

## Software realization problems of mathematical models of pollutants transport in rivers

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In this report is offered the program package of mathematical models of pollutants transport in rivers. It is created as a convenient, modern, comfortable and reliable tool for specialists of different areas of knowledge such are ecology, hydrology, building, agriculture, biology, ichthyology and so on. It allows us to calculate pollutants concentrations in any points of rivers depending from quantity and condition of dropping from many pollution sources. As mathematical models of rivers water quality formation there are realized one-, two-, and three-dimensional models at both classical and new, original boundary conditions. For these mathematical models there are developed new and are improved already known finite difference calculation schemata. At program realization of these schemata there arise some problems from solution of which depends the quality of received results. These problems are: a) analytical description of bank lines and bottoms of rivers; b) analytical description of dependence of equation coefficients from spatial coordinates; c) analytical description of heterogeneous part of solved diffusion equation from spatial coordinates and from time, i.e. analytical description of pollution sources powers from spatial coordinates and from time; d) correct choice of values of spatial and time grids steps. All these problems are solved on the appropriate level and are realized in the package that increases the universality, flexibility and reliability of working of the package.

The program package is realized for IBM-compatible personal computer in accordance with generally accepted standards on the analogous products in whole world and users can utilize it as modern, convenient, simple and reliable tool at solution problems from different areas. Detailed experimental research of the developed package and realized in it algorithms confirm their high computing and working conditions.