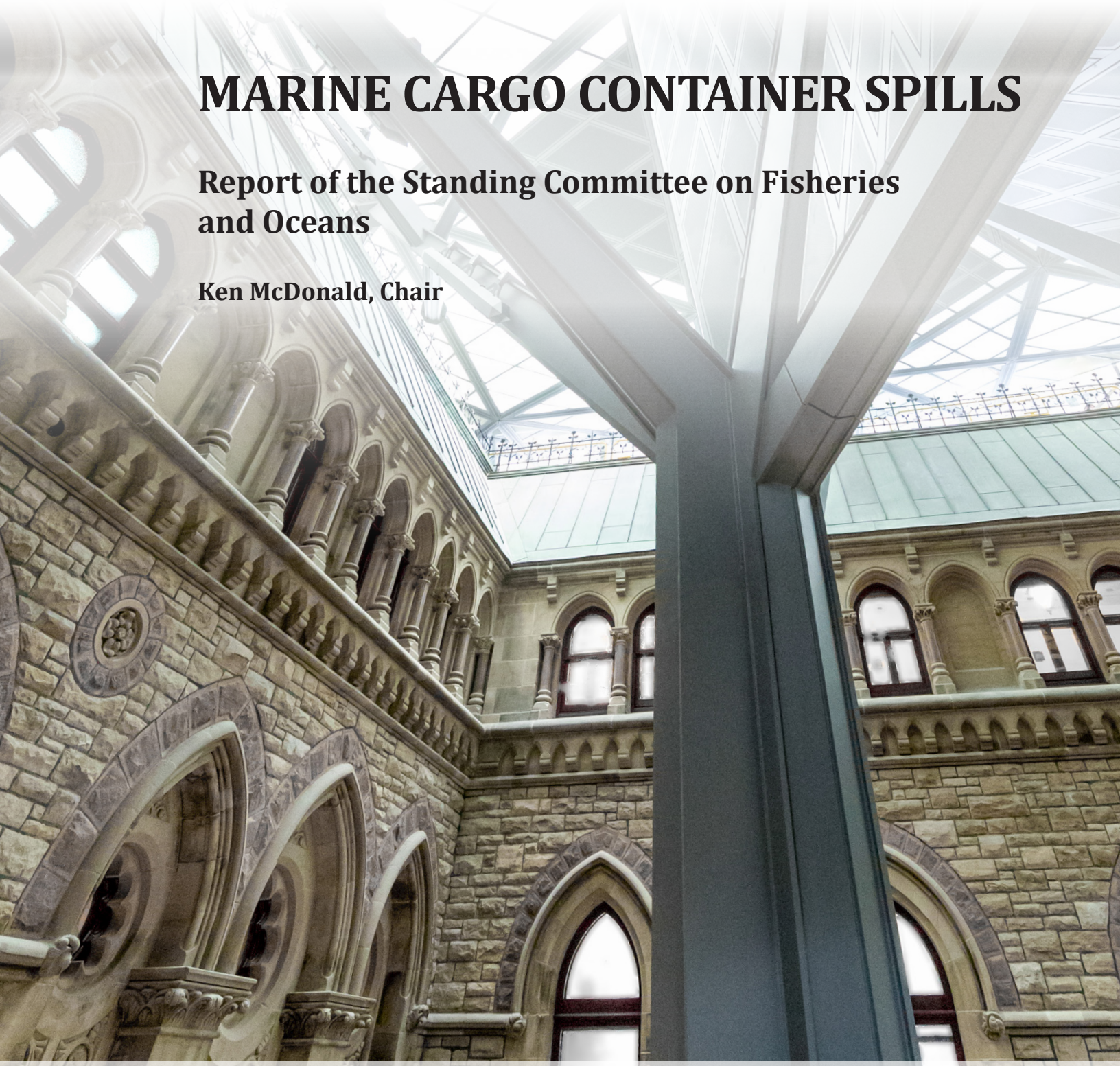
HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA



MARINE CARGO CONTAINER SPILLS

Report of the Standing Committee on Fisheries and Oceans

Ken McDonald, Chair

OCTOBER 2022
44th PARLIAMENT, 1st SESSION

MARINE CARGO CONTAINER SPILLS

Report of the Standing Committee on Fisheries and Oceans

Ken McDonald
Chair

OCTOBER 2022

44th PARLIAMENT, 1st SESSION

NOTICE TO READER

Reports from committees presented to the House of Commons

Presenting a report to the House is the way a committee makes public its findings and recommendations on a particular topic. Substantive reports on a subject-matter study usually contain a synopsis of the testimony heard, the recommendations made by the committee, as well as the reasons for those recommendations.

To assist the reader:
A glossary of terms used in this report is available on page ix

STANDING COMMITTEE ON FISHERIES AND OCEANS

CHAIR

Ken McDonald

VICE-CHAIRS

Rick Perkins

Caroline Desbiens

MEMBERS

Mel Arnold

Lisa Marie Barron

Serge Cormier

Brendan Hanley

Ken Hardie

Mike Kelloway

Robert J. Morrissey

Clifford Small

Bob Zimmer

OTHER MEMBERS OF PARLIAMENT WHO PARTICIPATED

James Bezan

Luc Desilets

Francis Drouin

Stephen Ellis

Marie-Hélène Gaudreau

Richard Lehoux

Marty Morantz

Pierre Paul-Hus

Anna Roberts

CLERKS OF THE COMMITTEE

Christine Sing

Tina Miller

LIBRARY OF PARLIAMENT

Parliamentary Information, Education and Research Services

Michael Chalupovitsch, Analyst

Daniele Lafrance, Analyst

Natacha Kramski, Analyst

Edouard McIntyre, Analyst

Thai Nguyen, Analyst

THE STANDING COMMITTEE ON FISHERIES AND OCEANS

has the honour to present its

SIXTH REPORT

Pursuant to its mandate under Standing Order 108(2), the committee has studied marine cargo container spills and has agreed to report the following:

TABLE OF CONTENTS

GLOSSARY OF TERMS IX

LIST OF RECOMMENDATIONS 1

MARINE CARGO CONTAINER SPILLS 7

- Objectives of the Study 7
- Marine Environmental Impact 8
- Marine Cargo Container Spill Response 11
  - Timeliness of Communication 11
  - Public Access to Vessel Manifests 12
  - Emergency Towing and Firefighting Capability 14
  - Salvage Capability 15
  - Incidents Involving Hazardous and Noxious Substances 17
- Cross-Jurisdiction Collaboration 20
- Polluter Responsibility and Financial Accountability 24
- Conclusion 26

APPENDIX A LIST OF WITNESSES 27

APPENDIX B LIST OF BRIEFS 29

REQUEST FOR GOVERNMENT RESPONSE 31

GLOSSARY OF TERMS

Bioremediation

Bioremediation is any process that uses decomposers and green plants, or their enzymes, to improve the condition of contaminated environments. Bacteria can be used to clean up oil spills in the ocean through bioremediation. Specific bacteria can be used to bioremediate specific contaminants, such as hydrocarbons, which are present in oil and gasoline.[1]

