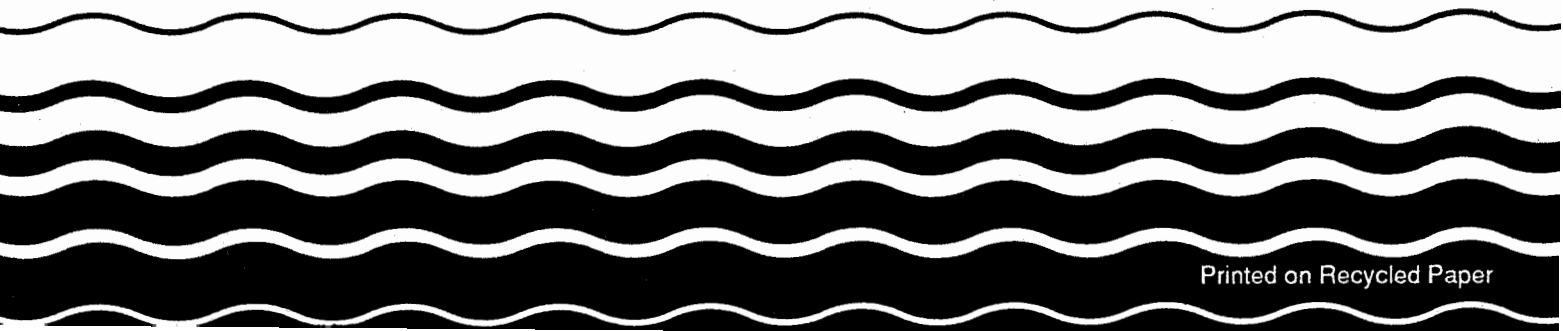




# NPDES Compliance Inspection Training Program Student's Guide



**NPDES COMPLIANCE INSPECTION  
TRAINING PROGRAM**

**STUDENT'S GUIDE**

**FINAL**

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Submitted to:

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**DISCLAIMER**

This Student's Guide represents the introductory training on selected topics related to the conduct of NPDES compliance inspections developed by the U.S. Environmental Protection Agency Office of Enforcement and Compliance Assurance. Failure on the part of any duly authorized official, inspector, or agent to comply with its contents shall not be a defense in any enforcement action, nor shall a failure to comply with this guidance alone constitute grounds for rendering evidence obtained thereby inadmissible in a court of law. The mention of trade names or commercial products constitutes neither endorsement nor recommendation for use.

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### FOREWORD

To prepare novice inspectors to conduct complete and accurate inspections under the National Pollutant Discharge Elimination System (NPDES) program, the Office of Enforcement and Compliance Assurance of the U.S. Environmental Protection Agency (EPA) has developed the NPDES Compliance Inspection Training Program, which is designed for independent study. The student works under the guidance of an experienced inspector or "instructor" to complete the *NPDES Compliance Inspection Training Program Student's Guide* (hereafter referred to as the "Guide" and to perform a period of intensive field work. The program reviews the Clean Water Act (CWA) and focuses on the basic policies, procedures, and techniques involved in NPDES inspections. The program's primary references are EPA's 1994 *NPDES Compliance Inspection Manual* (hereafter referred to as the "Manual") and the following EPA 1990 *NPDES Compliance Monitoring Inspector Training Modules*.

- *Overview* – Presents a review of the NPDES program and briefly summarizes the different types of inspections
- *Legal Issues* – Discusses the legal issues which must be addressed during an inspection and provides legal information to assist inspectors
- *Biomonitoring* – Outlines the principles of biomonitoring and the role of biological testing in the NPDES inspection program
- *Sampling Procedures* – Details procedures to be used when conducting sampling
- *Laboratory Analysis* – Outlines procedures and information necessary to perform an effective evaluation of a permittee's laboratory.

The period of intensive field work accomplished under the guidance of the instructor is intended to provide the student with practical "hands-on" experience and to reinforce the information presented in the Guide. The student's performance is evaluated regularly by the instructor, who makes recommendations for additional work (if necessary).

This document is the Student's Guide in the NPDES Compliance Inspection Training Program; it provides directed study and questions on the Manual, the five training modules, the CWA, and relevant regulations. This guide contains 14 self-study units that lead the student through the reference materials, test his/her understanding of the topics discussed, and prepare him/her for independent field inspections.

### HOW THE PROGRAM WORKS

Each unit consists of a series of activities that explore, review, and reinforce:

- Standard inspection procedures
- Techniques for defensible evidence collection
- The overall NPDES enforcement program.

Each unit contains at least one exercise that includes a reading assignment and a study checklist. The study checklist includes questions that the student should be able to answer after completing the reading assignment. The student should first read through the study checklist and respond to as many items as possible. This will help focus the material presented in the reading assignment and identify areas that will need detailed study. The student should then complete the recommended reading assignment. After reading all the assigned materials, the student should return to the study checklist and respond to each question. The student should work through the checklist, correcting any errors

made the first time. If questions persist, they should be discussed with the instructor. The student must not proceed to the next exercise until each item on the checklist is completed correctly. The study checklists within each unit include the appropriate references where the answers to the questions can be found. Each unit also contains an exam which is to be completed after the student has finished each exercise in that unit. This exam does not contain references. A final exam will be given to the student after completion of all the units.

Most units contain several exercises which require the student to use basic unit information to solve problems that inspectors often face in the field. Responses to many of these exercises are not simply right or wrong, but are open to interpretation and discussion. It is important that the student and instructor review and discuss the student's responses.

## SCHEDULE/CHECKLIST

		<b>STUDENT</b>	
		<b>INSTRUCTOR</b>	
STUDY UNIT	ESTIMATED TIME TO COMPLETE	SCHEDULED COMPLETION DATE	SATISFACTORY COMPLETION
1. Introduction	9 hours		
2. Inspection Procedures	6 hours 15 minutes		
3. Documentation/Record Keeping and Reporting	1 hour 30 minutes		
4. Facility Site Review	5 hours		
5. Sampling	5 hours 45 minutes		
6. Flow Measurement	3 hours 30 minutes		
7. Laboratory Procedures and Quality Assurance	3 hours 15 minutes		
8. Toxicity	5 hours 30 minutes		
9. Pretreatment	3 hours 15 minutes		
10. Sewage Sludge	2 hours 45 minutes		
11. Storm Water	3 hours 15 minutes		
12. Combined Sewer Overflows	1 hour 30 minutes		
13. Pollution Prevention	2 hours		
14. Multi-Media Concerns	2 hours 30 minutes		
Final Exam	2 hour 30 minutes		
TOTAL	57 hours 30 minutes		



## UNIT ONE

### INTRODUCTION

The primary responsibility of an inspector is to inspect facilities for compliance with permit requirements. To carry out this responsibility, inspectors must be knowledgeable of the CWA, the many procedural requirements and responsibilities, and multimedia concerns involved in conducting a successful inspection. Unit One is designed to familiarize the student with these program aspects.

Unit One corresponds to Chapter 1 of the Manual, select sections of the CWA, as amended, the NPDES regulations, and EPA's 1990 *NPDES Compliance Monitoring Inspector Training Overview* module. The exercises included in this unit cover:

- Legal authority for NPDES inspections
- NPDES permitting regulations
- Responsibilities of the NPDES inspector.

**EXERCISE 1-1****LEGAL AUTHORITY FOR  
NPDES INSPECTIONS****3 HOURS  
30 MINUTES**

To carry out their duties effectively, inspectors must be thoroughly familiar with the legal bases for their actions. A clear understanding of the objective, purpose, scope, and requirements of the CWA is imperative.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapters 1A and 1B of the Manual and Chapters 1 and 2 of the *NPDES Compliance Monitoring Inspector Training Overview* module.
3. Obtain a copy of the current CWA from your instructor. Read Sections 301, 303, 304, 308, 309, 402, 504, and 507.
4. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. State (in your own words) the objective of the CWA. (Overview module, Chapter 1, page 1-1)

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2. Section 301(b)(1)(B) of the CWA requires Publicly Owned Treatment Works (POTWs) in existence on July 1, 1977, or approved pursuant to Section 203 of the CWA prior to June 30, 1974, to meet effluent limits based on \_\_\_\_\_.
3. List 5 things that must be taken into consideration when establishing new or revised water-quality standards [under Section 303(c)(2)(A) of the CWA].

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

- d. \_\_\_\_\_
- e. \_\_\_\_\_
4. Section 304 of the CWA establishes a time table for EPA and States to develop and publish information on water quality.
- TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
5. Indicate which part of Section 308 of the CWA addresses confidential information.
- \_\_\_\_\_
6. List two types of penalties available to EPA under Section 309 of the CWA.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
7. Under Section 402 of the CWA, a permit may never be renewed, reissued, or modified to contain effluent limitations which are less stringent than the effluent limits in the previous permit.
- TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
8. Describe the circumstances under which EPA may take action to immediately stop someone from discharging pollutants. (CWA, Section 504)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
9. Section 507 of the CWA sets forth protection for employees who testify or institute proceedings under the CWA.
- TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
10. Summarize the process by which EPA, under the CWA, regulates the discharge of pollutants into the Nation's waterways. (Manual, Chapter 1B, page 1-7)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
11. List nine types of NPDES compliance inspections presented in the Manual Overview module. (Manual Chapter 1A, pages 1-1 through 1-3; Overview module, Chapter 2, pages 2-1 through 2-4)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_
- i. \_\_\_\_\_

**EXERCISE 1-2****NPDES PERMITTING REGULATIONS****3 HOURS**

The NPDES permitting regulations detail the regulatory requirements under which a permittee must operate a facility to remain in compliance. This exercise will review those requirements that affect the inspector's understanding of his/her responsibilities and ability to perform successful inspections.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Obtain a copy of the regulations [*Code of Federal Regulations* Title 10, Part 122 "EPA Administered Permit Programs: The National Pollutant Discharge Elimination System."] from your instructor and read them.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. State (in your own words) the purpose and scope of the NPDES permitting regulations. [40 CFR 122.1]  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. List six things that must be included in a facility's monitoring records for each sample or measurement taken. [40 CFR 122.41(j)(3)]
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
3. List two conditions under which a "bypass" will not result in an enforcement action. [40 CFR 122.41(m)(2)&(4)]
  - a. \_\_\_\_\_  
\_\_\_\_\_
  - b. \_\_\_\_\_  
\_\_\_\_\_
4. List four conditions that a permittee must demonstrate to establish an "upset" as an affirmative defense. [40 CFR 122.41(n)(3)]
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
5. Describe what production-based limits for existing facilities (except POTWs) should be based on. [40 CFR 122.45(b)]  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Describe the manner in which permit effluent limitations for continuous-discharge POTWs should be stated. [40 CFR 122.45(d)]

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7. List four factors that should be considered when limiting the discharges from noncontinuous-discharge facilities. [40 CFR 122.45(e)]

- a. 

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- b. 

---
- c. 

---
- d. 

---

8. Identify the maximum length of time for which a permit may be granted. [40 CFR 122.46]

---

9. Indicate by when compliance schedules must require compliance. [40 CFR 122.47(a)]

---

10. List three types of information specified in permits for the recording and reporting of monitoring results. [40 CFR 122.48]

- a. 

---
- b. 

---
- c. 

---

**EXERCISE 1-3****RESPONSIBILITIES OF THE NPDES INSPECTOR****2 HOURS**

Inspections are the enforcement mechanisms for detecting and verifying violations of NPDES permits. Inspectors must know and abide by the legal authority concerning inspections and the accepted procedures for conducting them. This exercise focuses on the purpose, scope, and elements of various inspections, and the basic responsibilities of an inspector.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 1C and Appendix A of the Manual and Chapters 3 through 5 of the *NPDES Compliance Inspector Training Overview* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. State the purposes of an inspection. (Manual, Chapter 1C, page 1-9)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
2. List two legal requirements under which an inspector must conduct all NPDES inspections. (Manual, Chapter 1C, page 1-9)  
 a. \_\_\_\_\_  
 b. \_\_\_\_\_
3. Summarize the inspector's responsibilities related to personal safety during an inspection. (Manual, Chapter 1C, pages 1-10 through 1-11; Overview module, Chapter 4, page 4-3)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Summarize the responsibilities of an inspector relating to ethical conduct and professionalism during an inspection. (Manual, Chapter 1C, pages 1-11 through 1-12; Overview module, Chapter 3, page 3-1)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
5. Information from a permitted facility that has been classified as confidential may be withheld from an EPA or State NPDES inspector. (Overview module, Chapter 3, page 3-2)  
 TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
6. It is permissible for the NPDES inspector, after completing an inspection of a facility, to discuss both the findings of the inspection and all violations identified with representatives of the permittee. (Overview module, Chapter 4, page 4-5)  
 TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
7. Which of the following is not an objective of the Compliance Sampling Inspection (CSI)? (Circle correct answer.) (Overview module, Chapter 5, pages 5-9 through 5-10)

- a. To verify compliance with permit effluent limits
  - b. To evaluate the permittee's laboratory techniques
  - c. To verify that parameters specified in the permit are consistent with the facility's wastewater characteristics
  - d. To gather information that may support enforcement actions.
8. Which of the following is not a component of a Compliance Evaluation Inspection (CEI)? (Circle correct answer.) (Overview module, Chapter 5, page 5-1)
- a. Facility site review
  - b. Compliance schedule review
  - c. Biomonitoring procedures review
  - d. Records and reports review.
9. A CSI is (more/less) resource-intensive than a CEI. (Circle correct answer.) (Overview module, Chapter 5, page 5-10)
10. It is the NPDES inspector's obligation during a Performance Audit Inspection (PAI) to be knowledgeable about common permittee self-monitoring deficiencies. (Overview module, Chapter 5, page 5-12)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

11. Which of the following is/are objectives of the records and reports review conducted as part of the CEI? (Circle correct answer.) (Overview module, Chapter 5, page 5-2)
- a. To identify trends in a permittee's effluent quality
  - b. To review the Quality Assurance (QA) system of a permittee's self-monitoring program
  - c. To document compliance/noncompliance with permit limitations and requirements
  - d. All of the above.

