water?

229. The following treatment method(s) have proven to be effective for removing mercury to below 0.002 mg/L or 2 ppb: coagulation/filtration, granular activated carbon, _____, and reverse osmosis.
A. A carbon filter D. Lime softening
B. Backwash carbon E. Point of use
C. Activated carbon F. None of the Above

Mercury Explained

230. Mercury occurs in deposits throughout the world mostly as cinnamon.
A. True B. False

231. The red pigment vermilion is mostly obtained by?
A. Aluminum D. Mercury-aluminum amalgam
B. Water-soluble forms E. Reduction from cinnabar
C. Cinnabar (mercuric sulfide) F. None of the Above

232. Mercury poisoning can also result from exposure to _____ of mercury (such as mercuric chloride or methylmercury), inhalation of mercury vapor, or eating seafood contaminated with mercury.
A. Aluminum D. Mercury-aluminum amalgam
B. Water-soluble forms E. Reduction from cinnabar
C. Cinnabar (mercuric sulfide) F. None of the Above

233. Mercury is used in thermometers, barometers, manometers, sphygmomanometers, though concerns about the element's toxicity have led to mercury thermometers and sphygmomanometers being largely phased out in clinical environments in favor of alcohol-filled?
A. Bottles D. Galinstan-filled, digital, or thermistor-based instruments
B. Ultraviolet light E. Sphygmomanometers
C. Machinery F. None of the Above

234. Mercury is used in lighting: electricity passed through mercury vapor in a phosphor tube produces short-wave ultraviolet light that then causes the _____ to fluoresce, making visible light.

- A. Aluminum
- B. Ultraviolet light
- C. Cinnabar (mercuric sulfide)
- D. Mercury-aluminum
- E. Phosphor
- F. None of the Above

Amalgams

235. Mercury dissolves to form amalgams with gold, zinc and many other metals.

- A. True
- B. False

236. Copper is an exception; copper flasks have been traditionally used to trade mercury.

- A. True
- B. False

237. Which of the following terms is a common reducing agent in organic synthesis, and is also used in high-pressure sodium lamps?

- A. Aluminum amalgam
- B. Ultraviolet amalgam
- C. Cinnabar (mercuric sulfide)
- D. Mercury-aluminum amalgam
- E. Sodium amalgam
- F. None of the Above

238. Mercury readily combines with aluminum to form a _____ when the two pure metals come into contact.

- A. Aluminum amalgam
- B. Ultraviolet amalgam
- C. Cinnabar (mercuric sulfide)
- D. Mercury-aluminum amalgam
- E. Sodium amalgam
- F. None of the Above

239. Amalgam destroys the _____ which protects metallic aluminum from oxidizing in-depth.

- A. Aluminum amalgam
- B. Aluminum oxide layer
- C. Cinnabar (mercuric sulfide)
- D. Mercury-aluminum amalgam
- E. Sodium amalgam
- F. None of the Above

240. Mercury is not allowed aboard an aircraft under most circumstances because of the risk of it forming an amalgam with exposed aluminum parts in the aircraft unless it is in a copper pot.

- A. True
- B. False

Nitrate (Measured as Nitrogen)

241. EPA regulates _____ in drinking water to protect public health.

- A. Nitrates and nitrites
- B. Nitrate ion
- C. Nitrate
- D. Nitrates are converted to nitrites
- E. Various organic and inorganic compounds
- F. None of the Above

242. Nitrate may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

- A. True
- B. False

What is Nitrate?

243. Nitrates and nitrites are _____ which combine with various organic and inorganic compounds.
- A. Nitrogen-oxygen chemical units
 - B. Nitrate ion
 - C. Nitrate
 - D. Nitrates are converted to nitrites
 - E. Various organic and inorganic compounds
 - F. None of the Above

Uses for Nitrate.

244. According to the text, once taken into the body, nitrates are converted to?
- A. Nitrates and nitrites
 - B. Nitrate ion
 - C. Nitrate
 - D. Nitrites
 - E. Various organic and inorganic compounds
 - F. None of the Above

What are EPA's Drinking Water Regulations for Nitrate?

245. The MCLG for nitrate is 50 mg/L or 50 ppm. EPA has set this level of protection based on the best available science to prevent potential health problems.
- A. True
 - B. False
246. EPA has set an enforceable regulation for nitrate, called a maximum contaminant level (MCL), at 50 mg/L or 50 ppm.
- A. True
 - B. False

How will I know if Nitrate is in my Drinking Water?

247. Water suppliers must notify their customers as soon as practical, but no later than 24 hours after the system learns of the violation.
- A. True
 - B. False
248. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.
- A. True
 - B. False

Nitrate Explained

249. The nitrate ion is a polyatomic ion with the _____ and a molecular mass of 62.0049 g/mol.
- A. Nitrates and nitrites
 - B. Nitrate ion
 - C. Nitrate
 - D. Molecular formula NO_3^-
 - E. Various organic and inorganic compounds
 - F. None of the Above

Structure

250. It is the conjugate base of nitric acid, consisting of one central nitrogen atom surrounded by three identically bonded oxygen atoms in a trigonal planar arrangement. The nitrate ion carries a formal charge of -1.
- A. True
 - B. False
251. This results from a combination formal charge in which each of the three oxygens carries a $-\frac{2}{3}$ charge, whereas the nitrogen carries a +1 charge, all these adding up to formal charge of the _____.
- A. Nitrates and nitrites
 - B. Nitrate ion
 - C. Nitrate
 - D. Polyatomic nitrate ion
 - E. Various organic and inorganic compounds
 - F. None of the Above

Nitrite (Measured as Nitrogen) - Inorganic Contaminant 1 mg/L MCL

252. EPA regulates nitrite in drinking water to protect public health. Nitrite may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by _____.

