

**Forum:** Environmental Commission (EC)  
**Issue:** Preventing Oil Spills and Ensuring Biodiversity in the Arctic  
**Student Officer:** Ileana Geroulanou  
**Position:** Deputy President

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## PERSONAL INTRODUCTION

Dear Delegates,

My name is Ileana Geroulanou and I am currently a Year 11 student at St Catherine’s British School. It is a great honour and pleasure to serve as the Deputy President of the Environmental Commission in this year’s PSMUN conference. Although I first started MUN in September of last year, it has turned out to be a big passion of mine and I look forward to being able to share it with you.

Over the past year, MUN has become a really big part of my life and I owe it all to the Environmental Commission which was the first committee I participated in, and am ecstatic to now be chairing. I really hope to make this experience as special for you as my chairs once made it to me and to help you appreciate the importance and value of everything that MUN teaches you as you learn about and discuss different environmental topics that have big effects on our world. The EC mainly deals with topics related to protecting the environment, and mitigating the impact of climate change.

This study guide will help you learn about the topic of ‘Preventing Oil Spills and Ensuring Biodiversity in the Arctic’ by providing some background information, as well as countries and organisations involved and some possible solutions. However, I strongly encourage you to conduct some of your own deeper research to get more familiar with the topic, since this guide only provides an overall introduction to it.

I hope that you find this guide helpful and interesting and are inspired to come up with your own smart and detailed clauses so that we can have a fruitful debate. If you have any questions or any difficulties regarding the topic or the whole pedicure in general, feel free to email me at [ileanageroulanos@gmail.com](mailto:ileanageroulanos@gmail.com).

I’m looking forward to meeting you all this March!

Best Regards,

Ileana Geroulanou

## INTRODUCTION

“The Arctic is undergoing rapid environmental and social changes. As human activity increases in the region, so does the risk of oil spills.”<sup>1</sup> The Arctic is the North-Most part of the Earth, making it sensitive to extremely cold temperatures and extensive ice coverage. It is under the jurisdiction of the 8 coastal states (Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware) but still falls under international laws and policies. Due to the harsh weather conditions, different species have evolved to survive the excessive temperatures, making them essential to the preservation of the ecosystems; the diverse range of species contributes to the region’s unique ecological conditions, ensuring the survival of local species. Biodiversity is essential for the processes that support all life on Earth, without which any species would be unable to survive. Each animal has its own specialised role within their ecosystem in order for long-term sustainability to be achieved.

However, the imposition of oil spills (leakage of oil from storage and container tanks) has significantly damaged the biodiversity and, generally, the aforementioned ecosystems. More specifically, it threatens animals’ habitats and exposes them to chemical toxins; thus, the lives of each species are disrupted, making them vulnerable to the icy environment and limiting their food availability. There are, also, many cumulative effects of oil spills, leaving long-term impacts such as disrupting animals’ breeding and migration patterns and further endangering Arctic biodiversity. This causes many animals, including the Polar Bear, Arctic Fox, Walrus, and the Bowhead Whale, to go extinct.

Although oil spills can also be caused naturally, the majority of cases are caused by technological advancements in oil drilling and shipping or operational accidents. This is a clear current example of where the development of technology has had a deteriorating impact on the environment and the biodiversity of the Arctic, linking the topic to the conference’s theme of the ‘Paradox of Progress’. The ‘Paradox of Progress’ means that when society moves forward, more problems are created instead of being solved. When new technologies are invented to reduce the problem of oil spills, new ways of oil spillage start to occur, and this is hard to combat as they cannot be prevented and it is very difficult to solve the new problems that are created. Also, since oil is seen as a method to boost economic growth, this leads to more oil drilling expeditions, which increases the likelihood of oil spills occurring. This is a prime example of the consequences that occur when society moves forward.

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<sup>1</sup>Arctic Council Secretariat. “Using Data to Improve Oil Spill Response in the Arctic.” Arctic Council, 2023, [www.arctic-council.org/news/data-improve-oil-spill-response-in-arctic/](http://www.arctic-council.org/news/data-improve-oil-spill-response-in-arctic/).

