AP Environmental Science (APES) Atmospheric Pollution Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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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

1. What changes would be expected with a low pH pond?

A. Increased level of heavy metals

B. Decreased level of heavy metals

C. Higher dissolved oxygen

D. Lower metal solubility

2. What is the mechanism behind the increased radon indoors during cold weather?

A. Vacuum created by indoor-outdoor temperature differences pulls soil gas into the building

B. Increased soil radon generation

C. Weather cools radon, making it condense

D. Higher indoor ventilation

3. Which gas is a corrosive pollutant produced by burning coal and linked to industrial smog?

A. Ozone

B. Nitrogen dioxide

C. Sulfur dioxide

D. Carbon monoxide

4. Which practice provides the most reliable evidence about long-term changes caused by acid deposition?

A. Monitoring the long-term chemical and biological parameters of an ecosystem

B. Measuring a single water sample

C. Assessing only soil pH at one time

D. Counting the number of storms per year

5. The majority of atmospheric mercury is produced by which source?

A. Natural geological sources

B. Coal burning power plants

C. Vehicle emissions

D. Volcanoes

6. On a dark and cloudy day, what is the predicted pattern for nitrogen dioxide and ground-level ozone readings?

A. There will be an increase in the level of nitrogen dioxide and a decrease in the level of ground-level ozone.

B. There will be a decrease in nitrogen dioxide and an increase in ground-level ozone.

C. Both NO_2 and O_3 increase.

D. Both NO_2 and O_3 decrease.

7. What is true of decreased concentrations of stratospheric ozone?

A. It will cause cooler global temperatures

B. It has no effect on human health

C. Significant increases in skin cancer have already occurred

D. It will increase rainfall in arid regions

8. What is the most likely reason indoor radon fluctuates seasonally, showing higher levels in colder months?

A. Radon levels tend to increase in the colder months because of the difference in temperature inside and outside the home, which creates a vacuum pulling radon into the home at a higher rate.

B. Radon production in the soil increases in the winter.

C. Radon is released from home sources more during winter.

D. Warmer weather causes radon to decay faster.

9. Which statement best describes the vertical sequence of temperature in a typical atmospheric inversion from the surface upward?

A. Temperature increases with height through the inversion layer

B. Temperature decreases with height through the inversion layer

C. Temperature remains constant with height

D. Temperature oscillates with height

10. Which of the following describes how the Clean Air Act helped reduce air pollution?

A. Banned all vehicle emissions

B. Increased use of lead in fuels

C. Reduced emissions through voluntary programs

D. Introduced regulatory measures to control the amount of lead in fuels

Answers

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

Explanations

1. What changes would be expected with a low pH pond?

A. Increased level of heavy metals

B. Decreased level of heavy metals

C. Higher dissolved oxygen

D. Lower metal solubility

Low pH makes heavy metals more soluble, so their concentrations in the pond water rise. In acidic conditions, hydrogen ions react with metal hydroxides and carbonates, breaking them apart and releasing metal ions into solution. This keeps metals that might otherwise precipitate or adsorb to sediments in the dissolved phase. Aluminum is a common example that becomes more soluble as pH drops, and higher dissolved metals can be toxic to aquatic life. Dissolved oxygen isn't directly increased by lower pH; its levels depend more on temperature, mixing, and photosynthetic activity. Lower metal solubility would occur at higher pH, not low pH, and the option about a decreased metal level doesn't fit acidic conditions. So, the expected change in a low-pH pond is an increased level of heavy metals.

2. What is the mechanism behind the increased radon indoors during cold weather?

A. Vacuum created by indoor-outdoor temperature differences pulls soil gas into the building

B. Increased soil radon generation

C. Weather cools radon, making it condense

D. Higher indoor ventilation

In cold weather, heating the inside of a building creates a stack effect: warm indoor air rises and leaks out of the upper parts of the house, while cooler air is drawn in at the bottom. This movement lowers the air pressure at the foundation, pulling soil gas from beneath the house into the living space through cracks and openings. That soil gas carries radon, so indoor radon levels rise when the indoor–outdoor temperature difference drives this suction. Radon production in the soil itself doesn't suddenly increase in winter, and radon is a gas that won't condense with cold air. Higher indoor ventilation would actually dilute radon rather than raise it.

3. Which gas is a corrosive pollutant produced by burning coal and linked to industrial smog?

A. Ozone

B. Nitrogen dioxide

C. Sulfur dioxide

D. Carbon monoxide

Sulfur dioxide forms when sulfur-containing coal is burned. Its corrosive nature comes from reacting with water in the atmosphere to form sulfurous and sulfuric acids, especially when it mixes with droplets in polluted air. This creates sulfurous/acidic smog—industrial smog—historically seen in places with heavy coal use, and it also leads to acid rain that damages metals, stone, and vegetation. Ozone and nitrogen dioxide are involved in other types of smog and pollution pathways, but the classic corrosive pollutant linked to coal-fired industry and industrial smog is sulfur dioxide.

4. Which practice provides the most reliable evidence about long-term changes caused by acid deposition?

A. Monitoring the long-term chemical and biological parameters of an ecosystem

B. Measuring a single water sample

C. Assessing only soil pH at one time

D. Counting the number of storms per year

Long-term evidence about how acid deposition changes ecosystems comes from monitoring a suite of chemical and biological indicators over many years. Tracking multiple chemical parameters (like pH, sulfate, nitrate, and aluminum) alongside biological responses (such as species composition, growth, reproduction, and population trends) over extended time reveals consistent trends and links them to deposition patterns rather than short-term fluctuations. This approach captures lag effects, recovery or deterioration trajectories, and the overall impact on ecosystem health, which a single measurement cannot provide. Relying on a single water sample misses the natural variability in water chemistry from rainfall, season, and location, so it cannot establish a reliable trend. Checking only soil pH at one moment is likewise a snapshot and doesn't show how soil chemistry or buffering capacity changes over time. Counting storms per year measures meteorological activity but does not directly quantify chemical deposition or the ecological responses that result from it.