UNIT 1	EXAM	30 MINUTES
<b>Instructions</b> <ol style="list-style-type: none"><li>1. Complete this exam without referring to any text or notes.</li><li>2. Do not exceed the time limit listed above.</li><li>3. Verify the answers with your instructor.</li><li>4. Correct any errors and clarify problems or questions before proceeding to Unit 2.</li></ol>		

Exam Questions

1. Explain the process by which EPA, under the CWA, regulates the discharge of pollutants into the Nation's waterways.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Explain the purpose of the NPDES permitting regulations.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. According to 40 CFR 122.44 of the NPDES regulations, permits must include numerous conditions. List three examples of these conditions.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
4. List two basic purposes of NPDES inspections.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
5. Information from a permitted facility that has been classified as confidential may never be withheld from an inspector.  
  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
6. Describe what a CSI focuses on.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. A diagnostic inspection usually results in the issuance of a Administrative Order to conduct a detailed analysis to correct the identified problem(s).  
  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
8. List the six activities commonly involved in NPDES inspections.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_



## UNIT TWO

### INSPECTION PROCEDURES

Section 308 of the CWA and NPDES regulations provide the general authority and limitations for inspections. The terms and conditions of the NPDES permit, however, more precisely define the authority to inspect a permitted facility. The scope of an NPDES inspection can be complex and will vary from facility to facility. However, inspection procedures and guidelines have been established for those elements common to all inspections. Unit Two of this Guide corresponds to Chapter 2 of the Manual, EPA's 1990 *NPDES Compliance Monitoring Inspector Training Overview* module, and EPA's 1990 *NPDES Compliance Monitoring Inspector Training Legal Issues* module. Chapter 2 is divided into the following six exercises:

- Planning and preparing for an inspection
- Entering the facility
- Conducting the opening conference
- Ensuring appropriate documentation
- Conducting the closing conference
- Preparing the inspection report.

EXERCISE 2-1	PLANNING AND PREPARING FOR AN INSPECTION	2 HOURS
<p>Proper planning and preparation are necessary to ensure that an inspection is conducted smoothly, efficiently, and professionally. This exercise is designed to focus on the procedures involved in the preinspection process.</p> <ol style="list-style-type: none"> <li>1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.</li> <li>2. Read Chapter 2A and Appendix B of the Manual; review Chapter 4 and Appendices E through F of the <i>NPDES Compliance Monitoring Inspector Training Overview</i> module; and read Chapters 1 through 5 and Appendix B of the <i>NPDES Compliance Monitoring Inspector Training Legal Issues</i> module.</li> <li>3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.</li> </ol>		

Study Checklist At the end of this exercise, you should be able to:

1. Explain how facilities are selected for inspections. (Overview module, Appendix E; Legal Issues module, Chapter 4, pages 4-1 through 4-2).

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2. List five sources of legal authority. (Legal Issues module, Chapter 1, page 1-3)

- a. 

---
- b. 

---
- c. 

---
- d. 

---
- e. 

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3. EPA inspectors may visit a facility which has not been issued an NPDES permit. (Legal Issues module, Chapter 3, page 3-1)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

4. List five sources of evidence regarding specific violations. (Legal Issues module, Chapter 4, page 4-2)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

5. Routine inspections should not be targeted at facilities in litigation with EPA. (Legal Issues module, Chapter 4, pages 4-1 through 4-2)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

6. Describe how facilities may be notified of an impending inspection. (Manual, Chapter 2A, page 2-6; Overview module, Chapter 4, page 4-4; Legal Issues module, Chapter 4, page 4-2)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. List three goals of reviewing facility background information prior to an inspection. (Manual, Chapter 2A, page 2-1)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

8. List three sources of facility background information. (Manual, Chapter 2A, pages 2-4 through 2-5)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

9. Explain how an inspector may determine what equipment and supplies might be needed during an inspection. (Manual, Chapter 2A, pages 2-6 through 2-8; Overview module, Appendix F)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

10. List six components or facets of an inspection that should be addressed during development of an inspection plan. (Manual, Chapter 2A, pages 2-5 through 2-6)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_

11. Claims of confidentiality must be asserted at the time of the inspection or they will be considered waived by the permittee. (Legal Issues module, Chapter 4, page 4-3)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

12. The procedures for handling claims of confidentiality are set out in \_\_\_\_\_. (Legal Issues module, Chapter 4, page 4-4)

13. Inspectors should sign confidentiality or secrecy agreements if entry will be otherwise denied by the facility. (Legal Issues module, Chapter 4, page 4-5)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

14. Unauthorized disclosure of confidential information is a criminal offense. (Legal Issues module, Chapter 4, page 4-6)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

15. The types of sampling which the inspector may undertake at the facility is determined by the terms and conditions of the permit. (Legal Issues module, Chapter 5, page 5-2)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

**EXERCISE 2-2****ENTERING THE FACILITY****45 MINUTES**

Specific procedures for entering a facility have been established and must be followed by inspectors at all times. It is imperative that inspectors understand these procedures and their legal ramifications. Inspectors should be aware that enforcement proceedings against a facility may be hindered if inspectors fail to follow required procedures. This exercise focuses on entering a facility to conduct an inspection.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 2B and Appendix C of the Manual and Chapters 6 and 7 of the *NPDES Compliance Monitoring Inspector Training Legal Issues* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Describe the legal authority for an inspector's entry into a facility. (Manual, Chapter 2B, page 2-9)

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2. State when and why an inspector's credentials need to be presented to facility officials. (Manual, Chapter 2B, page 2-9; Legal Issues module, Chapter 6, page 6-1)

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3. Explain how an inspector might overcome initial reluctance on the part of a facility official to give consent to an inspector. (Manual, Chapter 2B, page 2-10; Legal Issues module, Chapter 6, page 6-3)

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4. Generally, inspections must occur during a facility's business hours. (Legal Issues module, Chapter 6, page 6-1)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

5. If the facility refuses entry to an inspector, it becomes subject to civil penalties for violating its permit. (Legal Issues module, Chapter 6, page 6-3)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

6. Summarize the procedures to be followed if entry to a facility is denied. (Manual, Chapter 2B, page 2-11; Legal Issues module, Chapter 6, page 6-3)

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7. List two things an inspector should NEVER do if entry is denied. (Manual, Chapter 2B, pages 2-11 through 2-12; Legal Issues module, Chapter 6, page 6-3)

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- a. \_\_\_\_\_
- b. \_\_\_\_\_
8. Once consent is given, it cannot be withdrawn, and an inspector does not have to halt an inspection. (Manual, Chapter 2B, page 2-12; Legal Issues module, Chapter 6, page 6-3)
- TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
9. Describe the actions that an inspector should take if consent to conduct a facility inspection is withdrawn during such an inspection. (Manual, Chapter 2B, page 2-12)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
10. Explain the purpose of a warrant. (Manual, Chapter 2B, page 2-12; Legal Issues module, Chapter 7, page 7-1)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
11. List the three grounds for obtaining a search warrant are. (Legal Issues module, Chapter 7, page 7-1)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
12. To obtain a search warrant, an \_\_\_\_\_, indicating the grounds for issuance of the warrant, will also have to be signed. (Legal Issues module, Chapter 7, page 7-3)
13. A criminal conviction requires the permitting authority to demonstrate evidence which is \_\_\_\_\_. (Legal Issues module, Chapter 7, page 7-6)

**EXERCISE 2-3****CONDUCTING THE OPENING CONFERENCE****15 MINUTES**

The intent of an opening conference is to provide facility officials with a clear understanding of the authority, purpose, and scope of the inspection to be conducted. The opening conference also provides the inspector with the opportunity to carry out administrative duties. This exercise focuses on the components of an inspection's opening conference.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 2C of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List three considerations that should be discussed during an opening conference to prevent misunderstandings and assist facility personnel during an inspection. (Manual, Chapter 2C, pages 2-13 through 2-15)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_

**EXERCISE 2-4****DOCUMENTATION****2 HOURS**

One basic responsibility of an inspector is documentation of the actual conditions existing at the time of the inspection. Documentation is the basis on which EPA builds a case to prosecute violations of the CWA. It is imperative that all documentation be developed in accordance with established procedures to ensure its accuracy and objectivity. This exercise focuses on the components of documenting an inspection.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 2D of the Manual and Chapters 8 through 12 of the *NPDES Compliance Monitoring Inspector Training Legal Issues* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Explain the purpose of the field notebook and list the types of information to be entered in it. (Manual, Chapter 2D, pages 2-17 through 2-18)

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2. Summarize the procedures for documenting a suspected violation by means of the items listed below. (Manual, Chapter 2D, pages 2-18 through 2-22; Legal Issues module, Chapter 8, pages 8-1 through 8-2)

- a. Statement from witnesses

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- b. Photographs

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- c. Video tapes

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- d. Drawings and maps

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- e. Printed matter

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- f. Mechanical recordings

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3. Describe standard procedures for copying and identifying records. (Manual, Chapter 2D, pages 2-22 through 2-24)

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4. Use of documentation as evidence in court is one reason why standard procedures are important when documenting inspection findings. Assume you are called to the witness stand to testify regarding an inspection conducted the previous year and are asked to identify a particular record. Describe how you would prove when, why, and by whom the record was examined. (Manual, Chapter 2D, pages 2-22 through 2-24)

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5. Describe how information can be claimed as confidential by the permittee. (Manual, Chapter 2D, page 2-24)

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6. Explain what security measures should be taken to safeguard inspection data or information that a permittee satisfactorily claims as confidential. (Manual, Chapter 2D, page 2-25)

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7. Explain the policies regarding the discussion of deficiencies and violations identified during an inspection with facility officials. (Manual, Chapter 2D, page 2-24)

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8. Log books can be used to refresh the inspector's memory in the event s/he is called on to be a witness in an enforcement action. (Legal Issues module, Chapter 10, page 10-3)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

9. If the inspector believes s/he has made an error in testifying, the error should be announced or corrected as soon as possible. (Legal Issues module, Chapter 10, page 10-3)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)



**EXERCISE 2-5****CONDUCTING THE CLOSING CONFERENCE****15 MINUTES**

A final meeting with facility officials will enable the inspector to "wrap up" the inspection and will allow questions to be answered and information gaps to be closed. This exercise focuses on the components of an inspection's closing conference.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 2E and Appendix D of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List two topics an inspector should generally refrain from discussing with facility officials. (Manual, Chapter 2E, page 2-27)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
2. Explain the purpose of a Deficiency Notice. (Manual, Chapter 2E, pages 2-27 through 2-28)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. List five areas of a permittee's self-monitoring program that an inspector may address in a Deficiency Notice if problems are identified during an inspection. (Manual, Chapter 2E, page 2-28)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_

**EXERCISE 2-6****PREPARING THE INSPECTION REPORT****30 MINUTES**

Information gathered during an inspection must be organized and arranged in a manner that will allow case proceedings personnel to develop a sound evidence package. The inspection report, if properly prepared, will serve as the basis for this evidence. This exercise focuses on how to prepare an inspection report.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 2F and Appendix E of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. State the objective of an inspection report. (Manual, Chapter 2F, page 2-29)

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2. List the four basic elements of an inspection report. (Manual, Chapter 2F, page 2-30)

- a. 

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- b. 

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- c. 

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- d. 

