CRUISING ON POLLUTION LOOPHOLES:

Revealing the Giant Loopholes in Canada's Cruise Ship Pollution Regulations

a report by **Stand.earth** and **CPAWS-BC**

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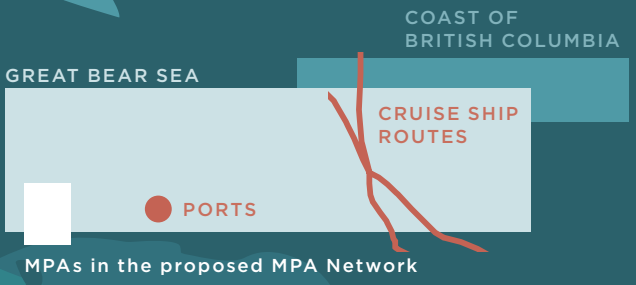
EXECUTIVE SUMMARY

On June 9, 2023, Transport Canada issued an Interim Order Respecting the Discharge of Sewage and the Release of Greywater by Cruise Ships in Canadian Waters.[1] The Order had been long awaited. Canadians were becoming increasingly concerned about the large amounts of marine pollution that cruise ships were dumping in our waters, where regulations were less stringent than in neighbouring U.S. states.[2] The coast of British Columbia had been referred to as the "toilet bowl" of the cruise industry because of the large amounts of pollution being discharged there.[3]

With this new Interim Order, it appeared that Transport Canada was finally addressing the issue of more than 31 billion litres (and growing) of contaminated sewage, greywater and Exhaust Gas Cleaning System "scrubber" wastewater entering the coastal waters of British Columbia annually.[4] The accompanying press release from Transport Canada included a quote from the then Minister of Fisheries and Oceans Canada, the Honourable Joyce Murray. She stated, "These measures apply to cruise ships transiting through Canada's Marine Protected Areas and marine refuges, and making them mandatory underlines our commitment to safeguarding our oceans for future generations."[5]

> "These measures apply to cruise ships transiting through Canada's Marine Protected Areas and marine refuges, and making them mandatory underlines our commitment to safeguarding our oceans for future generations."
>
> **JOYCE MURRAY**
> Minister of Fisheries and Oceans (2021-2023)

MAP ES1: Cruise ship routes from aggregated open data source overlaid with proposed MPA Network (*2022 Network Action Plan*) and the Great Bear Sea[6]



The Minister's statement has particular significance to **the Great Bear Sea,** an area of incredible beauty and biodiversity that stretches from northern Vancouver Island to the Alaskan border that a vast majority of cruise ships on the Alaska routes pass through.[7] This area is the proposed site of **Canada's first Marine Protected Area (MPA) Network,** an initiative being developed between the Government of Canada, the Province of British Columbia and 17 First Nations along the North Pacific Coast.[8] In addition to the direct impacts of pollution on ecosystems, increased cruise ship traffic through these biodiverse areas may have adverse impacts on human health via contaminated seafood.[9 10]

However, a closer review of the Interim Order reveals significant exemptions to the purported protections, leaving large gaps in Canada's cruise ship waste discharge regulations. Namely, the **INTERIM ORDER:**

includes enigmatic **geographic exemptions** dependent on individual cruise ship tank storage space and onshore reception facilities, leaves large unregulated **"toilet bowls"** in the middle of the Great Bear Sea, and fails to address the largest source of cruise ship pollution — **scrubber wastewater.**

Closer analysis suggests that given the breadth of exemptions in the Interim Order, it provides cruise ships with great latitude to continue to discharge **sewage, greywater** and **scrubber wastewater** all along the B.C. coast.

The entire Great Bear Sea, including the MPA Network, is open to the discharge of scrubber wastewater. And based on our analyses of the proposed MPA Network,[11] approximately 35% of it is open to the discharge of untreated sewage and greywater through unregulated "toilet bowls" if the Interim Order supersedes the enhanced restrictions of the MPA Protection Standard. Additionally, specific geographic exemptions potentially permit the discharge of sewage and greywater along the entirety of the Great Bear Sea's complex coastlines when treated with a Marine Sanitation Device (a technology known to have deficiencies). **While a step in the right direction, the exemptions appear to potentially be the rule and undermine the pollution reduction value of the Interim Order.**

The federal government must enact stronger legal protections on cruise ship discharges if it is truly committed to finally closing the lid on the B.C. toilet bowl. **The expiry of the Interim Order coming up in June 2024 brings an opportunity to integrate a stronger, more permanent regulation under the Canada Shipping Act, 2001.** Canada should follow the example of areas that have stronger regulations (like our neighbours in Alaska and Washington), designate no-discharge zones for sewage and greywater in the Great Bear Sea, prohibit the discharge of scrubber wastewater in Canadian waters and become a leader in implementing a third-party on-board monitoring program.

THIS REPORT RECOMMENDS THE FOLLOWING:

Legally require cruise ships to have **holding tanks that are of adequate size** to store all sewage and greywater produced during a ship's intended voyage.

Close the **"toilet bowls"** in the Great Bear Sea by extending the application of cruise ship discharge regulations to the entirety of Canada' Internal Waters and territorial seas.

Require regular, **independent third-party monitoring** while cruise ships are underway to ensure discharge requirements are met. Fund this program by a per-passenger fee.

Eliminate the geographical exemption permitting cruise ships to discharge sewage and greywater in areas where the shores are narrower than **6 nautical miles wide.**

Designate **no-discharge zones** for sewage and greywater within marine protected areas to align with the proposed enhanced restrictions of the MPA Protection Standard.[12]

Prohibit the use of scrubbers in **Canada's Internal Waters and territorial seas.**

Eliminate the exception that permits cruise ships to discharge sewage and greywater within **3 nautical miles** of shore if no onshore reception facilities exist on the ship's intended voyage.

Canada has a responsibility and moral obligation to prioritize protecting its coastal biodiversity, respect the rights of coastal First Nations, and conserve the bounty and beauty of Canadian coasts for future generations. Although the focus of this report concentrates on Alaskan cruise ship routes along the coast of B.C., similar concerns are likely to arise on Canada's other coasts, given the trend of increased cruise tourism and the danger of unregulated cruise ship pollution threatening our global ocean.

INTRODUCTION

Canada's Marine Protected Areas (MPAs) are meant to be safe havens where wildlife can take refuge and recover from the consequences of human activities. They provide critical habitats for migratory species, protect the invaluable biodiversity held within, and sustain the cultures and communities along the coast. **The wide array of toxic substances in cruise ship liquid waste streams pose a significant, compounding threat to aquatic wildlife** and the habitats and food webs on which they depend. Nutrients from untreated or poorly treated sewage and greywater create algal blooms that completely deplete areas of oxygen, thus suffocating sea life,[13] and highly acidic, toxin-laden wastewater from Exhaust Gas Cleaning Systems (EGCSs or "scrubbers") contributes to coastal water acidification and contamination with heavy metals and polycyclic aromatic hydrocarbons (PAHs).[14] The MPA Protection Standard has proposed prohibitions for discharging oily engine bilge, sewage (blackwater), greywater, food waste and scrubber washwater up to 12 nautical miles (nm) from land in MPAs.[15] However, these proposed regulations have yet to be implemented.

