**Environmental Science Level 2**

**Student Study Guide for Chapter 13 Quiz**



http://climatechange.pbwiki.com/GreatCartoons

**Helpful hints for studying:**

* **Focus on objectives of Chapter 13 section 2 and 3 as listed in our handouts**
* **Review handouts of our Smartboard notes.**
* **Read Chapter 13 and study the questions at the end of each section**
* Be able to explain how the accumulation of carbon dioxide (CO2) in the atmosphere increases the Earth’s greenhouse effect and may cause climate changes.
* Be able to explain the apparent causes of ozone depletion and its theorized impact.

**Chapter 13 Practice**

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. Which of the following best describes measurements of CO2 levels in the atmosphere since 1958?

|  |  |
| --- | --- |
| a. | Levels of CO2 were steady until the mid-1970s, when they began to increase rapidly. |
| b. | Measurements of CO2 have shown a steady increase since accurate measurements began. |
| c. | CO2 levels are higher in winter and lower in summer, but the winter “highs” have increased each year and the summer “lows” have not fallen as far. |
| d. | CO2 levels are higher in winter and lower in summer, but the winter “highs” are higher each year and the summer “lows” are lower each year. |

\_\_\_\_ 2. How long will it take for chlorofluorocarbons released from Earth’s surface today to reach the stratosphere?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | about six months | c. | three to five years |
| b. | one to two years | d. | 10 to 20 years |

\_\_\_\_ 3. Which of the following gases is *most* responsible for the greenhouse effect?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | nitrous oxide | c. | oxygen |
| b. | methane | d. | water vapor |

\_\_\_\_ 4. A true statement about greenhouse gases is that they

|  |  |
| --- | --- |
| a. | convert sunlight into heat energy that warms Earth. |
| b. | are concentrated in the stratosphere. |
| c. | trap heat that is radiated upward from Earth. |
| d. | are not affected by human activity. |

\_\_\_\_ 5. Which of the following statements related to global warming is *not* accurate?

|  |  |
| --- | --- |
| a. | Carbon dioxide levels have risen over the last 30 years. |
| b. | Only fossil fuels, not living plants, release carbon dioxide when burned. |
| c. | Global temperature and carbon dioxide concentration are related. |
| d. | By itself, reforestation is not sufficient to slow global warming. |

\_\_\_\_ 6. The critical difference between today’s global warming and Earth’s previous climate changes is that

|  |  |
| --- | --- |
| a. | human-made chemicals such as CFCs do not influence global warming. |
| b. | previous changes in climate were dramatic but very short-lived. |
| c. | scientists can now save all species from extinction by genetic engineering. |
| d. | global warming may occur much more rapidly than it did during previous climate changes. |

\_\_\_\_ 7. Chlorofluorocarbon molecules are environmentally significant because

|  |  |
| --- | --- |
| a. | their chlorine atoms can destroy many stratospheric ozone molecules. |
| b. | they are poisonous, flammable, and corrosive to metals. |
| c. | their absorption of lethal solar energy protects Earth. |
| d. | they readily break down ozone molecules produced as pollution. |

\_\_\_\_ 8. Ultraviolet radiation is particularly dangerous because

|  |  |
| --- | --- |
| a. | it can damage genetic material in cells. |
| b. | little has been done to save the ozone layer. |
| c. | it always leads to the rapid death of organisms. |
| d. | All of the above |

\_\_\_\_ 9. The average global temperature has \_\_\_\_\_ during the 20th century.

|  |  |
| --- | --- |
| a. | remained the same |
| b. | increased every year |
| c. | risen some years and fallen others, but has increased overall |
| d. | risen some years and fallen others, but has decreased overall |

\_\_\_\_ 10. Which of the following would *not* be a consequence of a rise in global temperature?

|  |  |
| --- | --- |
| a. | rising sea level |
| b. | increased polar ice mass |
| c. | increased frequency of major storms |
| d. | increased frequency of major droughts |

\_\_\_\_ 11. As the amount of ozone in the stratosphere decreases,

|  |  |
| --- | --- |
| a. | more ultraviolet light is able to reach Earth’s surface. |
| b. | less solar energy is able to reach Earth’s surface. |
| c. | the amount of methane in the atmosphere increases. |
| d. | the amount of phytoplankton in the ocean increases. |

**Completion**

*Complete each sentence or statement.*

12. Stratospheric \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is destroyed by chlorine atoms released from CFCs.

13. Damage to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in cells of living organisms is caused by exposure to UV radiation.

14. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an international agreement that limits CFC production.

15. The development of an ozone hole over the poles is a result of human activities and begins when molecular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from chlorofluorocarbons is released into the atmosphere and collects on polar stratospheric clouds.

16. Though CFC production has been cut back, the threat to stratospheric ozone continues because CFCs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the atmosphere for decades.

17. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a process by which the atmosphere traps heat that is radiated from Earth’s surface.

18. A predicted increase in Earth’s average temperature caused by human activities and the subsequent release of gases such as carbon dioxide is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

19. A continuous record from Mauna Loa, Hawaii, reveals that annual average atmospheric CO2 concentrations have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ since 1958.

20. If polar ice masses melt as a result of global warming, sea levels will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

21. Water vapor and carbon dioxide help trap heat in the atmosphere near the surface of Earth, so they are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

22. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an international agreement that seeks to limit CO2 emissions from developed countries.

23. As a result of the destruction of stratospheric ozone, scientists believe that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, including frogs, toads, and salamanders, will be especially vulnerable to increased UV radiation.

24. One serious consequence of global warming, a rise in sea levels, could result in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of beaches.

**Short Answer**

25. Explain why the temperature inside a greenhouse is warmer than the temperature outside.

26. Explain the effect on sea levels as global warming continues to cause Earth’s average temperature to increase.

27. What type of light from sunlight is absorbed by ozone? Explain two consequences that may occur if more of this type of light reaches Earth’s surface.

28. Ozone is formed near Earth’s surface from automobile exhaust. Ozone is being depleted in the upper atmosphere. Explain why the first environmental problem is not the solution to the second one.

29. Will recovery of the ozone layer be a rapid or a slow process? Explain your answer. Be specific!

30. How might global warming cause changes in major ocean currents?

31. Briefly explain the role of the stratospheric ozone layer in the protection of living organisms on Earth’s surface.