Hazardous and Noxious Substances

A hazardous and noxious substance (HNS) is "any substance other than oil which, if introduced into the marine environment, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."[2]

International Maritime Organization

The International Maritime Organization (IMO) is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.[3]

Nurdles

Pre-production plastic pellets or "nurdles" are about the size and shape of a lentil and are the building blocks of nearly all plastic products. Nurdles are made up of thermoplastics—various polymers that can be melted and then molded or extruded to form products ranging from grocery bags and soda bottles to the rigid pipes used in sewer systems. Most nurdles are clear or milky but they are also made in various colours.[4]

1 Science World, *Bioremediation of oil spills*.

2 International Maritime Organization [IMO], *Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol)*.

3 IMO, *About IMO*.

4 Gard, *Marine plastic pollution—are nurdles a special case for regulation?*

Rotterdam Convention

The *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade* is an "international treaty that provides an early warning to countries on a broad range of hazardous chemicals in international trade that have been banned or severely restricted in other countries to protect human health or the environment."[5]

5 Government of Canada, *Rotterdam Convention on Prior Informed Consent Procedure*.

LIST OF RECOMMENDATIONS

As a result of their deliberations committees may make recommendations which they include in their reports for the consideration of the House of Commons or the Government. Recommendations related to this study are listed below.

Recommendation 1

That the Department of Fisheries and Oceans implement a marine debris monitoring and management plan that adequately addresses all forms of marine debris impacting coastlines. 9

Recommendation 2

That the Government of Canada invest in research and monitoring to understand the impacts of polystyrene and other plastics entering our oceans and improve how these products are removed to prevent ecological harms. 9

Recommendation 3

That the Government of Canada take a leading role to encourage the United Nations Environment Programme and international partners to ban the use of expanded polystyrene foam in packaging for marine transport. 10

Recommendation 4

That, in collaboration with major shipping nations, the Government of Canada work with the International Maritime Organization to develop standards and requirements for locating devices to be incorporated in shipping containers, and that the Canadian Coast Guard, in consultation with Transport Canada, consider the feasibility of installing location and tracking devices, e.g., transponders, on shipping containers to assist in locating lost and sunken containers. 10

Recommendation 5

That, in collaboration with major shipping nations, the Government of Canada work with the International Maritime Organization to investigate new container ship rules, e.g., the Rotterdam rules or others, that consider the volume and risk of modern container traffic. 10

Recommendation 6

That the Canadian Coast Guard advocate for the expansion of improved cell phone and broadband internet coverage to Canada's coastal communities..... 12

Recommendation 7

That the Government of Canada improve public accountability for marine spill incidents by communicating the progress of efforts in the wake of the spill with the public. 12

Recommendation 8

That, in collaboration with major shipping nations, the Government of Canada work with the International Maritime Organization to require ships' manifests to more accurately identify goods being carried and to require them to be made available to the port authority and joint spill response task force in advance of entry to the port. Spill response task forces would be established for each port and would include federal, provincial and territorial agencies and involved volunteers from coastal communities. 14

Recommendation 9

That the Government of Canada immediately review its emergency salvage tug capacity along all coasts to ensure that salvage tug capacity is consistent with the size and volume of vessels travelling to our ports, and establish long-term arrangements for marine emergency towing. 15

Recommendation 10

That the Minister of Fisheries and Oceans consult the Canadian Coast Guard and other ministries on options to improve marine firefighting capabilities such as were required to deal with the *ZIM Kingston*. 15

Recommendation 11

That the Minister of Fisheries and Oceans write a letter to the Minister of Transport, the Minister of the Environment and to provincial and territorial counterparts to explore opportunities to develop a list of pre-qualified salvage contractors from which ship owners must choose to respond to shoreline debris and lost-cargo cleanup of Canada's coastal and inland waterways. 17

Recommendation 12

That to be pre-qualified to undertake clean-up activities, a salvage operator must have demonstrated capacity or skill and performance to work in partnership with Indigenous and coastal communities who possess the local terrain knowledge and can provide critical advice and operational support. 17

Recommendation 13

That the Government of Canada review the salvage capacity on the West Coast and Canada's other coasts to address the current lack of major vessel salvage operations capability and promote domestic capacity, and consult with U.S. federal counterparts on methods and equipment to retrieve sunken containers. 17

Recommendation 14

That, to encourage industry involvement in the development of regional salvage capacity, the federal government investigate global best practices and develop standards to ensure that shipping companies travelling through Canadians waters have established arrangements with salvage companies..... 17

Recommendation 15

That the Government of Canada expand Canada's marine oil spill preparedness and response regime to include responses to hazardous and noxious material incidents from major vessels. 19

Recommendation 16

That the Government of Canada require hazardous and noxious substances handling facilities of prescribed classes (to be determined through consultation with industry) to develop hazardous and noxious substances response plans to ensure adequate response to pollution incidents that could occur during the handling of hazardous and noxious substances between a vessel and a facility. 19

Recommendation 17

That the Canadian Coast Guard ensure it has the flexibility to quickly contract with appropriate technical experts and responders in the event a polluter is unknown, unwilling, or unable to respond to a hazardous and noxious substances release. 19

Recommendation 18

That the Canadian Coast Guard ensure that its officials have the appropriate training to develop new expertise and competencies required to carry out its federal monitoring officer and on-scene commander functions through a hazardous and noxious substance response program. 19

Recommendation 19

That the Canadian Coast Guard develop and maintain a national exercise plan to regularly validate both the national contingency plan for hazardous and noxious substances and region-specific planning and readiness for hazardous and noxious substances. 19

Recommendation 20

That the Government of Canada take a leading role to encourage the United Nations Environment Programme and the International Maritime Organization, to review and update the rules relating to the marine transport of hazardous chemicals and in particular, those chemicals that are reactive with water and prone to combustion. 19

Recommendation 21

That the Canadian Coast Guard consult with stakeholders, including Indigenous coastal communities, in a review of its emergency response training for emergency response and shoreline cleanup personnel in coastal communities to ensure the safe and proper handling and disposal of debris and the provision of necessary equipment and supplies. 21

Recommendation 22

That the Government of Canada work in collaboration with Indigenous communities to review their spill response capacity in their territories to ensure they can be active partners in clean-up efforts. 22

Recommendation 23

That Fisheries and Oceans Canada and other relevant departments review how they communicate the risk of spills to the public to ensure that people without training are not at risk after a spill occurs. 22

Recommendation 24

That the Government of Canada review the Canadian Coast Guard's drift modelling capabilities, which are essential to effective responses to marine spills. 22

Recommendation 25

That the Canadian Coast Guard consult with current and potential partners on a strategy to create a joint spill response task force that adds clean-up capacity to supplement, where necessary, the capabilities of volunteer groups and involves the Unified Command response partnership in the oversight of the clean-up effort. 23