In June 2023, Transport Canada released an Interim Order Respecting the Discharge of Sewage and the Release of Greywater by Cruise Ships in Canadian Waters.[16] Concerns had been mounting among Canadians regarding the significant marine pollution being discharged by cruise ships into waters within Canadian jurisdictions, particularly when compared to stricter regulations in neighbouring U.S. states. **The coastal region of British Columbia had earned the ignominious reputation as the "toilet bowl" of the cruise industry** due to the alarming levels of pollution being dumped there.

The issuance of this new Interim Order signalled Transport Canada's acknowledgment of the pressing issue of cruise vessel dumping, as more than 31 billion litres of contaminated sewage, greywater and EGCS "scrubber" wastewater enters the waters along the B.C. coast from these ships annually.[17] The accompanying press release from Transport Canada included a quote from the then Minister of Fisheries and Oceans Canada, the Honourable Joyce Murray. She stated, "These measures apply to cruise ships transiting through Canada's Marine Protected Areas and marine refuges, and making them mandatory underlines our commitment to safeguarding our oceans for future generations."

The Order purported to prohibit ships from dumping sewage and greywater within 3 nm of shore "where geographically possible." It also stipulates that cruise ship sewage and greywater released between 3 to 12 nm offshore must be treated to meet a standard fecal coliform count of 14/100 mL; must not contain visible solids; must not leave a sheen, sludge or emulsion; and cannot create water discoloration under the surface or on the shoreline. These new restrictions were welcome news for the many communities and ecosystems that exist along cruise ship routes.

However, a closer review of the Interim Order reveals significant exceptions to the purported protections, leaving large gaps in Canada's cruise ship pollution discharge regulations. Further, the Interim Order is only in place for one year, and its expiration is rapidly approaching. During this year, representatives from Transport Canada have verbally stated that it is preparing more permanent regulations to replace it, highlighting an opportunity to address the massive deficiencies in the Interim Order. This report's authors contacted Transport Canada in the summer of 2023 and again to follow up in the spring of 2024 to request information on any analysis the agency may have completed regarding the extent of the geographical exceptions from the Interim Order discharge restrictions on the West Coast. Transport Canada has not provided a substantive response to these inquiries to date.

This analysis offers an independent review of the Interim Order. It also details regulations Canada can consult for guidance as it strengthens its legal framework and provides recommendations to improve final regulations that will fulfill the objective of protecting waters within Canadian jurisdictions. It is imperative that Canada acts to protect the rich biodiversity and cultural significance of the extensive coastal waters and marine ecosystems from the deleterious impacts of cruise ship water pollution.

THREE MAJOR TYPES OF WATER POLLUTION FROM CRUISE SHIPS:

SEWAGE (A.K.A. BLACKWATER): The waste from toilets. Sewage from cruise ships is more concentrated than household sewage.[18] It can contain fecal coliform (a group of bacteria whose presence is often used to indicate the presence of human waste pathogens in wastewater).[19] It can also contain ammonia, chlorine, and a variety of toxic pollutants, including pharmaceuticals, heavy metals, hydrocarbons and organochlorines. These contaminants can affect fish, crabs and shellfish, as well as human health.[20]

GREYWATER: The waste from sinks, laundry machines, bathtubs, shower stalls, dishwashers, pool water, waterslides, and other sources. It can also contain high amounts of fecal coliform. In fact, the U.S. Environmental Protection Agency (EPA) found higher counts of fecal coliform bacteria in cruise ship greywater than inflow into municipal sewage treatment facilities.[21] It also contains detergents, cleaners, lotions and topical creams, nutrients, solids, oil and grease, hazardous carcinogens and growing amounts offibre-based microplastics.

SCRUBBER WASTEWATER: The acidic, toxin-laden pollution created by EGCSs, known as"scrubbers." Cruise ships have traditionally burned heavy fuel oil (HFO), one of the cheapest and dirtiest fossil fuels.[22] In 2020, the International Maritime Organization adopted a new legal requirement for lower sulphur content in ship fuel. However, an exception in the regulation permits ships to continue to burn high-sulphur HFO, as longas operators employ scrubbers to reduce air sulphur emissions. While scrubbers reducethe amount of sulphur air pollution, these systems simply convert air pollution into waterpollution. This combustion waste is most often simply discharged directly into the oceanas scrubber wastewater and accounts for 97% of pollution dumped into waters withinCanadian jurisdictions by cruise ships.[23]

THE CRUISE SHIP INDUSTRY ON CANADA'S WEST COAST

Prior to the COVID-19 pandemic, the global cruise ship industry had been growing rapidly. It was estimated to have grown from 17.8 million passengers in 2009 to 30 million in 2019.[24] The pandemic hit the sector hard, particularly following high-profile outbreaks, ships entered extended quarantine and vessels were being turned away from port after port. The sector has struggled but is projected to grow by 11% by 2028 from its post-pandemic 2022 levels.[25]

Alaska cruise routes have long been regarded as a critical growth market for the sector, and these routes appear to have rebounded quickly. Cruise traffic off the West Coast of Canada has exploded since the industry re-opened in 2022. **Last year, the Port of Vancouver estimated that a record 1.25 million passengers came through its berths, a 54% increase compared to 2022.**[26] Projections for the 2024 cruise season anticipate another record-breaking year.[27]

These ships generally follow one of two routes. Ships travelling the first route leave Seattle and head up the west coast of Vancouver Island to Alaska. These vessels may stop in Victoria on the way back to Seattle to comply with U.S. vessel rules. The second route is known as the "Inside Passage." Vessels travelling this route leave

the Port of Vancouver and sail through the narrow straits between Vancouver Island and the mainland, past Campbell River, and then through the archipelago of islands of the central and north coast of British Columbia to the Alaskan border. [28] This "inland sea" shelters many rare and endangered species, including sanctuaries for millions of migrating birds, thousands of coastal salmon runs, and multiple whale species.[29] [30] Vessels then either return along the same route or via the Juan de Fuca Strait.

