PAME II 2018
Agenda 6.9(c): Placeholder for a possible new fuel project in the Arctic
Submitted by Norway

Introduction

Basis for this proposal to PAME is a project funded by the Norwegian Coastal Administration (NCA, 2016-2017): that included a characterization study on 3 hybrid/LSFO-fuels and 5 different marine diesel oils (DMA) showed:

1. The three hybrid oils had a wide span in properties, and two of them had highly solidifying properties in cold water (high pour point values) that reduced the effectiveness of dispersants. With regard to one of the oils reduced oilskimmer performance was observed due to solidification.

2. A Wide span in toxicity / chemical composition were also reviled.

The main findings from this NCA project were presented at AMOP 2017 and at Interspill in London 2018. The project report can be downloaded here:

http://www.kystverket.no/Beredskap/forskning-og-utvikling/diesel--og-hybridoljer/forskningsresultater/

This pre-project led to a concern by the Norwegian Authorities (and also by other international Oil Spill Agencies and organizations) concerning – response / mitigation to future spills of marine fuels oil (particularly in cold and Arctic areas). There is a need for further characterization of the properties on the increasing numbers of new marine fuels coming on the marked, and that need to be taken into account when evaluating oil spill contingency strategies for releases related to shipping activities. A good overview of the physicochemical / weathering properties- fate and behavior when spilled at sea, potential toxicity and feasibility of the different response techniques like mechanical recovery, dispersants and in-situ burning (ISB) for these oils will be of high importance for the coming years.

Suggested progress for submitting a formal project proposal to PAME and EPPR

Norway want to solder the interest for a joint project between EPPR and PAME at PAME II 2018. Norway will also present this idea for EPPR at their next meeting in December 2018. If there is a positive interest for such project, Norway will proceed to prepare a formal project proposal for the PAME I and EPPR I meeting in 2019.

The project idea and aim

The proposed project aim is to gather knowledge and describe facts accurately. Industry involvement will be necessary.

The project is advised to be performed in two sub tasks, task one by PAME and task two by EPPR. The two sub tasks will be written in one report, so close corporation between PAME and EPPR will therefore be required.

1. ***Environmental toxicity of light- and intermediate fuel oils (gas oil and hybrid fuel oils).*** Why do we find high toxicity levels in certain fuel oil samples within the same classification (e.g ISO classes), while fuel samples from other batches with the same product, or the

equivalent product from other producers, may have considerably lower toxicity levels? Is it the crude oil used in the refinery as an input that is decisive for the toxicity level? Or the refinery technology or processes? Or is the toxic substances added for other reasons by the refinery, or by the oil blenders? A toxic oil can give severe and harmful effects in the fragile arctic environment. What measures can be taken to avoid high toxicity levels in oils in arctic waters and in other sea areas? Industry involvement will be required for this task.

2. ***The fate of hybrid- and intermediate fuel oil when spilled at a cold sea surface***
   The goal is to describe why fuel oil from the same viscosity and ISO class behave so differently when spilt on a cold sea surface. The fate of such oils can hence be completely different. Next task will be to describe what measures can be taken to optimize intermediate and hybrid fuel oil for cold water and ice (composition and chemistry of oil). Some Hybrid oils become very stiff and greasy and they may be difficult to remove mechanically with skimmers or other oil uptake methodologies. While other hybrid oils on the other hand, will be in a liquid form even at a cold sea surface and hence much easier to remove. Oils with acceptable oil uptake properties will also normally naturally disperse faster and thereby be less persistent in the environment.

The two points above are closely related. Both spills of highly toxic fuel oils and persistent intermediate oils, which can be difficult to disperse or recover mechanically, may lead to severe and long lasting effects in the arctic environment.