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4 ALBERT EMBANKMENT  
LONDON SE1 7SR  
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

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**GUIDANCE FOR EVALUATING THE 2011 GUIDELINES FOR THE CONTROL  
AND MANAGEMENT OF SHIPS' BIOFOULING TO MINIMIZE  
THE TRANSFER OF INVASIVE AQUATIC SPECIES**

1 The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), approved the Guidance for evaluating the *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (see MEPC 65/22, paragraph 11.14), developed by the Sub-Committee on Bulk Liquids and Gases at its seventeenth session (4 to 8 February 2013), as set out in the annex.

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

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## ANNEX

### GUIDANCE FOR EVALUATING THE 2011 GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BIOFOULING TO MINIMIZE THE TRANSFER OF INVASIVE AQUATIC SPECIES

#### 1 Context

1.1 The Marine Environment Protection Committee (MEPC), at its sixty-second session, adopted, by resolution MEPC.207(62), the *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*, (the Guidelines). The aim of the Guidelines is to provide a globally consistent approach to managing biofouling by providing useful recommendations on general measures to minimize the risks associated with biofouling for all types of ships.

1.2 MEPC 62 requested that members take urgent action in applying the Guidelines, including: disseminating the Guidelines to the shipping industry and other interested parties, taking the Guidelines into account when adopting measures to minimize the risk of introducing invasive aquatic species via biofouling, and reporting to the MEPC on any experience gained in their implementation. MEPC agreed to keep the Guidelines under review based on experience gained in their implementation. This would include consideration as to whether the voluntary Guidelines are effective in influencing biofouling management practices.

1.3 This Guidance is provided to assist Member States and observers who wish to collect information needed to undertake future reviews of the Guidelines, and to do this in a more consistent way. The Guidance identifies the types of performance measures (section 3) that could help to assist in evaluating the different recommendations in the Guidelines. A party wishing to collect information may do so for all or only some of these measures.

1.4 It is anticipated that the information needed to review the Guidelines could be collected by Member States and/or observers and submitted to the appropriate Sub-Committee.

#### 2 Evaluation process

2.1 A process for evaluating the information collected could include annual reviews of the implementation of the Guidelines by the Sub-Committee with a more comprehensive review undertaken after the Guidelines have been in place for five years. The first review of available information could occur in a meeting of the Sub-Committee in early 2014 with a more comprehensive review at a meeting of the Sub-Committee in early 2017. It may also be useful to take stock of available information at year three (2015) to determine whether sufficient information is likely to be available to undertake a more comprehensive review after five years. If it is determined that further information is likely to be required, the Sub-Committee could actively encourage collection of the necessary information. The proposed process is further detailed in the appendix.

The focus of the review is likely to change over time. Initially the information available is likely to be on the level of dissemination and awareness of the Guidelines: whether there are any impediments (including omissions and errors) to the implementation of the Guidelines that need to be addressed and evidence of early implementation, e.g. use of biofouling management plans and record books or in-water inspection. In subsequent reviews, the focus could shift more towards evaluating the extent and level of implementation and evidence of change in the extent of biofouling on ships. New research and/or technology developments related to the Guidelines would be relevant for all reviews. If, as a result of the review, modifications to the Guidelines are considered necessary, the Sub-Committee could recommend these to the MEPC.

2.2 The comprehensive review of all available information at year five could help determine whether the Guidelines are having sufficient impact on biofouling management using the performance measures outlined in this guidance. If the Guidelines are determined to have sufficient impact, they could continue to be implemented in their current form with the Sub-Committee determining the nature and regularity of ongoing reviews. If the Guidelines, or elements of the Guidelines, are determined to have insufficient impact the Sub-Committee could provide advice to MEPC on whether other actions may need to be taken to enhance the effectiveness of the Guidelines in preventing the transfer of invasive aquatic species.

### 3 Performance measures

3.1 Performance measures can help to evaluate whether the *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* are improving biofouling management practice in the maritime industry, and thereby reducing the likelihood of invasive aquatic species being transferred through ships' biofouling. It is not considered feasible at this time to directly measure the environmental benefits of the Guidelines, i.e. to assess whether the Guidelines result in fewer biological invasions by aquatic species as a result of transfer via biofouling of ships.

