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AIR POLLUTION PREVENTION

Unified and representative emission factors for use in the environmental risk assessment of Exhaust Gas Cleaning System discharge water

Submitted by ICS and CLIA

SUMMARY

Executive summary:	Emission factors are a key input for determining predicted environment concentrations (PECs) used in environmental risk assessments. An agreed standard method to calculate representative emission factors is needed to ensure consistent application of the risk assessment process. This agreed standard would become the basis for an appendix to MEPC.1/Circ.899 on the *2022 Guidelines for risk and impact assessments of the discharge water from EGCS*. To that effect, this document outlines, for consideration by the Committee, draft terms of reference for the GESAMP Task Team on EGCS to use in its work on emission factors if re-established.
Strategic direction, if applicable:	1
Output:	1.23
Action to be taken:	Paragraph 17
Related documents:	MEPC 82/10; MEPC 79/5/1; MEPC 78/9/3, MEPC 78/17; MEPC 77/16; MEPC 76/INF.33, MEPC 76/INF.38; MEPC 74/INF.27; PPR 11/18, PPR 11/7/5; PPR 9/21, PPR 9/INF.10, PPR 9/INF.16, PPR 9/INF.21; PPR 7/INF.23, PPR 7/INF.18 and MEPC.1/Circ.899

Introduction

1 The Committee, when considering the report of PPR 11 (PPR 11/18) is invited to note that, in relation to the development of representative emission factors for use in environmental risk assessments of EGCS discharge water, the Sub-Committee invited interested Member States and international organizations to submit to MEPC 82 proposals for terms of reference for the re-establishment of the GESAMP Task Team on EGCS to conduct further work on this matter (MEPC 82/10, paragraph 3.10.2).

2 This document is submitted (in relation to that invitation to submit proposals for terms of reference for the re-establishment of the GESAMP Task Team on EGCS) with a view towards the development of a dataset and emission factors for inclusion as an appendix to MEPC.1/Circ.899 on *2022 Guidelines for risk and impact assessments of the discharge water from exhaust gas cleaning* (2022 Risk Assessment Guidelines).

Background

3 PPR 11 recalled that MEPC 78, having approved the 2022 Risk Assessment Guidelines, had agreed that the Guidelines would be kept under review to allow the consideration of experience gained (MEPC 78/17, paragraph 5.16).

4 PPR 11 also recalled that the Working Group on Prevention of Air Pollution from Ships (the Group) at PPR 9 had agreed not to include specific emission factors in the Guidelines at that time due to time constraints, and that interested delegations had been invited to submit proposals on emission factors to a future session of the Sub-Committee.

5 PPR 11 had, for its consideration, proposals on emission factors for use in the environmental risk assessment of the discharge water from EGCS, as set out in documents MEPC 78/9/3 (Germany), MEPC 79/5/1 (CESA) and PPR 11/7/5 (ICS and CLIA).

6 PPR 11 noted that several delegations, in expressing support for the methodology used and the values presented in document PPR 11/7/5, stressed that emission factors should be based upon the amount of each substance generated solely by the exhaust gas cleaning process. Several other delegations questioned the methodology used in the study's underlying document (PPR 11/7/5), especially the net concentration method used, and suggested that the methodology be discussed in-depth within the Working Group.

7 Several delegations in the Group at PPR 11, in highlighting that there were significant discrepancies between the values provided in documents MEPC 78/9/3 and PPR 11/7/5, suggested that the methodologies and data used be presented in detail and discussed in the Working Group. Several delegations suggested that the raw data be made available for experts to review the values presented. Several delegations suggested re-establishing the GESAMP Task Team on EGCS to review the methodologies for determination of representative EGCS discharge emission factors for use in risk and impact assessments.

8 One delegation at PPR 11 highlighted that the Organization should first agree on a methodology for the determination of emission factors, before discussing the possible inclusion of emission factors in the 2022 Risk Assessment Guidelines.

Previous consideration of emission factors

9 When considering section 5.1.2 of the draft guidelines (Data set for environmental risk assessment (ERA)), the Group at PPR 9 discussed the need for "emission factors" for the chemical substances included in the draft guidelines. The Group noted that these emission factors were not included in the draft guidelines, and several delegations expressed the view that it would be important to add those into the guidelines before finalization, and that a specific new annex could be developed to that purpose (PPR 9/WP.4, paragraph 25).

10 Several other delegations in the Group at PPR 9 expressed the view that the emission factors set out in documents PPR 9/INF.16 (Sweden), PPR 9/INF.21 (Canada) and the Report of the GESAMP Task Team on EGCS set out in document PPR 7/INF.23 (Secretariat) could be used. One delegation proposed to insert the emission factors for heavy metals, PAH and nutrients as listed in table 17 of document PPR 9/INF.16 (Sweden) (PPR 9/WP.4, paragraph 26).