## DEFINITION OF KEY TERMS

### Biodiversity

“The number and types of plants and animals that exist in a particular area or in the world generally.”<sup>2</sup>

### Oil Spills

“An accidental leakage of oil from a container such as a storage tank, oil tanker, or oil pipeline, which causes the pollution of the surrounding area.”<sup>3</sup> This can occur by both humans, and natural disasters and has a great impact on the environment, specifically the biodiversity, as it causes long-lasting influences and harm to the lifestyles and health of the animals and plants.

### Animal migration

“Animal migration refers to a pattern or behaviour of specific species that travel from one area to another in search of food, better conditions, or reproductive needs.”<sup>4</sup>

### Offshore Drilling

“Offshore drilling is the process of extracting petroleum from reserves located beneath the Earth’s oceans instead of reserves located on the mainland.”<sup>5</sup> Oil spills are an unavoidable part of offshore drilling, usually occurring accidentally or due to equipment failures. Offshore drilling occurs to supply a country with enough oil and gas, while it is a huge contribution to the economy since it also creates new jobs and helps with developing new technologies and research.

### Environmental Impact Assessment (EIA)

“Environmental Impact Assessment (EIA) is a tool used to assess the significant effects of a project or development proposal on the environment.”<sup>6</sup> The EIA helps with the identification of oil spill risk areas, and also helps come up with fast and effective solutions in terms of regulation and prevention.

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<sup>2</sup> Cambridge Dictionary. “BIODIVERSITY | Meaning in the Cambridge English Dictionary.” *Cambridge.org*, 13 Nov. 2019, [www.dictionary.cambridge.org/dictionary/english/biodiversity](http://www.dictionary.cambridge.org/dictionary/english/biodiversity).

<sup>3</sup> Oxford Reference. “Search Results for Oil Spills - Oxford Reference.” *Oxford Reference*, 2023, [www.oxfordreference.com/search?q=oil+spills&searchBtn=Search&isQuickSearch=true](http://www.oxfordreference.com/search?q=oil+spills&searchBtn=Search&isQuickSearch=true). Accessed 1 Sept. 2023.

<sup>4</sup> “Migration.” *Education*, [www.education.nationalgeographic.org/resource/migration/](http://www.education.nationalgeographic.org/resource/migration/). Accessed 17 Dec. 2023.

<sup>5</sup> Energy Education. “Offshore Drilling - Energy Education.” *Energyeducation.ca*, 2016, [www.energyeducation.ca/encyclopedia/Offshore\\_drilling](http://www.energyeducation.ca/encyclopedia/Offshore_drilling).

<sup>6</sup> mygov. “Environmental Impact Assessment (EIA).” *Www.mygov.scot*, 21 July 2022, [www.mygov.scot/eia](http://www.mygov.scot/eia).

## Ecological Restoration

“Ecological Restoration is the process of assisting in the recovery of an ecosystem that has been degraded, damaged or destroyed.”<sup>7</sup> Ecological restoration is imperative to saving the environment, especially when wildlife is harmed and ecosystems are destroyed.

## Wildlife

“Any animal which is now or historically has been found in the wild, or in the wild state, within a particular area (such as a country).”<sup>8</sup> Some examples of wildlife that are local to the Arctic Region include: the Arctic Fox, Beaver, Polar Bears, Arctic Seabirds, Snowy Owls, Ice Seals, Walrus, Beluga Whales, and many more.<sup>9</sup> All these animals are adapted to survive in the Arctic, having extra insulation and feet that are adept to walking on the ice. It is these adaptations that make the wildlife vulnerable to changes in climate and conditions.

## Fouling

Fouling from oil spills is the build-up of oil on surfaces in aquatic environments, causing harm to marine life, disrupting ecosystems, and altering habitats by damaging the animals’ protective layers.

## BACKGROUND INFORMATION

### Causes and Effects of Oil Spills

#### Natural Causes

A main, although quite rare, natural cause of oil spills is seismic activity. Earthquakes and volcanic eruptions can rupture pipelines, storage tanks, or drilling platforms which could lead to excessive oil spillage. These can also be caused by other factors, including hurricanes and strong currents which destroy oil reserves, leading them to be leaked into the ocean. Because of the ocean’s currents, the oil spills also get transported so it is harder to locate them and clean them.

Another cause is underwater eruptions, such as submarine volcanic eruptions, which release oil and gas stored beneath the seafloor, leading to underwater oil plumes and potential spills.