Alaska cruises are hugely popular because vessels on these routes pass through some of the most incredible scenery on the planet: narrow fjords, dramatic mountains and rainforests, and estuaries hosting some of the most important salmon runs in the world. One of these key areas is **the Great Bear Sea (also referred to as the Northern Shelf Bioregion). This 100,000 km² area next to the iconic Great Bear Rainforest off the coast of British Columbia is home to one of the most biodiverse ecosystems in the world** —and is of great cultural significance to over 30 Indigenous Nations and communities who have stewarded the lands, waters and terrestrial and marine resources since time immemorial. This important area is teeming with life underwater. Notably, all five wild Pacific salmon species, humpback whales, dolphins, porpoises, seals, sea lions and the critically endangered southern resident killer whales rely on this marine ecosystem.[31] Additionally, cruise ships sail through the important feeding waters of the Scott Islands Marine National Wildlife Area at the northern end of Vancouver Island. This area is a refuge for over 5 million seabirds.[32] Alarmingly, this key ecological area has more waste dumped in it by cruise ships than any other MPA in Canada.[33]

MAP 1: Cruise ship routes along the west coast of B.C. from aggregated open data source with the the Great Bear Sea area delineated[34]

THE ENVIRONMENTAL IMPACTS OF CRUISE SHIP WATER POLLUTION SOURCES

With increasing cruise traffic also comes increased pollution. A 2022 report from the World Wildlife Fund (WWF) found that **roughly two thirds of the volume of sewage, greywater and scrubber wastewater discharged from vessels in waters within Canadian jurisdiction comes from cruise ships, despite these ships accounting for only 2% of ships in their analysis.**[35] Pollution from cruise ships on the West Coast poses **ecological, socio-economic** and **human health risks** as a massive volume of toxic greywater, sewage, and scrubber wastewater is being released into extremely important coastal ecosystems.[36]

As sewage contains human body waste, its discharge into coastal waters may also contain ammonia, heavy metals, hydrocarbons, organochlorines and high levels of fecal coliform bacteria.[37] These materials may cause

localized water temperature increases from rapid waste biodegradation and high nutrient loads, leading to algal blooms.[38] **These algal blooms directly impact plants and animals in coastal waters through suffocation.**[39] The socio-economic and human health risks of inadequately treated sewage dumped into coastal waters include the potential presence of pathogens like **salmonella, hepatitis, gastro-intestinal viruses and the accumulation of harmful toxins.**[40] **These pathogens and toxins may directly enter the food chain and impact human food sources like kelp, seaweeds or shellfish,**[41] posing a risk to the food sovereignty of remote communities and coastal First Nations along the West Coast.[42]

Greywater poses equally concerning ecological risks due to contaminants such as detergents, microplastics, grease, suspended solids, excess nutrients and dangerously high levels of fecal coliform bacteria (sometimes even higher than untreated sewage).[43] High ship traffic through the Great Bear Sea may lead to concentrated areas of discharge, contributing to further suffocation of and developmental impacts on important coastal and marine species.[44]

Scrubber wastewater is highly acidic, as it contains sulphur oxides from the marine exhaust. It is usually discharged straight into the ocean often without treatment.[45] It also contains high levels of PAHs and heavy metals — contaminants linked to cancer, DNA damage and even the adverse maternal health of endangered southern resident killer whales.[46][47] **Acidic scrubber wastewater discharges may also exacerbate the impacts of global ocean acidification on coastal B.C. species that rely on a pH balanced environment — such as oysters, clams, mussels, barnacles and many more —** as it may further compound the effects of increasing atmospheric carbon concentrations in localized marine environments.[48]

In addition to the direct impacts of pollution on natural and social ecosystems, increased cruise ship traffic through these biodiverse areas may have adverse impacts on human and ecosystem health through increased antibiotic resistance,[49] heightened noise pollution to multiple key marine species,[50] increased risk of whale strikes (and associated loss of global marine carbon storage),[51] the degradation of climate-mitigating kelp forest habitats,[52] increased harm to key animals like the critically endangered southern resident killer whales and human health via contaminated seafood.[53] **Many cruise ship passengers may be shocked to learn that their trip of a lifetime through the fjords of the West Coast could leave such a harmful legacy.**

CRUISE SHIP DISCHARGE REGULATIONS IN CANADIAN JURISDICTIONS

The link between cruise ship traffic and increased pollution became exceedingly clear during the cancellation of the 2020 cruise ship season, when **an estimated 31 billion litres of cruise ship pollution were prevented from being discharged in the waters off B.C.'s coast**.[54]

This figure includes the highly acidic and toxic wastewater from **scrubbers — technology increasingly installed on cruise ships to reduce the sulphur content from a vessels' air exhaust plume by "rinsing" it with seawater.**[55] **This "loophole" technology effectively converts air pollution into water pollution.** It was widely adopted by cruise ships in response to Sulphur Emissions Control Areas and in preparation for a new regulation from the International Maritime Organization (IMO) that restricted the sulphur content in marine fuels. It came into force in 2020.[56] The loophole in the IMO fuel standard has allowed ship operators to continue burning cheap, dirty, sulphur-laden HFO rather than switch to cleaner, lower-sulphur marine fuels.[57] **Canada has not prohibited the use of scrubbers, despite scrubber wastewater accounting for 97% of the billions of litres of pollution dumped into waters within Canadian jurisdictions by cruise ships.**[58]

Sewage largely contains human body waste and should be treated via on-board wastewater treatment systems like a Marine Sanitation Devices (MSD) or a Advance Wastewater Treatment System (AWTS) to a standard that protects human and ecosystem health. Prior to the

Interim Order, Canadian regulations allowed cruise ships to discharge sewage, even within 3 nm of shore as long as it was filtered through a MSD and met a high 250/100 ml monthly average fecal coliform count.[59] Under the Interim Order, cruise ships are required to use an MSD and average monthly fecal coliform counts must be equal or less than 14/100 ml. Unfortunately, MSD systems often use outdated technology that have been shown, in some cases, to be largely ineffective, especially without sufficient maintenance requirements in place, leaving fecal coliform levels as high as 24 million colonies per 100 ml.[60] Although the Interim Order includes a 14/100 ml fecal coliform count standard, in line with neighbouring U.S. states,[61] it is questionable whether this standard will be met in practice using this subpar technology.[62] [63]

Prior to the Interim Order, Canada also had few restrictions on the discharge of greywater by cruise ships.[64] Greywater could often be discharged directly into the ocean without even the meagre treatment afforded by passing it through an MSD.

Further, **the Interim Order does not establish an independent monitoring system or require regular performance testing** to ensure that these fecal coliform limits are being met in cruise ship discharges. It is imperative that the permanent regulations Transport Canada has committed to instituting before the Interim Order expires include monitoring, performance testing and the use of Advanced Wastewater Treatment Systems for both sewage and greywater.

CANADA CRUISE SHIP REGULATIONS LAX COMPARED TO NEIGHBOURING U.S. STATES

In 2021 Stand.earth and West Coast Environmental Law released a report, *Regulating the West Coast Cruise Industry,* which examined cruise ship discharge regulations. This analysis found that **Canadian regulations for cruise ship sewage, greywater and scrubber wastewater discharges lagged behind those of neighbouring U.S. states.**[65] These regulations incentivized cruise ships to dump toxic and often undertreated or mistreated greywater, sewage and scrubber wastewater pollution straight into waters within Canadian jurisdictions, further putting the very same habitats and wildlife that passengers were paying to see at risk.

