



A Case Against the Cruise Industry's Expansion in Virginia

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Executive Summary

The cruise industry is growing rapidly, carrying more than 32 million passengers last year, and is targeting new ports of call for further expansion. Some view this as an economic opportunity yet fail to accurately account for the impacts of this industry.

Cruise ship tourism in its current form is not responsible tourism. Although it is popular with travelers and some businesses may benefit, there are serious detrimental impacts to port communities and the environment that need to be considered and managed. Decisions to promote cruise tourism in should be done with transparency that fully assesses the industry's business model and its negative impacts. The size and passenger capacity of these large cruise ships can alter the character of communities they visit. Recent scientific studies demonstrate that the pollution impacts on both marine ecosystems and public health can be severe. Thus, transparency and early public input is essential in the decision process related to welcoming ocean-going cruise ships to coastal communities.

This report covers many topics rarely acknowledged by the cruise industry when expanding into new markets. Topics include over-tourism in port communities, pushback by communities around the world against their business practices, exaggerated economic benefits without full cost accounting, water pollution and impacts on marine life including potential impacts to the local seafood industry, public health concerns, climate impacts, inadequacy of current regulations, efforts by states and localities to protect themselves, the cruise ship lobby and more.

Once the cruise ship industry is established in an area, it is extremely difficult and challenging to manage their impacts. This multibillion-dollar industry and its trade association will fight aggressively to protect and expand cruise markets. Therefore, it is a critical to establish meaningful limitations and regulations for ensuring responsible tourism that protects the health of port communities, and recreational and commercial fisheries. Cruise tourism can be managed responsibly, but this requires changes to the industry's current business practices. Protect-Virginia.org has outlined seven principles of [Responsible Cruise Ship Tourism](#), the key tenants of which are:

- More Sustainable Cruise Ships Practices
- Community Self-determination
- Holistic Economic and Cultural Impact Analysis
- Environmental and Health Impact Analysis
- Equitable Tax Burden
- Monitoring and Transparency
- Protection of Public Health

At face value these principles appear to be common sense and obvious, but unfortunately, they are rarely considered fully prior to cruise industry establishing a presence in a community. There is an opportunity to change this paradigm and be proactive by ensuring responsible tourism, but it requires action at the local, State, and Federal levels.

Introduction

Large “ocean-class” cruise ships are essentially floating cities with associated power generation and waste stream production that directly impact air and water quality on a scale considerably beyond that of other vessels. The largest ships can carry 7,600 passengers and upwards of 2300 crew. The waste and pollution generated by large cruise vessels are well documented and there is a worldwide movement to protect the environment and populations from these detrimental effects through regulation. Virginia is the nation’s fourth largest producer of marine products, and a healthy marine ecosystem is vital for the sustainability of its fisheries. In addition to marine life and industry impacts, public health is also put at risk. Lastly, there are direct impacts to port communities through over-tourism and an exploitative business model. This report cites direct evidence of cruise industry impacts, practices, and past performance in communities.

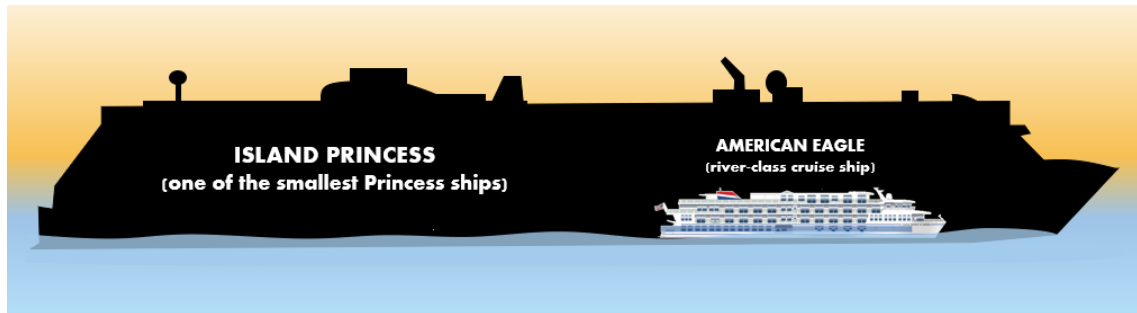
Recently a Princess Cruise Line lobbyist stated at a public hearing that Virginians should “roll out the welcome mat for the cruise industry in Virginia” and wrote in a [Daily Press opinion](#) stating, “we cannot afford not to” welcome cruise ships in Virginia. The industry plans to expand in Virginia, but communities can educate themselves and push back on this expansion. We believe this is essential to protect Virginians, our communities, our waters, and our seafood industry.

Cruise Industry Background

Carnival Corporation, Royal Caribbean, and Norwegian Cruise Lines own the lion’s share of this \$25B industry. These three corporations are parent companies to more than 15 subsidiaries. For example, Carnival, the industry leader, is the parent company of Princess Cruises, Holland America, and several others. The sector is projected to see continued growth (estimated to reach \$30B this year) through leveraging current markets and finding new ones. This industry generates significant revenue from U.S. markets, yet the ships are registered under [foreign flags](#) to avoid taxes. It is very clear that cruise lines are looking for new ports of call in Virginia. Any cruise ship legislation and regulations should be made with this in mind. Once in a market, the cruise industry will fight vigorously to expand its reach.

An important question when considering expansion of the cruise industry in Virginia is the scale of these ocean-class ships and impacts on the ecosystems and port communities they travel through. Their massive size is hard to comprehend from photographs. The smaller ships have over 3,000 people on board (passengers & crew) and the largest one carries over 9,500, with a definitive trend toward ever larger vessels. The [Transport & Environment study](#) is projecting this to continue with 345,000 GT ships carrying 10,500 passengers by 2050, with the number of ships also increasing as the industry expands to new markets (i.e. Virginia).

These ships are character-altering everywhere they visit. In many small port cities in the U.S., where one ship can double or triple the population of the port city, multiple ships arrive simultaneously and inundate the port with hundreds of thousands of passengers per year. Many ships burn toxic bunker fuel 24 hours a day to generate the power to keep the lights, HVAC, and a multitude of other on-board amenities running. Traditional cruise ships need 10–100 megawatts of power for propulsion, lighting, air conditioning and on-board amenities. The power needed for one ship can be equivalent to power used in [60,000 to 70,000](#) average homes. Additionally, there is an enormous amount of waste that must be treated and managed.



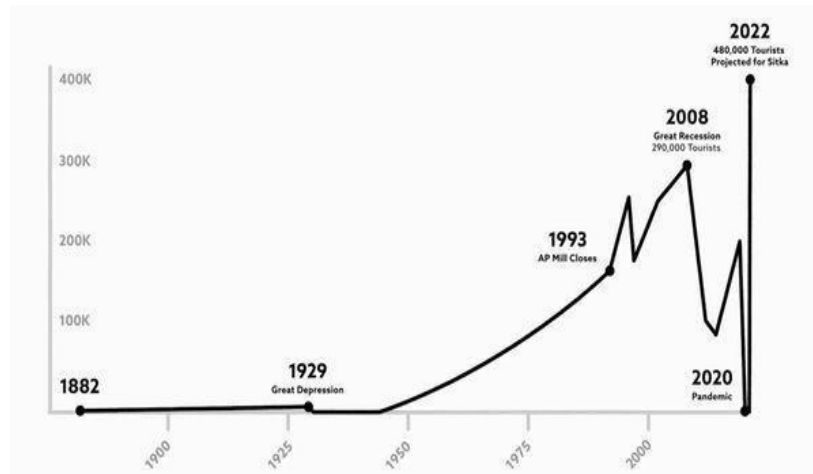
Scale of the Cruise Industry Ships (Island Princess more than 3 football fields long)

It is important to note that this report is focused on the “mega-class” pleasure cruise ships, not military or merchant ships. Also, there are smaller river-class vessels, with business models that minimize the negative impacts of their ships. For example, the ships of [American Cruise Lines](#), a U.S. based company, burn low sulphur fuels, do not scrub exhaust pollutants into the water, are shore power equipped, and have hull designs to minimize noise. Another example is [Uncruise](#), a cruise ship company with a core value of “Do the right thing” and with accountability as a core responsibility. Yet another is [Hurtigruten](#), that was first to ban Heavy Fuel Oil in 2009 and is working toward Net-Zero-Emissions. There are acceptable approaches to cruise ship tourism that manage environmental and human impacts.

Community Impacts

Key West, Charleston, Venice, Barcelona, Sitka, Juneau, Seattle, Amsterdam, Monterey Bay, Marseille, Bar Harbor, Bergen, and many other cities all tell the same tragic story. The cruise industry has exploited these communities to the breaking point, and yet the citizens in these communities have had little input in the initial decision to bring in large cruise ships. Now they are fighting back.

Sitka, a remote community in Alaska, now has over 560,000 tourists per year (see the following graph). Sitka’s story is depicted in the documentary “Cruise Boom”, excerpts of which can be found [here](#). The citizens voted down a cruise ship pier and the cruise lines side-stepped the community by helping to finance a business for a privately run pier; this also happened in Key West. In a recent Sitka survey, 63% of respondents said the cruise industry negatively impacted their lives. Despite a clear message from residents, the industry places profits before the will of the people and has not scaled back. Bar Harbor, Maine, recently passed a law limiting tourism to 1,000 passengers per day, and it has been fighting [costly court challenges](#). There are growing numbers of such stories worldwide.