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<sup>7</sup> Society for Ecological Restoration. “Restoration Resource Center What Is Ecological Restoration?” *Ser-Rrc.org*, 2019, [www.ser-rrc.org/what-is-ecological-restoration/](http://www.ser-rrc.org/what-is-ecological-restoration/).

<sup>8</sup> ---. “Search Results for Wildlife - Oxford Reference.” *Oxford Reference*, 2023, [www.oxfordreference.com/search?btog=chap&isQuickSearch=true&pageSize=20&q=wildlife&sort=relevance](http://www.oxfordreference.com/search?btog=chap&isQuickSearch=true&pageSize=20&q=wildlife&sort=relevance). Accessed 1 Sept. 2023.

<sup>9</sup> “Wildlife of the Arctic - the Arctic (U.S. National Park Service).” *Www.nps.gov*, [www.nps.gov/subjects/arctic/wildlife.htm](http://www.nps.gov/subjects/arctic/wildlife.htm).

### Human Causes

Human causes are the principal cause of oil spills, and they include a variety of different practices, from oil exploration to dumping. They are the main reason for the environmental problems that the Arctic faces due to oil spills. The removal of crude oil from the subsurface of the Earth often leads to mass oil spillage, which is particularly catastrophic in sensitive areas like the Arctic.

Initially, shipping and operational accidents often result in excessive oil leakage, especially through collisions and structural failures, although it is also likely to occur through leaks in ageing or corroded pipelines. Another weakness is the likelihood of storage tank failures – usually due to overfilling – which leads to spills at refineries and storage facilities. The largest operational spillage comes from oil transportation; approximately 1.7 billion<sup>10</sup> tonnes of oil get transported annually, making accidental oil spills expected.

Similarly, offshore drilling is a key cause of oil spills; it is the process of drilling into the ocean floor to access pockets of oil and gas that lay beneath it. Approximately 15%<sup>11</sup> of crude oil in America is extracted in this way. Although many new technologies and regulations are continuously being implemented, the risk of oil spills remains and while it is possible to plug a leak, it is impossible to recollect all the oil and gases that have leaked into the ocean.

Human mistakes are also made in terms of illegal dumping of waste in areas surrounding the Arctic. The purposeful release of oil from vessels is used as a cost-cutting method since surplus oil supply is costly to transport and difficult to discard or store since many risks (such as gas leaks) come with it. It is, also, done to hide the environmental violations and their detrimental effects on the environment that occur during oil drilling.

Similarly, the introduction of technology in oil drilling tactics has resulted in many operational mistakes due to the wrong handling of the devices, since they were recently developed and, hence, only their creators are properly trained for their usage.

### Effects on the Ecosystems

The biggest effect that oil spills have on ecosystems is harm to the wildlife, the toxic compounds that they contain have harmful impacts on marine life causing them a series of health-related problems, including organ damage and developmental abnormalities. Animals can suffer due to internal exposure to the chemical gases, as well as by suffocating or poisoning due to being coated

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<sup>10</sup> "Oil Spill Transport: Topics by WorldWideScience.org." *Worldwidescience.org*, worldwidescience.org/topicpages/o/oil+spill+transport.html. Accessed 16 Oct. 2023.

<sup>11</sup> Hu, Shelia. "Offshore Drilling 101." *Www.nrdc.org*, 31 Jan. 2023, [www.nrdc.org/stories/offshore-drilling-101#what-is](http://www.nrdc.org/stories/offshore-drilling-101#what-is).

in oil. Oil drenched fur and feathers can affect animals' ability to regulate their body temperature, an adaptation that is crucial to survival in the Arctic but can also affect buoyancy, which is essentially the tenancy that objects have to float in liquids, causing many animals to drown. Another effect that oil has on the species is that when it comes into contact with the fur or feathers of the animals, it can reduce their insulating properties, making them vulnerable to the icy Arctic temperatures. Oil spills have fatal effects on ecosystems, either by having a direct impact on internal structures or by harming their adaptations to survive in the polar conditions, which leaves them unprotected and susceptible to harsh fates.

