



**PLANNING OF GESAMP ACTIVITIES:
REVIEW OF APPLICATIONS FOR 'ACTIVE SUBSTANCES' TO BE USED IN BALLAST
WATER MANAGEMENT SYSTEMS**

Report of the GESAMP Ballast Water Working Group (Working Group 34)

Background and introduction

1 The International Convention for the Control and Management of Ships' Ballast Water and Sediments, (hereafter referred to as the BWM Convention) was adopted at IMO on 13 February 2004, in response to the international community's increasing concern of the with regard to the transfer of invasive species in ships' ballast water. On 8 September 2017, the Ballast Water Management Convention entered into force. Currently, the ratification status is that the combined tonnage of contracting States to the treaty adds up to 91.11% with 85 contracting Parties (status as of 27 July 2020).

2 Within this framework, an approval procedure has been set up for those ballast water management systems that make use of an Active Substance or Preparation to comply with the Convention. The procedure consists of a two-step approach for granting Basic Approval and Final Approval. The approval is granted by the Marine Environment Protection Committee (MEPC) based on the advice provided by the Ballast Water Working Group of the GESAMP (WG 34). There is a third step, the type approval, but that is outside the remit of WG 34.

3 The more general outline, scope and aim of the BWM Convention have been addressed in the report to the GESAMP 35 (see document GESAMP 35/5/1) and will only be referred to here. The Terms of Reference of WG 34 have been added as annex 1 to this report. As the terms of reference of WG 34 have not changed, several parts of this report have been kept unchanged. For the readability of the report these sections are kept in the report with apologies for the experienced reader.

4 This report focuses on the main activities of WG 34, which consist of the evaluation of several ballast water management systems (hereafter BWMS) and the further development of the Methodology of the Group, which has been accepted as a 'living' document. This means that the Methodology will be a discussion item at (almost) every meeting of the Group and changes and improvements are made, as appropriate (see further below).

Ballast water management systems

5 'Active Substances' are defined by the Convention as "substances or organisms, including a virus or a fungus, that have a general or specific action on or against harmful aquatic organisms and pathogens" and the approval of BWMS using such substances is described in resolution MEPC.169(57) adopted in 2008. However, not only 'Active Substances' are evaluated by the WG 34. Also, all other substances considered relevant are taken into account in the evaluation report. The Procedure for approval of ballast water management systems that make use of Active Substances (G9) contained in resolution MEPC.169(57) under the BWM Convention distinguishes also 'Relevant Chemicals' and 'Other Chemicals'.

6 Therefore, WG 34's task is to evaluate the risks of the BWMS for the crew, the ship's safety, the risk for the public at large and the environment. It is, furthermore, the intention of WG 34 to perform these evaluations in a consequent, consistent and transparent manner, which helps Administrations to prepare a concise dossier, containing all the necessary data. The Methodology, as developed by WG 34 in the course of its work process, serves as guidance in the evaluation. GESAMP may recall that the Methodology of WG 34 was presented at the 50th anniversary of GESAMP during its 46th meeting in New York.

7 WG 34 held two meetings since GESAMP 46 to evaluate proposed BWMS; one time for a regular meeting from 4 to 9 November 2019, where six BWMS have been evaluated, and one time for a regular meeting from 1 to 13 June 2020 with three BWMS to be evaluated. Due to the COVID-19 pandemic the last meeting was held virtually and was performed over a 2-week period lasting 3 hours a day. Of these nine BWMS, six were submitted to MEPC 75, one received a recommendation for Final Approval, one was not recommended for Final Approval and four received a recommendation for a freshwater extension to their original Final Approval. One system was not recommended for Final Approval. The three systems evaluated at the virtual meeting, one BWMS received a recommendation for Final Approval and one system did not. The final system was again an extension of the earlier received Final Approval, now for fresh water application. This was explained in more detail in the report of WG 34 to GESAMP 46.

8 For none of these nine systems, MEPC has been able to decide on the recommendations of WG 34 because MEPC 75 was cancelled due to the COVID-19 pandemic and the planning for following meetings was not yet ready at the time of writing this report. An overview of the BWMS evaluated this meeting is presented in annex 2 to this report.

9 WG 34 was able to clear the whole stock of BWMS submitted for evaluation before the meeting of MEPC for which the evaluation was requested. The Group recognized that the number of BWMS presented to the Group had increased compared to recent reporting periods. The Group does expect that more BWMS will have to be evaluated for freshwater as there are still several BWMS that received only Final Approval for marine and brackish water.

Methodology for information gathering and the conduct of work of WG 34

10 The evaluation Methodology of WG 34 has been determined to be a living document based on increasing experience in the evaluation of BWMS. WG 34 added three more substances to the GISIS database of IMO based on the regularly occurring second neutralizer sodium sulfite. The current version of the database contains now 44 specific chemicals, including an AS and two neutralizers frequently used in BWMSs. For these 44 substances the applicants of BWMS do not have to submit the physico-chemical characteristics and the data on (eco-)toxicology anymore to IMO as the Group is of the opinion that all and sufficient, relevant information is already available. If, however, new data becomes available, it has to be submitted to IMO in any application dossier.