- A. MCLG
- B. Water supplier
- C. Cops
- D. Emergency Planning and Community Right to Know Act (EPCRA)
- E. EPA
- F. None of the Above

What is Nitrite?

253. Nitrates and nitrites are _____ which combine with various organic and inorganic compounds.

- A. Nitrogen-oxygen chemical units
- B. Nitrate ion
- C. Nitrate
- D. Nitrates are converted to nitrites
- E. Various organic and inorganic compounds
- F. None of the Above

Uses for Nitrite.

254. Once taken into the body, _____ are converted to nitrites.

- A. Nitrites
- B. Nitrate ions
- C. Nitrates
- D. Nitrogen ions
- E. Various organic and inorganic compounds
- F. None of the Above

What are EPA's Drinking Water Regulations for Nitrite?

255. The MCLG for nitrite is 1 mg/L or 1 ppm. EPA has set this level of protection based on the best available science to prevent potential health problems.

- A. True
- B. False

256. Which of the following terms in which the regulation for nitrite became effective in 1992?

- A. MCLG
- B. MCLs
- C. The Phase II Rule
- D. EPCRA
- E. CWA
- F. None of the Above

How does Nitrite get into my Drinking Water?

257. The major sources of _____ in drinking water are runoff from fertilizer use; leaching from septic tanks, sewage; and erosion of natural deposits.

- A. Nitrites
- B. Nitrate ion
- C. Nitrate
- D. Nitrogen ions
- E. Various organic and inorganic compounds
- F. None of the Above

Selenium- Inorganic Contaminant 0.05 mg/L MCL

258. Selenium (Se) is an essential element for _____, with the majority of our intake coming from foods such as nuts, cereals, meat, fish, and eggs.

- A. Vitamins
- B. Drinking water
- C. Minerals
- D. Selenide or selenate compounds
- E. Human nutrition
- F. None of the Above

259. The concentration of Selenium in drinking water is usually high, and comes from natural minerals.

- A. True
- B. False

260. In soils, selenium often occurs in soluble forms such as selenate, which are leached into rivers very easily by runoff increasing the amount of?

- A. Selenium
- B. Selenium in drinking water
- C. Minerals
- D. Selenide or selenate compounds
- E. An essential element
- F. None of the Above

261. Which of the following terms is also a by-product of copper mining / smelting?

- A. Selenium
- B. Selenium in water
- C. Minerals
- D. Selenide or selenate compounds
- E. An essential element for human nutrition
- F. None of the Above

262. Acute toxicity caused by _____ or other sources of intake has been observed in laboratory animals and in animals grazing in areas where high selenium levels exist in the soil. The US EPA has established the MCL for selenium in water at 0.05 mg/l.

- A. Selenium
- B. Selenium in drinking water
- C. Minerals
- D. Selenide or selenate compounds
- E. High levels of selenium in water
- F. None of the Above

263. Selenium is also used in photoelectric devices because its electrical conductivity varies with light.

- A. True
- B. False

Selenium Explained

264. Selenium is found impurely in metal sulfide ores, where it partially replaces the oxygen.

- A. True
- B. False

265. Commercially, selenium is produced as _____ in the refining of these ores, most often during copper production.

- A. Metal sulfide ores
- B. Natural deposits
- C. Antioxidant enzymes
- D. Silicon
- E. Glutathione peroxidase
- F. None of the Above

266. Minerals that are pure selenide or selenate compounds are known, but are?

- A. Selenium based
- B. Found in drinking water
- C. Minerals
- D. Compounds
- E. An essential element for human nutrition
- F. None of the Above

267. Selenium continues to be used in a few types of DC power surge protectors and one type of?

- A. Metal sulfide ores
- B. Natural deposits
- C. Selenium
- D. Silicon semiconductor devices
- E. Fluorescent quantum dot
- F. None of the Above

268. Selenium salts are toxic in _____, but trace amounts are necessary for cellular function in many organisms, including all animals.

- A. The poisoner's poison
- B. Pharmaceutical industry
- C. Selenium salts
- D. Large amounts
- E. A heavy layer of oxide
- F. None of the Above

Thallium- Inorganic Contaminant 0.002 mg/L MCL

269. Thallium is a metal found in natural deposits such as ores containing_____.

- A. Metal sulfide ores
- B. Natural deposits
- C. Selenium
- D. Silicon
- E. Other elements
- F. None of the Above

Uses for Thallium.

270. The greatest use of _____is in specialized electronic research equipment.

- A. Nonselective toxicity
- B. Thallium
- C. Selenium
- D. Potassium ores
- E. This soft gray poor metal
- F. None of the Above

What are Thallium's Health Effects?

271. Some people who drink water containing thallium well in _____ for many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver problems.