Another problem related to oil spills is the contamination of food chains. When animals ingest contaminated prey, it leads to a higher concentration of toxic chemicals making them likely to develop chronic diseases and genetic mutations in future generations, leaving the entire species vulnerable and likely to be endangered. Genetic mutations and abnormalities will occur throughout the following generations, and a big majority of the species will be unable to survive in the Arctic conditions.

Oil spills can have detrimental effects on the habitats of wildlife; they contaminate critical habitats, such as nesting and breeding areas, which can lead to reduced reproductive success and habitat degradation. Species will, then, become less populous and that influences the entire ecosystem since less prey means less food for the higher predators in the food chain.

Oil can also persist in Arctic environments for a long time due to the slow microbial degradation (the breakdown and detoxification of oil due to microorganisms and their enzyme systems) in cold waters. This means that the impacts of oil spills can continue to exist long after the event of an oil spill and will have many longer-lasting and worsening effects on the wildlife that will continue to eat and live in a contaminated environment. The droplets of oil from spills often sink into the seabed, contaminating food sources for many species. After a study on bottlenose dolphins exposed during the Deepwater Horizon event, it was proven that the oil had a large effect on the dolphin's immune systems that spanned for generations, meaning that the dolphins became more susceptible to diseases.<sup>12</sup>

### Connections Between Oil Spills and Biodiversity

Oil spills have terminal effects on the biodiversity of the Arctic, ranging from organ destruction to surficial problems, thus, making it impossible for the wildlife to survive

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<sup>12</sup> Schwacke, Lori H, et al. "Modeling Population Effects of the Deepwater Horizon Oil Spill on a Long-Lived Species." *Conservation Biology : The Journal of the Society for Conservation Biology*, U.S. National Library of Medicine, Aug. 2022, [www.ncbi.nlm.nih.gov/pmc/articles/PMC9545999/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC9545999/).

healthily in the post-oil spill conditions. The crude oil that poisons the water can travel many distances through the ocean currents, leaving victims over a large surface area, which disrupts life across the Arctic region.

Oil spills disrupt the structure and function of marine ecosystems. This, then, has a spillover effect on the land-residing communities either through hunting or oil being washed ashore and destroying the land causing further damage to growing populations.

The oil spills have a chain reaction on the Arctic wildlife, as an impact on one species can disrupt entire food chains, habitats, and community life. For example, oil spills can contaminate the surface waters where plankton, the foundation of the food web, grows. With a decrease in plankton or the contamination of plankton, fish numbers will also start to decrease due to ingested toxins or the unavailability of food. As this continues through the food web, species numbers will start to decrease rapidly and the ecosystem will be unable to function without each species doing its part for the rest as animals within an ecosystem heavily rely on each other for both food and protection.

All these effects have long and sublethal effects on the biodiversity of the Arctic, usually leading to chronic health problems and fatal outcomes. This greatly reduces the biodiversity of the region, leaving it less populous and a smaller ecosystem. Many organisms are likely to become extinct or endangered, leaving many others without prey and nutrition. This is a big issue, especially when the rest of the available food is contaminated by the oil spills.

## Case Studies

### Exxon Valdez Spill

The Exxon Valdez Spill occurred on March 24<sup>th</sup>, 1989, when an oil tanker owned by the Exxon Shipping Company spilled 11 million gallons<sup>13</sup> of crude oil into Alaska's Prince William Sound. The oil slick covered 1,300 miles of coastline and killed hundreds of thousands of seabirds, otters, seals, and whales. 30 years later, crude oil still remains collected in some locations and continues to affect the lives of the majority of the local wildlife.

This spill occurred due to a collision between the oil tanker, carrying 53 million gallons of crude oil on board, and the Bligh Reef (a well-known navigation hazard). The collision's impact tore open the ship's hull, causing the oil to leak into and contaminate the water.

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<sup>13</sup> History.com Editors. "Exxon Valdez Oil Spill." HISTORY, 21 Aug. 2018, [www.history.com/topics/1980s/exxon-valdez-oil-spill](http://www.history.com/topics/1980s/exxon-valdez-oil-spill).

The captain of the tanker, Joseph Hazelwood, was convicted of a single charge of misdemeanour negligence, fined \$50,000, and ordered to perform 1,000 hours of community service.

