



The Association  
of European  
Vehicle Logistics

# Sulphur Content in Marine Fuels (Global Sulphur Cap 2020)



Briefing Report

October 2018  
*(Updated from June 2014)*

# Background to MARPOL and IMO regulations<sup>1</sup>

The **International Convention for the Prevention of Pollution from Ships (MARPOL)** is a combination of two international treaties adopted in 1973 and 1978 respectively and also includes the Protocol of 1997 (Annex VI). The Convention includes regulations aimed at preventing and minimising pollution of the marine environment by ships - both accidental pollution and from routine operations - and currently includes six technical Annexes. A state must accept Annex I and II in order to become a party to MARPOL. Annexes III-VI are voluntary and the most important Annex, from the point of view of sulphur emissions, is **Annex VI**.

## Annex VI – Prevention of Air Pollution from Ships (entered into force 19<sup>th</sup> May 2005)

The regulations in this Annex set limits on sulphur oxide (SO<sub>x</sub>) and nitrogen oxide (NO<sub>x</sub>) emissions from ship exhausts as well as particulate matter (PM), and prohibit deliberate emissions of ozone-depleting substances. Emission control areas set more stringent standards. It was prepared by the **IMO's Marine Environment Protection Committee (MEPC)** and established:

- A global cap of 4.5% of sulphur in marine fuels;
- A lower limit of 1.5% of sulphur in SO<sub>x</sub> Emission Control Areas (hereafter SECAs);
- To set limits on emissions of nitrogen oxides (NO<sub>x</sub>) from diesel engines. A mandatory NO<sub>x</sub> Technical Code, which defines how this shall be done, was adopted.
- Deliberate emissions of ozone depleting substances, which include halons and chlorofluorocarbons (CFCs), are prohibited. New installations containing ozone-depleting substances are prohibited on all ships, however, new installations containing hydro-chlorofluorocarbons (HCFCs) are permitted until 1<sup>st</sup> January 2020;
- The on-board incineration of certain products, such as contaminated packaging materials and polychlorinated biphenyls (PCBs), is prohibited.

# Current situation from IMO standpoint

The **limits for sulphur in marine fuel** are subject to a series of step changes over the years:

Outside SECAs	Inside SECAs
4.5% prior to 1 <sup>st</sup> January 2012	1.5% prior to 1 <sup>st</sup> January 2010
3.5% on and after 1 <sup>st</sup> January 2012	1.0% on and after 1 <sup>st</sup> January 2010
0.5% on and after 1 <sup>st</sup> January 2020	0.1% on and after 1 <sup>st</sup> January 2015

As of March 2014 the **SECAs** established to limit sulphur content in marine fuel are:

1. Baltic Sea area – as defined in Annex I of MARPOL
2. North Sea area (including the English Channel) – as defined in Annex V of MARPOL
3. North American area (entered into force on 1<sup>st</sup> August 2012);
4. United States Caribbean Sea (entered into force on 1<sup>st</sup> January 2014)



Most ships which operate both outside and inside these SECAs already have to operate on different fuel oils in order to comply with the respective limits (*unless they choose other means of compliance, cf. below*).

In Annex VI a **fuel availability clause** is also mentioned (Regulation 18). It requires that each subscribing state shall take all reasonable steps to promote the availability of fuel oils which comply with the limitations set in the Annex and inform the IMO of the availability of compliant fuel oils in its ports and terminals. It also grants a certain level of protection to the shipowners in the event of non-availability of compliant fuel oil.

There are other means by which equivalent levels of SO<sub>x</sub> and particulate matter emission controls can be achieved, both outside and inside SECAs. These may be divided into methods termed **primary** (*in which the formation of the pollutant is avoided*) or **secondary** (in which the pollutant is formed but subsequently removed to some degree prior to discharge of the exhaust gas stream to the atmosphere). In using the latter there would be no constraint on the sulphur content of the fuel oils as bunkered other than that determined by the system's certification.<sup>2</sup>

## Current situation from EU standpoint

The EU rendered mandatory IMO rules on marine fuels through Directive 2012/33/EU of 17<sup>th</sup> December 2012, further amending Directive 1999/32/EC as regards the sulphur content of marine fuels. The key elements of this directive are:

