

X-PRESS PEARL MARITIME DISASTER

SRI LANKA

REPORT OF THE UN ENVIRONMENTAL ADVISORY MISSION

JULY 2021



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This report is based on the information received and gathered during the mission and therefore cannot be seen as exhaustive, but can be considered as representative of the existing situation. All information has been compiled by the experts on mission based upon best available knowledge when drafted.

Report authors:

Hassan Partow, Camille Lacroix, Stephane Le Floch and Luigi Alcaro

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List of Abbreviations

BAOAC	Bonn Agreement Oil Appearance Code
CEDRE	Centre of Documentation, Research and Experimentation on Accidental Water Pollution (France)
CEFAS	Centre for Environment, Fisheries, and Aquaculture Science (UK)
DWC	Department of Wildlife Conservation
ECHO	European Commission's Directorate-General for Civil Protection and Humanitarian Aid
HDPE	High Density Polyethylene
HFO	Heavy Fuel Oil
HNS	Hazardous and Noxious Substances
IFO	Intermediate Fuel Oil
IMT	Incident Management Team
IMDG	International Maritime Dangerous Goods
ISPRA	National Institute for Environmental Protection and Research (Italy)
ITOPF	International Tanker Owners Pollution Federation
LDPE	Low Density Polyethylene
LLDPE	Linear Low Density Polyethylene
MEPA	Marine Environment Protection Authority
NARA	National Aquatic Resources and Development Agency
NBRO	National Building Research Organisation
MV	Merchant Vessel
NM	Nautical Mile
NOSCP	National Oil Spill Contingency Plan
NGO	Non-Governmental Organization
OCHA	(UN) Office for the Coordination of Humanitarian Affairs
OSRL	Oil Spill Response Limited
PAH	Polycyclic Aromatic Hydrocarbons
PM	Particulate Matter
PPE	Personal Protective Equipment
SACEP	South Asia Co-operative Environment Programme
SASP	South Asian Seas Programme
SLPA	Sri Lanka Port Authority
UN	United Nations
UNEP	United Nations Environment Programme

Executive Summary

The X-Press Pearl incident is the worst maritime disaster to have struck Sri Lanka. It has had a significant impact on Sri Lanka's sensitive coastal environment, local communities and the economy. Moreover, the event continues to unfold, and its active pollution generation phase will only come to closure with the elimination of the risks from the wreck and containers lost at sea.

Along with uncertainties of cascading environmental damage, the incident's complexity stems from the range of pollutants involved - oil, hazardous chemicals and plastics – and the lack of clarity regarding the nature and status of a substantial part of the vessel's cargo. Moreover, the growing geographic extent of the plastic spill - the largest on record - is expected to have transboundary impacts further compounding the problem.

There are two immediate risks from the incident that need to be eliminated as soon as possible:

- i) a sudden major spill of the fuel oil aboard the ship; and
- ii) pollution and navigational hazards from the wreck and lost containers.

Proactive and vigilant surveillance are required to mitigate these risks. With the development of offshore and shoreline clean-up plans, as well as the deployment of response equipment, key actors are now relatively well pre-positioned to deal with a possible oil spill. Action to contain and recover the limited but continuous release of oil from the wreck should be taken as soon as conditions allow.

Similarly, planning needs to be initiated to remove the wreck, lost containers and debris as a matter of priority. A detailed roadmap for this major decommissioning project needs to be developed immediately in a consultative and transparent manner, and independently from current concerns over monsoon related weather challenges. Government sanctioned oversight is imperative to ensure accountability for the satisfactory conduct of the work and instilling public confidence in the wreck and debris recovery process.

Despite the operational constraints of COVID-19 lockdown restrictions, Sri Lanka's authorities are implementing a commendable and efficient clean-up campaign of the plastic spill. Nevertheless, several key actions need to be carried out to enhance its effectiveness including:

- i) contamination analysis of the plastic waste to determine if it is hazardous or not;
- ii) refining and scaling-up clean-up techniques that minimize sand abstraction and recover small burnt particles; and
- iii) establish technical specifications for completion of microplastic clean-up operations while minimizing inadvertent environmental damage.

Environmental assessment of the incident needs to focus on pollution 'hot spots'; namely the area of the wreck and impacted shoreline sites. The investigation strategy should be directed at resolving several key questions with significant socio-economic implications and to allay public concerns, notably:

- i) is the fish inside/outside the designated 'no fishing area' safe to eat?
- ii) when should the moratorium on fishing be lifted?
- iii) is the reported spike in turtle and marine mammal deaths linked to the incident?

A biomonitoring programme is recommended as a relatively simple and cost-effective option to monitor the situation around the wreck, including the status of sensitive marine ecosystems (i.e. coral reefs) in the wider incident area.

While extensive sampling has been conducted, it is now important to focus the analysis on key parameters and expedite laboratory testing to generate scientific results for decision making and assess the actual damage from the incident. The results should also help inform the design of a longer-term monitoring programme of the marine environment. This is vital not only to track this disaster's ecological impacts, but also to obtain insight on baseline conditions which are essential for conducting scientific assessment and remediation of future maritime incidents. A sound knowledge base is also a central requirement for litigation and damage and loss assessments.

Beyond short-term remedial counter measures, ultimately real progress is for Sri Lanka to emerge from this traumatic experience with a more resilient system for preventing and responding to future maritime disasters. This would require a multi-year initiative that would include:

- i) development of a maritime disaster plan (building on the existing NOSCP);
- ii) strengthening the institutional basis for its implementation; and
- iii) a capacity building and training programme.