Recommendation 26

That the Government of Canada establish and fund a joint spill response task force composed of federal, provincial, territorial and Indigenous governing bodies, commercial fisheries organizations, and non-governmental organization representatives and task it to recruit, regularly train, and equip a workforce capable of responding to spills in the regions most likely to be impacted, which can be deployed in the immediate wake of a spill occurring..... 23

Recommendation 27

That the Government of Canada assign a joint spill response task force to create the geographic response plans required to respond effectively to cargo container spills on all coastlines, including clear objectives and timeline standards for cargo container spill responses..... 23

Recommendation 28

That a joint spill response task force be composed of federal, provincial, territorial and Indigenous representatives and be tasked to develop the human and social capital infrastructure required to respond to cargo container spills in a timely manner. 23

Recommendation 29

That the federal government examine alternative polluter-pays and/or industry-pays mechanisms that would go beyond the current statutory limitation of three or six years and would ensure that sufficient funds are available in a timely manner to respond to immediate and long-term environmental damage caused by marine cargo container spills. 25

MARINE CARGO CONTAINER SPILLS

OBJECTIVES OF THE STUDY

On 21 October 2021, the *ZIM Kingston*, a container ship owned by Greece-based Danaos Shipping Company Ltd., advised Marine Communications and Traffic Services of the Canadian Coast Guard that, due to rough weather, it has lost approximately 40 containers at the entrance of the Juan de Fuca Strait between British Columbia (B.C.) and Washington State.[1] Hazardous materials were identified in two containers and several of the lost containers drifted off to the northwest coast of Vancouver Island. By 27 October 2021, it was determined that over 100 containers went overboard rather than the initially reported 40. On 3 November 2021, the Transportation Safety Board of Canada deployed a team of investigators to the site and their investigation is ongoing.[2]

In light of the *ZIM Kingston* incident and global marine shipping trends evolving towards the use of larger container ships and increasing total container volumes in the context of rising extreme weather conditions,[3] on 20 January 2022, the House of Commons Standing Committee on Fisheries and Oceans (the committee) agreed to undertake a study of the effects of "cargo container spills on Canada's marine environment with regard to

(i) the environmental impacts of cargo container spills;

(ii) improving response times and efficacy to cargo spills;

(iii) addressing jurisdictional gaps to improve collaboration with volunteer, charitable organizations, provincial and territorial agencies, municipalities, and Indigenous communities during spill responses;

(iv) improving polluter responsibility and financial accountability."[4]

1 Government of British Columbia, *Equipment Failure—M/V ZIM Kingston*.

2 Transportation Safety Board of Canada, *Marine transportation safety investigation M21P0297*.

3 Transport Canada, "Transportation Volumes and Performance," in *Transportation in Canada 2020—Overview Report*, 2020, p. 7.

4 House of Commons, Standing Committee on Fisheries and Oceans [FOPO], *Minutes of Proceedings*, 20 January 2022.

The committee held four meetings from 29 March 2022 to 7 April 2022 and heard from 21 witnesses representing the Canadian Coast Guard, Transport Canada, the Government of British Columbia, Tla-o-qui-aht First Nation, the Transportation Safety Board of Canada, port authorities, and non-governmental and emergency management organizations.[5] The committee recognizes that the evidence heard was heavily focused on the West Coast. However, the themes of the report and recommendations put forward by the committee based on the evidence presented are applicable to Canada's three coasts and the St. Lawrence Seaway.

MARINE ENVIRONMENTAL IMPACT

Based on toxicological assessments undertaken by Fisheries and Oceans Canada (DFO) and Environment and Climate Change Canada (ECCC), no fisheries closures were imposed in the aftermath of the *ZIM Kingston* incident. Regarding the two lost containers containing hazardous materials, Chris Henderson, Deputy Commissioner, Operations, Canadian Coast Guard, told the committee that they represent a "limited" risk of environmental impact due to bioremediation. He explained:

> The information that we have been given by Environment and Climate Change Canada and the Department of Fisheries and Oceans, the science on the chemicals, is that they will dissolve and be bioremediated very quickly in saltwater. To the extent there is pollution resulting from those two sea containers opening at depth, that will be limited to the surrounding area and then quickly mitigated by bioremediation and by dissolving in the saltwater.[6]

A document provided to the committee by the Canadian Coast Guard on 15 June 2022 provided details on the hazardous materials contained in two of the containers that went overboard.[7] One container has 23,800 kg of potassium amylxanthate, and the second contains 18,000 kg of thiourea dioxide.[8]

Beyond hazardous chemicals, debris from the *ZIM Kingston*, including refrigerators and polystyrene foam, have been found washed ashore on the northwest coast of Vancouver

5 FOPO, *Marine Cargo Container Spills*.

6 FOPO, *Evidence*, 29 March 2022 (Chris Henderson, Deputy Commissioner, Operations, Canadian Coast Guard).

7 Canadian Coast Guard, "Follow ups to the March 29 FOPO meeting with Canadian Coast Guard officials," *Written correspondence to the committee*, 15 June 2022.

8 Potassium amylxanthate is a pale-yellow powder used in the mining industry and thiourea dioxide is a white organosulfur agent employed in the textile industry. Both substances are classified by Environment and Climate Change Canada as class 4.2 dangerous materials meaning that they are substances liable to spontaneous combustion.

Island. Alys Hoyland, Youth Coordinator, Pacific Rim Chapter, Surfrider Foundation Canada, pointed out that "containers and their cargo, particularly plastics, can persist in the marine environment for decades, if not centuries, and circulate in ocean currents, absorbing pollutants and eventually making landfall."[9] In the opinion of Stafford Reid, Environmental Emergency Planner and Analyst, EnviroEmerg Consulting, polystyrene foam and nurdles from marine debris are "much more insidious and have much more long-term impact than even oil."[10] Plastic pollutants, including microplastics, can persist in the aquatic environment and their long-term impacts are hard to determine.[11]

Given their potential environmental impacts, Alys Hoyland mentioned the critical need for locating sunken containers and a long-term tracking of marine debris. In her view:

> When we can't accurately track where these containers are and we don't know where the load of chemicals will eventually spill, it's almost impossible for us to engage in any long-term monitoring and to fully understand, from a scientific perspective, what the ramifications of that chemical being in the aquatic environment will be. Until we have that information, we can't categorically say what is or isn't going to happen, from a scientific perspective.[12]

Recommendation 1

That the Department of Fisheries and Oceans implement a marine debris monitoring and management plan that adequately addresses all forms of marine debris impacting coastlines.

Recommendation 2

That the Government of Canada invest in research and monitoring to understand the impacts of polystyrene and other plastics entering our oceans and improve how these products are removed to prevent ecological harms.

As plastic pollution and the prevention of marine pollution by ships are also of global concern and responsibility under the International Maritime Organization (IMO)

9 FOPO, *Evidence*, 31 March 2022 (Alys Hoyland, Youth Coordinator, Pacific Rim Chapter, Surfrider Foundation Canada).

10 FOPO, *Evidence*, 29 March 2022 (Stafford Reid, Environmental Emergency Planner and Analyst, EnviroEmerg Consulting).

11 FOPO, *Evidence*, 7 April 2022 (Valérie Langlois, Professor and Canada Research Chair in Ecotoxicogenomics and Endocrine Disruption, Institut national de la recherche scientifique).