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3. Describe the purpose of a narrative report and the steps that should be followed to prepare a narrative report. (Manual, Chapter 2F, pages 2-30 through 2-31)

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4. Explain the inspector's responsibility relative to the Permit Compliance System. (Manual, Chapter 2F, page 2-31)

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UNIT 2	EXAM	30 MINUTES
<b>Instructions</b> <ol style="list-style-type: none"> <li>Complete this exam without referring to any text or notes.</li> <li>Do not exceed the time limit listed above.</li> <li>Verify the answers with your instructor.</li> <li>Correct any errors and clarify problems or questions before proceeding to Unit 3.</li> </ol>		

Exam Questions

- Official credentials must always be presented whether or not identification is requested by facility officials.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
- Authority to inspect under the CWA is granted by Section 304.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
- An inspector must secure the expressed consent of the agent in charge of the facility before entering.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
- If entry to a facility is denied for any reason, or if consent to inspect is withdrawn during an inspection, the inspector should follow the denial of entry procedures which state that the inspector:
  - Should talk with officials to see if obstacles (such as misunderstandings) can be overcome  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
  - May suggest that facility officials contact their attorneys to clarify the situation  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
  - Should explain to facility officials the penalties under the CWA regarding refusal to allow entry  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
  - Should write down all observations regarding the incident, including any reasonable suspicions about the reasons for denial of entry  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
- Once an inspector is granted access to the facility, s/he, without additional consent from facility officials, has the authority to:
  - Observe the source of discharges  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
  - Sample the effluent  
TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
  - Read and copy facility records

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

- d. Inspect the monitoring equipment and observe self-monitoring procedures

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

6. List five types of information about the facility the inspector should obtain prior to an inspection.

- a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_  
e. \_\_\_\_\_

7. Describe the legal requirement an inspector must meet immediately on arrival at the facility.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. What information should be recorded in the inspector's field notebook? (Circle correct answer.)

- a. Conditions and practices observed during the inspection  
b. Procedures followed by the inspector relating to all inspection activities  
c. Listing of documents and samples taken by the inspector  
d. Unusual conditions or practices observed by the inspector  
e. General facility information  
f. All of the above.

9. Of the following two items, which one best illustrates the type of information that should be included in a statement used to document an alleged violation? (Circle correct answer.)

- a. "It's common knowledge that they're dumping toxic chemicals illegally. You can see the trucks going by every day."  
b. "My boss told me to take a load of drums and keep them out in the back. Some of the drums were marked 'hazardous'."

Explain why.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. Describe how photographs taken during an inspection should be identified.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

11. Specific procedures have been developed to ensure that all inspection data received as confidential are protected while in the custody of the inspector. Which of the following activities are not in accordance with these procedures for handling confidential inspection data? (Circle the correct answer.)

- a. Leaving inspection data in a locked motel room  
b. Reviewing inspection data in the inspector's automobile  
c. Reviewing inspection data in the presence of other inspectors

- d. Carrying inspection data while inspecting another facility
  - e. Locking physical samples in the inspector's automobile
  - f. All of the above.
12. The inspection report is a comprehensive collection of information designed to support enforcement personnel in preparing for legal action. The information in the report must, above all, be complete and accurate. List three other requirements of an inspection report.
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_

UNIT THREE

DOCUMENTATION/RECORD KEEPING AND REPORTING

The NPDES permit program requires permittees to maintain records and report periodically on the quantity and character of the waste in their wastestreams. Section 308 of the CWA authorizes inspection of required records and reports. The NPDES inspector must be familiar with the purpose of, and procedures for, inspecting records. Unit Three is based on Chapter 3 of the Manual. The unit is comprised of two exercises:

- Inspection authority and evaluation procedures for facility record reviews
- Summary/review (optional).

<b>EXERCISE 3-1</b>	<b>INSPECTION AUTHORITY AND EVALUATION PROCEDURES FOR FACILITY RECORD REVIEWS</b>	<b>1 HOUR</b>
<p>A review of a facility's records determines whether record-keeping and reporting requirements stipulated in the permit are being met. This review is an important part of an NPDES inspection. Careful examination of the data often indicate violations of record-keeping and reporting requirements as well as of other permit violations. This exercise focuses on inspection authorities and evaluation procedures for facility record reviews.</p> <ol style="list-style-type: none"> <li>1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.</li> <li>2. Read Chapter 3 of the Manual and watch the video <i>Conducting a Records Inspection</i>.</li> <li>3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems your instructor. Do not proceed until you have mastered the material in this exercise.</li> </ol>		

Study Checklist At the end of this exercise, you should be able to:

1. State the primary objective of a records inspection. (Manual, Chapter 3A, page 3-1, Video)
2. A permittee's required recordkeeping requirements are contained in its \_\_\_\_\_. (Manual, Chapter 3B, page 3-3; Video)
3. As part of pre-inspection preparation, the inspector should review the facility's \_\_\_\_\_ to determine the facility's compliance history and to detect irregularities in sampling results. (Video)
4. List three items contained in a facility's permit that should be verified during the opening conference or walk-through inspection. (Manual, Chapter 3B, page 3-3)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_

- 
5. List at least five types of data or records that should be reviewed during the inspection to ensure retention for the minimum required period of time. (Manual, Chapter 3B, pages 3-3 through 3-4; Video)
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
6. List four items the inspector should verify when reviewing sampling and analytical data to ensure that the facility followed proper procedures. (Video)
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
7. To identify any discrepancies or errors in reporting sampling and analytical data, the inspector should compare results in the DMRs to the facility's \_\_\_\_\_. (Video)
8. Explain when a compliance schedule status review should be conducted, and provide at least three reasons why it should be conducted. (Manual, Chapter 3B, pages 3-5 through 3-6)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
9. Summarize (for each of the following components) the elements that should be reviewed by an inspector during evaluation of a permittee's ability to meet its compliance schedule deadline. (Manual, Chapter 3B, pages 3-6 through 3-7)
- a. Construction progress
  - \_\_\_\_\_
  - \_\_\_\_\_
  - b. Construction contract and equipment orders
  - \_\_\_\_\_
  - \_\_\_\_\_
  - c. Authorization and financing
  - \_\_\_\_\_
  - \_\_\_\_\_
  - d. Attainment of operational status
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
-

10. Summarize the procedures for conducting a review of POTW pretreatment program requirements. (Manual, Chapter 3B, pages 3-7 through 3-8)

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11. Describe when an in-depth investigation of permittee records should be conducted. (Manual, Chapter 3B, page 3-8)

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12. List at least five procedures that should be followed while conducting an in-depth investigation. (Manual, Chapter 3B, pages 3-8 through 3-9)

- a. 

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- b. 

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- c. 

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- d. 

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- e. 

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**EXERCISE 3-2****SUMMARY/REVIEW (OPTIONAL)****15 MINUTES**

This is an optional exercise which summarizes and reviews Chapter 3 of the Manual on record-keeping and reporting.

1. Read the statements below describing a situation an inspector may face during an inspection. In the space provided, respond to each statement, explaining how you would proceed to evaluate and document the situation. Refer to Chapter 3 of the Manual as necessary.
2. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to respond to these situations:

1. During an inspection of a permittee's records, it is discovered that records of laboratory equipment calibration, required by the permit, have not been kept for the past 6 months. Respond to this situation. (Manual, Chapter 3B)

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2. During a review of POTW pretreatment requirements, the POTW is unable to produce a list of contributory Industrial Users (IUs). Respond to this situation. (Manual, Chapter 3B)

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<b>UNIT 3</b>	<b>EXAM</b>	<b>15 MINUTES</b>
<p><b>Instructions</b></p> <ol style="list-style-type: none"> <li>1. Complete this exam without referring to any text or notes.</li> <li>2. Do not exceed the time limit listed above.</li> <li>3. Verify the answers with your instructor.</li> <li>4. Correct any errors and clarify questions or problems before proceeding to Unit 4.</li> </ol>		

Exam Questions

1. List at least five types of records generally verified during a facility inspection.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
2. Authority to require that certain records be kept by permittees comes from the CWA in Sections \_\_\_\_\_.
3. Routine record-keeping and reporting evaluations are conducted at all permittee facilities. Provide an example of when an in-depth investigation of records would be warranted.
   
\_\_\_\_\_
   
\_\_\_\_\_
   
\_\_\_\_\_
4. List three actions of a permittee's compliance schedule covered by compliance schedule status reviews.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_

**UNIT FOUR**  
**FACILITY SITE REVIEW**

The objective of a facility site review is to examine the permittee's physical and operational plant functions for compliance with permit conditions and effluent limitations. To carry out this responsibility, inspectors must have a thorough understanding of each treatment process in the facility and how each process fits into the overall treatment scheme. The success of a facility site review will depend on the inspector's ability to identify problem areas that will affect the performance of the treatment facility. Unit Four corresponds to Chapter 4 of the Manual and several other EPA documents. Topics covered in the three exercises contained in this unit include:

- Physical inspection of the facility
- Operation and Maintenance (O&M) evaluation
- Summary of treatment units and operations that should be inspected (optional).

**EXERCISE 4-1****PHYSICAL INSPECTION OF THE FACILITY****1 HOUR**

To carry out their duties effectively, inspectors must be thoroughly familiar with the physical aspects of a treatment facility. This exercise is designed to review the primary indications of noncompliance at a treatment facility.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapters 4A and 4B of the Manual. For additional information, review EPA's 1978 *Field Manual for Performance Evaluation and Trouble-Shooting at Municipal Wastewater Treatment Facilities*, MO #16, EPA 430/9-78-001.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List four objectives of the facility site review. (Manual, Chapter 4A, page 4-1)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
2. List four areas that should be covered in the walk-through. (Manual, Chapter 4B, page 4-3)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
3. List five problem indicators associated with chemical treatment units. (Manual, Chapter 4B, page 4-13)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_

e. \_\_\_\_\_

4. List five problem indicators associated with primary clarifiers and five problem indicators associated with secondary clarifiers. (Manual, Chapter 4B, pages 4-6 and 4-7)

Primary Clarifiers

Secondary Clarifiers

a. \_\_\_\_\_

a. \_\_\_\_\_

b. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

e. \_\_\_\_\_

5. List four problem indicators associated with trickling filters. (Manual, Chapter 4B, page 4-6)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

6. List five problem indicators associated with a filtration unit (i.e., an advanced physical treatment system). (Manual, Chapter 4B, page 4-8)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

7. List four problem indicators for chlorination units and four problem indicators for dechlorination units. (Manual, Chapter 4B, page 4-9)

Chlorination Units

Dechlorination Units

a. \_\_\_\_\_

a. \_\_\_\_\_

b. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

d. \_\_\_\_\_

8. List three problem indicators for polishing ponds or tanks. (Manual, Chapter 4B, page 4-12)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

9. List three general problem indicators that may be found during an inspection of sludge-handling facilities and four problem indicators that may be identified during inspection of sludge-disposal processes. (Manual, Chapter 4B, pages 4-9 through 4-12)

Sludge Handling

Sludge Disposal

a. \_\_\_\_\_

a. \_\_\_\_\_

b. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

10. Discuss potential production changes at an industrial facility which should be evaluated or verified and documented by an inspector. (Manual, Chapter 4B, pages 4-13 through 4-14)

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**EXERCISE 4-2****O&M EVALUATION****30 MINUTES**

Operating factors that may affect plant performance range from the knowledge and skill of the operator to physical deficiencies in the equipment. This exercise will review the plant O&M functions that an inspector should cover.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 4C of the Manual. For additional information, review EPA's 1973 *Maintenance Management Systems for Municipal Wastewater Facilities*, EPA 430/9-74-004.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the five areas that must be evaluated by an inspector during a review of operation functions. (Manual, Chapter 4C, page 4-15)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
2. Discuss the information that should be available to the inspector while evaluating the operating policy and procedures of a facility. (Manual, Chapter 4C, page 4-15)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Identify the facility staff members that should be interviewed by the inspector to identify staffing problems. (Manual, Chapter 4C, page 4-15)  
\_\_\_\_\_
4. Describe Occupational Safety and Health Administration Right-to-Know laws. (Manual, Chapter 4C, page 4-16)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Discuss the factors an inspector should consider when evaluating management controls. (Manual, Chapter 4C, page 4-16)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Explain how corrective- and preventive-maintenance programs relate to efficient plant functions and why this is important to an inspector. (Manual, Chapter 4C, pages 4-16 through 4-17)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 
7. List three topics of primary concern to an inspector during a maintenance evaluation. (Manual, Chapter 4C, page 4-17)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

8. Describe the elements of a maintenance cost-control system. (Manual, Chapter 4C, page 4-17)

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9. Describe the elements of the management-control system for plant maintenance that an inspector should evaluate. (Manual, Chapter 4C, pages 4-23 through 4-24)

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**EXERCISE 4-3****SUMMARY OF TREATMENT UNITS AND OPERATIONS  
THAT SHOULD BE INSPECTED (OPTIONAL)****3 HOURS**

This summary exercise focuses on the types of treatment units and operations found at wastewater treatment facilities.

1. Obtain an example inspection plan and a description of a wastewater treatment facility from your instructor.
2. Develop a written plan for the inspection of this facility. It should detail the objectives and information to be collected during the inspection. The plan should list treatment units and O&M functions that should be inspected. For each unit or function you identify, describe how you plan to evaluate compliance (Manual, Chapter 4).
3. Discuss the plan with your instructor. If an observation inspection can be arranged, use the inspection to clarify questions or problems you have regarding the facility site review.
4. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.