- A. MCLG
- B. MCLs
- C. The Phase II Rule
- D. MCLGs are set as close to the health goals as possible
- E. Excess of the maximum contaminant level (MCL)
- F. None of the Above

Thallium Explained

272. Thallium is a chemical element with symbol **Tl** and atomic number 81.

- A. True
- B. False

273. Thallium is soft gray poor metal is not found free in nature. _____, it resembles tin, but discolors when exposed to air.

- A. Nonselective toxicity
- B. When observed
- C. When isolated
- D. Like Potassium ores
- E. This soft gray poor metal
- F. None of the Above

274. Thallium tends to oxidize to the +3 and +1 oxidation states as ionic salts. The +3 state resembles that of the other elements in thallium's group (boron, aluminum, gallium, indium).

- A. True
- B. False

275. The +1 state, which is far more prominent in thallium than the elements above it, recalls the chemistry of alkali metals, and thallium(I) ions are found geologically mostly in potassium-based ores, and (when ingested) are handled in many ways like _____by ion pumps in living cells.

- A. Metal sulfide ores
- B. Natural deposits
- C. Selenium
- D. Potassium ions (K⁺)
- E. Antioxidant enzymes
- F. None of the Above

276. Which of the following - is used in small, nontoxic amounts as an agent in a nuclear medicine scan, during one type of nuclear cardiac stress test?

- A. Nonselective ion
- B. Thallium 111
- C. Thallium 3
- D. Potassium ore
- E. Soluble chloride TlCl
- F. None of the Above

277. Soluble thallium salts (many of which are nearly tasteless) are highly toxic in quantity, and were historically used in?

- A. Nonselective ion
- B. Thallium 111
- C. Thallium 3
- D. Rat poisons and insecticides
- E. Soluble chloride TICI
- F. None of the Above

278. Thallium poisoning notably results in tooth loss.

- A. True
- B. False

279. Thallium has gained notoriety as "the poisoner's poison" and " _____ " (alongside arsenic).

- A. Inheritance powder
- B. Pharmaceutical powder
- C. Saltpeter powder
- D. Soluble sleeping powder
- E. Sleeping powder
- F. None of the Above

SOC Section - SOC Introduction

280. SOCs are known carcinogens (cancer causing). EPA has set Maximum Contaminant Levels (MCL) for 30 _____ under the Safe Drinking Water Act.

- A. Volatile Organic Compounds (VOCs)
- B. Synthetic Organic Chemicals (SOCs)
- C. Polychlorinated Biphenyls (PCBs)
- D. Maximum Contaminant Levels (MCL)
- E. Organic compounds
- F. None of the Above

281. The Safe Drinking Water Act requires that all water sources of all public water systems be periodically monitored for regulated?

- A. Volatile Organic Compounds (VOCs)
- B. Synthetic Organic Chemicals (SOCs)
- C. Polychlorinated Biphenyls (PCBs)
- D. Maximum Contaminant Levels (MCL)
- E. Organic compounds
- F. None of the Above

282. Which of the following terms are very persistent in the environment, whether in soil or water?

- A. Volatile Organic Compounds (VOCs)
- B. Synthetic Organic Chemicals (SOCs)
- C. Polychlorinated Biphenyls (PCBs)
- D. Maximum Contaminant Levels (MCL)
- E. Organic compounds
- F. None of the Above

283. Which of the following terms or "blue baby syndrome" from ingestion of elevated levels of nitrate or nitrite?

- A. Methemoglobinemia
- B. Most contaminants
- C. Three contaminant groups
- D. Elevated levels of nitrate or nitrite
- E. Chemical compounds
- F. None of the Above

284. All public water systems must monitor for?

- A. Valuable Organic Compounds (VOCs)
- B. Synthesis Organic Chemicals (SOCs)
- C. Polychlorinated Biphenyls (PCBs)
- D. Maximum Constant Levels (MCL)
- E. Nitrate and Nitrite
- F. None of the Above

Volatile Organic Compounds (VOCs) - VOCs Explained

285. Which of the following terms - are organic chemicals that have a high vapor pressure at ordinary, room-temperature conditions?

- A. Volatile Organic Compounds (VOCs)
- B. Synthetic Organic Chemicals (SOCs)
- C. Polychlorinated Biphenyls (PCBs)
- D. Maximum Contaminant Levels (MCL)
- E. Organic compounds
- F. None of the Above

286. Which of the following terms - _____ are of VOCs?.

- A. 3 organic chemicals
- B. Most scents or odors
- C. Five contaminant groups
- D. Elevated odors
- E. Substances
- F. None of the Above

287. Which of the following terms are regulated by law, especially indoors, where concentrations are the highest?

- A. Anthropogenic VOCs
- B. Aqueous solvents
- C. VOCs
- D. Benzene
- E. Methylene chloride
- F. None of the Above

Chapter 3

Permit Application

Wastewater/Pretreatment Sampling General Information

288. In accordance with the Clean Water Act and _____, the POTW conducts a variety of sampling activities which must be closely coordinated.

- A. General Pretreatment Program Regulations
- B. Each site user and
- C. All industrial users and
- D. Priority Pollutants within
- E. Characteristics of the wastes
- F. None of the Above

Permit Application Policy Example

289. All industrial users that require a permit must be sampled to determine the characteristics of the _____ to be discharged into the POTW's sewer system.

- A. SROG
- B. Local limits
- C. Outer limits
- D. Priority Pollutants
- E. Wastes
- F. None of the Above

290. Prior to the issuance of a permit for existing industrial users, the POTW samples the user's effluent, and performs the analyses required by the applicable discharge standards i.e., Categorical standards or?