Graph of Cruise Industry Over-Tourism in Sitka, Alaska

In Yorktown, Virginia, the cruise industry lobbied local government and legislators outside of the public eye to secure funding for a cruise ship pier on private property. After finding out from local media outlets, residents fought back through educational meetings, a [website](#), and a [petition](#). A resident from Juneau, Alaska read about the effort to stop Princess Cruise Lines from coming to Yorktown and wrote a letter that in part stated,

“You are in a critical moment, and I am encouraged to see you organizing so quickly. The industry are colonizers, and they go through stages in their colonization and exploitation. I think you could be in the position to be assertive and in their face and turn them away. If they start coming, they will get locals who sell out and every local who gets money from them will make it harder to stop.

“They promise the sun and the moon. They will externalize all costs, make demands that have you giving up what is dear to you, and frame a lot of ‘facts’ that are not facts.”

A concerned woman from Charleston, South Carolina, shared her experience in a heartfelt letter to the York County Board of Supervisors as well:

“Over the years, the cruise ship industry touted economic benefits of cruise traffic, while downplaying the harmful consequences. The boats pollute our air, create effective no-go zones for residents, and tax city infrastructure and public services. All a very sugar-coated, hidden agenda.”

The story in each port city is remarkably similar. The cruise industry’s tactic is to work behind the scenes promising economic benefits while downplaying negative impacts. Over time a majority of residents organize and push back, but it is costly and difficult to unseat this multibillion-dollar industry once it moves into an area. The cases are well documented on the [Protect Virginia](#) website. An article from the [Business Insider](#) tells the story of these port communities through images.

Cruise Ship Economics

The cruise ship industry touts the economic benefits to the community, but evidence shows these benefits can be greatly exaggerated. [Research](#) shows the economic benefit to the community is about 5% of what is promised. When detrimental impacts (e.g. pollution) are considered, there is a significant net loss to the community. [Cruise ship tourists spend less than virtually all other categories of tourists](#). Even backpackers spend more! This makes perfect sense; remember this industry's sole focus is maximizing profits. Passengers typically eat breakfast on-board, are bussed to an excursion, and are back on-board by dinnertime. And even the meager spending ashore is minimized by "pay to play" agreements that compel onshore tour operators and retail businesses to pay to do business with the cruise lines. A major source of income for the industry comes from on board gambling, when allowed. And on-board gambling revenues are not taxable aboard foreign flagged ships. This opportunity for passengers is yet another way of keeping them on board to spend their money. The [ENDEVR](#) documentary, The Cruise Ship Industry: A floating grave?, discusses the cruise industry economics – excerpts can be found [here](#).

A cruise industry tactic is to work behind the scenes promising economic benefits while downplaying negative impacts. The industry works to get a foot in the door with local businesses and organizations. They will ask to start small - perhaps a pilot program to begin with. They will lobby local and state officials - promoting their agenda outside of the public eye if possible. They might make selected donations to key organizations. Once a program is initiated, they count on the revenue streams created to make it hard to back out. Businesses are pitted against citizens, allowing them to continue to operate and expand. This is not an economic business model that is transparent, nor one that works to the benefit of the citizens of the Commonwealth.

Foreign-flagged Ships

Most cruise ships are registered outside the United States and fly "flags of convenience." This greatly reduces their U.S. tax burden on profits and their compliance with U.S. labor laws, conferring a competitive advantage over shore-based businesses. The article, [Economics of Cruise Ships](#), states: "According to annual report filings, the major cruise lines pay an average tax rate of 0.8%." The industry exploits U.S. infrastructure but does not give back its fair share (the Federal corporate tax rate is 21%). The various port and permit fees required of cruise lines do not adequately compensate states and localities for use of personnel, infrastructure, emergency services, nor for environmental and cultural impacts.

The Congressional Research Service [report](#) warned that the complicated legal structure behind cruise ships and their flags-of-convenience system makes it difficult to enforce international standards to prevent or investigate environmental accidents due to the poor response, in many cases, from the countries where the vessels are registered. Although not a cruise ship, the vessel that [collapsed the Keystone Bridge](#) in Baltimore is a foreign-flagged ship that "follows the regulations enforced by that country despite sailing out of an American port," according to [News Nation](#). The article also states, "the use of a foreign-built ship sailing out of an American port follows a trend in which the [U.S. Department of Transportation](#) reported a significant drop in American-built ships being used in international trade."

The practice of foreign-flagged ships does not afford workers the same protections provided under U.S. labor laws. In [testimony](#) to the U.S. Senate Commerce Committee, three labor related issues are stated,

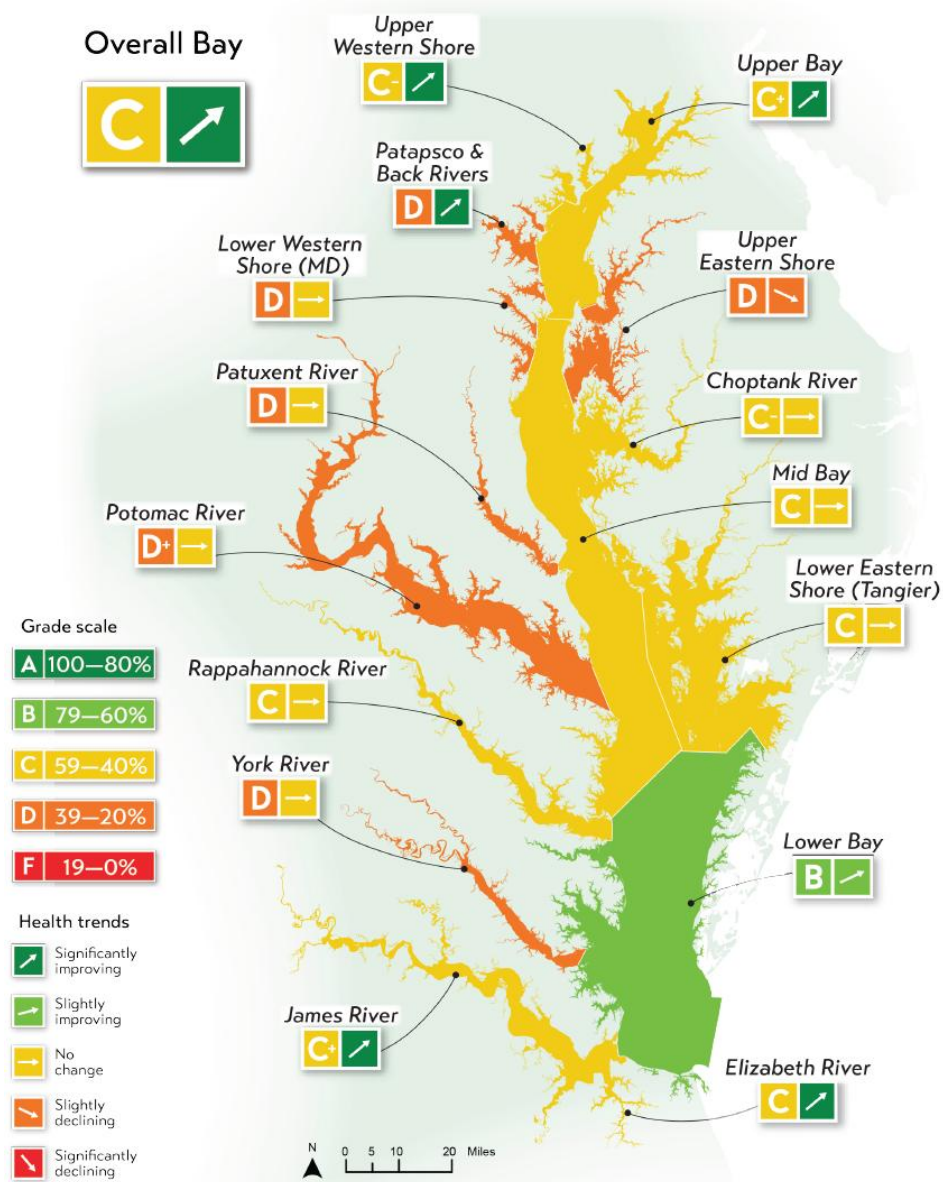
(1) “The typical workweek is a mandatory 77 hours – 11 hours a day, seven days a week.” (2) “workers are often required to pay to secure a position,” and (3) “unpaid overtime.”

Pollution and Environmental Impacts

The State of Virginia Waters

The 2025 University of Maryland’s [Chesapeake Bay & Watershed report card](#) shows moderate and poor conditions for Virginia’s waters. No Virginia waters receive an “A” grade and only the lower bay received a grade of “B” -- so there is still much work to be done. Pollution from cruise ships could reverse any progress that has been made toward a cleaner Chesapeake Bay.

