***Ozone Level Depletion***

Ozone is a form of oxygen in which the molecule contains three atoms of that element. The chemical formula for a molecule of ozone is O3, whereas a molecule of the common form of oxygen has the formula O2. Ozone occurs naturally in small amounts in Earth's atmosphere but can also be generated near Earth's surface by interactions between sunlight and air pollutants such as nitrogen oxides. Ground-level ozone is found in smog and poses serious health risks. Even very small amounts of ozone near Earth's surface can irritate the eyes and lungs, contributing to ailments such as asthma.

*The Ozone Layer*

The ozone layer is the region where ozone naturally occurs in Earth's upper atmosphere. The layer lies between roughly 15 and 35 kilometers (9 and 22 miles) above Earth's surface. Most of the ozone layer lies within the stratosphere. The ozone layer absorbs solar ultraviolet (UV) radiation that otherwise could severely injure most living things on Earth.

Scientists believe that the ozone layer formed about two billion years ago. The rise in atmospheric oxygen levels at that time would have allowed ozone levels to increase. Formation of the ozone layer most likely played a key role in the development of life on Earth; by blocking deadly radiation the ozone layer would have helped living things move from the oceans to land. Ozone in the atmosphere also functions as a greenhouse gas and thus contributes to keeping Earth's surface warm and hospitable.

*Human Activities and the Ozone Layer*

Human activities have greatly altered the ozone layer. Some chemicals that are used in industry and everyday life can destroy ozone molecules in the stratosphere. For example, UV radiation breaks down chlorofluorocarbons (CFCs), a group of chemicals found in such products as aerosol sprays. When these products are used, they release CFCs into the atmosphere, where they destroy ozone molecules. Such reactions have destroyed enough ozone to create “holes” in the ozone layer that allow dangerous UV radiation to reach Earth. The largest ozone hole appears over Antarctica.

Although the hole allows more radiation from the Sun to reach Earth, which contributes to the heating of the atmosphere, it does not directly affect how much heat is retained in Earth's atmosphere. In fact, because ozone is a greenhouse gas, the thinning of the ozone layer has counteracted a small part of the warming that has resulted from rising concentrations of other greenhouse gases. As the ozone layer slowly recovers in the coming decades, this cooling effect is expected to recede.

Answer the following questions in complete sentences in your notebook.

1. What causes ozone to form on Earth’s surface?
2. What are effects of ozone near Earth’s surface?
3. Where is the ozone layer located?
4. What is the role of the ozone layer and why is the ozone important?
5. What does ozone in the atmosphere function as? What does the ozone contribute to?
6. How have human activities altered the ozone layer? Give examples