**BABED 2 SEM**

**ENVIRONMENT**

**UNIT – 4**

**ALKA ASATI**

**The ozone layers**

The ozone layer is a natural layer of gas in the upper atmosphere that protects humans and other living things from harmful ultraviolet (UV) radiation from the sun.

Although ozone is present in small concentrations throughout the atmosphere, most (around 90%) exists in the stratosphere, a layer 10 to 50 kilometres above the Earth’s surface. The ozone layer filters out most of the sun's harmful UV radiation and is therefore crucial to life on Earth.

**Ozone depletion**

Scientists discovered in the 1970s that the ozone layer was being depleted.

Atmospheric concentrations of ozone vary naturally depending on temperature, weather, latitude and altitude, while substances ejected by natural events such as volcanic eruptions can also affect ozone levels.

However, these natural phenomena could not explain the levels of depletion observed and scientific evidence revealed that certain man-made chemicals were the cause. These ozone-depleting substances were mostly introduced in the 1970s in a wide range of industrial and consumer applications, mainly refrigerators, air conditioners and fire extinguishers.

**Ozone hole**

Ozone depletion is greatest at the South Pole. It occurs mainly in late winter and early spring (August-November) and peak depletion usually occurs in early October, when ozone is often completely destroyed in large areas.

This severe depletion creates the so-called “ozone hole” that can be seen in images of Antarctic ozone, made using satellite observations. In most years, the maximum area of the hole is bigger than the Antarctic continent itself. Although ozone losses are less radical in the Northern Hemisphere, significant thinning of the ozone layer is also observed over the Arctic and even over continental Europe.

Most of the ozone-depleting substances emitted by human activities remain in the stratosphere for decades, meaning that ozone layer recovery is a very slow, long process.

The chart below shows the development of the (annual maximum) size of the ozone hole over the Antarctic. The hole grew in the years following ratification of the Montreal Protocol, due to the lag caused by the fact that ozone-depleting substances remain in the stratosphere for a long time. The maximum size of the ozone hole is now decreasing.

**Effects of ozone depletion for humans and the environment**

Ozone layer depletion causes increased UV radiation levels at the Earth's surface, which is damaging to human health.Negative effects include increases in certain types of skin cancers, eye cataracts and immune deficiency disorders.

UV radiation also affects terrestrial and aquatic ecosystems, altering growth, food chains and biochemical cycles. Aquatic life just below the water’s surface, the basis of the food chain, is particularly adversely affected by high UV levels. UV rays also affect plant growth, reducing agricultural productivity.