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## POLLUTION PREVENTION AND RESPONSE

### The urgent need to address scrubber discharges

Submitted by FOEI, WWF, Pacific Environment and CSC

#### SUMMARY

*Executive summary:* This document provides comments on documents MEPC 76/9/1 (ICES), MEPC 76/9/2 (Austria et al.) and MEPC 76/9/6 (Japan) and urges the Committee to approve the scope of work on scrubber discharges and identify zero-discharge areas, and require the work to be undertaken as a matter of urgency

*Strategic direction, if applicable:* 1

*Output:* 1.23

*Action to be taken:* Paragraph 16

*Related documents:* PPR 7/22, PPR 7/22/Add.1; MEPC 75/10; MEPC 76/9/1, MEPC 76/9/2 and MEPC 76/9/6

#### Introduction

1 This document is submitted in accordance with the provisions of paragraph 6.12.5 of the document on *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.2). It provides comments on documents MEPC 76/9/1 (ICES), MEPC 76/9/2 (Austria et al.) and MEPC 76/9/6 (Japan).

2 Scrubbers or exhaust gas cleaning systems (EGCS) have been developed for use on ships to enable continued use of heavy fuel oils, the most polluting type of marine fuel. The resulting wash water produced is then discharged overboard, containing not only SO<sub>x</sub> but also a range of other polluting substances including polyaromatic hydrocarbons (PAHs) and heavy metals. Recent scientific evidence shows that this practice can have severe consequences for the marine environment. For example, an analysis by Thor et al. (2021) (<https://pubs.acs.org/doi/10.1021/acs.est.0c07805>) provides a list of substances found in scrubber wash water, including 10 different metals and a multitude of PAHs. It concludes that effluents from maritime scrubber systems, whether they originate from open-loop or closed-loop systems, are highly toxic to zooplanktonic organisms" – these are important central components of marine food chains.

### Using scrubbers causes both marine and air pollution

3 Document MEPC 76/9/2 "reiterates the urgent need for uniform and unambiguous regulatory measures to better control pollution" and refers to scientific evidence on the potential toxicity of scrubber wash water discharges based on sampling and analyses of EGCS discharges by Member States. A recent scientific publication from Hermansson et al. in June 2021 (Anna Lunde Hermansson et al. "Comparing emissions of polyaromatic hydrocarbons and metals from marine fuels and scrubbers" (June 2021)) provides new information highlighting that "Shifting the emissions from air to water means that many of the compounds will not be susceptible to atmospheric chemistry reactions before entering the surface waters", pointing out that new substances such as chromium can be introduced: "installations of scrubbers might also introduce entirely new contamination sources such as Cr, shown by the enrichment of Cr in scrubber water," and concluding that "Shifting from residual fuels towards distillate fuels would reduce the environmental load. Installing open loop scrubbers, would not (...). Removing HFO from the market would also decrease the risk of ships being non-compliant."

4 The International Council on Clean Transportation (ICCT) also provides arguments against the use of scrubbers in a new report published in November 2020, which found that "using HFO with scrubbers is not equivalently effective at reducing air pollution compared to using lower sulfur fuels, such as MGO. Additionally, scrubbers of all kinds (open, closed, and hybrid) directly contribute to ocean acidification and water pollution, whereas lower sulfur fuels do not." (<https://theicct.org/sites/default/files/publications/Air-water-pollution-scrubbers-dec2020.pdf>).

5 The co-sponsors strongly support the recommendation included in document MEPC 76/9/1 (paragraph 11.2) proposing that until scrubber water discharge can be avoided:

- .1 discharges in specific areas (e.g. Particularly Sensitive Sea Areas and Special Areas, as defined by IMO) should be banned;
- .2 stringent limits for contaminants in discharge water should be set and enforced; and
- .3 further development of standards and protocols for measuring, monitoring and reporting on scrubber discharge water for contaminants and other parameters should be ensured.

6 In addition to the areas identified in document MEPC 76/9/1, paragraph 11.2, the co-sponsors believe that the use of scrubbers and/or the discharge of scrubber effluents should be banned in Arctic waters.

7 In document MEPC 76/9/6, Japan proposes to extend the target completion date for output 1.23 on "Evaluation and harmonization of rules and guidance on the discharge of liquid effluents from EGCS into waters, including conditions and areas". However, given the recent proof of the impact of contaminants from scrubbers, recent delays in the work commencing, and the urgency for strong measures with respect to the discharge of ECGS effluents, the co-sponsors do not agree with any further delay in completing the necessary work to address this output.

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## **Scrubber discharge guidance must be consistent with UNCLOS and existing regional regulations**

8 Furthermore, in document MEPC 76/9/6, it is proposed that Member States should submit their risk assessment results to the Committee to seek advice prior to introducing local restrictions. Any such requirement would risk infringement of the right of the coastal state to exercise sovereignty within its internal waters and territorial sea by adopting laws and regulations for the prevention, reduction and control of marine pollution, per *UNCLOS* article 211. Indeed, many Member States will already have local or regional regulations in place adopted over many years with the aim of limiting and reducing inputs of hazardous substances including those contained in scrubber effluents. Additionally, this is not in accordance with *UNCLOS* article 234, under which the coastal state may unilaterally raise shipping standards beyond the generally accepted international rules and standards adopted through the IMO in ice-covered areas without IMO consultations.