Moderate and poor conditions for most regions

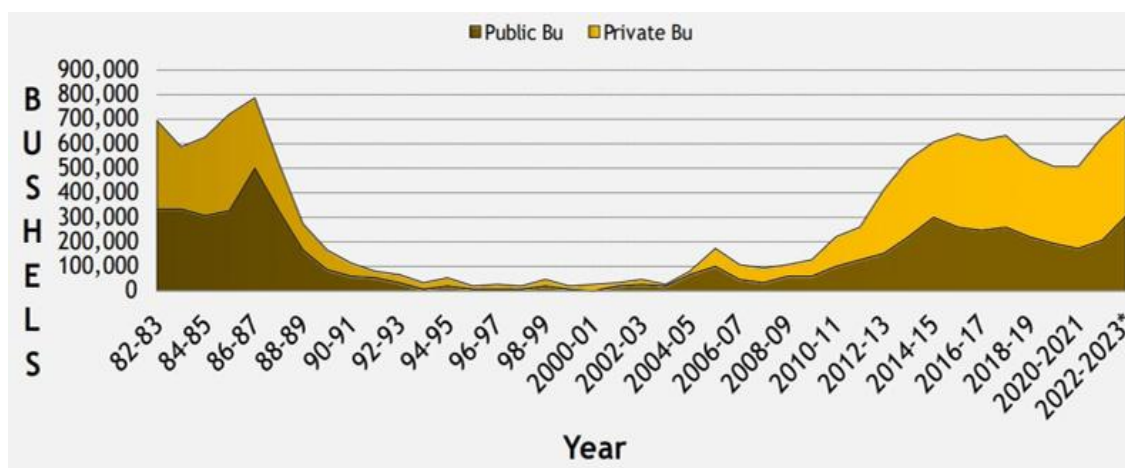


Chesapeake Bay & Watershed Report

Seafood Industry Impacts

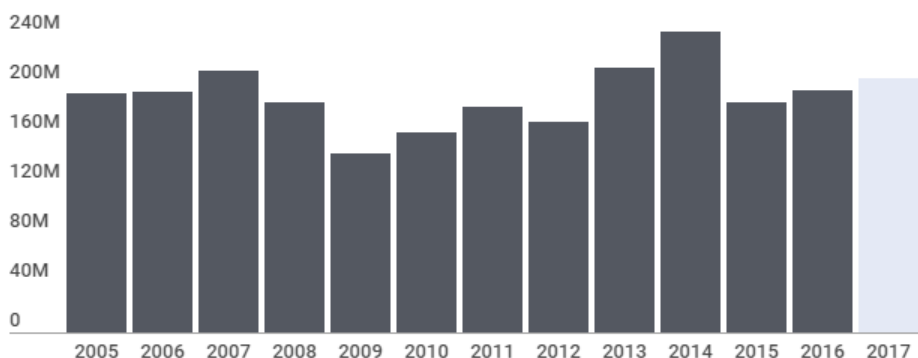
According to VirginiaSeafood.org, “Virginia’s watermen harvest 50 commercially valuable species from some 620,000 acres of water. Among these traditional species in order of economic value, are Oysters, Blue Crab, Sea Scallops, Menhaden, Clams, Summer Flounder, Striped Bass, Spot, Black Sea Bass, and Blue Catfish,” and “Virginia is the nation’s fourth largest producer of marine products with total landings of 321,860,722 pounds in 2020 and is only outpaced by Alaska, Louisiana, and Oregon.” The report from the Virginia Cooperative Extension - [Economic Contributions of the Virginia Seafood Industry](#) - states, “The total economic output effect of the Virginia seafood industry was estimated at \$1.1 billion in 2019. The total employment effect of the Virginia seafood industry was estimated to be 7,187 people; with a direct effect of 6,050 jobs, indirect effect of 523 jobs, and induced effect of 614 jobs. In 2019, the Virginia seafood industry generated over \$26 million in tax revenue from local, state, and federal taxes.” It bears repeating that cruise industry profits typically will not generate significant U.S. tax revenue since most ships fly a foreign flag.

The oyster harvest in Virginia has also improved after years of restoration, according to the Virginia Marine Resources Commission.



Virginia Oyster Production

Additionally, according to Virginia Institute of Marine Science (VIMS), Virginia not only leads the nation in oyster production but also in hard clams.

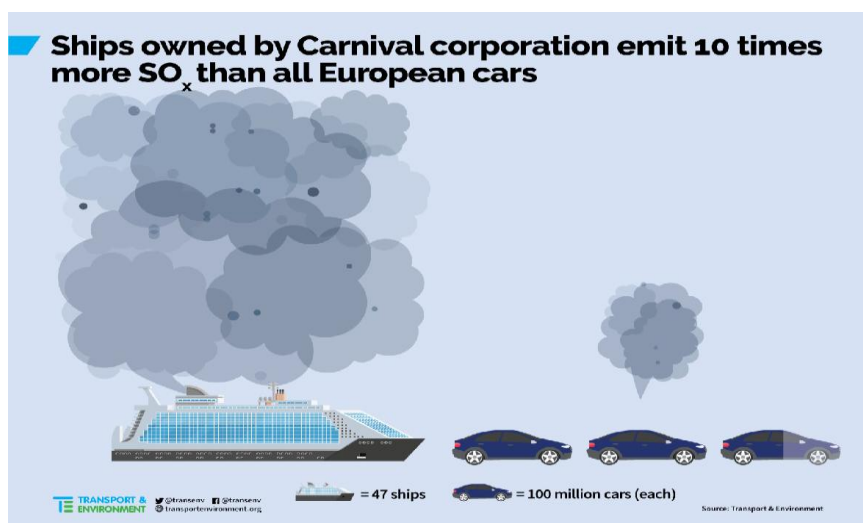


Hard clams sold in Virginia.

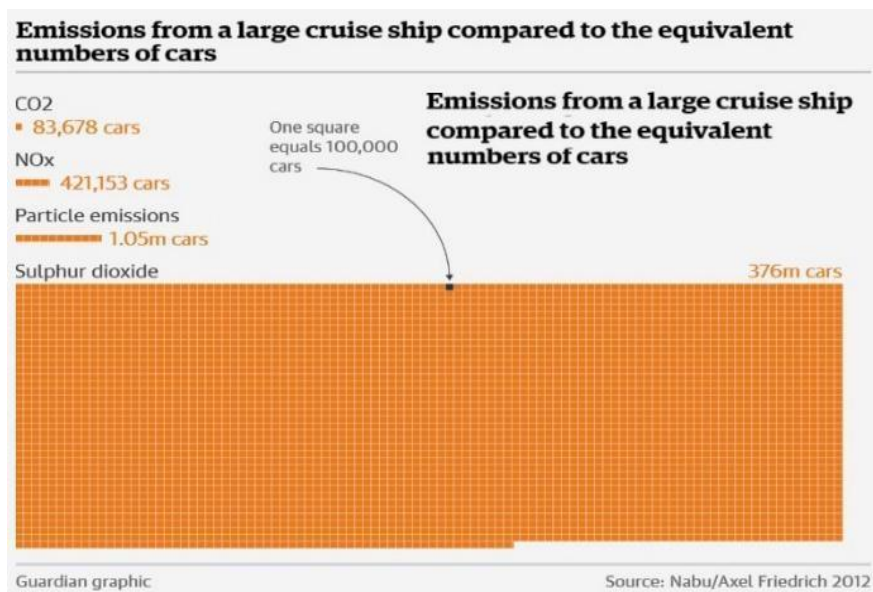
The Virginia seafood industry thrives when our waters are clean and productive. Seafood is a renewable resource, but only if the Commonwealth continues to protect the health of the Bay and its watershed. As discussed in the following section, the cruise industry's air and water pollution footprint is significant and can put this industry at risk if not appropriately regulated. Maintaining the seafood industry in a sustainable way is vital for Virginia's economy.

Cruise Ship Pollution

Untreated exhaust from cruise ships produces significant emissions that impact public health, the environment, and the climate. The cruise industry's decision to burn [Heavy Fuel Oil](#) (HFO) is the reason for the excessive emissions which are reduced with cleaner, more expensive fuels used by other vessels (e.g. military vessels). This decision reflects a disregard for public health and the environment in favor of higher profits.

