

Neverova-Dziopak, E. Assimilative Capacity of Transitional and Coastal Waters in Ecological Security Assessment of Marine Areas. *Ochrona Srodowiska* 2015, Vol. 37, No. 2, pp. 17–20.

Abstract: The proprietary concept is presented of assimilative capacity assessment of aquatic ecosystems, which are pollution recipients from both point and diffuse sources. The assimilative capacity may serve as a basis for determining the maximum ecologically permissible pollutant loads. Existing methods of setting the conditions of pollutant discharge into surface water recipients are predominantly based on pollutant limit values in wastewater. These are established on the basis of technological capabilities. Such an approach, however, does not ensure the ecological safety of surface waters as it does not take into account the ecological functioning mechanisms of separate aquatic ecosystems. Considering the above, the assimilative capacity of surface waters was defined as the amount of pollution that might be accumulated, transformed in biochemical processes and discharged to the outside of the ecosystem without disturbing its ecological equilibrium. Examples of assimilative capacity calculations for selected marine areas of the Baltic Sea were presented in terms of various anthropogenic pollutants, *e.g.* trace metals, benzopyrene, polychlorinated biphenyls and nutrients. Analysis of calculation results revealed that assimilative capacity of the Baltic Sea in its various areas depended on local hydromorphological and hydrobiological properties and was getting exhausted due to the loads of copper and lead compounds as well as polychlorinated biphenyls. In contrast, there are still significant ecological reserves present in the individual areas of the Sea with respect to the loads of zinc, cadmium, mercury and mineral nutrients.

Keywords: Surface water, aquatic ecosystem, pollution load, ecologically permissible limit.