

SUB-COMMITTEE ON POLLUTION  
PREVENTION AND RESPONSE  
10th session  
Agenda item 6

PPR 10/6/3  
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**REDUCTION OF THE IMPACT ON THE ARCTIC OF BLACK CARBON EMISSIONS  
FROM INTERNATIONAL SHIPPING**

**A pathway for regulation of Black Carbon impacting the Arctic**

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

**SUMMARY**

*Executive summary:* Following over a decade of work on the impact on the Arctic of Black Carbon emissions from international shipping, this document sets out a possible pathway for the regulation of Black Carbon emissions from shipping impacting the Arctic. It focuses on near-term measures which can be agreed to and implemented now and would lead to reductions in Black Carbon emissions that would be effective in the short-term.

*Strategic direction, if applicable:* 3

*Output:* 3.3

*Action to be taken:* Paragraph 13

*Related documents:* PPR 10/6 and MEPC 79/5/5

**Background**

1 The document sets out a possible pathway for the regulation of Black Carbon emissions from shipping impacting the Arctic. The PPR 9 Correspondence Group reduced the number of potential Black Carbon (BC) regulatory measures for further exploration to six options, including (1) a switch to distillate fuels; (2) a fuel standard based on aromatic content; (3) a BC emission control area (ECA); (4) engine certification (long term); (5) further work on resolution MEPC.342(77); and (6) the mandatory installation of BC reduction technology, e.g. diesel particulate filters (DPFs).

2 The Correspondence Group also agreed that further work should focus first on measures that can be agreed to and implemented immediately. Of the six options listed above, only ECAs, as currently provided for, and a mandatory switch to distillate, through an amendment to MARPOL Annex VI, can be implemented now.

3 With this in mind, the recent work has effectively established the following pathway for the future control and regulation of BC impacting the Arctic, comprised of:

- .1 near-term regulatory measures (appropriate for immediate implementation):
  - .1 development of an Arctic BC regulation requiring a switch to distillate fuels via an amendment to MARPOL Annex VI (based on resolution MEPC .342/77); and
  - .2 Arctic emission control areas (ECAs) addressing Sulphur oxides (SO<sub>x</sub>) and particulate matter including BC.
- .2 long-term regulatory measures:
  - .1 development of an aromatic fuel standard;
  - .2 development of engine certification; and
  - .3 mandatory installation of BC reduction technology.

#### **Near-term regulatory measures**

##### ***Development of an Arctic BC regulation via an amendment to MARPOL Annex VI***

4 Document MEPC 79/5/5 (FOEI et al), which was referred to PPR 10, outlines an approach to amend MARPOL Annex VI to incorporate a requirement for ships to only use marine distillate fuel or other cleaner alternative fuels or methods of propulsion that are safe for ships when operating in or near to the Arctic. Following discussion during the plenary session at MEPC 79, this text and any alternatives should be considered by an air pollution working group with a view to PPR 10 making recommendations at MEPC 80.

5 As outlined in document MEPC 79/5/5, a switch to distillate fuels is the most effective regulatory mechanism because it could not only be implemented quickly but could also significantly reduce BC emissions from ships operating in and near the Arctic. It would fulfil the commitment IMO Member States made over a decade ago, at MEPC 62, to reduce BC emissions impacting the Arctic.

##### ***Arctic emission control areas (ECAs)***

6 MARPOL Annex VI sets out clear guidelines for the preparation and submission of ECA proposals which, as the Correspondence Group noted, Member States can propose at any time. For this reason, the Sub-Committee should not hesitate to encourage Member States to immediately consider the establishment of ECAs in and near Arctic waters, especially given the acknowledged impacts of ship air pollution on the vulnerable Arctic environment as well as the harm that ship air pollution causes to Arctic Indigenous communities.

7 However, as the Correspondence Group recognized, it is important to note that traditional SO<sub>x</sub>/PM and NO<sub>x</sub> ECAs, as provided for in MARPOL Annex VI, may not directly regulate BC emissions as effectively as a mandatory switch to distillates or other cleaner fuels. This is because ultra low sulphur fuel oil (ULSFO) is ECA compliant due to the low sulphur content but has higher BC emissions than distillates. In Europe, there are concerns that

ULSFOs are being used to comply with the European ECAs, whereas in North America, distillates seem to be widely, although possibly not exclusively, used as the ECA compliant fuel. The effectiveness of any ECA to reduce BC emissions will depend on ensuring that distillate fuel or other cleaner fuels are used as the compliance mechanism.

8 Discussions related to the concept of an Arctic BC ECA also recognized that further work would be necessary including potentially to develop and agree on a BC emission standard unless the emission standard is simply set at a distillate level.

### **Long-term regulatory measures**

9 As noted above, the Correspondence Group also identified a number of additional regulatory pathways for reducing BC emissions that include the development of an aromatic fuel standard, the development of engine certification, and the mandatory installation of BC reduction technology. While work on these pathways should be encouraged, it is important to recognize that they cannot be agreed and implemented immediately.

10 With respect to the development of an aromatic fuel standard, for example, discussions and submissions in previous sessions have highlighted the need for further research and discussion on the paraffinic and aromatic qualities of marine fuels. Recent studies on the costs and social benefits of enhanced refinery processes to reduce aromatics and thus soot emissions in aviation kerosene are relevant to the question of mitigating their marine fuel impacts.\* While an aromatic fuel standard is arguably more appropriate as a global measure, a better understanding of the role of aromatics on marine fuel emissions is clearly needed. As acknowledged, an engine certification will only apply to new ships and while having potential as a long-term objective cannot be considered an effective measure for immediate reductions in BC emissions. Finally, most BC-reducing technology does not work effectively on ships operating on residual fuel, which means that a switch to distillate or other cleaner fuels is necessary for this to be an effective regulatory mechanism.

11 The need to reduce the impact of BC emissions on the Arctic from ships operating in and near the Arctic is urgent and the co-sponsors strongly believe that the Sub-Committee should focus first on regulatory pathways that can be agreed to and implemented now.

### **Impact of BC emissions on the Arctic**

12 In addition, to effectively reduce the impact of BC emissions on the Arctic, any recommendatory or mandatory measure – whether a distillate switch, a BC ECA or guidelines – must account for BC emissions from ships operating in and near the Arctic. Accordingly, any regulation or measure aimed at reducing BC emissions impacting the Arctic will require the development of a definition of "the Arctic" for MARPOL Annex VI that is broad enough to encompass the area in which BC emissions from ships have a negative impact on the Arctic. This issue was raised during the work of the Correspondence Group under both term of reference 1 (developing guidelines) and term of reference 3 (on control and regulatory measures) and is considered an outstanding question that needs to be clarified.

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\* <https://cedelft.eu/publications/social-costs-and-benefits-of-advanced-aviation-fuels/>

<https://cedelft.eu/publications/potential-for-reducing-aviation-non-co2-emissions-through-cleaner-jet-fuel/>

**Action requested of the Sub-Committee**

13 The Sub-Committee is invited to:

- .1 consider paragraphs 1 to 12, and particularly paragraphs 4 to 8 addressing near-term regulatory measures that could be agreed and implemented now, to inform further consideration of control and regulatory measures to effectively reduce the impact of BC emissions from international shipping on the Arctic, and
  - .2 refer this document and document MEPC 79/5/5 to a working group, if established, for further consideration and action as appropriate.
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