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September 25, 2009

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Air and Radiation Docket and Information Center
U.S. Environmental Protection Agency
Mailcode 6102T
1200 Pennsylvania Ave., NW
Washington, DC 20460

Docket ID: EPA-HQ-OAR-2007-0121

Dear Sir or Madam:

Subject: Comments of the Canadian Shipowners Association on the United States Environmental Protection Agency's proposed rulemaking entitled "Control of Emissions from New Marine Compression-Ignition Engines at or above 30 Liters per Cylinder"

The Canadian Shipowners Association (CSA) provides comment herein on the proposed rulemaking entitled "Control of Emissions from New Marine Compression-Ignition Engines at or above 30 Liters per Cylinder" (hereafter "the proposed rule" or "the proposed rulemaking") posted by the USEPA on its website June 26, 2009 and subsequently entered into the Federal Register on August 28, 2009.

Who We Are

The CSA represents the owners of Canadian-flagged ships trading in the Great Lakes and St. Lawrence Seaway. Our members' fleet comprises 68 vessels with an annual volume of over 62 million tonnes in 2008, of which 33.2 million tonnes – more than half – were carried between Canada and the United States.

The domestic marine transportation industry plays an essential role in Canada's industrial and natural resources economy, providing communities and industries with reliable, economic and environmentally sustainable transportation. The Canadian Shipowners Association and its member companies recognize their responsibility to maintain a marine transportation system that is environmentally sustainable. This is accomplished through the application of an Environmental Management System to all facets of operations and implementation of the Green Marine program in response to key environmental issues.

The CSA is a founding member and active supporter of the Green Marine Program, an environmental partnership between companies in the St. Lawrence and Great Lakes regions to implement a voluntary environmental program for the maritime industry in these two

sensitive, vital waterways. The program's objective is to continuously improve the environmental performance of the marine industry, to underline and maximize the relative environmental benefits of marine transportation, and to establish partnerships and collaborative models with partners throughout the St. Lawrence and Great Lakes to ensure environmental protection and sustainability are seen as "job one" for all transportation providers in this ecosystem.

The marine industry in Canada is an important contributor to domestic and international economic activity which contributes to our collective wealth, and environmental performance is a key factor in the maritime industry's competitiveness. We are working to reduce the maritime industry's environmental footprint without compromising its economic viability. We want to work with regulators, and other partners, to increase the effectiveness of the Green Marine Program and continuously improve our environmental performance.

Introductory Statements

The Canadian domestic marine industry supports the objective of reducing air emissions. This reduction must however be achieved in a manner that minimizes the risks of modal shift and industrial diversions, and thus avoids the adverse environmental consequences associated with these risks. The new rules must allow sufficient time to phase in the new standards and/or new technology in order to mitigate the adverse unintended consequences of modal shift, fuel supply disruption and lost economic activities. A rational phase-in of new fuel standards will provide an appropriate investment climate to enable the renewal of the Canadian fleet with new technology and new vessels, which in turn will improve the fleet's environmental performance.

The CSA and its industry supporters and customers believe that the EPA has not conducted a proper analysis of either the air emissions deposited in the Great Lakes/St. Lawrence Seaway region by Canadian and/or US Domestic vessels (lakers), nor has it adequately identified the negative environmental and commercial effects of the proposed rulemaking. Driving traffic from the greenest mode of transportation to other modes will degrade the Region's air rather than improve it. The proposed rule imposes requirements designed for ocean shipping upon the Great Lakes, an action which does not make any sense in a marine transportation regime that is entirely different from ocean shipping. Prior to, and in order to determine the best corrective action or rulemaking to be applied to the bi-national Great Lakes waters of Canada and the US, a proper analysis and problem statement needs to be concluded for the region being regulated.

All of the analysis done for the proposed rulemaking for U.S. internal water is taken from the Canada-US application to the IMO for a North American Coastal ECA, an analysis that relates specifically to ocean-going vessels that operate in the North American Coastal ECA zone. The environmental benefits of the proposed rules are based on very large growth estimates for ocean shipping and these are not at all representative of the Great Lakes region. The analysis in the NPRM assumes that similar benefits will accrue if the same rules are applied in the Great Lakes, which is not the case. Shipping by domestic carriers in the Great Lakes is very different from ocean shipping and these differences have not been addressed in the analysis. The enormous adverse environmental consequences of applying the same rules to CSA vessels in the Great Lakes have not been quantified and considered in the analysis. Points related to this which we will elaborate on:

- The EPA has dramatically overstated the benefits of a Great Lakes ECA while severely understating the costs in all areas including the environmental impacts, fuel cost/supply and operating costs, commercial impact and human factors. The EPA has not separated all of the factors associated with its application to the IMO for Coastal ECA's from those to be applied to the internal waters ECA.
- The operating environment in the Great Lakes is totally different from ocean operations and applying a solution based on ocean operations to the Great Lakes is entirely unjustified. Because of major operating differences and very different environmental consequences, it is inappropriate to apply the same timeframe for changes in fuel standards to Great Lakes domestic and transborder marine transportation. In other words, a solution cannot be developed for the Great Lakes until the problem has been properly defined and quantified.
- Ships operating in the Great Lakes do so in direct competition with land-based modes of freight transport, while for ocean-going ships there is no such competition. The EPA analysis assumed that the demand for marine transportation is inelastic. This is not true in the Great Lakes. Traffic will shift to land-based modes when fuel costs are increased relative to these modes. EPA has not analyzed the impact of modal shift on both the economy and the environment, and it is incumbent upon the EPA to do so.
- The proposed rules will not only create a modal shift to already congested land-based modes but they will also eliminate the possibility of shifting existing and future traffic from land-based modes to the greatly underutilized marine infrastructure. This flies in the face of the policies of both the United States and Canadian federal governments to encourage the development of short sea shipping in order to improve the environment and relieve congested infrastructure.

The CSA is, however, in favour of increasing environmental standards in a way that takes into account the environmental, economic and technical realities of the commercial shipping industry in the Great Lakes. That's why the Canadian-flagged marine transportation industry is presently committed to a process of continuous improvement of our environmental performance. We are participants in Green Marine, a voluntary environmental program of continuous improvement with accountable, independent verification of performance. We are constantly optimizing our vessel schedules and routes to transport the maximum amount of goods in the most efficient way possible.

