INVESTIGATION OF BIOGEOCHEMICAL CYCLES PECULIARITIES IN DAMAGED ECOSYSTEMS

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To meet humanity's energy needs, humanity has significantly increased the level of carbon dioxide in the atmosphere, which is damaging the climate of our planet. To meet humanity's food needs, we have increased the level of nitrogen in the biosphere, thereby destroying the ecosystem. Another problem of humanity in the reserves of phosphorus which plays an important role in meeting the needs of mankind in crops. Changes in biogeochemical cycles combined with climate change increase the vulnerability of biodiversity, human health, food security and water quality to climate change. [1] [2]

Biogeochemical cycle of Carbon (C) - its storage is an important ecosystem function. Changes in the carbon content of soils affect the climate system of our planet through emissions of carbon dioxide (CO_2) and methane (CH_4), as well as the storage of carbon removed from the atmosphere through photosynthesis. Soil organic matter is also important for human society, such as improving water purification and water retention, protecting against the risk of erosion, and providing food and fiber by improving soil fertility. [3]

Biogeochemical cycle of Nitrogen (N): Nitrogen is one of the most common substances in all life forms, as it is found in proteins, nucleic acids and other compounds (Galloway et al., 2008). Humans and animals get their Nitrogen from plants, which on land are mainly absorbed in mineral form (ie NH + 4 and NO – 3) from the soil. The base material of the soil does not contain a significant amount of Nitrogen (most other nutrients, such as P, are largely derived from the source material). New Nitrogen mainly enters the soil through the fixation of atmospheric N2 by a specialized group of microorganisms. However, the largest flow of nitrogen in soils is generated by continuous recirculation of nitrogen within the plant-soil system: the soil mineral nitrogen is absorbed by the plant, fixed in biomass, and eventually N is returned as waste to the soil. Here, microorganisms decompose it, mineralizing part of the nitrogen and making it re-available for plant growth, while converting the other part to SOM, which is ultimately the largest store of stable nitrogen in the soil. Typically, N cycles are tight in the system with minimal losses. Nitrogen is lost from the soil into the water system by leaching and into the atmosphere during gas leakage (NH_4, N_2O and N_2). In most terrestrial natural ecosystems, the presence of nitrogen limits productivity. [4]

Biogeochemical cycle Phosphorus (P): During weathering, phosphorus derived from the source material is cyclically present in the plant-soil system between biochemical molecules (eg nucleic acid, phospholipids) and mineral forms after decomposition (eg H_3PO_4). In soils, P is one of the most restrictive nutrients because it is found in small amounts and is only available to plants in dissolved ionic forms,

which react rapidly with calcium, iron and aluminum cations to form insoluble compounds. Significantly in these forms P is lost in the water system due to erosion and surface runoff. Losses can also occur in dissolved form, for example, through groundwater and groundwater. An important form of loss is the export of organic P into agricultural products. Due to widespread deficiencies of P in agriculture, people began to extract "primary" P from deposits of guano or rock phosphate and added it to the soil in the form of mineral fertilizers. This external contribution has led to positive agronomic balances of P and excess of P and N in many. [5]

Through various measures – people change the composition of biological communities. These measures increase the rate of species invasion and species extinction on all scales – from global to local. Changes in the components of biodiversity on our planet are of concern for ethical and aesthetic reasons, but they also have powerful potential. To change the properties of ecosystems and the services they provide to humanity. Experiments, observations and theoretical developments in the field of Ecology - show that the properties of ecosystems are highly dependent on biodiversity in terms of the characteristics of the functions of organisms present in the ecosystem, also depend on the distribution and number of organisms in space and time. Species effects act in concert with the influence of climate, the availability of resources and modes of disturbance, affecting the properties of ecosystems. Human activity can change all the above factors; here we focus on modifications of these biotic controls. The scientific community has reached a broad consensus on many aspects of the relationship between biodiversity and the functioning of ecosystems, including many aspects of ecosystem management. Further progress will require the integration of knowledge about biotic and abiotic control of ecosystem properties, how structured ecological communities are, and the forces that drive species extinction and invasion. To strengthen links with policy and governance, we also need to integrate our environmental knowledge with an understanding of the social and economic constraints of potential governance practices. Understanding this complexity, while taking decisive steps to minimize current species loss, is essential for the responsible management of the Earth's ecosystems and the diverse biota they contain. [6]

For example, the North-Eastern economic region includes Kharkiv, Poltava and Sumy regions. The area of the district is 84.0 thousand km2 or 14 % of the territory of Ukraine [7]. The economic center of the district is the city of Kharkiv. The main wealth of the district is mineral resources. Here are the largest natural gas and oil fields in Ukraine. The main ones are Shebelinske and Zapadno-Khrestyschenske (Kharkiv region) – produced by 90 % and 83 %, Efremovske, Bagatoyske (Kharkiv region). Among the non-metallic resources, there are reserves of rock salt and chalk in the Kharkiv region (Isachkivsko-Romensky district); phosphorites and apatites are extracted – Izyum deposit (Kharkiv region); refractory clays in the Kharkiv region. Throughout the district there are reserves of clay, sand, sandstone, limestone, marl. All that certainly influences natural biogeochemical cycles on climate, catastrophes, extinction of some species of flora and fauna and have negative pressure on human health.

Conclusions: These theses were written in order to draw attention to the problem of biogeochemical pollution of the biosphere. The predominant factor of pollution is the negative impact of human activities. The North-Eastern economic region, namely Kharkiv region, has a rich reserve of mineral resources. Therefore, the correct and safe use of resources is currently an urgent problem that needs to be addressed.

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ABOUT ENVIRONMENTAL SERVICES IN CHINA

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The objective of my thesis is to analyze the current Status of Environmental Services in China, to overview the basic situation of China's environmental service industry. In the bulletin on the status of national environmental protection related industries in 2000 issued by China's environmental protection administration, China's environmental service industry is defined as an environment related service trade