

Estimation of the Frequency of Emergency Hazardous Cargo during the Operation of Ships in the Volga Basin

**E. A. Batanina, V. S. Naumov, A. E. Plastinin,
V. N. Zakharov, N. S. Otdelkin**

Volga State University of Water Transport, Nizhny Novgorod, Russia

Keywords: emergency reset; inland waterways; Volga basin; oil vessels; traffic volumes; dangerous goods; frequency estimation; dry cargo vessels; transport accident.

Abstract: The analysis of freight traffic on the inland waterways of the Russian Federation is carried out; and the volumes of transportation of various types of dangerous goods are determined. It was revealed that the volumes of transportation of dry goods that pose the greatest environmental hazard (chemical and mineral fertilizers, coal, coke and cement) are comparable with the volumes of oil cargo transported. The structure of transport accidents involving dry cargo and oil vessels in the Volga basin in the constituent entities of the Russian Federation is investigated. The results of estimating the frequency of emergency dumping of dangerous goods from ships during transport accidents are presented. It is shown that the frequency of emergency dumping of dangerous goods during transport accidents involving dry cargo vessels in the Volga basin is eight times higher than the frequency of oil spills during accidents of oil vessels. The classification of the constituent entities of the Russian Federation in the Volga basin is developed according to the level of risk of traffic accidents that can lead to emergency dumping of dangerous goods from ships. It was established that the most dangerous constituent entities of the Russian Federation in terms of the frequency of emergency dumping of dangerous goods in the Volga basin are Nizhny Novgorod Region and the Republic of Tatarstan.