3.2 The following types of performance measures could be used to help evaluate the different recommendations in the Guidelines:

- .1 Awareness and dissemination of the Guidelines – have the Guidelines been disseminated to relevant parties and are they aware of the Guidelines?
- .2 Impediments to implementation of the Guidelines – are there any omissions and errors with the Guidelines that need to be corrected and/or are appropriate facilities and tools available to effectively implement the Guidelines?
- .3 Application of the Guidelines – is there evidence of use of the Guidelines?
- .4 Change in level of biofouling – is there evidence of changes in the level of biofouling from in-water or dry-dock inspections and/or data on the net benefits from managing biofouling?
- .5 Extent of research and development – what research and technology development, related to the Guidelines, is available?

3.3 Performance measures for the different components of the Guidelines are outlined in table 1. Each performance measure consists of the criteria being considered, an indicator for the criteria and a goal that the Guidelines are trying to achieve. Note that the "Year(s)" column in table 1 refers to the year following implementation when information is likely to be available for the relevant performance measure. Table 2 outlines a questionnaire that could be used to provide a uniform, but voluntary, approach to collecting information.

3.4 In collecting information for performance measures it is useful to collect information not only on progress towards the specified goal but also information on why a particular goal is or is not being achieved. This would help the Sub-Committee to determine if actions, such as modifying the Guidelines, are required.

3.5 The high level goal across all performance measures is to see an increase in the uptake of the recommendations of the Guidelines over time.

**Table 1: Performance measures**

<b>Part 1: Awareness and dissemination of the Guidelines</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
1.1	The Guidelines, or communications based on the Guidelines, have been disseminated to: shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning service providers; ship designers, naval architects and builders; anti-fouling coating companies; Harbour Masters; and organizations involved in maritime/seafarer education and training.	Number and proportion of Member States and Recognized Organizations that have disseminated the Guidelines or communications based on the Guidelines.	Most Member States and Recognized Organizations have disseminated the Guidelines or communications based on the Guidelines.	Year 1 Year 2
1.2	The following are known to be aware of, and understand the Guidelines: shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning service providers; ship designers, naval architects and builders; anti-fouling coating companies; Harbour Masters; and organizations involved in maritime/seafarer education and training.	Number and proportion of ships/facilities/etc. that are known to be aware of the Guidelines.	Most ships/facilities are aware of the Guidelines.	Year 1 Year 2
1.3	Biofouling management is known to be included in relevant training and education programmes for: shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning providers; ship designers, naval architects and builders; anti-fouling coating companies; Harbour Masters; and organizations involved in maritime/seafarer education and training.	Number and proportion of known relevant training and education programmes that include biofouling management content.	Most relevant programmes include biofouling management content.	Year 2 Year 3
1.4	Member States are notifying the Organization of other measures being applied for biofouling management. For example, national regulations or emergency measures.	Information related to other biofouling management measures being applied by Member States is being provided to, and disseminated by, the Organization.	Member States and the maritime industry are aware of other biofouling management measures being undertaken by IMO Member States.	Year 3 Year 4

<b>Part 2 Impediments to implementation of the Guidelines</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
2.1	The Guidelines can be implemented by: shipowners and operators; maintenance/recycling facilities; in-water inspection and cleaning providers; and ship designers, naval architects and builders.	Feasibility issues, omissions and errors are identified in the use of the Guidelines.	Feasibility issues, omissions and errors are addressed in the review and revision of the Guidelines.	Year 1 Year 2 Year 3
		Number and proportion of ships/facilities/etc. that have indicated lack of facilities or tools as reasons for not aligning their practices with the Guidelines.	Availability of facilities and tools addressed through market demand and research initiatives.	Year 1 Year 2 Year 3 Year 4
2.2	Use of the Guidelines does not present a safety issue for: ship's crew; maintenance and recycling workers; in-water service providers; and any other entities directly applying the Guidelines.	Any safety issues or concerns raised by use of the Guidelines are identified in the use of the Guidelines.	Safety issues are addressed in the review and revision of the Guidelines.	Year 2 Year 3

<b>Part 3 Application of the Guidelines</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
3.1	Ships have biofouling management plans and are maintaining biofouling record books or equivalent documentation.	Number and proportion of ships known to have biofouling management plans and maintaining biofouling management record books.	Most ships have biofouling management plans and record books.	Year 1 Year 2
3.2	Ships are conducting the following activities in line with the Guidelines: - in-water inspections - in-water cleaning, if appropriate.	Number and proportion of ships known to be conducting in-water inspections and, if appropriate, in-water cleaning.	Most ships are conducting in-water inspections, and in-water cleaning, if appropriate.	Year 2 Year 3
3.3	Facilities are adopting appropriate measures for capture of waste.	Number and proportion of facilities that have waste capture measures in place aligned with the Guidelines.	Most facilities have adopted appropriate waste capture measures.	Year 2 Year 3

