



BUZKY ESTUARY BOTTOM SEDIMENTS AS A BIO-RAW MATERIAL FOR ECO-TECHNOLOGIES

Bottom sediments accumulate salts of pollutants carried by surface water, products of wind erosion, heavy compounds formed in the surface layer of the atmosphere, and the solid phase of industrial and domestic wastewater. On the other hand, bottom organo-mineral silt is valuable because it is considered a fertilizer and bio-additive for producing organic vegetables or meat. In estuaries, sludge contains a lot of organic matter, which, on the one hand, creates significant pollution of the water body, and on the other hand, creates the basis for the use of sludge masses for various purposes.

The Buzky estuary belongs to the internal sea waters of Ukraine and has the status of a water object of national importance. The waters of the Ingul and Southern Bug rivers flow through it. The dimensions of the estuary: 11 km in width, 82 km in length. As a result of the combination of river and sea waters in the estuary, a unique favorable ecological zone for high bio-productivity was created here, which is characterized by an increase in the diversity and number of species. There is an anthropogenic load on the hydroecosystem of the Bug Estuary due to the intensive use of the Bug Estuary as a transportation route in pre-war times and a wide network of ports that provided grain logistics and the development of river and sea transportation (Fig. 1).

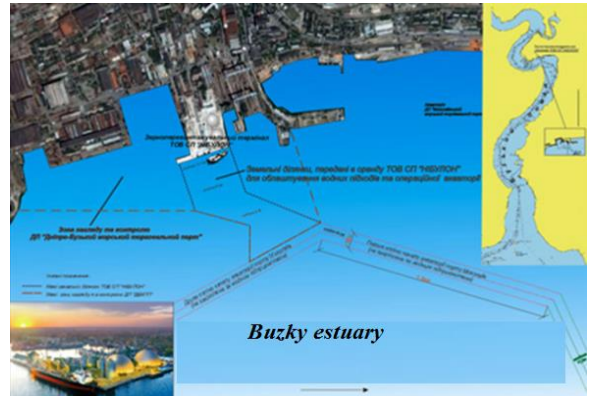


Fig.1. Seaports along the coastline of the Bug estuary

In order for the unique bioproductive zone of the Buzki estuary to remain functional, it is necessary to maintain the balance of a complex complex: 1) phytoplankton, phytomicrobenthos, 2) aquatic and coastal-aquatic vegetation and an equally diverse fauna, which perform a barrier function in the path of the entry of organic and mineral water pollution, take active participation in self-purification of water. Therefore, the study of the consumer properties of the bottom silt of the Buzki estuary will contribute to solving two problems: 1) cleaning the estuary from silt, increasing the ecological capacity of this ecosystem; 2) the use of valuable mineral and organic matter of sludge as a bio-raw material in various eco-technologies.



Fig.2. Seaports along the coastline of the Bug estuary

Our work is aimed at carrying out complex studies on the study of the consumer properties of Sapropel of the Buzki estuary (Fig.2). Our goal is to create a laboratory-production complex for the analysis and use of estuarine bottom mud as a raw material for the creation of mineral fertilizers, fuel briquettes, feed additives, etc.

Possibilities of using contaminated sludge as an organic layer in the remediation of technologically disturbed ecosystems :

- two tailing ponds of Mykolaiv Alumina Plant LLC,
- in the process of restoration and reclamation of land affected by hostilities (as a result of the Russian military aggression, according to preliminary estimates, about 30% of land in Ukraine is affected by hostilities and may be unsuitable for use and cultivation of agricultural products without their appropriate restoration).

Thus, contaminated river and estuary silt can become a valuable resource in the process of restoring and reclaiming these lands (Fig.3).

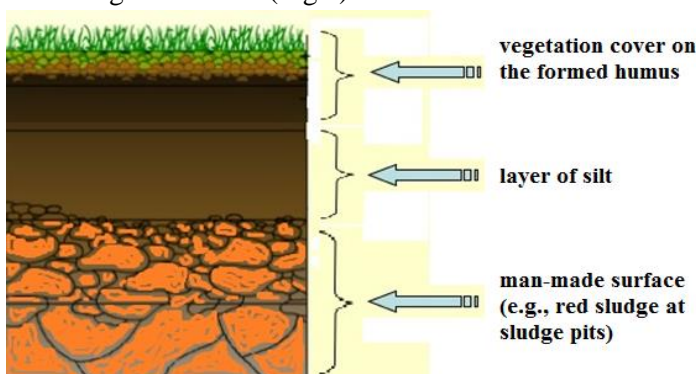


Fig.3. Scheme of formation of an organic layer from bottom silt on a technologically disturbed surface