An initiative of this scale hinges on forging a solidarity coalition between the Government of Sri Lanka and its international friends and partners. Success will ultimately depend on coordinated action between diverse actors and hence the importance of a designated mechanism to organize international support. Thereby reinforcing Sri Lanka's efforts to consolidate its position as a global maritime and logistical hub, while assuring greater protection of ocean health, fishery resources and world trade.

1. Mission Background and Scope

On 20 May 2021, chemical fume emissions erupted on the Singapore-flagged MV X-Press Pearl containership as it anchored around 9 nautical miles (17 kilometres) northwest of the Port of Colombo in Sri Lanka national waters. An unknown number of containers, some of which carrying dangerous chemicals and plastic pellets, reportedly fell overboard as an intense fire broke out and explosions occurred on 25 May. Once the fire was under control around a week later, an effort to tow the vessel on 2 June to a deeper water refuge failed and resulted in partial sinking of the vessel. An oil slick emanating from the ship was visible by satellite from 8 June. And by 17 June the entire vessel had settled on the seabed at a depth of about 21 meters, with only its castle and some of its cranes partially visible. The crew were safely evacuated from the ship and no human casualties were deplored from the incident.

The principal environmental issues arising from this incident include:

1. A large black smoke plume created by the fire extending inland;
2. Potential spill of 15 products classified as Dangerous Goods aboard the ship into the sea, including 25 metric tonnes of nitric acid;
3. Large quantities of plastic pellets, cargo and other debris from the vessel washing ashore along the west coast of Sri Lanka; affecting most notably the Negombo beaches and lagoon - a prime fishing and tourist sector north of Colombo; and
4. A long but limited oil slick continuously leaking from the ship raising concern over a major sudden spill of the 348 tonnes of bunker fuel aboard the ship.

The Marine Environment Protection Authority (MEPA) activated the National Oil Spill Contingency Plan (NOSCP) and manages the incident as it continues to unfold; in collaboration with the Sri Lanka Armed Forces, technical government departments, local authorities and other key stakeholders.

On 4 June the UN Resident Coordinator in Sri Lanka received an official request from the Ministry of Foreign Affairs for technical support. And on 10 June the UN Environment Programme (UNEP) Executive Director received a similar request for assistance. In response to this request and in coordination with the UN Resident Coordinator, the UNEP/OCHA Joint Environment Unit mobilised a team of four experts to advise the Government of Sri Lanka primarily on:

1. Designing and implementing an environmental assessment;
2. Preventing, mitigating and responding to risks from the incident;
3. Strengthening national capacities to deal with future maritime disasters.

The four-member team deployed by the UNEP/OCHA Joint Environment Unit included two oil/chemical and marine litter experts from the Centre of Documentation, Research and Experimentation on Accidental Water Pollution (CEDRE) in France and a marine environment expert from the Italian National Institute for Environmental Protection and Research (ISPRA). The experts were mobilised through the European Commission's Directorate General for European Civil Protection and Humanitarian Aid Operations/Emergency Response Coordination Centre (DG ECHO/ERCC). The team was led by an environmental assessment specialist from the UNEP Resilience to Disasters and Conflicts Global Support Branch and was in Sri Lanka from 16 – 30 June.

The UN team worked closely with MEPA on daily basis, who organised consultation meetings with members of the Environmental Damage Assessment committee and facilitated site visits to the shipwreck and impacted shoreline sites. Furthermore, members of the UN team also received remote backstopping from their respective head offices and networks on technical questions that arose during the mission.

1.1 Context

Although historically Sri Lanka has experienced relatively limited maritime disasters, over a period of nine months the country suffered two major incidents namely that of the: i) MT New Diamond crude oil carrier in September 2020, and ii) MV X-Press Pearl cargo vessel in May 2021. Both incidents were caused by fire aboard the ships. Located on a major East-West shipping route and with major investments underway to build a regional maritime and logistical hub, the prospect of similar accidents occurring is expected to increase in the future.

The Sri Lanka authorities describe the MV X-Press Pearl as the “worst catastrophe in its maritime history”¹. It is evident that this is a complex and multi-dimensional incident encompassing a spectrum of environmental issues with potentially serious consequences over both the short and longer term. The key risks arise from:

1. Bunker fuel oil spill (348 tonnes);
2. Hazardous and noxious substances (of the vessels 1,486 containers, 81 were carrying dangerous goods including 25 tonnes of nitric acid, caustic sodic, methanol. In addition, there was 9,700 tonnes of potentially toxic epoxy resins on board²);
3. Recovery and decommissioning of the shipwreck wreck and lost containers;
4. Microplastics (nurdles or plastic pellets < 5mm). In total, there were 87 containers carrying several types of plastic pellets aboard the ship. The overall quantity of plastic pellets is estimated at around 1,680 tonnes;
5. Macro plastics (5-50 mm);
6. Fire residues (micro to macro);
7. Assorted bulk debris (cargo, pieces of damaged containers); and
8. Air pollution

A gradually developing incident with transboundary impacts

First, it is important to underline that this is a dynamic and evolving disaster, which is not over yet. While the initial emergency response phase has subsided, there is always a residual risk of bunker oil escaping from the vessel and/or hazardous chemicals and plastic pellets

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