12 FOPO, *Evidence*, 31 March 2022 (Hoyland).

conventions, Karen Wristen, Executive Director, Living Oceans Society, suggested Canada play a "leading role" at the international level. She indicated:

> Work needs to be done at both the IMO and the United Nations Environment Programme where we could work on eliminating expanded polystyrene foam as a packing material, certainly in the case of anything being shipped by marine container.[13]

In the view of Karen Wristen, marine cargo container spill prevention can be enhanced through a wider international adoption of the Rotterdam Convention.[14] Information shared under that convention would enable governments to assess the risks posed by hazardous chemicals and to make informed decisions on their future import.

Recommendation 3

That the Government of Canada take a leading role to encourage the United Nations Environment Programme and international partners to ban the use of expanded polystyrene foam in packaging for marine transport.

Recommendation 4

That, in collaboration with major shipping nations, the Government of Canada work with the International Maritime Organization to develop standards and requirements for locating devices to be incorporated in shipping containers, and that the Canadian Coast Guard, in consultation with Transport Canada, consider the feasibility of installing location and tracking devices, e.g., transponders, on shipping containers to assist in locating lost and sunken containers.

Recommendation 5

That, in collaboration with major shipping nations, the Government of Canada work with the International Maritime Organization to investigate new container ship rules, e.g., the Rotterdam rules or others, that consider the volume and risk of modern container traffic.

13 FOPO, *Evidence*, 31 March 2022 (Karen Wristen, Executive Director, Living Oceans Society).

14 The *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade* is an "international treaty that provides an early warning to countries on a broad range of hazardous chemicals in international trade that have been banned or severely restricted in other countries to protect human health or the environment."

MARINE CARGO CONTAINER SPILL RESPONSE

In response to the *ZIM Kingston* incident, the Canadian Coast Guard, acting as the lead agency for ship-source spills, and B.C. Ministry of Environment and Climate Change Strategy created a unified command post to devise a harmonized response. This Incident Unified Command Post also comprised Resolve Marine Group, a U.S. company hired by Danaos Shipping Company Ltd. (as the responsible polluter), First Nations, and local municipalities.

According to witnesses, the response to this specific incident has not been optimal. Witnesses identified issues such as the timeliness of communication with affected coastal communities, lack of public access to cargo manifests, emergency towing and firefighting capability, and salvage capability as factors hampering the efficacy and timeliness of the spill response.

Timeliness of Communication

Satinder Singh, Vice-President, Marine Operations and Harbour Master, Nanaimo Port Authority, stated that there was a delay in managing the incident since the port authority was not included from the outset at the table to discuss response options.[15] The committee was told that the delay may also be related to congestion at ports on the West Coast. The Chamber of Shipping stated:

> [S]upply chain disruptions and congestion are creating an abnormal number of container ships arriving to Canadian waters before they can conduct cargo operations at terminals in the Port of Vancouver and certain other ports. While some ships proceed to anchor at and near ports, many have been forced to wait offshore until space is available. This leaves a vessel more vulnerable than if it were at anchor in sheltered waters. Other ports such as Long Beach, California have requested that ships delay their arrival and wait 100 miles offshore, but such an approach for British Columbia would increase risk to vessels during much of the year, as the Pacific Northwest is subject to more frequent and adverse weather conditions.[16]

On the other hand, the committee also heard Josh Temple, Coordinator, Environmental Sustainability, Tla-o-qui-aht First Nation, praising the efforts of the Canadian Coast Guard and the Province of B.C. in "keeping not only Indigenous but also non-Indigenous

15 FOPO, *Evidence*, 31 March 2022 (Satinder Singh, Vice-President, Marine Operations and Harbour Master, Nanaimo Port Authority).

16 Chamber of Shipping, *Brief*, 26 April 2022.

peoples along the coast exceptionally well informed through consistent releases and updates."[17]

Communications with B.C. remote coastal communities during the incident and the ensuing clean-up operations appeared to be affected, however, by the low availability and reliability of cellphone coverage and broadband Internet access. Terry Dorward, Project Coordinator, Tribal Parks, Tla-o-qui-aht First Nation, indicated:

> There are a lot of spotty areas. First Nation connectivity is improving, but it still needs a lot of work. There are a lot of dead zones, even on Vancouver Island, and of course on the remote islands. It's very spotty.[18]

Recommendation 6

That the Canadian Coast Guard advocate for the expansion of improved cell phone and broadband internet coverage to Canada's coastal communities.

Recommendation 7

That the Government of Canada improve public accountability for marine spill incidents by communicating the progress of efforts in the wake of the spill with the public.

Given that climate change is resulting in an increased frequency of adverse weather conditions, communication with vessels in distress was another topic brought up by the Chamber of Shipping. In its view,

> the Government of Canada should support proactive vessel monitoring and guidance to vessels when safety may be compromised by adverse weather conditions. This should include consideration of extending the jurisdiction and services of the Canadian Coast Guard's Marine Communications and Traffic Services to include offshore risk management.[19]

Public Access to Vessel Manifests

Since lost containers and their cargo can wash ashore anywhere along Canada's extensive coastline, coastal communities can be put at risk when hazardous and noxious

17 FOPO, *Evidence*, 5 April 2022 (Josh Temple, Coordinator, Environmental Sustainability, Tla-o-qui-aht First Nation).

18 FOPO, *Evidence*, 5 April 2022 (Terry Dorward, Project Coordinator, Tribal Parks, Tla-o-qui-aht First Nation).

19 Chamber of Shipping, *Brief*, 26 April 2022.

substances (HNS)[20] are released from the cargo. Alys Hoyland informed the committee that without public access to the complete vessel manifest, it is difficult to "accurately identify and monitor the spread of the debris in order to hold the responsible parties accountable for the full cost of clean up."[21]

Karen Wristen also emphasized the risks being borne by coastal communities with the lack of information regarding marine debris landing on their shores. Referring to the *ZIM Kingston* incident, she stated:

> […] we really have no idea what to expect from the missing sunken containers. Two of them are known to contain a chemical that is acutely toxic to aquatic organisms, and we have no idea where they are or what condition the cargo is in, and 102 of the containers are simply mysteries. We're told that the manifest, which is not made public, describes the cargo only in the most general sense. We have no means of assessing the size or nature of the risk that has been consigned to the ocean. How, then, are we to begin to hold the polluter to account for the risk or to plan and pay for a response when those sunken containers break up and release their content?[22]

Christopher Hall, President and Chief Executive Officer, Shipping Federation of Canada, confirmed to the committee, however, that certain information from a vessel manifest is disclosed to enforcement agencies:

> Certainly, all cargo on a ship is very highly documented through a ship's manifest, so I can't answer the question specifically as to why it was not shared or why it took a while to obtain that information, but that information certainly would have been in the hands of certain Canadian agencies, namely the Canada Border Services Agency would have that information as would the shipper itself.[23]

While noting that awareness of the types of cargo being carried on a specific vessel is not readily shared between governmental authorities and coastal communities that may have a response capability, the Chamber of Shipping indicated that, in collaboration with Transport Canada and five Central Coast First Nations, it is planning to launch a pilot project this year aimed at sharing cargo manifest information in a timely manner to

---

20 The International Maritime Organization defines hazardous and noxious substances (HNS) as "any substance other than oil which, if introduced into the marine environment, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."

