



COMMITTEE: Assembly of the International Maritime Organization (IMO)

TOPIC: Regulating Air and Sea Pollution from International Shipping

I. History of the International Maritime Organization

Throughout history, agreed-upon regulations on safety at sea have been necessary to international cooperation. After the founding of the United Nations in 1948, Member States adopted a formal maritime convention creating the International Maritime Organization (IMO). Referred to initially as the Inter-Governmental Maritime Consultative Organization (IMCO), the organization formally entered into force in 1958. The purpose of the IMO, as outlined in Article 1(a) of the convention, is *"...to provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety."*¹

The organization's first landmark agreement in 1960 adopted a new version of the International Convention for the Safety of Life at Sea (SOLAS) which set specific minimum safety standards for the construction, equipment and operation of ships. This is now referred to as the most important treaty relating to maritime safety. In the following years, the IMO focused on the facilitation of international maritime traffic, load lines and the carriage of dangerous goods² until the emergence of a new problem arose in the late 20th-century: pollution. Much of their effort turned to preventing environmental disasters caused by tanker accidents and disposal of ship engine waste.³ One of the most well known of their measures was the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL). This convention developed international agreements not only on accidental and operational oil pollution, but also pollution from hazardous chemicals, sewage, garbage, packaged goods and air pollution.⁴

¹ <https://www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx>

² <https://www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx>

³ <https://www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx>

⁴ <https://www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx>

Another pressing issue also came to the attention of the IMO, the human element of shipping. In 1978, the IMO developed the Standards of Training, Certification and Watchkeeping of Seafarers (STCW). Further amendments to this Convention in 1997 gave the IMO the power to check on Governments and ensure that parties under their jurisdiction complied with international standards. SOLAS, MARPOL, and STCW remain the three key conventions of the International Maritime Organization.

Safety regulations and pollution prevention remain the organization's highest priorities. In the 21st century, the organization has developed numerous international agreements on maritime trade, safe shipping, and maritime access in addition to playing a crucial role in deterring air and sea pollution.

II. Jurisdiction and Structure of the International Maritime Organization

The international Maritime Organization consists of the Secretariat, Assembly, Council, five main committees (Maritime Safety Committee, Marine Environment Protection Committee, Legal Committee, Technical Cooperation Committee, Facilitation Committee) and a number of sub-committees.⁵ The organization is composed of 175 United Nations Member States, three Associate Members, and numerous Intergovernmental Organization (IGO) and Non-Governmental Organization (NGO) stakeholders.⁶

The Assembly is the highest governing body of the IMO and consists of all Member States. It meets every two years, and is responsible for approving the agenda of the IMO. In intervening time between IMO sessions, the Council of the IMO acts as a supervising body. The 40 member nations of the IMO Council are elected at the beginning of bi-annual Assembly convenings.⁷ Additional technical work takes place within the various committees throughout the calendar year.

III. Post-COVID Shipping Concerns: Air Emissions and Dumping of Waste

Maritime activity is essential to the world's economy and overall well-being. Ships move approximately 80 percent of the world's goods and bring a large majority of international tourism to port cities.⁸ In comparison to other forms of transportation such

⁵<https://www.imo.org/en/about/pages/structure.aspx#:~:text=The%20Organization%20consists%20of%20an,of%20the%20main%20technical%20committees.>

⁶[https://www.dco.uscg.mil/IMO/International-Maritime-Organization-Sub-committees-HWT/#:~:text=The%20IMO%20is%20based%20in,%20Governmental%20Organizations%20\(NGO\).](https://www.dco.uscg.mil/IMO/International-Maritime-Organization-Sub-committees-HWT/#:~:text=The%20IMO%20is%20based%20in,%20Governmental%20Organizations%20(NGO).)

⁷<https://www.imo.org/en/about/pages/structure.aspx#:~:text=The%20Organization%20consists%20of%20an,of%20the%20main%20technical%20committees.>

⁸<https://clearseas.org/en/air-pollution/>

as rail and air, shipping is a climate-friendly and energy-efficient way to both move large volumes of cargo and facilitate travel.

Despite this, air pollution and waste dumping from international ships does raise environmental concern in our progressively globalized world. When COVID-19 broke out across the globe, most international shipping operations came to a standstill. While COVID-19 temporarily slowed maritime activity⁹, a subsequent boom in global tourism and trade came in the aftermath of the pandemic. In 2022, around 58,000 commercial ships sailed in international waters—around 3,000 more ships on average than before COVID-19 began in 2020.¹⁰ Without new regulations, the rising number of cruise ships and non-passenger carrying vessels could bring in ever higher levels of air pollution and ocean waste.