**UNIT 4****EXAM****30 MINUTES****Instructions**

1. Complete this exam without referring to any text or notes.
2. Do not exceed the time limit listed above.
3. Verify the answers with your instructor.
4. Correct any errors and clarify questions or problems before proceeding to Unit 5.

Exam Questions

1. For each of the areas listed below, list a minimum of three indicators of treatment process problems.
  - a. Flow indicators
    - \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
  - b. Unusual waste
    - \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
2. Discuss the impact of production changes and describe the areas related to production changes the inspector should investigate relating to production changes.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. List three important areas to be addressed during an operation evaluation. For each area, list three questions that should be asked by the inspector.
  - a. \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
  - b. \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
  - c. \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
4. List three important areas to be addressed during a maintenance evaluation. For each area, list three questions that should be asked by the inspector.
  - a. \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- b. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- c. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## UNIT FIVE

## SAMPLING

NPDES permittees are required to sample their wastewater as part of the NPDES Compliance Monitoring Program. The inspector's role is to both evaluate the permittee's self-monitoring compliance program and verify those program data on overall permit compliance by sampling the wastewater. To fulfill this two-fold responsibility, the inspector must know:

- Permittee sampling requirements
- Sampling procedures and techniques.

These topics correspond to Chapter 5 of the Manual, EPA's 1990 *NPDES Compliance Monitoring Inspector Training Sampling* module, and several other EPA documents. They are addressed in the two exercises included in this unit.

**EXERCISE 5-1****EVALUATION OF PERMITTEE SAMPLING  
PROGRAM AND COMPLIANCE SAMPLING****30 MINUTES**

When evaluating a permittee's sampling program, the NPDES inspector must be cognizant of the effluent limitations and monitoring requirements of the permit. The objectives and requirements for inspecting sampling programs are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 5A of the Manual and Chapter 1 of the *NPDES Compliance Monitoring Inspector Training Sampling* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the five objectives of sampling conducted by inspectors. (Manual, Chapter 5A, page 5-1; Sampling module, Chapter 1, page 1-3)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
2. List six areas to assess in evaluating sampling procedures. (Manual, Chapter 5A, page 5-2; Sampling module, Chapter 1, pages 1-3 through 1-4)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_

3. The inspector does not have to evaluate sampling procedures of a POTW for SIUs that discharge to the POTW. (Manual, Chapter 5A, page 5-2)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

**EXERCISE 5-2****SAMPLING PROCEDURES AND TECHNIQUES****4 HOURS  
30 MINUTES**

By collecting samples, the inspector can verify (firsthand) a permittee's compliance with effluent limitations and other permit parameters, further evaluate the permittee's self-monitoring program, and support enforcement actions or permit reissuance or revision. This exercise reviews general sampling methods and associated procedures.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 5B and Appendix F of the Manual and Chapters 2, 3, 4, 6, and 7 of the *NPDES Compliance Monitoring Inspector Training Sampling* module. Watch the video *Sampling Wastewater at a Wastewater Treatment Plant*. For additional information, refer to these two EPA handbooks: EPA's 1979 *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020 and EPA's 1982 *Handbook for Sampling and Sample Preservation of Water and Wastewater*, EPA-600/4-82-029.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

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Study Checklist At the end of this exercise, you should be able to:

1. Summarize the main features of a representative site for collecting samples. (Manual, Chapter 5B, pages 5-3 through 5-4; Sampling module, Chapter 2, pages 2-5 through 2-6; Video)
  - a. Influent samples  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Effluent samples  
\_\_\_\_\_  
\_\_\_\_\_
2. Prior to going onsite to conduct sampling, the inspector should develop a \_\_\_\_\_ that identifies sampling procedures to be followed. (Video)
3. List and describe the two primary types of samples that can be collected. (Manual, Chapter 5B, page 5-5; Sampling module, Chapter 2, pages 2-8 through 2-10)
  - a. \_\_\_\_\_  
\_\_\_\_\_
  - b. \_\_\_\_\_  
\_\_\_\_\_
4. Describe the parameters for which grab samples should be taken. (Manual, Chapter 5B, page 5-5; Sampling module, Chapter 2, page 2-8)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. List the four methods for compositing samples. (Manual, Chapter 5B, pages 5-5 through 5-6; Sampling module, Chapter 2, pages 2-9 through 2-10)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
6. Required sample containers, preservation methods, and maximum allowable holding times are contained in \_\_\_\_\_. (Manual, Chapter 5B, pages 5-6 through 5-8; Video)
7. Indicate how to determine the appropriate sample volume that should be collected. (Manual, Chapter 5B, page 5-6; Sampling module, Chapter 2, page 2-14; Video)  
\_\_\_\_\_  
\_\_\_\_\_
8. Discuss the types of sample containers appropriate for collecting samples to be analyzed for specific constituents or classes of pollutants. (Manual, Chapter 5B, page 5-6; Sampling module, Chapter 2, pages 2-6 through 2-7; Video)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. Describe how a bacteriological sample should be collected. Explain why. (Sampling module, Chapter 2, pages 2-20 through 2-21; Video)  
\_\_\_\_\_

- 
- 
10. Indicate the type of container oil and grease samples should be taken in. (Manual, Chapter 5B, page 5-6; Sampling module, Chapter 2, page 2-22; Video)

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11. Describe the type of sample container used for volatile organics and indicate how a sample is collected. (Sampling module, Chapter 2, page 2-22)

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12. List two types of blank samples that a sampler may need to take in the field. (Manual, Chapter 5B, page 5-9; Sampling module, Chapter 6, pages 6-3 through 6-4; Video)

a. \_\_\_\_\_

b. \_\_\_\_\_

13. Describe what an equipment blank is and what it is used for. (Video)

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14. List five examples of the kinds of information that should be recorded to identify a sample. (Manual, Chapter 5B, page 5-7; Sampling module, Chapter 2, page 2-16)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

15. Identify the proper container, preservative, and maximum holding time for testing wastewater alkalinity. (Manual, Chapter 5B, Table 5-3; Sampling module, Appendix E)

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16. List three standard procedures used to preserve samples. (Manual, Chapter 5B, pages 5-7 through 5-8; Sampling module, Chapter 2, page 2-15; Video):

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

17. Describe the purpose and importance of chain-of-custody procedures and records when transferring and handling samples. (Manual, Chapter 5B, page 5-8; Video)

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**UNIT 5****EXAM****45 MINUTES****Instructions**

1. Complete this exam without referring to text or notes.
2. Do not exceed the time limit listed above.
3. Verify the answers with your instructor.
4. Correct any errors and clarify problems or questions before proceeding to Unit 6.

Exam Questions

1. The inspector (should/should not) be able to determine whether or not the sampling site specified in the permit is adequate for the collection of a representative sample. (Circle the correct answer.)
2. Identify the citation to the CFR which specifies required sample containers, preservation techniques, and maximum allowable holding times to be used in wastewater analysis.

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3. List three preferred influent sampling points for raw wastewater.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
4. List two situations when collection of a grab sample is appropriate, and two situations when collection of a composite sample is appropriate.

GrabComposite

- |          |          |
|----------|----------|
| a. _____ | a. _____ |
| b. _____ | b. _____ |
5. Identify the type of sample to be collected for determining pH.

---

6. List at least six items that must be recorded on the label and/or data sheet to accurately identify a sample.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
7. Summarize the sample types listed below and explain the objectives of each in terms of their usefulness.
  - a. Duplicate samples
    - \_\_\_\_\_
    - \_\_\_\_\_
  - b. Split samples
    - \_\_\_\_\_

- 
- \_\_\_\_\_
- c. Spiked samples
- \_\_\_\_\_
  - \_\_\_\_\_
- d. Sample preservative blanks
- \_\_\_\_\_
  - \_\_\_\_\_
8. Explain the significance of a chain-of-custody record in the event that a facility is in violation of its permit requirements.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
9. Indicate who must fill out the chain-of-custody record.
- \_\_\_\_\_
10. Describe the parameters for which grab samples are appropriate.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



## UNIT SIX

### FLOW MEASUREMENT

NPDES permits require facilities to accurately measure, record, and report the quantity of wastewater discharged. Flow measurement by a permittee provides information on the operation, performance, and cost of wastewater treatment and data for long-term plant production capacity in conjunction with treatment capacity. Evaluations of a permittee's compliance with flow-measurement requirements involve inspection of a facility's flow-measurement devices, data handling and reporting procedures, and QC measures, as well as independent flow measurement by inspectors. Topics addressed in this unit and corresponding to Chapter 6 and Appendix G of the Manual and EPA's 1990 *NPDES Compliance Monitoring Inspector Training Sampling* module include:

- Evaluation of a permittee's flow-measurement equipment and procedures
- Flow-measurement methods
- Flow-measurement compliance inspection procedures.

**EXERCISE 6-1****EVALUATION OF A PERMITTEE'S  
FLOW-MEASUREMENT EQUIPMENT AND PROCEDURES****1 HOUR**

To accurately evaluate a permittee's flow-measurement program, the inspector must be familiar with flow-measurement devices, data-recording concerns, and QC needs. This exercise provides an introduction to each of these concerns.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 6A of the Manual and Chapter 5 of the *NPDES Compliance Monitoring Inspector Training Sampling* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Differentiate between closed-channel flow and open-channel flow. (Manual, Chapter 6A, page 6-1; Sampling module, Chapter 5, pages 5-1 and 5-7)

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2. Differentiate between primary and secondary flow-measurement devices and give an example of each. (Manual, Chapter 6A, pages 6-1 through 6-2; Sampling module, Chapter 5, pages 5-1 through 5-7)

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3. List five conditions that inspectors should evaluate while inspecting flow-measurement devices installed by a permittee for self-monitoring purposes. (Manual, Chapter 6A, pages 6-2 through 6-3)

- a. 

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- b. 

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- c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
4. Describe the information that should be maintained by a permittee to illustrate thorough record-keeping practices for flow. (Manual, Chapter 6A, page 6-3)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
5. List four issues integral to QC that should be evaluated by an inspector. (Manual, Chapter 6A, page 6-4)
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_

**EXERCISE 6-2****FLOW-MEASUREMENT METHODS****1 HOUR**

This exercise introduces the student to the basics of flow measurement (including hydraulic calculations and the components and use of various flow-measurement devices).

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Appendix G of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Describe the components of a typical continuous flow-measurement system. (Manual, Appendix G, page G-1)  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Discuss the difference between continuous and instantaneous flow measurement. (Manual, Appendix G, pages G-1 through G-2)  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. List four variations of the sharp-crested weir. (Manual, Appendix G, Figure G-2; Sampling module, Chapter 5, page 5-4)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
4. Summarize the operating principles on which the primary devices listed below are based. (Manual, Appendix G, pages G-2 through G-5; Sampling module, Chapter 5, pages 5-2 through 5-9)
  - a. Weirs  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Parshall flume  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - c. Palmer-Bowlus flume  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- d. Venturi meter

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- e. Electromagnetic flow meter

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- f. Propeller meter

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5. Define the purpose of secondary flow-measurement devices. Define the two classes of secondary devices and provide examples of each. (Manual, Appendix G, page G-5; Sampling module, Chapter 5, page 5-7)

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6. Describe the advantages and disadvantages of using pressure-bulb-measuring devices. (Manual, Appendix G, Table G-9)

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7. Explain why flow-measurement using pump data is not normally used for NPDES permit compliance evaluation. (Manual, Appendix G, page G-6)

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**EXERCISE 6-3****FLOW-MEASUREMENT COMPLIANCE  
INSPECTION PROCEDURES****1 HOUR**

A review of a permittee's flow-measurement devices and techniques and of the data collected should indicate whether or not the permittee is accurately monitoring and reporting the type and amount of wastewater generated and discharged. This exercise introduces procedures for inspecting various flow-measurement devices, measuring flow using common, permanent, and portable systems, and evaluating flow data.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 6B of the Manual and watch the video *Inspecting a Parshall Flume*.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the four steps that an inspector should follow to evaluate flow-measurement systems. (Manual, Chapter 6B, page 6-6; Video)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
2. List two examples of when the use of a portable flow meter would be appropriate. (Manual, Chapter 6B, page 6-5)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
3. List four items that an inspector should consider during evaluation of a permittee's flow-measurement system. (Manual, Chapter 6B, page 6-5)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
4. List four common sources of errors in the use of primary flow-measuring devices (sharp-crested weirs and Parshall flumes) and four sources of errors in the use of secondary devices. (Manual, Chapter 6B, page 6-6 and pages 6-9 and 6-10)

Primary DevicesSecondary Devices

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>a. _____</li> <li>b. _____</li> <li>c. _____</li> <li>d. _____</li> </ol> | <ol style="list-style-type: none"> <li>a. _____</li> <li>b. _____</li> <li>c. _____</li> <li>d. _____</li> </ol> |
|--|--|
5. Describe how to inspect sharp-crested weirs. (Manual, Chapter 6B, page 6-7)
   
