

THE COST OF CRUISING

LARGER SHIPS ARE SAILING LONGER AND MORE OFTEN IN THE ARCTIC THAN EVER BEFORE



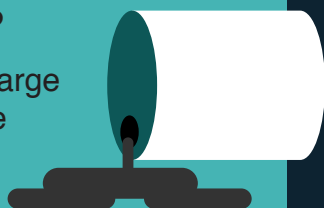
HEAVY FUEL OIL

What is it?

- Heavy fuel oil (HFO)¹ is a tar-like residual waste from the oil refining process.
- **HFO is persistent:** Tests have shown that even after 20 days in the water over 90 percent of HFO remains, whereas weathering can break down marine diesel in approximately three days.²

Why is it a problem?

- More than 90 percent of large ships, 408 out of 449, use HFO in the Arctic.³
- An average-size cruise ship operating on HFO in the Arctic can produce sulfur dioxide emissions equivalent to 13 million cars each day.⁴



NORTHWEST PASSAGE

What is it?

The Northwest Passage is a sea route connecting the northern Atlantic and Pacific Oceans through the Arctic Ocean. The passage has become more accessible recently as Arctic sea ice has diminished. Before 2000, only 77 ships traversed the NW Passage. From 2000 to 2014, 143 vessels, including cargo ships, cruise ships and yachts, made the crossing.⁵

Why is it a problem?

Shipping activity through the Arctic is expected to rise by more than 50 percent from 2012 to 2050.⁶ In the U.S. Arctic alone, shipping voyages are projected to increase between 100 and 500 percent by 2025.⁷



CRUISE SHIPS HAVE THE ARCTIC IN THEIR SIGHTS

11 cruise ships with more than **1,000** people on board traveled to the Arctic in 2016.

Costa P&O

Holland America Line

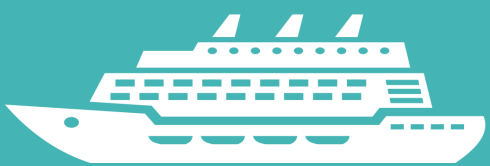
Fred. Olsen Cruise Lines

CRYSTAL CRUISES

CRUISE & MARITIME VOYAGES

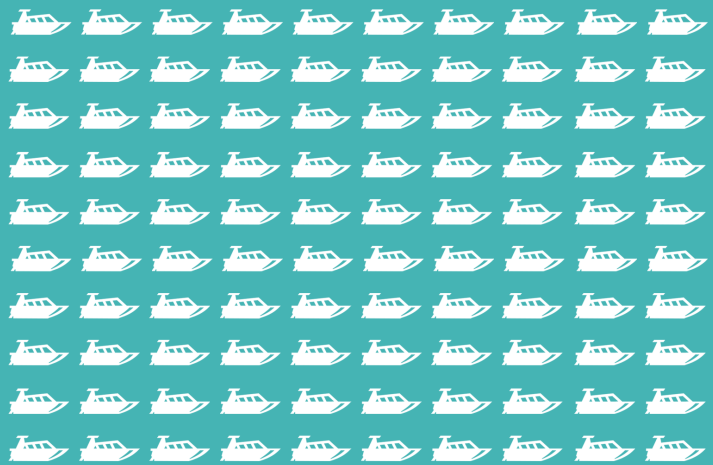
MSC SPLENDIDA

The MSC Splendida, which ventures to the Arctic, carries enough fuel to power **100,000** speedboats and accommodates more than **5,200** passengers and crew.



 = 1,000 speedboats

*Figures based on a Washington State Department of Ecology report⁸



CRYSTAL SERENITY

The Serenity is the first large cruise ship to transit the NW Passage. In 2016, the Serenity voluntarily used marine gas oil, a distillate fuel, instead of HFO on its journey through the passage. This commitment not only reduced oil spill threats and toxic air emissions, but also mitigated indigenous food security risk. Crystal plans to send the Serenity through the NW Passage again in 2017.



A CLEANER FUTURE

Cruise ships operating in the Arctic must stop using HFO to protect this fragile region. The Crystal Serenity's voyage illustrates the feasibility of using marine distillate fuel. Moreover, in November 2016 the Association of Arctic Expedition Cruise Operators (AECO) reconfirmed its support for a ban on HFO in the Arctic as well.⁹ With more cruise ships traveling to the Arctic, strong action is needed to protect it from this growing HFO threat.

1 HFO in this document refers to residual marine fuel or mixtures containing predominately residual fuel and some distillate, such as intermediate fuel oil.

2 Det Norske Veritas (DNV), Report – Heavy fuel in the Arctic (Phase 1), Report for PAME, Report No./DNV Reg. No.: 2011-0053/ 12RJ7IW-4, 38-39 (2011), available at <http://www.pame.is/index.php/projects/arctic-marine-shipping/heavy-fuel-in-the-arctic-phase-i>; see also A. Evenset and G. Christensen, A. Evenset and G. Christensen, Environmental impacts of expedition cruise traffic around Svalbard, prepared for Association of Arctic Expedition Cruise Operators, Akvaplan-niva AS Report: 4823-1, 4-5, 2011, available at <http://www.aeco.no/documents/Finalreport.pdf> ("It is believed that around 70-80% of all MDO/MGO will evaporate within 24 hours after a spill.")

3 Communication with Bryan Comer, PhD., International Council on Clean Transportation (ICCT), based on 2015 data for the Arctic.

4 https://www.washingtonpost.com/national/health-science/cruise-ship-lines-alaska-officials-question-new-air-pollution-limits/2012/07/22/gjQAc4Jy2W_story.html.

5 <http://vancouversun.com/opinion/columnists/daphne-bramham-arctic-region-must-adapt-to-less-ice-but-can-it-happen-fast-enough>.

6 M. Winther et al. (2014). Emission inventories for ships in the arctic based on satellite sampled AIS data. Atmos. Environ., 91: 1-14.

7 U.S. CMTS, (2015). A 10-Year Projection of Maritime Activity in the U.S. Arctic, 2015, available at <http://www.cmts.gov/Bulletin.aspx?id=87>.

8 <https://fortress.wa.gov/ecy/publications/documents/96250.pdf>.

9 <http://www.aeco.no/2016/11/aecos-position-on-hfo/>.

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