

POLLUTION FROM SHIPS AND PROTECTION OF THE ENVIRONMENT: THE IMO, MARPOL AND COOKING OIL

The International Maritime Organisation (IMO) has militated for the protection of the environment from the harmful effects of fuel emissions originating from shipping traffic since the 1960s. The International Convention for the Prevention of Pollution from Ships (MARPOL) was enacted in 1973. Regulations in [MARPOL Annex VI](#) dealing specifically with air pollution from ships were enacted in 1997 and entered into force in 2005. Revised regulations in Annex VI were adopted in 2008 and took effect on 1st July 2010. Further, additional amendments have been adopted since.

MARPOL Annex VI and Sulphur Oxide Emissions

The aim of Annex VI has been specific: the regulations endeavour to reduce and control the airborne emissions of sulphur oxides, nitrogen oxides, volatile organic compounds and the consequences of shipboard incineration. The focus is on the prevention of pollution on the environment of littoral regions and ports, including human health problems demonstrably caused by these toxic emissions, as well as on global air pollution.

The regulations are designed to reduce sulphur oxide emissions by regulating the sulphur oxide content of ship fuel oil down to a global limit.

Since 1st January 2015, Annex VI established a sulphur limit of 0.10% for ships operating in so-called Emission Control Areas (ECA), currently the busy Nord Sea, the Baltic Sea, designated areas off the US and Canada and the US Caribbean Sea. But what about the coastal areas outside those the IMO has categorised as ECAs?

In 2016, the Contracting Parties to MARPOL set themselves a deadline, of 1st January 2020, for the regulations of Annex VI to come into effect for ships sailing in areas outside the designated ECAs. A decision was reached that the limit for the sulphur content of ship's fuel oil, which was 3.5% mass by mass until 31st December 2019, was to be reduced to 0.50 % mass by mass.

That the agreement on the date of 1st January 2020 was fixed did by no means go without saying. Whilst the date was originally set in 2008 by the revised Annex VI, it remained to be seen whether in the interim there would be enough low sulphur fuel oil of good quality, available in ports worldwide, to implement this ambitious deadline. If there appeared to be insufficient 'compliant' fuel oil available by the 1st January 2020 deadline, then the date could be pushed forward to 1st January 2025. However, after assessment of the availability of low sulphur fuel oil going forwards, the Marine Environment Committee of the IMO decided in October 2016 that the designated deadline would indeed be achievable: the countdown to 1st January 2020 could begin.

Whilst the ultimate responsibility of compliance with Annex VI lies with the Contracting Parties to MARPOL, in order to comply with the regulations, shipowners and operators themselves have begun using a number of methods to ensure that low sulphur fuel oil is bunkered and used on board in both main and auxiliary engines. The use of gas is a much-favoured option amongst ship operators and so is methanol. Currently, there are also a number of feasibility studies into the use of LNG for the propulsion of ships which are not themselves LNG carriers, being carried out in the North American and Caribbean ECA's. The prospects are good.

The Cooking Oil Alternative

Most recently, a new low sulphur fuel has been tried and tested.

Cooking oil used in the catering industry is the most advanced and imaginative low emission fuel to have been adopted by certain shipowners. It is not altogether surprising that in 2019, CMA CGM, France's foremost global container transport group, in partnership with Shell, tested marine biofuel obtained from the country's famed gastronomic sector. CMA CGM state that they will henceforward supply their fleet with 'tens of thousands of tonnes' of marine biofuel distilled out of used cooking oil. CMA CGM's fuel now used on board their fleet is composed of 80% of low sulphur fuel oil and 20% biofuel. Greenhouse gas emissions will be reduced by 80%. An added benefit is that the use of cooking oil in the marine fuel sector has the advantage of relieving restaurateurs from disposing of used oil in less environment friendly places such as landfills. In short, if cooking oil does not unduly damage the combustion machinery of the ships designated to be operated on such fuels, then this could be a win-win situation for a number of stakeholders.

Not to be outdone by CMA CGM, MSC Crociere of Geneva have announced that their vessels will now use marine fuel oil consisting of 30% biofuel on a routine basis going forward, when bunkering in Rotterdam.

