Editorial

Wrecks at sea: The unseen threat to oceans and coastal lives

During May and June 2025, two marine disasters occurred in the Arabian Sea along the coast of Kerala, India. In the first incident, the Liberian-flagged vessel MSC ELSA 3, *en route* to Kochi from Vizhinjam Port, sank off the Kerala coast near Kochi on May 24, 2025. The ship was carrying 643 containers, including 13 with hazardous cargo. It began tilting dangerously about 38 nautical miles from the Kochi coast before eventually capsizing and sinking. Following the incident, around 30 containers were dislodged and washed ashore in the Alappuzha and Kollam districts. None of the containers that reached shore were found to contain hazardous substances. Many were empty, while others held items such as glass, green tea, wood, and cotton. However, among the hazardous cargo still on board were approximately 12 containers of calcium carbide—a chemical that reacts dangerously with seawater, producing highly flammable acetylene gas. The ship also carried 64 metric tonnes of diesel, 367 metric tonnes of furnace oil, and 450 tonnes of bunker oil. Seventy containers were packed with plastic pellets (nurdles), and some of these were also washed ashore.

Another major shipping accident occurred on June 9, involving the MV Wan Hai 503. A fire broke out following explosions while the vessel was about 44 nautical miles off the Azhikkal coast in Kannur, Kerala. According to the cargo manifest, more than 143 of the 1,754 containers onboard held various types of hazardous materials. Plumes of brown, white, grey, and black smoke billowing from the vessel suggested the combustion of multiple substances. The ship carried 2,000 tonnes of fuel oil and 240 tonnes of diesel. Despite relentless firefighting efforts, only about 40% of the fire had been brought under control even after ten days. The vessel was subsequently towed to a safer location 91 nautical miles offshore, where the sea depth is nearly one kilometre. While *Wan Hai 503* no longer poses an immediate threat to the Indian coastline, the risk of marine pollution remains high, as smoke continues to rise and hot spots persist. Recovery operations are ongoing and may take several more weeks, focusing on extinguishing the fire, salvaging the ship, and retrieving cargo.

In both incidents, Indian Coast Guard (ICG) vessels, in coordination with other government agencies, have been supporting shoreline cleanup efforts. An ICG Dornier aircraft, equipped with specialised gear, is stationed in Kochi for aerial assessment, oil spill detection, and the application of dispersants to contain spread. A dedicated pollution control vessel, *Samudra Prahari*, is also being mobilised from Mumbai to strengthen the oil spill response.

Pollution caused by shipwrecks is a silent but growing threat to our oceans. The above-mentioned incidents underscore the urgent need to safeguard India's coastline from maritime accidents involving merchant vessels. Coordinated action plans must be developed to prevent ship sinkings that result in cargo loss, maritime traffic disruption, and severe environmental degradation. Disaster management agencies must also be equipped with state-of-the-art technology and maintain high levels of preparedness to swiftly combat onboard fires and mitigate long-term ecological damage caused by oil spills.

Shipwrecks can have damaging impacts on marine ecosystems, especially when they involve oil or hazardous materials. The consequences are wide-ranging and severe. Oil spills, plastic debris, and toxic substances can kill or injure marine organisms including commercially important fish species, contaminate habitats, and disrupt food chains. This leads to the degradation of coastal and marine ecosystems, especially those comprising mangroves and coral reefs. Furthermore, marine pollution can pose direct threats to human health. Unexploded munitions (if present) may detonate, and consumption of fish contaminated by toxic chemicals released from wrecks can cause toxicity or even carcinogenic effects. Pollution also damages livelihoods, impacting fisheries, coastal tourism, and industries that depend on a healthy marine environment. For millions who rely on the sea for food and income, this is not just an environmental concern; it is a matter of survival. Oil slicks and other pollutants can render

beaches inaccessible and unattractive. The resulting cleanup efforts often require extensive manpower and impose considerable financial burdens on local authorities.

Marine pollution from sunken vessels is a global, transboundary issue affecting people, ecosystems, and economies worldwide. It is estimated that there are around 3 million sunken and abandoned vessels in the world's oceans, more than 8,500 of which are classified as "potentially polluting wrecks." Many of these contain harmful chemicals, unexploded munitions, and an estimated 6 billion gallons of heavy fuel oil. Leaks from these vessels are expected to peak in the coming one or two decades. However, it is difficult to forecast when or where individual leaks will occur.

While significant challenges remain, global efforts are indeed being made to address marine pollution from shipwrecks. The transport of hazardous materials (HAZMAT) involves substances that pose a risk to health, safety, and the environment if not handled properly. These include explosives, flammable liquids and solids, oxidisers and organic peroxides, toxic and infectious agents, radioactive substances, and corrosives. Transportation of such hazardous materials requires specific packaging, labelling, documentation, and handling procedures as per the International Maritime Dangerous Code (IMDG). It is managed by the International Maritime Organization (IMO). The code, initially regarded as a recommendation, became a mandatory component of the International Convention for the Safety of Life at Sea (SOLAS) in 2004. It is updated every two years to keep pace with the evolving industry and safety standards. The IMO has also established conventions such as MARPOL (the International Convention for the Prevention of Pollution from Ships) to regulate various forms of ship-source pollution. The IMO promotes the adoption of new technologies, stricter enforcement of regulations, and more sustainable practices such as using alternative fuels and route optimisation, to help reduce the environmental footprint of maritime transport. In this context, it is worth noting that the UN Sustainable Development Goal 14 seeks to "prevent and significantly reduce marine pollution of all kinds by 2025." Likewise, the UN Decade of Ocean Science (2021–2030) envisions a clean ocean with reduced pollution. But declarations are not enough. As we reach the midpoint of 2025, tangible progress remains elusive. To achieve these goals, meaningful international cooperation among maritime nations is urgently needed.

For developing countries, the financial burden of addressing wreck-related pollution is immense. There is no clear global framework for cost-sharing or liability. Consequently, countries in whose waters these wrecks occur are often left to manage the fallout alone, with limited resources and capacity. The lack of comprehensive data and coordinated international mechanisms hampers timely responses. As a result, interventions often come too late to prevent irreversible damage to marine ecosystems and coastal communities.

Addressing the recurring crisis of marine pollution from shipwrecks requires genuine international cooperation. Countries must share best practices, establish common standards, and strengthen enforcement mechanisms. Binding international agreements, shared funding systems, and real-time data sharing are essential. The protection of our oceans—and the future of those who depend on them—can no longer be left to chance.

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