

*Thematic course:* Results of algolization of wastewater contaminated with organic substances, unicellular algae *Chlorella vulgaris*. Part 1.

## Change of chemical oxygen density due to algolizing water by chlorella

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### Abstract

The deterioration of the quality of surface waters in the Middle Volga region, reinforces the importance of its treatment by not only physical and chemical methods, but also deeper – biological methods. From the biological methods of post-treatment is of interest biohydrobotanical method in which aquatic plants are used as accumulators of pollutants. One of the variants of this method is the use of unicellular algae, the most actively used of which is chlorella. We considered the results of algolization of different reservoirs by chlorella.

We studied the results of the introduction of the chlorella culture in the waste waters of pulp and paper mill in the region Lopatinskay Volozhka in Volga reach of the Kuibyshev reservoir.

In the Volga reach of the Kuibyshev Reservoir thus far retained regime closest to the regime of the Volga river before its regulation. In control stations are characteristic values of chemical oxygen density (COD) from 19.3 to 28.4 mgO<sub>2</sub>/dm<sup>3</sup>, what indicates a relatively low concentration of organic substances. Examined in the seasonal aspect changes of COD in different parts of the reservoir – higher of discharge, in water mixing zone and downstream.

Examined in the seasonal aspect changes of COD over the years in waste waters of company. The highest values of COD are found from February to May.

It is shown that the application of a Chlorella culture twice a week with an optical density of 1.2-1.4 in the waste water not only reduces the concentration of biogenic substances, but also leads to a decrease in the concentration of organic substances, chemical index of oxygen decreased 1.7 to 2.2 times. After secondary settling tank in a zone of water mixing with the Kuibyshev reservoir waters COD decreased to 23.7-30 mgO<sub>2</sub>/dm<sup>3</sup>. The average amount of hardly degradable organic matter in areas above the discharge (control) water, in the water mixing zone and below the discharge was at the same level. The conclusion was made about the good prospects of chlorella for purification of water ecosystems.

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