21 FOPO, *Evidence*, 31 March 2022 (Hoyland).

22 Ibid. (Wristen).

23 FOPO, *Evidence*, 7 April 2022 (Christopher Hall, President and Chief Executive Officer, Shipping Federation of Canada).

inform spill response resource management.[24] The Chamber of Shipping also recommended the Government of Canada "rapidly progress the design and implementation of a Single-Window framework for the sharing of key cargo manifest information between authorities responsible for the prevention and reaction to marine cargo spills."[25]

Recommendation 8

That, in collaboration with major shipping nations, the Government of Canada work with the International Maritime Organization to require ships' manifests to more accurately identify goods being carried and to require them to be made available to the port authority and joint spill response task force in advance of entry to the port. Spill response task forces would be established for each port and would include federal, provincial and territorial agencies and involved volunteers from coastal communities.

Emergency Towing and Firefighting Capability

Increasing marine emergency tow capacity is an initiative under the federal Oceans Protection Plan.[26] This initiative aims to improve the Canadian Coast Guard's capability to rescue ships in distress. In 2018, the federal government leased for a three-year term two offshore vessels, the *Atlantic Eagle* and *Atlantic Raven*, capable of towing large ships on the West Coast. On 5 November 2021, the federal government announced a one-year contract extension for the lease.[27] The *Atlantic Raven* participated in the response to the *ZIM Kingston* incident.

The usefulness of the two leased towing vessels was recognized by Shri Madiwal, Director, Marine Operations and Harbour Master, Vancouver Fraser Port Authority.[28] However, he pointed out the lingering uncertainty regarding a potential extension of the lease or the long-term national approach for marine emergency towing announced by the federal government under its National Strategy on Emergency Towing. The

24 Chamber of Shipping, *Brief*, 26 April 2022.

25 Ibid.

26 Government of Canada, *Oceans Protection Plan–Increasing Emergency Tow Capacity*, February 2018.

27 Canadian Coast Guard, *Government of Canada extends contract for marine emergency towing vessels on the West Coast*, News release, 5 November 2021.

28 FOPO, *Evidence*, 31 March 2022 (Shri Madiwal, Director, Marine Operations and Harbour Master, Vancouver Fraser Port Authority).

committee notes that the 2022 federal budget proposes to renew and expand the Oceans Protection Plan by providing an additional $2 billion over nine years.[29]

Recommendation 9

That the Government of Canada immediately review its emergency salvage tug capacity along all coasts to ensure that salvage tug capacity is consistent with the size and volume of vessels travelling to our ports, and establish long-term arrangements for marine emergency towing.

Firefighting capability plays an important role in marine emergency response. Regarding the *ZIM Kingston* incident, Shri Madiwal revealed that the initial fire incident was reported by the ship at approximately 12:45 and the Canadian Coast Guard intervened at about 17:30 to 18:00. However, the emergency towing vessel with firefighting capability was only on site the next day at 6:30, about 18 hours later.[30] Stafford Reid underlined that the situation was saved by the fortuitous presence of two offshore supply vessels with firefighting capability in the vicinity.[31]

Recommendation 10

That the Minister of Fisheries and Oceans consult the Canadian Coast Guard and other ministries on options to improve marine firefighting capabilities such as were required to deal with the *ZIM Kingston*.

Salvage Capability

Marine salvage is the process of recovering a ship and its cargo after an incident. As mentioned by Chris Henderson, under the *Wrecked, Abandoned or Hazardous Vessels Act*, the clean-up of lost cargo is the responsibility of the vessel owner. The Canadian Coast Guard's responsibility is to "ensure that the owner takes the appropriate measures to address the lost cargo."[32]

29 Government of Canada, "Protecting Our Lands, Lakes, and Oceans," Chapter 3.3 in *Budget 2022—A Plan to Grow Our Economy and Make Life More Affordable*, 2022.

30 FOPO, *Evidence*, 31 March 2022 (Madiwal).

31 FOPO, *Evidence*, 29 March 2022 (Reid).

32 Ibid. (Henderson).

In the opinion of Stafford Reid, however, there is currently no effective marine salvage capability on the West Coast. He indicated:

> When we actually lose containers, there's really very little response to track the actual floating containers other than throwing some tracking buoys in the water. Finding and recovering the sunken ones is very difficult. It's a salvage operation. When it gets down to the point of actually removing the containers and recovering the debris from the shores, those are really complex processes that require shoreline clean-up assessment techniques and the ability to muster a workforce that is not only registered but screened, hired, supervised, equipped and paid. Being paid is a big thing. Building that workforce is really important.
>
> None of the major salvage providers in the world reside here. There's no representation like SMIT, Ardent, Mammoet, or any of the other 50 major salvage companies worldwide. We don't have any storage depots for large salvage equipment that's required, which you can put on a vessel or helicopter. [33]

In a written submission, Stafford Reid pointed out that the United States has legal requirements for ships entering their waters to have an arrangement with a salvage company while Canada does not:

> In Canada, there is no legal requirement that major vessels entering its waters have an arrangement with a salvage company, nor are there any specifies the performance requirements of a salvage company. In the United States are these requirements. The shipping industry has not invested in regional salvage capacity building such as buying staging critical equipment along the coast and undertaking exercises. They view the low probability of using the expensive resources as out weighting such investments.[34]

Karen Wristen added, in the *ZIM Kingston* case, the contractor hired by the polluter had no contact at the beginning with the Quatsino First Nation where the focus of the on-the-ground salvage efforts occurred. In her view, there is a “policy vacuum” regarding salvage operations for marine cargo container spills. She stated:

> In that void, the ship's owner retained an agent with no shoreline salvage experience, no knowledge of the local terrain, infrastructure or response assets, and gave him command of the entire operation. That agent decided to prioritize the removal of goods that were still contained in a beached container over the goods that were strewn all over the beach. That choice is largely responsible for the fact that debris is now strewn on every beach from Haida Gwaii to Tofino, at the very least.[35]

---

33 Ibid. (Reid).

34 Stafford Reid, Environmental Emergency Planner and Analyst, EnviroEmerg Consulting, *Brief*, 29 March 2022.

35 FOPO, *Evidence*, 31 March 2022 (Wristen).

Recommendation 11

That the Minister of Fisheries and Oceans write a letter to the Minister of Transport, the Minister of the Environment and to provincial and territorial counterparts to explore opportunities to develop a list of pre-qualified salvage contractors from which ship owners must choose to respond to shoreline debris and lost-cargo cleanup of Canada's coastal and inland waterways.