Air Pollution

In 2012, ships contributed to approximately 2.2% of the world's total CO₂ emissions.¹¹ Post-COVID, emissions from shipping could increase from 20% - 120% by 2050, depending on global economic conditions.¹² Commercial ships burn fuel for energy, emitting several different types of air pollution. Most common and environmentally hazardous are carbon dioxide (CO₂), nitrous oxides (NO_x), sulfur oxides (SO_x) and particulate matter.¹³ Air pollution can lead to detrimental effects on human development, such as lost productivity, increased health conditions and healthcare costs, decreased quality of life, stunted crops and plants and damage to outdoor infrastructure.¹⁴

Ship Waste

Ships produce waste as part of normal operations and while waste can be properly handled, an accidental or deliberate dumping of ship waste can severely impact the health of ocean ecosystems. To keep ships clean and properly functioning, propeller shaft oil, discharge water, cargo residue, ballast water, microplastics and anchor wash water will be produced.¹⁵ Ship passengers and crew additionally result in

⁹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8864125/>

¹⁰ Statista. (2023). Number of Ships in the World Merchant Fleet as of January 1, 2022, by Type.

¹¹ <https://clearseas.org/en/air-pollution/>

¹² <https://clearseas.org/en/air-pollution/>

¹³ <https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/ambient-air-pollution>

¹⁴ <https://www.canada.ca/en/environment-climate-change/services/air-pollution/quality-environment-economy/economic-issues/human-health-costs.html>

¹⁵ <https://clearseas.org/en/ship-waste-management/>

the discharge of food, garbage, sewage and greywater from ships. These all can contaminate food chains and harm marine wildlife.

IV. Case Studies

There is little direct research on the impact of post-COVID travel on ship pollution and waste dumping thus far. However, reports out of port cities around the globe are a cause for environmental alarm, and international action is imperative to deter further harm.

Air Pollution in the Port of Barcelona

Barcelona, Spain is a major travel hub for international tourists, and is Europe's busiest cruise ship destination.¹⁶ Prior to 2020, the air pollution from sulfur oxides in Barcelona's port was ranked the worst in Europe,¹⁷ but strict confinement measures adopted early in the COVID-19 outbreak led to a drop in city-wide pollution.¹⁸

Post-pandemic, cruise ship travel is booming and more tourist ships are coming into the port than ever before. But, this is not without a cost. New studies show that 18 tons of sulfur oxides were released in the atmosphere in the city last year, potentially raising the likelihood of acid rain and respiratory conditions such as asthma and emphysema in residents.¹⁹ Barcelona's current mayor, Ada Colau, has led a strong anti-cruise ship stance that is rising in popularity with local residents. The IMO currently caps sulfur content in marine fuels at .5 percent per ship, but the rise in the number of cruises continues to increase total emissions. In 2022, Barcelona imposed a "cruise pollution tax"²⁰ and Barcelona plans to ban cruise ships from docking at the northern port in the coming year.²¹

Waste Dumping at State-Wide Ports in Florida, USA

Florida, USA is home to a large number of port cities that have historically battled against waste dumping from cargo and cruise ships. Florida is a top maritime trade state and home to the world's largest cruise ports. Cargo and cruise activities support

¹⁶<https://www.theguardian.com/cities/2019/jun/07/barcelona-port-is-worst-in-europe-for-cruise-ship-air-pollution>

¹⁷<https://www.transportenvironment.org/press/luxury-cruise-giant-emits-10-times-more-air-pollution-sox-all-europe%E2%80%99s-cars-%E2%80%93-study>

¹⁸ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8864125/>

¹⁹ <https://www.ft.com/content/8727387d-590d-43bd-a305-b5ec208a4dfe>

²⁰https://www.upi.com/Top_News/World-News/2022/06/07/spain-barcelona-cruise-ship-passenger-tax-pollution/1901654621531/

²¹ By the time this paper has been published, there is a possibility that this new rule will have gone into effect.

\$117.6 billion in economic value and 13.3% of Florida's GDP.²² In early 2020, prior to the COVID-19 pandemic, a cruise ship run by the popular tourism company Carnival spilt twenty-two metric tons of gray water (close to 6,000 gallons) into Port Canaveral, Florida²³ after paying over \$20 million USD in fines for illegally dumping plastic waste into ports around Miami, Florida.²⁴ While operations temporarily ceased in 2020, shipping skyrocketed during pandemic recovery, and waste dumping has continued to decimate Florida's ocean ecosystem.

In response to concerns that the state has raised regarding rising air pollution in recent years, many ships which operate around the Floridian peninsula have begun to utilize "scrubber" devices to remove pollution from ship exhaust fuels. In 2021, a study by the International Council on Clean Transportation revealed that ships pour 10 gigatons (10 billion metric tons) of polluted water into the ocean per year through the use of scrubber devices primarily around the Port Everglades and Port Miami areas in Florida.²⁵ These devices are still being reviewed by the IMO for concerns, but environmental activists in Florida have called for their removal, especially as studies in Belgium²⁶ and Sweden²⁷ have called out the use of scrubber devices as "highly toxic" to oceans.

