

Day zero for ballast water treatment



The entry into force of the BWMC will mean that ballast water will have to be treated prior to discharge to minimize the inadvertent transport of alien species in such waters.

Just over a week ago, Finland ratified the Ballast Water Management Convention (BWMC) drawn up by the IMO (International Maritime Organisation), a specialised agency of the UN. This, in itself, might not have hogged the limelight on media portals, if only it weren't for its sheer significance and implications.

With Finland's adherence, in fact, the BWMC has now come of age, a full 12-13 years after it was first conceived way back in 2004, with the threshold of over 30 countries representing 35% of the global merchant shipping tonnage having been finally breached. This has automatically set the clock ticking, with the BWMC coming into force in September 2017.

But to fully embrace the ramifications of such developments, one must first trace the context within which ballast is used and the environmental impact of its discharge.

Different forms of transport vehicles, especially but not exclusively merchant ships, have a dire need for stabilisation, and this role is fulfilled by ballast. In fact, the major purposes of ballasting a vessel prior to embarking on a voyage are to increase its manageability and safety, particularly under inclement weather conditions, to control its draft and trim for maximum efficiency by submerging the propeller and rudder and reducing stress on the hull and compensating for weight loss through fuel and water consumption, and to control its stability to ensure safe passage.

Until the 1880's, ships made use of a jambalaya of ballast forms, ranging from quarried stone and rocks to soil and sand and even to roof tiles, besides the 'living ballast' which is constituted by the weight of the sailors on board the vessel.

The adoption of such solid forms of ballast posed more than one challenge, namely, its shifting within the bowels of the ship could lead to dangerous instances of instability and the time-consuming procedure of loading and unloading such solid ballast, which frequently ended up being carted away at the destination port for all forms of novel adoptions.

For instance, quarried stone used as ballast contributed to the construction of the city of Montreal in Canada, whilst the topsoil in the Grand Harbour contiguous areas is infused with soil originating in the most disparate parts of the globe.

The advent of liquid ballast, made possible by the design of powerful pump systems (for instance, tankers can clear ballast water at rates approaching 20,000 cubic metres per hour), spearheaded the upsurge in the water-borne transport of merchandise worldwide, with over 80 per cent of global trade being mediated over the sea. This in turn has bolstered the volume of ballast water which is transported globally, with an estimated staggering 5 billion tons of such water being currently transported on an annual basis.

It's been only in the past 20 years that the world has awoken to the surreptitious entry of non-indigenous or alien species through ballast discharge. The IMO Secretary-General Kitack Lim hailed the coming into force of the BWMC as 'a truly significant milestone for the health of the planet.'

Notorious examples of non-native species which owe to ballast their introduction into fresh pastures include the North American comb jelly (*Mnemiopsis leidyi*), which has crippled small pelagic fisheries in the Black Sea after being introduced from North America, and the zebra mussel (*Dreissena polymorpha*), which colonised western and northern Europe as well as the eastern seaboard of North America from the Black Sea.

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The BWMC will require all ships in international trade to manage their ballast water and sediments to certain standards, according to a ship-specific ballast water management plan.

All ships will also have to carry a ballast water record book and an International Ballast Water Management Certificate. The ballast water performance standard will be phased in over a period of time. Most ships will need to install an on-board system to treat ballast water and eliminate unwanted organisms. More than 60 type-approved systems are already available, being mainly based on filters, ultra-violet radiation or on electro-chlorination.

Shipboard ballast water management systems must be approved by national authorities, according to a process developed by IMO.

Ballast water management systems have to be tested in a land-based facility and on board ships to prove that they meet the performance standard set out in the treaty. All of this is of huge relevance to our islands, which hosts the 10th largest cargo-handling port in the EU and the 50th largest in the world – the Freeport – which last year alone handled over 3 million containers.

At the CIESM (International Commission for the Scientific Exploration of the Mediterranean Sea) Congress held earlier this week in Kiel, Germany, which hosts one of the busiest merchant shipping canals in the world connecting the Baltic Sea to the North Sea, an estimate of the ballast water volumes hailing directly from the Suez Canal and discharged within a number of Central Mediterranean ports was presented.

The study, conducted jointly by the Physical Oceanography Research Group at the University of Malta and ISPRA of Italy, identified those tankers which reached the Grand Harbour, and the Sicilian ports of Augusta, Catania, Syracuse, Porto Empedocle and Lampedusa, directly from the Suez Canal, without making any intermediate stops during the transit.

This was done by using data emerging from a number of AIS (Automatic Identification Systems) antennae installed in Malta and Sicily.

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