

Lake Carriers' Association

The Greatest Ships on the Great Lakes



BEST MANAGEMENT PRACTICES (BMPs)

Past & Present

BALLAST WATER

Federal Legislation Stalled • States Frustrated



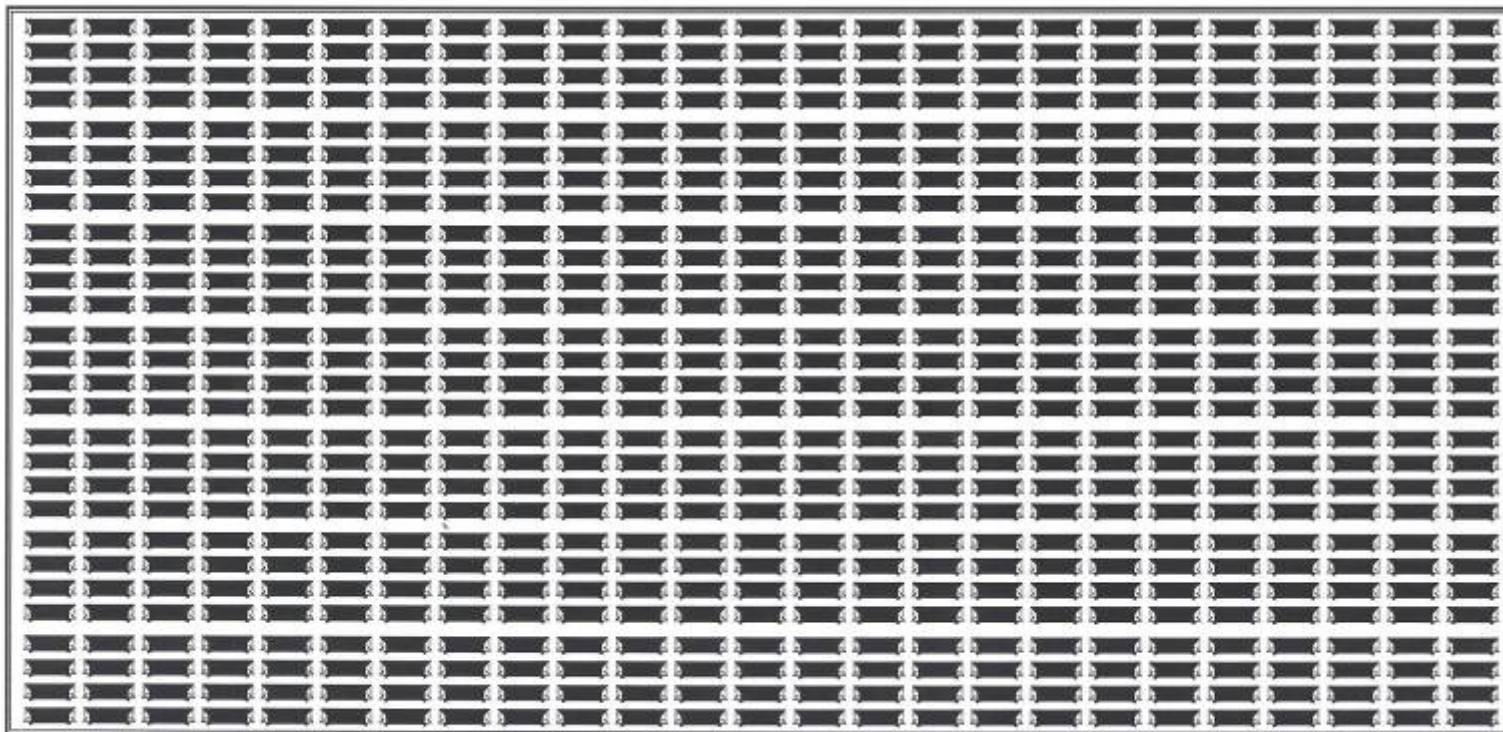
The battle to stop more introductions of exotics into the Great Lakes will be won or lost in the ballast tanks of ocean-going vessels, NOT Lakers.

