

NORTH CAROLINA SURFACE WATER PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE**

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	16

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What is the only acceptable breathing device for handling chlorine leaks?**
 - A. Activated carbon canister type
 - B. Potassium tetroxide canister type
 - C. Self-contained breather apparatus
 - D. Oxygen supply apparatus
- 2. Hydrogen sulfide gas smells like...**
 - A. Dead fish
 - B. Fuel gas
 - C. Rotten eggs
 - D. Skunk
- 3. Killing of pathogenic organisms in water treatment is called...**
 - A. A. Disinfection
 - B. B. Oxidation
 - C. C. Pasteurization
 - D. D. Sterilization
- 4. Which of the following is NOT a health effect associated with trihalomethanes?**
 - A. Reproductive issues
 - B. Kidney damage
 - C. Liver damage
 - D. Skin irritation
- 5. What can improve sedimentation in a water treatment process?**
 - A. Short circuiting
 - B. A sludge blanket
 - C. Uniform, short, low velocity flow across the basin
 - D. Reducing the detention time in the basin
- 6. What is the MCL for Total Trihalomethanes (TTHMs)?**
 - A. 60 ppb
 - B. 60 ppm
 - C. 80 ppb
 - D. 80 ppm

- 7. Which factor can affect the flow rate of a centrifugal pump?**
- A. Pump speed
 - B. Water temperature
 - C. Type of fluid
 - D. All of the above
- 8. If an operator hears a pinging sound coming from the pump, what is the probable cause?**
- A. Descaling
 - B. Cavitation
 - C. Corrosion
 - D. Hardness
- 9. The most hazardous condition associated with storage areas where dry activated carbon is present is...**
- A. combustion
 - B. depletion of oxygen
 - C. fire
 - D. oxidation
- 10. What is the primary health risk associated with exposure to trihalomethanes (THMs)?**
- A. Gastrointestinal diseases
 - B. Nervous system damage
 - C. Cancer
 - D. Increased blood pressure

Answers

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1. C
2. C
3. A
4. D
5. C
6. C
7. D
8. B
9. A
10. C

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Explanations

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1. What is the only acceptable breathing device for handling chlorine leaks?

- A. Activated carbon canister type
- B. Potassium tetroxide canister type
- C. Self-contained breather apparatus**
- D. Oxygen supply apparatus

The only acceptable breathing device for handling chlorine leaks is a self-contained breathing apparatus (SCBA). This device is crucial in such situations because chlorine gas is highly toxic and can cause severe respiratory distress or even be life-threatening if inhaled. An SCBA is designed to provide breathable air in environments that are hazardous or where the air quality is unknown. It includes a tank of compressed air that allows the user to operate in a contaminated atmosphere for a specified period. This equipment protects the user from inhaling chlorine gas and other harmful substances, ensuring that emergency responders or workers can effectively manage the leak and evacuate the area safely. Other types of breathing devices, such as activated carbon or potassium tetroxide canisters, do not offer the same level of protection against chlorine because they are not specifically designed for the high toxicity of chlorine gas. Oxygen supply apparatuses may not be effective in environments with dangerous concentrations of gases like chlorine, as they do not filter out harmful agents. Therefore, the use of SCBA is mandated in situations involving chlorine leaks to ensure maximum safety for individuals responding to the incident.

2. Hydrogen sulfide gas smells like...

- A. Dead fish
- B. Fuel gas
- C. Rotten eggs**
- D. Skunk

Hydrogen sulfide gas is well-known for its distinctive odor, which is often compared to that of rotten eggs. This characteristic smell arises from its molecular structure and behavior in the environment. When hydrogen sulfide is present, it can be detected by humans at very low concentrations, typically around 0.0005 to 0.01 parts per million. This strong, unpleasant scent serves as a warning sign, as hydrogen sulfide can be toxic and hazardous to health. The association of hydrogen sulfide with rotten eggs is significant in contexts where safety is paramount, particularly in industries like wastewater treatment, petroleum extraction, and sewage management, where the gas might be encountered. Recognizing this odor is vital for workers and individuals in these environments to appropriately respond and take necessary precautions. In contrast, the other options provided represent different odors that do not accurately describe hydrogen sulfide. Dead fish, fuel gas, and skunk smells each have distinct characteristics and are associated with different substances or conditions, making them less relevant when discussing hydrogen sulfide specifically. Thus, the correct choice captures the well-documented and widely recognized fragrance of hydrogen sulfide gas.