Recommendation 12

That to be pre-qualified to undertake clean-up activities, a salvage operator must have demonstrated capacity or skill and performance to work in partnership with Indigenous and coastal communities who possess the local terrain knowledge and can provide critical advice and operational support.

Recommendation 13

That the Government of Canada review the salvage capacity on the West Coast and Canada's other coasts to address the current lack of major vessel salvage operations capability and promote domestic capacity, and consult with U.S. federal counterparts on methods and equipment to retrieve sunken containers.

Recommendation 14

That, to encourage industry involvement in the development of regional salvage capacity, the federal government investigate global best practices and develop standards to ensure that shipping companies travelling through Canadians waters have established arrangements with salvage companies.

Incidents Involving Hazardous and Noxious Substances

The BC Marine Debris Working Group highlighted that potassium amylxanthate, a hazardous substance carried by the *ZIM Kingston*, "can spontaneously combust in the presence of water and may have been responsible for the extensive fire damage to the cargo."[36] While the Oceans Protection Plan includes a HNS initiative planning for a "national program to better prepare for and respond to releases of these substances from ships,"[37] Stafford Reid stated that Canada's current marine emergency

36 BC Marine Debris Working Group, *Brief*, 24 March 2022.

37 Government of Canada, *Oceans Protection Plan—Hazardous and Noxious Substances*, February 2018.

preparedness and response regime has “no meaningful operational readiness” for the handling of ship-source releases of HNS.[38]

The committee also heard Satinder Singh pointing out that, during the *ZIM Kingston* incident, even though there was no approved facility in Nanaimo for a container discharge, the port of Nanaimo was the only installation able to accommodate the ship’s salvage operation in the western region due to congestion and the time required to unload the damaged containers.[39] In the opinion of Kevin Butterworth, Executive Director, Environmental Emergencies and Land Remediation, Ministry of Environment and Climate Change Strategy, Government of B.C., there is a definite gap regarding coordinated spill response plans addressing substances other than oil. Therefore, he proposed the federal government collaborate with the Province of B.C. in expanding marine oil spill preparedness and response regime to include all hazard incidents.[40]

At the international level, the IMO’s *Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000* seeks to “ensure that ships carrying HNS, as well as HNS handling facilities involved in handling operations to or from a ship, are subject to national preparedness and response programs similar to those already in existence for oil incidents.”[41] In the committee’s opinion, Canada should establish a national program for HNS preparedness and response built around the elements of the IMO Protocol. The committee would like to reiterate through the following recommendations those from the 2014 Tanker Safety Expert Panel report on the need to develop classes of HNS handling facilities, as Transport Canada has done for oil handling facilities; identify contractors capable of providing technical expertise and responding to releases of HNS in the marine environment; and develop a national program to exercise the skills and knowledge required for the response to an HNS-release incident.

38 Reid, *Brief*, 29 March 2022.

39 FOPO, *Evidence*, 31 March 2022 (Singh).

40 FOPO, *Evidence*, 7 April 2022 (Kevin Butterworth, Executive Director, Environmental Emergencies and Land Remediation, Ministry of Environment and Climate Change Strategy, Government of B.C.).

41 Tanker Safety Expert Panel, *A Review of Canada’s Ship-Source Spill Preparedness and Response: Setting the Course for the Future, Phase II—Requirements for the Arctic and for Hazardous and Noxious Substances*, 2014.

Recommendation 15

That the Government of Canada expand Canada's marine oil spill preparedness and response regime to include responses to hazardous and noxious material incidents from major vessels.

Recommendation 16

That the Government of Canada require hazardous and noxious substances handling facilities of prescribed classes (to be determined through consultation with industry) to develop hazardous and noxious substances response plans to ensure adequate response to pollution incidents that could occur during the handling of hazardous and noxious substances between a vessel and a facility.

Recommendation 17

That the Canadian Coast Guard ensure it has the flexibility to quickly contract with appropriate technical experts and responders in the event a polluter is unknown, unwilling, or unable to respond to a hazardous and noxious substances release.

Recommendation 18

That the Canadian Coast Guard ensure that its officials have the appropriate training to develop new expertise and competencies required to carry out its federal monitoring officer and on-scene commander functions through a hazardous and noxious substance response program.

Recommendation 19

That the Canadian Coast Guard develop and maintain a national exercise plan to regularly validate both the national contingency plan for hazardous and noxious substances and region-specific planning and readiness for hazardous and noxious substances.

Recommendation 20

That the Government of Canada take a leading role to encourage the United Nations Environment Programme and the International Maritime Organization, to review and update the rules relating to the marine transport of hazardous chemicals and in particular, those chemicals that are reactive with water and prone to combustion.

CROSS-JURISDICTION COLLABORATION

Despite the Canadian Coast Guard being the lead agency for ship-source spills and coordinating the unified command post's response, environmental emergency response typically begins at the local level and coastal communities are bearing the brunt of cleanup efforts.[42] Therefore, capacity building for coastal communities in marine emergency response is part of the Oceans Protection Plan. The committee notes that, as part of the Enhanced Maritime Situational Awareness Initiative, the federal government collaborates with coastal communities in developing a system providing near real-time information on maritime activity in local waters.[43] A Marine Training Program reflecting local knowledge and the learning needs of coastal communities was also funded by the Oceans Protection Plan and is offered in B.C., Nova Scotia, and Nunavut.[44]

In B.C., collaboration between the Government of Canada and 14 First Nations on the central and northern coast is facilitated with the signing of the *Reconciliation Framework Agreement for Bioregional Oceans Management and Protection* in 2018. Regarding marine emergency preparedness and response, the Agreement calls on parties to identify "requirements and gaps of marine emergency preparedness and response capabilities on the West Coast, including but not limited to emergency towing capabilities, response infrastructure and transportation of dangerous goods." The Agreement also plans for a "Network of Nations Community Response Teams, including new programs or initiatives for training, capacity-building and participation related to the Pacific North Coast Nations involvement in regional search and rescue, environmental response, and incident management activities."

