

Enclosure

Legislative Council Panel on Environmental Affairs

Views from the Hong Kong Institution of Engineers on Upgrading the Diesel Standard for Local Vessels

The Hong Kong Institution of Engineers (HKIE) supports the proposal of upgrading the diesel standard for local vessels by reducing the limit on sulphur content from 0.5% to 0.05% by weight, with a view to reducing emissions from local vessels for better protection of air quality and public health. We would like to provide further views as below for consideration.

2. We note from the Environmental Protection Department (EPD)'s paper that a marine vessel operating on low sulphur diesel (LSD) with a sulphur limit of 0.05% emits about 90% less sulphur dioxide (SO₂) and 30% less respirable suspended particulates (RSP) than on high sulphur diesel (HSD) with a sulphur limit of 0.5%. We suggest the Government to provide elaborations on the rationale and reasons for the combustion of LSD that could lead to reduction in RSP emission. This can help clearly demonstrate the benefit to the environment for consuming LSD.

3. While the proposal of the Government focuses on the reduction of SO₂ and RSP emissions, the EPD's paper also mentions the contribution of vessels on the total emission of nitrogen oxide (NO_x). We consider it necessary to also provide information on the NO_x measurement when consuming LSD if it has been taken in the durability test, or else EPD is suggested to provide further information regarding the impact of NO_x emission in order to provide a complete picture of the test results.

4. It is noted in the EPD's paper that the fuel consumption of burning LSD is slightly higher than the HSD due to its lower calorific value. Also, there is a possible 5% reduction of the performance efficiency of the fishing vessels due to the use of LSD.¹ The higher fuel consumption of LSD and reduction of performance of efficiency of fishing vessels may in turn lead to more emissions of the three pollutants (i.e. SO₂, RSP and NO_x). Even such additional emissions might be insignificant comparatively speaking, we suggest that the Government should still take the impact into consideration to reveal the exact benefit of consuming LSD.

5. From the durability test conducted by the University of Hong Kong, it is found that there was not much difference of fuel injectors and pump wear due to fuels between HSD and LSD after 200 hours of operation. However, we take reference from findings derived from studies by American Bureau of Shipping (ABS)² and Chevron Products Company³, in which it is noted that the lower lubricating properties and change of viscosity of low sulphur fuel would lead to excessive wear within the

¹ LC Paper No. CB(1)1331/12-13 – Minutes of Panel on Environmental Affairs meeting held on 25 March 2013, Item 27.

² American Bureau of Shipping (n.d.), *Fuel Switching Advisory Notice*. Retrieved 8 July 2013, from <http://www.eagle.org/eagleExternalPortalWEB/ShowProperty/BEA%20Repository/References/ABS%20Advisories/FuelSwitchingAdvisory>.

³ Chevron Products Company (n.d.), *Diesel Fuels Technical Review*. Retrieved 8 July 2013, from http://www.chevronwithtechron.com/products/documents/diesel_fuel_tech_review.pdf.

fuel pump. We understand that this problem, if exists, could be lessened by the introduction of lubricity improver. Based on the above, we suggest that further studies on the durability of engine with longer operating time and/or addition of lubricity improver could be conducted to verify the findings.

6. Other than the use of LSD to reduce emissions from local vessels, we are of the view that adoption of on-shore power could help further reduce emissions from local vessels when they berth in Hong Kong waters. Electricity can power basic operations of vessels when they are docked, so that the diesel-powered engine can be switched off without being left idling. Hence, we suggest the Government to conduct feasibility study of installing on-shore power supply or charging facilities for vessels equipped with batteries as a long term alternative plan.

7. Notwithstanding the benefit of using the LSD to air quality, it is envisaged that the proposal, if implemented, might have impact to the vessel owners and operators, in particular in relation to the concern of fuel cost. The HKIE suggests the Government to closely monitor the situation such as the effect on fuel price, and consider measures, where appropriate, for compensation or assistance, in order to ensure that all the stakeholders' concerns are well addressed.