



Handlings of liquid chemicals in the BSR

The Baltic painting

The Baltic is one of the busiest seas in the world; it is also highly sensitive to environmental impacts caused by possible chemical accidents. Since November 2005 it has been classified as a Particularly Sensitive Sea Area by the IMO. At present, oil and chemical tankers account for a quarter of all vessels plying there. Both the number and volumes of transported chemicals have increased significantly in recent years.

When you take into consideration that navigation in the Baltic is challenging due to the shallowness of fairways, narrow routes as well as ice fields in winter, then the maximal awareness of potential risks involving the most frequently transported chemicals is a key factor when preparing and actually reducing risks caused by possible accidents.

Sailing under Mendeleev's flag

The Centre for Maritime Studies at the University of Turku has examined handlings of liquid bulk chemicals in Baltic ports and marked those encountered most often in the BSR, especially in Finnish and Swedish ports, which together deal with over 50% of these cargoes. The study reveals that every year more than 11 mln tn of liquid chemicals are handled in ports of the Baltic Sea – approx. 4% of the ports' total amount of liquid cargo. Chemicals predominately handled (at least several hundred thousand tonnes per year) are methanol, sodium hydroxide solution, ammonia, sulphuric and phosphoric acid, pentanes, xylenes, methyl tert-butyl ether (MTBE), ethanol and ethanol solutions. Furthermore, high amounts of liquid fertilisers, such as solutions of urea and ammonium nitrate in water, are also handled.

The study shows that in 2010 Finnish ports handled about 60 different chemicals which altogether totalled approx. 3.5 mln tn. Eight types of chemicals surpassed 100,000 tn of yearly volumes, while another 35 exceeded 10,000 tn each. Methanol, sodium hydroxide solution and pentanes were the top transported chemicals

(see Table 1). In 2010 exports dominated in Finland's ports and accounted for 73% of overall handlings of liquid chemicals. Methanol, pentanes and xylenes were the most often exported chemicals, while sodium hydroxide solution, ethanol and ethanol solutions as well as propane prevailed in imports. When compared to 2008, the total volume of liquid bulk chemicals handled in Finnish ports in 2010 dropped by approx. 3%. The number of different liquid chemical cargoes has also decreased from about 80 to 60. However, the list of top liquid chemicals has remained quite the same during these years.

Tab. 1. Top 10 liquid chemicals handled in Finnish ports in 2010 (import & export)

Nº.	Type of cargo	Total turnover [tn]
1	Methanol	746,141
2	Sodium hydroxide solution	380,331
3	Pentanes	315,978
4	Xylenes	161,894
5	MTBE	159,660
6	Aromatic free solvents (e.g. white spirit and NESSOL)	155,363
7	Ethanol and ethanol solutions	122,918
8	Paraffins	111,079
9	Phosphoric acid	91,797
10	Phenol	87,359

Swiss cheese statistics

Data regarding chemical transportation volumes in the Baltic Sea and in the EU are full of holes – limited and decentralized. Except for Finland and Sweden's ports, the exact quantities of different chemicals transported in the Baltic are not publicly available. At the moment, information about chemicals handled in the Baltic Sea ports seems to be scattered among different companies, ports and agencies and on top of that – classified as confidential. There is the SafeSeaNet system which enables European Union Member States, Norway and Iceland to provide and receive feedback on ships and their movements with hazardous cargo, however, the system's data are not available for scientific use.

Yet, the information given by the study will come in handy during the next stages of the Chembaltic project in order to evaluate environmental risks of chemical transportation in the Baltic Sea more precisely. Data on handling volumes of different chemicals help to enlighten decision makers with what exactly we are dealing with, how serious the potential threat is and what's the most important thing – how to prevent chemical-related marine accidents as well as how to contrive those which will actually happen.

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