3. Killing of pathogenic organisms in water treatment is called...

- A. A. Disinfection**
- B. B. Oxidation
- C. C. Pasteurization
- D. D. Sterilization

Disinfection refers to the process of killing or inactivating pathogenic organisms in water, making it safe for human consumption. This is a critical step in water treatment, particularly to eliminate pathogens that could cause waterborne diseases. Methods of disinfection commonly include the use of chlorine, ultraviolet light, or ozone, all of which target harmful microorganisms effectively. While the other processes mentioned have their own significance, they serve different purposes. Oxidation refers to the chemical reaction where substances lose electrons, which can help in removing organic material and certain contaminants in water, but it does not specifically target pathogens. Pasteurization is a heat treatment process often used in food and beverage industries to kill pathogens but is not typically used for large-scale water treatment. Sterilization aims to kill all forms of microbial life, not just pathogens, and is more extensive than what is needed for drinking water treatment. Thus, disinfection is specifically designed to make water potable by reducing or eliminating harmful organisms, making it the appropriate choice in this context.

4. Which of the following is NOT a health effect associated with trihalomethanes?

- A. Reproductive issues
- B. Kidney damage
- C. Liver damage
- D. Skin irritation**

Trihalomethanes (THMs) are a group of chemicals that are formed when chlorine, used for disinfecting drinking water, reacts with naturally occurring organic matter. The health effects associated with exposure to THMs are primarily linked to long-term consumption of contaminated drinking water, and these effects have been extensively studied. Reproductive issues, kidney damage, and liver damage are documented potential health risks associated with THM exposure. Research has indicated that chronic exposure to THMs may lead to adverse reproductive outcomes such as potential fetal growth restrictions or developmental issues. Furthermore, animal studies have shown that THMs can impact kidney function and may lead to liver damage due to their toxic properties. In contrast, skin irritation is typically not considered a direct health effect of THM exposure. While exposure to high concentrations of various chemicals can irritate the skin, the primary concerns regarding THMs are related to systemic effects from ingestion over time rather than localized skin responses. Therefore, identifying skin irritation as NOT a health effect associated with trihalomethanes aligns with the established scientific understanding of the risks involved.

5. What can improve sedimentation in a water treatment process?

- A. Short circuiting
- B. A sludge blanket
- C. Uniform, short, low velocity flow across the basin**
- D. Reducing the detention time in the basin

Improving sedimentation in a water treatment process is largely about ensuring that solids in the water settle effectively. A uniform, short, and low velocity flow across the basin allows for more consistent conditions for settling. When flow velocities are low, the likelihood of turbulence decreases, which can disrupt the settling process. A uniform flow ensures that all particles have an equal opportunity to settle instead of being carried away by uneven currents. This leads to better performance in sedimentation, as solids can more effectively reach the basin floor. In contrast, aspects like short circuiting create uneven flow paths that can lead to some areas of the basin being less effective for sedimentation, as they may be bypassed by water. A sludge blanket, while useful in certain sedimentation processes, primarily serves to prevent resuspension of settled solids rather than directly improving sedimentation rates. Reducing the detention time in the basin typically does not facilitate sedimentation because there is less time for particles to settle, leading to a decrease in efficiency. Overall, the proper control of flow dynamics is crucial for enhancing the sedimentation process.

6. What is the MCL for Total Trihalomethanes (TTHMs)?

- A. 60 ppb
- B. 60 ppm
- C. 80 ppb**
- D. 80 ppm

The maximum contaminant level (MCL) for Total Trihalomethanes (TTHMs) is set at 80 parts per billion (ppb). This standard is established by the Environmental Protection Agency (EPA) to control these potentially harmful compounds that can form when chlorine or other disinfectants used in water treatment react with organic matter present in the source water. TTHMs are significant because they are linked to various health risks, including potential impacts on the liver, kidneys, and central nervous system, as well as potential carcinogenic effects with long-term exposure. Thus, maintaining TTHM levels at or below the MCL is critical in ensuring drinking water safety and protecting public health. Understanding the appropriate units for measuring contaminants is also crucial; in this case, the use of parts per billion (ppb) is standard for such low concentrations. This makes options measured in parts per million (ppm) inappropriate for this MCL. With this context, the choice reflecting the correct MCL of 80 ppb stands as the right answer.