- A. Taste test
- B. Local limits
- C. SDWA
- D. Priority Pollutants
- E. Characteristics of the wastes
- F. None of the Above

291. For new industrial users, estimates of the _____ to be discharged into the POTW's sewer system must be submitted along with the permit application.

- A. Wastes
- B. CWA
- C. Odor
- D. Priority Pollutants
- E. Characteristics of the wastes
- F. None of the Above

292. No sampling would be performed at these new facilities, since they do not presently discharge wastes into the?

- A. POTWs
- B. Sewer system
- C. CMOM
- D. Priority system
- E. Interceptor
- F. None of the Above

293. A four-day sampling program is usually conducted at _____ to collect both composite and grab (for pollutants not amenable to composite sampling) samples as needed.

- A. POTWs
- B. Each site
- C. All industrial users
- D. The interceptor
- E. The manhole
- F. None of the Above

Wastewater Priory Pollutants

294. The concentrations of various substances in _____ in dissolved, colloidal or suspended form are typically low but vary considerably.

- A. POTWs
- B. These 126 pollutants
- C. New industrial users
- D. Priority Pollutants
- E. Water
- F. None of the Above

295. Priority Pollutants refer to a list of 126 specific pollutants that includes heavy metals and specific organic chemicals. The priority pollutants are a subset of " _____ " as defined in the Clean Water Act (USA).

- A. POTWs
- B. Toxic pollutants
- C. Friendly pollutants
- D. Priority Pollutants
- E. Safe contaminants
- F. None of the Above

296. Which of the following terms were assigned a high priority for development of water quality criteria and effluent limitation guidelines because they are frequently found in wastewater?

- A. POTW managers
- B. These 126 pollutants
- C. Safe contaminants
- D. Priority Pollutants
- E. The concentrations of various substances
- F. None of the Above

297. Which of the following terms - with an approved pretreatment program must develop local limits for arsenic, cadmium, chromium, copper, cyanide, lead, mercury, nickel, silver and zinc?

- A. Each POTW
- B. Each city
- C. All industrial users
- D. Priority pollutant producers
- E. Home owners
- F. None of the Above

298. The POTW must also identify all _____ and evaluate the need for limits for these pollutants.

- A. Other pollutants of concern
- B. 126 pollutants
- C. New industrial users
- D. Priority Pollutants
- E. Concentrations of various substances
- F. None of the Above

299. Concentrations of various substances is defined as any pollutant limited in the POTW's NPDES permit or found in the collection system in sufficient quantity to have a reasonable potential to cause pass through or interference at the treatment plant, pose a threat to worker health and safety, or to cause other problems within the collection system or at the treatment plant, such as explosions or obstruction of wastewater flow.

- A. True
- B. False

300. The priority pollutant scans performed periodically by POTWs with approved pretreatment programs are useful in identifying?

- A. Pollutants of concern
- B. These 126 pollutants
- C. New industrial users
- D. Priority Pollutants
- E. The concentrations of various substances
- F. None of the Above

301. Many POTWs have surcharge programs for?

- A. POTWs
- B. Conventional pollutants
- C. All industrial users
- D. Priority Pollutants
- E. Local limits
- F. None of the Above

302. A POTW should set absolute upper limits for _____ in its sewer use ordinance (SUO) or industrial user (IU) permits, based on total plant capacity.

- A. Conventional pollutants
- B. Surcharge programs
- C. All industrial users
- D. Priority Pollutants
- E. Local limits
- F. None of the Above

303. Which of the following terms - can stimulate the growth of algae and other aquatic plants?

- A. Excess nutrients
- B. Industrial discharges
- C. Heavy Metal
- D. Carbon, nitrogen and phosphorus
- E. Agricultural runoff
- F. None of the Above

304. When these plants die and decompose, they may reduce the amount of _____ in the water.

- A. Nutrients
- B. Oxygen
- C. Heavy Metal
- D. Carbon, nitrogen and phosphorus
- E. Agricultural runoff
- F. None of the Above

305. Which of the following terms can also get into wastewater from industrial discharges, common household detergents and cleaners, runoff from streets and lawns and air pollutants that fall to the ground?

- A. Nutrients
- B. Industrial discharges
- C. Heavy Metal
- D. Carbon, nitrogen and phosphorus
- E. Agricultural runoff
- F. None of the Above

306. Treatment plants cannot remove all _____ from the wastewater.

- A. Nutrients
- B. Industrial discharges
- C. Heavy Metal
- D. Carbon, nitrogen and phosphorus
- E. Agricultural runoff
- F. None of the Above

307. "Heavy Metal" in the water treatment field refers to heavy, dense, _____ that occur only at trace levels in water, but are very toxic and tend to accumulate.

- A. Nutrients
- B. Industrial discharges
- C. Heavy Metal
- D. Metallic elements
- E. Agricultural runoff
- F. None of the Above

308. Which of the following terms include DDT, Aldrin, Chlordane, Endosulfan, Endrin, Heptachlor, and Diazinon. Surprisingly, concentrations of pesticides in urban runoff may be equal or greater than the pesticides in agricultural runoff?

