You wish to speak to a marine-sector expert?

You wish to get specific information on safety and security, navigation or the environment?

You wish to find the answer to a question about the St. Lawrence and the Saguenay rivers?

Contact the Maritime Information Bureau:

1-581-996-5823
bureaumarine@st-laurent.org
www.st-laurent.org/bim
@BIM_qc

The MIB is a single information window that helps getting quick access to experts and information about the marine sector, its spinoffs and its activities in Quebec.

The MIB’s mission is to help the media, elected officials and the public get relevant, factual marine-industry-related information quickly and efficiently.

The MIB’s objectives are simple:

- **Gather and assemble** relevant information, studies and expertise of the marine industry
- **Efficiently disseminate relevant, neutral and factual information** to the media and the public
THE MARINE INDUSTRY: GENERATING QUÉBEC’S ECONOMIC DEVELOPMENT

Spanning 1200 kilometers—more than 3700 if we count the St. Lawrence Seaway—the St. Lawrence–Great Lakes transportation system is the gateway to North America’s industrial heartland.

4th largest economic zone in North America after California, Texas and New York.

Almost 45% of international traffic in Canada.

THE MARINE INDUSTRY, AN OCEANFUL OF ADVANTAGES FOR QUEBEC’S REGION

- 27 000 jobs on land and at sea
- 366 businesses
- A $2.3 billion share of Québec’s gross domestic product (GDP)
- $1 billion in wages
- $680 million in tax receipts
- 110 million tonnes of cargo transhipped

Source: Quebec Marine Industry Economic Impact Study, SODES, 2012

BREAKDOWN OF MARINE COMPANIES BY CATEGORY IN 2013

Source: Sectorial Study on Quebec’s Marine Industry Human Resources, CSMOIM, 2013
THE TYPES OF CARGO TRANSPORTED ARE:

- Dry and liquid bulk (wheat, ore, oil and chemical products, etc.)
- General breakbulk cargo (steel, aluminum, machinery, various types of equipment, etc.)
- Containerized cargo (wine, fruits, electronic and computer equipment, cars, etc.)

Passenger transport

International cruises
- St. Lawrence River is a more and more popular cruise destination
- In 2014:
  - 27 different ships made **348 stopovers**
  - More than **261 000 cruise ship passengers** and 94 000 crew members

Tour boats
- More than **75 companies**
- A fleet of 150 boats ranging from zodiac to cruise ships

Ferries
- Société des traversiers (STQ):
  - Network of **13 maritime services**
  - More than **5.2 million passengers** and 2.1 million vehicles every year

3/4 of the goods transhipped in St. Lawrence ports are international in origin
Shipping is the safest mode of transport, and the mode posting the best environmental performance. The marine industry intends to remain a sustainable development leader, and to do so, implements various measures and best practices.

**Green Marine**
Green Marine is an environmental certification program for the North American marine industry. Year after year, Green Marine’s environmental program continues to show its effectiveness and its ability to inspire participants to exceed regulatory requirements.

**EXAMPLE OF BEST PRACTICES**

- Voluntary speed reduction measures for:
  - Diminishing river bank erosion caused by ship-generated waves
  - Avoiding collisions with marine mammals (increased detection time and vessel reaction time)
- The International Maritime Organization (IMO) establishes sulphur oxides emission limits in its regulations. Canadian regulations have established even more stringent limits.
  - Use of fuel with low sulphur content (e.g. Liquid Natural Gas)
  - Technological improvements (e.g. scrubbers or other abatement technologies)

**GREENHOUSE GASES (GHG)**

$\text{CO}_2$ emissions linked to shipping are lower than for any other mode of transport.

Shipping accounts for **1.1%** of all transport sector emissions (-40.4% compared to 1990)
COMPARISON BETWEEN MODES OF TRANSPORT

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>CO₂ Emissions (grams per tonne-km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very large container vessel (18,000 teu)</td>
<td>3.0</td>
</tr>
<tr>
<td>Bulk carrier (10,000 - 34,999 dwt)</td>
<td>5.9</td>
</tr>
<tr>
<td>Trucks (&gt; 40 tonnes)</td>
<td>7.9</td>
</tr>
<tr>
<td>Oil tanker (80,000 - 119,999 dwt)</td>
<td>80.0</td>
</tr>
<tr>
<td>Air freight (747, capacity 113 tonnes)</td>
<td>435.0</td>
</tr>
</tbody>
</table>

Source: IMO GHG study, 2009

WASTEWATER TREATMENT
Ships on the St. Lawrence River must comply with strict environmental regulations and standards. They are regularly inspected to ensure compliance.