Despite existing cross-jurisdiction collaboration programs, the committee heard from witnesses that there is still an important need for greater training and capacity building for coastal communities enabling them to safely handle and dispose of marine debris. Lucas Harris, Executive Director, Surfrider Foundation Canada, mentioned the necessity to enhance coordination between government agencies, local communities and volunteer organizations for ensuring timely and efficient spill responses.[45] Referring to the *ZIM Kingston* case, Ben Boulton, Field Operations Manager, Rugged Coast Research Society, highlighted the limited resources of local coastal restoration volunteer

42 FOPO, *Evidence*, 5 April 2022 (Dorward).

43 Transport Canada, *Expanding the Enhanced Maritime Situational Awareness Program*.

44 Transport Canada, *Renewing the Marine Training Program*.

45 FOPO, *Evidence*, 31 March 2022 (Lucas Harris, Executive Director, Surfrider Foundation Canada).

organizations and the woeful level of communication between local communities and Amix Group, the contractor hired by the polluter to support clean-up efforts.[46]

In a written submission to the committee, the BC Marine Debris Working Group also mentioned jurisdictional gaps and communication issues in the response to the incident:

> Coast Guard has no authority to require that the ship owner contract with knowledgeable, local groups. It has no legislated mandatory response time to enforce; and so, was left with trying to persuade Amix to avail itself of local resources. It was apparently without an up-to-date contact list for First Nations and had no means of assuring that members contracted for the work were properly trained.
>
> It is clear from this spill experience that issues of communication and jurisdiction arose as between Quatsino First Nation and Coast Guard, in that Quatsino's territorial stewardship ought to have earned it an immediate seat on Incident Command and assurances that their members would be trained, equipped and paid as a first priority for the clean-up work. We understand that none of the Nuu-chah-nulth Nations was represented on Incident Command, either.[47]

The committee heard Terry Dorward expressing the wish for the Tla-o-qui-aht First Nation to participate in a "coastwide framework of first responders" and the need for long-term and stable funding for capacity building as follows:

> We require direct funding to build response capacity for coastal First Nations, and to provide emergency training and response materials to First Nation communities who are best positioned to be the first responders in the event of a spill. We know we can safely and effectively mobilize to reduce response times and mitigate the challenges of bringing in distant federal response agencies like Transport Canada, the Coast Guard and external contractors.[48]

Recommendation 21

That the Canadian Coast Guard consult with stakeholders, including Indigenous coastal communities, in a review of its emergency response training for emergency response and shoreline cleanup personnel in coastal communities to ensure the safe and proper handling and disposal of debris and the provision of necessary equipment and supplies.

46 FOPO, *Evidence*, 29 March 2022 (Ben Boulton, Field Operations Manager, Rugged Coast Research Society).

47 BC Marine Debris Working Group, *Brief*, 24 March 2022.

48 FOPO, *Evidence*, 5 April 2022 (Dorward).

Recommendation 22

That the Government of Canada work in collaboration with Indigenous communities to review their spill response capacity in their territories to ensure they can be active partners in clean-up efforts.

Recommendation 23

That Fisheries and Oceans Canada and other relevant departments review how they communicate the risk of spills to the public to ensure that people without training are not at risk after a spill occurs.

Echoing Terry Dorward's opinion, Karen Wristen recommended the federal government establish a joint spill response task force involving federal and provincial agencies as well as coastal communities. In her view, coordinated and integrated regional marine emergency response plans need to be devised with the participation of all jurisdictions and non-governmental organizations.[49] Such plans should specify clear standards in terms of response objectives, timelines and required workforce and infrastructure for coastal clean-up activities. Kevin Butterworth concurred regarding the need for greater clarity about marine spill response standards.[50]

Although the Canadian Coast Guard's Deputy Commissioner, Chris Henderson, told the committee that "the Coast Guard was well-positioned to respond quickly and effectively to this incident,"[51] a written response from the agency to the committee clarified that it was the U.S. Coast Guard that had "completed an initial drift model for the lost sea cans, and shared this with the CCG [Canadian Coast Guard] Regional Operations Centre. Initial decisions on impact field were determined from this information."[52]

Recommendation 24

That the Government of Canada review the Canadian Coast Guard's drift modelling capabilities, which are essential to effective responses to marine spills.

49 FOPO, *Evidence*, 31 March 2022 (Wristen).

50 FOPO, *Evidence*, 7 April 2022 (Butterworth).

51 FOPO, *Evidence*, 29 March 2022 (Henderson).

52 Canadian Coast Guard, "Annex A," *Written correspondence to the committee*, 15 June 2022.

In the view of Christopher Hall, Canada should model its ship-source pollution response regime on the systems of Australia and the United Kingdom to ensure timely decision-making as recommended by the 2014 Tanker Safety Expert Panel report:

> Those regimes provide for a position known as the secretary of state's representative for maritime salvage and intervention—or SOSRep for short. This position is tasked with acting in the public's best interest and has a range of powers that are designed to mitigate environmental impact through the use of timely decision-making and early intervention. Unfortunately, this portion of the expert panel's recommendations was never implemented in Canada.[53]

Recommendation 25

That the Canadian Coast Guard consult with current and potential partners on a strategy to create a joint spill response task force that adds clean-up capacity to supplement, where necessary, the capabilities of volunteer groups and involves the Unified Command response partnership in the oversight of the clean-up effort.

Recommendation 26

That the Government of Canada establish and fund a joint spill response task force composed of federal, provincial, territorial and Indigenous governing bodies, commercial fisheries organizations, and non-governmental organization representatives and task it to recruit, regularly train, and equip a workforce capable of responding to spills in the regions most likely to be impacted, which can be deployed in the immediate wake of a spill occurring.

Recommendation 27

That the Government of Canada assign a joint spill response task force to create the geographic response plans required to respond effectively to cargo container spills on all coastlines, including clear objectives and timeline standards for cargo container spill responses.

Recommendation 28

That a joint spill response task force be composed of federal, provincial, territorial and Indigenous representatives and be tasked to develop the human and social capital infrastructure required to respond to cargo container spills in a timely manner.

53 FOPO, *Evidence*, 7 April 2022 (Hall).

POLLUTER RESPONSIBILITY AND FINANCIAL ACCOUNTABILITY

When a marine spill occurs, the polluter is required to follow provincial/territorial and federal regulations regarding environmental protection, spill reporting and spill cost recovery. Martin McKay, Executive Director, Legislative, Regulatory and International Affairs, Marine Safety and Security, Transport Canada, confirmed to the committee that federal legislation requires the costs of pollution to be paid for by the polluter in accordance with the polluter-pays principle:

> Transport Canada also establishes the liability and compensation regime for ship-source incidents, including for container spills, fires and pollution. Under the *Marine Liability Act* and the *Wrecked, Abandoned or Hazardous Vessels Act*, shipowners are liable for pollution from their ships and for lost cargo and containers.[54]

François Marier, Director, International Marine Policy, Transport Canada, clarified, however, that there is a statutory limitation of "either three years from the time the debris or the container has been determined to be a hazard, or six years from the date that the container went overboard."[55] According to Stafford Reid, as there is a cap to the polluter financial accountability under the *Marine Liability Act*, "for a major vessel casualty, the ship owner can limit its financial responsibility for response costs and compensation awards," and "the level of financial responsibility is never revealed."[56] He also stated:

> Once a ship owner reaches this limit during a response, their incident commander can legally relinquish their role in incident management and response. All further management and response costs are left with those jurisdictions remaining in Unified Command. This transfer-of-command can occur well before an incident's closure: there can still be containers and debris on shores, and sunken ones on the seabed. The short timeline often becomes a surprise to those in UC [Unified Command].[57]

Considering the above testimonies, in the committee's view, the current polluter accountability statutory limitation of three years from the time the debris or the container has been determined to be a hazard, or six years from the date that the container went overboard, is insufficient given the potential long-term environmental impact affecting coastal communities. The committee also heard from Stafford Reid that there is "only one Tier-level of immediate response funding and future compensation

54 FOPO, *Evidence*, 29 March 2022 (Martin McKay, Executive Director, Legislative, Regulatory and International Affairs, Marine Safety and Security, Transport Canada).