The EPA-proposed regulations are prescriptive in nature and not responsive to the operational efficiencies of lakers, nor are they conducive to continuing investment in finding operational solutions. CSA members believe in the benefits of new technology and are in discussion with technology providers to test new systems to reduce our environmental footprint. It is well understood in the global marine community, particularly at IMO, that performance-based standards are more effective than prescriptive rules. An effective rule to control air emissions should allow for the use of technology to reduce air emissions and not simply specify fuel standards. In addition, an effective rule needs to allow time for suitable technologies to be developed and implemented.

Great Lakes vessels have a useful life of 40 to 50 years, and even more if well-maintained. A solution that forces older-technology ships out of service within 2 or 3 years does not allow sufficient time for these ships to be replaced with modern ships, and the traffic they carry will be lost to other less environmentally friendly modes. Ten years was provided to the trucking industry to phase in fuel standards for equipment that has less than one fifth the useful life of ships. The new rules to reduce air emissions must be introduced in a manner that encourages older ships to be replaced with new ones or to be retro-fitted with technologies that achieve

similarly improved environmental performance. The new rules must be phased in over sufficient time:

- to allow marine transportation markets time to adjust to increased costs rather than shifting to other modes,
- to allow the ship fuelling industry to develop an efficient and effective supply chain, and
- to allow the marine carrier industry to introduce new ships and/or new technologies with enhanced environmental performance before their markets are lost to other modes

It is good environmental policy to maintain a marine transportation industry in the Great Lakes as it is well known that marine is the most environmentally efficient means of transportation. The Great Lakes marine transportation industry contributes, in a major way, to the regional economies of both the US and Canada.

Great Lakes Shipping is Very Different from Ocean Shipping

In the analysis used in the Notice of Proposed Rulemaking (NPRM) to extend the ECA regime to the Great Lakes, the EPA has failed to recognise the differences between the marine industry on the Great Lakes-St. Lawrence River and the ocean-going vessel operations on the coast.

For example, the analysis in the NPRM is based on the assumption that shipping activity has and will steadily increase. Environmental impacts were estimated using the historical high growth rates of transoceanic traffic; however, the actual fact is that Great Lakes shipping, both in terms of ships and commodities shipped, have been steadily and dramatically declining since before 1990. The environmental benefits of the ECA are based on very large growth estimates for ocean shipping, with high horse-powered engines, and these estimates are not at all representative of the Great Lakes region. This should have been a consideration in forecasting the environmental impacts of shipping in the Great Lakes.

The compliance cost for the laker fleet is under represented since the analysis did not address the impact on vessels, and in particular, steam propulsion vessels built before 1990. Further, the analysis was based on the data of a typical ocean vessel, which has half the useful life of the mostly fresh water domestic vessels used in the Great Lakes.

Our Great Lakes vessels currently have the highest tonne-mile efficiencies (over 400 tonne-miles per litre of fuel) and the lowest horsepower to tonnage ratios (0.35 to 0.5 hp per tonne moved) over any other shipping area in the world. Our efficiencies are simply not recognised in the EPA's analysis. Comparing a high horsepower SuperMax to a Canadian Seaway ship is simply not comparing "apples to apples".

Although we understand that the US Lake Carriers Association has previously provided the EPA with data on laker vessel efficiency and demonstrated that the EPA data on emissions at Great Lakes ports was in error by a factor of more than 300%, the EPA neither recognised the laker vessel efficiencies nor corrected their erroneous data. Again, important rulemaking with dramatic negative consequences cannot be based on flawed data and overstated benefits.

We believe the EPA has failed to conduct an appropriate analysis of the impact of the proposal on the domestic and transborder shipping industry and on the shippers that rely on

marine transportation. The EPA is mistaken in its approach of applying positive environmental benefits achieved from a coastal ECA to the domestic vessels of both the US and Canadian fleets in the Great Lakes.

Modal Competitiveness

There are both technical and economic reasons why it is a very bad idea to apply the ECA timeframe to changing fuel standards in the Great Lakes region. Let's start with the economic reasons, which also have huge adverse environmental consequences.

An ECA-equivalent regime, such as that contained in the proposed rule, will affect vessels operating in internal waterways differently than ocean shipping, and its direct application in the Great Lakes system would threaten marine transport competitiveness. This is because ships operating mainly in the Great Lakes and St. Lawrence River do so in competition with land-based modes of freight transport, while for ocean-going freight there is no such competition. The impact of a modal shift on both the economy and the environment has not been analyzed.

A basic assumption used in the analysis was that demand for marine transportation is totally inelastic; in other words, increased costs associated with the new rules will not impact demand for marine services. Although this is generally true for ocean shipping where there are no comparably priced alternatives and only 3% of the ocean voyage is subject to the new rules, such an assumption makes no sense in domestic and US/Canada transborder markets where there is extensive modal competition and the rules would apply to 100% of the voyage.

The operating environment of the Great Lakes is unique and deserves due consideration in the proposed rulemaking. For the reasons outlined above, it is totally inappropriate to assume that a cost analysis that applies to ocean shipping is equally applicable to markets operating in bi-national and internal waterways. The EPA proposed rules will profoundly impact Canadian domestic operations. Even if the rules did not apply in Canadian waters, the shared nature of the bi-national waterways makes it impractical and unsafe to adopt continuous "fuel switching procedures" when going from Canadian to US Waters; in a typical voyage through the system, the US boundaries are crossed in excess of two dozen times when the safest routes are followed.

For those trades which are subject to competition from land-based modes, cost is the most important factor. The competitive advantage of marine shipping is a matter of just a couple of percentage points over truck or rail in most of these cases; these trades are highly cost-sensitive. If marine carrier costs go up by even a small percentage in order to buy low sulphur fuel – which would roughly double fuel costs – then it would be cheaper for customers to ship their goods by rail or by truck.

The operating costs of CSA members will increase extensively if they are required to burn distillates because of the higher price of distillate fuel and the modifications required to IFO engines in order to burn solely distillate fuels. CSA models show that a shift to burning exclusively MDO (containing less than 0.1% sulphur as in the final ECA scenario) for a fleet of today's self-unloaders will result in an increase in operating costs of approximately 32% - equivalent to a fuel cost increase of up to about 63%. In Canadian dollar terms, this represents almost \$150 Million Dollars of additional fuel costs on a per year basis (2008 blended), not including the additional premiums for importation of low sulphur fuels from outside the region.

