

Introduction

Millions of people take cruise vacations each year to relax, have fun, and experience the natural beauty of the oceans and the coast. Cruise ships may offer an amazing vacation, but the trail of pollution that follows them into some of our most pristine ecosystems has devastating effects on the ocean and marine environment. This chapter will explore the cruise ship industry, its ties to Florida, and the types of pollution it generates. The chapter will also include ways you, the consumer, can help protect the marine environment from cruise ship pollution.

Cruise Ships in Florida

Cruising has become a popular vacation choice because it allows passengers to visit interesting and exotic ports while also enjoying on-board activities and comforts. Each year, the world's fleet of over 220 cruise ships carries about 10 million passengers to ports around the globe. Florida ranks first by far among states hosting cruise ships in their ports. Three of Florida's ports, Miami, Port Canaveral, and Port Everglades (Fort Lauderdale), are the first, second and third largest in the U.S., respectively. Together, these three ports represent 44% of the world cruise market. Adding Tampa, ranked number eight, gives the state of Florida nearly half of the world market.



Almost 4 million passengers board cruise ships at one of these four Florida ports each year, and in so-doing, they provide considerable travel revenues to the state. The Canaveral Port Authority's latest study found about 15 percent of cruise passengers at the port stayed at least one night in Brevard County, spending more than \$13 million in 1999 on lodging, restaurants, entertainment, transportation and shopping. Yet due to the ships' foreign flags, they pay no U.S. taxes and in many places the industry provides shore-side shopping and other facilities, which compete with local merchants for those revenues.

Many of the passengers that embark in Florida are bound for the Caribbean. While some may argue that the cruise ship industry brings a wealth of economic value, the costs of this pollution to the unique and priceless resources of Florida and the Caribbean region continue to be unrecognized. The Wider Caribbean Region, stretching from Florida to French Guiana, receives 63,000 calls from ships each year. Besides revenues, these ships and their passengers generate over 90,000 tons of garbage among other types of waste.

Cruise Ship Pollution

Cruise ships are a major and growing source of ocean pollution. They can carry as many as 5,000 passengers, and new ships being built will accommodate even more. Take a look at what an average-sized cruise ship housing 3,000 passengers and crew generates:

7 tons of garbage and solid waste every day – This trash includes bottles, cans, plastic, cardboard and food wastes. Approximately 75 to 80 percent is incinerated at sea and then the ash is dumped into the ocean. Some ships have been found to be grinding plastics and flushing them into graywater for illegal at-sea disposal. Although many cruise ships do recycle or dispose of some waste on land, other cruise ship garbage is sometimes dumped illegally at sea. U.S. law prohibits dumping within three miles of the coast and an international treaty limits the size of waste dumped between three and 25 miles out and prohibits dumping of anything plastic in any U.S. waters.

In one year, 15 billion pounds of trash is dumped at sea worldwide. About 77 percent of all ship waste comes from cruise ships (ENS-Lycos.) The toll that trash dumping takes on marine life is staggering. Each year, millions of animals become trapped or poisoned by marine refuse. Sea turtles often die from eating plastic bags that they mistake for jellyfish. Sea lions, birds and other marine life become entangled in plastic six-pack holders, nets and other debris. Besides the impacts on marine life, our beaches are less attractive if polluted by garbage brought by strong currents or dumped in the local harbor.



1,000 metric tons of ballast water per release – Cruise ships take in millions of gallons of ballast water to stabilize and trim the vessel to ensure safe operating conditions. In doing so, they bring in thousands of marine species including plankton, microorganisms, fish and invertebrate larvae. Ships discharge ballast water back into the ocean as needed to maintain safe operating conditions. Ballast water is often taken on in one coastal region and then discharged at the next port. Along with those discharges, these marine animals are also flushed into the ocean, sometimes in places far away from where they were picked up. As a result, serious diseases (including cholera, paralytic shellfish poisoning and red tides), parasites and non-native species are carried into U.S. waters from ballast waters. Non-native species are the number two cause of biodiversity loss and cost the U.S. economy \$137 billion per year.

15 gallons of toxic waste everyday – Cruise ships generate toxic wastes such as silver, mercury, lead and cadmium through dry cleaning, photo processing, print shops, painting activities and other sources. Cruise ship incinerators also produce dioxins and release mercury and other chemicals into the air. The waste should be returned to shore for appropriate disposal. However, some of these wastes go through sinks and other drains into graywater and are discharged without treatment. Much of this waste is carcinogenic or otherwise toxic to marine life, potentially causing reproductive failure and other effects. Furthermore, some chemicals can be passed up the food chain to accumulate in fish, sea birds, marine mammals and humans. It is illegal to discharge toxic waste through graywater. The U.S. Resource Conservation and Recovery Act requires wastes to be off-loaded to land-based treatment, storage or disposal facilities. Though record-keeping is required, in some cases it is difficult to determine whether wastes have been disposed of illegally.