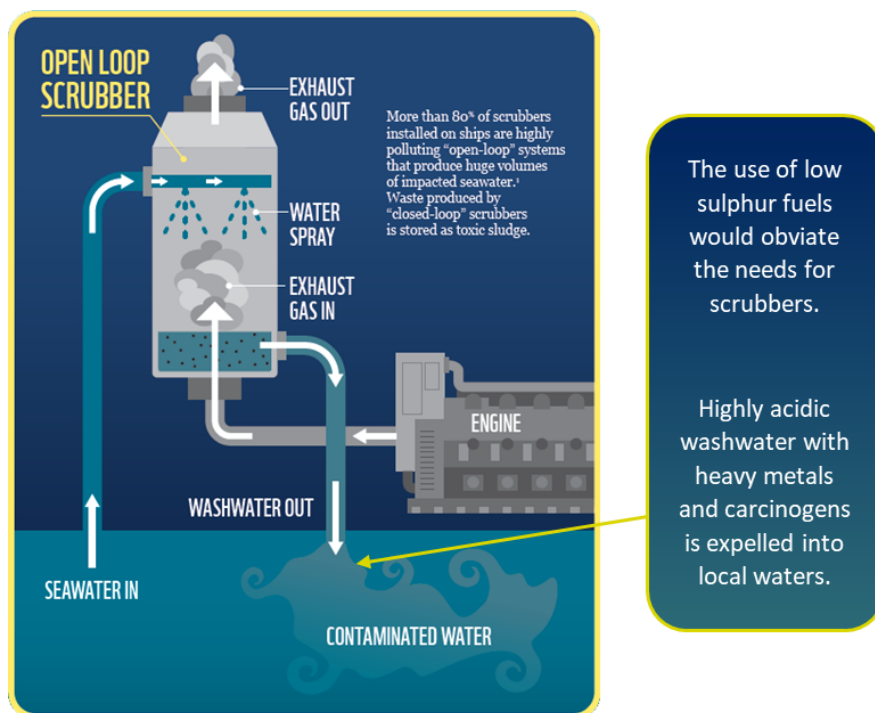


Cruise Ship Sulphur Oxides (SO_x) Emissions



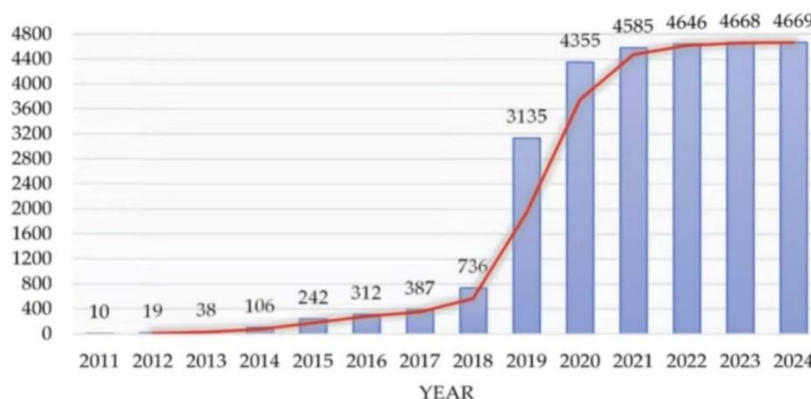
Large Cruise Ship Emissions Comparison to Cars

In 2020, the IMO (International Maritime Organization) set new tougher standards for Sulphur emissions, and currently the global shipping fleet is in the process of switching to lighter, cleaner fuels. But the environmental effects of these regulations are offset by increases in ship size, passenger capacity, and by the loophole allowing vessels to reduce sulfur by using scrubbers, or Exhaust Gas Cleaning Systems. The EPA standards, both current and proposed, do not ban cruise ship scrubbers, thus allowing operation in Virginia waters. The cruise industry has elected to use scrubbers rather than switch to more expensive fuels to “greenwash” the problem while saving money. (see: [Shipping’s dirty secret: how ‘scrubbers’ clean the air – while contaminating the sea](#)).



Exhaust Gas Cleaning System, commonly called a Scrubber –Original Source: [IMO Arctic Summit](#)

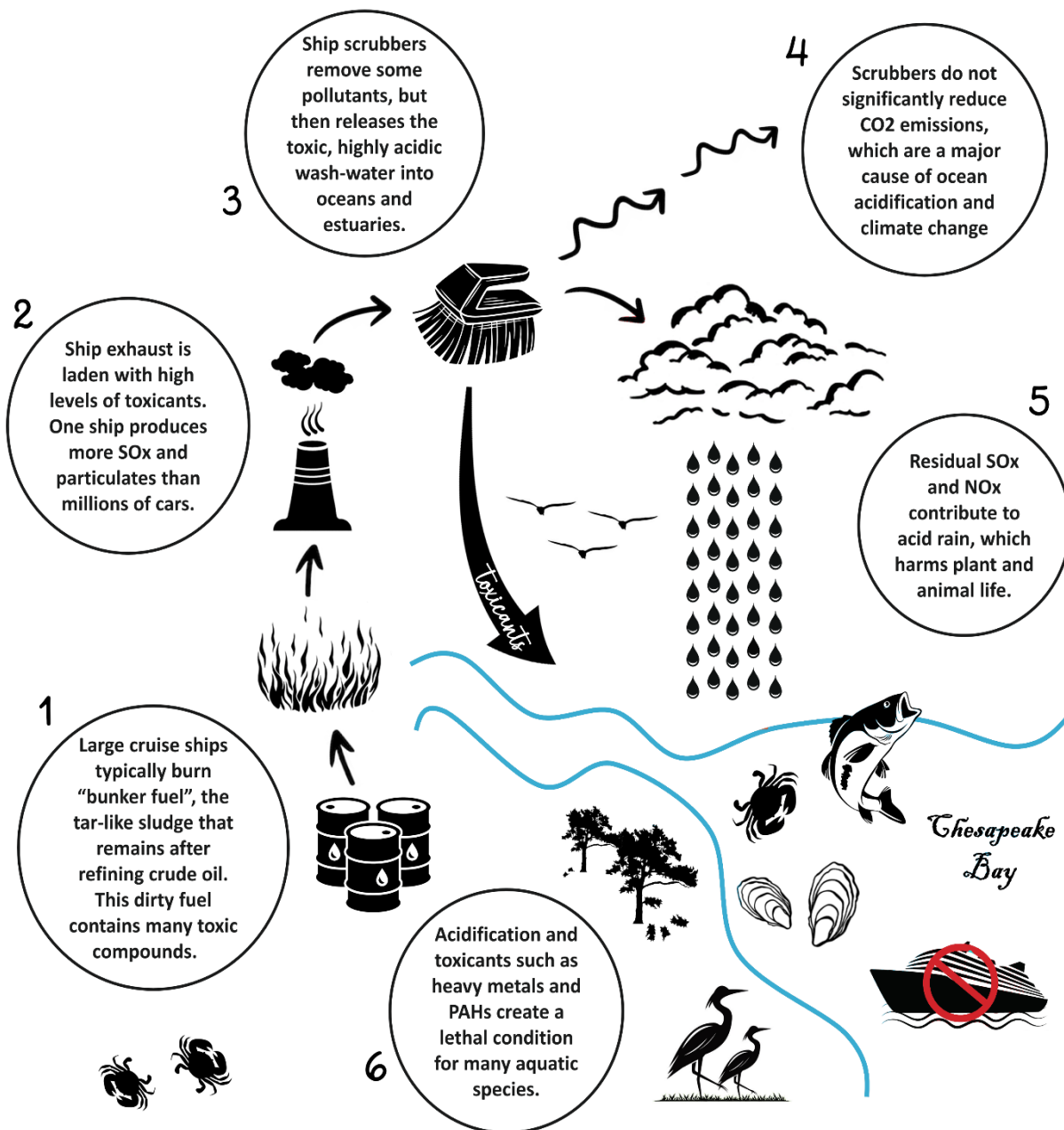
Total number of ships using scrubbers



Dramatic increase in ship scrubbers after the IMO’s 2020 sulphur regulations

Source: [End Scrubbers Use Now Webinar](#)

The types of scrubbers used by 81% of cruise ships are open-loop systems and do not solve the pollution problem. These systems use ambient seawater sprayed into exhaust stacks to remove pollutants, but the highly acidic spray, laden with toxic PAHs and heavy metals, is then flushed back into the water. Scrubbers thereby transfer an air pollution problem into a water pollution problem. Closed-loop scrubbers produce less effluent than open-loop systems but the bleed-off is more concentrated and more acidic. Furthermore, all scrubbers do not reduce CO₂ or fine particulates that are harmful to human health. The [International Council on Clean Transportation](#) states that scrubbers are not as effective at reducing total air pollution compared to marine gas oil, and scrubber discharge “contributes to ocean acidification and worsens water quality.”



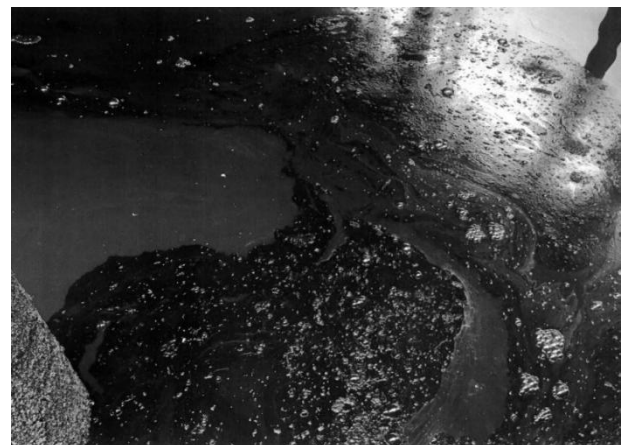
The recent August 2024 Pacific Environment report, [Ship Pollution: From air to ocean](#), summarizes 26 scientific studies that show the harmful impacts of toxic scrubber wastewater – “A growing body of scientific data indicates there is virtually no safe concentration of untreated scrubber effluent and that it negatively affects organisms throughout the marine food chain.” The sources referenced found that “concentrations of scrubber wastewater as low as 0.0001% have toxic effects on marine life. Scrubber discharges can increase seawater acidity, especially in places with high ship traffic, and discharges contain harmful and persistent substances like polycyclic aromatic hydrocarbons (PAHs), nitrates, nitrites, and heavy metals.” Heavy metals can have a devastating effect on zooplankton which menhaden, herring, and other species feed on, and they also bioaccumulate at higher trophic levels. “PAHs and heavy metals that have been linked to cancers and reproductive dysfunction in marine mammals, including threatened and endangered species like northern and southern resident killer whales and belugas.”