We have been advised by fuel suppliers that these costs will be incurred as early as 2012 when the 1.0% standard comes into effect due to unavailability of blended fuel to a 1.0% standard, in addition to technical problems associated with blended fuel instability. This analysis is based upon fuel prices prevailing at the end of April 2009. Note that the model does not include secondary demand effects, such as the upward pressure on the price of MDO as a result of the new regulatory standard.

In the analysis done to estimate the cost of the proposed rule, the EPA compared a world price differential between residual and distillate fuels. When this cost differential assumption is applied to the Great Lakes, it understates the cost pressures actually faced by Great Lakes marine operators by more than 300%. Such a large fuel price increase is enough to cause a serious weakening of the competitive position of marine transportation relative to other modes. For example, a 30-35% increase in operating costs as above would translate into roughly a 15-20% increase in commodity freight rates.

However, fuel is only one component of a complex cost structure for marine freight rates. Studies show that the marine mode has a fuel cost (IFO) and fuel efficiency advantage, but the CSA is seriously concerned that – when combined with other factors that apply in both Canada and the US such as harbour taxes and port fees, pilotage fees, cargo handling, marine service fees, maintenance costs and other new regulations such as the EPA Ballast Water and US State 401 Certification costs – a sudden fuel cost increase will drive the advantage away from the marine mode in the Great Lakes region. Such a large spike in marine transportation costs is too high to absorb without major consequences. Therefore, if markets are not given a sufficient amount of time to adjust to these new costs, especially in this economic climate, they will not accept increased freight rates as long as there are other viable alternatives such as rail and truck.

CSA commissioned a study of the modal shift implications of the proposed rules in the Great Lakes and St. Lawrence region. The study was commissioned by the CSA in cooperation with the St. Lawrence Seaway Management Corporation and the Chamber of Marine Commerce soon after the EPA website declaration of proposed rulemaking at the end of June, 2009. Due to the short deadline for submission of comments, the CSA considered that there was insufficient time available to do a full and complete study of all trades; as a result, the study authors were requested to look at the possible effects of the proposed rules on modal shift for specific trades.

The complete report is attached to this document as Annex A. In summary, that report shows that the implementation of the proposed rules would lead to an expected modal shift as follows in the specific trades that were studied:

1. **Aggregate/Construction Industry:** a 20% mode shift could be a reasonable expectation and specific shippers might experience much higher rates depending on local competitive circumstances. The modal shift would be significantly higher if the market loss induces a downward spiral of operations cost increases and further loss of market share.
2. **Canadian Agricultural Movements:** the expected short-term modal shift of grain from marine to rail is 12.3%.; this is constrained in the short term to only 12.3% by the current capacity of the rail system. The modal shift would be higher in the long term if investments were made in additional rail cars.
3. **Salt:** Although the increased fuel prices resulting from a Great Lakes ECA alone are unlikely to drive existing salt markets to other modes, they will ensure that salt currently

carried by other modes, which would normally shift to marine as fuel prices rose, would no longer shift to the cleaner marine mode.

- 4. Canadian Petroleum Movements:** For petroleum products, the main cost of ECA will be the opportunity cost of not recapturing market share from rail. This market loss would be in the order of 11.3%.

Generally, the report indicates a modal shift of 10-20%, when the cost differential as a result of the EPA ECA is viewed as the only factor. The study did not address the cumulative effects of modal shift as a result of the interdependence of various trades. Shipping in the Great Lakes has become among the most efficient in the world by minimizing the amount of time that ships are operating in ballast (no cargo). For example, maintaining a low rate structure to bring iron ore into the region depends on being able to bring grain out of the system on the backhaul. Similarly, the movement of salt is viable for marine transportation because the existence of an aggregate backhaul reduces the cost of the salt movement. The loss of cargo on one leg of the voyage will increase the cost of the remaining leg and further erode the traffic base. If the grain and aggregate markets lose traffic to other modes, then the salt and iron ore markets also become more vulnerable to modal shift or loss of business. There was insufficient time during the modal shift study to model the effects of lost backhauls on trades that would otherwise be able to absorb fuel price increases.

Nor did the study address the snowballing effect of losing economies of scale when part of a market is eroded to other modes. For example, one aggregate producer indicated that if 20% of the market for one of his facilities is eroded by modal shift and marine transportation costs increase for the remaining market, then he will simply close down the facility and shift production to a more economical site that would need to be served by road or rail transportation.

As indicated, we had only limited time to address the modal shift issue that was not addressed in the EPA analysis. In that limited time, we were not able to do the detailed analysis required, nor were we able to look at all of the Great Lakes trades, including the U.S. grain trade, that are at risk. However, the study provides conclusive evidence that the current ECA rules will result in modal shifts for various marine markets and that the EPA assumption that demand for marine transportation is inelastic is, in fact, an erroneous assumption. When we started to look at the modal shift issue, we expected that a shift of traffic of around 10% would occur in certain markets. It is very discouraging to find that this initial assumption was grossly underestimated – the actual effect on the industries surveyed range from 11% minimum to 20%, without other influencing factors being taken into account. The loss of 20% due to modal shift represents a loss of approximately 15 billion tonne-kilometres of freight to truck and rail, in tonnage terms almost 13 million tonnes of cargo! There are likely to be even higher modal shifts and additional facility closings, both of which will occur as a result of the compounding effects of lost backhauls and lost economies of scale outlined above.

The basic assumption in the analysis done to support the NPRM is clearly incorrect when applied to marine transportation activities in the Great Lakes/St Lawrence Seaway system. Demand for marine transportation in the Great Lakes is NOT totally inelastic and the EPA has a responsibility to determine the extent of modal shift that would occur, to determine the adverse environmental, safety and social impacts that would result when this proposed ruling drives more traffic onto road and rail, and to amend the rulemaking accordingly in order to avoid these adverse impacts.

More trucks and trains means more energy use, more emissions, more noise and congestion, more injuries (truck injuries are 57 times more than marine on a tonne-kilometre basis) and more deaths.

In addition to commercial “modal shift” as a direct result of rate increases due to the higher costs of distillate fuels over that of the current cost of propulsion with residual fuels, we can calculate further modal shift as a result of lost production. Lost production can be quantified in two areas: 1) the idling of Steam Vessels, and; 2) the potential loss of speed due to fuel switch on the remainder of the fleet, discussed below.

