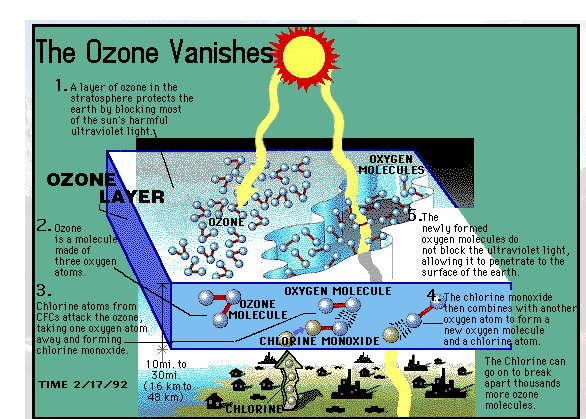
**Ozone Layer Depletion: Effects and Causes**

http://www.buzzle.com/articles/ozone-layer-depletion-effects-and-causes-of-ozone-depletion.html

Ozone is a colorless gas found in the upper atmosphere of the Earth and formed by the action of ultraviolet radiation on oxygen. Ozone forms a layer in the stratosphere, which protects life on Earth from the harmful effects of ultraviolet radiation. Today, one of the most discussed and serious [environmental issues](http://www.buzzle.com/articles/environmental-issues/) is the ozone layer depletion.

Ozone is formed when oxygen molecules absorb ultraviolet photons and undergo a chemical reaction known as photo dissociation or photolysis, where a single molecule of oxygen breaks down to two oxygen atoms. The free oxygen atom (O), then combines with an oxygen molecule (O2) and forms a molecule of ozone (O3). The ozone molecules, in turn, absorb ultraviolet rays between 310 to 200 nm wavelength and thereby prevent these harmful radiations from entering the Earth's atmosphere. In the process, ozone molecules split up into a molecule of oxygen and an oxygen atom. The oxygen atom (O) again combines with the oxygen molecule (O2) to regenerate an ozone (O3) molecule. Thus, the total amount of ozone is maintained by this continuous process of destruction and regeneration.

The most important compound, which accounts for almost 80% of the total depletion of ozone in the stratosphere are chlorofluorocarbons (CFC). These compounds are very stable in the lower atmosphere of the Earth, but in the stratosphere, they break down to release a free chlorine atom due to ultraviolet radiation. A free chlorine atom reacts with an ozone molecule (O3) and forms chlorine monoxide (ClO) and a molecule of oxygen. Now chlorine monoxide reacts with an ozone molecule to form a chlorine atom and two molecules of oxygen. The free chlorine molecule again reacts with ozone to form chlorine monoxide. The process continues and the result is the reduction or depletion of ozone in the stratosphere.

The ozone layer is very important because it protects us of the harmful effects of ultraviolet rays. The ozone layer is responsible for absorbing the ultraviolet rays and thereby preventing them from passing through the atmosphere of Earth. Ultraviolet rays of the Sun are associated with a number of health related and environmental issues. The most important of these is the association between ultraviolet rays and an increased risk of developing several types of skin cancers. Even the incidents of cortical cataracts can also increase significantly with the increased exposure to ultraviolet rays.

The effects of ozone depletion are not limited to humans only, as it can affect animals and plants as well. It can affect important food crops like rice by adversely affecting cyanobacteria, which helps them absorb and utilize nitrogen properly. Phytoplankton, an important component of the marine food chain, can also be affected by ozone depletion. Studies in this regard have shown that ultraviolet rays can influence the survival rates of these microscopic organisms by affecting their orientation and mobility.

The increasing concern for the causes and effects of ozone depletion led to the adoption of the Montreal Protocol, in the year 1987, in order to reduce and control the industrial emission of chlorofluorocarbons. International agreements have succeeded to a great extent in reducing the emission of these compounds, however, more cooperation and understanding among all the countries of the world is required to mitigate the problem.