11 Several other delegations in the Group at PPR 9 expressed the view that more data should be collected before inserting such emission factors in the guidelines and recalled that appendix 3 to the *2021 Guidelines for exhaust gas cleaning systems* (resolution MEPC.340(77)) on discharge water collection already invites Administrations to collect relevant data (PPR 9/WP.4, paragraph 27).

12 Following discussion, the Group at PPR 9 agreed to not include specific emission factors in the guidelines[1] at that stage due to time constraints, and that any interested delegation could submit specific proposals to a future session (PPR 9/WP.4, paragraph 28).

13 At PPR 11, the Working Group on Prevention of Air Pollution from Ships (the Group) considered how to advance the development of unified and representative emission factors for use in the environmental risk assessment of the discharge water from EGCS, taking into account documents MEPC 78/9/3 (Germany) MEPC 79/5/1 (CESA) and PPR 11/7/5 (ICS and CLIA) with a view to advising the Sub-Committee on how best to advance the work under this output (PPR 11/18, paragraph 7.37).

14 Several delegations in the PPR 11 Group, referring to document MEPC 79/5/1, stressed the importance of first developing an agreed methodology for development of emission factors. Several delegations, in highlighting that some data sets were incomplete, stressed the need to assess the robustness of data and methodology used. Several delegations suggested that the GESAMP Task Team on EGCS could be invited to collate and update available data and evaluate the methodologies used to collect data and establish emission factors (PPR 11/WP.4, paragraph 26).

15 The Group at PPR 11 saw merit in re-establishing the GESAMP Task Team on EGCS and inviting them to conduct further work on the matter and recommended that the Sub-Committee invite interested Member States and international organizations to submit proposed terms of reference for the re-establishment of the GESAMP Task Team on EGCS (PPR 11/WP.4, paragraph 27).

Proposal

16 Draft Terms of Reference for the GESAMP Task Team on EGCS are set out in the annex to this document for the Committee's consideration, with a view to re-establishing that group and it reporting to PPR 12 in 2025[2].

Action requested of the Committee

17 The Committee is invited to consider the information provided in this document, specifically the proposal set out in paragraph 16 alongside the annex containing the draft Terms of Reference for a GESAMP Task Team on EGCS and take action as appropriate

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[1] The PPR 9/21 report refers only to "guidelines" which as the Group were discussing the 2022 Guidelines for risk and impact assessments of the discharge water from exhaust gas cleaning would suggest they were discussing inclusion of the emission factors in those guidelines rather than the 2021 EGCS guidelines but the report is silent on which set of guidelines.

[2] Provisionally scheduled from 27 to 31 January 2025.

ANNEX

DRAFT TERMS OF REFERENCE FOR GESAMP TASK TEAM ON EGCS

Summary

1 Emission factors enable ports and port States to complete a key step in developing EGCS-related environmental risk assessments, as recommended by MEPC.1/Circ.899. However, to enable the development of a universal set of emission factors a standard method should be identified or developed, which should also include certain best practices and calculation methods.

Instructions for GESAMP

2 Compare methods used in MEPC 78/93, MEPC 79/5/1 and PPR 11/7/5 to set out the best approach to achieving a representative set of emission factors with universal geographic application.

3 Evaluate best practices for developing the data set and methods, including:

.1 size and geographic diversity of sample data set needed to achieve representative emission factors;

.2 direct ship sampling measurements using an established protocol with appropriate QA/QC vs. literature reviews or other sources;

.3 standard onboard sampling locations, e.g. seawater inlet, post-tower, overboard discharge;

.4 minimum onboard specific data needed to make each sample eligible for use, e.g. seawater flow rate, engine load, engine MCR, fuel sulphur level, fuel type, date/time/location; and

.5 use laboratories with low detection limits to achieve as many detections as possible and avoid artificially inflating the values of non-detects.

4 Evaluate considerations for calculating Emission Factors, including:

.1 removing background concentrations, calculating only those from the exhaust gas cleaning process, making the derived emission factors universally useful;

.2 ensuring data quality by using statistical analysis (i.e. a 95% confidence interval) to avoid the skewing effect from data outliers; and

.3 using 50% of laboratory detection limits as assigned values for non-detects.

5. Determine local total environmental loading for a site-specific risk assessment by adding the local ambient seawater background concentrations to the emissions from the exhaust gas cleaning process.

GESAMP deliverables/output

6 Based on consideration of the elements above, propose a standard methodology for development of the data set and calculation of the emission factors for a unified, representative and universal set of emission factors, including best practices.