\_\_\_\_\_
   
\_\_\_\_\_
   
\_\_\_\_\_
  6. Describe the proper location of a Parshall flume. (Manual, Chapter 6B, page 6-8; Video)

7. Describe how to inspect a Parshall flume. (Manual, Chapter 6B, page 6-8; Video)

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8. Describe how to inspect the discharge (downstream channel) of a Parshall flume. (Manual, Chapter 6B, page 6-8; Video)

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9. Describe the procedures used to measure flow under free-flow conditions. (Manual, Chapter 6B, page 6-10)

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10. Describe how to verify that a flow totalizer is correctly calibrated. (Manual, Chapter 6B, page 6-12)

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UNIT 6	EXAM	30 MINUTES
<b>Instructions</b> <ol style="list-style-type: none"><li>1. Complete this exam without referring to any text or notes.</li><li>2. Do not exceed the time limit noted above.</li><li>3. Verify the answers with your instructor.</li><li>4. Correct any errors and clarify problems or questions before proceeding to Unit 7.</li></ol>		

Exam Questions

1. The permittee may be required to retain flow-measurement records for a minimum of 2 years.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make the necessary changes to correct it.)
2. The inspector should determine whether primary and secondary flow devices are adequate for measuring normal flow as well as for measuring maximum expected flow.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make the necessary changes to correct it.)
3. A flow-measurement system must be able to measure within  $\pm 10$  percent to be considered accurate.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make the necessary changes to correct it.)
4. The permittee may choose an appropriate flow-measurement site regardless of permit specifications.  
TRUE **G** FALSE **G** (Check one. If the statement is false, make the necessary changes to correct it.)
5. Describe the circumstances under which the inspector would use a portable flow sensor and recorder rather than those installed in the facility being inspected.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. List three factors the inspector should consider when evaluating a Parshall flume.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
7. The Venturi meter measures differences in \_\_\_\_\_ between the inlet section and the throat of the meter.
8. Discuss the advantages and disadvantages of using electromagnetic flow meters.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. Explain how secondary devices are used within a flow-measurement system.  
\_\_\_\_\_  
\_\_\_\_\_

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10. List the two broad classes of secondary devices.

- a. \_\_\_\_\_
- b. \_\_\_\_\_



## UNIT SEVEN

## LABORATORY PROCEDURES QUALITY ASSURANCE

The analytical laboratory has the primary responsibility for providing the data necessary to determine a permittee's compliance with NPDES standards and requirements. These data must be accurate and reliable in their description of the characteristics and concentrations of constituents appearing in the test samples. The laboratory QA program ensures accurate data result from the activities of the analytical laboratory. Topics covered in the exercises in this unit (which correspond to Chapter 7 of the Manual and EPA's 1990 *NPDES Compliance Monitoring Inspector Training Laboratory Analysis* module) include:

- Objectives and requirements
- Sample handling procedures
- Laboratory analyses techniques evaluation
- QA and QC.

**EXERCISE 7-1****OBJECTIVES AND REQUIREMENTS****15 MINUTES**

Reviews of sampling, analytical, and laboratory QA techniques are components of many NPDES inspections. This exercise is intended to provide an introduction to laboratory QA requirements and procedures.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 7A of the Manual and Chapter 1 of the *NPDES Compliance Monitoring Inspector Training Laboratory Analysis* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List two primary functions of the laboratory QA program. (Manual, Chapter 7A, page 7-1)

- a. \_\_\_\_\_
- b. \_\_\_\_\_

2. Define QA. (Manual, Chapter 7A, page 7-1)

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3. Describe activities for which QA measures are required. (Manual, Chapter 7A, page 7-1)

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4. Describe items that should be included in a laboratory's QA/QC manual. (Manual, Chapter 7A, page 7-1)

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5. Define QC. Indicate how QC is different from QA. (Manual, Chapter 7A, page 7-1)

6. Explain the purpose of the laboratory evaluation. (Laboratory Analysis module, Chapter 1, pages 1-2 through 1-3)

**EXERCISE 7-2****SAMPLE HANDLING PROCEDURES****15 MINUTES**

Sample handling procedures are an important component of any monitoring program. To accurately assess the adequacy of a laboratory's sample receipt and handling procedures, an inspector must be familiar with such requirements. This exercise addresses sample handling procedures.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 7B of the Manual and Chapter 2 (Sections 2.1 through 2.4) of the *NPDES Compliance Monitoring Inspector Training Laboratory Analysis* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Explain why sample handling and control procedures are important to a permittee. (Manual, Chapter 7B, page 7-3; Laboratory Analysis module, Chapter 2, page 2-9)

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2. List five procedures that should be used by laboratory personnel and verified by an inspector. (Manual, Chapter 7B, page 7-3)

- a. 

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- b. 

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- c. 

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- d. 

---
- e. 

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3. Describe the primary sources of information about a permittee and its compliance with the permit requirements. (Laboratory Analysis module, Chapter 2, page 2-3)

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**EXERCISE 7-3****LABORATORY ANALYSES TECHNIQUES  
EVALUATION****45 MINUTES**

The use of uniform and standardized testing methodologies is critical in comparing or sharing data among laboratories. In addition, maintenance of the laboratory's facilities and equipment is also important to laboratory QA. This exercise addresses laboratory analyses techniques evaluation.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 7C of the Manual and Chapter 2 (Section 2.5) of the *NPDES Compliance Monitoring Inspector Training Laboratory Analysis* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Identify the part and section of the CFR in which the approved analytical test procedures are prescribed. (Manual, Chapter 7C, page 7-5; Laboratory Analysis module, Chapter 2, page 2-13)

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2. List at least two publications in which approved 40 CFR Part 136 procedures are published. (Manual, Chapter 7C, page 7-5; Laboratory Analysis module, Chapter 2, page 2-13)

a. \_\_\_\_\_

b. \_\_\_\_\_

3. Explain why it is important that a laboratory use approved, standardized analytical methods. (Manual, Chapter 7C, page 7-5)

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4. Identify the key to quality analytical performance. (Laboratory Analysis module, Chapter 2, page 2-14)

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5. List four items that should be verified by an inspector while evaluating a laboratory's analytical procedures. (Manual, Chapter 7C, pages 7-5 through 7-6)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

6. List four items or services which affect the reliability of data that should be available in all laboratories. (Manual, Chapter 7C, page 7-6)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

7. List four procedures or conditions that should be verified by an inspector while evaluating a laboratory's storage and preparation of reagents and standards. (Manual, Chapter 7C, pages 7-7 through 7-8)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

8. Describe the procedures that should be observed when dealing with laboratory supplies that have a limited shelf life. (Manual, Chapter 8C, page 8-7)

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**EXERCISE 7-4****QA AND QC****1 HOUR  
45 MINUTES**

Laboratory control procedures are established to ensure high-quality analyses. The precision (reproduceability among replicate observations) and accuracy (degree of difference between observed and actual values) of a laboratory's findings are important factors in ensuring the quality of analytical results. This exercise summarizes QA and QC procedures.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 7D of the Manual and Chapter 2 (Sections 2.6 through 2.7) of the *NPDES Compliance Inspector Training Laboratory Analysis* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the four primary procedures used by laboratories to ensure high-quality analyses. (Manual, Chapter 7D, page 7-9)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
2. Define the terms "precision" and "accuracy." (Manual, Chapter 7D, page 7-9; Laboratory Analysis module, Chapter 2, page 2-22)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Explain how, when, and/or why each of the following items or processes is used to establish the precision or accuracy of laboratory analytical procedures. (Manual, Chapter 7D, pages 7-9 through 7-10; Laboratory Analysis module, Chapter 2, pages 2-24 through 2-29)
  - a. Control samples  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Duplicate samples/analyses  
\_\_\_\_\_  
\_\_\_\_\_
  - c. Precision control charts  
\_\_\_\_\_  
\_\_\_\_\_
  - d. Spiked samples  
\_\_\_\_\_  
\_\_\_\_\_
  - e. Accuracy control charts  
\_\_\_\_\_  
\_\_\_\_\_

4. Explain how accuracy warning and control limits are established and when corrective actions should be taken with respect to these limits. (Manual, Chapter 7D, pages 7-9 through 7-10; Laboratory Analysis module, Chapter 2, pages 2-26 through 2-30)

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5. List five procedures that should be used by analytical laboratories to record, process, and report data. (Manual, Chapter 7D, pages 7-10 through 7-11)

a. 

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b. 

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c. 

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d. 

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e. 

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6. List five types of data that should be kept in a laboratory analyst's notebook. (Manual, Chapter 7D, page 7-11)

a. 

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b. 

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c. 

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d. 

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e. 

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7. Describe the skills required of professional laboratory personnel and laboratory assistants. (Manual, Chapter 7D, page 7-11)

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8. Explain the Discharge Monitoring Report Quality Assurance (DMR QA) Program. (Manual, Chapter 7D, page 7-12)

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9. List three benefits or positive aspects of the DMR QA Program. (Manual, Chapter 7D, page 7-12)

a. 

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b. 

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c. 

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10. Explain the interdependency of the NPDES inspection program and the DMR QA Program. (Manual, Chapter 7D, page 7-13)

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UNIT 7	EXAM	15 MINUTES
<b>Instructions</b> <ol style="list-style-type: none"><li>1. Complete this exam without referring to any text or notes.</li><li>2. Do not exceed the time limit listed above.</li><li>3. Verify the answers with your instructor.</li><li>4. Correct any errors and clarify questions or problems before proceeding to Unit 8.</li></ol>		

Exam Questions

1. Define QA.

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2. Define QC.

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3. List the two reference books many standardized test procedures as promulgated under 40 CFR Part 136 are published in.

a. 

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b. 

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4. List four services that all laboratories should have on hand to ensure production of reliable data.

a. 

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b. 

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c. 

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d. 

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5. Written schedules for required or recommended replacement, cleaning, checking, and/or adjustment of laboratory instruments and equipment are not a concern to the inspector.

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

6. Working standards should be checked frequently to determine changes in \_\_\_\_\_ or \_\_\_\_\_.

7. \_\_\_\_\_ percent of samples should be duplicated.

8. The upper and lower accuracy control limits are established at \_\_\_\_\_ times the standard deviation above and below the central line.

9. Explain when the laboratory should take corrective actions for precision control limits.

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10. A laboratory does not need to have provisions for cross-checking calculations.

TRUE ☒ FALSE ☒ (Check one. If the statement is false, make necessary changes to correct it.)

11. All incoming samples should be received by a custodian, who then signs the chain-of-custody record sheet accompanying the samples and retains the sheet as a permanent record.

TRUE ☒ FALSE ☒ (Check one. If the statement is false, make necessary changes to correct it.)



**UNIT EIGHT****TOXICITY**

The inspector's responsibility during a biomonitoring inspection is to attempt to determine whether or not the permittee's toxicity testing program meets the requirements of the permit. The inspector must be familiar with the permittee's toxicity testing requirements as well as with toxicity sampling and monitoring procedures and any modifications to those procedures.

Compliance Biomonitoring Inspections (CBI) (as opposed to biomonitoring inspections) involve evaluation of a permittee's effluent through the inspecting agency's (i.e., EPA or the State) conduct of toxicity testing. The regulatory agency or inspector may evaluate a permittee's effluent by conducting either onsite or offsite toxicity tests. To ensure successful conduct of a CBI, the inspector must be knowledgeable of sample collection and handling procedures, use of test organisms, facility/equipment needs, and toxicity testing procedures. Topics addressed in this unit (which correspond to Chapter 8 of the Manual and EPA's 1990 *NPDES Compliance Monitoring Inspector Training Biomonitoring* module) include:

- Objectives
- Requirements of WET testing
- Analysis of results.