<b>Part 3 Application of the Guidelines</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
3.4	The following are known to have practices that follow, or are aligned with, the Guidelines: shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning providers; ship designers, naval architects and builders; anti-fouling coating companies; and organizations involved in maritime/seafarer education and training.	Evidence that practices follow, or are substantially aligned with the Guidelines.	Most ships, facilities, etc. are implementing the Guidelines.	Year 2 Year 3 Year 4
3.5	In-water cleaning technologies are able to capture most of the macrofouling debris from in-water cleaning.	Number and availability of in-water cleaning technologies that incorporate capture of debris for all ship types.	In-water technologies, able to capture most of the macrofouling debris, are widely available and sufficient to meet demand.	Year 2 Year 3
3.6	The Guidelines are being taken into account by Member States that apply other measures for biofouling management. For example, national regulations or emergency measures.	Whether other biofouling measures take into account the Guidelines.	All other biofouling management measures take into account the Guidelines.	Year 2 Year 3

<b>Part 4 Change in level of biofouling</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
4.1	Ships are maintaining submerged surfaces and internal seawater cooling systems in accordance with the Guidelines to ensure they are as free of biofouling as is practical.	Number and proportion of ships known to have submerged hull surfaces that are as free of biofouling as is practical.	Most ships, adhering to the Guidelines, have submerged hull surfaces as free of biofouling as is practical.	Year 3
		Number and proportion of ships known to have niche areas and internal seawater cooling systems that are as free of biofouling as is practical.	Most ships, adhering to the Guidelines have niche areas and internal seawater cooling systems as free of biofouling as is practical.	
		The effectiveness of control measures applied are evaluated at dry dock.	The effectiveness of measures is verified.	Year 3 Year 4

<b>Part 4 Change in level of biofouling</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
		Net costs attributable to implementing the Guidelines (i.e. cost minus benefit, e.g. reduced fuel consumption) as a % of total operating costs.	Net costs attributable to implementing the Guidelines are understood.	Year 2 Year 3
4.2	Indirect or consequential benefits obtained from implementing the Guidelines.	Any known indirect or consequential benefits (such as proven reduced GHG emissions or improved energy efficiency) from the use of the recommendations in the Guidelines.	Indirect or consequential benefits of implementing the Guidelines are understood.	Year 3

<b>Part 5 Research and Development</b>				
	<b>Criteria</b>	<b>Indicator</b>	<b>Goal</b>	<b>Year(s)</b>
5.1	Research and development of technologies to improve biofouling management is being undertaken.	Information on research and technology development, relevant to the Guidelines, can be identified.	Current status of research and technology development, relevant to the Guidelines, is understood.	Year 1 Year 2 Year 3 Year 4
5.2	Research into the indirect or consequential benefits of implementing the Guidelines is being undertaken.	Research into indirect or consequential benefits of implementing the Guidelines can be identified.	Indirect or consequential benefits of implementing the Guidelines are understood.	Year 3 Year 4

#### **4 Performance measure questionnaire**

4.1 These questions are provided as guidance for those who may be interested in collecting information on the implementation of the biofouling Guidelines. It is recognized that not all those using the questionnaire will have authority or linkages with all listed audiences.

4.2 The purpose of this voluntary questionnaire is to gather information regarding the implementation of the Guidelines based on the respondent's experience. Specifically, the respondent is asked to provide information regarding a range of issues that include but are not limited to: the clarity of the Guidelines, dissemination and inspection strategies, educational products, inspection, biofouling management plans, etc. The respondent's information will be used to evaluate the effectiveness of the measures within the Guidelines for the control and management of ships' biofouling.

4.3 Where relevant and if possible, additional details and quantitative data should be provided rather than simply yes/no answers.