V. Past IMO Actions ²⁸

Regulating air and sea pollution from international shipping during post-COVID recovery requires innovative solutions. Past responses from the International Maritime Organization can be expanded and amended to take further action on the issue.

Past Action on Air Pollution

In 2012, the IMO introduced emission control areas (ECAs) to help minimize NO_x, SO_x and particulate matter in designated areas away from coastal ports.²⁹ ECA areas are established in: the Baltic Sea area, the North Sea area, the United States Caribbean Sea area, and the North American area (covering designated Pacific and Atlantic coastal areas of the United States and Canada).³⁰ In the North American area,

²²<https://www.workboat.com/coastal-inland-waterways/florida-seaports-see-record-high-cargo-in-2022#:~:text=According%20to%20the%20report%2C%20Florida,and%2013.3%25%20of%20Florida's%20GDP.>

²³ <https://www.miamiherald.com/news/business/tourism-cruises/article238937103.html>

²⁴<https://www.npr.org/2019/06/04/729622653/carnival-cruise-lines-hit-with-20-million-penalty-for-environmental-crimes>

²⁵ <https://www.miamiherald.com/article250980394.html>

²⁶ <https://en.europe.springeropen.com/articles/10.1186/s12302-020-00380-z>

²⁷ <https://pubs.acs.org/doi/pdf/10.1021/acs.est.0c07805>

²⁸ <https://clearseas.org/en/air-pollution/>

²⁹ <https://clearseas.org/en/air-pollution/>

³⁰ <https://home.kuehne-nagel.com/en/-/knowledge/emission-control-areas>

emissions are expected to decrease by up to 86 percent.³¹ A new MARPOL regulation in the coming years states that ships sailing in designated ECAs must additionally stop burning VLSF (Very Low Sulphur Fuel) or Heavy Fuel Oil (HFO) when using a scrubber device.³² These ECA areas are expected to expand to different regions in the coming years.

In 2018, the IMO adopted an initial strategy to reduce ship source emissions by at least 50 percent by 2050. This includes a tiered approach to reducing nitrogen oxides which has positively impacted the air quality of numerous countries including Canada where air pollutants have decreased significantly.³³ Similar tiered approaches have been recommended to decrease sulfur and particulate matter emissions. In the same year, the IMO committed to work towards measures that mitigate the risks associated with heavy fuel oils (HFOs) that create particulate matter such as black carbon, especially to deter negative impacts of HFOs in the Arctic.³⁴ In the Antarctic, such oils have been banned since 2011 with a positive impact.

Past Action on Waste Dumping

The IMO currently limits how waste can be disposed of from ships. The United Nations Convention on the Law of the Sea (UNCLOS) establishes that ships over 400 gross tons cannot discharge waste such as sewage into bodies of water directly under a Member State's jurisdiction—12 nautical miles or less from shore.³⁵ Ships are also only permitted to discharge liquid waste if the oil content is less than 15 parts per million (ppm) and not from oil cargo.³⁶ Hazardous residue from liquid waste additionally must be stored in a holding tank for disposal at a recognized disposal center. However, keeping waste on ships does possibly pose health risks to passengers and crew, and limited storage space often leads to additional dumping.

VI. Questions to Consider in Research

- How can previous efforts by the IMO be expanded or amended to adjust to post-COVID recovery? How have these efforts not been effective in the past and what are the downsides to previous regulations?

³¹<https://nepis.epa.gov/Exe/ZyPDF.cgi/P100AU0I.PDF?Dockey=P100AU0I.PDF>

³² <https://home.kuehne-nagel.com/en/-/knowledge/emission-control-areas>

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[https://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Nitrogen-oxides-\(NOx\)-%E2%80%93-Regulation-13.aspx](https://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Nitrogen-oxides-(NOx)-%E2%80%93-Regulation-13.aspx)

³⁴ <https://clearseas.org/en/air-pollution/>

³⁵ <https://clearseas.org/en/ship-waste-management/>

³⁶ <https://clearseas.org/en/air-pollution/>

- How can we ensure that regulations on air pollution (such as scrubber devices) do not have negative environmental effects on international oceans?
- How can equity be made a part of international shipping regulations? Will solutions have adverse impacts on ship laborers?
- How can private shipping companies be held accountable by Member State governments? How can governments monitor compliance?
- How should the IMO work with environmental activists and scientists on the issue?
- What would reparations for local residents of port cities dealing with the effects of air and sea pollution look like? To what extent should they be offered?