- A. Nutrients
- B. Industrial discharges
- C. Heavy Metal
- D. Typical pesticides and herbicides
- E. Agricultural runoff
- F. None of the Above

309. Which of the following terms spilled or released petroleum products (from oil spills or discharge of oil production brines) and combustion products that are found in urban runoff?

- A. PAHs
- B. Priority Pollutants
- C. Chemical standards
- D. Open-ended groups of pollutants
- E. Inorganics
- F. None of the Above

310. Polychlorinated biphenyls are organic chemicals that formerly had widespread use in electrical transformers and hydraulic equipment. This class of chemicals is extremely persistent in the environment and has been proven to bioconcentrate in the food chain, thereby leading to environmental and human health concerns in areas such as the Great Lakes.

- A. True
- B. False

311. The Priority Pollutants are a set of _____ EPA regulates, and for which EPA has published analytical test methods.

- A. Combustion products
- B. Chemical pollutants
- C. Chemical standards
- D. Open-ended groups of pollutants
- E. Sampling requirements for inorganics
- F. None of the Above

312. Which of the following terms list is more practical for testing and for regulation in that chemicals are described by their individual chemical names?

- A. Organics
- B. Preservatives
- C. Priority Pollutant
- D. List of toxic pollutants more usable
- E. Environmental and human health concerns
- F. None of the Above

313. Which of the following terms contains hundreds of compounds; there is no test for the group as a whole, nor is it practical to regulate or test for all of these compounds?

- A. Combustion products
- B. Priority Pollutants
- C. Chemical standard
- D. Open-ended groups of pollutants
- E. The list of toxic pollutants
- F. None of the Above

Chapter 4 Sampling POTW's Wastewater Samples General

314. Hand compositing is a series of time proportional grab samples which are collected and composited by hand.

- A. True
- B. False

315. Generally, there are four types of samples that are collected by the POTW's Sampling Section: grab, time proportional composites, flow proportional composites, and hand composites.

- A. True
- B. False

316. Which of the following terms - used depends largely on the types of analyses to be run, and the nature of the wastestream being sampled?

- A. An analysis
- B. The sampling method
- C. Duplicate samples
- D. Taste test
- E. Blanks
- F. None of the Above

317. Which of the following sampling terms - is an individual sample collected in less than 15 minutes without regard for flow or time of day.

- A. Entire batch discharge
- B. The volume of sample
- C. A grab sample
- D. An individual sample
- E. Proportional composite sampling
- F. None of the Above

318. pH, cyanide, oil and grease, sulfide, and volatile organics must be collected as composite samples.

- A. True
- B. False

319. Which of the following sampling terms - would then be taken by means of time proportional composite sampling methods or by hand composite will provide a representative sample of the effluent being discharged?

- A. An analysis
- B. Split samples
- C. Duplicate samples
- D. Samples
- E. Blanks
- F. None of the Above

320. Which of the following sampling terms - to be collected by any of these methods is dependent on the number and types of analyses that must be performed?

- A. Entire batch discharge
- B. The volume of sample
- C. Concentration of pollutants
- D. An individual sample
- E. Proportional composite sampling
- F. None of the Above

Wastewater Grab Samples

321. Grab samples are individual samples collected in less than 3 minutes without regard to flow or time of day.

- A. True
- B. False

322. Which of the following sampling terms - are normally taken manually, but can be pumped?

- A. Quantify the pollutants
- B. Grab samples
- C. Hand composites
- D. Time proportional composite sampling methods
- E. Flow proportional composites
- F. None of the Above

A grab sample is usually taken when a sample is needed to:

323. Provide information about _____ of pollutants at a specific time.

- A. Entire batch discharge
- B. The volume of sample
- C. Concentration of pollutants
- D. An individual sample
- E. An instantaneous concentration
- F. None of the Above

324. According the text, quantify the _____ in a non-continuous discharge?

- A. Pollutants
- B. Split samples
- C. Duplicate samples
- D. Taste test
- E. Blanks
- F. None of the Above

325. According to the text, corroborate _____ if the waste is not highly variable.

- A. Entire batch discharge
- B. The volume of sample
- C. Composite samples
- D. An individual sample
- E. Proportional composite sampling
- F. None of the Above

326. Which of the following sampling terms – not amenable to compositing such as pH, temperature, dissolved oxygen, chlorine, purgeable organics and sulfides, oil and grease, coliform bacteria, and sulfites?

- A. Quantify the pollutants
- B. Grab samples
- C. Hand composites
- D. Monitor parameters
- E. Flow proportional composites
- F. None of the Above

Timed Composites

327. Which of the following sampling terms - are usually taken in instances where the intention is to characterize the wastes over a period of time without regard to flow?

- A. Timed samples
- B. Grab samples
- C. Hand composites
- D. Time proportional composite sampling methods
- E. Flow proportional composites
- F. None of the Above

328. Which of the following sampling terms consist of a series of equal volume grab samples taken at regular intervals?

- A. Timed composite samples
- B. Grab samples
- C. Hand composites
- D. Time proportional composite sampling methods
- E. Flow proportional composites
- F. None of the Above

Flow Proportional Composites

329. Which of the following sampling terms consist of a series of grab samples whose volumes are equal in size and proportion to the flow at the time of sampling?

- A. The sampling point(s)
- B. Sample preservation
- C. Duplicate samples
- D. Routine QA/QC measures
- E. Flow proportional composite samples
- F. None of the Above

330. Which of the following sampling terms are taken at varying time intervals, or continuous samples taken over a period of time based on the flow?

