A new study from the International Council on Clean Transportation (ICCT) estimates that ships in the Great Lakes-St. Lawrence Seaway (GL-SLS) consumed more than 500,000 tons of fuel and emitted more than 1.6 million tons (Mt) of CO$_2$ in 2019. The new, wide-ranging emissions inventory for 2019 also shows that ships flagged to the United States and Canada were together responsible for nearly 80% of total CO$_2$ emissions, each about 40%.

While ships flagged to the Marshall Islands ranked second in terms of number of vessels in the GL-SLS, they emitted less CO$_2$ than U.S.-flagged ships. “Knowing the number of ships only tells you so much, and this underscores the importance of more granular analyses like this that help us understand ship activity,” said Zhihang Meng, ICCT marine program associate researcher and co-author of the briefing paper released today.

Although the St. Lawrence Seaway portion is less than 1% of the geographic area of the whole GL-SLS, it was home to 25% of the CO$_2$ emissions in 2019 and had an average CO$_2$ emissions intensity 36-times higher than the Great Lakes. By ship type, the most emissions in the GL-SLS came from bulk carriers, approximately 1 Mt or 62% of the total CO$_2$, and they were followed by chemical tankers, responsible for about 10% of total emissions, and tugs, which accounted for about 9%.

“This inventory can be a baseline for a variety of stakeholders, including governments, ports, and community groups, in their efforts to reduce air pollution and mitigate the climate impacts of maritime shipping in the region,” said Bryan Comer, Ph.D., ICCT marine program lead and study co-author. “Such actions could include promoting the use of shore power, shore-based or barge-based emissions capture bonnets, batteries, fuel cells, low-carbon fuels (as measured on a life-cycle basis), wind-assisted propulsion, and more.”

The ICCT intends to periodically update the analysis of this important commercial waterway as more recent data becomes available. Additional data is also published with the study: a statistics file with details of emissions of non-CO$_2$ climate and air pollutants including methane (CH$_4$), black carbon, sulfur oxides (SO$_x$), particulate matter and more; and an ArcGIS shapefile with the gridded CO$_2$ emissions inventory for the GL-SLS at a 0.05° x 0.05° resolution. The emission factors used were the same as those used in the International Maritime Organization's Fourth IMO Greenhouse Gas Study, except for ships that use heavy fuel oil with scrubbers. In the case of a ship with a scrubber, emission factors developed by the ICCT were applied.

**More information:** Paper: theicct.org/publication/ships-...kes-emissions-