Steam Vessels: The entire Canadian fleet of steam propulsion “bulk commodity” vessels will require an 85% to 120% fuel cost increase, eliminating their commercial viability. Steam vessels would have to be significantly modified to accept MDO as the fuel used in the boiler and these costs are not considered viable in any market demand, when added to the large increases in operating cost. The CSA fleet alone will lose 12% or 6 of its 49 bulk carriers. We have been advised that the number of US domestic steam propulsion vessels that would be idled is almost double that of the Canadian fleet. The loss of the Canadian steamers represents the loss of approximately 9.36 Billion Tonne Kilometres of freight availability (including one other non-CSA member steam vessel). Any loss of vessels results in a shift to less environmentally friendly modes when the demand on the fleet is at 100% of vessel capacity (which was the situation for the majority of the 2008 navigation season).

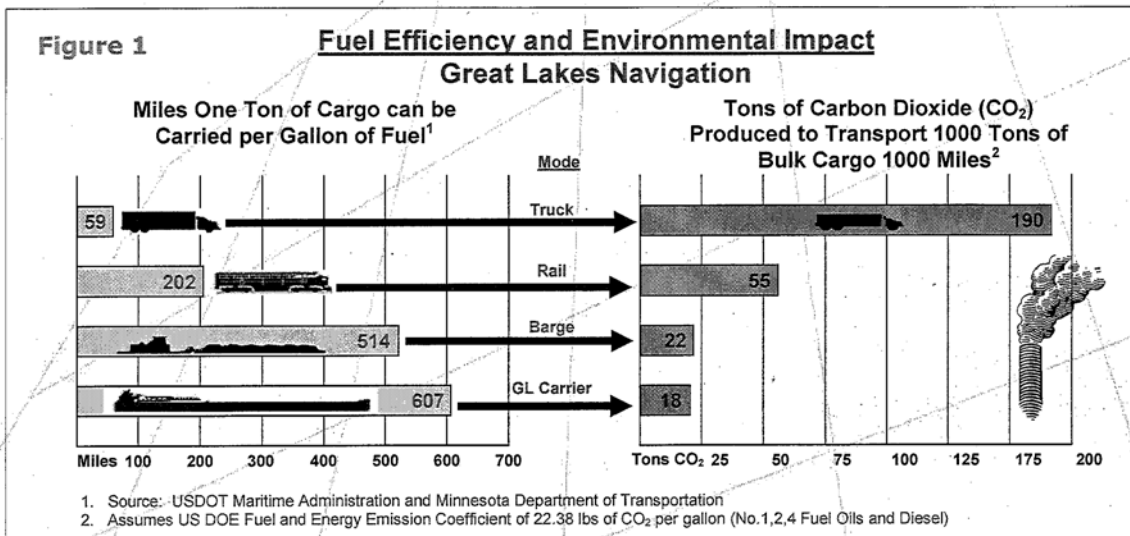
The very nature of steam vessel trading patterns (they generally are only profitable on very long trades due to the high cost of in port fuel use) would limit both the US and Canada primarily in the area of wheat/grain/soybean export to the world market. Without the ability to competitively ship domestically grown grains, the effect on the livelihoods of many US and Canadian citizens involved in agriculture would be severely crippling.

Speed of Diesel Propelled Vessels: The bulk of the Canadian fleet is designed to operate on Intermediate fuel and thus all of the auxiliary engineering systems are in support of this fuel type. MDO has a higher calorific value by weight, but a lower calorific value by volume. Because of this, engine fuel rack settings will have to be increased by about 10% to obtain the same power output, and therefore maintain speed. Engines in the current fleet are generally over 30 years of age and it is unknown if the fuel rack will be able to overcome these new volumes and a result may well be a loss of speed. We expect that there will be a loss of 2.5% to 5% in overall speed due to the difference in fuel properties, but at this time (without actual fuel shifting) this cannot be accurately quantified. Any loss of speed results in modal shift when the demand on the Canadian fleet is at 100% of vessel capacity. A 5% loss of speed equates roughly to a loss of approximately 3.6 billion tonne-kilometres of freight availability.

Environmental Consequences of Loss of Modal Competitiveness

Clearly, either a modal shift or a loss of global competitiveness will carry economic repercussions. Less obvious, however, are the environmental consequences of either of these outcomes. Marine transportation has many environmental advantages that will be lost if marine carriers lose their competitive advantage. There would be drastic increases in emissions because moving goods on the water is the most energy-efficient means of transporting them (see Figure 1 below), and has strong advantages over land-based modes in terms of overall air pollution as well. The adverse environmental impacts of shifting marine traffic onto rail and already overcrowded roads are so negatively staggering that there is an obvious need for the US EPA to take a step back and do a full and complete analysis prior to

moving forward with any rulemaking on marine air emissions in the Great Lakes/St. Lawrence. The effect of the proposed rulemaking is so environmentally negative that to do otherwise would be indefensible.



CSA studies indicate that, as a direct result of a 15% modal shift due to lost competitiveness and lost production, greenhouse gas emissions associated with CSA’s current traffic will increase by more than 60%, NOx will increase by more than 10%, VOCs will increase by close to 30% and CO by more than 70%.

It is also important to note that marine transportation, because of its very nature, tends to take place mainly away from populated areas – in clear contrast with both rail and road transportation. It does not generate a great deal of noise and requires relatively little infrastructure compared to the volume of trade. Diversion of traffic from the underutilized Great Lakes Seaway marine highway means that already stressed road and rail networks will become even more congested and increased investment in land-based infrastructure will be required. A diversion of traffic to trucks, for example, means that one laker would be replaced by a convoy of trucks that would stretch 20 miles long. It is not difficult to imagine the additional air pollution and extensive road congestion resulting from putting just one laker out of business.

In addition, the safety record of marine transportation is substantially better than either road or rail – having accident and fatality rates impressively lower than competing modes. Injuries per tonne-kilometre carried by rail are 14 times higher than marine and trucks are 57 times higher than marine. Fatalities per tonne-kilometre carried by rail or by trucks are 7 times higher than marine. Harmful discharges (spills) from rail are 75 times more frequent than marine and nearly 2,000 times more frequent by trucks. Truck and rail impose the greatest noise nuisance per tonne-km compared to marine and have the greatest negative impacts in terms of congestion. Although truck and rail have a minor advantage related to particulate matter from engine combustion, this advantage is overestimated because the particulate matter produced from surface matter disturbance from vehicle operations (asphalt, rubber, dust) is not included.

At the same time that government policy in both Canada and the US is trying to promote short sea shipping as a solution to traffic bottlenecks on both roads and railways, the increasing costs of doing business will have the opposite effect and drive investment away from marine transportation. U.S. and Canadian domestic carriers operating freight movements in confined internal waters, where road and rail are competitors, are by their very nature engaged in “Short Sea Shipping”.

