

COAGULATION AND MINERALIZATION AS BASIC PHENOMENA IN FORMATION NEW SEDIMENTS IN THE IRON GATE I RESERVOIR

by

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By formation of water reservoir of the Iron Gate I hidroelectric power plant at the Yugoslav-Romanian Danube sector exhibiting a flux of 2000-16000 m³/s, conditions for deposition new sediments have been arisen. The catchment drains an area of 817000 km², including intensive anthropogenic activities.

In the upstream part of the catchment large quantities of plankton material have been generated, with the chlorophyll "a" value up to 100 µg/l. he phenomenon of common deposition of organic matter and all ochthonous material in the mineralization process defines properties of new sediments in this reservoir, showing sedimentation intensity of 20 Mt/g.

The intensive coagulation in a turbulent flow has produced conditions for precipitation of the exceptionally fine materials 0.4-50 µm in grain size. The analysis of this material has exhibited records on deposition of the finest quartz particles, with high Al and Fe contents. In such a basic background of material the most important pollutants are precipitated covering a large area. As indicators of anthropogenic contamination the characteristically heavy metals have been analyzed, showing a high grade concentration, compared with the "geologic background".

An important mineralization kinetics of the new type sediments has been ascertained, with expressed effect of elution of numerous detrimental and dangerous materials into the water phase of both superficial and ground waters. Numerous processes leading with high probability to activation of the chemical time bomb (CTB) have been established.

High effects of quartz precipitation have lead to alarming changes in the Black Sea phytoplankton species composition from diatoms (siliceous) to coccolithophores and flagellates (non-siliceous), focussing to necessary analyses and workings to slow down this process.