WHAT IS AT RISK:

- **200 Million Tons of Dry-Bulk Cargo**
- **Power Grid – Coal Transportation**
- **Construction Industry – Stone Trade**
- **Steel Industry**
 - ***\$350 Billion*** Annually
 - ***1,200,000 Jobs*** (U.S.)
- **Mining Industry**
 - ***\$1.5 Billion*** in MN (? MI, WI, WY, Canada ?)

**IN ONE TRIP, A 1,000-FOOT-LONG GREAT LAKES
SELF-UNLOADER CARRIES THE EQUIVALENT OF**

SEVEN 100-CAR UNIT TRAINS



= 100 NET TONS PER RAILROAD CAR

**IN ONE TRIP, A 1,000-FOOT-LONG GREAT LAKES
SELF-UNLOADER CARRIES THE EQUIVALENT OF**

2,800 TRUCKS



Photo: Rod Burdick












INDUSTRY SEGMENTS

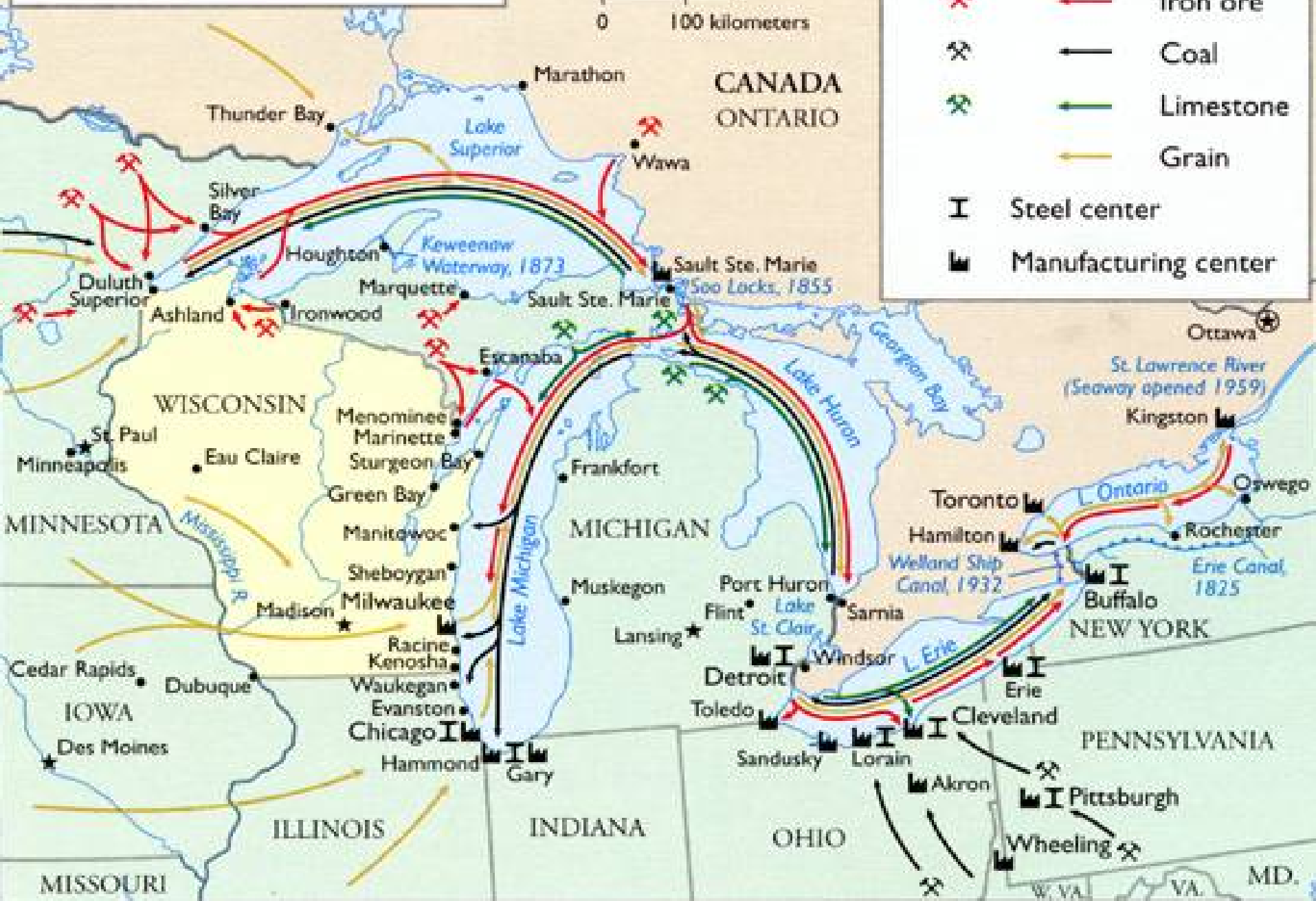
- **Differ By:** Trade Route, Vessel Size, Cargo Volume of Ballast and Flow Rates of Ballasting Systems.
- **Domestic U.S.-Flag.** Great Lakes (*Primarily Upper 4*).
Represented by Lake Carriers' Association.
Primarily Moving Iron Ore, Coal, and Stone.
- **Domestic Canadian-Flag.** Great Lakes & Seaway
Represented by Canadian Shipowners Association (CSA).
Primarily Moving Iron Ore, Coal, Stone, and Grain.
- **Salties.**
Represented by ShipFed and U.S. Great Lakes Shipping Assn.
Ocean-Going Vessels Importing Steel and Exporting Grain.