55 FOPO, *Evidence*, 29 March 2022 (François Marier, Director, International Marine Policy, Transport Canada).

56 Reid, *Brief*, 29 March 2022.

57 Ibid.

awards for a container ship incident with no oil spill or threat. This is provided by Protection and Indemnity Club insurers."[58] According to Josh Temple, the current response funding framework is inadequate and does not provide "sufficient liquidity to support large-scale recovery efforts when a situation like the *ZIM Kingston* happens."[59] In the committee's opinion, a review of the current response funding process may be required to ensure that local communities and organizations undertaking clean-up operations have timely access to sufficient funds in order to act quickly when a marine cargo container spill occurs.

Recommendation 29

That the federal government examine alternative polluter-pays and/or industry-pays mechanisms that would go beyond the current statutory limitation of three or six years and would ensure that sufficient funds are available in a timely manner to respond to immediate and long-term environmental damage caused by marine cargo container spills.

To strengthen the polluter-pays principle, Karen Wristen proposed the federal government establish a levy per container shipped through Canadian ports to create a fund ensuring that adequate compensation will be available for communities affected by cargo container spills and supporting spill response efforts:

> In terms of good examples of a response mechanism, I would suggest that the best mechanisms spread the risk as far as possible, with as little cost as possible, to each player. In that regard, a levy per container is exactly the right approach to take. With a very small levy on every container sent through our ports, we could create a fund that would fund a standing spill response effort that is joint with the communities and takes advantages of all those local assets and local know-how.[60]

Karen Wristen's proposed levy was, however, not supported by Christopher Hall and Shri Madiwal. Christopher Hall emphasized that the international HNS Convention should be the "sole mechanism for establishing liability for container spills involving such materials."[61] In his opinion, "charging additional fees on the cargo or to the carriers would be both counterproductive and detrimental to Canada's competitiveness and would undermine the intent of the HNS Convention itself."[62] In Shri Madiwal's opinion,

58 Ibid.

59 FOPO, *Evidence*, 5 April 2022 (Temple).

60 FOPO, *Evidence*, 31 March 2022 (Wristen).

61 FOPO, *Evidence*, 7 April 2022 (Hall).

62 Ibid.

the HNS Convention already provides a framework ensuring that the shipping and HNS industries provide compensation for those who have suffered loss or damage resulting from an HNS incident.[63] He indicated that, with the international compensation system established by the HNS Convention, when the shipowner's liability is exceeded, the compensation fund would kick in and provide some additional benefits to the affected local communities. Shri Madiwal likened the HNS Convention compensation fund to Canada's existing Ship-source Oil Pollution Fund.

Regarding financial accountability for releases of hazardous and noxious substances, Canada ratified the HNS Convention in 2018[64] but it has not yet entered into force internationally. The HNS Convention would ensure that industry provides compensation for those who have suffered loss or damage resulting from a ship-source incident. François Marier indicated that Canada has been "leading international efforts to promote the Convention and to get other states on board to become party to it so that it can come into force."[65]

CONCLUSION

The committee observes that the federal government, provinces, and coastal communities are currently not operationally prepared to effectively manage marine cargo container spills, including releases of HNS. Salvage capability required to mitigate the long-term environmental impacts of marine debris is still lacking. At present, there is no capability to track floating containers and recover sunken ones. In addition, marine emergency towing and firefighting capability is still deficient.

The committee calls on the federal government to implement the recommendations put forward in this report in its efforts to establish a robust marine cargo container spill preparedness and response regime in Canada.

63 FOPO, *Evidence*, 31 March 2022 (Madiwal).

64 International Maritime Organization, *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS)* [HNS Convention].

65 FOPO, *Evidence*, 29 March 2022 (Marier).

APPENDIX A
LIST OF WITNESSES

The following table lists the witnesses who appeared before the committee at its meetings related to this report. Transcripts of all public meetings related to this report are available on the committee's webpage for this study.

Organizations and Individuals	Date	Meeting
Canadian Coast Guard	2022/03/29	13
Jonathan Brickett, Regional Director Incident Management, Western Region		
Chris Henderson, Deputy Commissioner Operations		
Department of Transport	2022/03/29	13
François Marier, Director International Marine Policy		
Martin McKay, Executive Director Legislative, Regulatory and International Affairs, Marine Safety and Security		
Naim Nazha, Executive Director Navigation Safety and Environmental Programs, Marine Safety and Security		
Désirée Sauvé, Acting Director General Oceans Protection Plan		
EnviroEmerg Consulting	2022/03/29	13
Stafford Reid, Environmental Emergency Planner and Analyst		
Rugged Coast Research Society	2022/03/29	13
Ben Boulton, Field Operations Manager		
Living Oceans Society	2022/03/31	14
Karen Wristen, Executive Director		
Nanaimo Port Authority	2022/03/31	14
Satinder Singh, Vice-President Marine Operations and Harbour Master		

Organizations and Individuals	Date	Meeting
Surfrider Foundation Canada	2022/03/31	14
Lucas Harris, Executive Director		
Alys Hoyland, Youth Coordinator Pacific Rim Chapter		
Vancouver Fraser Port Authority	2022/03/31	14
Shri Madiwal, Director Marine Operations and Harbour Master		
Canadian Transportation Accident Investigation and Safety Board	2022/04/05	15
Kathleen Fox, Chair		
Clifford Harvey, Director Marine investigations		
André Lapointe, Chief Operating Officer		
Tla-o-qui-aht First Nation	2022/04/05	15
Terry Dorward, Project Coordinator Tribal Parks		
Josh Temple, Coordinator Environmental Sustainability		
Government of British Columbia	2022/04/07	16
Kevin Butterworth, Executive Director Environmental Emergencies and Land Remediation, Ministry of Environment and Climate Change Strategy		
Institut national de la recherche scientifique	2022/04/07	16
Valérie Langlois, Professor and Canada Research Chair in Ecotoxicogenomics and Endocrine Disruption		
Shipping Federation of Canada	2022/04/07	16
Christopher Hall, President and Chief Executive Officer		

APPENDIX B
LIST OF BRIEFS

The following is an alphabetical list of organizations and individuals who submitted briefs to the committee related to this report. For more information, please consult the committee's webpage for this study.

Chamber of Shipping

EnviroEmerg Consulting

Epic Exeo

Living Oceans Society

Ocean Legacy Foundation

Rugged Coast Research Society

Surfrider Foundation Canada

REQUEST FOR GOVERNMENT RESPONSE

Pursuant to Standing Order 109, the committee requests that the government table a comprehensive response to this report.

A copy of the relevant *Minutes of Proceedings* (Meetings Nos. 13 to 16, 26, 29 and 32) is tabled.

Respectfully submitted,

Ken McDonald
Chair