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MODERN ECOLOGICAL PROBLEMS OF ZARAFSHAN RIVER DELTA

Abstract: The article presents environmental problems of the Zarafshan river delta, soil pollution with pesticides, soil salinity, its changes under the influence of anthropogenic factors, mineralization of surface and ground water, and the disease increase.

Key words: Soil, salinity, erosion, pesticides, ecology, toxic chemicals, saline, soil degradation, drainage, surface and ground water, chemical fertilizer.

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Introduction

The Zarafshan River Delta is located in the Navoi and Bukhara regions of the Republic of Uzbekistan. It is located almost on the contact zone of the mountains and plains of Central Asia, has the shape of a triangle. Here, the genetic combination of low mountains, foothill loops, erosion-tectonic basins, local denudation highlands, alluvial-delta plains and oases. The slope of the relief from north to south is lowering from the salient heights from 1101 to 160 m. In the zonal relation, the plain part of the delta is desert, and the slopes represent the first step vertical zoning of the desert-steppe belt of the Lower Zarafshan district. The climatic conditions of the delta are typical mainly for a typical desert, where there is a moist warm spring, long dry summers, short and warm autumn and unstable cold winters. The vegetation is represented by oasis and desert-semi-desert-pasture complexes. Until the 60s of the 20th century, anthropogenic impacts on the nature of the Zarafshan River Delta were imperceptible. Population growth, industrial development, large open fields of natural gas and oil, irrational use of water resources, the use of large amounts of chemical fertilizers and pesticides in agriculture, and an increase in the

number of Karakul sheep in pastures led to a deterioration in the natural complexes of the Lower Zarafshan District. As a result, atmospheric air, surface and underground waters, soil, etc., were heavily polluted.

In the bowels of the Zarafshan River Delta, there are large reserves of natural gas and oil in the Gazli, Dzharkak, Sarytash, Kandymlinsky and other fields. Bentonite clays, gypsum and limestone, and cement raw materials are also mined. Extraction of these minerals has led to a change in soil composition, plant degradation and depletion of the animal world. As a result, mobile sands and dunes formed in large areas. The Zarafshan River Delta is one of the ancient centers of sanitization and irrigation of Central Asia. Archaeologists have established that primitive irrigated agriculture arose here in the fourth millennium BC. e. The total area of ancient irrigated lands here is 600-700 thousand ha, which is almost higher than the modern area of oases (Gulyamov, 1966). With the increase in passive areas in middle Zarafshan, there was an acute shortage of water in Lower Zarafshan, as evidenced by extensive deserted land, abandoned mазars, clay buildings in the basins of Taikyr, Gujeyli, Mahandar, Vabkentdarya were

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destroyed. As a result of the centuries-old impact of mankind on nature, it virtually no longer has natural geo-systems: all of them are more or less altered by man, and we are dealing with natural-anthropogenic systems. In the irrigated soils of the agro-landscapes of the Zarafshan River Delta, the sanitization process has a long history, is actively continuing at present and will continue in the future, as evidenced by the tendency of its development in space and time. Depending on the unevenness of the relief, the nature of the soil, the depth of the groundwater level, the sanitization process throughout the territory of irrigated oases proceeds no uniformly. Therefore, the degree of sanitization of soils varies from weak, medium and strong, in the fruit to the formation of typical, puffy and cortical salt marshes. The Zarafshan River Deltas is a drainage dispersion area and the basis for the accumulation of various substances brought by the river flow. Due to increased pollution of rivers, these accumulations increase from year to year, polluting not only surface but also groundwater. Currently, almost all areas of groundwater have become unsuitable for drinking due to the high salinity. To provide the population with high-quality drinking water from the Samarkand oasis, the Damkhoja-Navoi-Bukhara pipeline was built. Naturally, Damkhozinsky water provides only the needs of a part of the population of Navoi and Bukhara viloyats located nearby this water main. Due to a shortage of water in the city of Bukhara, the water of the Kuyumazor reservoir is diluted to this Damkhozhin water. Therefore, the quality of tap water in many respects does not correspond to the State Standard of the Republic. A large part of the population of the Zarafshan River Delta is mainly fed by the waters of wells. Mineralization of water in wells increases from north to south and reaches 5.5 g / l (Ramitan-1.5 g / l, Dzhandar-1.6 g / l, Pawn-1.8 g / l, Kagan-2, 5 g / l, Alat-5.3 g / l). Over the past 50-60 years, the groundwater level in Bukhara and Karakul oases has risen from 0.4 to 1.0 meter. Currently, the average groundwater level over the entire territory of old irrigated lands is from 1.6 to 2.1 meters, which is considered to be significantly higher than critical and creates a risk of increasing saline areas. The main reason for sanitization is an increase in the irrigation rate, as well as improper planning and use of drainage water for irrigation. Due to the lack of river water, many farms were forced to use highly mineralized drainage water to irrigate crops. They are the main cause of widespread sanitization on irrigated lands. Currently, 60% of irrigated lands in the Zarafshan River Valley are salinized to varying degrees, and salinization is increasing downstream. In the Samarkand landscape, saline lands account for less than 30%, Kattakurgansky - about 60%, Kermeninsky - 70.4%, Bukhara - 89.5%, Karakul - more than 90%. According to the Republican Land Cadastre, in the middle of the last century in the Zarafshan Valley,