**EXERCISE 8-1****OBJECTIVES****30 MINUTES**

NPDES permits impose toxicity testing requirements as a means of assessing the quality or toxicity of a facility's effluent. To effectively evaluate a permittee's self-monitoring program, the inspector must be familiar with toxicity testing requirements and procedures. This exercise provides the inspector with an introduction to such information.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 8A of the Manual and Chapter 1 of the *NPDES Compliance Monitoring Inspector Training Biomonitoring* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List at least four objectives of a biomonitoring inspection. (Manual, Chapter 8A, page 8-1)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
2. Define toxicity. (Manual, Chapter 8A, page 8-1; Biomonitoring module, Chapter 1, page 1-3)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Explain how toxicity of a substance is measured. (Manual, Chapter 8A, page 8-1)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. List five types of NPDES inspections which involve performing or evaluating whole effluent toxicity testing (Manual, Chapter 8A, page 8-1; Biomonitoring module, Chapter 1, pages 1-3 through 1-4)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_

**EXERCISE 8-2****REQUIREMENTS OF WET TESTING****3 HOURS  
30 MINUTES**

Inspectors must be familiar with the technical procedures to be followed when conducting effluent biomonitoring or toxicity testing inspections. Procedures and standards exist for effluent and dilution water, test organisms, and record-keeping and reporting. These issues are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 8B and Appendix H of the Manual and Chapters 2 through 7 of the *NPDES Compliance Monitoring Inspector Training Biomonitoring* module. Watch the video *Conducting a Performance Audit Inspection at a Facility Conducting Toxicity Testing*.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Discuss the difference between acute and chronic toxicity test methods. (Manual, Chapter 8B, page 8-3; Biomonitoring module, Chapter 2, page 2-3)  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. List five protocols or requirements for WET testing that are typically included in a facility's NPDES permit. (Video)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
3. If an effluent sample is not to be used immediately, describe how it should be preserved. (Manual, Chapter 8B, page 8-4; Biomonitoring module, Chapter 4, page 4-3)  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Effluent samples must be used within \_\_\_\_\_ hours of sampling. (Manual, Chapter 8B, page 8-4; Biomonitoring module, Chapter 3, page 3-3)
5. If the D.O. in an effluent sample is not near saturation, the sample should be \_\_\_\_\_. (Video)
6. Discuss dilution water sources and how to determine which source should be used. (Manual, Chapter 8B, page 8-5; Biomonitoring module, Chapter 5, pages 5-1 through 5-2)  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. Receiving water that is used as dilution water should be refrigerated if not used in a test within \_\_\_\_\_ hours. (Manual; Chapter 8B, Page 8-5; Biomonitoring module, Chapter 5, page 5-2)

8. Describe problems that can be caused by not removing excess food. (Manual, Chapter 8B, page 8-7; Biomonitoring module, Chapter 6, page 6-6)

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9. If a laboratory cultures test organisms onsite, it may house the brood stock in the testing area. (Video)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

10. Adding dilution water to the water that organisms were raised in prior to a test is called \_\_\_\_\_. (Biomonitoring module, Chapter 6, page 6-6)

11. The zero percent dilution (that is 0% effluent and 100 percent dilution water) is the \_\_\_\_\_. (Video)

12. Plastic containers and tubing that are used in a toxicity test can be washed and used again. (Manual, Chapter 8B, page 8-6; Biomonitoring module, Chapter 7, page 7-2)

TRUE **G** FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)

13. No materials containing \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ should come into contact with any solution to be used in toxicity testing. (Manual, Chapter 8B, page 8-6; Biomonitoring module, Chapter 7, page 7-2)

14. What should be done with test results obtained when temperatures were outside ranges specified by the test protocol? (Biomonitoring module, Chapter 7, page 7-3)

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15. Dissolved oxygen should be above \_\_\_\_\_ percent saturation for tests run at more than 20°C or above \_\_\_\_\_ percent saturation for tests run at below 20°C. (Manual, Chapter 8B, page 8-17; Biomonitoring module, Chapter 7, page 7-4)

16. List the five areas or procedures that are generally covered during a PAI at a facility conducting toxicity testing. (Video)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

17. List four test conditions that should be evaluated during an inspection of a laboratory conducting toxicity testing. (Video)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

18. In a test with a reference toxicant, what should be done with organisms whose responses are outside the limits specified for that toxicant? (Biomonitoring module, Chapter 6, page 6-5)

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**EXERCISE 8-3****ANALYSIS OF RESULTS****30 MINUTES**

Inspectors should be able to analyze and interpret WET test results, including acceptable mortality in controls and abnormalities in test data. Inspectors should also be familiar with the definitions in which test results are expressed so that test results can be compared to permit limits. This exercise familiarizes the inspector with this information.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 8C of the Manual, review Chapter 2 and read Chapter 8 of the *NPDES Compliance Monitoring Inspector Training Biomonitoring* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Mortality in controls must be less than \_\_\_\_\_ percent for acute tests and less than \_\_\_\_\_ percent for chronic tests. (Manual, Chapter 7B, page 7-16; Biomonitoring module, Chapter 5, page 5-2)
2. List three results that would be questionable for acute testing (Manual, Chapter 8C, page 8-12).
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
3. The \_\_\_\_\_ is the calculated percentage of effluent at which 50 percent of the test organisms die during the test period. (Manual, Chapter 8C, page 8-12; Biomonitoring module, Chapter 2, page 2-7)
4. The highest tested concentration at which test organisms' responses are not statistically different from the control organisms' responses is called the \_\_\_\_\_. (Manual, Chapter 8C, page 8-13; Biomonitoring module, Chapter 2, page 2-8)
5. The ChV, which stands for \_\_\_\_\_, is calculated by \_\_\_\_\_. (Biomonitoring module, Chapter 2, page 2-8)

UNIT 8	EXAM	1 HOUR
<b>Instructions</b> <ol style="list-style-type: none"><li>1. Complete this exam without referring to any text or notes.</li><li>2. Do not exceed the time limit listed above.</li><li>3. Verify the answers with your instructor.</li><li>4. Correct any errors and clarify questions or problems before proceeding to Unit 9.</li></ol>		

Exam Questions

1. List four objectives of a biomonitoring inspection.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
2. Describe how effluent samples used for WET testing purposes should be stored.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. List four procedures the inspector should evaluate when reviewing a laboratory's test organism handling and maintenance procedures.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
4. Explain where receiving water should be obtained for use as dilution water.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Explain when it is necessary to conduct an abbreviated, preliminary range-finding or screening test.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Explain the basis of a definitive toxicity test.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. List the three types of toxicity tests based on how the test organisms are exposed to test solutions.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

8. Explain how temperature control is normally achieved during toxicity testing.

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## UNIT NINE

## PRETREATMENT

EPA has developed two types of onsite reviews to evaluate POTW and IU compliance with pretreatment program requirements. These include pretreatment program audits and Pretreatment Compliance Inspections (PCIs). Pretreatment audits evaluate all aspects of a POTW's pretreatment program, and therefore, are more comprehensive than PCIs [which principally evaluate compliance monitoring (sampling and inspection) and enforcement activities]. Unit 9 corresponds to Chapter 9 of the Manual and EPA's 1990 *NPDES Compliance Inspector Training Overview* module. More information on pretreatment program requirements may be obtained from the guidance manuals listed in Chapter 9 of the Manual. Topics covered in this unit include:

- Review of the General Pretreatment Regulations
- PCIs and audits.

**EXERCISE 9-1****REVIEW OF THE GENERAL  
PRETREATMENT REGULATIONS****2 HOURS**

Understanding the basic concepts of the General Pretreatment Regulations and the requirements and responsibilities of EPA, States, POTWs, and industries is essential to the inspector's evaluation of pretreatment program implementation and enforcement. These issues are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 9A of the Manual, 40 CFR Part 403 (the General Pretreatment Regulations), and Chapter 6 of the *NPDES Compliance Inspector Training Overview* module.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the three specific objectives of the General Pretreatment Regulations. (Manual, Chapter 9A, page 9-1; 40 CFR Part 403; Overview module, Chapter 6, page 6-1)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_



2. List the specific areas in which the Control Authority has responsibility to implement the pretreatment program. (Manual, Chapter 9A, pages 9-3 through 9-4)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
3. Discuss the public-participation requirements that a Control Authority must meet to adequately implement its pretreatment program. [Manual, Chapter 9A, page 9-5; 40 CFR 403.5(c)(3) and 40 CFR 403.8(f)(2)(vii)]
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
4. List three types of discharge standards or requirements with which industrial dischargers must comply. (Manual, Chapter 9A, page 9-6; 40 CFR Part 403)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
5. List five types of reports required of IUs by 40 CFR 403.12. (Manual, Chapter 9A, page 9-10; 40 CFR 403.12)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
6. Describe briefly when the combined wastestream formula is needed and the purpose of its use. [Manual, Chapter 9A, page 9-6; 40 CFR 403.6(e)]
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
7. Explain the basis of categorical pretreatment standards and their point of application. (Manual, Chapter 9A, page 9-6; 40 CFR 403.6)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

8. Explain who (EPA, the State, or the Control Authority) is responsible for establishing and periodically re-evaluating local limits to prevent interference, pass through, and/or sludge contamination. [Manual, Chapter 9A, page 9-4; 40 CFR 403.5(c)]

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**EXERCISE 9-2****PCIs AND AUDITS****30 MINUTES**

PCIs and audits evaluate POTW and IU efforts to meet Federal, State, and local POTW program requirements. NPDES inspectors are asked to conduct PCIs in conjunction with visits to POTWs for other NPDES inspections. This exercise and the corresponding text provide inspectors with an introduction to, and an overview of, PCIs and audits.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 9B of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Discuss the differences between a PCI and an audit. (Manual, Chapter 9B, page 9-19; Overview module, Chapter 6, pages 6-2 and 6-9)

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2. Describe three previsit preparation responsibilities. (Manual, Chapter 9B, page 9-16)

- a. 

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- b. 

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- c. 

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3. Describe seven onsite responsibilities. (Manual, Chapter 9B, page 9-16)

- a. 

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- b. 

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- c. 

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- d. 

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- e. 

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- f. 

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- g. 

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UNIT 9	EXAM	45 MINUTES
<b>Instructions</b>  1. Complete this exam without referring to any text or notes.  2. Do not exceed the time limit above.  3. Verify all the answers with your instructor.  4. Correct any errors and clarify questions or problems before proceeding to Unit 10.		

Exam Questions

1. Identify the part and section of the CFR which sets forth State and POTW regulations and requirements of the National Pretreatment Program.  
  
\_\_\_\_\_
2. List the three objectives of the General Pretreatment Regulations.  
  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_
3. Define the terms "interference" and "pass through."  
  
a. Interference  
  
\_\_\_\_\_  
\_\_\_\_\_  
  
b. Pass through  
  
\_\_\_\_\_  
\_\_\_\_\_
4. List five of the specific prohibitions in 40 CFR 403.5(b).  
  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_  
e. \_\_\_\_\_

5. A POTW with an approved pretreatment program is located in a State that has not been approved by EPA to implement a State pretreatment program. List the Control Authority and the Approval Authority.

a. \_\_\_\_\_  
b. \_\_\_\_\_

6. Metal finishing is a Federally regulated category with specific discharge standards for IUs.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

7. A Control Authority has developed local limits that are less stringent than Federal categorical standards promulgated for the electrical and electronic components industry. An industry which is subject to those Federal standards discharges process wastewaters directly to the sewer without combining with other wastestreams. The Control Authority may apply the less stringent local limits to the IU's discharge.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

8. The PCI is a comprehensive review of all facets of a POTW's pretreatment program.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

UNIT TEN

SEWAGE SLUDGE

EPA has promulgated technical standards for the use or disposal of sewage sludge. Consequently, sludge use and disposal requirements are being included in NPDES permits when they are reissued. Evaluation of sludge management activities and compliance with sewage sludge regulations is intended to be incorporated into the existing inspection structure. Therefore, inspectors need to be familiar with the sewage sludge regulations and how to evaluate a facility's compliance with those regulations. Unit 10 corresponds to Chapter 10 of the Manual. Topics covered in this unit include:

- Review of the sewage sludge regulations
- Sludge inspection procedures.