30,000 gallons of human waste everyday – Cruise ship sewage, sometimes called blackwater, consists mostly of wastewater from toilets. Ships are permitted to dump raw sewage directly into the ocean once they are three miles out from shore, except in Alaska. Treated sewage can be dumped anywhere in the ocean after being treated by either chemical (chlorine) or biological (bacteria) means. Unfortunately, such treatment rarely works on such a large scale. Even where it does work, the chemicals or bacteria used to treat the waste are introduced into the waste stream, and then dumped into the ocean along with the sewage. This creates yet another form of pollution. The U.S. Clean Water Act requires vessels to install and use marine sanitation devices to treat or hold raw sewage and sets limits regarding bacteria levels in sewage released within three nautical miles of shore. Unfortunately, little monitoring is done. Where tests have been conducted, it has found that the devices often do not treat the wastes well enough to meet the standards.

7,000 gallons of oily bilge water everyday – Residual oil from routine engine maintenance mixes with bilge water and collects at the bottom of the vessel. When these chemicals are released, the components of the oil (even in very small amounts) can cause toxic effects on marine life. Though there are regulations governing the amount of oil that can be released, recent cases have uncovered a rash of violations of the law. Within U.S. waters oil waste is regulated by the Clean Water Act and the Oil Pollution Act, which limits the concentration of oil in bilge water to be discharged.

255,000 gallons of graywater everyday – Graywater is wastewater generated by laundries, showers, sinks and dishwashers. It contains detergents, cleaners, oil and grease, metals, pesticides, and medical, dental and other forms of toxic waste. Waste that should be segregated and disposed at land-based facilities is often pumped into graywater. In addition, ground up garbage is sometimes pumped into graywater. Ships may dispose of graywater anywhere without treatment except in Alaska and the Great Lakes where stronger coastal protection rules apply. U.S. Department of Defense and Environmental Protection Agency (EPA) studies determined that graywater “has the potential to cause adverse environmental effects.” Nitrogen and phosphorus from graywater can deplete the ocean water of oxygen necessary to support marine life. One study found graywater in Alaska contained fecal coliform levels exceeding national sewage standards by 10,000 to 100,000 times. Graywater is exempt from U.S. regulations, except in Alaska, and not covered by active international treaties.

Diesel exhaust emissions equivalent to thousands of automobiles EVERYDAY – Many ships burn low-grade diesel fuel that produces 50 times more pollutants than the dirtiest diesel trucks. Diesel burn-off is emitted through the ships’ exhaust systems. Nitrogen dioxide emissions contribute to unhealthy smog in the air, and dead zones and algae blooms in the ocean. Sulfur, carbon dioxide, carbon monoxide, particulates and other emissions play an important role in acid rain, global climate change and respiratory diseases. Ships’ incinerators release toxic chemicals including persistent organic pollutants (POPs) such as dioxins and mercury. These toxic chemicals are transported through the atmosphere and can wind up in the ocean where they accumulate in fish and other marine mammals. Cruise ship air emissions are almost entirely unregulated by the

EPA. New proposed rules for governing air pollution from ships are pending; however, they do not go nearly far enough to level the playing field between cruise ships and other sources of air pollution.

The diverse collection of wastes described above, including toxic waste, human waste and chemical pollution contaminate the water, damage corals, deplete the oxygen supply in the ocean, and harm both marine and human life. Caribbean reefs are one example of an ecosystem that can be affected by cruise ship pollution anchor damage, and ship collisions. Recent studies have shown that coral diseases can be linked to human sewage, not unlike what is released from cruise ships. This is a critical finding since about 90 percent of Florida's coral reefs are already believed to be dead or dying. White pox is one disease effecting coral reefs off Key West and throughout the Caribbean where the culprit is bacteria often found in the human gut, indicating that sewage is contributing to the destruction beneath the sea. Reefs in Jamaica, Belize, St Croix and the Bahamas have also been affected by the same disease.



Historical Violations

Cruise ship pollution has gone largely unnoticed for years. But, a number of high profile court cases challenging polluting cruise lines have recently brought the issue to the public's attention. According the Government Accounting Office, foreign-flagged cruise ships were involved in 87 confirmed cases of illegally discharging pollution into U.S. waters between 1993 and 1998. There were also 17 alleged incidents documented outside U.S. waters bringing the total in those 6 years to over 100.

More recently, in July, 2002, Norwegian Cruise Lines (NCL) pled guilty in a federal court in Miami, to U.S. charges arising from dumping oily bilge into the world's seas. NCL, the fourth largest cruise line operator, pled guilty to lying in government-required sea logs and agreed to pay a \$1 million fine and to contribute \$500,000 to environmental organizations in Florida, according to the U.S. Department of Justice and the company.

