Worksheet: Atmosphere & Greenhouse Effect

ChemistrySheets

Specification: GCSE Chemistry (AQA 5.9.1 & 5.9.2 / Edexcel SC25)

Core Concepts: The Earth's atmosphere has changed significantly over billions of years. The early atmosphere was formed by volcanic activity. The formation of oceans and the evolution of life (photosynthesis) led to the current atmosphere. Greenhouse gases absorb and re-emit infrared radiation, warming the planet in a process called the greenhouse effect.

Section A: Early Atmosphere Formation & Key Terms

1. Figure 1 illustrates key processes in the formation of the Earth's early atmosphere and oceans.

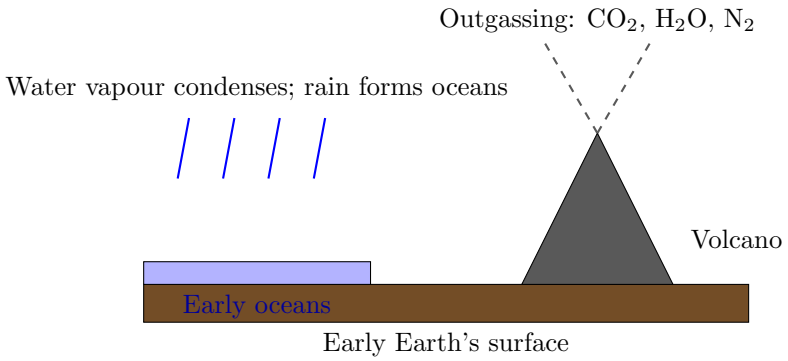

Figure 1: Formation of the Early Atmosphere and Oceans

Using Figure 1, describe two key processes that contributed to the formation of the early atmosphere and oceans.

2. Complete the following sentences using the most appropriate scientific terms.

a) The early atmosphere was mainly composed of _____ and _____, released from _____.

b) As the Earth cooled, water vapour condensed to form _____.

c) The evolution of _____ organisms led to a significant increase in atmospheric _____.

d) Carbon dioxide dissolved in the oceans and was later locked up in _____ and _____.

Section B: Evolution of Atmospheric Composition

1. Describe the composition of Earth's early atmosphere.

2. Explain how the oceans formed and their role in changing the atmosphere.

3. Describe the process of photosynthesis and its impact on atmospheric composition.

4. Explain the main differences between the early atmosphere and the atmosphere today.

Section C: The Greenhouse Effect

1. Figure 2 illustrates the mechanism of the greenhouse effect.

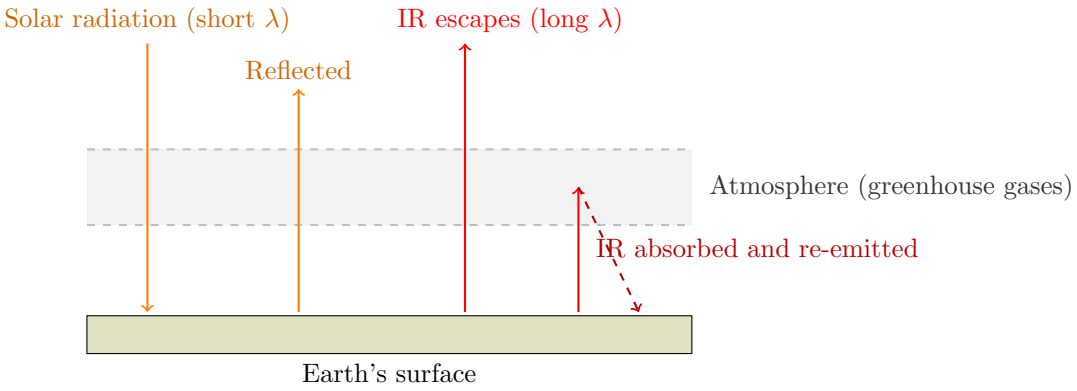

Figure 2: The Greenhouse Effect

Using Figure 2, explain how greenhouse gases contribute to the warming of the Earth's atmosphere.

2. Describe the mechanism of the greenhouse effect, explaining the role of different types of radiation and how specific greenhouse gases contribute to this process. (6 marks)