OIL SPILL RESPONSE CAPACITY IN NUNAVUT AND THE BEAUFORT SEA

RESPONDING TO ARCTIC SHIPPING OIL SPILLS: RISKS AND CHALLENGES

As the Arctic warms and sea ice diminishes, the biggest threat to the Arctic marine environment from ships is from an oil spill. Less summer sea ice has already led to increases in ship traffic, yet significant legislative, capacity, information and funding gaps exist in the current spill response framework in both Nunavut, and in the Beaufort region.

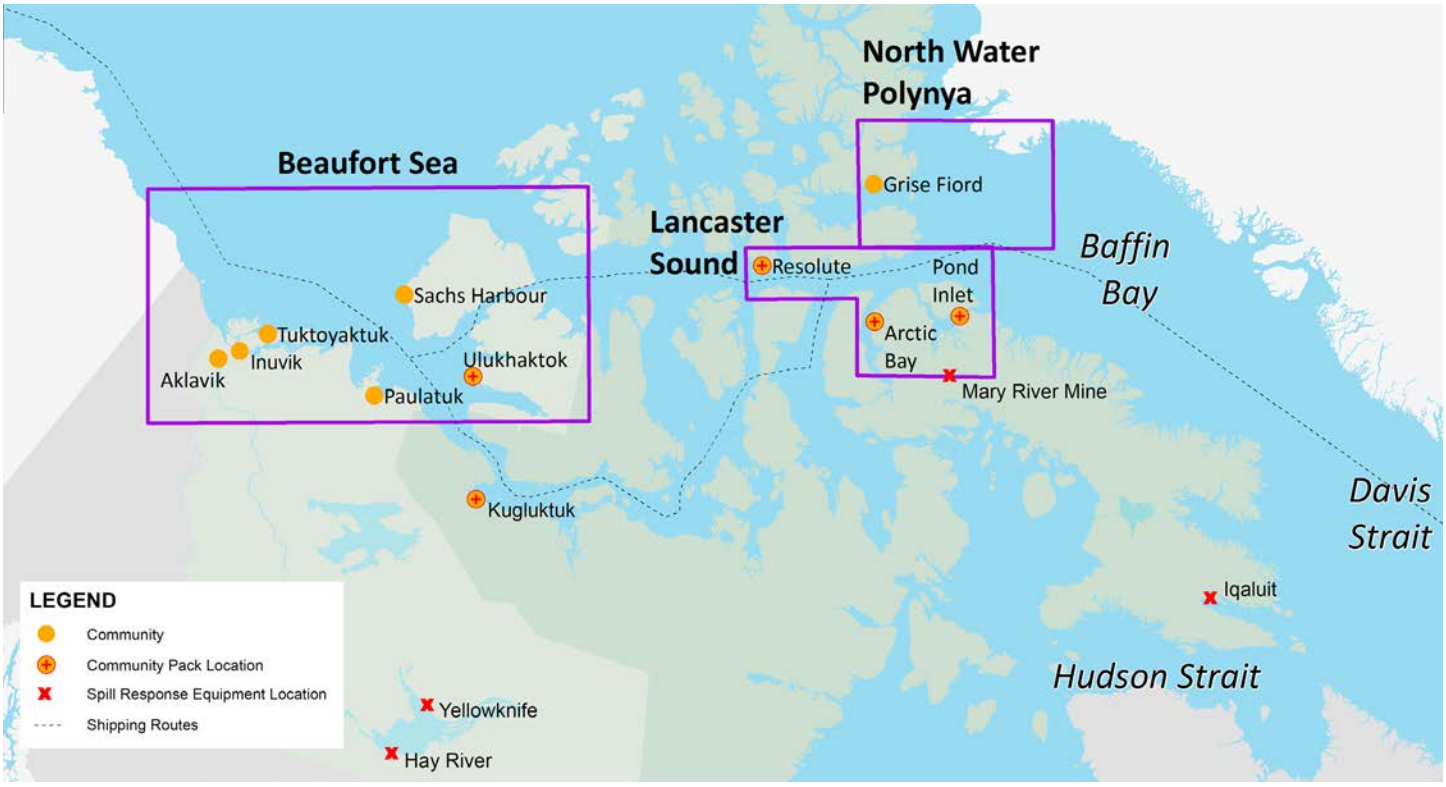
Although the Canadian Coast Guard has developed national, regional, and area response plans, these plans rely on capacities and methods that may not exist or cannot be adapted in remote communities to respond to a ship-based spill.

