

2. Predict what will happen in the following scenario. Give reasons for your answer.

A wetland (with anaerobic soils) is drained and used as farmland (agricultural soil is aerobic). The farm requires applications of PO_4^{3-} fertilizers. After 25 years the farmer sells the land to a nonprofit organization that wants to convert the farm back to a wetland.

In your answer, consider the dynamics of iron in this system and the implications on PO_4^{3-} .

3. If nitrogen is not present in gasoline, how does combustion of gasoline in automobiles contribute to the formation of HNO_3 in acid rain? Be specific.

4. List two environmental/health problems that occur as a result of burning coal that contains sulfur (include the specific sulfur compounds that are responsible).

5. a. Explain how the greenhouse effect works in terms of an actual greenhouse (made of glass).

b. Explain the similarities between a greenhouse made of glass and the greenhouse effect in the earth's atmosphere.

6. Identify the following statements as true or false.

_____ a. Average global temperature is increasing.

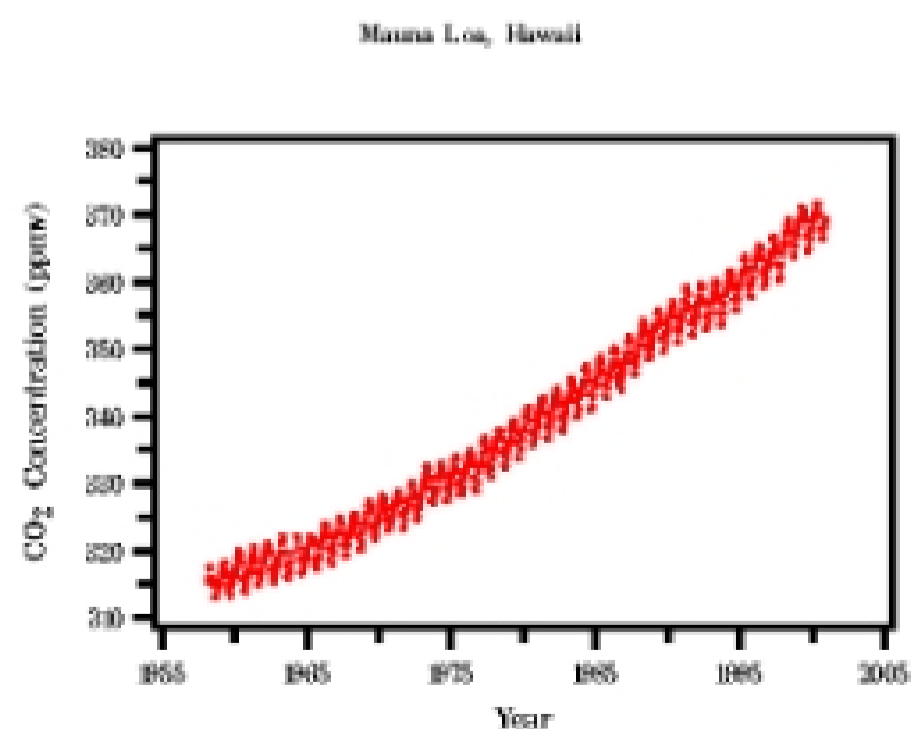
_____ b. Measured increases in temperature are due solely to increases in CO₂

_____ c. The greenhouse effect is a natural phenomenon without which earth's temperature would average -20 °C.

_____ d. It is a scientifically certain fact that CO₂ can retain heat.

_____ e. CH₄, N₂O and CO₂ have about the same ability to retain heat.

7. What is the general trend indicated by the following graph? What causes the oscillating pattern in CO₂ concentrations?



Source: Dave Keeling and Tim Whorf (Scripps Institution of Oceanography)