Global Competitiveness

For those trades within the Great Lakes which are not subject to modal competition because, for example, the receiving facility has no rail link, we face a different type of problem: these industries may simply shut down their Great Lakes facilities and shift production elsewhere or cease the manufacturing or the growing of the commodity for sale. This is of particular concern in the case of the steel industry and the US midwest grain industries because their markets are subjected to intense global competition. For Great Lakes industries whose facilities are equipped primarily to receive raw materials by ship only, large cost increases in marine transportation will quickly erode their global competitiveness.

Increasing fuel costs for marine carriers will have a strongly negative impact on their ability to serve key customers whose Great Lakes facilities compete in a global marketplace and have no other viable options for their freight transportation needs. This is likely to lead to these customers moving the business of these facilities overseas to jurisdictions where transportation and other costs are lower and air emissions standards are less onerous or not in existence.

Although higher transportation costs associated with raw materials for steelmaking may not cause a “mode shift”, the cost increases are substantive enough to be an influencing decision about where in the world it is cheaper to make the steel. Most US and Canadian steel mills are owned by multi-national steelmakers who have larger facilities in parts of the world where labour is cheaper and emission standards are less onerous. Shift of production for the steel industry and other industries that have “Global Shift” options must be carefully analysed by the EPA in this rulemaking. It is a current and verifiable phenomenon that at the bottom of the recession, many North American-based producers, who have other plants overseas, have decided to resume operations in these foreign countries prior to restarting in North America – and this is with current cost competitiveness, without the added burden of the costs associated with the ECA.

The EPA has not considered these possibilities in their analysis. Steelmaking is vital to the economies and industrial autonomies of both Canada and the US and to not study the effects of this rulemaking on this industry is a major deficiency in the analysis. One steelmaker, based in Indiana Harbour (where he can be serviced by rail), indicates that for just one of the four blast furnaces that they operate, two train-sets per day, of over 2 miles in length, 7 days per week, would be required to feed the iron ore requirements of the one blast furnace.

The steel market accounts for over 50% of the CSA member fleets’ commercial voyages and may account for a higher percentage with the US domestic fleet. Any loss of tonnes of steel produced has a higher tonnage loss related to marine transportation as it generally takes more tonnage in raw materials to make one tonne of steel. See the following table for US Manufacturing; these ratios are likely higher in Canada due to the requirement to receive coal/coke/stone primarily by water.

US Lake-Delivered Inputs per Ton of Finished Prime Steel with Fluxed Pellets, no sinter; does not include any Lake coal or coke deliveries		
Process Output	Lake Delivered Input	Ratio Input/Output
Taconite Pellets	Fluxing Stone	0.13
BF Ironmaking	Taconite Pellets	1.50
	Siliceous Ore + Bauxite	0.03
Lime Production	Limestone	2.00
Steel slab production	BF Iron	0.96
	Lime	0.05
Coil Production	Steel Slabs	1.26
Overall Ratio, Lake Inputs/Prime Steel:		2.20

Canadian steelmakers have advised the CSA that over the medium term, marginal costs will have a huge impact on whether production and, more critically, investment will occur in North America or elsewhere. Although a 60 to 100% increase in fuel costs relative to other production locations may not have a large impact on the average cost of steel production, it will likely have a determining impact on marginal costs and decisions about where steel will be produced and where capital investments will occur. Such cost increases, which could easily exceed \$50 million per year for Canadian steel plants and which are not faced by competing overseas plants, will go straight to the bottom line.

The economic consequences of putting the Great Lakes steel industry at a competitive disadvantage must not be overlooked: this will contribute directly to further de-industrialising the heartland of North America, with associated increases in unemployment and a worsening of the already precarious economic situation in an area hard hit by the global financial crisis and subsequent "Great Recession".

Environmental Consequences of Loss of Global Competitiveness

As the above analysis shows, there is a risk that manufacturing and industrial production will shift overseas where air pollutants per unit of output are a multiple of those here – leading to much more extensive adverse global environmental consequences. Other countries producing steel may have lower environmental protection standards than North America does, leading to higher emissions of pollutants in those countries and for the world overall, eventually affecting North America.

There is also a further set of environmental consequences to be considered, as the steel that is needed for North American industries will have to be imported from other regions, increasing the GHG and air emissions intensity of that product as the raw materials are transported thousands of kilometres overseas from North America only to be shipped back over those same thousands of kilometres as finished product. In an era of acute concern over

climate change, how can we in good conscience contribute to a further globalisation of an industry that functions perfectly well where it is currently located, in the Great Lakes region?

Availability and Cost of Fuel

The fuel supply chain in the Great Lakes and St. Lawrence region has been established over decades. It will take time to adapt that supply chain to meeting the demand for low-sulphur fuels without incurring the emissions penalties of shipping fuel back and forth from the Gulf of Mexico. Refining capacity to meet increased demand for distillates does not exist in the Great Lakes region, so fuel will have to be transported to refineries elsewhere – likely in the Gulf of Mexico – and then transported back to market. Residual fuels currently produced in the Great Lakes region would need to be shipped elsewhere for further refining.

Blending IFO to meet LS fuel requirements is not a case of simply adding more MDO to bunker. Blends using typical feed stocks may prove unstable at the blend percentage needed to meet the 1% sulphur requirement. A recent survey of fuel refiners in Canada, conducted by CSA members, has indicated that there is little likelihood of residual fuels with a sulphur content of less than 1% being available to support the Great Lakes market in 2012. Effectively, the marine industry will have no alternative but to switch to distillate fuels once the fuel standard is reduced to 1% sulphur content.

The availability of distilled product in North America is a matter that needs to be determined. The IMO expert group did not arrive at a definite answer for global supply. North American refineries, traditionally, are configured primarily for gasoline production. Increasing distillate fuel will require capital investment and will take some time. At the International Maritime Organization MEPC 59 meeting, China raised the question of secure fuel supply for the new ECA and it is not an irrelevant concern. The EPA should be sensitive to the fact that there is concern about possible refinery closings in Canada, such as Shell Canada's Montreal refinery and this should be cause for concern and closer study. The closing of a Montreal refinery will eliminate a significant portion of LS-IFO from the Canadian market.