Toxicants released by open-loop scrubbers.

Accidents and Violations

The “normal” or operational pollution generated by the cruise industry is significant by any measure and the damage to our environment is still being assessed. In addition, accidents do occur and have significant and direct impacts on local ecosystems and port communities. Many incidents are minor, but serious ones can be devastating. In November 2023 a Carnival cruise ship dumped [scrubber sludge into Grand Turk](#) port waters during a power outage. Another scrubber accident in a port in Ketchikan, Alaska, is shown to the right. Other accidents include damage to pier facilities during bad weather and fires.



Release of Scrubber Sludge [\[source\]](#)

The cruise industry has a history of pollution and felony convictions for violating environmental regulations. In 2016, Princess Cruise Lines paid the [largest criminal penalty](#) for deliberate vessel pollution: \$40 million dollars. They used a surreptitious “[magic pipe](#)” to bypass the oily water separator, which allowed waste liquids to be discharged in contravention of maritime pollution regulations. This violation occurred on multiple ships, pointing to a systemic, corporate-level issue with the industry. Furthermore, even after the large fine, Princess [violated regulations](#) six times while on probation and received an additional \$20M fine in 2022. A history of some of the major cruise ship violations can be found [here](#).

According to a 2023 report by the Chief Science and Research Officer at the College of the Florida Keys, “32 turbidity events associated with cruise ships exceeded EPA standards (13.1% of total cruise ship visits). The most substantial turbidity event was > 6.5 times beyond the EPA standards.” Several cruise ship arrival and departure turbidity events clouded the water to levels that exceeded levels seen from recent hurricanes. According to the [Chesapeake Bay Program](#), excessive sediment clouds the waters of the Bay and its tributaries, which harms fish, oysters, blue crab, and underwater bay grasses.

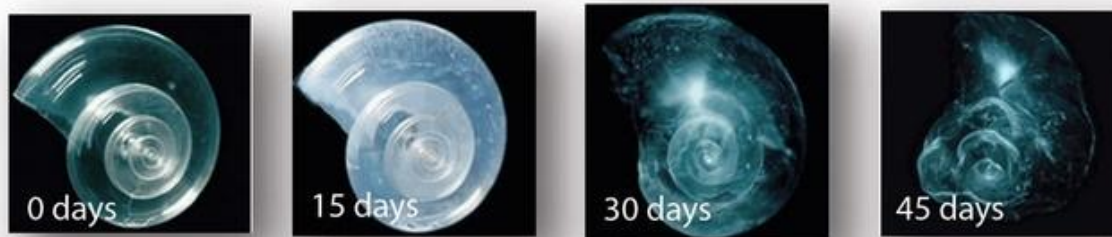
In addition to pollution spills and sediment disruptions, another all-too-frequent accident is whale strikes. In May 2024 a cruise ship sailed into New York Harbor with a 44-foot dead endangered Sei Whale across its bow. A video of the incident is [here](#). The noise from cruise ships confuses the whales and disrupts their communications. Also this year, eight whales of four species, including the endangered Atlantic Right Whale, washed up in [southeastern Virginia and Northeastern North Carolina](#). Several of these deaths were likely from vessel strikes. [Chesapeake Bay Magazine](#) also reported dead whales consistent with vessel impacts that have also washed up in Virginia Beach.

Climate Impacts

CO₂, a greenhouse gas, is also released by cruise ships. As one [source](#) states, the CO₂ output from one ship is equivalent to more than from 83,000 cars. Another [source](#) states, “just one cruise ship docked for a day at port can emit diesel exhaust equivalent to 34,400 idling trucks.” Increasing atmospheric CO₂ is the major cause of global climate change and ocean acidification. [Analysis](#) has shown that cruise ship passengers have a carbon footprint eight times more than that of land-based vacationers. Nitrogen Oxide (NO_x), also in cruise ship exhaust, is another important greenhouse gas. One ship can produce more NO_x than 400,000 cars. According to [Inside Climate News](#), NO_x can warm the atmosphere more than 300 times that of CO₂ and damages the ozone layer.

Climate change is impacting Virginia in multiple ways: increased storm intensity/frequency, heat waves and drought, and sea level rise. [Tangier Island](#) may be under water within the next 50 years. Coastal military bases will be impacted. A [Military Times](#) article warns, “the Department of Defense says two-thirds of the bases are vulnerable to worsening flooding as the climate warms, and half are vulnerable to increasing drought and wildfires.” [Homeowners in Virginia](#) are already seeing the impact of extreme weather in their insurance premiums and “climate exceptions” in their policies. Climate effects will also directly impact the seafood industry. The article [Warming water threatens aquatic life in Chesapeake Bay region](#) states that an increase in water temperature by 1.8 degrees would reduce endangered sturgeon habitat by 65%. In the Bering Sea the impacts to the seafood industry are already being felt by fishermen. An [article](#) on the reduction in the crab population by the billions, points to rising water temperatures as the cause.

Ocean and coastal acidification are a global challenge causing harm to marine life, primarily affecting the ability to form shells and skeletons. Coral reefs and shellfish such as oysters are highly susceptible to acidification. This [PBS video](#) also demonstrates that the impacts to the shellfish industry are real and present today. [Recent research](#) at the University of Virginia has demonstrated increased mortality rates for blue crab in early stages of life caused by ocean acidification. The study, [Vulnerability and adaptation of US shellfisheries to ocean acidification](#), cites the Chesapeake Bay as one of the most vulnerable regions to ocean acidification and discusses the “threat to coastal species” and the “emergence of real, economically measurable human impacts.” It should also be stressed that potential losses to the Virginia seafood economy are not hyperbole; the study also stated, “Ocean acidification has already cost the oyster industry in the US Pacific Northwest nearly \$110 million.”



The pteropod's, or "sea butterfly" shell (shown above) dissolves in acidic seawater. Virtually all shellfish (e.g., oysters, scallops, crab, clams, etc.) will be negatively impacted by ocean acidification. Image source: National Geographic

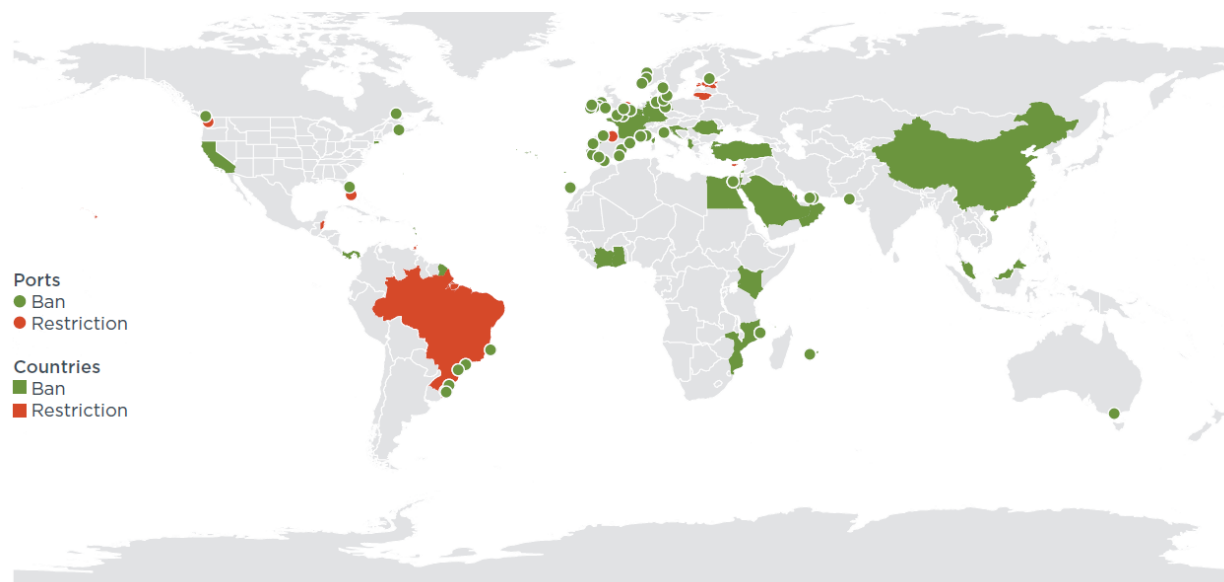
Pollution from waste discharges on cruise ships is also a major problem. A 2008 report by the [Congressional Research Service](#) estimated that during an average weeklong cruise, a cruise ship carrying (only) 3,000 passengers and crew can generate 210,000 gallons of raw sewage; 1 million gallons of gray water (from sinks, showers, and washing machines); 130 gallons of hazardous materials; up to 8 tons of solid waste; and 25,000 gallons of oily water. Effluent waste can contain bacterial and viral pathogens and also high nutrient concentrations, which promote algal blooms and cause oxygen-depleted “dead zones.” The Bureau of Transportation Statistics’ summary of the waste streams can be found [here](#).

