

## Expert's Opinion

### Marine fuel quality: Where do we go from here?



Contaminated marine fuel remains to be one of the biggest hurdles facing the bunkering industry in 2018 and this trend will likely continue beyond 2020.

It is not known precisely how contaminated fuels enter the shipping industry as bunkers. However, regarding the recent Houston fuel contamination, it seems highly likely that this contamination occurred upstream in the fuel supply chain due to the large number of vessels and wide range of bunker suppliers involved. This suggests that contamination occurred either during the refining process or fuel blending process. Fuel is blended to ensure that it meets the required specification outlined in ISO8217 and blending components such as cutter stocks and diluents are used, with the fuel often additionally treated with additives. Contamination may arise from impurities in any of these blending components and there is always the possibility that some unforeseen detrimental side-reactions may take place during blending. It should be noted that many of these blending components are from other process streams, which further raises the possibility of contamination.

The reason that we are seeing contaminated fuels now, even for fuels containing up to 3.5%S, is due to the complexity and chemistry of blending components that are being used to produce these fuels. To explain,

components are blended to produce the fuel to ensure that it meets the required specification (e.g. cutter stocks may be added to reduce viscosity) but the composition and chemistry of these components may introduce contaminants into the fuel. It should be noted that fuel blenders may change their supply of blending components due to market conditions, for example if they can source cheaper alternatives. This introduces the possibility of different impurities entering the marine fuel supply chain from time to time.

With little over a year until 2020 and the 0.5%S cap, the industry is now actively looking for new cutter stocks and blending materials to meet the demands of this low sulphur requirement. The impact of this is that although the 0.5%S cap is not yet in place, the preparations for this are creating risks to the quality of bunkers now.

More rigorous quality control of the marine fuels supply chain needs to be introduced to better manage contamination. The key is to provide traceability and highlight changes, additions or blending of the fuel throughout its journey from refinery to vessel. This could be achieved by testing and certifying the fuel at each stage of the fuel custody transfer, including checks on the quality of all components used to blend the fuel. Such a system currently exists for other fuel supply chains such as aviation fuel but would prove costly for the marine fuel sector. The introduction of blockchain technology, as discussed at SIBCON 2018, could provide a cost-effective alternative. This would enable bunker fuel end-users and regulators to trace each step in the supply chain and identify the common source of the problem when fuel contamination occurs.

The ISO8217 standard, meanwhile, has been developed over the years with new tests being included and other tests being modified as time has evolved. The development of such a standard is always dynamic and it needs to react to the market. Future development of ISO8217 should include testing for organic contaminants which are currently not

specified.

VPS plays a role in the development of the ISO8217 standard by attendance on the Committees which discuss its development. However, these Committees tend to be dominated by the fuel suppliers, and we would strongly recommend shipowners to become more actively involved.

Unfortunately, it looks highly likely that marine fuel contamination cases will continue towards 2020 and beyond. The reasons for this are fourfold:

- I. As earlier mentioned, in the short-term leading up to 2020, the industry is actively looking for cutter stocks and blending materials to meet the demands of this low S requirement. These are being introduced now as part of the introduction of new 0.5% fuels entering the market.
- II. Post-2020, it is simple commercial reality that there will remain an incentive for suppliers to blend in new components (with the risk of new contaminants) that become available due to market conditions.
- III. The anticipated widening cost between distillate and residual fuels will make the further use of residual fuels financially attractive, resulting in increased blending with the heightened risk of issues relating to compatibility, stability and contamination of such fuels.
- IV. It should be noted that not all distillates are low in sulphur and they too require a degree of treatment, which may lead to numerous quality issues with distillate products too.

However, there are a number of steps that shipowners can take to protect themselves from contaminated fuels as below:

- Source bunker fuel from a reliable supplier. VPS can provide statistical data (big data) from our extensive database on the quality of fuel available from different suppliers and at different ports. This is because VPS tests approximately 50% of all marine fuel

that is tested globally and therefore has aggregated data on suppliers across all ports worldwide.

- Ensure that the fuel is tested, using a representative sample that has been taken during bunkering.

In response to requests from clients for a testing and advisory service which provides additional protection to their vessel, VPS is introducing a new fuel protection package for ship-owners that is based on our extensive experience. Expanding upon the current ISO8217 suite of parameters, the VPS-Additional Protection Service, offers additional testing for both residual and distillate fuels, from which even greater fuel quality management information can be attained and interpreted, increasing awareness and directive actions required to further protect vessels from poor quality bunkers.

#### **About the Author:**

*Dr Malcolm Cooper, who has worked in laboratories for 40 years, is today the Group Managing Director of Veritas Petroleum Services (VPS), which created marine fuel testing in 1981 and remains by far the largest bunker fuel testing company today with close to 50% of the testing market.*

*A PhD qualified chemist, Dr Cooper is currently responsible for driving improvements across the global portfolio of VPS. He has held a range of positions across the chemicals, oil and gas and environmental sectors, working in technical, operational, commercial and general management roles.*

*His experience includes operational delivery, change management, business development, working at Board level and making and integrating acquisitions – all with an emphasis on improving business*

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