As a result, the program under consideration allows revealing the abnormal areas in an ozone layer, tracing the extreme concentration of aerosols, extracting and investigating statistical information on the given parameters. Moreover, the developed program can form a basis for further researches of this subject domain.

Chernyuk V., Kapitza V.

*International Sakharov Environmental Institute of Belarusian State University, Minsk, Republic of Belarus*

**ENVIRONMENTAL RISK ASSESSMENT OF THE IMPACT OF NATURAL FACTORS ON AGROECOSYSTEM**

In modern conditions, agriculture remains the most vulnerable sector of the national economy in regard to the impact of climatic factors because of the agroecosystem among the human communities have the most interaction with environmental factors. In this connection there is an economic interest in the modeling of the impact of environmental factors (especially climate) on agricultural systems. This process is particularly relevant in relation to climate change and the spread of more productive varieties and introduction of intensive technologies of cultivation of agricultural crops, because the impact of extreme meteorological factors in such circumstances is a cause of serious economic losses from death or yield reduction, or damage to the plantations themselves (in the case of long-term plantings).

Assessment of damage to agriculture, adverse weather factors acquires great importance for the establishment of compensation and justification for the relevance of the preventive protective measures. One of the most important influences is the impact of drought and frost.

Temperature oscillation during the year is typical for our climate. Such oscillations adapted as the annual cycle of agriculture in our country and agricultural crops grown in our climate.

Analysis of the practice of assessment of damages from emergency situations can also be taken into account for assessing harm from exposure to adverse factors.

There is a regulatory unit of analysis of the economic damage from the negative influence of economic activity to assess the damage from emergency situations (ES).

Conducting socio-economic studies of ES allows you to comprehensively assess the economic damage on the basis of actual costs.

Emergency situation of natural character connected with geological, meteorological and hydrological hazards, forest and grassland fires, fires grain arrays, underground fires fossil fuels.

In the case of measuring economic losses from adverse and dangerous weather events (AWE and DWE) in agriculture, it is necessary to consider features of the evaluated object and its critical periods of maximum sensitivity to the effects. The
most exposed to temperature fluctuations are crops. Among them it is necessary to allocate the objects most susceptible to frost and (separately) drought (extremely high temperatures).

In the first category should include winter and perennial crops.

They are characterized by winterkill or freezing vegetative organs, leading to disease development or death.

In assessing the impact DWE must consider not only temperature, but also the period of exposure and the combination with other factors increasing sensitivity of the object and causing damage.

Danchenko A., Lemiasheuski V.

*International Sakharov Environmental Institute of Belarusian State University, Minsk, Republic of Belarus*

**INFLUENCE OF EXPOSURE HELIUM-NEON LASER AT A FRACTION OF METHEMOGLOBIN AND GLYCATED HEMOGLOBIN**

Blood is a liquid body tissue, which provides transport of all resources and exchange products for other cells and tissues of the body. In this regard, human blood parameters are a very important feature of health status that reflects its state at a given time. Since the blood is quite labile tissue, so its reacts to external and internal influences. Hemoglobin fractions are its basis, a helium-neon laser of low-intensity radiation was selected as a tool to influence the blood. Irradiation of helium-neon laser allows to achieve photobiological biostimulation effect that occurs at low-intensity radiation (\( \lambda = 632.8 \) nm). This effect occurs not only when irradiated blood but also tissues areas with any inflammatory processes. The laser beam is a means for vasodilation, increasing the number of hemoglobin complexes with NO, increasing the amount of erythrocytes, hemoglobin and leukocytes.

Hemoglobin is one of the leading acceptor of radiation energy. Irradiation causes a conformational change in the molecule, which leads to increase its affinity for oxygen. The laser radiation can increase the activity of cytochrome b558III on the membranes of red blood cells, as well as increase transformation methemoglobin to oxyhemoglobin form. However, the effect of helium-neon laser at glycated hemoglobin is not described in the scientific literature.

Methemoglobin is an important indicator of the overall state of the blood, its ability to carry oxygen to the tissues. It is a hemoglobin containing oxidized form of iron ion (Fe3 +) is not able to attach the oxygen, and hence to carry out its transport to the tissues. The blood methemoglobin is constantly present and is recovered in an amount of up to 1%. The rise of this level is promotes to development of methemoglobinemia, which carries the symptoms such as intense blue-brown skin color (15%), hypoxia, anemia (60%) and death induced by it (70–80%). Although there is