- A. Entire batch discharge
- B. The volume of sample
- C. Concentration of pollutants
- D. An individual sample
- E. Samples
- F. None of the Above

331. Wherever possible, grab sampling is recommended because it most accurately reflects the nature of the wastestream.

- A. True
- B. False

332. Which of the following sampling terms - taken at varying time intervals are most often collected by the sampling inspectors?

- A. Entire batch discharge
- B. The volume of sample
- C. Equal volume samples
- D. An individual sample
- E. Proportional composite sampling
- F. None of the Above

Industrial Users - Permitted/Non-permitted Example

333. Which of the following sampling terms - within an industry vary with each industry depending on the nature of the process and location of pretreatment facilities?

- A. The sampling point(s)
- B. Sample preservation
- C. Duplicate samples
- D. Routine QA/QC measures
- E. Blanks
- F. None of the Above

334. Exact sampling locations must be identified on a case by case basis. The following general principles apply in all cases: A permanent sampling location(s) must be identified for use by the collection system.

- A. True
- B. False

Wastewater Sample Preservation

335. One or more unstable pollutants that require immediate analysis or preservation until _____ can be made.

- A. An analysis
- B. Split samples
- C. Duplicate samples
- D. Taste test
- E. Blanks
- F. None of the Above

336. According the text, sample preservation is needed for _____, for example, which may be stored for as long as 24 hours prior to transferring them to the laboratory.

- A. Nitrified effluent
- B. Composite samples
- C. Total Nitrogen (TN)
- D. Nitrogen and phosphorus levels
- E. Activated sludge
- F. None of the Above

Quality Assurance/Quality Control Policy Example

337. According the text, Quality Assurance/Quality Control (QA/QC) measures taken by the sampling crew include equipment blanks, trip blanks, split samples and duplicate samples.

- A. True
- B. False

338. Equipment blanks and _____ are routine QA/QC measures.

- A. The sampling point(s)
- B. Sample preservation
- C. Duplicate samples
- D. Routine QA/QC measures
- E. Trip blanks
- F. None of the Above

339. Which of the following sampling terms are taken for Local Limits (pretreatment) sampling and when requested by an industry or laboratory?

- A. An analysis
- B. Split samples
- C. Duplicate samples
- D. Taste test
- E. Blanks
- F. None of the Above

340. Which of the following sampling terms should be run when requested by a Supervisor or Project Leader?

- A. An analysis
- B. Split samples
- C. Duplicate samples
- D. Taste test
- E. Blanks
- F. None of the Above

341. The laboratory needs to prepare _____ used by the sampling crews.

- A. The sampling point(s)
- B. Sample preservation
- C. Duplicate samples
- D. Routine QA/QC measures
- E. All trip blanks/travel blanks
- F. None of the Above

342. Any contamination detected in the _____ would result from field exposure which could in turn affect collected samples.

- A. An analysis
- B. Split samples
- C. Duplicate samples
- D. Taste test
- E. Blanks
- F. None of the Above

Chain-of-Custody

343. If sampling is performed for the Pretreatment program, any sampling data may be used as evidence in court proceedings in this case _____ becomes critical.

- A. Sampling crew
- B. Duplicate samples
- C. Pre-preserved bottles
- D. Documentation
- E. Noncompliant industrial user
- F. None of the Above

344. Laboratory personnel sign and date the chain of custody form, and return it to the sampling crew who makes two copies of the form. One copy is for the sampling crew files and the other is for data entry.

- A. True
- B. False

Proper Sample Handling

345. The proper handling of _____ also includes wearing gloves.

- A. Other parameters
- B. Pre-preserved bottles
- C. Preservatives
- D. Some samples
- E. Water quality samples
- F. None of the Above

346. When this missing term is received from the laboratory, check to see that none have leaked.

- A. Other parameters
- B. Pre-preserved bottles
- C. Preservatives
- D. Some samples
- E. Containers and preservatives
- F. None of the Above

347. Which of the following wastewater sampling terms should be labeled with type of preservative used, type of analysis to be done and be accompanied by a Safety Data Sheet (SDS)?

- A. Sampling crew
- B. Duplicate samples
- C. Pre-preserved bottles
- D. Sampling bottles
- E. Noncompliant industrial user
- F. None of the Above

348. Make sure you can tell if containers are pre-preserved, because you do not to overfill them when collecting samples in the field.

- A. True
- B. False

349. Check with the laboratory about _____ when using pre-preserved bottles.

- A. Other parameters
- B. Quality control procedures
- C. Preservatives
- D. Some samples
- E. Organics
- F. None of the Above

350. If necessary, obtain extra coolers and never store coolers and containers near solvents, fuels or other sources of contamination or combustion. In warm weather, keep coolers and samples in the shade.

- A. True
- B. False

351. Nitrile gloves are appropriate for?

- A. Other parameters
- B. Pre-preserved bottles
- C. Preservatives
- D. Some samples
- E. Organics
- F. None of the Above

352. Which of the following wastewater sampling terms use this procedure when coolers and containers are prepared, sealed and shipped?

- A. Chain-of-custody
- B. Duplicate samples
- C. Pre-preserved bottles
- D. Safety Data Sheet (SDS)
- E. Noncompliant industrial user
- F. None of the Above

353. _____ are hydrochloric, nitric, sulfuric and ascorbic acids, sodium hydroxide, sodium thiosulfate, and biocides.