In their turn, HAPAG LLOYD let it be known on 4th February last that they were testing marine biofuel consisting of cooking oils and fats on the 'Montreal Express', one of their medium sized container ships capable of transporting 4400 TEU's and plying between the Canadian East Coast and Europe. They claim that the use of biofuel will reduce greenhouse gas emissions by 90%. Their used fuel will consist of 80% low sulphur fuel oil and 20% biodiesel based on cooking oil. The 'Montreal Express', currently deployed on a trial run with the new fuel, will also undergo additional tests to ascertain the effect of cooking oil on the ship's combustion machinery.

Evidently, shipowners are now competing to employ the invention of used cooking oil to contribute to a reduction of the airborne health hazards which high sulphur content fuel oils pose in ECA's, and also globally.

So far so good! But who controls compliance with the new Annex VI regulations and what sanctions await those operators exceeding the 0.10 % and 0.50 % limits? Compliance will largely be in the hands of flag states whilst sanctions are to be established by each Contracting Party to MARPOL as flag or port state. Since sanctions are the responsibility of each separate Member state, it would not be unthinkable that a marked divergence between the sanctions for non-compliance on the territory of each Contracting Party would ultimately result. It would presumably be the task of local authorities of the Member states, such as Ministries of Transport or Economic Affairs, which could impose administrative fines for non-compliance. The Sub-Committee on Pollution Prevention and Response of IMO has developed guidance to assist the Contracting Parties in their implementation of the 2020 mass for mass sulphur limits.

Cooking Oils – securing availability and supply

Returning to cooking oil and fats, the question which exercises the mind most is the availability and quality of these oils. In other words, where to obtain used cooking fats in quantities sufficient to supply the gigantic tonnage of shipping plying the high seas. The IMO appears rather to bow out of their responsibility in this respect since it hands the responsibility swiftly on to the Contracting Parties to MARPOL. Regulation 18 of Annex VI provides that the Parties '*take all reasonable steps to promote the availability of fuel oils which comply with this Annex and inform the Organization of the availability of compliant fuel oils in its ports and terminals.*'

One envisages a situation whereby each Contracting State's authorities issue orders to all hostellers and any other gastronomic establishments in their territory to preserve their cooking oils and fats. These would then have to be collected by tankers and transferred to the designated authorities to be purified, processed and converted to low emission fuel in readiness for further transport to terminals worldwide. Indeed, in the USA this process has, in conjunction with BP, taken place in respect of jet fuel, but to date on a limited basis.

In the interim, the Sustainable Shipping Initiative (SSI) launched her report '[The Role of Sustainable Biofuels in the Decarbonisation of Shipping](#)' presented at the UN Climate Change Conference (COP25) held in Madrid in December 2019. Reactions emanating from the shipping industry to this report are eagerly awaited.

Conclusion

For the time being, however, it is heartening to note the enthusiasm with which shipowners and operators have embraced the 'cooking oil alternative' and it is sincerely to be hoped that energy companies such as Shell and BP will continue to contribute to this process. Whether this alternative will ultimately satisfy global demand remains anyone's guess and the marine sector is clearly not the only industry in which the new biofuels are going to be used. Demand will come from a number of other industries (such as aviation). Supply for the shipping industry may, as a result, be relatively constrained. It must therefore be assumed that other low carbon biofuels will remain an important element in the composition of shipping fuels for the 21st century.

About the Author

Reina Maria van Pallandt is a senior disputes resolution lawyer with dual British and Dutch nationality. Reina Maria obtained a degree in Dutch Law and Public International Law (LLB Hons) at the University of Amsterdam and was subsequently admitted as a Solicitor of the Senior Courts of England & Wales in 1979 and to the Law Society of Ireland in 2019. Reina Maria originally practised as a solicitor at Holman, Fenwick & Willan in London and Paris and thereafter at Clifford Chance where she specialised in marine and general commercial arbitration and litigation representing shipowners, P&I Clubs, shipbuilders, repair yards and charterers such as oil and gas companies and commodity traders.

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For more information or assistance with a particular query, please in the first instance contact Adam Mikula on 020 7947 5354 or by email on adm@prospectlaw.co.uk.