Months after the spill, Exxon employees, federal responders and Alaska residents worked to clean up the spill. Exxon paid a total of \$3.8billion<sup>14</sup> on clean-up costs and habitat restoration, as well as personal damages related to the spill. However, environmental officials purposefully left some areas of shoreline untreated in order to study the long-term effects of oil spills on wildlife. The Arctic wildlife suffered severely due to the Exxon Valdez oil spill, killing 40%<sup>15</sup> of the otter population which didn't recover until 2014 (25 years after the spill). Approximately 250,000 sea birds, 3,000 otters, 300 seals, 250 bald eagles, and 22 killer whales were killed due to the spill, taking a major toll on the wildlife populations.

### The Willow Project

The Willow Project is a massive oil drilling venture proposed to be extracted on federal lands by a Houston-based energy company called ConocoPhillips that has been exploring and drilling oil in Alaska for years. It is estimated to add more than 250 million metric tons of CO<sub>2</sub><sup>16</sup> to the atmosphere over the next 30 years which is sure to devastate efforts to keep global warming below 2°C. The area where the project is planned holds up to 600 million barrels of oil<sup>17</sup>, which would take a while to enter the market since the project has not begun yet. It has been greenlit by both President Trump and President Biden's administrations. However, according to the CNN "The Biden administration felt its hands were tied with the project because Conoco has existing and valid leases in the area... legally, courts wouldn't have allowed them to fully reject or drastically reduce the project"<sup>18</sup>. So, instead of cancelling the project, President Biden reduced President Trump's approved construction of 5 drill pads to 3. This led many different environmental groups to start protesting and boycotting the project in hopes of its cancellation.

<sup>14</sup> History.com Editors. "Exxon Valdez Oil Spill." HISTORY, 21 Aug. 2018, [www.history.com/topics/1980s/exxon-valdez-oil-spill](http://www.history.com/topics/1980s/exxon-valdez-oil-spill)

<sup>15</sup> History.com Editors. "Exxon Valdez Oil Spill." HISTORY, 21 Aug. 2018, [www.history.com/topics/1980s/exxon-valdez-oil-spill](http://www.history.com/topics/1980s/exxon-valdez-oil-spill)

<sup>16</sup> Protect Our Winters. "The Willow Project." Protect Our Winters, 2022, [www.protectourwinters.org/campaign/willow/](http://www.protectourwinters.org/campaign/willow/).

<sup>17</sup> Protect Our Winters. "The Willow Project." Protect Our Winters, 2022, [www.protectourwinters.org/campaign/willow/](http://www.protectourwinters.org/campaign/willow/).

<sup>18</sup> Nilsen, Ella. "The Willow Project Has Been Approved. Here's What to Know about the Controversial Oil-Drilling Venture | CNN Politics." CNN, 14 Mar. 2023, [edition.cnn.com/2023/03/14/politics/willow-project-oil-alaska-explained-climate/index.html#:~:text=The%20Biden%20administration%20felt%20its](https://edition.cnn.com/2023/03/14/politics/willow-project-oil-alaska-explained-climate/index.html#:~:text=The%20Biden%20administration%20felt%20its)



The Willow Project has become a top priority for climate activists, who find it imperative to prevent this operation before it causes irreversible damage to the planet and the environment. The project is said to generate enough oil to release 9.2 million metric tons of planet-warming carbon pollution a year, having a detrimental effect to public and health and safety. The carbon dioxide release will have a significant impact as more gas being trapped in the atmosphere will enhance the greenhouse effect and have an increase in global warming. Because of this, his project undermines Biden’s promises to develop cleaner fuel alternatives to reduce America’s impact on climate change. The inevitable oil leaks will also have an impact on the region's unique environment, permanently altering the ecologically rich Western Arctic by eroding habitats, disrupting migration patterns and posing health risks for Alaskan communities.

However, supporters of the Willow Project argue that it will ensure that the USA has a reliable, domestic supply of energy and that it is important to limit the country’s reliance on oil suppliers. It is, also, predicted to produce billions of dollars of economic activity in the USA, and specifically Alaska.

## MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

### United States of America (USA)

The USA has enforced multiple wildlife conservation laws and are dedicated to working towards reducing oil spills and protecting biodiversity in the arctic, especially since the Arctic is under the jurisdiction of 8 of its states. It is an active member of the Arctic Council and invests a lot of money and time in supporting scientific research and monitoring. However, they are also responsible for the highest number of oil spills in the Arctic region. In July of 2003, a total of 15 tons of chemical leakage by the USA was reported, creating a 400 square metre oil spill<sup>19</sup>. This example, alongside many others, is the prime reason behind the USA’s dedication to mitigating oil spill leakage in the Arctic.

### Russian Federation

Russia has a long history of causing oil spills in the Arctic, each of which left an extensive environmental impact. These leaks, which frequently originate from infrastructure built during the Soviet era, have had significant and long-lasting effects on the polar ecology. Given that 53% of the Arctic coastline is covered by Russia, the country must take major steps to reduce the negative environmental effects of its

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<sup>19</sup> “ARCTIS | Effects of Oil Spills in Arctic Waters.” [www.Arctis-Search.com](http://www.Arctis-Search.com) , 2009, [www.arctis-search.com/Effects+of+Oil+Spills+in+Arctic+Waters](http://www.arctis-search.com/Effects+of+Oil+Spills+in+Arctic+Waters).

mining operations in the northern waters.<sup>20</sup> Notably, it is imperative to address the ongoing effects of past spills coming from facilities built during the Soviet era, which continue to negatively affect the region. However, despite the many challenges that have been created, Russia has cooperated to set up different oil response strategies and safety measures.

### Canada

Canada, alongside the USA, is one of the highest contaminators of the Arctic waters. They are responsible for most small to medium oil spills, with volumes ranging up to 10,000m<sup>3</sup>.<sup>21</sup> Incidents like this encouraged Canada to take immediate action, establishing various marine protected areas in the Arctic to safeguard the vulnerable ecosystems. The nation also promotes sustainable practices associated with shipping and oil drilling across Arctic waters in order to protect the different species. The setup of the World Wildlife Fund Canada is one of the ways the country has remained dedicated to ensuring the adaptation of the Arctic to any environmental changes, to limit the effect that they would have on the region and its biodiversity.

### Norway

Norway has collaborated alongside many nations, including the USA and Russia, to implement measures such as traffic separation schemes to reduce the number of oil spills associated with shipping collisions and accidents. Through its chairship with the Arctic Council, the nation is able to seek ways to ensure their Arctic security policy: security, stability and international cooperation. By investing large amounts in scientific research and monitoring, Norway actively tries to lower the environmental impact oil drilling and spills have on Arctic communities.

### Arctic Council

The Arctic Council was founded in 1996 in order to promote the conservation of Arctic biodiversity. It consists of 8 countries – the USA, Canada, Norway, Denmark, Finland, Iceland, Sweden, and Russia – who work together to create and fund new technologies and strategies to solve the problem of oil spills and marine safety in the Arctic. It focuses on environmental protection and sustainable development, as well as collaboration for research and data sharing. The Arctic Council serves as a platform to research and safeguard Arctic ecosystems from pollution and other environmental impacts. The Council contains 6 working groups:

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<sup>20</sup> “Russian Chairmanship of the Arctic Council: The Awakening of a Giant - Groupe d’Études Géopolitiques.” <https://Geopolitique.eu/en/2021/05/31/russian-chairmanship-of-the-arctic-council-the-awakening-of-a-giant/>. Accessed 2 Sept. 2023.

<sup>21</sup> Marty, Jerome. “Evaluation of the Risk of Oil Spills in Canadian Arctic Waters.” Research Gate, June 2016, [www.researchgate.net/publication/301584513\\_Evaluation\\_of\\_the\\_Risk\\_of\\_Oil\\_Spills\\_in\\_Canadian\\_Arctic\\_Waters](http://www.researchgate.net/publication/301584513_Evaluation_of_the_Risk_of_Oil_Spills_in_Canadian_Arctic_Waters). Accessed 2 Sept. 2023.

The Arctic Contaminants Action Programme (ACAP) which works to reduce and prevent pollution in the Arctic with a focus on contaminants such as persistent organic pollutants and hazardous waste. The Arctic Monitoring and Assessment Programme (AMAP) which conducts scientific assessments of environmental pollutants in the Arctic. The Conservation of Arctic Flora and Fauna (CAFF) which focuses on the conservation and sustainable use of Arctic Biodiversity. The Emergency Prevention, Preparedness, and Response (EPPR) which develops strategies for responding to environmental and maritime incidents. The Protection of the Arctic Marine Environment (PAME) whose primary goal is addressing issues related to shipping, oil and gas activities. The Sustainable Development Working Group (SDWG) which promotes sustainable development through economic, social and cultural activities.

