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Basic approaches to abatement of water pollution caused by non-point sources in the Volga river basin.

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The Volga River is the largest river in Europe and the main waterway of the western part of Russia. The total number of cases of high and extremely high pollution of surface waters in the river basin in 2016 and 2017 amounted to 988 and 939, respectively, which is about 30-35% of the total number of registered cases in the Russian Federation.

Traditionally the main factors affecting water quality are considered to be insufficiently treated industrial effluents and municipal sewage systems. In this regard, until recently, the regulatory actions of water protection in Russia have been the management of discharges and the reuse of wastewater, i.e. the management of point sources of pollution. However, despite some progress in that direction and the overall decline in wastewater discharges, partly as a result of the decline in industrial production, such a one-sided approach had not had the expected effect and, according to official statistics and reports, there had been no significant improvement in the ecological state of water bodies and in the quality of the Volga water. The recent research conducted by Water Problem Institute jointly with other leading Russian institutions and scientific organizations in 2018-19 within the framework of National project of rehabilitation of the Volga river has shown that such a situation took place mainly due to the lack of attention to non-point sources of pollution, particularly to agricultural activities, industrial sites, urban and suburban land development, landfills and areas of «accumulated environmental damage».

These studies, as well as the synthesis of the results of surveys carried out within the Volga basin in previous years, show that the volume of pollutants such as oil products, organic substances, suspended solids, heavy metals (zinc, copper) from non-point sources exceeds (in some cases repeatedly) that of the point sources. For example, for the catchment area of the Upper Volga, it has been established that the amount of nitrogen and phosphorus coming from non-point sources is on average 45-55% of the total nutrient load, and for oil products and suspended substances this value can exceed 90%, especially during rainfall and spring flood events.

A general conception has been under developing and discussion to prevent further pollution of the Volga region including issues of monitoring, evaluation of diffuse loads, enhancing water protection programs and preventing negative effects of human activities at the scale of river catchments.