- A. Other parameters
- B. Pre-preserved bottles
- C. Preservatives
- D. Some samples
- E. Organics
- F. None of the Above

354. Many laboratories provide _____ filled with measured amounts of preservatives.

- A. Sampling crew
- B. Duplicate samples
- C. Pre-preserved bottles
- D. Safety Data Sheet (SDS)
- E. Noncompliant industrial user
- F. None of the Above

Field Parameters

355. Be sure to measure and record the field parameters of temperature, electrical conductivity, pH and _____ in an undisturbed section of stream flow.

- A. Nitrified effluent
- B. Nitrogen
- C. Total Nitrogen (TN)
- D. Dissolved oxygen
- E. Activated sludge
- F. None of the Above

Dissolved Oxygen

356. Aerobic means without air and some bacteria thrive under these conditions and utilize the nutrients and chemicals available to exist.

- A. True
- B. False

357. At least two general forms of bacteria act in balance in a wastewater digester: Saprophytic organisms and?

- A. Methane Fermenters
- B. DO fermenters
- C. Carbon dioxide fermenters
- D. Butyric acid fermenters
- E. Aerobic fermenters
- F. None of the Above

358. The saprophytes exist on dead or decaying materials.
A. True B. False
359. The methane fermenting bacteria require a pH range of 6.6 to 7.6 to be able to live and reproduce.
A. True B. False
360. Aerobic bacteria do not require oxygen to live and thrive.
A. True B. False
361. Aerobes decompose inorganics in the water; the result is carbon dioxide and H₂SO₄.
A. True B. False
362. Dissolved oxygen (DO) in water is considered a contaminant.
A. True B. False
363. Dissolved oxygen level is important because too much or not enough dissolved oxygen can create?
A. Unfavorable conditions D. Frequent dissolved oxygen measurement
B. DO analysis E. Aerobic conditions
C. Carbon dioxide F. None of the Above
364. A lack of dissolved oxygen in natural waters creates?
A. Anaerobic conditions D. Phosphorus-reduction system(s)
B. Methane fermenters E. Excessive sludge production
C. Denitrification F. None of the Above
365. Which of the following wastewater terms lives on the volatile acids produced by these saprophytes?
A. Wildlife habitat D. Phosphorus-reduction system(s)
B. Methane fermenters E. Excessive sludge production
C. Denitrification F. None of the Above
366. Which of the following wastewater terms indicates that dissolved oxygen is present?
A. Sample(s) D. Frequent dissolved oxygen measurement
B. DO analysis E. Aerobic conditions
C. Carbon dioxide F. None of the Above
367. Which of the following wastewater terms in a water sample can be detrimental to metal pipes in high concentrations because oxygen helps accelerate corrosion?
A. Winkler Method D. Anaerobic conditions
B. Dissolved Oxygen E. The Iodometric (titration) test
C. Only molecular oxygen F. None of the Above
368. Oxygen's primary value is to oxidize iron and manganese into forms that will precipitate out of the water; it also removes excess carbon dioxide.
A. True B. False

369. Which of the following wastewater terms – in a water sample will affect the taste of drinking water?

- A. Sample(s)
- B. DO analysis
- C. Carbon dioxide
- D. Dissolved oxygen
- E. Aerobic conditions
- F. None of the Above

Methods of Determination

370. Temperature, atmospheric pressure, salinity, biological activity and pH all have an effect on the (DO) content.

- A. True
- B. False

371. Which of the following wastewater terms procedure is based on the rate of diffusion of molecular oxygen across a membrane?

- A. Membrane electrode method
- B. Dissolved Oxygen
- C. Only molecular oxygen
- D. Anaerobic conditions
- E. Iodometric (titration) test
- F. None of the Above

372. Many factors determine the _____ in a water sample.

- A. Solubility of oxygen
- B. DO analysis
- C. Carbon dioxide
- D. Frequent dissolved oxygen measurement
- E. Aerobic conditions
- F. None of the Above

Iodometric Test

373. The Iodometric (titration) test is not a very precise and reliable for (DO) analysis of samples.

- A. True
- B. False

374. Reactions take place with the addition of certain chemicals that liberate iodine equivalent to the?

- A. Original (DO) content
- B. Dissolved Oxygen
- C. Only molecular oxygen
- D. Anaerobic conditions
- E. Iodometric (titration) test
- F. None of the Above

375. Which of the following wastewater terms – can liberate iodine from iodides, and some reducing agents reduce iodine to iodide?

- A. Ammonia oxidation
- B. Phosphorus removal
- C. Certain oxidizing agents
- D. An aerobic wastewater treatment facility
- E. Oxygen demand of wastewater
- F. None of the Above

376. Which of the following wastewater terms – effectively removes interference caused by nitrates in the water sample, so a more accurate determination of (DO) can be made?

