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New Approach To The Assessment Of Marine Environment Quality

Galina Monakhova [(1)], Vyacheslav Zaytsev [(2)], Sergey Monakhov [(3)] and Elena Ostrovskaya [(4)]

(1) Dagestan State University, 367025 Makhachkala, Russia
Telephone: +7 8722 67 46 51 Email: gavochka@mail.ru
(2) Astrakhan State Technical University, 414025 Astrakhan, Russia
Telephone: +7 8512 61 42 71 Email: viacheslav-zaitsev@yandex.ru
(3) Caspian Marine Scientific Research Center, 414045 Astrakhan, Russia
Telephone: +7 8512 30 34 70 Email: kaspmniz@mail.ru
(4) Astrakhan Center for Hydrometeorology and Environment Monitoring, 414028 Astrakhan, Russia
Telephone: +7 8512 38 68 79 Email: eostrovskaya@mail.ru

Several criteria can be used for the assessment of marine environment quality. They are as follows: maximum permissible concentration of pollutants (MPC), background concentration of pollutants (BC) and the difference between MPC and BC. BC of a substance is accepted as a median – a statistical sampling parameter most stable to outlying at distribution edges conditioned by local pollution. The abovementioned criteria of the assessment of marine environment quality are widely used in world practices, and three indices can be singled out: accumulation index (BC criterion), pollution index (MPC criterion) and pressure index (difference between MPC and BC as criterion). The new method of integrated assessment of marine environment quality developed in KaspMNIZ is a multi-criteria (using all the mentioned criteria) and multi-parametric (all the identified pollutants which concentration is standardized act as parameters) one. Criteria can be of similar or different significance. In the first case water quality assessment is ensemble, and in the second case – integral. The technique of the ensemble estimation consists of several stages and its output is a matrix which columns are quality assessment criteria and rows are pollution parameters. Each matrix element contains the results of the mono-criterion mono-parametric estimate expressed in scores. The estimate results from the comparison of actual pollutant concentration with one of the criteria. Comparison results are interpreted in scores by means of the unified five-score scale. The arithmetic mean of the data presented in a separate matrix column reflects the result of the mono-criterion multi-parametric estimate (G); while the arithmetic mean of the data presented in a separate matrix row reflects the results of multi-criteria mono-parametric estimate (E). The output of multi-criteria multi-parametric estimate is calculated for all the parameters, including the parameters not complying with criteria and the parameter with the highest pollution level. Thus, the ensemble method helps perform a detailed analysis of the state of pollution, assess the contribution of separate components on the basis of different criteria and draw a well-grounded conclusion on the quality of the marine environment. The offered technique is already applied in the Caspian Sea for

environmental feasibility reports on the planned activities and the assessment of environmental conditions in the areas of operations and their environmental consequences. Keywords: marine environment quality, ensemble method, accumulation index, pollution index, pressure index