GREAT LAKES SHIPPING



Mining Shipping

-   Iron ore
-   Coal
-   Limestone
-   Grain
- I** Steel center
-  Manufacturing center



VOLUMES & FLOWS

Ship

Capacity

Rate

(Gallons in Millions)

(Gallons Per Minute)

U.S.-Flag

- 1,000'
- 730'

16

52,000 - 79,000

3 - 4

20,000

Canadian-Flag

3 - 4

8,800

Salty *(Seaway Size)*

2 - 4

4,400 - 8,000

Ranger III

.03

Not Applicable - Vents

LCA'S ROLE

- **Develop Voluntary BMPs**
- **Ballast Water Treatment Demonstration Project**
 - Co-Chaired Project with Northwest-Midwest Institute (NEMWI) from 1996-1998 to evaluate filtration, hydro cyclone, and U.V. treatment systems. \$3 million in research.
- **BMPs Developed**
 - 1993 – Ruffe – Lake Superior Ports
 - 1997 – Ruffe – Alpena
 - 2001 – General Guidelines – All Great Lakes
 - 2007 – VHS Fish Virus (Written December 2006 for March 2007 Release)
 - 2008 – Supplemental VHS BMP (Rapid Response)

VHS – BMP PROCESS

- Legal Review

- FIFRA (40 CFR 152 - 186) - Pesticides

- Registration with EPA
 - Proposed Label
 - Directions for its use...

- 33 CFR 151.2035 (a)(1)

- Avoid the discharge or uptake of ballast water in areas within or that may directly affect marine sanctuaries, marine preserves, marine parks, or coral reefs.

- Endangered Species Act

- Section 7 Consultation

VHS – BMP PROCESS

- **Literature Review**
- **VHS – Fish Virus**
- **Treatment Methodologies – General**
- **VHS Specific Treatment Methodologies**
- **Invasive Species Research**
- **Invasion Theory**

VHS & AIS

EXPERT ADVICE

- **Great Ships Initiative**
- **U.S. Geological Survey**
- **Great Lakes Fisheries Commission**
- **U.S. Department of Agriculture**
- **U.S. Coast Guard**

OTHERS CONSULTED

- **Michigan Dept. of Natural Resources**
- **Michigan Dept. of Environmental Quality**
- **Canadian Shipowners Association**
- **New York Dept. of Commerce**
- **U.S. Fish and Wildlife Service**
- **The Shipping Federation of Canada**
- **U.S. Great Lakes Shipping Association**

RISK SCENARIOS

- **Transportation of Live Infected Fish**
- **Transportation of Viral Particle in Decaying Organic Material** (*“fish goo”*)
- **Transportation of Free Floating Viral Particle**

SECTIONS

- **Introduction**

Role of industry, commitment to use voluntary measures to decrease potential of moving fish from affected areas to unaffected areas.

- **What is VHS? How is it spread?**

Description of virus, impacts, and potential.

