

MAIN ECOLOGICAL PROBLEMS OF THE BALTIC SEA

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The Baltic Sea is situated on the territory of the economically developed countries. That is the main reason for its pollution. It should be emphasized that there are 132 Hot Spots around the Baltic Sea. Many chemicals get into the sea during their manufacturing, processing, transportation and application and as a consequence of emergency situations. The input of a large quantity of different types of chemicals into the Baltic Sea lead to a critical state of its ecosystem, since the input rate of polluting substances is higher than the rate of water self-purification capacity. The main ecological problems of the Baltic Sea are eutrophication, pollution with harmful and toxic substances, oil-spills accidents and sea-dumped chemical weapons. Problem of eutrophication. Our researches have shown that the most significant factor determining entering of total phosphorus and total nitrogen into the Baltic Sea is quantity of the population in the drainage areas of different countries. The greatest quantity of total phosphorus and total nitrogen goes in the sea from territory of Poland, then follow Russia, Sweden, Finland, Denmark, Latvia, Estonia and Germany. Problem of chemical pollution. There are a lot of chemical pollutants in the water and sediments of the sea (heavy metals, organo-chloro compounds, polycyclic aromatic hydrocarbons, phenols, petroleum products). According to the literature data the residence time of metals in an ecosystem of the Baltic Sea is rather insignificant for lead (7 years), cadmium (6 years) and mercury (6 years), it is a little bit more for zinc (10 years) and maximum for benzo(a)pyrene (20 years), copper (27 years) and PCPs (35 years). The entry of copper, lead and PCBs exceeds them the marine assimilation capacity. That requires an essential decrease of their sea disposals. Problem of emergency situations. The Baltic Sea presents many difficulties for navigation. Winter storms, poor visibility, narrow channels, ice cover, winding passages with limited depth on one hand, and high-density traffic areas with crossing vessels on the other, can combine to cause problems and result in high incidence of accidents. According to statistics annually in the Baltic Sea there are approximately three major accident accompanying with oil spills and petroleum. For an example, 33,245 tons of oil have got in the sea in 1969-1995. The hit of oil and its components in the sea change the physical, chemical and biological properties of the water, disturbs natural biochemical processes. During the process of transformation of oil hydrocarbons more toxic compound can be produced. These products of transformation have carcinogenic and mutagenic properties and rather stable to biochemical oxidation. Besides acute effects of oil spills, such as polluted beaches or mass-stranding of oiled sea birds, also long-term effects of spills from these incidents have noticed, e.g. locally increased levels of PAHs contamination in sediments. Problem of sea-dumped chemical weapons. The ecological threat posed more than 300,000 tones of chemical weapon dumped in the seas after the second World War is one that demands the urgent attention of the international community. The amount dumped represents more than three times as much as the total reported chemical arsenals of United States and Russia. The munitions were disposed of in the shallow depth of the Northern European seas where - fishing is actively pursued - in close proximity to densely population coastlines, with no consideration for long-term consequences. Also the risk of sea-dumped munitions does not meet the eye, the

corrosion of the shells and rounds which were dumped five decades ago is progressing fast now.