These fuel supply and transportation issues will result in a further unintended increase in environmental impact, due in particular to the increased shipment of unrefined fuels out of the region for processing and commensurate shipment of refined products back into the region to meet the new sulphur content regulations. This will result in increases in emissions of air pollutants and GHGs, not to mention possible exposure to invasive species, associated with this additional traffic of fuel to and from the Gulf of Mexico in particular.

The total negative aggregate environmental impact and the additional life-cycle environmental impacts involved in this must be included as part of the EPA's analysis informing the proposed rulemaking. The US EPA has overlooked these realities in this proposed rulemaking. At a time when the IPCC is warning that climate change indicators are tracking beyond even their most pessimistic simulation scenarios, we need to be doing all we can to make maximum use of modes of transport that are highly greenhouse gas-efficient, as ships are, rather than finding ways to indirectly generate far more greenhouse gases by vastly increasing fuel shipping requirements for no demonstrated purpose.

Recent third party information (Bunkerworld – Lloyds List) suggest that on top of the price differential and penalty associated with the switch from IFO fuel to MDO, we can expect a \$100 to \$150 additional premium applied on a per tonne basis due to the availability-of-supply and importation issues mentioned above. Again, as is a common theme, the EPA has not

included the true costs of the proposal in the cost analysis used to support this proposed rulemaking.

Technical issues

The marine engines in the CSA fleet comprise low speed 2-stroke and medium speed 4-stroke diesel engines. All low speed engines are 30 years or older and all are designed to operate on heavy fuel. Wartsila, one of the leading low speed engine makers warns in a 2002 paper that a switch from high-sulphur heavy fuel oil to low-sulphur fuel can lead to high deposits on the piston crown and of consequent engine damage if lubricating oil feed rates are too high, if the engine is not equipped with a polishing ring, if there is high humidity in the scavenge air, etc. Since the old engines used in the CSA fleet have much higher than the recommended 1.0g/kWh lube oil consumption rates these engines are at risk with a switch to low-sulphur fuel, required in the ECA. A permanent switch to MDO will require consultation with engine manufacturers to determine the appropriate modifications, modifications that may not be practical or even possible to 30 year old engines.

There is a further technical issue with the form of the proposed rule: the prohibition on production and sale of fuel above the specified sulphur content thresholds effectively makes the use of abatement technologies irrelevant. This is despite the fact that Regulation 4 of MARPOL Annex VI specifically states that Parties may allow the fitting of devices which are “at least as effective in terms of emissions reductions as that required by this Annex, including any of the standards set forth in regulations 13 and 14 [on NOx and SOx emissions, respectively]”. Given the EPA’s past willingness to allow for technological innovation in improving environmental protection, it is puzzling that this proposed rule would effectively preclude the development of scrubber technologies for use in the Great Lakes.

Annex VI permits the use of Exhaust Gas Cleaning systems on ships burning higher sulphur content heavy fuel oil while in an ECA, to achieve compliant exhaust gas quality. Technology is being developed and prototype testing is being carried out. It seems reasonable to assume that IMO will implement exhaust gas scrubbing regulations as soon as there are adequate numbers of systems and technologies approved and available. To date these systems are developed for operation on ocean-going ships using seawater as scrubber medium. Freshwater scrubbers are being considered; to date no full scale tests have been carried out in fresh water. The costs for a typical great lakes ship are in the order of \$1,500,000 capital cost plus an equal sum for installation. It is therefore readily obvious that without the ability to purchase heavier S-content fuel post 2014 that there would not be the conditions required to achieve a suitable return-on-investment for the equipment. Equally important, the development and testing of scrubbing equipment suitable for the Great Lakes is not sustainable without the hope of benefit. Who will invest in this technology if it must be market ready by 2012 and obsolete by 2014?

Since the technology for freshwater scrubbing is not yet proven, it is inconceivable that an appropriate technology could be developed and installed on the entire Great Lakes fleet in less than three years when marine carriers will need to decide whether to switch to distillate fuels or lay up a ship. This is not a performance based standard when it is technically impossible to achieve. Even if fuel suppliers were allowed to produce residual fuels in the US, they would have no incentive to do so if there was insufficient time to develop and install the technology required to use those fuels. If the EPA truly wants to implement the IMO performance standard, they must provide sufficient time for the technology to be developed, tested and installed on the Great Lakes fleet.

It must also be noted that the fuel sulphur production limit as proposed will put US fuel suppliers at a considerable competitive disadvantage, since ocean vessels using abatement technologies such as salt water scrubbers will be able to buy cheaper fuel with higher sulphur content in other countries, and simply burn it in US waters while using their scrubbers to clean the exhaust. This will remove any incentive such vessels may have to buy low sulphur fuel produced in the US as mandated by the proposed rule. In essence, in addition to disadvantaging the US fuel supply industry, the EPA is also promoting a competitive advantage to foreign flag, foreign crewed vessels over those currently servicing the prime interests of the US and Canada.

As mentioned above, the CSA has grave concerns regarding the timing of the 1% sulphur target for 2012. Due to fuel stability issues, it is not technically feasible to blend intermediate fuel oils with MDO beyond a certain proportion; usually, 30 or 40 centistokes is the lower threshold of viscosity below which the fuel becomes unstable and therefore unusable. At this level of blending, it may be possible to meet the 1% limit, but this is highly unlikely. As a result, the 1% sulphur limit for 2012 effectively means that vessels will be forced to burn MDO while in waters covered by the proposed rule (including all of the Great Lakes) in order to be certain that the 1% limit has been met. Effectively, this imposes the 0.1% sulphur limit in 2012, not in 2015, as it should be under MARPOL Annex VI. This means that marine carriers operating in the ECA will be hit with these higher costs sooner than anticipated, making the cost curve harder for them to absorb.

We also wish to raise an issue that was identified by the US Coast Guard in a Marine Safety Alert on June 16, 2009. USCG is concerned that vessels switching between residual fuels and distillate fuels may experience loss of propulsion “linked to procedural errors or fuel oil incompatibility”. If the US adopts the Great Lakes as an ECA, and Canada does not, fuel switching would not be feasible on most routes because of the high number of border crossings on each voyage and the technical difficulties associated with continuous fuel switching. However, even if fuel switching was technically feasible on some routes, the concern about loss of propulsion in the confined waters of the Great Lakes/ St. Lawrence Seaway system may present unacceptable safety risks. Losing power for even a short period of time could have disastrous consequences in one of the canals or in a fast flowing river. The USCG comment follows:

“On June 16, 2009, the USCG’s Office of Design and Engineering Standards and Office of Investigations and Analysis issued a Marine Safety Alert. The text of the alert is reproduced below. Please also note the reference to the API technical paper which is available at the internet address provided within the body of the alert.