9 It is important to recognize that both globally and regionally, a wealth of regulation already exists which aims to improve water quality and to limit inputs of contaminants in the marine environment. There is potential that discharging wash water from scrubbers should be considered to be an infringement of the *UNCLOS* duty to not transfer damage or hazards or transfer one type of pollution to another state (article 195). In taking measures to prevent, reduce and control pollution of the marine environment, States shall act so as not to transfer, directly or indirectly, damage or hazards from one area to another or transform one type of pollution into another.

10 The co-sponsors of this document believe that discharging scrubber effluent to the marine environment is already prohibited under a number of regional regulations. For example, the EU Marine Strategy Framework Directive (MSFD) requires States to meet "Good Environmental Status" with respect to a range of descriptors including contaminants. Contaminants, defined as substances which are toxic, persistent and liable to accumulate or which give rise to an equivalent level of concern, must be "at a level not giving rise to pollution effects". The Directive's main goal is to achieve Good Environmental Status, and requires that human activities, including shipping, introducing substances and energy into the marine environment do not cause pollution effects. Since preventing and reducing inputs to the marine environment with a view to phasing out pollution is a primary objective of the Directive, discharging effluents from scrubbers in any European waters runs counter to the requirements of the MSFD.

## **Scrubber discharge guidance must be consistent with climate law goals**

11 In document MEPC 76/INF.5, ICES reports: "*It has been estimated that for each tonne of sulphur dioxide discharged by scrubber water, the ocean uptake of atmospheric carbon dioxide is reduced by half a tonne, thereby reducing the ability of the ocean to contribute to offsetting global climate change.*" In the *United Nations Framework Convention on Climate Change, 1992*, states have fundamental duties to protect the climate system and to take "precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects", including carbon sinks. The *Paris Agreement, 2015* also urges states to take action to conserve and enhance sinks and reservoirs of greenhouse gases. In providing a framework for the discharge of scrubber wash water into the marine environment, it is vital that IMO's guidance is consistent with global climate law goals.

### **Equivalency and compliance...are scrubbers fit for purpose?**

12 During MEPC 77, the Committee will be asked to approve the draft MEPC resolution on the *2020 Guidelines for exhaust gas cleaning systems*, and the draft revised MEPC circular on *Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the exhaust gas cleaning system fails to meet the provisions of the EGCS Guidelines*. The intent for scrubbers to be an equivalence provision equal to lower-sulphur fuels has been put into question by the ICCT Report for Environment and Climate Change Canada (<https://theicct.org/sites/default/files/publications/Air-water-pollution-scrubbers-dec2020.pdf>). After a literature review of relevant scrubber studies, it was concluded that when considering total air pollution consequences resulting from the use of scrubbers, EGCS are not equivalent to lower-sulphur fuels such as marine gas oil (MGO). The use of HFO with an EGCS resulted in higher emissions of multiple pollutants including CO<sub>2</sub>, PM, and BC, as compared to using MGO. Average CO<sub>2</sub> emissions were 4% higher using HFO with a scrubber compared with MGO. On a life-cycle basis, well-to-wake CO<sub>2</sub> emissions are expected to be 1.1% higher than using MGO. PM emissions from using HFO with a scrubber were approximately 70% higher than MGO, on average. BC emissions using HFO with a scrubber were expected to be 81% higher than using 0.07% sulphur MGO in a medium-speed diesel (MSD) engine. A 2018 study commissioned by the California Air Resources Board found that while scrubbers reduced SO<sub>2</sub> by 97%, it only reduced organic carbon (OC) PM by 6% and it increased other forms of PM (PM<sub>2.5</sub> 4% increase, elemental carbon 12% increase, and sulphate PM 5% increase).

13 Information published by a U.S. federal judge in April 2019 in the Carnival Corporation & PLC criminal probation for its 2016 felony convictions make clear that EGCS do not meet the standard set forth in MARPOL Annex VI, Regulation 4 for emissions reductions equivalencies. The Court Appointed Monitor Team identified over thirty reported incidents related to EGCSs during Year One of Carnival's Environmental Compliance Plan. Many of these incidents relate to unexpected EGCS shutdowns resulting in violations of air emission requirements. For example, the Carnival Ecstasy experienced multiple EGCS shutdowns due to equipment malfunctions. As a result, the ship impermissibly burned heavy fuel oil in Emission Control Areas without an EGCS online. Had these ships simply been using low sulphur fuel, these violations would have been avoided entirely.

### **Proposals**

14 Since the beginning of 2020 when the accepted sulphur content of fuel oil was reduced to 0.5%, the use of scrubbers by international shipping has increased. Document MEPC 75/10 (Secretariat) identifies the approval of the revised title for the output on the evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment as an urgent matter emanating from PPR 7 (which took place in February 2020). However, nearly two years have elapsed with no progress on this output.

15 Given the potential for severe environmental impacts of scrubbers on both air quality and the aquatic environment, the co-sponsors invite the Committee to note the information and concerns expressed in paragraphs 3 to 13 above, and urge the Committee to approve the scope of work on scrubber discharges and identify zero-discharge areas, and to require PPR 9 to undertake the work as a matter of urgency so that the Guidance can be finalized by MEPC 78.

### **Action requested of the Committee**

16 The Committee is invited to consider this document, in particular the proposals in paragraph 15, and take action as appropriate.