Through the U.S. Clean Water Act (passed in 1972) and the U.S. Environmental Protection Agency Vessel General Permit (passed in 2009), the U.S. federal government instituted a basic legal framework to regulate vessel discharges in U.S. waters. However, several states have also implemented more stringent policies due to continued non-compliance by the cruise industry, year-over-year industry growth and the amassing evidence on the adverse impacts of cruise ship pollution sources.[66]

Washington state prohibits the discharge of sewage from Seattle to the Canadian border in the Puget Sound No Discharge Zone.[67] Washington State and Alaska also placed strict limits on fecal coliform levels that can be released in greywater and sewage at no more than 14/100 ml for average monthly coliform counts. Alaska also generally has stricter sewage and greywater discharge permit requirements that require treatment through the more advanced AWTS technology.[68] Further, in an effort to address isolated pockets of federal waters within state waters ("doughnut holes"), a federal bill known as the Murkowski Bill was passed to prevent cruise ships from entering those exemption enclaves and releasing waste.[69] Lastly, while California has banned the use of scrubbers as an air pollution compliance mechanism within 24 nm of their coast and mandated cleaner marine fuels, Canada has not.[70]

Following the publication of this report, an access to information request submitted by the National Observer uncovered a note from the Deputy Minister of Fisheries and Oceans outlining how cruise ship discharge regulations in the U.S. were "more stringent in several ways compared to Canada." The information obtained as a result of the request also revealed that Transport Canada had been developing, along with industry, regulations that would focus "on the discharge of greywater, sewage, and scrubber wastewater and are seeking to align with what the states of Washington and Alaska have in place."[71]

THE 2023 INTERIM ORDER

In June 2023, Transport Canada finally issued a temporary Interim Order, putting in place new enhanced legal restrictions on cruise ship discharges, while it finished developing more permanent regulations.[72] While the Order did not address scrubber wastewater (which, as noted above, accounts for the vast majority of cruise ship pollution), it did purport to prohibit ships from dumping sewage and greywater within 3 nm of shore "where geographically possible." It also imposed a fine of up to $250,000 if vessels were caught doing so. It stipulates that cruise ship sewage and greywater released between 3 and 12 nm offshore must be treated to meet a standard fecal coliform count of 14/100 mL, must not contain visible solids; must not leave a sheen, sludge, or emulsion; and cannot create water discoloration under the surface or on the shoreline. These new restrictions were welcome news for the many communities and ecosystems that exist along cruise ship routes.

HOWEVER, UPON CLOSER INSPECTION, SOME WHALE-SIZED EXCEPTIONS WERE ALSO INCLUDED IN THIS INTERIM ORDER. THREE KEY EXEMPTIONS EXIST IN THIS ORDER:

GEOGRAPHIC EXEMPTIONS:

A cruise ship can discharge sewage and greywater within 3 nm from shore using an MSD if:

the cruise ship does not have adequate tank storage space for the combined volume of sewage or greywater it produces on its intended voyage (once combined, the waste is considered sewage), AND it is sailing between two shorelines less than 6 nm apart (i.e., the Johnstone Strait)

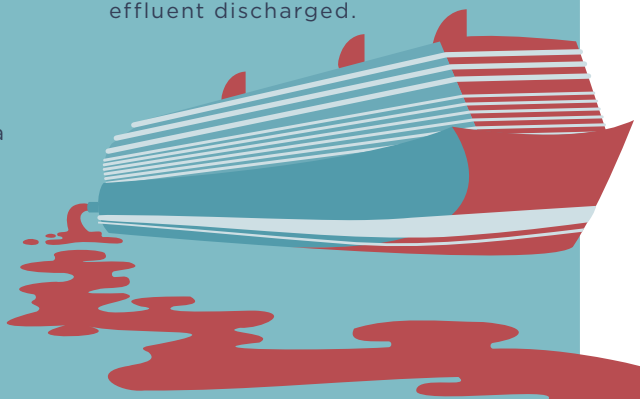
OR there are no available and adequate onshore reception facilities during the cruise ship's intended voyage to receive its greywater and sewage.

GEOGRAPHIC LIMITATIONS:

Massive areas of the Internal Waters of Canada within the Great Bear Sea lie outside of 12 nm offshore from the mainland and are thus still unregulated "toilet bowls." Large parts of these unprotected areas also fall within the proposed Great Bear Sea MPA Network. Canada can and should be protecting these areas from cruise ship discharges.

WASTEWATER EXCLUSION:

Scrubber wastewater is not addressed, despite it being the largest volume of cruise ship effluent discharged.



Additionally, the Interim Order fails to include regular monitoring, analysis and reporting protocols for discharges (unless the discharges were released in an accident or for safety reasons), nor does it provide for the presence of third-party, on-board observers. Instead, the Interim Order requires reporting only in the event of discharges made for safety reasons or if the Transport Minister requires it of a particular vessel to show compliance. Both events are unlikely to occur with enough regularity for consistent data to provide any insight into the behaviour of the industry. **Without independent oversight and adequate reporting and enforcement, these measures are insufficient to protect coastal biodiversity and the air, water, food and local blue economies of coastal communities.** In contrast, ships in Alaska are required to submit reports and monitor the contents of any wastewater dumped to keep a maximum fecal coliform count of 14/100 ml in the entire Alexander Archipelago.[73]

The following sections provide greater detail on each of these "loopholes." They include an analysis of the actual area of protected waters along the coast of British Columbia under the current policy and provide key recommendations for strengthening the Interim Order, and ultimately, introducing robust permanent regulations under the Canada Shipping Act, 2001.

GEOGRAPHIC EXEMPTIONS: THE LOOPHOLES ON DISCHARGING CLOSE TO SHORE

The Interim Order states that cruise ships can discharge sewage and greywater within 3 nm of shore using an MSD if the cruise ship does not have a large enough holding tank for the "amount of sewage and greywater that could reasonably be expected to be produced during the ship's intended voyage" and the shorelines are less than 6 nm apart; or "if there is no onshore reception facility that is available and adequate for the purpose of receiving sewage and greywater in an environmentally safe manner during the ship's intended voyage." [74]

The language regarding "adequate" tank storage capacity and reception facilities is quite vague and is therefore difficult to enforce. **These exemptions provide significant latitude to cruise vessel operators for discharging sewage and greywater, particularly for ships travelling in remote areas, like the narrow fjords of coastal British Columbia.**

LACK OF ADEQUATE ONSHORE RECEPTION FACILITIES EXEMPTION:

If an adequate onshore reception facility is not available during the ship's intended voyage and the ship's holding tanks do not have adequate capacity for the volume of waste produced, the Interim Order permits cruise ships to **discharge sewage and greywater treated through an MSD anywhere along the coast.** The majority of cruise ships on the Alaska routes leave from Seattle or Vancouver, make a few stops through ports in Alaska (Juneau, Skagway, Ketchikan, and either Sitka or Haines) and may stop in Victoria, B.C. on the return voyage. Some of the Alaskan ports have onshore reception facilities for cruise ship discharges, but whether these facilities are "adequate and available" to prevent sewage and greywater dumping along the coast of B.C. is unclear. Cruise operators must pay fees for the volume of sewage and greywater discharged at onshore reception facilities, and they pay more for more highly contaminated wastes.[75] These fees could create a financial incentive for vessels to discharge along the coast of B.C. under the Interim Order exemptions, thus reducing the volume of waste operators must pay to offload in Alaska ports. **The variability in storage tank capacities, number of passengers, and onboard amenities further contribute to the uncertainty regarding whether the Alaska discharge stations can be relied upon to protect waters in Canadian jurisdictions.**

Cruise vessel traffic along the Alaska routes is growing, and cruise ship operators should be required to ensure that there are appropriate pump out facilities along these routes. Without proper regulation, cruise ships can continue to discharge water pollution while voyaging through waters within Canadian jurisdictions to and from the Alaskan border. This path is just offshore of some of Canada's most iconic protected areas, such as the Pacific Rim National Park and the Gwaii Haanas National Park and Haida Heritage Site.