An Arctic shipping oil spill would devastate the surrounding marine environment, including the destruction of habitat for polar bears, seals, walrus, sea birds, as well as beluga, narwhal and bowhead whales. These consequences would be mainly borne by the communities, not the responsible parties. Arctic communities depend on healthy and clean waters for much of their food, and their cultural and spiritual well-being is tied to their environment.

WWF-Canada commissioned a series of reports to identify barriers that will prevent northern communities from effectively responding to a ship-based oil spill. Parallel reports for the western Beaufort region and Nunavut outline these barriers, and are summarized below. A third report provides a framework for developing realistic oil spill response plans for Nunavut communities. To effectively address the issues of oil spill response capacity in the North, engagement with communities is crucial to developing a framework that works within the Arctic context.

GEOGRAPHY AND POPULATION

The reports focus on remote regions above the Arctic Circle in Nunavut and the Northwest Territories, where communities generally rely on a mixed subsistence and market economy. Many people spend time harvesting land and sea mammals to supply a significant portion of their diet. Traditional knowledge is passed from generation to generation, and is an important element of northern Indigenous culture. When the environment is disrupted, it will undoubtedly have a significant impact on communities.



BEAUFORT REGION

The Beaufort region includes more than 7,500 kilometres of coastline. The area roughly corresponds with the Inuvialuit Settlement Region (ISR), one of the four Inuit regions of Canada. This region is also considered part of the southern route of the Northwest Passage.

In the Beaufort Region, the major communities are Inuvik, Tuktoyaktuk, Aklavik, Paulatuk, Kugluktuk, Sachs Harbour and Ulukhaktok. The total population of the communities is 5,767 people, of which more than half are Inuvialuit.

NUNAVUT

This report focuses on the four northernmost communities in Nunavut. Above the Arctic Circle, much of Nunavut's territory is a series of islands that make up the Arctic Archipelago. The largest of these is Baffin Island, which is home to the Mary River iron ore mine. All four communities are either on or close to the northern route of the Northwest Passage.

The total population of the four Nunavut communities is just over 2,800 people, with more than half of those living in Pond Inlet, the closest community to the Mary River mine. The vast majority of Nunavut residents are Inuit.

EXISTING ARCTIC SHIPPING OIL SPILL RESPONSE FRAMEWORK AND STANDARDS

The reports describe the framework that is in place to ensure that ships travelling through the Arctic have the capability to respond to an oil spill. It shows that while there are plans and standards in place, there are also gaps and uncertainties.

NATIONAL/INTERNATIONAL

- Canadian law requires ships to contract with a response organization that can provide equipment and personnel sufficient to clean up the amount of oil a ship is carrying, up to 10,000 tonnes. However, ships travelling north of 60 degrees' latitude are exempt from these provisions.
- Under Canadian and international law, all tankers over 150 tonnes and all other vessels over 400 tonnes must have a Ship Oil Pollution Emergency Plan (SOPEP), which includes reporting procedures, authorities to be contacted and actions to be taken. Currently, SOPEPs are not Arctic-specific and may not account for communications challenges that could arise in attempting to report a spill in the Arctic.
- Canada also has the National Marine Spills Contingency Plan, which includes a Central and Arctic Regional Plan that details the procedures, resources and strategies to be used in the event of spill.

BEAUFORT REGION

The **Canada/United States Joint Marine Pollution Contingency Plan** includes a **Joint Response Team** for both countries to co-ordinate when necessary. It also sets out procedures for Arctic nations to notify and request assistance from each other in the event of a spill, and includes commitments to maintain a national oil spill response plan.

The **Beaufort Sea and Amundsen Gulf Area Plan** identifies specific geographical priority areas and proposes tactics to protect these areas in the first 12 to 24 hours after a spill.

NUNAVUT

As part of the **Nunavut Agreement**, the **North Baffin Regional Land Use Plan** prohibits ships from coming within 10 kilometres of coastlines, and within 25 kilometres from the coastlines of Lancaster Sound, one of the most biologically productive areas of the Canadian Arctic.

The **Nunavut Land Use Plan** is expected to be completed by the end of 2017. The 2016 draft of the plan identifies several other protected areas with seasonal restrictions to protect wildlife habitat such as sea ice crossings and calving grounds.