Pollution Regulations

As the impacts of cruise ship pollution have become better understood, several states have enacted laws to limit cruise ship pollution. Unfortunately, Virginia has not, solely relied on inadequate EPA regulations. For example, the EPA allows for scrubber discharge despite the [strong scientific body of evidence](#) in support of needed regulation. The international community now recognizes the damage from cruise ship pollution and has begun to take regulatory action to limit impacts. Existing regulations take many forms: low sulfur fuel requirements, open-loop scrubber bans, shore power requirements, no dumping zones, etc. In addition to these regulations, many port communities are fighting to limit the size and number of ships that visit through passenger limits, pier restrictions, no-cruise-ship-Saturdays, and other methods not addressed in this report.

The June 2023 [International Council on Clean Transportation \(ICCT\) Policy Update](#) does an excellent job of summarizing scrubber bans and restrictions worldwide. It notes that over 5000 ships use open loop scrubbers to comply with IMO Sulphur oxides (SO_x) regulations and projects 81% open-loop (4,097), about 17% hybrid (869), and approximately 1% closed-loop in 2025. The report stated that the number of vessels

outfitted with scrubbers is increasing and identifies 93 bans and restrictions across 43 countries in place against scrubbers and associated discharges as of February 2023. Eighty-six percent of the measures are bans rather than more limited restrictions, with most bans focusing on open-loop scrubbers or washwater discharges.

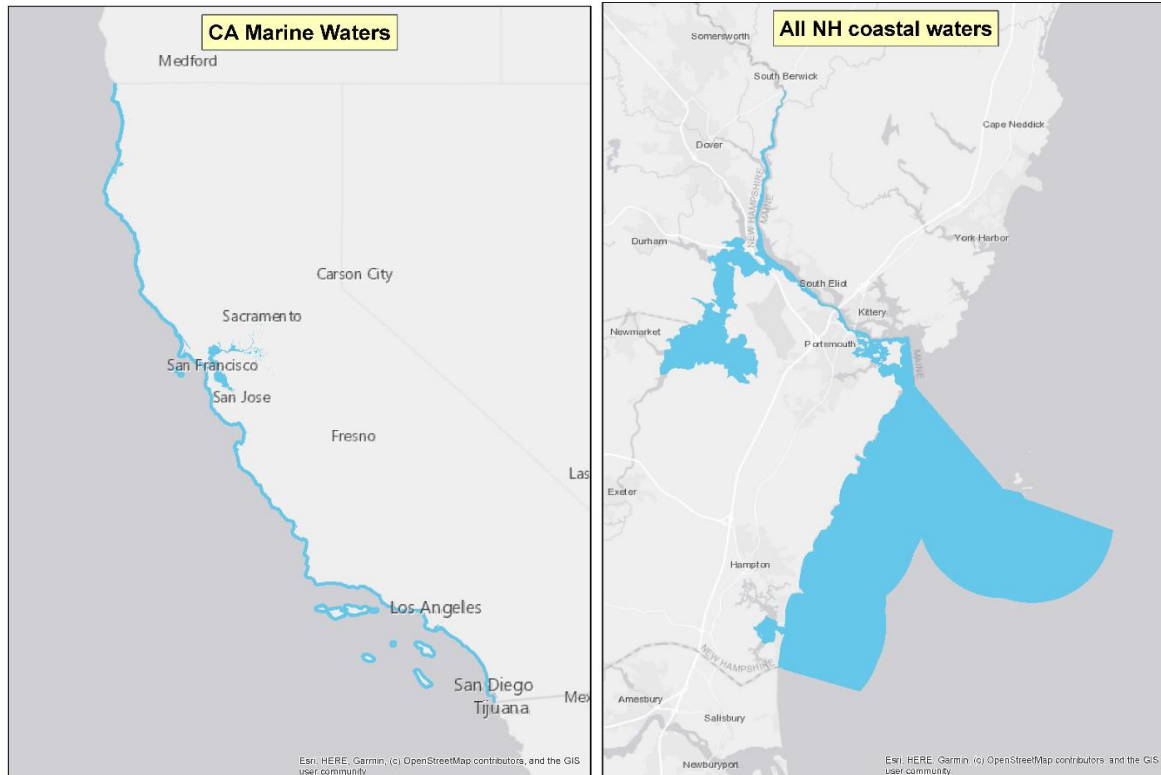


Bans and restrictions on scrubbers by countries and ports.

**This map is presented without prejudice as to the status of or sovereignty over any territory, the delimitation of international frontiers and boundaries, and the name of any territory, city, or area.*

The approach taken by different countries varies, but all have the same goal of protecting the environment. For example, in Germany, inland waterways are regulated by the Strasburg Waste Convention (CDNI) which classifies scrubber washwater discharges as “hazardous substances” and thus prohibited. China’s Maritime Safety Administration has prohibited discharges from open-loop scrubbers in inland river and coastal port Emission Control Areas (ECAs) since 2019. Egypt bans all scrubber types in its territorial waters and ports.

The U.S. has regulations in five states (Connecticut, California, Florida, Hawaii, and Washington) that target cruise ship pollution. Connecticut has a statewide scrubber ban. Hawaii controls discharge through official license and permitting. Florida and Washington State have port-level measures in place. California has passed a series of statutes limiting vessel discharges. California Senate Bill 771, the Clean Coast Act enacted into law in 2005, prohibited all commercial ships from dumping hazardous waste, sewage sludge, oily bilge water, “gray water” from sinks and showers, and sewage in state waters. The bill also required California to petition the Federal government for “No Discharge Zones” to enforce the bill’s anti-dumping provisions, ultimately leading to action by the Federal government. California now has [11 No Discharge Zones](#); the latest in 2012 protects the entire California coastline. New Hampshire has taken a similar approach with 2 No Discharge Zones, one for coastal waters and another for all in-land waterways, thereby protecting the entire state and coastline.



California's 11th and New Hampshire's 2nd No Discharge Zones covering coastal waters.

Note that the California law goes beyond scrubber discharges; it also includes sewage and gray water. This is also very important to secure the health of Virginia waters. As pointed out in the pollution section and reiterated here, effluent waste can contain bacterial and viral pathogens and high nutrient concentrations which promote algal blooms and cause oxygen-depleted “dead zones,” which are especially harmful to sessile organisms like oysters.

Virginia has only four No Discharge Zones to protect against discharge. According to the [EPA website](#) they are: Sarah's Creek and Perrin River; Smith Mountain Lake; Lynnhaven River; and Broad Creek, Jackson Creek and Fishing Bay. This is a sound practice, but these zones cover only a small fraction of Virginia territorial waters and primarily target recreational and commercial fishing vessels.

Many States augment the EPA's Vessel General Permit (2013 VGP section 6.0) for discharges to protect their waters and the associated ecosystems. Provisions address black and gray water, bilge water, “hazardous wastes which poses a potential threat to human health or the environment,” and other types of pollution. Connecticut directly targets scrubbers stating, “Discharge of exhaust gas scrubber washwater into Connecticut waters from any vessel covered under the VGP or sVGP is prohibited.” In total, 25 states have augmented the VGP to add protections not found in the 2013 VGP. Many States have been effective at closing gaps in the dated VGP, but Virginia has no additional provisions in its VGP. When the EPA's new standard becomes the regulation, the 2013 VGP will be deprecated, but states will still be allowed to enact stricter regulations for their territorial waters. (Is this true? The new EPA regs will become the maximum requirement after Coast Guard implementation as we understand it and states will not legally be able to impose stricter regulations.)

Another article by [LITECH](#) states that “more than 120 ports worldwide have banned open-loop scrubber discharge,” yet Virginia has no such restrictions.

The cruise industry could have chosen to use cleaner fuel, but elected to increase profit instead of reducing pollution, transferring the cost to taxpayers. Shore-based power generation is often much cleaner than ship-board generation. For example, Dominion Energy has renewable energy programs for users, in which cruise ships could participate. The [Port of Seattle](#) is taking this approach, with a goal to phase out seaport-related emissions by 2050. A shore power connection allows cruise ships to plug into cleaner, land side electrical power and turn off engines, reducing exhaust emissions by 80% and CO₂ emissions by 66% on average. New York has also proposed a [bill](#) “to compel cruise terminal operators to require that cruise ships use shore power.” It should be noted that scrubber bans also incentivize the use of shore power by allowing ships to turn off generators in port. Alternatively, they encourage clean fuels which do not require scrubbing to meet IMO Sulphur emissions standards.

Local regulations can also be an effective approach for managing the cruise industry. Bar Harbor, Maine [passed a regulation](#) to limit the tourism from cruise ships to 1000/passengers per day and imposed fines for violators. This is an effective deterrent for the ocean-class ships that hold thousands of passengers. In Monterey California, the city [refused to provide landing services](#) for large foreign ships thereby precluding passenger disembarkation. They later reversed this prohibition but disallowed any waste discharges, including waste that could be legally discharged under EPA regulations. Local communities can also require the use of shore power to reduce local pollution; Seattle is requiring shore power independent of State and Federal regulations.