11 GESAMP may recall that during the last meeting it was discussed whether or not WG 34 should continue working on the further development of the Methodology. During its 40th meeting the Group discussed the toxicological information available for the substance 1,2,3-trichloropropane that is included in the GESAMP-BWWG database with relevant information on physico-chemical and (eco-)toxicological data for substances most commonly associated with ballast water. The Group revisited the toxicological basis for the DMEL and considered it appropriate to derive an alternative DMEL based on the original carcinogenicity study by the U.S. National Toxicology Program (1993) and applying the methodology published by the European Chemicals Agency. The newly derived DMEL value of 5.1E-2 µg/kg bw/d was used during GESAMP-BWWG 40 and will replace the current value of 2.0E-4 µg/kg bw/d in the GESAMP-BWWG *Database of chemicals most commonly associated with treated ballast water* (<https://gisis.imo.org>) with immediate effect from the date of its 40th meeting. It should be noted that this revision is not yet endorsed by MEPC.

Planning ahead

12 WG 34 did not made any plans yet for an upcoming meeting as the planning of IMO meetings is not yet finalized due to the COVID-19 pandemic. Of course, the number of meetings depends on the number of submissions. Meetings are foreseen to be held at IMO Headquarters in London.

Acknowledgement

13 WG 34 is thankful to all the members of GESAMP that took the time to critically review the work of WG 34. The quality of the work has been improved as a result of this peer review process and the comments made were brought to the attention of the consultant involved in the drafting of the reports for future use. WG 34 also would like to thank all the members of GESAMP that critically reviewed the draft GESAMP R&S report. The quality of the report was improved as a result of this peer review.

Action requested of GESAMP

14 GESAMP is invited to review this document and to comment, as it deems appropriate.

ANNEX 1

TERMS OF REFERENCE FOR THE TECHNICAL GROUP (GESAMP-BWWG/ WG 34)

1 Consideration of development of necessary methodologies and information requirements in accordance with the "Procedure for approval of ballast water management systems that make use of Active Substances (G9)" (adopted by resolution MEPC 169(57)).

2 For Basic Approval, the Group should review the comprehensive proposal submitted by the Member of the Organization along with any additional data submitted as well as other relevant information available to the Group and report to the Organization.

In particular, the Group should undertake:

- .1 scientific evaluation of the data set in the proposal for approval (see paragraphs 4.2, 6.1, 8.1.2.3, 8.1.2.4 of Procedure (G9));
- .2 scientific evaluation of the assessment report contained in the proposal for approval (see paragraph 4.3.1 of Procedure (G9));
- .3 scientific evaluation of the risks to the ship and personnel to include consideration of the storage, handling and application of the Active Substance (see paragraph 6.3 of Procedure (G9));
- .4 scientific evaluation of any further information submitted (see paragraph 8.1.2.6 of Procedure (G9));
- .5 scientific review of the risk characterization and analysis contained in the proposal for approval (see paragraph 5.3 of Procedure (G9));
- .6 scientific recommendations on whether the proposal has demonstrated a potential for unreasonable risk to the environment, human health, property or resources (see paragraph 8.1.2.8 of Procedure (G9)); and
- .7 preparation of a report addressing the above-mentioned aspects for consideration by MEPC (see paragraph 8.1.2.10 of Procedure (G9)).

3 For Final Approval, the Group should review the discharge testing (field) data and confirm that the residual toxicity of the discharge conforms to the evaluation undertaken for Basic Approval and that the previous evaluation of the risks to the ship and personnel including consideration of the storage, handling and application of the Active Substance remains valid. The evaluation will be reported to the MEPC (see paragraph 8.2 of Procedure (G9)).

4 The Group should keep confidential all data, the disclosure of which would undermine protection of the commercial interests of the applicant, including intellectual property.

