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## **THE IMPORTANCE OF THE OZONE LAYER AND POSSIBLE EFFECTS OF OZONE HOLES**

Preserving of the ozone layer, which protects earthy life from harmful actions of ultraviolet solar radiation is one of the priority global environmental problems of the XXI century. Ozone depletion is something that humanity has learned about only in recent years. Ultraviolet light is dangerous to life on earth unless it is filtered through a protective layer of ozone in the upper atmosphere. In the first time, atmospheric ozone was discovered in 1785 by Dutch physicist Van Marum. The largest hole with a diameter of over 1000 km was detected 200 years later in the southern hemisphere, over the Antarctic.

The ozone absorbs ultraviolet radiation thus creating a source of heat. The importance of the ozone layer was announced by the Royal Swedish Academy of Sciences. In its announcement of the 1995 Nobel prize in Chemistry: “It has proven that ozone with oxygen, can absorb the major part of the sun’s ultraviolet radiation and therefore prevent this dangerous radiation from reaching the surface. Without protective ozone layer in the atmosphere, animals and plants couldn’t exist” [4].

**The purpose** of our work is to find out the reasons of ozone depletion and the effects of this problem.

### **Objectives of the study:**

- to analyze the causes of ozone layer depletion;
- to evaluate the consequences of ozone destruction;
- to consider the measures to protect the ozone layer.

As most scientists say, the main culprit of the ozone destruction is chemicals. According to scientists at the University of California the cause of the destroying is chlorofluorocarbon. This research work was awarded the Nobel prize in 1996 [3].

In the 1970s, American scientists discovered that molecules of chlorofluorocarbons turned out to be resistant in the lower layers of the atmosphere, but already in the middle layers, under the influence of ultraviolet radiation, they decayed releasing chlorine, which destroyed ozone [2].

However, not all scientists agree with this and rely on to another answer. Such as Cambridge researchers believe that the reason for this is climate change, and emissions of chlorofluorocarbons are only affected in the second place.

And in the national report on the state of the environment of the Ministry of Ecology of Ukraine was approved that there is a greater number of reasons for the depletion of ozone:

1) active functioning of the chemical industry; 2) using of nitrogen fertilizers; 3) chlorination of drinking water; 4) use freon; 5) burning of rocket fuel by airplane engines; 6) the formation of smog in large industrial cities [1, c. 34].

Damage of the ozone layer is caused by certain chemicals, which people use daily. If the society stop producing them entirely they will go on thinning the ozone layer. Dr. Watson, an upper atmosphere expert at the National Aeronautics and Space Administration in Washington, confirms this: "even if all ozone-destroying chemicals were outlawed today, thinning would continue because of all the chemicals that had already risen into the upper atmosphere" [2].

This ecological problem poses a direct threat to the biosphere, since the growth of ultraviolet radiation, reaching Earth's surface, creates a threat to all living things. There is an interest and anxiety about this problem from science and society, which try to solve it as soon as possible. Ultraviolet light can cause cancer of the skin. American studies indicate that around 60 million Americans will have a skin cancer by 2075.

Reducing the amount of ozone threatens the violation of the thermal balance, which will lead to a critical state of biological processes, reduced yields of crops,

illnesses of animals and humans, suppressed plant growth, increase in the number of harmful mutations.

Plankton is at risk of disappearing by ultraviolet radiation. Phytoplankton plays a fundamental role in the food chain, as well as in the oceanic carbon cycle. It ultimately affects the entire ecosystem.

Growing concern about the destroying of ozone layer led to the adoption of the Montreal Protocol which is considered to be one of the most successful international environmental agreements through positive achievements in reducing emissions. Today, 197 states are members of this protocol. But more cooperation and understanding is needed from members of this agreement to overcome the problem.

**In conclusion**, as was seen above, atmospheric ozone plays an important role for all living on the planet. A thin layer of ozone protects life by screening out the dangerous ultraviolet radiation of the Sun and also maintains the temperature. So the causes of the ozone layer destruction were analyzed and evaluated, some effects it carries were discussed. Ozone layer is being destroyed by the greenhouse gases and human activity. Reducing its concentration adversely affects living organisms. So the problem of the formation of ozone holes is particular importance.

#### REFERENCES

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