Safe and reliable global maritime transport of dangerous chemical cargo via the Baltic Sea

By Jyrki Vähätalo

We are dependent on maritime transport. Currently around 90% of all world trade is carried by sea. Sea transport includes chemicals that are frequently – but not always – classified as dangerous. Today, the transport via Finnish ports of classified dangerous chemical cargo, i.e. noxious liquid substances and gases carried in bulk, solid materials possessing chemical hazard and solid bulk materials hazardous only in bulk, harmful substances and dangerous goods in packaged form, amounted to about 20 million tonnes.

The regulations, rules and recommendations concerning global shipping of dangerous cargo are based on the work of the International Maritime Organization (IMO). The legal instruments are codes and conventions. An active specialized agency of the United Nations, the IMO today has 168 Members after the Cook Islands became a member state on 18 July 2008. IMO plays a key role in ensuring safety of life at sea and in protecting the marine environment from ship source pollution - as summed up in IMO's mission statement: "Safe, Secure and Efficient Shipping on Clean Oceans."

Numerous vessels carrying also dangerous chemical cargo sail through the Baltic Sea, a unique, brackish inland sea with a sensitive ecosystem. The Baltic Sea can be considered an inland lake for the countries in the Baltic Sea region. In fact, it was only about 8,500 years ago that the Ancylus Lake was connected with the Atlantic through the Danish Straits and later formed what is now our Baltic Sea. Today, the Baltic Sea has the official status of a Particularly Sensitive Sea Area (PSSA) with the exception of the waters under sovereignty of the Russian Federation. A PSSA is an area which needs special protection through action by the IMO because of its significance for recognized ecological, socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities. When a PSSA has been approved, specific measures can be used to control the maritime activities in that area, such as equipment requirements for ships and installation of vessel traffic services (VTS). In the Baltic Sea safety measures involving shipping routes have been intensified including VTS systems, such as the Automatic Identification System (AIS) and the compulsory Gulf of Finland Reporting System (GOFREP) applied by Finland, Estonia and Russia.

The International Convention for the Safety of Life at Sea (SOLAS) covers various aspects of maritime safety including dangerous chemical cargo: the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) provides an international standard for the safe seaborne carriage of noxious liquid chemicals in bulk. The corresponding codes for gases carried in bulk are the IGC Code and the BC Code for solids. To minimize the risks to ships, their crews and the environment, the IMO's Codes prescribe the design and construction standards of ships and the equipment they should carry, with due regard to the nature of the products involved.

In 1992, the United Nations Conference on Environment and Development, familiarly known as the Rio Summit, established the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). The GHS provides a basis for harmonization of regulations on chemicals at national, regional and worldwide level, also an important factor for trade facilitation. GHS coincided with the review of Annex II of the International Convention for the Prevention of Pollution from Ships (MARPOL). The revised MARPOL Annex II Regulations for the control of pollution by noxious liquid substances in bulk entered into force on 1 January 2007. It includes a novel four-category classification system for noxious liquid substances designed to be in harmony with the GHS. Improvements in ship technology, such as efficient stripping techniques, have made possible significantly lower permitted discharge levels of noxious liquid substances. Noxious liquid substances from tankers may accidentally enter the marine environment through operational discharge, spillage, or loss overboard. Nevertheless, accidents of noxious liquid substances are rare due to the high-level safety standards; for instance, most tankers are of double hulled construction to prevent outflow of cargo even in the event of a collision or grounding.

Cargo transport units (CTUs) have revolutionised the worldwide transport including dangerous chemical cargo. The ancient Egyptians used amphorae to ship liquid cargo and only recently, in the 1930's, American entrepreneur Malcolm McLean (1913-2001), conceived of the container. Containers, commonly referred to as CTUs, replaced the traditional bulk method of handling goods. In sea transport the CTU is typically a freight container or a trailer. Notably, the volume of shipping of dangerous goods packaged into CTUs continues to grow significantly both worldwide and through the Baltic Sea.

The international rules for the carriage of packaged harmful substances and dangerous goods in packaged form are set in the International Maritime Dangerous Goods (IMDG) Code. The IMDG Code has been harmonised with the United Nations Recommendations on the Transport of Dangerous Goods and with other modal regulations (air, road and rail). In accordance with the principles set out in the UN Recommendations, the IMDG Code divides dangerous goods into 9 classes. The new GHS criteria for harmful substances, i.e. substances which are identified as marine pollutants only, will take effect from 2010.

The IMDG Code does not distinguish between ocean crossing and transport in smooth sea areas, also described as the concept of low wave heights. In the Baltic Sea today, most of the transport of packaged dangerous goods is carried out by trailers in ro-ro ships on relatively short voyages and within low wave areas. By derogation from the provisions of the IMDG Code, the Memorandum of Understanding on the Transport of Dangerous Goods in ro-ro Ships in the Baltic may be applied on all ro-ro ships operating in the Baltic Sea. The Memorandum is a multimodal agreement on the transport of packaged dangerous goods between Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Sweden and Poland. The Memorandum has existed for more than 25 years with the purpose of facilitating multimodal transports of dangerous goods from land mode to sea mode and *vice versa*. The Memorandum is allowed under the existing provisions of the IMDG Code. We are proud of the fact that the safety records are excellent.

Today, we live in a society which is supported by a global economy. Maritime transport of dangerous chemical cargo via oceans and smaller seas such as our fragile Baltic Sea is an integral part of global economy. Fortunately the countries in the Baltic Sea region, including Finland which became a member of the IMO in 1959, actively struggle for safe, secure, environmentally friendly and efficient shipping of dangerous chemical cargo to the world via the Baltic Sea.

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