**Table 2: Questionnaire for data collection**

<p><b>Question</b> Have you disseminated the Guidelines, or communications based on the Guidelines, to relevant parties including: shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning service providers; ship designers, naval architects and builders; anti-fouling coating companies; Harbour Masters; and organizations involved in maritime/seafarer education and training?</p>	<p><b>Audience</b> Member States</p>
<p><b>Response (additional comment/explanation)</b></p>	
<p><b>Question</b> Are you aware of the Guidelines? Is the information in the Guidelines clear?</p>	<p><b>Audiences</b> Shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning service providers; ship designers, naval architects and builders; anti-fouling coating companies; Harbour Masters; organizations involved in maritime/seafarer education and training; recognized organizations.</p>
<p><b>Response (if not clear, please provide details)</b></p>	
<p><b>Question</b> Are you aware of any information being included in relevant educational programmes?</p>	<p><b>Audience</b> Member States.</p>
<p><b>Response (if yes, please provide details)</b></p>	
<p><b>Question</b> Have you developed biofouling management measures in addition to the Guidelines, e.g. national regulations? Are these measures based on the Guidelines? Has this additional information been provided to IMO?</p>	<p><b>Audience</b> Member States.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Are there any feasibility issues, omissions or errors that have meant that the Guidelines are difficult to implement?</p>	<p><b>Audiences</b> Shipowners and operators; maintenance/recycling facilities; in-water inspection and cleaning providers; ship designers, naval architects and builders; recognized organizations.</p>
<p><b>Response (if yes, please provide details)</b></p>	
<p><b>Question</b> Are facilities and/or tools available to support the implementation of the Guidelines?</p>	<p><b>Audiences</b> Shipowners and operators; maintenance/recycling facilities; in-water inspection and cleaning providers; and ship designers, naval architects and builders; recognized organizations.</p>
<p><b>Response (please provide details)</b></p>	

<p><b>Question</b> Have any safety issues been identified in implementing the Guidelines?</p>	<p><b>Audiences</b> Ship's crew; maintenance and recycling workers; in-water service providers; and any other entities directly applying the Guidelines.</p>
<p><b>Response (if no, please provide details)</b></p>	
<p><b>Question</b> Are ships developing biofouling management plans and maintaining their biofouling record books?</p>	<p><b>Audience</b> Member States; Shipowners and operators.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Are you undertaking in-water inspections and in-water cleaning? Are these activities in line with the Guidelines?</p>	<p><b>Audiences</b> Shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; and in-water inspection and cleaning service providers.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Does your facility capture hull cleaning waste to minimize the risk of it entering the water?</p>	<p><b>Audience</b> Maintenance/recycling facility owners and operators.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Do your practices follow, or align with, the Guidelines?</p>	<p><b>Audiences</b> Shipowners and operators and shipping agents; maintenance/recycling facility owners and operators; in-water inspection and cleaning providers; ship designers, naval architects and builders anti-fouling coating companies; and organizations involved in maritime/seafarer education and training.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Is your in-water cleaning technology able to capture most of the macrofouling debris from in-water cleaning?</p>	<p><b>Audience</b> In-water inspection and cleaning providers.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Are the submerged hull surfaces of ships as free of biofouling as is feasible?  Have you seen a decrease over time in the amount of biofouling on submerged hull surfaces?</p>	<p><b>Audience</b> Member States; maintenance/recycling facility owners and operators; anti-fouling coating companies.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Are the niche areas and internal seawater cooling systems of ships as free of biofouling as is feasible?  Have you seen a decrease over time in the amount of biofouling in niche areas and internal seawater cooling systems of ships?</p>	<p><b>Audience</b> Member States; maintenance/recycling facility owners and operators; anti-fouling coating companies .</p>
<p><b>Response (please provide details)</b></p>	

<p><b>Question</b> Have you collected information about the effectiveness of specific measures in the Guidelines through dry dock inspections of ships?</p>	<p><b>Audiences</b> Member States; shipowners and operators; and maintenance/recycling facility owners and operators.</p>
<p><b>Response (please provide details)</b></p>	
<p><b>Question</b> Do you have any information on the direct or indirect benefits associated with implementing with the Guidelines, e.g. reduced fuel consumption as a % of total operating costs?</p>	<p><b>Audience</b> Shipowners and operators.</p>
<p><b>Response (if yes, please provide details)</b></p>	
<p><b>Question</b> Do you have any information on the additional costs associated with implementing the Guidelines?</p>	<p><b>Audience</b> Member States; and shipowners and operators.</p>
<p><b>Response (if yes, please provide details)</b></p>	
<p><b>Question</b> Are you aware of any research and/or development of technologies to improve biofouling management?</p>	<p><b>Audiences</b> Member States; organizations involved in maritime/seafarer education and training; and research organizations.</p>
<p><b>Response (if yes, please provide details)</b></p>	
<p><b>Question</b> Are you aware of any research into indirect or consequential benefits of implementing the Guidelines?</p>	<p><b>Audiences</b> Member States; organizations involved in maritime/seafarer education and training; and research organizations.</p>
<p><b>Response (if yes, please provide details)</b></p>	

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**APPENDIX: AN OVERVIEW OF THE EVALUATION PROCESS**