INADEQUATE TANK CAPACITY EXEMPTION:

If a cruise ship does not have an adequately sized tank to store all the sewage and greywater it produces on its intended voyage, the Interim Order permits the cruise ship to discharge sewage and greywater treated through an MSD close to shore in areas where shorelines are narrower than 6 nm apart. Canadian regulations also do not require cruise ships to have holding tank capacities adequate for the total volume of sewage and greywater that could reasonably be expected to be produced during the ship's intended voyage. Moreover, prior to the Interim Order, cruise ships were not required to keep the greywater produced in holding tanks. Given that cruise ships generate several times more greywater than sewage, **there is a real concern that many cruise ships will not have adequate holding tank capacity for all the sewage and greywater they produce.**[76] Sewage holding tank capabilities vary significantly between ships, ranging from 0.5 to 170 hours (likely dependent on tank size, vessel amenities and number of passengers).[77]

The Interim Order does not require cruise vessel operators to upgrade holding tank capacities to safely store the large volumes of contaminated greywater and sewage these ships produce. As such, the Interim Order does not create the impetus for cruise ship operators to take action to avoid greywater and sewage dumping. Instead, vessel operators can rely on the exemption for inadequate holding tanks to discharge sewage and greywater treated with an MSD close to shore in areas where the shorelines are narrower than 6 nm and/or in unprotected "toilet bowls."

This is particularly concerning for the Inside Passage cruise ship route because it passes through many very narrow straits where this

exemption could apply. **An estimated 77% of a typical cruise ship route through the Inside Passage takes place in areas narrower than 6 nm where vessels can discharge sewage and greywater** with an MSD directly off the shoreline.

MAP 2: Cruise ship routes along the west coast of B.C. from aggregated open data source with highlights to show where discharges are permitted or restricted based on exemptions in the Interim Order along the aggregated routes.[78]

To illustrate the extent of this exemption, consider two cruise ships scheduled to travel from Vancouver to Alaska in 2024: the Le Soléal and the Ruby Princess. Both ships have multiple stops at the Port of Vancouver supporting trips to Alaska in the 2024 season.[79]

The Le Soléal is a smaller ship advertising more adventurous and in-depth onshore experiences. The Ruby Princess is a large ship owned by Carnival Corporation and advertises many onboard amenities, including restaurants, pools and entertainment. The Le Soléal has a capacity of over 400 passengers and crew, a spa and two restaurants.[80] The Ruby Princess is reported to have a capacity of just over 3,000, upwards of 15 food services, a spa, and a mixture of pools and hot tubs.[81] Ships as large as the Ruby Princess are typically operating scrubbers on each of its 4–6 operating engines, and this ship has had scrubbers installed.[82] It is unknown if the Le Soléal has scrubbers installed. Both these ships may not have adequate tank capacity for the total volume of sewage and greywater likely to be produced on the intended voyages through waters within Canadian jurisdictions, nor are the vessels required to under current Canadian regulations. As a result, assuming inadequate tank capacities, the Interim Order would permit each of the vessels to discharge sewage and greywater treated with an MSD within 3 nm of shore or whenever it is travelling between two shores less than 6 nm apart.

The voyages begin at the Port of Vancouver, situated on the unceded traditional territories of the the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish) and səlilwətaɬ (Tsleil-Waututh) First Nations. Travelling en route to the Inside Passage, the ships will arrive in the Strait of Georgia, where they will have to navigate around the Gulf Islands. This is an area where many of the shorelines are less than 6 nm apart. A ship could conceivably begin to discharge directly off the shore of the coastal communities in this area using an MSD, depending on the route it chooses. However, at this early point in the journey, they are likely still collecting sewage and greywater aboard.

The cruise ships sail northward, travelling past many coastal communities including Nanaimo, Parksville, Comox, Courtenay, and Oyster River. This area also includes many Northern Coast Salish First Nations, including that of the Pentl'ach, K'ómoks (Comox) and Shíshálh (Sechelt) Peoples.

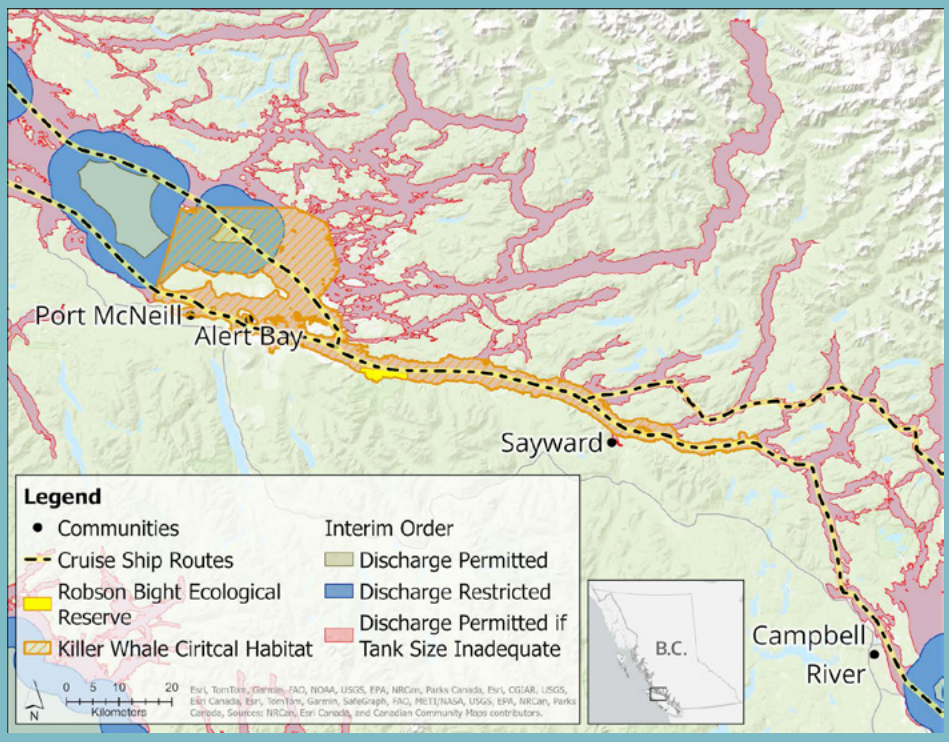
Eventually, the cruise ships will pass by Campbell River, a city of over 35,000 and one of the fastest-growing communities on Vancouver Island.[83] The ships will then enter Discovery Passage, a narrow inner channel between Vancouver Island and the Discovery Islands leading to Johnstone Strait, through the unceded territories of several First Nations, including the Wei Wai Kum and We Wai Kai First Nations.