In April of 2002, Carnival, the biggest cruise group with 43 vessels, agreed to pay \$18 million and pleaded guilty to six felony pollution counts. Royal Caribbean, the second largest cruise group, was levied fines and penalties totaling \$33.5 million to settle ocean-dumping complaints from actions that occurred between 1994 and 1998. This includes a \$9 million fine for dumping polluted water off the coast of Miami.

Enforcement of Current Laws and Regulations

Cruise ships are often referred to as floating cities. Yet, while they do pollute like cities, they are not regulated like them. The good news is that pollution from cruise ships is unique — it is 100 percent preventable.

All major cruise ship owners, including Disney and Carnival, sail their ships under foreign flags. By registering their ships with other countries known as "flag" countries,

in exchange for substantial fees, the owners avoid paying American corporate taxes and can pay lower wages to foreign crews. They also argue that they are not bound by U.S. labor or environmental laws. Financial documents show that Royal Caribbean saves approximately \$30 million a year just in United States taxes by registering its ships in Norway and Liberia (EnviroNews 1999).

Since the laws of individual countries only govern the waters a few miles off shore, ships are not being held accountable for their destructive actions. In fact, most laws and international treaties governing cruise ship pollution specifically allow ships to dump waste, including untreated human waste, at sea.

State laws rarely go any further. Florida, the chief cruise ship base in the United States, merely asks ships to voluntarily comply with industry standards, providing no formal inspection or reporting requirements for pollution control systems. As recent violations have shown, there is a major need for better monitoring, since many ships do not comply with the “honor system.”

The Coast Guard is the lead U.S. enforcement agency, for regulations regarding ocean dumping from vessels. The Coast Guard regulations make it illegal to dump anything plastic into any waters, and they also restrict dumping of non-trash and other forms of garbage. These regulations apply to all U.S. vessels wherever they operate, and to foreign vessels operating in U.S. waters out to 200 miles from shore.

While some laws do apply to cruise ship pollution, enforcement is a major problem. The Coast Guard devotes less than one percent of its total aircraft surveillance to environmental protection and lacks the resources to ensure that the industry is complying with existing regulations. Enforcement is further hindered by the fact that most cruise ships that visit U.S. ports are foreign-flagged, and flag states rarely enforce reported violations. However, under the new Alaska laws, the ship captains are responsible for reporting whether or not they are in compliance. While such a system is not perfect, it at least places a burden on the captain of the ship to monitor waste management practices. The Coast Guard still has the authority to investigate and enforce any violations.

What Oceana is Doing

Oceana is preparing to launch a major international campaign to make significant improvements in cruise ship waste disposal practices. The campaign will use all of the tools at its disposal including the law, the legislative process, economics and science to reduce or eliminate pollution from cruise ships. Oceana volunteers and WaveMakers will be an important part of this campaign. Already, Oceana staff and volunteers are working with local environmental organizations to secure commitments from several cruise ship companies not to discharge waste into California’s Monterey Bay National Marine Sanctuary. Oceana is also working with local groups to ensure that the city of San Francisco adequately evaluates the environmental impacts of cruise ship waste before encouraging more cruise ships to visit the Bay Area.

What You Can Do

In the case of cruise ship pollution, the ultimate power may be in the hands of the consumer. As passengers and others learn about this issue and understand the damage to ocean resources, they can become active participants in efforts to stop cruise ship pollution. If you are planning a cruise, investigate the cruise line to be sure their ships do not have a record of pollution. You can also ask whether they have a collective agreement to protect the rights of their crew. If you are vacationing on a cruise ship and observe any dumping of plastic at sea, you should report it to Oceana and the National Response Center by calling 1-877-7-OCEANA, or 1-800-424-8802.

Glossary

Blackwater: Sewage from cruise ships consisting of wastewater from toilets.

Dead zone: Condition caused when excessive nutrients-- including nitrogen and phosphorous-- trigger excessive growth of algae in lakes oceans and bays. When the algae die and decompose, dissolved oxygen levels plummet, causing fish, shrimp, crabs, and other sea life to die.

Dioxins: The most toxic group of chemicals we know of. Dioxins are produced as byproducts of combustion, such as in waste incineration, and as a byproduct of paper, chemical, and plastics manufacturing. These chemicals are produced on cruise ships through waste incineration. Because these chemicals are persistent, they build up in the food chain and contaminate fish, marine mammals and even humans.

Foreign Flagged Ships: Cruise ships that are staffed with international crews and operate, register and cruise under the flag of a foreign country in order to avoid U.S. taxes and labor laws.

Graywater: Wastewater generated by laundries, showers, sinks and dishwashers. This contains detergents, cleaners, oil and grease, metals, pesticides, and medical, dental and other forms of toxic waste.