- In line with Annex VI of the MARPOL Convention, the limits for the sulphur content of marine fuels used in designated SECAs will be 1% until 31<sup>st</sup> December 2014 and 0.1% as from 1<sup>st</sup> January 2015.
- The **IMO standard of 0.5% for sulphur limits outside SECAs will be mandatory for all vessels trading in EU waters (and globally) as of 1<sup>st</sup> January 2020**, which is a reduction from the previous 3.5% limit. This will also apply to passenger ships operating outside SECAs, a reduction from the previous 1.5% limit.
- A general cap does not allow the use of marine fuels with a sulphur content of more than 3.5% by mass within Member States territorial waters, with the exception of fuels used by vessels with alternative exhaust gas cleaning systems, so-called 'scrubbers', operating in 'closed' mode.
- In line with the MARPOL Convention the Directive provides that Member States shall endeavour to ensure sufficient availability of the required marine fuels.

As part of the **effective, proportionate and dissuasive penalties** to be set by Member States in implementing the Directive, possible fines should at least be equivalent to the

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2 <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/MEPC.259%2868%29.pdf>

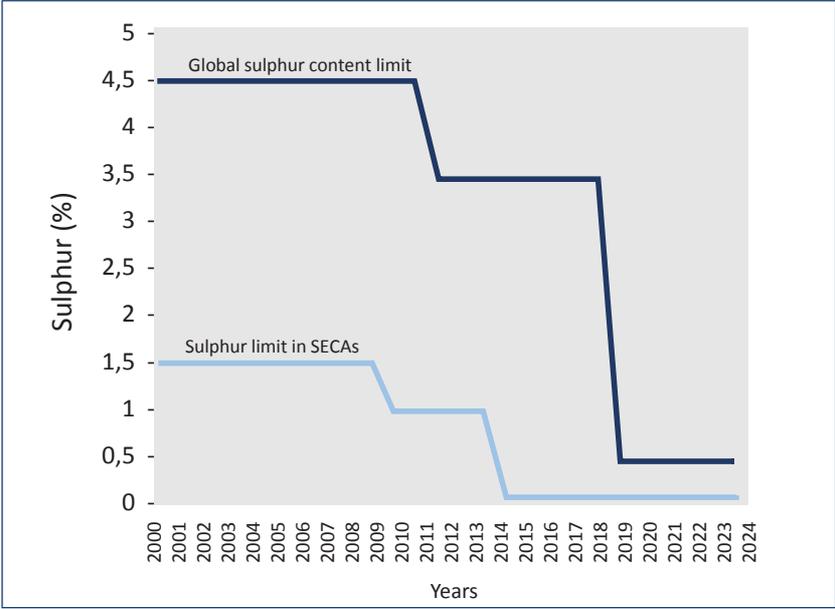
benefits deriving from the infringements. Alternative **compliance methods**, such as exhaust gas cleaning systems (scrubbers), may also be used or ships may be constructed, or possibly be retrofitted, to be able to use liquified natural gas (LNG) as fuel. Regardless of the compliance method used there will be a significant cost impact for operators.

**From 1<sup>st</sup> January 2020 onwards**, all ships operating in European (and global) waters, outside the current SECAs, and not using alternative compliance methods, will have to use fuels with sulphur content of **0.5% or less**, instead of the 3.5% limit that has been in place since 2012. This is also the global limit, agreed under the aegis of the IMO, and the number of ships – up to 70,000 worldwide according to IMO estimates – impacted by this is massive.

Table 1: Important deadlines and timeline

Sulphur content summary table				
	2011	2012 →	2015 →	2020 →
<b>Ships at berth</b>	0.1%	0.1%	0.1%	0.1%
<b>Inland waterways</b>	0.1%	0.1%	0.1%	0.1%
<b>Outside SECAs</b>	4.5%	3.5%	3.5%	0.5%
<b>Inside SECAs</b>	1.0%	1.0%	0.1%	0.1%
<b>Ro-Pax (outside SECAs)</b>	1.5%	1.5%	1.5%	0.5%

Table 2: Sulphur limit in and outside of SECAs



In summary, compliance options are to use the more expensive low-sulphur **marine gas oil (MGO)** or an alternative compliant fuel such as **LNG**, or to equip ships with **scrubbers** that remove sulphur from the exhaust gases.

Industry calculations show that all solutions will result in significant increased costs for the shipping companies to comply with these strict environmental regulations.

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