Greenwashing

The cruise industry will tell local communities a very different environmental story. They will not focus on violations or inadequacy of current regulations to protect the marine ecosystem or the health of Virginians in port communities. Instead, the cruise industry has a powerful trade organization, Cruise Lines International Association (CLIA), which promotes the industry and shapes messaging around “environmental sustainability”, highlighting use of liquid natural gas (LNG) and shore power which are barely used by most cruise ships, and which are not the panacea CLIA claims them to be. MSC Cruises was recently [reprimanded for greenwashing](#) (for making misleading claims about LNG and net-zero plans) by the Dutch Advertising Code Authority.

As previously stated, the carbon footprint of large cruise ships is enormous; one ship is approximately equal to 80,000 cars. The industry is growing rapidly. A recent [article](#) by The Guardian states, “Cruise ships pumped out 17% more carbon dioxide in 2022 than they did in 2019.” The industry also claims their newest ships are green as they transition to Liquid Natural Gas (LNG) but “methane emissions rose 500% over the same time period.” The documentary, [The Cruise Ship Industry: A Floating Grave?](#), shows uncombusted methane being release from a cruise ship.



*Infrared capture of methane emission from a cruise ship
Source: [The Cruise Ship Industry: A Floating Grave?](#)*

According to the EPA, methane is a greenhouse gas and “is more than 28 times as potent as carbon dioxide at trapping heat in the atmosphere.” The International Council on Clean Transportation (ICCT), methane emissions, or “methane slip,” from LNG-fueled ships have more than doubled in recent years. An [ICCT report](#) found methane slip to be over 6% more than double to EU regulations. In this [video from ICCT](#), it states that the industry is using the leakiest engine (more uncombusted methane) and LNG should not be considered a solution for the shipping industry, yet the industry touts the transition to LNG as good stewardship of the environment.

The industry regularly states that they are compliant with regulations while knowing a scrubber loophole exists that they exploit and vigorously fight against closing. They have cited a cruise industry funded studies that have been [shown to be suspect](#) and have been rejected by the IMO. They claim a large reduction in particulate matter while neglecting to mention the nanoparticles, that are the most dangerous and are linked to cancer, are not significantly reduced.

These cautionary topics in this report are not part of the cruise industry’s message.

Human Health Impacts

Air Pollution Impacts

Pollution not only impacts marine life through direct and long-term climate affects; it can also impact human health. According to [Envirotech](#), sulfur oxides (SO_x) are notorious for “exacerbating respiratory conditions such as asthma and emphysema.” Nanoparticles are fine particulate matter (< 0.1 cubic centimeters) and can enter the brain via the bloodstream when inhaled. They can harm the respiratory and circulatory systems, and are especially harmful to children, the elderly, and people with heart or lung issues. Nanoparticles have also been linked to an increased risk of lung cancer. One report found ultrafine particles in exhaust are “200 times higher than would be found in fresh air and 20 times worse than in congested port cities with heavy traffic.” According to the [EPA](#), “Breathing air with a high concentration of NO₂ can irritate airways in the human respiratory system. Such exposures over short periods can

aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO₂ may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO₂.” A [Environmental Health Perspectives Journal](#) article found consistent strong evidence of a relationship between NO₂ and lung cancer. The report, [Importing Harm: U.S. Ports’ Impacts on Health and Communities](#), states that port cities in Southern California are the largest source of SO_x, NO_x, and particulate emissions. “The California Air Resources Board estimates that there are 3,700 premature deaths per year directly attributed to the ports.” The publication, [Health impact assessments of shipping and port-sourced air pollution on a global scale: A scoping literature review](#), states, “Globally, ~265,000 premature deaths were projected for 2020 (~0.5% of global mortality) attributable to global shipping-sourced emissions.” Large cruise ship generating megawatts of power by burning fuel in ports will have health impacts that are not factored into the economics presented by this industry. And once again this is by choice to maximize profit as cleaner alternatives do exist. A significant reduction in air pollution can be achieved by using shore power. This approach is being used in New York and Seattle.

Impacts of Viruses and Disease

During the COVID pandemic over [50 cruise ships](#) had cases of COVID, on one ship over 700 people were infected. Post-pandemic viral outbreaks still occur on cruise ships. [CNN reported](#) that the “CDC reported a total of 16 gastrointestinal cruise outbreaks across 2024, the highest in over a decade.” The data suggests the of majority gastrointestinal outbreaks at sea were associated with the highly contagious norovirus, although there were cases of *Salmonella* food poisoning and *E. coli* illness as well. According to an [article](#) in USA Today, data also showed that incidence rates increase with increasing ship size and voyage length. The cruise industry is trending toward larger ships with ships expected to carry 10,500 passengers by 2050. Additionally, the CDC advised that, “Outbreaks on ships can be sustained over multiple voyages by crewmembers who remain onboard, or by persistent environmental contamination. Port visits can expose travelers to local diseases and, conversely, be a conduit for disease introduction into shoreside communities.” Ships have limited medical support and must rely on the local health infrastructure when their capacity or capability is exceeded.

Monetary Cost of Impacts

The public largely bears the cost of unmitigated health and environmental damage from the cruise industry. There are expenses from doctor visits and treatments for heart and lung issues, the loss of revenue from seafood industry impacts, the cost of property damage from increasingly more intense storms and wildfires, and more.

To help assess these costs the EPA provides an emission calculator and the Department of Transportation provides a table showing the monetized values of NO_x, SO_x, PM_{2.5} and CO₂. From this information, the cost of cruise ship emissions can be calculated.

Recommended Monetized Value(s)				
Emission Type	NO _x	SO _x	PM _{2.5} **	CO ₂
2023	\$19,800	\$52,900	\$951,000	\$228
2024	\$20,100	\$53,800	\$963,200	\$233
2025	\$20,300	\$54,800	\$975,500	\$237
2026	\$20,600	\$56,100	\$993,500	\$241
2027	\$21,000	\$57,400	\$1,011,900	\$245
2028	\$21,300	\$58,700	\$1,030,600	\$250
2029	\$21,700	\$60,100	\$1,049,600	\$253
2030	\$22,000	\$61,500	\$1,069,000	\$257
2031	\$22,000	\$61,500	\$1,069,000	\$262
2032	\$22,000	\$61,500	\$1,069,000	\$265
2033	\$22,000	\$61,500	\$1,069,000	\$270
2034	\$22,000	\$61,500	\$1,069,000	\$274
2035	\$22,000	\$61,500	\$1,069,000	\$278
2036	\$22,000	\$61,500	\$1,069,000	\$282
2037	\$22,000	\$61,500	\$1,069,000	\$287
2038	\$22,000	\$61,500	\$1,069,000	\$290
2039	\$22,000	\$61,500	\$1,069,000	\$294
2040	\$22,000	\$61,500	\$1,069,000	\$299
2041	\$22,000	\$61,500	\$1,069,000	\$303
2042	\$22,000	\$61,500	\$1,069,000	\$308
2043	\$22,000	\$61,500	\$1,069,000	\$312
2044	\$22,000	\$61,500	\$1,069,000	\$317
2045	\$22,000	\$61,500	\$1,069,000	\$321
2046	\$22,000	\$61,500	\$1,069,000	\$326

POLLUTION COST CALCULATION ASSUMPTIONS

US EPA Emissions Calculator

2023 US Department of Transportation Cost Table

Typical 3000 passenger ship (Tier II 100GT)

Fifty 8-hour cruise ship visits per year

Fuels - MDO (0.50% S) and HFO (3.50% S),

Region - SRVC (Virginia/Carolina)

Cost reflects emissions only, does not include marine environment impacts

IMPACT COST: \$3.5M to \$11.1M per year

Public Cost Burden of Cruise Ships (Emissions Only)

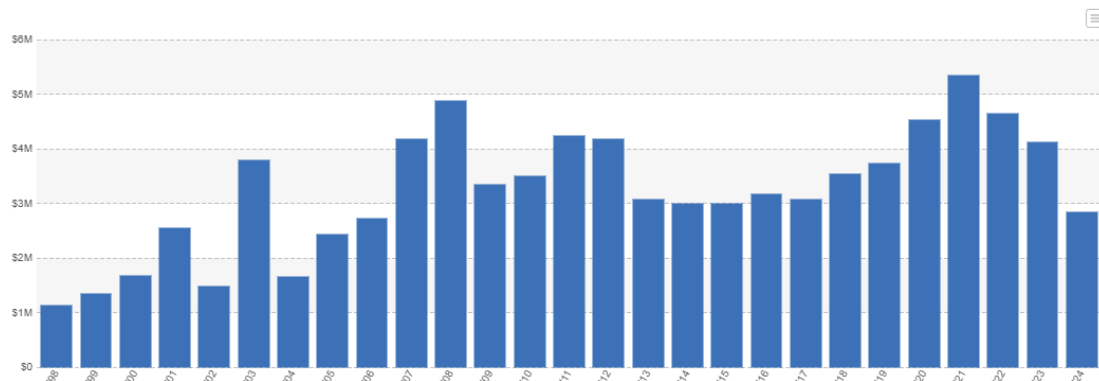
The public cost impacts are not inconsequential. The EPA calculator is designed to estimate cost savings from shore power installations. It takes into account many factors, vessel type, fuel type, number of visits and duration, and the geographical region. For this calculation two type of fuels were used, Marine Diesel Oil (MDO) with 0.5% Sulphur and Heavy Fuel Oil (HFO) with 3.5% Sulphur. This example illustrates the public cost savings of requiring ship to burning cleaner fuels.

