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PREVENTION AND RESPONSE  
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Agenda item 10

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**EVALUATION AND HARMONIZATION OF RULES AND GUIDANCE ON THE  
DISCHARGE OF DISCHARGE WATER FROM EXHAUST GAS CLEANING SYSTEMS  
(EGCS) INTO THE AQUATIC ENVIRONMENT, INCLUDING CONDITIONS AND AREAS**

**Urgent matters related to the harmful effects of EGCS wastewater discharges and  
conflicts with international treaty commitments and duties**

**Submitted by FOEI, WWF, Pacific Environment and CSC**

**SUMMARY**

*Executive summary:* This document identifies the risks associated with exhaust gas cleaning system (EGCS) wastewater discharges and accordingly recommends criteria that should be considered when risk and impact assessment guidelines are developed. It also identifies local, regional, and international regulatory instruments and measures which should be considered and included when a database containing restrictions and conditions on EGCS discharges is created.

*Strategic direction, 1  
if applicable:*

*Output:* 1.20

*Action to be taken:* Paragraph 20

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

**Introduction**

1 Exhaust gas cleaning systems (EGCS) also known as scrubbers have been developed for use on board ships to enable the continued burning of cheap heavy fuel oils, the most polluting type of marine fuel. The resulting acidic wastewater is then discharged overboard, containing not only SO<sub>x</sub> but also a host of other polluting substances including high concentrations of heavy metals and polycyclic aromatic hydrocarbons (PAHs), including alkylated PAHs. Part 1 of the scope of work for output 1.20 is to: "Develop a framework (guidelines) setting out factors that should be taken into consideration, to enhance harmonization when assessing the risks and possible harmful effects of EGCS discharge water". The following information underscores that harmful effects from EGCS discharges are

not a mere possibility but a reality and supports the co-sponsors' recommendations on factors that should be considered when developing risk and impact assessment guidelines for EGCS discharges.

### **Harmful effect of toxic EGCS wastewater on aquatic ecosystems**

2 There is a substantial body of scientific literature on the risks associated with exposure to many of the substances found in EGCS wastewater. There is also a growing body of evidence identifying the significant potential for EGCS wastewater to degrade the marine environment and undermine the resiliency of ecosystems. For example, Thor et al., (2021) concludes that effluents from EGCS discharges, whether they originate from open-loop or closed-loop systems, are highly toxic to the zooplanktonic organisms which underpin the marine food web.<sup>1</sup> Similarly, Teuchies et al., (2020) concludes that wastewater from EGCS is acutely toxic for aquatic organisms and demonstrates the potential for EGCS discharges to result in long-term increases in the concentrations of PAHs and metals in estuaries and harbours.<sup>2</sup> EGCS may also introduce entirely new sources of contamination to the marine environment such as chromium (Cr), as evidenced by the enrichment of Cr in EGCS wastewater.<sup>3</sup> Additionally, the acidity of EGCS wastewater affects the mobility and speciation of all metals, potentially increasing their bioavailability and toxicity.<sup>4</sup>

3 Due to its acidic character, EGCS wastewater has the potential to induce acidification similar to that induced by carbon dioxide over several years to decades. The potential for acidification is greatest in areas with low hydrodynamic exchange and those with naturally low alkalinity, such as the Arctic and coastal regions. This has severe consequences for a wide range of marine biota, including species already affected by ocean acidification such as corals and shellfish. Further, due to the intrinsic relationship between SO<sub>x</sub> and carbon dioxide, acidification by sulphur oxides hampers uptake of carbon dioxide in the ocean. This reduces the ability of the ocean to offset the rate of global climate change.<sup>5</sup>

4 These concerns are exacerbated by the amount of EGCS wastewater produced by ships globally. The International Council for Clean Transportation's (ICCT) recent report "Global scrubber washwater discharges under IMO's 2020 fuel sulfur limit", concludes that, absent additional regulations, ships with EGCS will emit at least 10 gigatonnes of EGCS wastewater globally each year.<sup>6</sup> These findings also indicate that approximately 80% of EGCS discharges occur within 200 nautical miles of shore, including in Particularly Sensitive Sea Areas (PSSAs) as well as waters that are home to coral reefs and endangered marine wildlife. This ICCT report can also be found in document PPR 9/INF.22 (FOEI et al.).

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<sup>1</sup> Thor, P., Granberg, M. E., Winnes, H., & Magnusson, K. (2021). Severe Toxic Effects on Pelagic Copepods from Maritime Exhaust Gas Scrubber Effluents. *Environmental Science & Technology*, 55(9), 5826–5835. <https://doi.org/10.1021/acs.est.0c07805>

<sup>2</sup> Teuchies, J., Cox, T. J. S., van Itterbeeck, K., Meysman, F. J. R., & Blust, R. (2020b). The impact of scrubber discharge on the water quality in estuaries and ports. *Environmental Sciences Europe*, 32(1). <https://doi.org/10.1186/s12302-020-00380-z>

<sup>3</sup> Hermansson, A., Hassellöv, I. M., Moldanová, J., & Ytreberg, E. (2021). Comparing emissions of polyaromatic hydrocarbons and metals from marine fuels and scrubbers. *Transportation Research Part D: Transport and Environment*, 97, 102912. <https://doi.org/10.1016/j.trd.2021.102912>

<sup>4</sup> *Ibid.*

<sup>5</sup> Stips, A., Bolding, K., Macias, D., Bruggeman, J., Coughlan, C., & European Commission. Joint Research Centre. (2016). *Scoping Report on the Potential Impact of On-board Desulphurisation on the Water Quality in SO<sub>x</sub> Emission Control Areas*.