Avoiding propulsion loss from fuel switching: American Petroleum Institute Technical Considerations. Ships switch fuel oil from residual fuels to distillate fuels in order to reduce emissions. The Coast Guard expects ships will switch fuel more frequently to comply with new emission reduction regulations. When switching fuel oil, some ships have experienced propulsion losses linked to procedural errors or fuel oil incompatibility”.

Flaws in Cost-Benefit Analysis

The EPA's description of the benefits of sulphur emission reduction in the coastal IMO-sanctioned ECA is not directly transferable to inland waters such as the Great Lakes. This is because the proportion of sulphur emitted by the marine industry is so much smaller in the Great Lakes than on the coasts. According to the analysis conducted by Environment Canada to support the joint Canada-US application for the coastal ECA, the marine contribution to sulphur deposition in the Great Lakes and St. Lawrence region is on the order of 2%, ranging on occasion as high as 5% but no more. This is in direct contrast with other regions where marine emissions can account for 60% or more of sulphur deposition, as is the case on North America's west coast, for example.

It must also be noted that prevailing winds take emissions from eastern North America eastward, not into the centre of the North American continent. Section 2.4.3.2 of the draft Regulatory Impact Analysis document for the proposed rule shows that in the Great Lakes area, reductions in sulphur deposition of 0-1% are expected in most areas, with expected reductions of 1-3% in some areas. This is in stark contrast with the major transoceanic shipping lanes on the west and east coasts (as depicted in Figure 2-32 of the draft Regulatory Impact Analysis) where expected reductions are on the order of 25% or more.

We question the air pollution modelling of marine emissions for the east coast ECA. Whereas the US – Canada ECA submission to IMO suggests that marine pollution is carried uniformly inland from the east coasts, the 2009 study of global marine emissions by S.B. Dalsoren et al (www.atmos-chem-phys.net/9/2171/2009/) suggests that emissions on the North American east coast are carried to sea by the prevailing winds. This study analyzes pollution by various ship types, showing that container ships are the primary contributors of marine air pollution. Large container ships do not come upriver of Montreal and into US internal waters and therefore do not contribute to "lakes" emissions.

This disparity highlights an important flaw in the proposed rule. The economic cost to the shipping industry of reducing emissions may be outweighed by the benefits where large reductions are possible, as they are on the coasts and in the major ocean shipping lanes. However, by applying the same standards to the Great Lakes industry as it does to the ocean-going industry, the proposed rule imposes a higher economic burden on Great Lakes shipping (because Laker vessels cannot switch to higher-sulphur fuels for most of their journey as ocean-going vessels can) while achieving only about one-tenth of the benefit that is achieved for ocean shipping (1-3% versus 25% reductions). This is not an equitable outcome of the proposed rule and needs to be reconsidered.

The EPA's analysis needs to consider efficiencies in terms of emissions intensity. The EPA currently considers reductions in the ECA for US and Canadian vessels as similar to the reductions to be achieved for ocean-going vessels. As explained previously, our fuel supply is geographically limited. While an ocean-going vessel can currently purchase and burn up to 4.5% sulphur in fuel, the reality for the Canadian fleet in the Great Lakes is a fleet average sulphur content of only 1.7%. Again, the EPA analysis overestimates the benefits of applying the ECA rules in the Great Lakes.

Procedural Issue

The procedure followed for this rule has been highly irregular: first the rule was made available on July 1, 2009, in a “pre-publication” version on the EPA website with a notice that comments would be accepted until September 5, 2009. No official notice appeared in the Federal Register, despite the requirement for such publication under the Administrative Procedure Act (5 U.S.C. § 553(b)), which states: “General notice of proposed rule making shall be published in the Federal Register, unless persons subject thereto are named and either personally served or otherwise have actual notice thereof in accordance with law.” Finally, the proposed rule was published in the Federal Register on August 28, 2009 – just eight days before the original comment period was to have closed. The August 28 publication allowed just 30 days for formulation of comments, with the new deadline for submission set for September 28.

Normal administrative practice is to allow 30-90 days after publication of a proposed rule in the Federal Register for interested parties to submit their comments on the proposal. Given the far-reaching effects of this proposed rule on the US and Canadian marine carriers on the Great Lakes, and on the industries they serve, we strongly feel that more time is needed to give this issue the consideration it requires. EPA should allow the maximum permitted time for comment on the official, published version of the proposed rule if it intends on proceeding to final rulemaking with this flawed regulation.

Other Considerations

There is concern that the EPA is taking liberties with the ambiguities of the US “Act to Prevent Pollution from Ships” and that there is no real legal authority to include the internal waters of the US when implementing Ocean Going IMO Standards. Since this legal uncertainty will not likely be concluded prior to 2010, the final rulemaking for the Great Lakes should be postponed at least until there is a clear legal basis on which to establish the new rules.

The EPA has not included the Pacific US Territories, smaller Hawaiian Islands, the US territories of Puerto Rico and the US Virgin Islands, nor Western Alaska including the Aleutian Islands and the Arctic in the ECA submittal to the IMO because further information is required to properly assess these areas. It is very clear that the EPA does not have the data necessary, and has not studied the vessels and/or industries that the ECA will affect, to justify inclusion of the Great Lakes into an ECA. It is this same lack of data and analysis that currently exempts the territories referenced above. For this reason alone, the EPA should withdraw this proposed ECA rulemaking for the Great Lakes while it determines specific requirements for the Lakes and develops the best approach to achieve air emission reductions in the region.

The EPA should not be prescriptive in its approach, but rather should be willing to investigate a measured approach to improving air quality issues related to domestic (Canada and the US) marine shipping. The EPA should recognise the shared waters for which this rulemaking is applied and the profound adverse impact that it would have on domestic marine movements in Canada. The CSA believes that the EPA should hold true to the intent of the International Boundary Waters treaty of 1909 and conduct rulemaking in a bi-national and cooperative fashion with Canada.

Recommendations

It is our view that the EPA is not sufficiently cognizant of the differences between ocean-going shipping and Great Lakes marine transportation and has rushed to parallel timelines with the North American ECA without due consideration of these differences. The EPA analysis of the impacts of this rulemaking in the Great Lakes is flawed and the rulemaking must be put on hold and the timeline extended until a proper analysis and review of the costs and benefits of applying the ECA to the Great Lakes is completed.