Furthermore, this estimate does not account for the cost of transit for the ships. Also, the impact costs to the marine environment and other cost are not accounted for in this calculation. Therefore, these estimates are low; the actual cost burden to the public may be much more.

Cruise Industry Lobbying

There is an urgent need for federal legislation protecting the environment from the cruise industry. Unfortunately, this has been thwarted by the cruise industry's powerful lobby, thus making it essential for the Commonwealth to act. According to [Open Secrets](#), the cruise industry currently has 30 registered lobbyists in the U.S. and has been spending millions of dollars per year.

Annual lobbying totals, 1998-2024



Annual Cruise Industry Funding for Lobbyists

U.S. Congressman Sam Farr tried four times to get federal cruise ship environmental legislation passed, but he never got enough support to get beyond the cruise lobby. “The lobbying work,” Farr said in an interview with [Univision News](#), “has prevented Congress from even considering reviewing a third bill — the Clean Cruise Ship Statute — which seeks to prohibit cruise ships, regardless of their flag or the nationality of their owner company, from dumping wastewater, garbage and other polluting substances into the waters near the coasts of the United States. Preventing all of this is costly, and cruise lines don’t want to spend money operating wastewater treatment plants on their ships.” The U.S. currently requires ships to be only three miles from shore before dumping raw sewage, whereas UN international regulations (under MARPOL Annex IV, to which the U.S. is not a signatory) sets the limit at twelve miles.

At the writing of this report, Virginia has three registered lobbyists working on behalf of Princess Cruise Lines to promote the cruise industry in the Commonwealth. In late 2022 and 2023, they successfully lobbied for legislation to fund a cruise ship pier in Yorktown, Virginia. This was all done behind the scenes and without citizen input. It was only through a [petition](#) and a concerted effort from the community, after Princess Cruise Lines had already announced Yorktown as a port of call, that the project was halted and the funding rescinded.

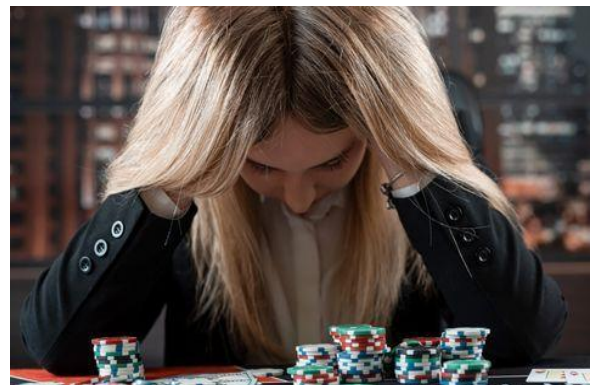
Cruise Ship Gambling

Currently cruise ship gambling is not allowed in Virginia waters, but the industry is trying to change that. [HB 1478 Casino gaming; cruise ships](#) was submitted for consideration in 2024. A cruise lobbyist spoke at the hearing in favor of the bill stating that it would “roll out the welcome mat” for the cruise industry, but it was defeated. This is just another example of the industry’s interest in expanding in Virginia and maximizing profits.

It is estimated that 9 million Americans suffer from gambling addiction with an annual social cost of \$14 billion, according to the National Council on Problem Gambling. One [reference](#) states that “the casino has a 25% edge overall when it comes to slot machines.” It is no wonder the cruise industry wants to open its casinos in Virginia waters and has registered three lobbyists in Virginia to promote cruise ship gambling legislation.

Detrimental Effects

Virginia currently has multiple venues for gambling. It can be argued that shore-based gambling can boost the economy of a region. This is not the case for cruise ship gambling because profits are not taxable on foreign flagged ships. In weighing the benefits of gambling, the cost to gamblers/gamers and their families must also be weighed. [UCLA Health](#) states that, “Like addictive drugs such as cocaine, heroin, nicotine and alcohol, gambling activates the brain’s reward system, which is powered by dopamine.” While the addicted person will suffer from a gambling addiction, that person’s family will also face challenges. The stress that the problem gambler experiences may cause irritable behavior, secrecy, and arguments. Calls from creditors and bill collectors erode relationships.



According to the [Skywood Recovery Center](#) that treats gambling addiction, families, and especially the children of gambling addicts also suffer in many ways, including:

- “Emotional neglect and abandonment (and even physical abandonment) when one parent is consumed in an addiction.
- Stressed and irritable parents may lash out at children angrily, and even if they do not, these children can sense their parents’ tension.
- Children of people with gambling addiction are at higher risk of experiencing their own addictions later in life.”

Lost Revenue

The arguments for cruise ship tourism often revolve around perceived economic benefit. Cruise ship gambling will reduce dollars spent in the Commonwealth. Most cruise ship passengers have a limited amount of expendable income. Money spent on gambling directly reduces expendable income and thus impacts the tourist’s ability to spend money on shore. This ripples: fewer tourist paying for excursions, fewer items purchased in stores, fewer meals served, fewer tourism service personnel hired, and so on. These Virginia based businesses and workers then pay less tax compounding the lost opportunity due to onboard gambling. The report, [Skill Games and Virginia](#), provides an analysis of the opportunity cost of gambling and a discussion of the economic multipliers that measure the ripple effects.

Regulation and Enforcement

Land-based casinos are subject to strict regulatory oversight, ensuring fair play and responsible gambling practices. In contrast, cruise ship casinos operate under the regulations of the ship’s flag state. This may vary depending on the country in which the ship is registered. While cruise lines may strive to uphold fair gaming practices, the level of regulatory oversight may differ dramatically from that of land-based casinos. Regulation and enforcement of on-board gambling can be complex. There is machine certification, minimum age requirements, addiction intervention, conflict and dispute resolution, and more. In a [Guardian article](#), John Kavanagh of Pacific Maritime Lawyers says: “Pragmatically, the flag state has responsibility for investigating issues with that ship wherever it is, but the further away that ship is from home, the logistics of that make it very difficult.” The cruise industry’s preference is always self-regulation, but as can be seen from their pollution record, self-regulation is rarely effective.

Principles of Responsible Tourism

Cruise tourism can be managed responsibly, but this requires changes to the industry’s current business practices. Protect-Virginia.org has outlined seven [Principles of Responsible Cruise Ship Tourism](#). The key tenants of responsible tourism as described in more detail on their website are:

- More Sustainable Cruise Ship Practices
- Community Self-determination
- Holistic Economic and Cultural Impact Analysis
- Environmental and Health Impact Analysis
- Equitable Tax Burden
- Monitoring and Transparency
- Protection of Public Health

At face value these principles appear to be common sense and obvious but unfortunately, they are rarely considered in full prior to the cruise industry making inroads to a community. Virginia has an opportunity to change this paradigm and be proactive to ensure responsible tourism.

Conclusions

A large body of evidence documents the impacts of ocean-class cruise ships on society. Their presence in local communities can be character-altering. Large ships hold thousands of passengers; burn dirty heavy fuel oil to generate megawatts of power around the clock; release unhealthy emissions (SO_x, NO_x, CO₂, particulates) into the air; and discharge toxicants (Zinc, PAHs, Arsenic, Nickel, etc.) into the water on a scale unparalleled by other vessels. Their practices and scale put them in a class by themselves, thus requiring stringent regulatory controls. The detrimental pollution impacts include both the public health of port community residents and the marine ecosystem in Virginia waters.

The seafood industry contributes significantly to the Commonwealth's economy creating jobs and revenue. The cruise industry has clearly stated and demonstrated that it wants to expand in Virginia, and if poorly regulated, this expansion will have detrimental impacts on Virginia waters and our marine resources, while also significantly contributing to climate change and associated ocean acidification on a global scale. The dismal record of cruise ship pollution is clear, and countries and ports around the world have acted to limit the environmental impacts of these massive ships. The large volumes of pollutant discharges and the known climate, acidification, and oxygen-depleted "dead zone" impacts make a strong case for regulation.

Federal regulations fall short in protecting the public and our waters from pollution, and there are well-documented loopholes in existing regulations. Communities world-wide have taken action to close the loopholes through regulation. States and local port communities have taken a variety of regulatory actions to protect their citizens and waters. Given the cruise industry's desire to expand in Virginia, it is paramount that the Commonwealth and port communities act to protect public health, marine ecosystems, the seafood industry, and the cultural integrity of Virginia's coastal communities.

Protect Virginia is a grassroots effort of citizens concerned about Virginia's rivers, estuaries, the Chesapeake Bay, and coastal ports and cities. Protect Virginia believes in managed growth that ensures a balance with both nature and the affected communities.

For questions or comments email: Info@Protect-Virginia.org

For more information visit: Protect-Virginia.org

To take action, share this report and tell your local representatives that you do not want the cruise industry to expand in Virginia without following [Principles of Responsible Cruise Ship Tourism](#). Also contact your Commonwealth [Senator](#) and [Delegate](#), contact [Governor Youngkin](#), contact [your US Representative](#) and your US Senators ([Kaine](#) and [Warner](#)) at the Federal level. You can also listen to and share our podcast, [Cruise Control](#), to spread the word. We need your help to Protect Virginia.

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