

The Impact of Shipping on Marine Environment - Safety Measures to reduce Future Accidents
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RESEARCHES & INNOVATIONS

international manufacturing commerce in numerous ways. The marine sector is vital in the transportation of items such as food, automobiles, clothing and home appliances, as well as natural resources and energy. It's accountable for balancing the global economy and keeping our nation and all nations united. As a result, many cities rely heavily on port revenues.

The Sri Lankan Ocean is home to diverse marine life (whales, turtles and dugongs). Accidents near or inside fragile marine habitats, including mangroves, shallow coral reefs, sea grasses, muddy tidal flats and lagoons, can have serious repercussions. The location of Sri Lanka makes it an important supply center for the transfer of goods and services. Its unique economic zone is eight times the size of its territory and receives more than 4,000 ships each year. The rise of global industry directly affects ocean pollution and poses a huge risk to the marine ecosystem. These maritime crises are mainly caused by shipwrecks for a number of reasons. Some are caused by ship collisions, internal technological issues, human mistake and weather. Most of them just ignore the lack of international regulations, registering the vessel in any other country than their own. It can impact the marine ecology, ocean water and coastal region; locals rely on fishing in varied forms and degrees every day.

Recent Shipping Accidents in Sri Lankan Sea water

• MT New Diamond

MT New Diamond was transporting 270,000 metric tons of crude oil from Kuwait's Meena Al Ahmadi port to India's Paradip port. On September 3, 2020, a fire broke out in the ship's boiler in the main engine room, killing a Filipino crewman. The accident began 38 nautical miles off the Sri Lankan coast. A coordinated mission with the Indian Navy put out the fire completely after this event. Even though 270,000 MT of crude oil was unaffected by the fire, an unspecified amount of fuel (around 1,700 MT) required to operate the ship ruptured in the blaze that destroyed the engine room and leaked into the ocean.

• MT New Diamond Accident

The environmental damages cannot be simply estimated due to future repercussions. The loss of fisheries, property, marine life and tourism can only be estimated. Long-term environmental implications are difficult to assess since significant environmental harm is occurring slowly. One of the biggest concerns with an oil spill is that marine creatures must surface to breathe, therefore inhaling the harmful compounds.

• MV X-Press Pearl

Eight months after the MT New Diamond disaster, a fire broke out on the MV X-Press Pearl on May 20, 2021. The MV X-Press Pearl, a Singapore-flagged vessel, caught fire on May 20. The joint operation of the Sri Lankan and Indian Naval Forces continued to extinguish the fire for more than 10 consecutive days. There were 28 containers of raw ingredients needed to create plastic bags and 25 tonnes of nitric acid and sodium hydroxide were on board. It also carried about 300 tonnes of gasoline. The beaches of Negombo and Kalutara are littered with microplastics and an oil slick is evident in the surrounding seas. The Sri Lankan Navy, environmentalists and locals have removed over 1,000 tonnes of trash from the beaches.

• The fire extinguishing of MV X-Press Pearl

In addition to water pollution, air pollution contributes to fire. As a result, vast amounts of greenhouse gases and hazardous vapours are released into the atmosphere. Once expelled by the fire, the pollutants cannot be eliminated. It is hard to regulate acid showers, particle deposition on plants, and pollutant gas inhalation in this circumstance. The research group recommends the following safety measures to avoid future marine accidents.

Safety Measures to Reduce Future Accidents

- If Sri Lanka wants to avert future incidents, it should at least form a risk analysis body. This will help us improve our ranking since we are rated as one of the worst ocean polluting nations. Seychelles, Thailand, China, India, Indonesia, Maldives, Australia and even countries in the Middle East must act quickly to prevent and manage maritime accidents and environmental damage. Regardless of who owns the land, those Governments should act quickly to put out the fire and prevent any oil or chemical spills into the ocean.
- A chemical safety and hazard investigation board must be established to simulate and analyze the fundamental causes of such incidents in order to prevent future occurrences. Those studies should be conducted as simulations to educate students, scientists, specialists and anyone interested in pollution control. After the accidents, media attention and public concern should not be separated. These should be used to establish safety standards and partnerships with other parties in the future.
- Immediate action should be taken to meet the requirement to be a party to MARPOL 73/78 Annex: 1-6. In such circumstances, it is vital to monitor all shipping boats passing through Sri Lankan waters, not only those owned by Sri Lanka.
- Involvement of all parties is required to eliminate accidents and incident causes. Prompt reporting of incidents is critical to a successful and effective reaction that corrects the causes. So, all countries should agree to follow this order.
- If a chemical leak or fire is detected, the nearest coastal authorities should take quick action to prevent and contain it, even if they lack the necessary equipment or human expertise. So, all MARPOL parties should agree to do that.
- Minor occurrences and near-misses should be recorded to prevent future serious accidents. Near-misses may be signs of future significant issues. Each near-miss indicates a problem with the current circumstances. Follow-up is required to avoid or eliminate major accidents. The concerned authorities must analyze the near miss and notify all nations along the maritime route so they can prepare.
- To reduce the effect of oil spills, the Sri Lankan government should establish oil-absorbing technology and research bodies.
- Many shipping companies use low sulphur fuels to comply with MARPOL Annex VI. Low sulphur fuels reduce the fuel's flashpoint by increasing a fire's potential (not biofuel). There are emission requirements for marine ships in several countries in Western Europe. However,

blended low-sulfur fuels will not work with old ships. Many cargo ships use regular fuel and clean the fuel gas before emitting it into the atmosphere to avoid the low sulphur fuel risk. So, authorities must check fuel type when asking for permission to enter territorial waterways.

- The Sri Lankan authorities should inspect the cargo ship's registered body, owner, cargo contents, fuel type, safety and health standards on board, insurance policy and terms, as well as the ship's quality and operational requirements.

Even ultra-high penalties are not enough to bring back the original nature which was there before the accidents. Therefore, prevention is better than cure.