EXERCISE 10-1

REVIEW OF THE SEWAGE  
SLUDGE REGULATIONS

45 MINUTES

Understanding the sewage sludge regulations and their applicability to generators and preparers of sewage sludge is necessary so that inspectors can adequately determine compliance. This exercise provides an overview of the sewage sludge regulations.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 10A of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the three sewage sludge use and disposal practices for which technical standards have been promulgated under 40 CFR Part 503. (Manual, Chapter 10A, page 10-1)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
2. List the five types of requirements under 40 CFR Part 503. (Manual, Chapter 10A, page 10-2)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_

- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
3. Most sewage sludge records for land application and surface disposal are required to be maintained for a minimum of \_\_\_\_\_. (Manual, Chapter 10A, pages 10-4 and 10-5)
4. Pathogen reduction treatment processes used to achieve Class A sludge are referred to as \_\_\_\_\_ and treatment processes used to achieve Class B sludge are referred to as \_\_\_\_\_. (Manual, Chapter 10A, page 10-4)
5. List the three classes of facilities that are required to report at least once per year under 40 CFR Part 503. (Manual, Chapter 10A, page 10-5)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
6. Surface disposal sites that are equipped with a liner and leachate collection system are not required to meet any pollutant concentration limits. (Manual, Chapter 10A, page 10-5)
- TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
7. List the 40 CFR Part 503 three types of monitoring requirements for sewage sludge incinerators. (Manual, Chapter 10A, page 10-6)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

<b>EXERCISE 10-2</b>	<b>SLUDGE INSPECTION PROCEDURES</b>	<b>1 HOUR 30 MINUTES</b>
<p>Inspectors should incorporate evaluation of sewage sludge use and disposal practices into existing inspections as much as possible. This exercise provides inspectors with an introduction to how to evaluate whether a facility is in compliance with the sewage sludge regulations, including sample collection and analysis.</p> <ol style="list-style-type: none"><li>1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.</li><li>2. Read Chapter 10B and Appendices I and J of the Manual and watch the video <i>Sampling Sewage Sludge</i>.</li><li>3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.</li></ol>		

Study Checklist At the end of this exercise, you should be able to:

1. List the six steps an inspector should do while preparing for an inspection. (Manual, Chapter 10B, pages 10-10 through 10-11)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
2. List five items that should be included in a sewage sludge sampling plan. (Video)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_



d. \_\_\_\_\_

e. \_\_\_\_\_

3. In general terms, describe where sewage sludge samples should be collected. (Manual, Chapter 10B, pages 10-12 and 10-17, video)

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4. In general terms, describe how composite samples are collected for metals analysis. (Video)

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5. Describe how sewage sludge samples should be preserved in the field. (Manual, Chapter 10B, pages 10-12 and 10-17, video)

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6. Describe where in the Code of Federal Regulations approved analytical methods for sewage sludge analyses are listed. (Manual, Chapter 10B, page 10-13)

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7. List the three elements related to sewage sludge laboratory analysis that are evaluated during a PAI. (Manual, Chapter 10B, pages 10-17 through 10-18)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

8. Part 503 pollutant standards are expressed on a \_\_\_\_ weight basis. (Manual, Chapter 10B, page 10-18)

9. Describe the sewage sludge parameter that must be known to convert pollutant concentrations from a wet to a dry weight basis. (Manual, Chapter 10B, page 10-19)

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10. Describe the appropriate location and method for sampling composted sludge. (Manual, Chapter 10B, page 10-23, Video)

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11. List the appropriate records that may be kept to demonstrate compliance with Class A, Alternative A1, pathogen reduction. (Manual Chapter 10B, page 10-24)

- a. 

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- b. 

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- c. 

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12. List the appropriate records that may be kept to demonstrate compliance with vector attraction reduction Option 1. (Manual, Chapter 10B, page 10-27)

- a. 

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- b. 

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## UNIT 10

## EXAM

30 MINUTES

**Instructions**

1. Complete this exam without referring to any text or notes.
2. Do not exceed the time listed above.
3. Verify the answers with your instructor.
4. Correct any errors and clarify questions or problems before proceeding to Unit 11.

Exam Questions

1. List the three sewage sludge use and disposal practices for which technical standards have been promulgated under 40 CFR Part 503.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
2. All sewage sludge that is land applied must meet \_\_\_\_\_ pollutant limits.
3. Part 503 regulations contain management practices for \_\_\_\_\_ and \_\_\_\_\_ of sludge use and disposal activities.
4. Vector attraction reduction requirements are intended to \_\_\_\_\_.
5. Required minimum self-monitoring frequencies for land application or surface disposal of sewage sludge are based on \_\_\_\_\_.
6. In general, sewage sludge records must be maintained for a minimum of three years.  
  
TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
7. Samples for pathogen analyses should be collected directly into \_\_\_\_\_ sampling containers.
8. Describe how sewage sludge samples should be preserved in the field.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. Sample containers for liquid sewage sludge should be completely filled for all pollutant analyses.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

10. Approved analytical methods for sewage sludge analyses are contained in 40 CFR Part 136.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

## UNIT ELEVEN

## STORM WATER

Under the storm water regulations, certain point source storm water dischargers must apply for a storm water discharge permit. As a result, NPDES inspectors may be inspecting facilities which have NPDES permits that include storm water requirements and conditions. To be able to assess a facility's compliance with the storm water regulations and applicable permit requirements, inspectors need to be familiar with the regulations. Unit 11 corresponds to Chapter 11 of the Manual. Topics covered in this unit include:

- Storm water regulations
- Storm water permits
- Sampling and inspection considerations.

**EXERCISE 11-1****STORM WATER REGULATIONS****45 MINUTES**

Understanding the storm water regulations and their applicability to facilities being inspected is necessary so that inspectors can adequately determine compliance. This exercise provides an introduction to the storm water regulations and permit application procedures.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 11A of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the three general types of dischargers that are regulated under the storm water regulations. (Manual, Chapter 11A, page 11-7)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_

- 
2. List the three types of permit applications for storm water discharges associated with industrial activities. (Manual, Chapter 11A, page 11-5)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
3. Describe what a light industrial facility that determines that there is no exposure to storm water should do. (Manual, Chapter 11A, page 11-3)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
4. Industrial storm water discharges include immediate access roads and rail lines that are used by a facility's carriers of raw materials, products, waste materials, or by-products. (Manual, Chapter 11A, page 11-3).
- TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
5. Industrial facilities that want to be covered under a general permit must file a \_\_\_\_\_. (Manual, Chapter 11A, page 11-6)
6. Under Section 402(p)(4) of the CWA, permits must require compliance no later than \_\_\_\_\_ after the permit issuance date. (Manual, Chapter 11A, page 11-8)

**EXERCISE 11-2****STORM WATER PERMITS****45 MINUTES**

To be able to determine a facility's compliance with applicable storm water regulations, inspectors need to be familiar with conditions normally included in storm water discharge permits. These issues are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 11B and Appendix K of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List five requirements included in EPA's baseline general permits. (Manual, Chapter 11B, page 11-15)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
2. Pollution Prevention Plans for industrial activities must contain a description of \_\_\_\_\_ and a description of \_\_\_\_\_ to prevent or minimize pollution of storm water. (Manual, Chapter 11B, page 11-15)
3. List three types of pollutant measures or controls that may be included in a Pollution Prevention Plan for industrial activities. (Manual, Chapter 11B, page 11-16)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
4. The EPA baseline general permit includes additional requirements for facilities that have discharges associated with industrial activity and are subject to \_\_\_\_\_. (Manual, Chapter 11B, page 11-17)
5. List the three types of controls that must be included in Pollution Prevention Plans for construction activity. (Manual, Chapter 11B, page 11-19)

- a.
- b.
- c.
6.

List the four types of pollutant sources that must addressed in storm water management programs for municipal separate storm sewer systems. (Manual, Chapter 11B, page 11-21)
- a.
- b.
- c.
- d.



**EXERCISE 11-3****SAMPLING AND INSPECTION  
CONSIDERATIONS****1 HOUR  
15 MINUTES**

Inspectors should be familiar with sources of storm water pollutants and procedures for collecting samples to characterize these pollutants. In addition, inspectors should be familiar with storm water flow measurement considerations and inspecting for illicit connections. These issues are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 11C and Appendices L through Q of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the six activities associated with industrial activities that have been identified as major potential sources of storm water pollutants. (Manual, Chapter 11C, page 11-27)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
2. List three conditions that make storm water sampling difficult and may require adjustment to sampling plans. (Manual, Chapter 11C, page 11-29)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
3. The storm water regulations specify that the storm event to be sampled must be at least \_\_\_\_\_ after the previously measurable storm event (greater than 0.1 inches). (Manual, Chapter 11C, page 11-29)
4. EPA's general storm water permit requires that monitoring records be maintained for a minimum of \_\_\_\_\_. (Manual, Chapter 11C, page 11-30)
5. List four items the inspector should assess to verify that outfalls receive storm water discharges from substantially identical outfalls. (Manual, Chapter 11C, page 11-30)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_

- 
- c. \_\_\_\_\_
- d. \_\_\_\_\_
6. List the four most common methods of measuring storm water flow. (Manual, Chapter 11C, page 11-31)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
7. List and describe the two types of illicit connections to storm sewer systems. (Manual, Chapter 11C, page 11-31)
- a. \_\_\_\_\_
- \_\_\_\_\_
- b. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
8. List the two steps an inspector can follow to evaluate facilities for illicit connections. (Manual, Chapter 11C, page 11-32)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
9. List four conditions that may indicate that an illicit connection exists. (Manual, Chapter 11C, page 11-33)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

UNIT 11	EXAM	30 MINUTES
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Instructions

1. Complete this exam without referring to any text or notes.

2. Do not exceed the time listed above.

3. Verify the answers with your instructor.

4. Correct any errors and clarify questions or problems before proceeding to Unit 12.

1. List the three general types of dischargers that are regulated under the storm water regulations.

a.

b.

c.
2. List three types of pollutant measures or controls that may be included in a Pollution Prevention Plan for industrial activities.

a.

b.

c.
3. List the four types of pollutant sources that must addressed in storm water management programs for municipal separate storm sewer systems.

a.

b.

c.

d.
4. List six activities associated with industrial activities that have been identified as major potential sources of storm water pollutants.

a.

b.

c.

d.

- e. \_\_\_\_\_
- f. \_\_\_\_\_

5. The storm water regulations allow permittees to sample and report monitoring data on only one of two or more substantially identical outfalls.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

6. The runoff coefficient method of estimating storm water flow is very accurate.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

7. \_\_\_\_\_ and \_\_\_\_\_ are two tests that can be key indicators of non-storm water discharges.

UNIT TWELVE

COMBINED SEWER OVERFLOWS

Many municipalities have combined sanitary and storm sewer systems that result in Combined Sewer Overflows (CSOs) during wet weather events. Since these CSOs are considered point sources of pollution, they are subject to the NPDES permit program. NPDES inspectors may have to determine a facility’s compliance with EPA’s 1994 CSO control policy and CSO conditions contained in NPDES permits. Unit 12 corresponds to Chapter 12 of the Manual. Topics covered include:

- The CSO control policy
- CSO inspection procedures.

EXERCISE 12-1	THE CSO CONTROL POLICY	30 MINUTES
<p>Inspectors should be familiar with EPA’s CSO control policy so that a facility’s compliance with that policy can be determined. This exercise provides an overview of the EPA’s CSO control policy.</p> <ol style="list-style-type: none"><li>1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.</li><li>2. Read Chapter 12A of the Manual.</li><li>3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.</li></ol>		

Study Checklist At the end of this exercise, you should be able to:

1. CSOs are not subject to secondary treatment requirements. (Manual, Chapter 12A, page 12-1)  
  
TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
2. List the four steps that the CSO control policy encourages permittees to take. (Manual, Chapter 12A, page 12-1 through 12-2)  
  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_

3. List the nine minimum CSO controls. (Manual, Chapter 12A, page 12-3)
- a.

b.

c.

d.

e.

f.

g.

h.

i.
4. List the nine elements of LTCPs. (Manual, Chapter 12A, page 12-3)
- a.

b.

c.

d.

e.

f.

g.

h.

i.

**EXERCISE 12-2****CSO INSPECTION PROCEDURES****45 MINUTES**

Inspectors should evaluate a facility's compliance with its NPDES CSO permit conditions and the CSO control policy. This exercise covers basic CSO inspection procedures.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 12B of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List the two documents in which requirements for CSO control can be found. (Manual, Chapter 12B, page 12-5)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
2. After permit issuance, permittees are usually given 2 years to submit a report documenting implementation of the nine minimum controls. (Manual, Chapter 12B, page 12-5)

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

3. List five areas for which the compliance inspector should obtain information to determine compliance. (Manual, Chapter 12B, page 12-5)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
4. List the four steps inspectors may take when determining compliance with CSO controls. (Manual, Chapter 12B, pages 12-5 through 12-8)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
5. List four types of CSO records a facility may maintain. (Manual, Chapter 12B, page 12-7)

- a.
- b.
- c.
- d.

6. A schedule submitted by a permittee in its LTCP is an enforceable schedule. (Manual, Chapter 12B, page 12-7)

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

7. List five examples of records or documents a permittee may maintain to demonstrate proper operation and maintenance of the combined sewer system. (Manual, Chapter 12B, page 12-9)

- a.
- b.
- c.
- d.
- e.

8. Describe what the inspector should do if any dry weather CSO discharges are observed. (Manual, Chapter 12B, page 12-8)



## UNIT 12

## EXAM

15 MINUTES

**Instructions**

1. Complete this exam without referring to any text or notes.
2. Do not exceed the time listed above.
3. Verify the answers with your instructor.
4. Correct any errors and clarify questions or problems before proceeding to Unit 13.

1. List the four steps that the CSO control policy encourages permittees to take.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

2. List the nine minimum CSO controls.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_
- i. \_\_\_\_\_

3. List the two documents in which requirements for CSO control can be found.

- a. \_\_\_\_\_
- b. \_\_\_\_\_

4. Inspections of CSO outfalls are routinely conducted as part of NPDES inspections.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

## UNIT THIRTEEN

## POLLUTION PREVENTION

The goal of pollution prevention is to achieve the reduction of pollution by the elimination or reduction of waste. Although inspectors may be limited in incorporating pollution prevention assessments into NPDES inspections, inspectors can identify pollution prevention options that would improve compliance. Therefore, inspectors should be familiar with the basics in identifying pollution prevention opportunities. Topics covered in the exercises in this unit (which corresponds to Chapter 13 of the Manual) include:

- Overview of pollution prevention
- Pollution prevention for industrial facilities
- Pollution prevention for municipal wastewater treatment plants.

