

PAME II-2014 Agenda Item 4.8(a)

AMSA Recommendation II(H): Reducing Air Emissions

Information on the status of consideration of emissions of Black Carbon at the IMO

Submitted by Norway

The IMO considers Black Carbon emissions under the agenda item “Consideration of the impact on the Arctic of black carbon from international shipping”. This document informs on the status of that work.

The Marine Environment Protection Committee have agreed to instruct the sub-committee on Pollution Preparedness and Response (PPR) as follows:

1. develop a definition for Black Carbon emissions from international shipping;
2. consider measurement methods for Black Carbon and identify the most appropriate method for measuring Black Carbon emissions from international shipping; and
3. investigate appropriate control measures to reduce the impact of Black Carbon emissions from international shipping.

PPR 1 met 3-7 February 2014 at the IMO headquarters in London, and had constructive discussions on the matter. The outcome is reflected in the report of PPR 1 in paragraphs 8.21 – 8.29 of the report of PPR 1 as seen in the annex below.

The outcome of PPR 1 will be considered at MEPC 67 on 13-17 October 2014 (ref. MEPC 67/12):

“The Committee is invited to take action on the remaining matters emanating from PPR 1, as follows:

1. *consider and endorse a definition of Black Carbon emissions from international shipping and appropriate measurement methods, taking into account the Sub-Committee's deliberation on the matter, with a view to facilitating the work on possible control measures to reduce the impact of Black Carbon emissions from international shipping (paragraphs 8.21 to 8.28)*;”*

One commenting paper is submitted on the issue (MEPC 67/12/6 by Norway). That document presents scientific information regarding the effects on the Arctic of emissions of Black Carbon. Furthermore, data regarding the contribution from shipping is presented.

PAME is invited to note the status of the work on Black Carbon at the IMO and take action as appropriate.

Annex Report of PPR 1

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A definition for Black Carbon emissions from international shipping

8.21 The Sub-Committee agreed, in principle, with the conclusion of the working group that a definition should be based on light absorption and that the definition should be either Light-Absorbing Carbon (LAC) or the equivalent Black Carbon (eBC), and not Elemental Carbon (EC) or refractory Black Carbon (rBC). Consequently, the Sub-Committee considered the following two definitions:

- .1 Equivalent Black Carbon (eBC):

"Black Carbon is defined as equivalent Black Carbon (eBC) derived from optical absorption methods, that utilizes a suitable mass-specific absorption coefficient."

or

- .2 Light-Absorbing Carbon (LAC):

"Black Carbon is defined as light absorbing carbonaceous compounds (LAC), resulting from the incomplete combustion of fuel oil."

8.22 In considering the above-mentioned two options for the definition, the following views were, inter alia, expressed:

- .1 the LAC definition is broader than Black Carbon, in that it covers all types of carbonaceous material, including organic Brown Carbon in addition to Black Carbon in the exhaust that absorbs light;
- .2 eBC would be a narrower definition for the Black Carbon component of exhaust emissions;
- .3 the target is to reduce the short-term climate forcing effect of all light absorption compounds in the Arctic and so the broader definition should be applied to include other light absorbing compounds in addition to Black Carbon; and
- .4 the focus of the work should be on Black Carbon only.

8.23 In recalling that the Sub-Committee had been instructed by the Committee to prepare one definition, the Sub-Committee concluded that, based on the views expressed in the plenary, the LAC definition should be recommended to the Committee for consideration and endorsement. However, the Sub-Committee noted that most delegations were not in a position to express a preference either for LAC or eBC, and some delegations considered there was a need for additional information before a final decision.

Appropriate methods for measuring Black Carbon emissions from international shipping

8.24 The Sub-Committee noted that the working group had prepared the following table of appropriate measurement methods that could support the proposed definitions, as set out in paragraph 11 of document PPR 1/WP.5, having noted that advantages and disadvantages of several methods taking into account the assessment made by Norway (PPR 1/8/5, paragraph 6).

Equivalent Black Carbon (eBC)	Light-Absorbing Carbon (LAC)
Filter Smoke Number (FSN)	Filter Smoke Number (FSN)
Multi Angle Absorption Photometry (MAAP)	
Photo-Acoustic Spectroscopy (PAS)	
Laser Induced Incandescence (LII)	

8.25 In this context, the Sub-Committee also noted that the following characteristics could be used to consider measurement methods:

- .1 PM components detected;
- .2 applicable fuel types;
- .3 applicable test conditions;
- .4 advantages;
- .5 drawbacks; and
- .6 ways to overcome drawbacks.

Control measures to reduce the impact of Black Carbon emissions from international shipping

8.27 The Sub-Committee noted that, as the working group had not finalized a definition of Black Carbon emissions from international shipping, possible control measures to reduce the impact of Black Carbon emissions had not been considered further. In this connection, the Sub-Committee noted that document BLG 17/INF.7 had provided an overview of possible control measures and that document PPR 1/8/5 (Norway) included a discussion of such measures.

Future work

8.28 The Sub-Committee invited MEPC 67 to decide on the definition of Black Carbon emissions from international shipping and appropriate measurement methods, taking into account its deliberation on the matter as described in paragraphs 8.21 to 8.27, with a view to facilitating the work on possible control measures to reduce the impact of Black Carbon emissions from international shipping.

Extension of the target completion year

8.29 In view of the above, the Sub-Committee invited MEPC 66 to extend the target completion year for this output to 2015 (see also annex 10).