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Diagnosis Of Pollutant Origin (gradient)

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The diagnosis of pollutant substance (PS) origin (gradient) is a constituent element of environmental characteristic of marine environment quality in the area of marine and riverine water mixing. Determination of the gradient makes it possible to identify the source of PS inflow and transfer. The diagnostic method is based on the analysis of PS concentration distribution in a salinity field. It is supposed that a steady decrease of PS concentration with the rise of water salinity points to PS inflow with the river runoff, a steady rise in concentration points to PS inflow with the marine water. According to the results of studies in the northern part of the Caspian Sea in 2001 – 2009, the Volga runoff is the main source of oil products and polycyclic aromatic hydrocarbons (PAH), and the advection of marine water from the Middle Caspian is the main source of lead and polychlorinated biphenyl (PCB). The origin of some metals such as Cd, Cu, Ni, Zn couldn't be identified, as their distribution within a salinity field is homogeneous. The analysis of seasonal variability showed that PS gradient can vary throughout the year. So, oil products inflow with the river runoff in autumn mainly, while PAH enter in spring and summer. The inflow of PCB with marine water increases in spring and summer. Currently the identification of PS origin is a constituent part of diagnostics of marine environment quality in the North Caspian, as it is vitally important to identify the sources of PS inflow. As far as pollution gradient depends on different factors (the volume of river runoff, water circulation, anthropogenic load etc.), further research will be aimed at the study of these correlations. Keywords: marine pollution, pollutant origin, gradient, diagnostics of marine environment quality