Specific CSA recommendations follow:

1. The proposed rule needs to better account for regional variation in its costs and benefits, particularly where the Great Lakes and St. Lawrence are concerned. It is very clear that the EPA does not have the data and analysis necessary to justify application of the proposed rulemaking to the Great Lakes. For this reason alone, the EPA should withdraw this proposed ECA rulemaking for the Great Lakes while it determines specific requirements for the Lakes and develops the best approach to achieve air emission reductions in the region.
2. The analysis of the environmental consequences of modal shift due to the increase in costs for marine transportation needs to be investigated in a much more thorough fashion than has been done to date. As we have briefly outlined above and in the attached report, what makes sense for ocean-going trades does not make sense for marine carriers operating primarily in the Great Lakes and St. Lawrence River. Demand for marine transportation in the Great Lakes is NOT totally inelastic and the EPA has a responsibility to determine the extent of modal shift that would occur, to determine the adverse environmental, safety and social impacts that would result when this proposed ruling drives more traffic onto road and rail, and to amend the rulemaking accordingly in order to avoid these adverse impacts. In the Great Lakes, the economic burden borne by industry will be higher and the defined benefits to the public and to the environment will be much smaller; in fact, the real overall environmental impacts will be negative. We recommend that EPA undertake a thorough study of the particular situation of the Great Lakes and St. Lawrence region, where marine carriers are in competition with land modes, with regard to the potential for modal shift and sourcing shift and the associated negative environmental impacts.
3. An effective rule to control air emissions should allow for the use of technology to reduce air emissions and not simply specify fuel standards. In addition, an effective rule needs to allow time for suitable technologies to be developed and implemented. If the EPA truly wants to implement the IMO performance standard, they must provide sufficient time for freshwater scrubbing technology to be developed, tested and installed on the Great Lakes fleet.
4. Since the Great Lakes and St. Lawrence are bi-national waterways, air emissions policy will need to be coordinated between the US and Canada. Domestic policy of the US and Canada on this issue will affect both fleets, as vessels regularly cross the international boundary in the course of their normal movements: on a typical trip from Montreal to Thunder Bay, a vessel may cross the border more than two dozen times. In order for coordinated, effective regulations to be established, then both countries must take into consideration the Great Lakes shipping industry as a whole.

5. Prior to, and in order to determine the best corrective action or rulemaking to be applied to the bi-national Great Lakes waters of Canada and the US, a proper analysis and problem statement needs to be concluded for the region being regulated. EPA should work with the Canadian government to develop an implementation schedule in this bi-national waterway that makes sense for both countries, that preserves marine markets rather than driving traffic to less environmentally friendly modes, that allows the ship fuelling industry time to develop an efficient and effective supply chain, and that provides an investment climate conducive to gradually renewing the domestic fleet with more efficient ships that meet higher environmental performance standards.
6. The reduction in air emissions in the Great Lakes must be achieved in a manner that minimizes the risks of modal shift and industrial diversions, and thus avoids the adverse environmental consequences associated with these risks. The new rules must allow sufficient time to phase in the new standards and/or new technology in order to mitigate the adverse unintended consequences of modal shift, fuel supply disruption and lost economic activities.
7. One option that should be examined is the gradual but continuous reduction in air emissions between 2012 and 2020 by establishing air emission reduction targets on a fleet average basis. Rather than implementing the IMO ECA targets in 2012 and 2015, the fuel standards should be introduced over a longer period of time that allows the marine transportation industry and its customers in the Great Lakes to adapt to the new standards without driving business away. This approach would enable an achievable and orderly transition to reduced air emission objectives, provide time for marine markets to adjust to large price increases, and provide incentives to invest in new technologies and new ships with improved environmental performance.

Conclusion

Air emissions from marine transportation in the Great Lakes/St. Lawrence waterway must be reduced in a way that allows marine transportation to remain competitive with other modes and to continue to serve the public interest. The proposed EPA rules on air emissions, as written, will put the Great Lakes marine transportation system at high risk, including ports and the bi-national Seaway. The proposal will threaten manufacturing, exports and a multitude of companies and jobs in North America's industrial heartland. This will require a bi-nationally coordinated regime.

The analysis accompanying the proposed rule is flawed in that it does not take sufficient account:

- of the particular circumstances of the Great Lakes and St. Lawrence region,
- of the problem of modal shift away from the marine mode due to the sudden increase in the price of marine fuels,
- of the competitiveness issues facing industries which participate in global markets, or
- of the fuel supply chain implications of implementing the proposed rule.

All of these have adverse environmental consequences which must be taken into account in evaluating the proposed rule's costs and benefits. Nowhere in the document does the EPA make the case for creating an ECA in the Great Lakes. EPA needs to undertake more rigorous study of the negative environmental impacts of the unintended consequences of the proposed rule.

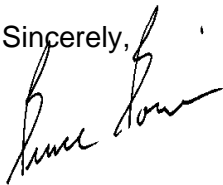
Marine transportation is green transportation. At a time when climate change is becoming an ever-greater threat, it is important to maximise the use of the most energy-efficient mode of freight transportation we have: the marine mode. It is possible to reduce sulphur emissions from ships while preserving the other environmental advantages that marine transportation offers. The CSA is open to discussion with EPA to find a workable solution that will reduce sulphur emissions and improve air quality on the Great Lakes while preserving the ability of the Canadian and US Great Lakes marine carriers to stay in business. Any proposed rulemaking must allow the Great Lakes marine industry to employ abatement technologies (assuming the purchase of higher sulphur content fuel is authorised for this purpose), encourage continuous improvement methodologies, provide for realistic and achievable phasing in of new requirements, and provide incentives to improve the environmental performance of the marine mode.

The new rules must be phased in over sufficient time to allow marine transportation markets time to adjust to increased costs rather than shifting to other modes, to allow the ship fuelling industry to develop an efficient and effective supply chain, and to allow the marine carrier industry to introduce new ships and/or new technologies with enhanced environmental performance before their markets are lost to other modes.

We look forward to continued dialogue and would welcome the opportunity to assist the EPA in understanding the realities of Great Lakes marine operations and in conducting the necessary environmental and commercial analysis. We strongly urge the EPA to develop alternative, sustainable strategies that allow a more achievable timeline for air emission reductions from the marine mode while at the same time preserving the superior environmental benefits that the US and Canadian marine transportation has to offer.

Thank you for accepting our comments on this very important matter. We look forward to your response.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce Bowie", written in a cursive style.

Bruce Bowie
President