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BWM.2/Circ.61  
26 July 2017

**INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS'  
BALLAST WATER AND SEDIMENTS, 2004**

**Guidance on methodologies that may be used for enumerating viable organisms for  
type approval of ballast water management systems**

1 The Marine Environment Protection Committee, at its seventy-first session (3 to 7 July 2017) approved *Guidance on methodologies that may be used for enumerating viable organisms for type approval of ballast water management systems*, to be used for verifying compliance with regulation D-2 of the BWM Convention prepared by the Sub-Committee on Pollution Prevention and Response at its fourth session (16 to 20 January 2017), as set out in the annex.

2 Member Governments are invited to bring this Guidance to the attention of all parties concerned.

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## ANNEX

### GUIDANCE ON METHODOLOGIES THAT MAY BE USED FOR ENUMERATING VIABLE ORGANISMS FOR TYPE APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS

#### Introduction

1 The Marine Environment Protection Committee (MEPC), at its seventieth session, adopted the *2016 Guidelines for approval of ballast water management systems (G8)* (resolution MEPC.279(70)), which call for guidance on methodologies for determining the viability of organisms.

2 The purpose of this Guidance is to provide information on methodologies used for enumerating viable organisms during the type approval of ballast water management systems (BWMS), in order to verify that they meet the ballast water performance standard described in regulation D-2 of the BWM Convention.

3 The selection of analytical methodologies used for determining the concentration of viable organisms is critical in providing confidence that a BWMS complies with the ballast water performance standard described in regulation D-2 of the BWM Convention.

4 This Guidance should be read in conjunction with the BWM Convention, the *2016 Guidelines for approval of ballast water management systems (G8)* (resolution MEPC.279(70)), the *Guidelines for ballast water sampling (G2)* (resolution MEPC.173(58)), the *Guidelines for port State control under the BWM Convention* (resolution MEPC.252(67)) and the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42/Rev.1, as may be revised).

5 As instructed by MEPC 64, sampling and analysis procedures to be used for enforcement of the BWM Convention should be no more stringent than what is required for type approval of BWMS. In addition, the Administration should take into consideration methodologies identified for compliance assessment within the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42/Rev.1, as may be revised).

#### General principles

6 Sampling and analysis should be consistent with the Guidelines (G8) and undertaken to the satisfaction of the Administration to assess compliance of BWMS with the ballast water performance standard described in regulation D-2 of the BWM Convention.

7 Analytical methodologies should:

- .1 determine viability by assessing the presence of one or more essential characteristics of life, such as structural integrity, metabolism, reproduction, motility, or response to stimuli;
- .2 be appropriate to the ballast water treatment technology being tested; and

- .3 provide assurance that organisms not removed from ballast water have been killed or rendered harmless to the environment, human health, property and resources.

10 The table in this Guidance contains methodologies that may be used to enumerate viable organisms. The Guidance remains open for addition of new methodologies as new or revised methodologies become available.

11 Analytical methodologies should be validated to the satisfaction of the Administration. The methodologies in the table below have been validated to the satisfaction of at least one Administration.

**Table: Methodologies that may be used for enumerating viable organisms for type approval of BWMS**

<b>Methodologies for enumerating viable organisms</b>	<b>Organism size class or indicator</b>	<b>Assessed criteria of viability</b>	<b>Examples of how the methodologies are applied</b>	<b>Applicability to ballast water treatment technologies</b>
FDA/CMFDA + Motility	Viable organisms $\geq 10 \mu\text{m}$ to $< 50 \mu\text{m}$	Membrane integrity, enzyme activity, motility	PPR 4/7, appendix 1; PPR 4/INF.10	Suitable for assessing treatment technologies intended to kill or remove organisms
MPN Dilution Culture + Motility	Viable organisms $\geq 10 \mu\text{m}$ to $< 50 \mu\text{m}$	Reproduction capacity, motility	PPR 4/7, appendix 2	Suitable for assessing all treatment technologies