Recent research has shown that waters off the coast of B.C., and in particular Johnstone Strait and areas of the Salish Sea, experience almost double the rate of acidification compared to the global average.[84] It is particularly problematic that Canada permits cruise ships, like the Ruby Princess, to continuously dump highly acidic scrubber wastewater into these already vulnerable marine environments.

The ships will continue through Johnstone Strait, an iconic 110-km channel running along the North Coast of Vancouver Island, with a width never wider than 3 nm. Under the Interim Order, the cruise ships could conceivably discharge sewage and greywater treated with an MSD (along with scrubber wastewater) throughout this entire area, including near the communities of Sayward, Alert Bay and Port McNeil and through the territories of the Tlowitsis, Mamalilikulla and Namgis First Nations, among others.

This sensitive area also includes the Robson Bight Ecological Reserve, as well as a federally designated critical habitat for northern resident killer whales.[85] Killer whales gather here to feed, socialize and exhibit an unusual behaviour only seen in this one special place: rubbing their bellies and sides on the smooth stones of the beaches. As top predators of marine food chains, toxins from cruise ships potentially pose a direct threat to these incredible animals, bioaccumulating in their bodies from the tonnes of prey they eat.[86]

As the cruise ships sail along the northern part of Vancouver Island, continuing the journey into the Great Bear Sea, they will pass through a key area where humpback whales gather to feed on the rich abundance of small crustaceans and forage fish. Large portions of this area fall within the exemptions in the Interim Order. **Allowing cruise ships to dump here threatens some of the most iconic coastal ecosystems and animals in B.C.**

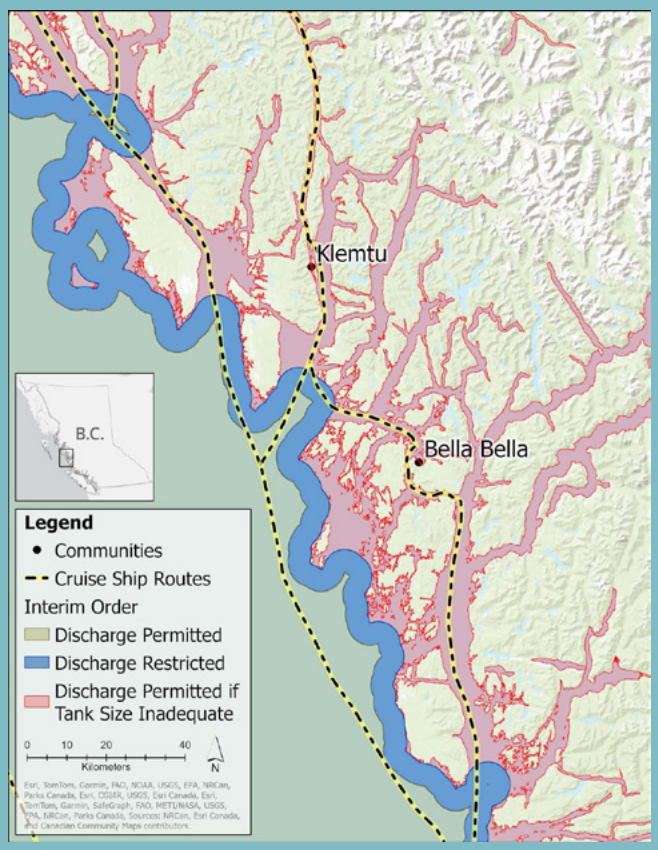


MAP 3: Cruise ship routes through Johnstone Strait from aggregated open data source with bands to show where discharges are permitted and restricted, and where exemptions apply along the coast.[87]

This region also includes several islands, such as Nigel Island and Kent Island, whose shores are no more than 6 nm apart. The cruise ships could once again be exempted from the prohibition on discharging close to shore. At this point along the route, the ships could also choose to travel 12 nm west into Queen Charlotte Sound. The Interim Order cruise ship discharge measures do not apply in this area, and the vessels could discharge freely without even using an MSD.

Moving north, the routes of the cruise ships will likely diverge. The larger Ruby Princess may head directly across the Great Bear Sea toward and past the Port of Prince Rupert

on the way to Alaska. The Le Soléal is likely to take a similar track to previous years. It will enter Fitz Hugh Sound, beginning the northern part of Canada's Inside Passage route through the North Coast Archipelago islands. Its remaining journey to the Alaskan border could be through narrow fjords, where the shorelines are all within 6 nm. Major urban



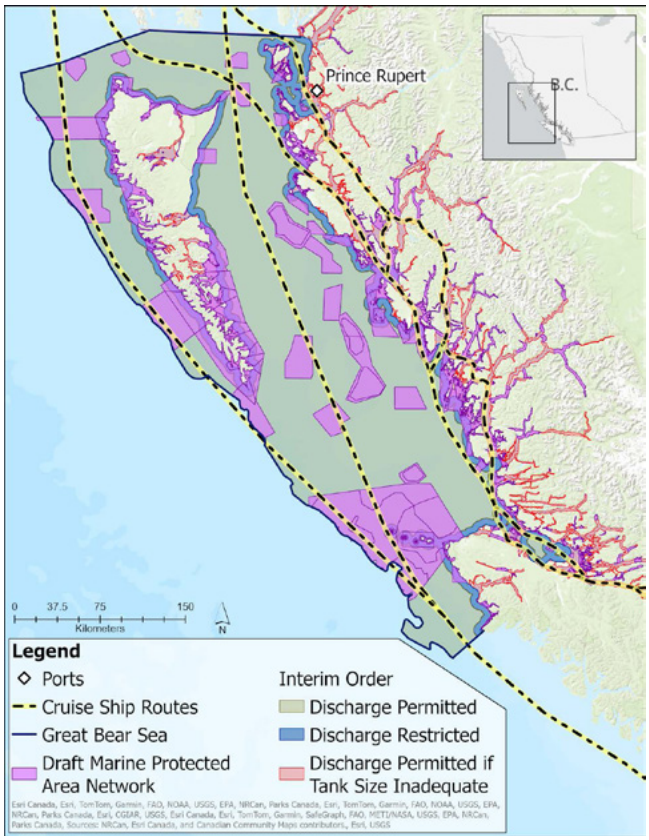
MAP 4: Cruise ship routes in the fjords around Bella Bella from aggregated open data source with bands to show where discharges are permitted and restricted, and where exemptions apply along the coast.[88]

centres with wastewater treatment capacity are few and far between. The ships could use exemptions in the Interim Order to discharge sewage and greywater treated with an MSD close to shore near the communities of Namu, Bella Bella, Klemtu and Hartley Bay, as well as in the proposed Central Coast National Marine Conservation Area Reserve.

Coastal First Nations' territory along this part of the route include the Wuikinuxv Nation, Heiltsuk, Kitasoo/Xaixais, Nuxalk Nation, Gitga'at and Metlakatla. Since time immemorial, these First Nations have relied on rich ocean resources such as salmon, herring and crab to sustain their vibrant communities and cultures. They now work to rebuild populations and restore the abundance of coastal species for the benefit of all people living in the region. Allowing continued cruise ship pollution dumping undermines these efforts.