### Conservation of Arctic Flora and Fauna (CAFF)

The CAFF is a working subsection group of the Arctic Council which was established in 1991. Its primary goal is to address biodiversity conservation and ecosystem management to promote sustainable life for all Arctic inhabitants. It works alongside indigenous communities to integrate traditional knowledge to promote local sustainability while simultaneously developing new initiatives to preserve biodiversity and ecosystems. The CAFF is essential for understanding and addressing the consequences of oil spills on the flora and fauna of the Arctic region.

### International Oil Pollution Compensation Funds (IOPCF)

The IOPCF is an organisation which provides financial compensation for oil pollution damage to cover clean-up costs and environmental restoration. It is financed by international oil companies and uses these funds to invest in local Arctic marine protection.

### Arctic Monitoring and Assessment Programme (AMAP)

The AMAP is an international organisation established by the Arctic Council to deliver sound science-based information for policy and decision making. It records the status of Arctic environment and pollution levels and is conducted according to a mandate determined by Arctic Council ministers and Senior Arctic Officials. The AMAP work plan included guiding principles, strategic goals and their implementation strategies. It plays a vital role monitoring and assessing the environmental impacts of oil spills in the Arctic and collects data to recommend responsive strategies to the problem.

## TIMELINE OF EVENTS

DATE	DESCRIPTION OF EVENT
2 November 1973	The International Convention for the Protection of Pollution from Ships (MARPOL) is adopted by the International Maritime Organization (IMO), having as its main goal to protect the marine

	environment from ships by reducing operational problems related to oil spills and leakages; while also establishing different control standards to regulate oil tankers and vessels.
10 December 1982	The United Nations Convention on the Law of the Sea (UNCLOS) is established to install a regime for the management and uses of the oceans and their resources.
24 March 1989	The Exxon Valdez spill occurs, spilling 11 million gallons of crude oil into the Prince William Sound, Alaska.
19 September 1996	The establishment of the Arctic Council, a high-level intergovernmental forum which promotes coordination and interaction among the Arctic States and indigenous people
20 April 2010	The Deepwater Horizon spill occurs when a blowout caused a catastrophic explosion on the offshore drilling rig, leading to the release of approximately 4.9 million barrels of crude oil into the Gulf of Mexico and having far-reaching consequences, contaminating extensive coastal habitats and requiring months of intensive containment and clean-up efforts.
November 2014	The Polar Code is adopted; a set of international regulations aimed at ensuring the safety and environmental protection of ships operating in Arctic waters which mandates that ships seeking to operate in these regions must obtain a certificate confirming their compliance with measures to minimise hazards commonly found in polar waters.
11 May 2017	The Agreement on Enhancing International Arctic Scientific Coordination is signed at the Fairbanks Ministerial meeting having as its main goal to promote education and scientific research as well as career development and training opportunities.

## PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

### The Arctic Environmental Protection Strategy (AEPS)

In the early stages of the Arctic Council, before its official founding, the AEPS existed as a non-binding agreement (international accords that lack legal enforcement mechanisms, making compliance and implementation voluntary for participating parties) between the Arctic States and indigenous people's organisations. Since this was non-binding, it was very hard to implement many strategies that would benefit all of the involved communities equally, meaning that cooperation and compromise was difficult to enforce as each nation worked towards finding the most efficient strategy for their own community instead of for the environment. Although it was a great effort, it was proven unfruitful, due to the lack of enforcement methods which hindered its ability to effectively address environmental issues in the Arctic.

### United Nations Convention on the Law of the Sea (UNCLOS)

UNCLOS was adopted to establish a comprehensive legal framework for the use and protection of the world's oceans and marine resources. It formed a balance between the rights and interests of coastal states and the international community to manage to develop new strategies to tackle the problems faced by the Arctic Region. Although it is considered partly successful, it faced many challenges including non-participation by many nations and delays in ratification. Since most of its mandates involve many nations, implementing certain processes is time-consuming and not an effective immediate strategy to battle the issue of oil spills. It is also a complex legal document with many provisions open to interpretation, meaning that there are many disputes over the ambiguity of its application.