<sup>6</sup> Osipova, L., Georgeff, E., & Comer, B. (2021, April). *Global scrubber washwater discharges under IMO's 2020 fuel sulfur limit*. International Council for Clean Transportation. <https://theicct.org/wp-content/uploads/2021/06/scrubber-discharges-Apr2021.pdf>

5 Given the potential for EGCS wastewater to negatively impact water quality, marine biota, and the climate system, it is apparent that discharging it into the aquatic environment is unsustainable. Therefore, the co-sponsors advise that there is no acceptable location for EGCS discharges to occur. While a full prohibition on EGCS discharges is needed, risk and impact assessment guidelines can be developed as an interim measure to mitigate acute impacts in vulnerable waters. Such guidelines should take a wide view of the risks associated with EGCS, and at minimum should consider the presence of critical habitats, subsistence and Indigenous use, conflicts with existing conservation measures (e.g. marine protected areas, emission control areas, special areas, and particularly sensitive sea areas), and the susceptibility of the receiving environment (e.g. potential for acidification and accumulation of pollutants). To ensure the effectiveness of these guidelines in the future, risks and potential impacts should be considered under high EGCS-use scenarios.

6 The co-sponsors strongly support the recommendation included in document MEPC 76/9/1 (paragraph 11.2) (ICES) proposing that until EGCS wastewater 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 EGCS discharge water for contaminants and other parameters should be ensured.

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

### **EGCS discharge guidance must reconcile with pre-existing international legal instruments**

8 The scope of work for output 1.20 ("Harmonization of Rules and Guidance on the Discharge of Discharge Water from EGCS into the Aquatic Environment, Including Conditions and Areas") includes a mandate to identify and develop, as appropriate, regulatory measures and instruments. A review of existing instruments reveals an apparent conflict between the controversial practice of discharging EGCS wastewater and environmental obligations under the 1982 UN Convention on the Law of the Sea (UNCLOS).<sup>7</sup>

9 Under Article 192 of UNCLOS, States have a general obligation to protect and preserve the marine environment. This entails a positive obligation to take measures and a negative obligation not to degrade the marine environment. These obligations apply with respect to the marine environment in all maritime areas.

10 In Article 194, States have a duty to take measures to prevent, reduce, and control pollution of the marine environment from any source. The measures must be designed in a manner to "minimize to the fullest possible extent ... the release of toxic, harmful, or noxious substances, especially those which are persistent". This provision states a general duty, and thus includes the release of substances from ships. Measures to be taken by States include

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<sup>7</sup> Chircop, A. (2021, September). *A legal perspective on EGCS in Canadian Arctic waters*.

"pollution from vessels, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels". This provision is even more specific in its application to ships and is arguably applicable to the intentional discharge of EGCS wastewater. Moreover, the measures taken by States "shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life".

11 In Article 195, States have a duty to take measures in a manner that does not "transfer, directly or indirectly, damage or hazards from one area to another or transform one type of pollution into another". The interpretation of the word "transform" refers to "the quality or nature of the pollution". This appears to be precisely what the IMO EGCS rule has led to: the atmospheric emission of SO<sub>x</sub> has been qualitatively converted to a discharge of harmful sulphur compounds, among other substances including those which are persistent, directly into the marine environment.

12 In Article 196, States have a duty to take measures to prevent, reduce and control marine pollution from technologies under their jurisdiction or control that may cause significant and harmful change.

13 There are also apparent inconsistencies between EGCS discharges and other international legal instruments, including the 1992 United Nations Framework Convention on Climate Change (UNFCCC), the 2015 Paris Agreement, and the 1992 Convention on Biological Diversity (CBD). The contribution of EGCS wastewater, which is acidic and therefore reduces buffering capacity, to reducing the CO<sub>2</sub> uptake of the ocean is inconsistent with climate law goals by compromising the oceans' capacity to function as sinks and thereby their ability to offset climate change. In the UNFCCC, 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. States committed to "Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gasses not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems". Similarly, the Paris Agreement urges States to take action to conserve and enhance sinks and reservoirs of greenhouse gasses. The discharge of EGCS waste also appears inconsistent with the goals and commitments of the CBD providing for the conservation of biological diversity and sustainable use of its components.