**EXERCISE 13-1****OVERVIEW OF POLLUTION PREVENTION****30 MINUTES**

To be able to identify pollution prevention opportunities, inspectors should be familiar with the goals and benefits of pollution prevention and the waste management hierarchy. These issues are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 13A of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Pollution prevention is intended to minimize or eliminate pollutants released without shifting pollutants from one media to another. (Manual, Chapter 13A, page 13-1)

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

2. List four ways by which a facility can implement pollution prevention. (Manual, Chapter 13A, page 13-1)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_

3. List the four levels of the waste management hierarchy. (Manual, Chapter 13A, pages 13-2 through 13-3)
- a.

b.

c.

d.
- 
4. Describe source reduction. (Manual, Chapter 13A, page 13-2)
- 
5. Evaporating spent electroplating baths is an example of pollution prevention. (Manual, Chapter 13A, page 13-3)
- TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
6. List three direct benefits of pollution prevention. (Manual, Chapter 13A, pages 13-4 and 13-6)
- a.

b.

c.
-

EXERCISE 13-2

POLLUTION PREVENTION FOR  
INDUSTRIAL FACILITIES

45 MINUTES

During inspections of industrial facilities, inspectors can identify pollution prevention opportunities through evaluation of facility layout, equipment and processes, and waste generation, handling, and disposal. This exercise covers the basics of identifying pollution prevention opportunities at industrial facilities.

- 1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
- 2. Read Chapter 13B and Appendix R of the Manual.
- 3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

- 1. List the four phases of pollution prevention opportunity assessments. (Manual, Chapter 13B, page 13-7)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
- 2. To better enable the inspector to identify pollution prevention opportunities, detailed information should be collected to develop a \_\_\_\_\_ for each process step. (Manual, Chapter 13B, page 13-7)
- 3. List the six areas or activities the inspector should focus on during the facility site visit. (Manual, Chapter 13B, page 13-10)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
- 4. List the four types of wastestreams that should be evaluated during a facility site visit. (Manual, Chapter 13B, page 13-10)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_

5. List two examples of how a facility could achieve the goal of pollution prevention through the use of fewer resources. (Manual, Chapter 13B, page 13-11)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
6. List the five pieces of information the inspector should gather information on for each identified wastestream. (Manual, Chapter 13B, page 13-10)
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

**EXERCISE 13-3****POLLUTION PREVENTION FOR  
MUNICIPAL WASTEWATER TREATMENT PLANTS****30 MINUTES**

The Municipal Water Pollution Prevention (MWPP) program promotes the application of pollution prevention concepts to POTWs. During inspections of POTWs, inspectors can assess the POTW's current pollution prevention practices and identify pollution prevention opportunities. These issues are covered in this exercise.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 13C of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. List four benefits for implementing pollution prevention at POTWs. (Manual, Chapter 13C, page 13-15)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
2. List three benefits of reducing sewer system infiltration/inflow. (Manual, Chapter 13C, page 13-16)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
3. Implementing pollution prevention through the pretreatment program is one of the best ways to control pollutants at their source. (Manual, Chapter 13C, page 13-16)  
  
TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
4. List five areas on which POTWs could focus pollution prevention practices. (Manual, Chapter 13C, page 13-15)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_

UNIT 13	EXAM	15 MINUTES
<b>Instructions</b>  1. Complete this exam without referring to any text or notes.  2. Do not exceed the time listed above.  3. Verify the answers with your instructor.  4. Correct any errors and clarify questions or problems before proceeding to Unit 14.		

1. List four ways by which a facility can implement pollution prevention.  
  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_
2. List the four levels of the waste management hierarchy.  
  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_
3. Inspectors generally will be able to conduct full pollution prevention opportunity assessments as part of NPDES compliance inspections.  
  
TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
4. List the six areas or activities the inspector should focus on during the facility site visit.  
  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_  
e. \_\_\_\_\_  
f. \_\_\_\_\_

5. List four benefits for implementing pollution prevention at POTWs.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

6. The \_\_\_\_\_ is one of the best ways to control pollutants discharged to a POTW at their source.



## UNIT FOURTEEN

## MULTI-MEDIA CONCERNS

NPDES inspectors may find it necessary to evaluate a facility's compliance with applicable environmental regulations in media other than wastewater. Therefore, inspectors may need to be familiar with other environmental programs such as RCRA, CERCLA, and air. Topics covered in this unit (which corresponds to Chapter 14 of the Manual) include:

- Introduction and overview
- Multi-media concerns and the screening program
- Multi-media inspections.

**EXERCISE 14-1****INTRODUCTION AND OVERVIEW****15 MINUTES**

Inspectors may be called upon to perform multi-media inspections of varying depth and complexity. This exercise provides an introduction to the various levels of multi-media inspections that may be conducted.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapters 14A and 14B of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Describe the difference between Category A and Category B inspections. (Manual, Chapter 14B, page 14-3)

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2. Category A inspections are the most complex multi-media inspections. (Manual, Chapter 14B, page 14-3)

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

3. List the five advantages to conducting multi-media inspections as opposed to program-specific inspections. (Manual, Chapter 14B, page 14-4)
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_

**EXERCISE 14-2****MULTI-MEDIA CONCERNS AND  
THE SCREENING PROCESS****1 HOUR  
30 MINUTES**

Inspectors that participate in multi-media inspections should have a basic understanding of other environmental program areas. This exercise provides a brief overview other program areas.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 14C and Appendices S and T of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. RCRA regulates the \_\_\_\_\_ of hazardous waste. (Manual, Chapter 14C, page 14-5)
2. The control of hazardous waste discharged directly to surface waters is deferred to the CWA under the direct discharge exclusion. (Manual, Chapter 14C, page 14-5)

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

3. List the four fates of hazardous wastes that are discharged to wastewater treatment plants. (Manual, Chapter 14C, page 14-5)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
4. POTWs that receive hazardous wastes by truck, rail, or dedicated pipeline are subject to RCRA \_\_\_\_\_ requirements. (Manual, Chapter 14C, page 14-5)
5. RCRA and the \_\_\_\_\_ regulate the cleanup of hazardous waste sites. (Manual, Chapter 14C, page 14-6)
6. Municipal sewage sludge that is co-incinerated with other wastes is regulated by the \_\_\_\_\_. (Manual, Chapter 14C, page 14-6)

EXERCISE 14-3	MULTI-MEDIA INSPECTIONS	30 MINUTES
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Multi-media inspections are generally performed by an inspection team. This exercise provides an overview of team responsibilities and required skills.

1. Read through the study checklist. Test your background knowledge by responding to as many items as possible.
2. Read Chapter 14D of the Manual.
3. Respond to each item on the study checklist. Correct any errors and expand any incomplete responses made in Step 1. Discuss any questions or problems with your instructor. Do not proceed until you have mastered the material in this exercise.

Study Checklist At the end of this exercise, you should be able to:

1. Describe the two steps in the basic strategy for performing multi-media inspections. (Manual, Chapter 14D, page 14-9)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
2. Each multi-media inspection team member should have expertise in each program area being evaluated. (Manual, Chapter 14D, page 14-10)

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)
3. The \_\_\_\_\_ has overall responsibility for conducting a multi-media inspection. (Manual, Chapter 14D, page 14-10)
4. List five skills or qualifications that each multi-media team member should possess. (Manual, Chapter 14D, page 14-10)
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_

## UNIT 14

## EXAM

15 MINUTES

## Instructions

1. Complete this exam without referring to any text or notes.
2. Do not exceed the time listed above.
3. Verify the answers with your instructor.
4. Correct any errors and clarify questions or problems before proceeding to the final exam.

1. Inspections that focus on one specific program area but also screen for possible noncompliance in other program areas are Category \_\_\_ investigations.
2. Category C investigations are conducted by a team of investigators and focus on two or more targeted program areas.

TRUE ☐ FALSE ☐ (Check one. If the statement is false, make necessary changes to correct it.)

3. RCRA regulates the \_\_\_\_\_ of hazardous waste.
4. List the four fates of hazardous wastes that are discharged to wastewater treatment plants.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
5. The \_\_\_\_\_ has overall responsibility for conducting a multi-media inspection.

APPENDIX A  
FINAL EXAM

FINAL EXAM

FINAL EXAM

2 HOURS  
30 MINUTES

Instructions

1. Complete this exam without referring to any text or notes.
2. Do not exceed the time limit noted above.

Exam Questions

1. Identify the sections of the CWA listed below by number.
  - a. Effluent Limitations  
\_\_\_\_\_
  - b. Information and Guidelines  
\_\_\_\_\_
  - c. Inspections, Monitoring, and Entry  
\_\_\_\_\_
  - d. NPDES  
\_\_\_\_\_
2. List the five steps involved with preinspection planning.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
3. Indicate the legal requirement an inspector must meet on arrival at a facility.  
\_\_\_\_\_
4. Describe the purpose of the inspector's field notebook.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Routine record-keeping and reporting evaluations are conducted at all permittee facilities. Explain why an in-depth investigation would be warranted and give one example.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. List the two objectives of a facility site review.
  - a. \_\_\_\_\_

- 
- b. \_\_\_\_\_
7. List four areas or conditions of a plant which are evaluated during a facility site review.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
8. List four specific objectives of sampling a permittee's effluent.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
9. List the two types of sampling techniques and when each type is appropriate.
- a. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- b. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
10. Describe the kinds of information that should be contained in a permittee's self-monitoring records (i.e., the laboratory data management system).
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
11. Describe a chain-of-custody form and explain its primary objective.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
12. List the five reasons why accurate flow measurement is important.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
13. Usually, the inspector is encouraged to use the facility's system if it is accurate. Describe the conditions under which the inspector would use a portable flow sensor and recorder.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
14. Describe the standard elements of a complete, continuous flow measurement system.
- \_\_\_\_\_



## FINAL EXAM

15. List four objectives of a biomonitoring inspection.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

16. Define QA and QC.

- a. QA  
\_\_\_\_\_  
\_\_\_\_\_
- b. QC  
\_\_\_\_\_  
\_\_\_\_\_

17. Describe the NPDES DMR QA program.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

18. List four features or services that quality-conscious laboratories should have on hand.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

19. Indicate the regulatory topic that is addressed in 40 CFR Part 403.

\_\_\_\_\_

20. Describe the purpose of the National Pretreatment Program.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

21. List three types of standards imposed on IUs under a pretreatment program.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

22. A toxicity test in which the effluent and dilution water are continuously replenished in test chambers is called a \_\_\_\_\_ test.

23. A \_\_\_\_\_ toxicity test estimates the concentration at which a predetermined toxic response occurs.

24. Describe where effluent samples for biomonitoring should be taken \_\_\_\_\_.

- 
25. Adding dilution water to the water that organisms were raised in prior to a test is called \_\_\_\_\_.
26. The types of sampling the inspector may undertake at the facility are determined by the terms and conditions of the permit.
- TRUE **G** or FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
27. EPA inspectors may visit a facility which has not been issued a permit.
- TRUE **G** or FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
28. List the three sewage sludge use and disposal practices for which technical standards have been promulgated under 40 CFR Part 503.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
29. All sewage sludge that is land applied must meet \_\_\_\_\_ pollutant limits.
30. In general, sewage sludge records must be maintained for a minimum of three years.
- TRUE **G** or FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
31. Describe how sewage sludge samples should be preserved in the field.
- \_\_\_\_\_
- \_\_\_\_\_
32. Sample containers for liquid sewage sludge should be completely filled for all pollutant analyses.
- TRUE **G** or FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
33. Approved analytical methods for sewage sludge analyses are contained in 40 CFR Part 136.
- TRUE **G** or FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
34. List the three general types of dischargers that are regulated under the storm water regulations.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
35. List the four types of pollutant sources that must be addressed in storm water management programs for municipal separate storm sewer systems.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
36. List six activities associated with industrial activities that have been identified as major potential sources of storm water pollutants.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

## FINAL EXAM

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- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
37. \_\_\_\_\_ and \_\_\_\_\_ are two tests that can be key indicators of non-storm water discharges.
38. List the four steps that the CSO control policy encourages permittees to take.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
39. List the nine minimum CSO controls.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_
- i. \_\_\_\_\_
40. List the two documents in which requirements for CSO control can be found.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
41. List four ways by which a facility can implement pollution prevention.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
42. List the four levels of the waste management hierarchy.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
43. Category A inspections are the most complex multi-media inspections.
- TRUE **G** or FALSE **G** (Check one. If the statement is false, make necessary changes to correct it.)
44. Describe the two steps in the basic strategy for performing multi-media inspections.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
45. RCRA regulates the \_\_\_\_\_ of hazardous waste.
-

46. List the four fates of hazardous wastes that are discharged to wastewater treatment plants.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

**APPENDIX B**  
**REFERENCES**

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- *Code of Federal Regulations*. Title 40, Part 403, "General Pretreatment Regulations for New and Existing Sources."