- A. Winkler Method
- B. Dissolved Oxygen
- C. Only molecular oxygen
- D. The alkaline Iodide-Azide reagent
- E. The iodometric (titration) test
- F. None of the Above

377. Which of the following wastewater terms are highly dependent on the source and characteristics of the sample?

- A. Methods of analysis
- B. DO analysis
- C. Carbon dioxide
- D. Frequent dissolved oxygen measurement
- E. Aerobic conditions
- F. None of the Above

378. Which of the following wastewater terms passes through the membrane and is measured by the meter?

- A. Carbon dioxide
- B. Dissolved Oxygen
- C. Only molecular oxygen
- D. H₂S
- E. Carbon
- F. None of the Above

379. According to the text, membrane electrodes provide an excellent method for _____ in polluted, highly colored turbid waters and strong waste effluents.

- A. Sample(s)
- B. DO analysis
- C. Carbon dioxide
- D. Frequent dissolved oxygen measurement
- E. Aerobic conditions
- F. None of the Above

380. Proper samples must be taken in _____ bottles where agitation or contact with air is at a minimum.

- A. Sample(s)
- B. DO analysis
- C. BOD
- D. Frequent dissolved oxygen measurement
- E. Aerobic conditions
- F. None of the Above

381. Which of the following wastewater terms –is the one of the most important analyses in determining the quality of natural waters?

- A. Winkler Method
- B. Dissolved Oxygen
- C. The dissolved oxygen test
- D. Anaerobic conditions
- E. The iodometric (titration) test
- F. None of the Above

382. Which of the following wastewater terms –measurement is essential for adequate process control?

- A. Sample(s)
- B. DO analysis
- C. Carbon dioxide
- D. Dissolved oxygen
- E. Aerobic conditions
- F. None of the Above

Sludge Volume Index (SVI)

383. The higher the (SVI), the better is the settling quality of the aerated mixed liquor, low (SVI) of 50 or less is considered a good settling sludge.

- A. True
- B. False

384. The Sludge Volume Index (SVI) of activated sludge is defined as the volume in milliliters occupied by _____ after settling for 30 minutes.

- A. A closed loop
- B. 1g of activated sludge
- C. Optimal DO levels
- D. Trickling filter FFSS
- E. A portion of the denitrified effluent
- F. None of the Above

Chapter 4 Enforcement Confined Space Entry Program

Purpose

385. The Confined Space Entry Program is provided to protect authorized employees that will enter confined spaces and may be exposed to hazardous atmosphere, engulfment in materials, conditions which may trap or asphyxiate due to converging or sloping walls, or contains any other safety or health hazards.

- A. True
- B. False

Scope

386. According to the text, you are required to recognize this term associated with confined spaces.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Dangers and hazards
- E. Atmospheric factors and physical agents
- F. None of the Above

Confined space:

387. Is large enough or so configured that an employee can?

- A. Engulfing an entrant
- B. Bodily enter and perform work
- C. An internal configuration
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

388. Is not designed for?

- A. Engulfing an entrant
- B. Hazardous atmospheres
- C. An internal configuration
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

389. Permit required confined space (permit space), is a confined space that has one or more of the following characteristics: Contains or has a potential to contain a?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Entry or exit
- E. Atmospheric factors and physical agents
- F. None of the Above

390. Has limited or restricted means for entry or exit (i.e. tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Limited means of entry
- D. Entry or exit
- E. Atmospheric factors and physical agents
- F. None of the Above

391. Contains a material that has the?

- A. Engulfing an entrant
- B. Hazardous atmospheres
- C. Potential for engulfing an entrant
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

392. Has an internal configuration such that _____ could be trapped or asphyxiated by inwardly covering walls or by a floor which slopes downward and tapers to a smaller cross-section.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. An entrant
- E. Atmospheric factors and physical agents
- F. None of the Above

393. Contains any other recognized serious safety or?

- A. Engulfing an entrant
- B. Hazardous atmospheres
- C. An internal configuration
- D. Health hazard
- E. Continuous employee occupancy
- F. None of the Above

394. Which of the following terms -will be marked "Confined Space - Entry Permit Required"?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Entry or exit
- E. Atmospheric factors and physical agents
- F. None of the Above

Confined Space Hazards

395. Fatalities and injuries constantly occur among construction workers who, during the course of their jobs, are required to enter?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Ventilation ducts
- D. Entry or exit
- E. Confined spaces
- F. None of the Above

396. Throughout the construction jobsite, contractors and workers encounter both inherent and _____ within confined workspaces.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Induced hazards
- E. Atmospheric factors and physical agents
- F. None of the Above

Inherent Hazards

397. Which of the following terms - such as electrical, thermal, chemical, mechanical, etc., are associated with specific types of equipment and the interactions among them?

- A. Inherent hazards
- B. Hazardous atmospheres
- C. An internal configuration
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

398. Inherent Hazards include high voltage (shock or corona discharge and the resulting burns), radiation generated by equipment, _____, omission of protective features, high or low temperatures, high noise levels, and high-pressure vessels and lines.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Defective design
- E. Atmospheric factors and physical agents
- F. None of the Above

399. Inherent hazards usually cannot be eliminated without degrading the system or equipment, or without making them inoperative. An emphasis must be placed on?

- A. Hazard control methods
- B. Hazardous atmospheres
- C. An internal configuration
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

Induced Hazards

400. Induced Hazards are: omission of protective features, physical arrangements that may cause unintentional worker contact with electrical energy sources, oxygen-deficient atmospheres created at the bottom of pits or shafts, lack of safety factors in structural strength, and?

- A. Common confined space
- B. Hazard
- C. Vaults
- D. An oxygen-deficient atmosphere
- E. Flammable atmospheres
- F. None of the Above