7. Which factor can affect the flow rate of a centrifugal pump?

- A. Pump speed
- B. Water temperature
- C. Type of fluid
- D. All of the above**

When considering the flow rate of a centrifugal pump, all the factors mentioned play a significant role. The pump speed is a direct influencing factor; as the speed of the pump increases, the flow rate typically increases as well due to the generated centrifugal force. Water temperature can affect the viscosity of the fluid, which in turn impacts flow rate; for example, warmer water is less viscous and can flow more easily than colder water. Additionally, the type of fluid being pumped is crucial because different fluids have varying densities and viscosities, affecting how they behave within the pump system. Therefore, each of these factors, whether related to the operational speed, the properties of the fluid, or environmental conditions, collectively influence the flow rate of a centrifugal pump, making the comprehensive consideration of all these aspects crucial for accurate assessments and operations.

8. If an operator hears a pinging sound coming from the pump, what is the probable cause?

- A. Descaling
- B. Cavitation**
- C. Corrosion
- D. Hardness

The presence of a pinging sound coming from the pump is often indicative of cavitation. Cavitation occurs when the pressure in a pump drops below the vapor pressure of the liquid being pumped. This leads to the formation of vapor bubbles within the liquid. As these bubbles travel through the pump and enter areas of higher pressure, they collapse or implode, creating shock waves that result in the distinct pinging or knocking sound. This phenomenon can cause significant damage to the pump components over time, including erosion and reduced efficiency, making it crucial for operators to identify and address the situation promptly. Factors that can contribute to cavitation include insufficient inlet pressure, excessive flow rates, or improper pump design, all of which should be evaluated if cavitation is suspected.

9. The most hazardous condition associated with storage areas where dry activated carbon is present is...

- A. combustion**
- B. depletion of oxygen
- C. fire
- D. oxidation

The correct answer highlights that combustion is the most hazardous condition associated with storage areas where dry activated carbon is present. Activated carbon is a highly porous material, and when it is dry, it can easily ignite under certain conditions, leading to combustion. This is particularly critical because activated carbon can act as a fuel source if it comes into contact with an ignition source, increasing the risk of fire. In environments where activated carbon is stored, the combination of dust, particulates, and the right conditions for ignition can create a situation that may lead to combustion. This hazard necessitates careful management, including maintaining proper storage practices to avoid leaks and excessive dust accumulation. While depletion of oxygen can be a concern in other contexts, such as confined spaces with organic materials, it is not the primary hazard associated specifically with dry activated carbon storage. Fire is indeed a significant risk, but combustion refers more directly to the chemical reaction that signifies the ignition process. Oxidation is a slower process that does not pose the immediate threat that combustion does in this scenario.

10. What is the primary health risk associated with exposure to trihalomethanes (THMs)?

- A. Gastrointestinal diseases
- B. Nervous system damage
- C. Cancer**
- D. Increased blood pressure

The primary health risk associated with exposure to trihalomethanes (THMs) is cancer. THMs are a group of chemicals that are formed when chlorine or other disinfectants used in water treatment processes react with naturally occurring organic matter in the water. Studies have shown a correlation between long-term exposure to elevated levels of trihalomethanes in drinking water and an increased risk of certain types of cancer, particularly bladder and colorectal cancer. Given the potential for these chemicals to persist in the environment and their ability to be ingested through drinking water, the risk is significant, especially for populations living in areas where water quality may not be adequately monitored. This makes understanding and mitigating THM exposure crucial for public health. Other health concerns associated with exposure to THMs may exist, such as irritation of the eyes and skin or potential reproductive issues. However, the strongest evidence points towards an increased cancer risk, which is why this is considered the primary health concern associated with these compounds. Understanding the link between THMs and cancer underlines the importance of water treatment practices and regulations aimed at controlling THMs in drinking water supplies.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://ncsurfacewater.examzify.com>

We wish you the very best on your exam journey. You've got this!

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