INTERNATIONAL MARITIME ORGANIZATION

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Agenda item 9

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CONSIDERATION OF THE IMPACT ON THE ARCTIC OF EMISSIONS OF BLACK CARBON FROM INTERNATIONAL SHIPPING

Mitigation of Black Carbon emissions by ships in Arctic waters

Submitted by FOEI, WWF, Pacific Environment and CSC[1]

SUMMARY

Executive summary:	This document summarizes the views of the co-sponsors on measuring Black Carbon and acknowledges a range of possible measures for controlling emissions of Black Carbon. The co-sponsors believe that there is an urgent need for action on control measures to reduce Black Carbon emissions in order to address the impact on the Arctic of emissions of Black Carbon from international shipping.
Strategic direction:	7.3
High-level action:	7.3.2
Output:	7.3.2.2
Action to be taken:	Paragraph 12
Related documents:	BLG 17/18, BLG 17/INF.7; PPR 3/INF.6; PPR 4/9 and PPR 4/INF.8

Introduction

1 This document comments on document PPR 4/9 and is submitted in accordance with paragraph 6.12.5 of the *Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.4/Rev.4).

2 IMO's Strategic Plan 2016 to 2021 recognizes the need to contribute to international efforts to reduce atmospheric pollution and address climate change (Strategic Direction 7.3) and the need to continue to develop appropriate measures to address climate change (High-level Action 7.3.2). In addition, the UNFCCC Paris Agreement includes commitments to

[1] The preparation of this document was assisted by the Environmental Investigation Agency (EIA), International Council on Clean Transportation (ICCT), and Ocean Conservancy.

pursue efforts to limit global temperature increases to 1.5 degrees Celsius above pre-industrial levels, as well as to increase the ability to adapt to the adverse impacts of climate change and foster climate resilience[2].

3 The co-sponsors thank EUROMOT for document PPR 4/9.

4 MEPC 62 agreed to a work plan to consider the impact on the Arctic of Black Carbon emissions from international shipping and instructed the BLG (now PPR) Sub-Committee to carry out this work by: developing a definition of Black Carbon; identifying the most appropriate measurement method(s) for international shipping; and investigating appropriate control measures. MEPC 68 approved the Bond et al. definition of Black Carbon proposed by PPR 2 and noted the need for the development of protocols and further study to collect data in order to identify the most appropriate measurement method(s) of Black Carbon emissions from international shipping (MEPC 68/21, paragraphs 3.26 to 3.28).

5 Steady progress has been made on this work plan. At BLG 17, appropriate control measures to reduce the impact of Black Carbon emissions from international shipping were submitted in the annex to document BLG 17/INF.7, as reported to MEPC 65 in document BLG 17/18. At PPR 2, the scientific consensus-neutral Bond et al. definition of Black Carbon was adopted. PPR 3 approved a measurement reporting protocol to be used in voluntary marine Black Carbon emissions testing campaigns.

6 Since PPR 3, the measurement reporting protocol has been applied in several voluntary marine Black Carbon emissions testing campaigns, including one carried out by a University of California, Riverside-led research consortium, according to the research plan described in document PPR 3/INF.6. Additional researchers have carried out similar testing campaigns in the laboratory and on board ships. Recently the results of these testing campaigns were presented at the two-day technical workshop hosted by the International Council on Clean Transportation (ICCT) in collaboration with Environment and Climate Change Canada held from 7 to 8 September 2016 in Vancouver, British Columbia, Canada (see PPR 4/INF.8). Other Member States have also submitted related research to this meeting.

Measuring marine Black Carbon

7 The research presented at the third ICCT workshop demonstrates the substantial progress made by the research community in measuring Black Carbon emissions from marine engines. Filter Smoke Number (FSN), Laser Induced Incandescence (LII), Photo Acoustic Spectroscopy (PAS), and certain Thermal-Optical Analysis (TOA) methods showed good correlation in some recent in-laboratory and on-board marine emissions testing campaigns. On the contrary, approaches that require high dilution before measuring Black Carbon emissions from marine engines, including those that use Multi Angle Absorption Photometry (MAAP) and Aethalometer instruments, do not appear to be fit for purpose for measuring Black Carbon for international shipping.

[2] Decision 1/CP.21 Adoption of the Paris Agreement, annex. The Paris Agreement, Article 2.

8 A standardized marine Black Carbon measurement protocol is needed:

.1 an ad hoc technical committee could develop and review such a protocol. Such a committee could be convened outside of IMO, similar to the three technical workshops hosted by the ICCT, to allow MEPC to focus on developing a policy framework for controlling Black Carbon emissions;

.2 such a technical committee could consider which of the method(s) identified in paragraph 7 of this document should be used in a standardized measurement protocol;

.3 such a technical committee could also consider other components of a standardized measurement approach, including identifying an appropriate reference fuel; and

.4 Member States could then report to MEPC on the development of a recommended standardized marine Black Carbon measurement protocol for consideration at a future session of the Committee, as appropriate.

Marine fuels and Black Carbon

9 The co-sponsors welcome the conclusions of the third ICCT workshop, as described in document PPR 4/INF.8, which recognizes that there are alternative fuels that emit much less Black Carbon than traditional bunker fuels and that there are also alternative propulsion technologies in development that could reduce or eliminate Black Carbon emissions. The co-sponsors further welcome the recognition that shifting from conventional heavy fuel oil (HFO) to distillate fuels such as MGO can reduce Black Carbon emissions. A shift to distillate fuels also allows the possibility of using diesel particulate filters (DPFs), which can dramatically reduce Black Carbon emissions.[3] A further benefit of switching to cleaner fuels will be reduced impact in the event of a spill.

Black Carbon control technologies and operational strategies

10 The co-sponsors note that in addition to the Black Carbon control measures outlined in the annex to document BLG 17/INF.7, there are a number of additional possibilities for controlling Black Carbon emissions including ship energy efficiency policies, restrictions on the pollution content of fuel oils, regional policies that could be applied in ecologically sensitive areas such as phasing out the use of HFO in the Arctic or limits on Black Carbon emissions, and Black Carbon standards for marine engines.

Way ahead

11 The co-sponsors believe that there is an urgent need for the issue of the impact on the Arctic of Black Carbon emissions from international shipping to be returned to MEPC in order for decisions to be agreed and action to commence on control measures to reduce these emissions. Science will continue to evolve and our knowledge and understanding will continue to improve, but while the methodology for measuring Black Carbon might benefit from further refinement, there is sufficient understanding now to agree and implement control measures. The urgency of addressing the impacts of Black Carbon emissions requires that actions start immediately.

[3] DPFs applied to vessels have reduced Black Carbon emissions from 95 to 99 per cent (annex to BLG 17/INF.7). Reports indicate, though, that filter effectiveness is limited as fuel quality decreases (Id.). DPFs are currently being used by ships of various type including cruise ships (**AIDA Prima**), research vessels (**MS Heincke**), large yachts, and harbour craft.

Action requested of the Sub-Committee

12 The Sub-Committee is invited to consider the information in this document when discussing the impact of Black Carbon emissions on the Arctic and to instruct the appropriate working group to consider the views on measurement methods identified in paragraphs 7 and 8.