Published on *The National Law Review* https://natlawreview.com

Navigating Emission Control Areas: Operational, Legal, and U.S. Enforcement Risks of MARPOL Annex VI's Low Sulphur Fuel Requirements

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The North American Emissions Control Area ("ECA"), which has been in force well over a decade, is one of four existing ECAs around the world. Effective May 1, 2025, the Mediterranean Sea ECA will become the fifth. In March 2026, pursuant to MARPOL Annex VI, Regulation 13, the Canadian Arctic and Norwegian Sea will also be designated as ECAs, increasing the global total to seven. These two ECAs will become enforceable on March 1, 2027. In addition to these ECAs, other port States around the world have separately implemented domestic emissions control regulations in their territorial seas, with China being a prominent example.

The establishment of these new ECAs and similar emissions control regimes throughout the world will result in an increasing number of vessels crossing ECA boundaries—sometimes multiple times on a single voyage—and on a more frequent basis. The use of different fuel types has in more and more cases led to operational and safety challenges, which has inevitably translated into heightened legal and enforcement risks. Given this expansion of ECAs worldwide, and the growing patchwork of other related port State emissions requirements, it is more important than ever to revisit the various legal and operational risks that have emerged over time, particularly those in the United States, to ensure compliance and mitigate potential risks.

Background

Among other requirements, vessels subject to the International Convention for the Prevention of Pollution from Ships ("MARPOL") must comply with low sulphur requirements set forth in Regulation 14 of Annex VI. These requirements mandate that ships use fuel with a sulphur content of no more than 0.5 percent when operating outside an ECA, and no more than 0.1 percent when operating inside an ECA. Alternatively, ships can install approved exhaust gas cleaning systems ("EGCS" or "scrubbers") to meet these standards. EGCS remove sulphur from engine exhaust, achieving an equivalent reduction in sulphur emissions as required by the regulations.

Fuel Switching While Underway

Some estimates suggest approximately 10-15 percent of existing vessels subject to MARPOL are equipped with scrubbers, though that percentage is rising as many newbuild orders include installation of these systems.

Vessels not fitted with scrubbers may not carry onboard high sulphur fuel oil or other bunkers with a sulphur content exceeding the global cap of 0.5 percent. If a vessel transits through an ECA, it must consume ultra-low sulphur fuel oil, marine gas oil, or other fuel with a sulphur content no more than 0.1 percent. Vessels equipped with scrubbers may consume any combination of fuels, so long as the EGCS is fully operational and reduces the sulphur content to a level at or below applicable limits.

Whether or not a vessel is fitted with scrubbers, fuel oil changeover procedures are required by MARPOL Annex VI for vessels entering an ECA. The fuel oil changeover procedure must allow sufficient time for the fuel oil service system to be fully purged of all fuel oil exceeding the applicable sulphur limit before entering an ECA. Outside of ECAs, most ships that do not have scrubbers fitted primarily operate on very low sulphur fuel oil to meet the 0.50 percent global sulphur requirement. Upon approaching a designated ECA, such vessels undergo fuel switching to meet the more stringent emission requirements within the ECA of 0.1 percent sulphur content. Upon leaving the ECA, this process is essentially reversed.

Vessels fitted with scrubbers must also comply with local port State discharge prohibitions or other requirements for scrubber washwater, such as the U.S. Environmental Protection Agency's Vessel General Permit or other state discharge regulations in the United States, such as California, where the use of scrubbers is not permitted.

Operational Risks—ECA Transits

The process of switching from higher sulphur fuels to lower sulphur fuels, and vice versa, must be undertaken with meticulous attention to detail by crew, following clear, standardized procedures to avoid operational failures.

Fuel changeovers, while necessary for regulatory compliance, pose safety considerations. The process typically involves a series of operations, including adjusting fuel systems, purging lines, and ensuring compatibility between the fuels. These challenges are well known, including the potential for fuel contamination, failure to properly control the temperature and viscosity of the marine fuel during transition, potential EGCS malfunction, and human error, among others. Experience has shown that these challenges can, under some circumstances, lead to loss of propulsion, loss of electrical power, engine damage, and other operational disruptions and mishaps.

Legal Risks Under U.S. Law—Reporting and Compliance

When these challenges materialize into operational disruptions or other incidents, this inevitably triggers a variety of potential reporting requirements, particularly in the United States, and the attendant significant legal risks of not reporting when required by law to do so. In addition, any non-compliance with low sulphur fuel standards—and failure to maintain accurate records in connection with these and related emissions requirements—can also result in civil or criminal penalties under applicable U.S. law.

Key reporting requirements for owners and operators of vessels, and their crews, when calling on U.S. ports include:

- **Marine Casualty Reporting**: Depending on the facts and circumstances, failure of or damage to ship's equipment, loss of propulsion, loss of electrical power, or other similar occurrence associated with fuel changeovers and ECA compliance may be considered a reportable "marine casualty" under 46 CFR § 4.05-1.
- **Hazardous Condition Reporting**: Apart from the marine casualty reporting requirement, depending on the facts and circumstances, such incidents and occurrences could also potentially be considered a reportable "hazardous condition" under the Ports and Waterways Safety Act ("PWSA"). A "hazardous condition" is defined in 33 CFR § 160.2020 as "any condition that may adversely affect the safety of any vessel, bridge, structure, or shore area or the environmental quality of any port, harbor, or navigable waterway of the United States. It may, but need not, involve collision, allision, fire, explosion, grounding, leaking, damage, injury or illness of a person aboard, or manning-shortage."

Determining whether a particular incident qualifies as a reportable "marine casualty" and/or "hazardous condition" under U.S. law is a fact-specific determination. This evaluation is influenced by the nature and severity of the incident, its location, the conditions, the circumstances surrounding it, and various other relevant factors. The U.S. Coast Guard issued guidance on marine casualty and other reporting requirements in Navigation and Vessel Inspection Circular 01-15. Since these reports must generally be made "immediately," it is often prudent to report the incident right away, along with any necessary response actions being undertaken by the vessel to address the situation. Penalties can be significant for failure to report in a timely manner.

Failure to report a "marine casualty" can result in civil penalties for both individuals and corporate vessel owners and operators. Failure to report a "hazardous condition" under PWSA regulations can result in both civil **and** criminal penalties.

Submitting a prompt written or verbal report to the U.S. Coast Guard when an occurrence happens typically fulfills both regulatory requirements. In the event of a reportable "marine casualty," the regulation also mandates the submission of CG Form 2692 within five days. This form serves as the method to report to the U.S. Coast Guard the specifics of what occurred.

Conclusion

The implementation of the Mediterranean Sea ECA and the upcoming designations of the Canadian Arctic and Norwegian Sea as ECAs underscore the continued global commitment to reducing vessel emissions. However, using low sulphur fuels in ECAs may present operational challenges, safety concerns, and legal risks, especially in the United States. As the decarbonization of shipping evolves, the use of alternative fuels and changes to vessel design may exacerbate these risks over time.

To mitigate legal and enforcement risks, vessel owners and operators should review their Safety Management Systems and operational procedures to ensure they align well with U.S. reporting and other regulatory requirements and policies cited above.

National Law Review, Volume XV, Number 93