**(AP) ENVIRONMENTAL SCIENCE 2022-23 March 21, 2023**

**Today’s Agenda (Day 128)**

1. Housekeeping Items

🡪 BRING:

1. Homework Check:

🡪 Chapter 15 Reading Guide

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1. Class Activity:

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🡪DAY 3: Chapter 15 PPT Review

1. **Section 15.3 – The Hydrologic Cycle**
2. **Section 15.4 – Human Influences on the Hydrologic Cycle**
3. Section 15.5 – Kinds of Water Use
4. Section 15.6 – Kinds and Sources of Water Pollution
5. Section 15.7 – Water-Use Planning Issues

HOMEWORK:

* READ: Chapter 15 – Water Management
* COMPLETE:
* **STUDY**: Chapter 15 Test

REMINDER**~~:~~**

* **TEST: Ch 15 🡪 March 23**
* QUIZ: Ch 15 & 16 Vocabulary 🡪Mar. 30
* **TEST: Ch 16 & 17 🡪 April 4**
* **TEST: Ch 18 🡪 April 11**
* QUIZ: Ch 17 - 19 Vocabulary 🡪April 13
* **TEST: Ch 19 🡪 April 18**

Chapter 15 Vocabulary

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| --- | --- | --- | --- | --- | --- |
| Activated-sludge sewage treatment | Aquiclude | Aquifer | Aquitard | Artesian wells | Biochemical oxygen demand (BOD) |
| Confined aquifer | Domestic water | Eutrophication | Evapotranspiration | Fecal coliform bacteria | Groundwater |
| Groundwater mining | Hydrologic cycle | In-stream water use | Industrial water use | Irrigation | Limiting factor |
| Nonpoint sources | Point source | Porosity | Potable water | Primary sewage treatment | Runoff |
| Salinization | Saltwater intrusion | Secondary sewage treatment | Semiconfined aquifer | Sewage sludge | Stormwater runoff |
| Tertiary sewage treatment | Thermal pollution | Trickling filter system | Unconfined aquifer | Vadose zone | Water diversion |
| Water table |  |  |  |  |  |

Chapter 16 Vocabulary

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| --- | --- | --- | --- | --- | --- |
| Acid deposition | Acid rain | Carbon monoxide | Criteria air pollutants | Decibels | Hazardous air pollutants (air toxics) |
| Hydrocarbons | Nitrogen dioxide | Nitrogen monoxide | Nitrogen oxides | Ozone | Particulate matter |
| Photochemical smog | Primary air pollutants | Radon | Secondary air pollutants | Sulfur dioxide | Thermal inversion |
| Volatile organic compounds (VOCs) |  |  |  |  |  |

**(AP) ENVIRONMENTAL SCIENCE 2022-23 READING GUIDECHAPTER 15**

REVIEW QUESTIONS

1. Describe the hydrologic cycle.

2. Distinguish between withdrawal and consumption of water.

3. What are the similarities between domestic and industrial water use? How are they different from in-stream use?

4. How is land use related to water quality and quantity? Can you provide local examples?

5. What is biochemical oxygen demand? How is it related to water quality?

6. How can the addition of nutrients such as nitrates and phosphates result in a reduction of the amount of dissolved oxygen in the water?

7. Differentiate between point and nonpoint sources of water pollution.

8. How are most industrial wastes disposed of? How has this changed over the past 25 years?

9. What is thermal pollution? How can it be controlled?

10. Describe primary, secondary, and tertiary sewage treatment.

11. What are the types of wastes associated with agriculture?

12. Why is stormwater management more of a problem in an urban area than in a rural area?

13. Define groundwater mining.

14. How does irrigation increase salinity?

15. What are the three major water services provided by metropolitan areas?

CRITICAL THINKING QUESTIONS [for APES students only]

1. Leakage from freshwater distribution systems accounts for significant losses. Is water so valuable that governments should require systems that minimize leakage to preserve the resource? Under what conditions would you change your evaluation?

2. Do nonfarmers have an interest in how water is used for irrigation? Under what conditions should the general public be involved in making these decisions along with the farmers who are directly involved?

3. Should the United States allow Mexico to have water from the Rio Grande and the Colorado River, both of which originate in the United States and flow to Mexico?

4. Do you believe that large-scale hydroelectric power plants should be promoted as a renewable alternative to power plants that burn fossil fuels? What criteria do you use for this decision?

5. What are the costs and the benefits of the proposed Garrison Diversion Unit? What do you think should happen with this project?

6. How might you be able to help save freshwater in your daily life? Would the savings be worth the costs?

7. Look at the hydrologic cycle in figure 15.3. If global warming increases the worldwide temperature, how should increased temperature directly affect the hydrologic cycle?

**(AP) ENVIRONMENTAL SCIENCE 2022-23 READING GUIDE**

**CHAPTER 16**

**Review Questions**

1. Name the two primary gases in the atmosphere.

2. Describe two ways the gases in the troposphere differ from those in the stratosphere.

3. Describe two ways the atmosphere can get rid of pollutants.

4. List the five primary air pollutants commonly released into the atmosphere and their sources.

5. List the six criteria air pollutants, their sources, and their effects.

6. Define secondary air pollutants and give an example.

7. How is each of the following involved in the production of photochemical smog: volatile organic compounds, nitrogen oxides, thermal inversions, sunlight, automobiles, and ozone?

8. Why do some cities have greater problems with smog than others?

9. Describe three regulatory actions of the EPA that have significantly improved air quality and why they improved air quality.

10. What molecules produce acid rain and how are they produced?

11. What are the primary effects of acid rain on terrestrial and aquatic ecosystems?

12. Why is stratospheric ozone important?

13. What was done to protect stratospheric ozone?

14. What are the National Ambient Air Quality Standards?

15. Give an example of a hazardous air pollutant.

16. Explain why air pollution problems in economically developing countries are different from those in developed countries.

17. How does radon enter a home?

18. Why do buildings often have poor air quality?

19. Define noise.

**Critical Thinking Questions**

1. Why do you think air pollution is so much worse in developing countries than in developed countries? What should developed countries do about this, if anything?

2. What common indoor air pollutants are you exposed to? What can you do to limit this exposure?

3. Is it possible to have zero emissions of pollutants? What level of risk are you willing to live with?