5. The majority of atmospheric mercury is produced by which source?

A. Natural geological sources

B. Coal burning power plants

C. Vehicle emissions

D. Volcanoes

The key idea is that mercury enters the atmosphere mainly through burning coal. Coal contains trace amounts of mercury, and when it is burned in power plants, that mercury is released as vapor and various reactive forms. Because coal-fired power plants exist in large numbers and burn vast quantities of fuel, their combined emissions constitute the largest share of atmospheric mercury. The mercury from these emissions can travel long distances and still affect ecosystems far away. While natural sources like geological releases and volcanic activity contribute mercury as well, their total contribution is smaller than that from coal combustion. So the major source of atmospheric mercury is coal burning power plants.

6. On a dark and cloudy day, what is the predicted pattern for nitrogen dioxide and ground-level ozone readings?

A. There will be an increase in the level of nitrogen dioxide and a decrease in the level of ground-level ozone.

B. There will be a decrease in nitrogen dioxide and an increase in ground-level ozone.

C. Both NO2 and O3 increase.

D. Both NO2 and O3 decrease.

On a dark, cloudy day, the amount of sunlight is minimal, which slows the photochemical reactions that produce ground-level ozone. Ozone at the surface forms when NO2 is broken apart by photons to produce atomic oxygen, which then combines with O2 to make O3. Without enough light, this step happens less, so ozone formation drops. At the same time, nitrogen dioxide can accumulate because its destruction by photolysis is reduced and ongoing emissions keep adding NO2 to the air. Additionally, any ozone that is present can be consumed by reactions with NO to form more NO2, reinforcing the drop in ozone. So nitrogen dioxide tends to increase while ground-level ozone decreases.

7. What is true of decreased concentrations of stratospheric ozone?

A. It will cause cooler global temperatures

B. It has no effect on human health

C. Significant increases in skin cancer have already occurred

D. It will increase rainfall in arid regions

Decreased stratospheric ozone lets more UV-B radiation reach Earth's surface. UV-B is energetic enough to damage DNA in skin cells, raising the risk of skin cancers (and also contributing to cataracts and immune suppression). Because the ozone layer blocks UV-B, thinning it means more skin damage from sun exposure, and this has led to noticeable increases in skin cancer in many populations over time. The other ideas don't fit: more UV-B at the surface doesn't cause cooler global temperatures overall—surface climate is influenced by many factors, and ozone depletion is tied mainly to higher UV exposure and health risks rather than a stand-alone cooling effect. It isn't a direct driver of increased rainfall in arid regions, either; rainfall patterns are affected by broader climate systems, not a straightforward result of weaker ozone.

8. What is the most likely reason indoor radon fluctuates seasonally, showing higher levels in colder months?

A. Radon levels tend to increase in the colder months because of the difference in temperature inside and outside the home, which creates a vacuum pulling radon into the home at a higher rate.

B. Radon production in the soil increases in the winter.

C. Radon is released from home sources more during winter.

D. Warmer weather causes radon to decay faster.

Radon indoors rises in winter mainly because of pressure differences created by heating and a more sealed house. When a home is heated, warm indoor air rises and escapes through the upper parts of the building, pulling in soil gas from beneath the foundation through cracks and openings. The soil continuously releases radon, but in winter the indoor-outdoor air pressure difference and reduced ventilation cause more of that soil gas to be drawn in and linger inside, boosting measured concentrations. Radon production in soil doesn't noticeably increase in winter, and decay rate isn't affected by temperature, so those factors don't explain the seasonal rise. Radon from inside sources isn't the major contributor; the primary source is soil gas entering the home.

9. Which statement best describes the vertical sequence of temperature in a typical atmospheric inversion from the surface upward?

A. Temperature increases with height through the inversion layer

B. Temperature decreases with height through the inversion layer

C. Temperature remains constant with height

D. Temperature oscillates with height

An atmospheric inversion is a layer where the air near the surface is cooler than the air above it, so as you move upward through that layer, temperature actually increases. This reversal from the usual cooling with height creates a stable condition that traps pollutants near the ground, because vertical mixing is suppressed. Inversions commonly form when the surface cools quickly at night while the air above remains relatively warm, or when sinking air compresses and warms aloft. Outside the inversion layer, the normal pattern—temperature decreasing with height—returns. The other patterns don't describe what's happening inside an inversion: a decrease with height would be the usual lapse rate, a constant temperature would show no gradient, and oscillation with height isn't characteristic of a single inversion layer.

10. Which of the following describes how the Clean Air Act helped reduce air pollution?

A. Banned all vehicle emissions

B. Increased use of lead in fuels

C. Reduced emissions through voluntary programs

D. Introduced regulatory measures to control the amount of lead in fuels

The key idea is that the Clean Air Act cuts pollution by creating enforceable limits and standards for what sources can emit and what fuels can contain. It gave the EPA authority to regulate fuel composition, including how much lead can be in gasoline. By setting these regulatory limits, lead in fuels was reduced and phased out, which lowered lead emissions from vehicles. This regulatory approach, rather than voluntary actions, drove the substantial decrease in air pollution from motor fuels.

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://apesatmosphericpollution.examzify.com

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