GAPS IN OIL SPILL RESPONSE FRAMEWORK

PHYSICAL ENVIRONMENT

Arctic conditions limit the effectiveness of response equipment and often prevent any response at all. The Arctic climate is defined by major seasonal changes and sea ice for nine out of every 12 months. Cold air temperatures persist for much of the year, with most communities experiencing at least 250 days below freezing. Rain, blowing snow, fog, gale-force winds and prolonged periods of darkness limit visibility.

The presence of sea ice is the largest limiting factor in an adequate oil spill response.

During the small window when a response would be possible, several other environmental factors would impede an adequate oil spill response:

- High waves and strong winds common to Arctic waters make it impossible to contain oil using a boom, a critical tool used to prevent oil from reaching the shoreline.
- If visibility is less than one kilometre, it is extremely difficult to find and recover oil slicks.
- Recovery cannot take place during darkness, which persists through most of the winter months.
- Response ships can become unsafe to operate due to ice buildup.

The type of oil used by the majority of ships, heavy fuel oil (HFO), is also extremely difficult to remove from the environment, even in ideal conditions.

EQUIPMENT

What Exists

The Canadian Coast Guard (CCG) is the primary source of spill response in the Arctic. Community packs containing basic equipment designed for small near-shore spills (up to one tonne of oil) have been placed in Resolute, Arctic Bay and Pond Inlet in Nunavut, and in Kugluktuk and Ulukhaktok in the Beaufort region.

Both Iqaluit and Tuktoyaktuk have stockpiles of equipment, as does the Mary River Mine on Baffin Island. Additional oil spill resources are available from the CCG base in Hay River, south of Yellowknife.

Remnants of sea ice in late summer in Resolute Bay, Nunavut

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WWF staff and volunteers practising the use of a boom to catch oil spills on water at the NordNorsk Beredskapssenter in Fiskebol, a training centre where people learn how to clean up oil and gas spills in water and along the coast. Lofoten Islands, Nordland, Norway.

Capacity Limits

Inadequate equipment

The largest equipment available in the Arctic can recover up to 1,000 tonnes of oil. However, tankers carrying fuel to the Mary River Mine can carry up to 4,500 tonnes of diesel, and community resupply vessels carry up to 18,000 tonnes of fuel oil.

Maintenance

Maintenance of community packs has been inconsistent. The Arctic environment renders mechanical equipment inoperable if it isn't properly maintained, so it is unknown whether the community packs are functional.

Access

Assuming the equipment is functional, accessing it would be another challenge. Some communities don't have a key for the locked storage containers because the CCG is concerned about maintaining responsibility for the equipment inside.

Transport to spill site

Even if the community can access the equipment, and it is functional, the small aluminum boats provided may not be sufficient to transport the equipment to the spill site in poor weather conditions. Larger boats better able to withstand harsh weather would then need to be located.

If the spill occurred in a community without a pack, the hamlet would need to arrange for an airplane to deliver the equipment from a nearby community and transport it from the airstrip to the spill site.

Storage and disposal

No hazardous waste facilities exist in the Arctic; all materials must be stored and transported south. Though response equipment in Iqaluit and Tuktoyaktuk is designed to recover up to 1,000 tonnes of oil, the containers in Tuktoyaktuk can only store up to 275 tonnes, with capacity in Hay River for an additional 240 tonnes. Oil cannot be removed from the environment if there is nowhere to store it.

People

The number of trained responders in northern communities is limited due to several factors. The communities are small, so there are only so many people to draw upon. In addition, people are often away from the community for long stretches, like during subsistence harvesting times, meaning a larger number would need to be trained to ensure there are always enough people available (anywhere from five to 16 community responders are necessary, depending on the equipment).

Government funding for training is currently well below what is necessary to recruit and train an appropriate number of community members. And even if enough people could be found and trained, there is little opportunity to practise or maintain skill levels.

Finally, in the event of a large spill, many responders would need to be flown in from larger centres. Small communities will likely not have the resources to house, feed and support the influx of people.

OTHER FACTORS THAT LIMIT RESPONSE

OIL SPILL BEHAVIOUR

Heavy fuel oil (HFO) is the fuel most often used by large shipping vessels. Of all the marine fuel options, it is also the most damaging in the event of a spill. The use of HFO is banned in the Antarctic, and several organizations (including WWF) are working with the International Maritime Organization to phase out the use of HFO in the Arctic.