14 Similarly, States also have obligations under international human rights law that interface with their environmental responsibilities, in particular with respect to rights now enshrined in the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). While the legal status of UNDRIP as a UN General Assembly resolution is not the same as an international convention or treaty, the resolution itself may constitute evidence of existing general international law. In resolution 5/2012, the International Law Association concluded that the rights to Indigenous ancestral lands, territories and resources constitute customary international law and therefore bind States. A further consequence of the legal status of the rights to lands, territories and resources as customary law is that States have substantive and procedural environmental obligations towards Indigenous peoples. Accordingly, it is arguable that under UNCLOS the obligation of States to protect and preserve the marine environment entails responsibilities to protect waters in a manner to enable Indigenous peoples to exercise their rights under international and domestic law. In this case, these obligations extend to not permitting the disposal of hazardous materials, including EGCS waste, in waters that are ancestral to Indigenous peoples.

15 Efforts to harmonize rules and guidance on the discharge of EGCS discharge water should align with these instruments. Failure to do so risks entrenching States in a legal and policy conflict over duties. Additionally, consideration should be given to the compatibility of EGCS use and discharges with current work at the Organization to reduce GHG emissions and increase the energy efficiency of ships. In view of these conflicts, the co-sponsors recommend that State parties consider the implications of failing to meet their responsibilities under United Nations legal instruments, as well as their duties to Indigenous peoples and climate goals.

16 It would also appear that discharging EGCS effluents 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 no later than 2027" 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 waste from EGCS in any European waters runs counter to the mandatory requirements of the MSFD.

### **National and local legislation restricting discharge**

17 Part 3 of the scope of work includes a mandate to "Develop a database containing local/regional restrictions/conditions on the discharge water from EGCS". An increasing number of authorities worldwide have already taken measures against pollution from EGCS wastewater to protect coastal ecosystems. Some of these measures prohibit wastewater discharge in all jurisdictional waters including internal waters, territorial sea, contiguous zone and exclusive economic zones. In some port areas wastewater discharges from EGCS containing "any chemicals or metals from ships" are strictly prohibited. According to Britannia P&I in 2021, 30 IMO Member States have installed restrictions on the discharge of EGCS wastewater.<sup>8</sup> As of June 2020, 16 countries have banned outright EGCS discharges in either their ports or territorial seas, preventing 421 Mt of discharged EGCS water, or about 4% of potential EGCS discharges, from entering the world's oceans. Malaysia and Brazil have gone so far as to completely ban any EGCS discharges in the entirety of their national waters.<sup>9</sup> The actions of these countries clearly indicates that a substantial number of national and port authorities recognize the impact of pollution caused by EGCS wastewater.

### **Risk of market distortion**

18 Restrictions made on a port by port or country basis may lead to higher costs for ships and distort the market. Therefore, countries considering protection of water quality may experience a less favourable economic position. Such an effect is not unique: unfortunately, history has shown that in many cases there are economic advantages when polluting. However, this usually leads to negative environmental and societal effects. To overcome such an unwanted effect and in alignment with part 1 of the scope of work (to enhance

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<sup>8</sup> Damgaard, J. (2021, April 21). *List of jurisdictions restricting or banning scrubber wash water discharges*. Britannia P&I. <https://britanniapandi.com/2020/01/list-of-jurisdictions-restricting-or-banning-scrubber-wash-water-discharges/>

<sup>9</sup> Osipova, L., Georgeff, E., & Comer, B. (2021, April). *Global scrubber washwater discharges under IMO's 2020 fuel sulfur limit*. International Council for Clean Transportation. <https://theicct.org/wp-content/uploads/2021/06/scrubber-discharges-Apr2021.pdf>

harmonization) there is a need for a rapid and uniform regulation prohibiting EGCS wastewater discharge. Such regulation should start with tackling the problem, namely: the massive pollution of the aquatic environment worldwide through EGCS wastewater discharge. As such state parties must consider the hazard of disincentivizing states from restricting EGCS discharges when risk and impact assessment guidelines are developed.

### **Recommendations**

19 The co-sponsors make the following recommendations:

- .1 There should be a complete prohibition of EGCS. Apart from eliminating toxic EGCS wastewater, this would also have co-benefits by eliminating the spill risks posed by HFO carriage for use as fuel, and reducing overall ship particulate matter emissions, including black carbon. It would also resolve outstanding conflicts between MARPOL and other United Nations legal instruments such as UNCLOS.
- .2 Until a global prohibition on EGCS is introduced, local and regional measures should be implemented to restrict EGCS discharges. To this end, the co-sponsors recommend the following:
  - .1 note the scientific evidence that EGCS wastewater has negative and toxic effects on the aquatic environment;
  - .2 develop risk and impact assessment guidelines with a view to prohibit discharges in the Arctic, critical habitats, indigenous use areas, and protected areas;
  - .3 consider the recommendations in paragraphs 5, 6, and 15 when developing risk and impact assessment guidelines; and
  - .4 consider the conflict between EGCS discharges and the legal instruments discussed in paragraphs 8 through 17 and include these instruments in the resulting database.

### **Action requested of the Sub-Committee**

20 The Sub-Committee is invited to consider the information and recommendations contained in this document, in particular paragraph 19, and take action as appropriate.

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