- **Vessel Action Plan**

Specific actions for vessels departing affected areas to unaffected ports.

VESSEL ACTION PLAN

- **Inspect** sea chest **screens** annually.
(Vice: Every Drydocking -- 5 -6 Years)
- **Elevate** intakes before ballasting.
- **Minimize** ballast uptake.
- **Never Gravity Feed or Empty**
Always use ballast pumps.

**GREAT LAKES MARITIME INDUSTRY
VOLUNTARY BALLAST WATER MANAGEMENT PLAN (BMP)
FOR THE CONTROL OF VIRAL HEMORRHAGIC SEPTICEMIA (VHS) VIRUS
2007 EDITION**

(Issued March 2007)

Owners and operators of vessels sailing exclusively within the Enclosed Aquatic Ecosystem of the Great Lakes recognize their role in assisting the governments of the United States and Canada in controlling the spread of invasive species. This BMP, specifically for the VHS virus, is in addition to general voluntary management practices for aquatic nuisance species. Vessels must use ballast water for safety purposes to provide adequate stability, trim, propulsion, maneuverability, and hull stress management. Recognizing these constraints, the marine industry will do everything within its power, consistent with safety and stability, to decrease the potential of moving fish from affected areas (Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, the St. Lawrence River, and the Canadian Maritime Provinces) to unaffected areas (Lake Michigan and Lake Superior).

WHAT IS VHS AND HOW IS IT SPREAD?

- 1) VHS is a virus that can cause fish to hemorrhage and result in large scale fish mortality in a short period of time. It is known to have existed in fish killed in 2003 in Lake St. Clair and resulted in a large fish kill in Lake Ontario in the spring of 2005.
- 2) VHS can be found in multiple fish species. It does not affect humans.
- 3) VHS is primarily transmitted by fish to fish contact via urine, feces, and sexual fluids. It enters the new host through the gills or wounds. It also may be possible for the virus to be transmitted by infected fish eggs.
- 4) The VHS virus can survive indefinitely in a live host. It is not known how long it can survive outside of a host, but it may be a couple of days. If in contact with decaying organic matter, such as a dead fish, the VHS virus could survive longer and perhaps more than a week, but it is not known for certain.
- 5) Fishery managers are doing what they can to slow the spread of the virus and account for the increase in natural fish mortality caused by the virus; however, once it is in wild fish populations, it is unlikely to be controlled and impossible to be eliminated.
- 6) Potential vectors for the introduction and spread include: aquaculture, bait fish, recreational boaters, sport fishermen, organisms in trade, natural movement of species and predators, or any other vector capable of transporting a viable virus. The U.S. Federal Government is currently conducting a "risk analysis."

FOR ALL VESSELS DEPARTING AREAS KNOWN TO CONTAIN VHS TO UNAFFECTED PORTS

- 1) In lieu of the normal 5-year inspection, annually inspect and replace, as necessary, ballast sea chest screens. Replace screens with the smallest openings allowed by good engineering practice. Inspections will be documented by log entry, diver's report, video report, dry-docking report, marine inspection note, or surveyor's report.
- 2) During cargo operations, while accounting for boom list, hull stress, and bending moments, lighten the ship as much as practical to elevate water intakes before ballasting to minimize sediment uptake and increase water flow.
- 3) Ballast water taken aboard in VHS affected waters should be the minimum needed to ensure the safety of the crew and vessel. Additional ballast water can be taken aboard, once deeper water is reached.
- 4) Ballast water should always be taken aboard or discharged via the pumps and never "gravity fed or drained." This ensures a fish that somehow makes it past the screen is pulverized by the high speed, high pressure, and tight tolerance pump.

VOLUNTARY BALLAST WATER MANAGEMENT PLAN CO-SPONSORED BY:

Lake Carriers' Association • Shipping Federation of Canada • United States Great Lakes Shipping Association

NEXT STEPS

- **Vet through LCA Members** – Agreed to sign on.
- **ShipFed and USGLSA** – Agreed to sign on.
- **CSA** – Opted to develop their own BMP for VHS.
- **CSA, ShipFed, and USGLSA** – To develop rapid response BMP (similar to LCA's) or sign on?

