



Oxygen is important because:

- It is recycled as part of the carbon, hydrogen, and oxygen cycles.
- It is cycled between the atmosphere and the living organisms of both aquatic and terrestrial ecosystems.
- It is absorbed by the water in aquatic ecosystems.
- It is produced as a byproduct of the photosynthetic organisms that live in the aquatic ecosystems.
- Heterotrophs (consumers) living in aquatic ecosystems require oxygen for cellular respiration but they receive their oxygen from the dissolved oxygen in the water.

Ozone Protects Life from UV Radiation:

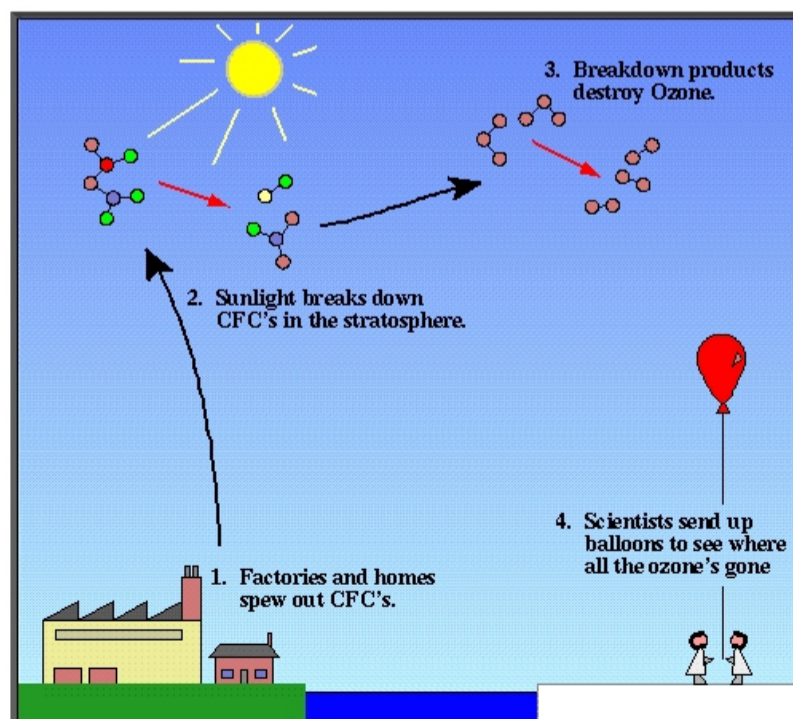
- **Ozone** is a form of oxygen. In the atmosphere oxygen is found in three forms: O, O₂, and O₃ (ozone). Ozone is created when solar rays hit a molecule of O₂ and cause it to split apart. If one of these free atoms hits another O₂, ozone (O₃) is formed. Ozone serves as a protective layer, filtering out the harmful UV radiation and thereby protecting life here on Earth from the harmful effects of UV radiation. In recent years, human activities have led to the destruction of the ozone layer. This environmental problem is known as ozone depletion.

What is depleting the ozone layer?

Chlorofluorocarbons (CFCs) account for approximately 80% of stratospheric ozone depletion. They belong to a group called industrial halocarbons. These compounds are used in refrigerators, furniture foam, fire extinguishers, etc. There are a couple of reasons why industrial halocarbons are very effective at ozone depletion:

- 1) They survive long enough to reach the stratosphere
- 2) They help natural reactions that destroy ozone. Once in the stratosphere, UV-C radiation breaks up compounds releasing chlorine and bromine.

The gradual disappearance of the ozone layer is also the result of, deforestation, fertilizer use, and fossil fuel combustion



Activity 1:

Read 2.4 "Case Study: The Interaction of Living Things" on pages 60 - 61. Answer questions 1 - 4 from "Understanding Concepts" on page 61.

Activity 2:

Read 16.2 "The Greenhouse Effect and Ozone Depletion" on pages 625 - 628. Answer questions 1 - 8 from "Understanding Concepts" and "Making Connections" on page 628.