saline lands accounted for less than 30% of the total irrigated land, which is half the current level. For many years, agro-landscapes of the Zarafshan delta have been negatively affected by pesticides and pesticides such as DDT, HCH, butifos, mercaptan, phasalon, etc. Due to the high toxicity of the accumulative properties, as well as their environmental damage in many countries of the world, the widespread use of DDT is prohibited. In Uzbekistan, a decree was issued in 1983. However, according to the data of the Republican Center for Observation of Environmental Pollution, the residual amount of DDT in soils does not decrease from year to year, in the irrigated soils of the considered territory, the average content of residual DDT is on average 2-2.5 times higher than MPC, and in some cotton farms, the residual DDT content is 17 times higher than the MPC. The residual amount of HCH in the soils is not very high, but there is a lot of it in water bodies. In the majority of canals and reservoirs of hitherto, HCH is found, especially this pesticide is higher than the norms in the bypass channels of the Kuyumazar reservoir. It should be noted that the city of Bukhara is mainly fed by the waters of these reservoirs. The Zarafshan River Delta is a peculiar, open geosystem surrounded by the Kyzylkum desert, where surface and underground drains and air flows are continuously a huge amount of salts and some of them are removed from the territory by collector-drainage drains. First of all, it is necessary to determine the water-salt balance of the oasis. The current situation shows that the incoming part of the salts is larger than the output, so that salinity of groundwater and soil increases from year to year. In order to remove more salts from the territory than is received, it is necessary to rebuild the collector-drainage system. She both in density and in depth does not answer on demand. To reduce the level of groundwater, increase the number of drainage collectors and their depth should be much greater than the level of groundwater. The length of the reservoirs in the Zarafshan River Delta is about 14-20 m / ha. Depending on soil salinity, V.A. Kovda (1984) suggests a density of drainage networks of 40-50, in some places up to 75 m / ha. It seems to us that in all areas where the groundwater level is about 2.0 meters from the surface of the earth, it must be reduced to 3, in places to 5 meters, to clean all main collectors and auxiliary drains. An important measure to determine the causes of the territorial diversity of the population of soil and groundwater is a structural analysis of the landscape structure of the oasis. The oasis does not represent a perfect, even surface filled with alluvial deposits. It has local uplifts, the depressions in which the type and thickness of sedimentary deposits differ sharply. This, in turn, exerts its influence on the reserve and quality of groundwater, on the salinization of groundwater and soil. Therefore, a structural landscape analysis based on the geological and

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geomorphological structure of the territory will help explain many of the negative natural phenomena that occur in the oasis. In the lower reaches of the Zarafshan River, environmental measures are significantly behind the rate of environmental pollution. Therefore, among the population, diseases such as hepatitis A, allergic, renal, cardiovascular and

others are increasing from year to year. Doctors also note that high infant mortality in cotton-growing areas is closely related to environmental pollution by pesticides. Studies by physicians and biologists show that pesticides used in the cotton-growing regions of Uzbekistan have a genetic danger to the body.

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