March 08 Supplemental BMP

- Introduction

Reason for Supplemental:

- Confirmed and Unconfirmed VHS Outbreaks

- Additional Information

- Temperature Range
- Risk Reduction
- Disease Management

- Rapid Response Plan

- Ballast Water Exchange – When and How
- Other Actions
- Comply with Federal, State, and Provincial Laws

**LAKE CARRIERS' ASSOCIATION'S
SUPPLEMENTAL VOLUNTARY BALLAST WATER MANAGEMENT PLAN
(BMP)
FOR THE CONTROL OF VIRAL HEMORRHAGIC SEPTICEMIA (VHS) VIRUS
2008 EDITION**

(Issued April 2008)

Operating exclusively within the Enclosed Aquatic Ecosystem of the Great Lakes, Lake Carriers' Association (LCA) members recognize their role in assisting the governments and concerned stakeholders of the United States and Canada in controlling the spread of invasive species and pathogens of aquatic animals. This supplemental BMP, developed following the VHS epizootic in the Great Lakes, is in addition to the general VHS BMP issued in March of 2007. Recognizing the need for vessels to use ballast water for stability and safe operations, LCA recommends its members take every reasonable measure to decrease the potential of moving fish from **KNOWN** affected areas (Lake Michigan, Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, the St. Lawrence River, and the Canadian Maritime Provinces) to areas where the pathogen has **NOT BEEN CONFIRMED** (Lake Superior). This supplemental BMP is being issued as a proactive effort to reduce the potential risk associated with one of a variety of possible vectors of this disease. We will continue to modify procedures as new science-based information warrants.

Additional Best Management Practice recommendations to be implemented during an active fish kill.

Notification to LCA members to initiate the following voluntary actions will be made by the USCG:

- 1) The temperature range in which the virus is known to replicate, and in which fish kills have been detected, is quite broad (37 F - 70 F [3-21 C]). Since this range encompasses the majority of water temperatures found in the Great Lakes throughout the year, LCA recommends following this supplemental BMP regardless of water temperatures.
- 2) In order for the disease to spread, an uninfected, yet vulnerable fish, must be exposed to an active virus, such as with exposure to the bodily fluids from an infected fish. The virus is most stable in a living fish. It can remain active in dead or macerated fish parts, but for a shorter time. Therefore LCA recommends its members take all appropriate actions to insure that fish or fish parts do not enter their ballast tanks. This is accomplished by inspecting the ½" openings screening the ballast water intakes and using pumps as macerators during uptake and discharge. These are also recommendations in the primary VHS BMPs (2007).
- 3) Fish populations are denser near shore and significantly less dense more than 3 miles from shore; therefore, LCA recommends its members, when and where possible, minimize uptake of ballast water in near shore locations. To further reduce risk, when possible:
 - a. Conduct a ballast water exchange in the deepest, warmest water prior to entering Lake Superior (this practice would specifically preclude exchanging ballast water in Lake St. Clair and the western basin of Lake Erie).
 - b. If members are unable to conduct an exchange in the lower Great Lakes, consider doing an exchange in deep, remote waters of Lake Superior.
 - c. Although it is unlikely a live fish or larger fish particle could have entered the ballast system, consider exchanging ballast water within the ship or recirculating it within a ballast tank (pumps act as a macerator to reduce the possibility of discharging fish or larger pieces of fish).
 - d. Continue working with the U.S. Coast Guard and Council of Lake Committees to evaluate additional risk reduction actions.

LCA appreciates the efforts of concerned stakeholders to help our members develop these supplemental BMPs. Please be cognizant that the use of chemicals on ballast water, or other treatment methods, must comply with U.S. Coast Guard regulations and must not violate any State, Provincial or Federal Law.