### Oil Spill Response Plans

The Arctic Council dedicates a lot of time to discovering and funding various oil spill response plans, including the Emergency Prevention, Preparedness, and Response (EPPR), to efficiently respond to oil spills as quickly as possible, to prevent further damage to the ecosystems and environment. Many of these response plans are still in the development phase, and although they are already being implanted, a lot more research and improvement needs to be made before they can effectively protect the Arctic environment before the oil spill has any permanent damage.

### Moratorium on Drilling in Arctic Waters

In December of 2016, a moratorium (temporary prohibition) on drilling in Arctic waters was placed by the Canadian government. It designated that all Canadian Arctic waters would be deemed to be off-limits to oil operations and licencing. However, the moratorium did not suspend the terms of the 80 existing oil and gas licences in the Arctic offshore, meaning that oil spills are still a big possibility and will remain a problem until these licences are suspended. However, the prohibition will be reviewed

every five years leaving room for the necessary adjustments and legislation. Although this ban was set to be lifted in 2023, the 2021 report encouraged the order to be extended.

## POSSIBLE SOLUTIONS

### Strict Regulations and Legislations

An effective strategy to improve the mitigation of oil spills is through harsh regulations and legislations, meaning more laws to be implemented to restrict the number of oil tankers and oil drilling operations – as well as to improve the design and operational efficiency of the vessels to prevent accidental leakage. Similarly, to enforce larger fines and punishments in cases where the legislation isn't followed to ensure that no illegal activity is occurring. This can also be achieved by more regular monitoring of the ships and the region, for example, by the creation of Non-Governmental Organizations (NGOs) and agencies that are dedicated to assessing ships entering the region to prevent illegal activities that would lead to oil spills. This could be done on both a national and international level to create certain bodies dedicated to ensuring that the laws aren't violated.

### Technological Developments

With more data collected from regular assessments, technological advancements are sure to occur. This means that not only more efficient and controlled methods can be created to prevent oil spills but also efficient and effective response plans, for example, improved oil spill detection systems, spill containment and clean-up equipment, and waste disposal.

Funding and encouraging scientists to work on researching and developing new strategies will also help discover the best way to ensure the protection of Arctic biodiversity and ecosystems. More data collection through case studies and experiments will also lead to a better understanding of the potential for oil spill response plans and long-term preservation.

### Biodiversity Conservation

An important aspect to consider as a possible solution for this issue is the formation of governmental and non-governmental organisations specifically for the protection of the ecosystems in the Arctic. This could be done by setting up Maritime Zones, areas of the ocean which are subject to national or international authority, which would restrict any vessels or oil drilling operations from being held near the species' natural habitats, to limit the animals' exposure to oil spills – therefore, limiting the consequences on the ecosystems and biodiversity. Specialisation in the protection of the ecosystems will be beneficial to the sustainability and longevity of all local species, ensuring that they will be safer and well protected from human-caused harm.

## Indigenous Involvement

Although Indigenous involvement has been previously attempted and been unsuccessful, it is the key to the long-term sustainability of the environment and the practices. Good communication between the locals and the researchers developing new practices will help in ensuring that the new strategies will not be harmful to the environment, especially since Arctic indigenous cultures can provide insight that would be overseen by someone unfamiliar with the area. This could also help with highlighting which areas are in more need of protection due to being sensitive or endangered. Indigenous communities are also sensitive to changes in their environment, so they are better able to detect shifts in wildlife behaviour and weather patterns that could be the result of major oil spills in the area. Good relationships with indigenous communities also mean that when a problem is detected, it can be reported faster, preventing more damage.

## Green Technology

Investing in and researching new technologies to replace oil-based fuels and petrol will help in the reduction of oil drilling which will limit oil spills. Replacing oil with renewable energy sources, such as solar energy and wind energy, as well as using biofuels will help with the limitation of oil spills by ensuring the prevention of numerous oil drilling operations.

The implementation of green technologies is the most effective way to restrict any activities that will be harmful to the Arctic environment and its ecosystems and is the most sustainable strategy to ensure the long-term survival of wildlife.

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