

# **Ballast Water Sampling – An overview of the work carried out by IMO<sup>1</sup>**

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Ballast water sampling has been on the agenda of IMO for the last eight years. One of the first attempts to address this issue was made in 2003 through an international workshop organized by GloBallast in Rio de Janeiro, Brazil. The workshop conducted a comprehensive review of ballast water sampling activities around the world, identified the various methods and guidelines available at that time and provided recommendations on how to develop standardized international guidance in the context of the coming BWM Convention. The workshop was also a unique opportunity for practical training on board a ship and facilitated extensive sharing of expertise, experience and data.

From the early stages, it was agreed that sampling techniques and programmes should be tailored to the purpose of sampling, which would include scientific research, risk assessment, capacity building, efficacy testing of ballast water management systems and compliance monitoring. Regardless of the purpose, however, any sampling programme has to be practical, rapid and, most importantly, needs to enable comparison of results when samples are taken in different countries by different stakeholders.

Samples need to be representative for all the organisms existing, not only in a ballast tank, but also in the whole ship and this appears to be the main challenge of any sampling programme. Because of the complex design of ships and their ballast water tanks and the associated sampling difficulties, the confidence that a ballast water sampling method could provide an overall picture of all biota present in the tanks of a ship was low and the sampling for compliance monitoring focused, in its early stages, on assessing compliance with ballast water exchange.

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<sup>1</sup> Views expressed in this paper are those of the author and should not be construed as necessarily reflecting the views of IMO or its Secretariat

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Sampling ‘tools’ based on the physical and chemical parameters of ballast water including pH, salinity, turbidity and organic content have been devised and port State control officers were equipped with instruments that are simple, portable, rapid and easy to apply at the port of discharge. The presence or absence of coastal and oceanic species in ballast water has also been used as an indicator of whether the ballast is of coastal or oceanic origin to determine if mid-ocean exchange has been conducted. More effective methods of assessing compliance with ballast water exchange requirements would involve in-line samplers and electronic monitoring systems based on automatic sensors located throughout the ship’s ballast tanks and piping.

The adoption of the International Convention for the Control and Management of Ships’ Ballast Water and Sediments (BWM Convention) in February 2004 and the global acceptance of the performance standard contained in regulation D-2 of the Annex to the Convention brought again the need for procedures to assess compliance of the newly developed ballast water management systems to the forefront of IMO’s working agenda.

Article 9 (Inspection of ships) of the BWM Convention provides that, in order to determine whether a ship is in compliance, a sampling of the ship’s ballast water could be carried out by the authorized officers in accordance with the guidelines developed by the Organization. Although the development of the “Guidelines for ballast water sampling” – later known as “Guidelines (G2)” to reflect the order in which different guidelines are mentioned in the Convention – started as early as 2002, they were only adopted by MEPC in resolution MEPC.173(58) in October 2008.

Guidelines (G2) provide general recommendations for ballast water sampling by port State control authorities and from the outset indicate that any sampling methods should be safe to the ship, inspectors, crew and operators as well as simple, feasible, rapid and applicable at the point of the ballast discharge. Also from the outset, Guidelines (G2) reiterate the last part of article 9, paragraph 1(c), which stipulates that the time required for sample analysis shall not be used as a basis for unduly delaying the operation, movement or departure of the ship. Guidelines (G2) are far-reaching tools that allow for use of automated systems for ballast water sampling provided such systems are sufficiently progressed and can be validated. This approach leaves the door open for technological progress and engineering ingenuity and calls for continuation of the R&D efforts.

If sampling for compliance with the ballast water exchange standard (regulation D-1) has been conducted in a number of countries and valuable experience has been accumulated, for the compliance with the performance standard (regulation D-2), sampling methods are in an early stage of development and further work on validation, inter-calibration and standardization is needed.

Despite some inherent potential shortcomings relating to sampling from the discharge line, Guidelines (G2) provide a set of principles that, if properly applied, ensure consistency of approach and provide the much needed certainty to the shipping industry.

As further guidance on the interpretation of the results arising from sample analysis is yet to be developed, the BLG Sub-Committee prepared an aide-memoire to compile the existing information into an IMO circular on ballast water sampling analysis protocols and on uniform application of such protocols.

BLG 13 agreed that the different types of sampling analysis currently used could be grouped in **indicative sampling**, which could be completed rapidly and conducted by the port State control officers, and **detailed sampling**, which is time-consuming and labour-intensive and requires expert personnel and laboratory facilities.

The most recent discussions held in IMO and the informal consultations among IMO Member States suggested that, whilst recognizing that further work is needed to develop detailed analysis protocols, the international community shares the view that indicative analysis protocols are both practical and achievable. Indicative analysis is described by Guidelines (G2) as sampling to establish whether a ship is potentially compliant or non-compliant. It is believed that such sampling could not only help the port State to identify immediate mitigation measures to avoid additional impact from a possible non-compliant ballast water discharge, but could also assist ships' Captains to evaluate the situation and decide on the most appropriate course of action.

It is hoped that the EMSA Workshop on Ballast Water Sampling will carry out a candid evaluation of the aspects mentioned above and offer its findings to the international community to facilitate further progress on this complex matter with direct ramifications for the work conducted by the FSI Sub-Committee at IMO on the development of specific guidelines for port State control officers.