FUTURE

- **Validate Existing BMPs**
- **Update Science**
- **Explore Other Actions**
 - Rapid Response Plan
 - Other Actions?
 - Pass Federal Legislation (H.R. 2830 and S. 1578)
Specific Additional Authority to USDA for VHS Virus

GREAT LAKES

REGIONAL COLLABORATION

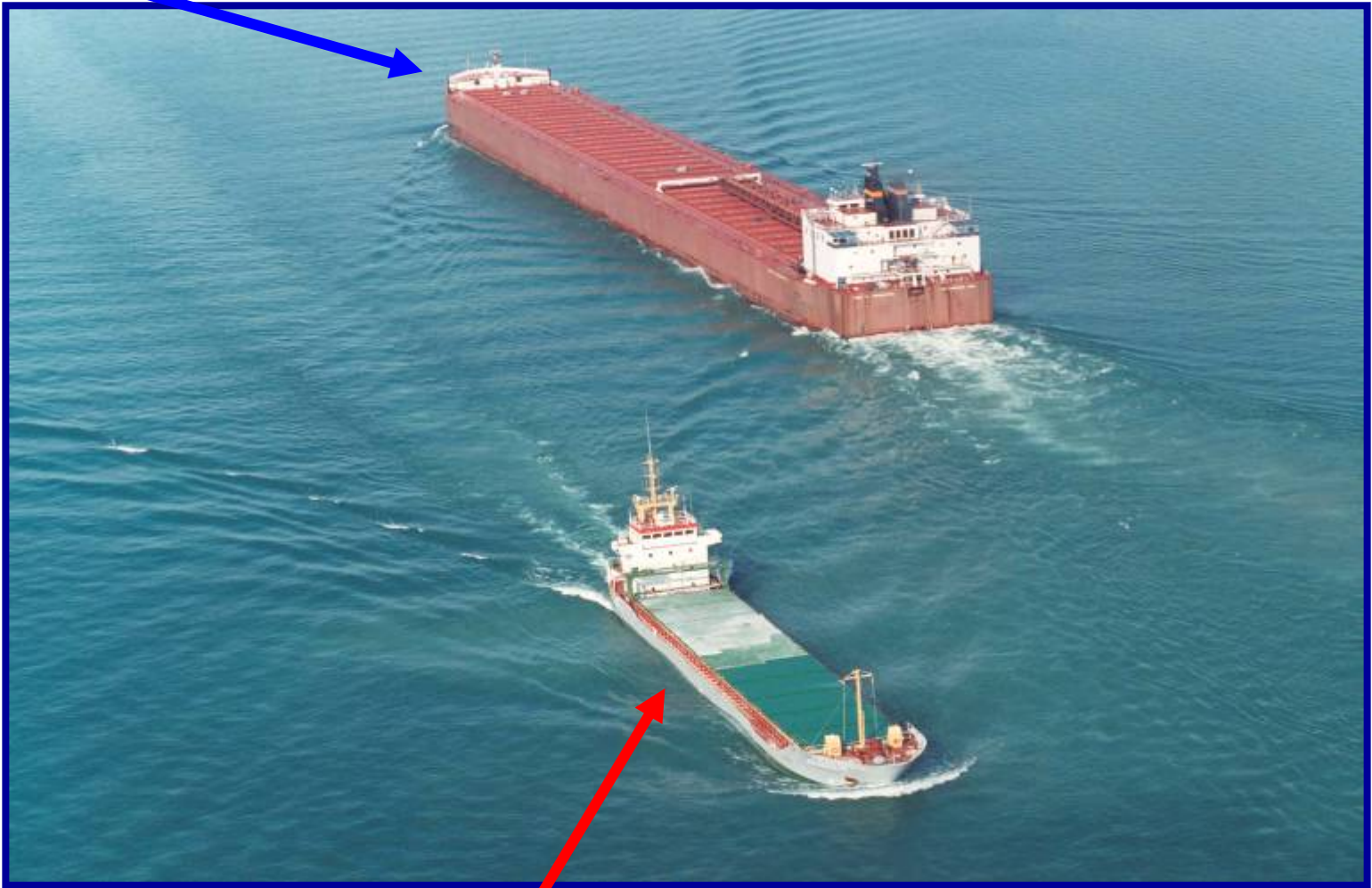
- **STOP Introduction**

By treating ballast water on ocean-going vessels.

- **CONTROL Spread**

By using Best Management Practices on Lakers, recreational vessels or other vectors.

Lakers NEVER leave the Great Lakes !



Salties DO!

Salties must be the focus now and in the future !