ANNEX 2

LIST OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES IN ACCORDANCE WITH PROCEDURE (G9) SINCE GESAMP 45

Name of the System/Manufacturer	Brief description of the System	Date of Approval	Specifications
<p>1. CleanBallast Ocean Barrier System BWMS</p> <p>Veolia Water Technologies Deutschland GmbH, submitted by Norway.</p>	<p>Disinfection using a combination of filtration and in situ generation of the Active Substance sodium hypochlorite by electrolysis and neutralization by sodium thiosulphate. This system requires the storage of the Active Substance and the neutralizer sodium thiosulfate on board.</p>	<p>Final Approval recommended but decision pending for MEPC 75, date unknown yet.</p>	<p>The Flag State Administration was invited to ensure that the recommendations provided in annex 4 of the report of the GESAMP-BWWG 39 meeting were fully addressed during the further development of this ballast water management system before issuing the Type Approval certificate. The recommendations mainly relate to some slight breechings of the Risk Characterization Ratios (RCRs) of Disinfection By-Products (DBPs).</p>
<p>2. FlowSafe BWMS</p> <p>Flow Water Technologies Ltd, Cyprus, submitted by Cyprus.</p>	<p>Disinfection with Active Substance sodium hypochlorite by in situ electrolysis. Filtration is used as pre-treatment of the side stream to the electrochlorination unit and neutralization as post-treatment. This system requires the storage of the neutralizer sodium thiosulfate on board.</p>	<p>Final Approval not recommended but decision pending for MEPC 75, date unknown yet.</p>	<p>The Flag State Administration was invited to ensure that the recommendations provided in annex 5 of the report of the GESAMP-BWWG 39 meeting were fully addressed before submission for Final Approval. The recommendations mainly relate to effectivity of the control scheme for TRO measurements and to apply an overdose for the neutralization process. In addition, the WET tests performed could not be evaluated due to uncertainties about neutralization process of this BWMS.</p>
<p>3. EcoGuardian BWMS</p> <p>HANLA IMS Co.</p>	<p>Disinfection with Active Substance sodium hypochlorite by in situ electrolysis. Filtration is</p>	<p>Extension for freshwater Final Approval recommended</p>	<p>No recommendations to be taken into account before issuing a Type Approval</p>

Name of the System/Manufacturer	Brief description of the System	Date of Approval	Specifications
Ltd., Republic of Korea, submitted by the Republic of Korea for freshwater.	used as pre-treatment and neutralization as post-treatment. This system requires the storage of the neutralizer sodium thiosulfate on board.	but decision pending for MEPC 75, date unknown yet.	certificate were identified by WG 34.
4. HiBallast BWMS Hyundai Heavy Industries Co., Ltd. (HHI), Republic of Korea, submitted by the Republic of Korea for freshwater.	Disinfection with Active Substance sodium hypochlorite by in situ electrochlorination. Filtration is used as pre-treatment and neutralization is used as post-treatment. This system requires the storage of the neutralizer sodium thiosulfate on board.	Extension for freshwater Final Approval recommended but decision pending for MEPC 75, date unknown yet.	No recommendations to be taken into account before issuing a Type Approval certificate were identified by WG 34.
5. ElectroCleen BWMS Techcross Inc., Republic of Korea, submitted by the Republic of Korea for freshwater.	Disinfection with Active Substance sodium hypochlorite by in situ electrochlorination. Filtration is used as pre-treatment and neutralization is used as post-treatment. This system requires the storage of the neutralizer sodium thiosulfate on board.	Extension for freshwater Final Approval recommended but decision pending for MEPC 75, date unknown yet.	No recommendations to be taken into account before issuing a Type Approval certificate were identified by WG 34.
6. BalPure BWMS De Nora Water Technologies, Germany, submitted by the United Kingdom for freshwater.	Disinfection with Active Substance sodium hypochlorite by in situ electrolysis. Neutralization is used as post-treatment. This system requires the storage of the neutralizer sulfur-based chemicals on board.	Extension for freshwater Final Approval recommended but decision pending for MEPC 75, date unknown yet.	No recommendations to be taken into account before issuing a Type Approval certificate were identified by WG 34.
7. SeaCure BWMS Evoqua Water Technologies Ltd., submitted by Liberia.	Disinfection with Active Substance sodium hypochlorite by in situ electrolysis. Neutralization is used as post-treatment. This system requires the storage of the neutralizer sodium sulfite on board.	Final Approval recommended but decision pending for MEPC 75, date unknown yet.	No recommendations to be taken into account before issuing a Type Approval certificate were identified by WG 34.
8. FlowSafe BWMS Flow Water Technologies Ltd, submitted by Cyprus.	Disinfection with Active Substance sodium hypochlorite by in situ electrolysis. Filtration is used as pre-treatment of the side stream to the electrochlorination unit and neutralization	Final Approval not recommended but decision pending for MEPC 75, date unknown yet.	The Flag State Administration was invited to ensure that the recommendations provided in annex 5 of the report of the GESAMP-BWWG 40 meeting were fully

Name of the System/Manufacturer	Brief description of the System	Date of Approval	Specifications
	as post-treatment. This system requires the storage of the neutralizer sodium thiosulfate on board.		addressed before submission for Final Approval. The recommendations relate to correctly proving that this BWMS is able to maintain the MADC at all times.
9. NK-O3 BBII BWMS NK-O3, Republic of Korea, submitted by Liberia for freshwater.	Filtration and disinfection with Active Substance ozone. Neutralization is used as post-treatment. This system requires the storage of the neutralizer sodium thiosulfate on board.	Extension for freshwater Final Approval recommended but decision pending for MEPC 75, date unknown yet.	No recommendations to be taken into account before issuing a Type Approval certificate were identified by WG 34.