In summary, assuming that cruise ships do not have adequate tank capacity to hold all of the sewage and greywater produced during the intended voyages, the ships could simply be exempted from the prohibition on discharging waste within 3 nm of shore in many narrow areas along the routes. In such a situation, **only approximately 12% of the entire Great Bear Sea is protected from sewage and greywater discharge.** Put another way, the discharge of sewage and greywater (when treated with meagre MSD technology) is permitted in nearly 90% of the ecologically sensitive Great Bear Sea if a ship does not have an adequate holding tank. The failure of Transport Canada to address scrubber wastes also means that waters along the coast of B.C. are unprotected from toxic scrubber waste dumping, including highly sensitive marine areas.

Water pollution travels, as do marine species. The patchy protections in the current Interim Order imperil the species that live and travel throughout the region. The inadequacies of the purported cruise dumping restrictions also pose a potential ongoing threat to the health, wellbeing and cultural survival of coastal communities along the Great Bear Sea.



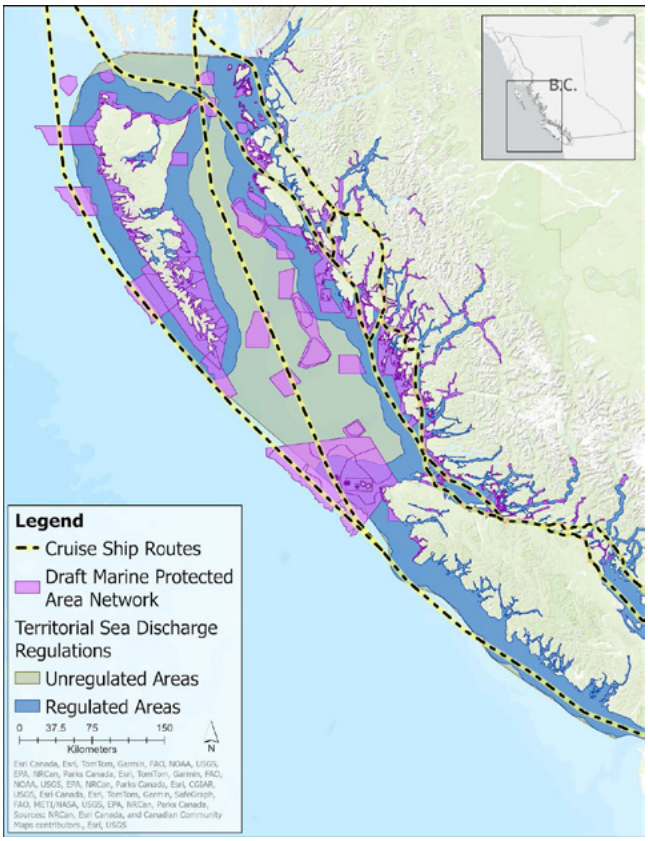
MAP 5: Cruise ship routes in the fjords and across the Great Bear Sea from aggregated open data source with bands to show where discharges are permitted and restricted, and where exemptions apply along the coast, as well as the draft MPA Network[89]

STILL A TOILET BOWL...

Another significant issue with the Interim Order is that it is written to only apply to areas within 12 nm from shore. This means that **large swaths of the Great Bear Sea, between Haida Gwaii and the Mainland, are not protected by the Interim Order. In these areas, cruise ships can discharge raw, untreated sewage and greywater directly into the ocean.**[90] The region is not only home to Canada's proposed first MPA Network, but dozens of communities as well. Allowing any pollution in any part of this sea puts both nature and people at risk.

Approximately 45% of the entire Great Bear Sea and nearly **35% of the entire proposed MPA Network within the Great Bear Sea, are in unregulated "toilet bowl" areas.** It is unclear if the Interim Order supersedes the expected enhanced restrictions of the MPA Protection Standard. As such, these exemptions leave vast portions of a critical network of proposed protected areas vulnerable to toxic vessel pollution. Canada is shirking its responsibility to safeguard these areas for future generations.

To understand the full scope of the unregulated areas, or "toilet bowls," please see **map 6** with MPAs overlaid within the Great Bear Sea.



MAP 6: Cruise ship routes in the fjords and across the Great Bear Sea from aggregated open data source with bands to show where discharges are addressed in the Interim Order and where they are not, as well as the draft MPA Network.[91]

According to international law and Canada's Oceans Act, Canada's territorial sea extends 12 nm from the baseline of its coasts.[92] [93] Baseline for coasts that have fringes of islands or coastal fjords are determined by joining straight lines from appropriate points on the outside of the islands.[94] As such, the baseline of the B.C. coast extends from the western coast of Vancouver Island through the western coast of Haida Gwaii.[95] The unprotected "toilet bowls" in the Great Bear Sea are legally recognized Internal Waters and fall within the boundaries of Canada's territorial sea.[96] [97]Canada has both the jurisdiction and obligation to close the "toilet bowls" in these waters under its jurisdiction.

Canada could follow the lead of the U.S. federal Murkowski Bill that addressed isolated pockets of water ("doughnut holes") by closing where discharging was unintentionally permitted within the Alaska archipelago. Taking similar action in Canada would permanently eliminate Canada's "toilet bowls" in its Internal Waters.

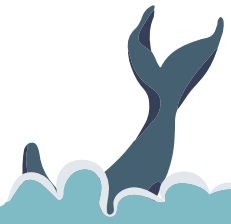
SCRUBBERS: ALL TALK AND NO ACTION

Heavy fuel oil (HFO) is a viscous, bottom-of-the-barrel fossil fuel that is high in sulphur and exceedingly difficult to clean up when spilled.[98] Due to the environmental and public health hazards of sulphur air emissions, the United Nations IMO enacted a new regulation aiming to reduce air emissions of sulphur oxides from oceangoing vessels. It came into force in 2020. Under the new standard, the maximum allowable sulphur content for marine fuel was reduced from 3.5% to 0.5% globally.[99] This change was preceded by even more dramatic reductions (to 0.1%) within Sulfur Emissions Control Areas, such as the North American Emissions Control Area in the United States and Canada.[100] The new global standard was intended to be a landmark international victory for the protection of human health from sulphur pollution.[101]

Shortly after the new fuel standard was adopted and before it came into force, the shipping industry exerted pressure at the IMO for an amendment to the International Convention for the Prevention of Pollution from Ships (also known as MARPOL) that would allow for so-called "equivalencies."[102] The IMO ultimately acquiesced to industry interests, and ships across the globe were given a choice of two pathways for

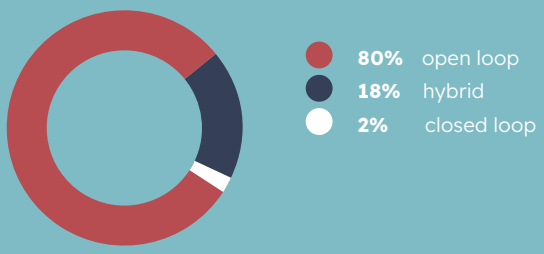
compliance: use lower-sulphur, compliant fuels or install exhaust gas cleaning systems (EGCSs or "scrubbers") to "wash" sulphur out of the exhaust plume.[103]

Between the two options, the use of lower-sulphur fuel is more expensive. Due to the comparatively lower cost over time of installing and running scrubber systems while continuing to burn cheap, dirty bunker fuel, many vessel operators opted for the treatment compliance pathway. In particular, major cruise ship companies were early adopters of scrubber technology.