The spreading and weathering of oil, and whether it comes in contact with ice, affects the way and the extent to which it can be recovered. Unfortunately, it is very difficult to conduct in-the-field research on how oil spills behave in the Arctic environment, so most of the information that exists is inferred from lab research.

COMMUNICATIONS INFRASTRUCTURE

Reliable communications infrasrtucture capable of providing information on weather and sea conditions, maintaining contact with on-the-ground and incoming responders, as well as being able to monitor the spill are all essential to an effective response.

The community nearest to the spill would serve as an important communications hub. However, in the Arctic, cellphone and Internet networks are quickly overwhelmed, slowing Internet speeds, preventing phone calls, and potentially leading to a complete breakdown in emergency response protocol.

It is also critical for incoming responders to have information about safe maritime routes, including the presence of sea ice and inclement weather. If communications systems are inoperable, area surveys may be needed before vessels can assist, leading to more response delays.

RESPONSE TIME

Canadian law provides response times for different levels of spills, which must be adhered to by regional response organizations. However, these standards are not in line with current response capabilities in the Arctic:

Response Equipment Type	Response Standard South of 60	Estimated Response Time North of 60
Oil spill up to 150 t	Six hours	48 hours
Oil spill up to 1,000 t	12 hours	One week

If a CCG icebreaker was in the region, it could provide additional assistance, but there are only three ships responsible for the whole of the Northwest Passage.

In 2008, the Baffin Regional Area Plan identified specific geographical priority areas (including Lancaster Sound) and proposed tactics to protect these areas in the first 12 to 24 hours after a spill. However, there are very few details or recommendations in the plan, and the CCG cautions that the strategies it outlines are untested and require an on-site assessment to confirm their validity.

A Canadian coast guard ship and a Russian converted research vessel carrying tourists in Resolute Bay, Qikiqtaaluk Region, Nunavut

CONCLUSIONS AND RECOMMENDATIONS

Shipping in the Canadian Arctic is a dangerous and precarious endeavour. Navigation is challenging, weather and visibility are often poor, sea ice is difficult to detect and the waters are inadequately charted. Yet, as sea ice melts, shipping is only increasing in the region, along with the risk of oil spills that threaten the sensitive Arctic ecosystem and the wildlife and communities that depend on it.

The extreme Arctic climate makes a successful oil spill response enormously challenging, even with unlimited personnel and equipment. However, there are several measures that could provide added safety and reduce the risk of spills, as well as increasing response capabilities:

1. Incorporate Inuit organizations into the Northern Marine Transportation Corridors Initiative

Inuit and Inuvialuit should have a greater role in decision-making that shapes the future of Arctic shipping. The Northern Marine Transportation Corridors Initiative is a CCG and Transport Canada program tasked with identifying specific shipping routes through the Arctic to improve safety. Arctic Indigenous peoples should be fully incorporated into this process.

2. Increase preventative measures

Shipping lanes should be identified using information on subsistence use and environmentally sensitive habitats. Transport Canada should then designate preferred routes, as well as areas to be avoided, and take these routes and areas to the International Maritime Organization.

3. Eliminate the use of heavy fuel oil in the Arctic

The Government of Canada, under the jurisdiction of Transport Canada, should implement a ban on HFO through national legislation, with a phase-out period to allow industry and re-supply vessels time to build new ships and integrate lighter fuels into their business models.

4. Strengthen oil spill response plans

Response plans should be made Arctic-specific and address the logistical challenges of a spill response. Ships should be required by international and Canadian law to carry equipment for an initial response to a spill, and should have effective damage control measures in place to help mitigate the longer response times often encountered in the Arctic due to extreme weather.

5. Implement southern response standards in the North

Indigenous communities in the North should not receive a lower level of protection from spills simply because there are fewer ships in the region and communities are less populated. Standards for contracting with response organizations south of 60 degrees' latitude should also be implemented in the North.

6. Develop local capacity to respond to spills

The CCG should develop a list of trained individuals in each community, and incorporate training for oil spill response in schools and community organizations. Funding is also required to develop local training organizations and advisory boards, and to ensure Indigenous voices are heard in the decision-making process. Additional resources are also needed for oil recovery storage, response boats, harbours, boat ramps and on-shore response equipment.

7. Integrate Arctic-specific measures into Canada's Oceans Protection Plan

Canada's Oceans Protection Plan commits to improving Canada's oil spill preparedness. The Government of Canada should commit to making the Arctic a top priority, and should be held accountable.

FOR MORE INFORMATION:

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