SCRUBBERS ARE BROADLY CATEGORIZED IN THREE TYPES: OPEN-LOOP, CLOSED-LOOP AND HYBRID

A 2019 report from the International Council on Clean Transportation found that — globally — approximately 80% of the scrubbers installed on vessels are open-loop, 18% are hybrid and only 2% are closed-loop.[104]



HYBRID SCRUBBERS are often operated in open-loop mode unless scrubber wastewater discharges are prohibited.

OPEN-LOOP SCRUBBERS produce a significant volume of wastewater pollution because these systems operate by continuously pulling in seawater to spray the exhaust plume and dumping the contaminated wastewater back into the ocean.

Close-loop scrubbers and hybrid scrubbers operated in closed-loop mode still produce toxin-laden liquid waste commonly referred to as "bleed-off."[105] **The toxin levels found in closed-loop scrubber bleed-off exceed many water quality standards and are acutely toxic to marine wildlife.**[106]

The international standards set by the IMO for scrubber wastewater are inadequate and do not address all of the harmful substances present in scrubber wastewater. In 2008, the IMO adopted voluntary Guidelines for Exhaust Cleaning Systems with criteria for pH, PAHs, turbidity/suspended particulate matter and nitrates in scrubber discharges. Although scrubber wastewater is known to contain toxic heavy metals, no specific criteria were set for heavy metal content.

At the time these standards were adopted, there were only

3 vessels operating worldwide with scrubber systems installed, two of which were prototypes.[107]

There are now more than

4,000

oceangoing vessels operating with scrubbers, **and this number continues to grow.**[108]

The legality of open-loop scrubbers (or hybrid scrubbers operated in open-loop mode) under the United Nations Convention on the Law of the Sea (UNCLOS) is unclear because **these systems wash contaminants from the air exhaust plume and instead discharge the contaminants in effluent scrubber waste.** The United Nations Joint Group of Experts on the Scientific Aspects of Marine Protection Task Team states in its 2019 report (PPR7/INF.23) to the International Maritime Organization: "The Task Team noted that, in this respect, it could even be argued that EGCS are potentially in conflict with Article 195 of UNCLOS 'Duty not to transfer damage or hazards or transform one type of pollution into another."[109]

In 2017, it was estimated that cruise ships dumped

35 million tonnes

of scrubber wastewater off the coast of B.C. annually.[110]

This figure is likely an underestimation of the current volume of wastewater released off Canada's West Coast each year due to the explosive growth in the Alaska cruise routes.

Further, a report commissioned by Environment and Climate Change Canada found that the use of scrubbers with HFO does not deliver equivalent air pollution reductions when compared to the use of lower-sulphur marine gas oil.[111] This is in line with the findings of the U.S. state of California, which disallowed the use of scrubbers to comply with air quality standards.[112] The decision by Transport Canada to allow the use of scrubbers as an air pollution compliance mechanism increases health risks for coastal communities.

The Interim Order fails to address scrubber wastewater discharges, though this is the largest volume of effluent wastes that cruise ships discharge into waters within Canadian jurisdictions. Contaminants found in scrubber wastewater have been linked to severe ecological harm, including the maternal health of threatened northern resident killer whales.[113]

An access to information and privacy request obtained by the National Observer revealed that Transport Canada planned to include scrubbers in the Interim Order in 2022.[114] After consultations with industry, the Ministry did not include any measures to address scrubber wastewater.

Local governments have been left to shoulder the pollution burden and to shore up the political will for action on this issue. In 2022, the Union of BC Municipalities passed a unanimous resolution at their annual convention requesting that the B.C. government commit to advocating to the federal government to take action to prevent acidic scrubber wastewater discharges and require the use of cleaner marine fuels.[115]

Other nations, U.S. states, and individual port jurisdictions have made evidence-based decisions based on emerging information of scrubber wastewater impacts. Transport Canada can adopt a policy that comes in line with other examples, including California's cleaner ocean fuels requirement and the disallowance of scrubbers to comply with 24 nm of baseline;[116] the Port of Vancouver's scrubber ban on discharges;[117] and countries that have banned discharges in territorial and inland waters, such as France, Germany, Denmark, China, Malaysia, Belize, Ghana, Mauritius, Oman, Slovenia, and Türkiye, among others, as well as dozens of some of the world's busiest ports and canals.[118] [119] [120]

It is important to note that ships operating open-loop scrubbers (or hybrid systems operated in open-loop mode) continuously discharge acidic wastewater. While port discharge bans can be helpful, they are insufficient to adequately prevent deleterious impacts on marine ecosystems along the coast.[121]

Transport Canada is best positioned to make this change for all three coasts and has the opportunity to **join global leaders in banning scrubber use and discharges.**

CONCLUSION

Transport Canada issued an Interim Order in June of 2023 imposing enhanced restrictions on the discharge of sewage and greywater from cruise ships but did not include measures to address scrubber wastewater discharges. The stated intention of the Order was to protect coastal ecosystems and communities, as well as ensure that Canada's cruise ship discharge regulations are as stringent as those in Alaska and Washington. However, **the Interim Order contains large loopholes that undermine its effectiveness.** This is particularly true within the Great Bear Sea, where the majority of cruise ships travel and where Canada is creating its first MPA Network.

The Interim Order will expire in June 2024. Transport Canada has stated that it will replace the Interim Order with permanent regulations. It is crucial that these new regulations close the loopholes in the Interim Order, address scrubber wastewater, and include robust monitoring and independent oversight to protect communities and the rich marine ecosystems along the B.C. coast from cruise vessel pollution.

RECOMMENDATIONS:

Designate no-discharge zones for sewage and greywater within MPAs to align with the proposed enhanced restrictions of the MPA Protection Standard.

Prohibit the use of scrubbers in **Canada's Internal Waters and territorial seas.**

Require regular, independent **third-party monitoring** while cruise ships are underway to ensure discharge requirements are met. Fund this program using a per-passenger fee.

Close the **"toilet bowls"** in the Great Bear Sea by extending the application of cruise ship discharge regulations to the entirety of Canada's Internal Waters and territorial seas.

Legally require cruise ships to have **holding tanks** that are of adequate size to store all sewage and greywater produced during a ship's intended voyage.

Eliminate the geographical exemption permitting cruise ships to discharge sewage and greywater in areas where the shores are narrower than **6 nm wide.**

Eliminate the exception that permits cruise ships to discharge sewage and greywater within **3 nm of shore** if no onshore reception facilities exist on the ship's intended voyage.

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