EX. : Sewage or “black” waters: wastewater from sanitary toilets / urinals
- With some exceptions, the discharge of untreated sewage into all Canadian inland waters and Canadian coastal waters within 3 nautical miles of land (ships less than 400 tons) and 12 miles of land (ships larger than 400 tons) is now banned, with a few rare exceptions

AQUATIC INVASIVE SPECIES
Aquatic invasive species can be introduced by ships’ ballast water. Ballast water is used by ships to ensure stability and structural integrity, by controlling the weight distribution in the vessel’s tanks.
- Canada has the best ballast water management system in North America.
- Scientific assessment has shown that no invasive species have been identified since 2006, when the ‘flushing’ measure was first implemented.
- 100% of ballast water reports are verified, 365 days/year.

DREDGING
Dredging activities are carried out in the St. Lawrence River to maintain the necessary depth to ensure navigation safety. These activities are overseen by various federal authorities, such as Fisheries and Oceans Canada (Canadian Coast Guard), Public Works Canada and Environment Canada.
## Overview

Green Marine Environmental program

Green Marine is a voluntary environmental certification program for the marine industry in North America.

| What is Green Marine? | • Unique program designed for the marine industry – nothing like it in the world  
|                      | • Addresses multiple environmental impacts and issues: land, air and water  
|                      | • Participating companies implement concrete actions, practices and technologies |
| Goals                | • Reduce environmental footprint and risk  
|                      | • Exceed regulatory compliance  
|                      | • Continuously improve environmental performance of marine industry |
| Participation        | • Program participants include shipping companies, port authorities, terminal operators, shipyards and St. Lawrence Seaway  
|                      | • Open to firms operating in Canada and the United States |
| 11 Performance Indicators | • For shipowners: ballast water, greenhouse gases, air emissions (SOx, NOx, PM), cargo residues, oily water, garbage management  
|                      | • Ports, terminals & shipyards: greenhouse gases, dust, noise, odors, light, cargo residues, environmental leadership, water and land pollution prevention |
| Performance Rating Levels | • Performance ranked from Level 1 to 5 where Level 1 = Regulatory Monitoring and Level 5 = Excellence and Leadership |
| Credibility & Transparency | • Program requirements available on website  
|                      | • CEO sign-off on performance self-assessments  
|                      | • Independent verification of results  
|                      | • Public disclosure of individual company results  
|                      | • Stakeholder participation in the program revision and development process |
| Results to Date      | • Over 200 organizations – participants, partners, associations and supporters  
|                      | • Company results improving year over year: 2014 = Level 3.2 (2008 = Level 2)  
|                      | • Committee structure encourages sharing of ideas and best practices |
| Governance & Management | • CEO leadership and commitment through Board of Directors  
|                       | • Green Marine Management Corporation – legal entity, federally incorporated, administers program and provides support to participants with a staff of 5  
|                       | • Stakeholder funded (not-for-profit basis) |
| Growing support & Recognition | • Supporters include government (Transport Canada, Environment Canada, etc.)  
|                       | • Major NGO’s supporting industry’s efforts (WWF-Canada, Ducks Unlimited, Carbon War Room, Great Lakes & St. Lawrence Cities Initiative, Seattle Aquarium.)  
|                       | • Lloyd’s List North American Maritime Award 2015 Winner for Environmental Excellence  
|                       | • Winner Green Shipping Initiative of the Year, Sustainable Shipping Awards 2011 |

www.green-marine.org
The marine transportation industry is heavily regulated through international conventions, national regulations, classification society requirements, inspections and enforcement actions.

**THE MARITIME SECTOR’S ACCIDENT RATE IS VERY LOW:**

Injuries per Billion Tonnes Transported on One Kilometer

![Bar chart showing the accident rate per mode of transportation: Ships have the lowest accident rate at 0.23, Rail is 3.12, and Trucks have the highest at 13.22.](chart.png)

*Source: The Environmental Footprint of Surface Freight Transportation, Lawson Economics Research, 2007*

**INTERNATIONAL REGULATIONS**

International maritime regulations are developed within specialized United Nations agencies, such as the International Maritime Organization (IMO).

**33 INTERNATIONAL CONVENTIONS TO DATE**

**CANADIAN REGULATIONS**

Shipping is the most regulated mode of transportation, and Canadian regulations are exhaustive and efficient.

The main Canadian laws governing marine transport are:
- Canada Shipping Act
- Marine Transportation Security Act
- Navigable Waters Protection Act
- Pilotage Act
- Canada Marine Act
TANKERS

Tankers, which transport liquid bulk such as oil and gas, are subject to very strict, rigorous inspections and legislation.

To carry oil, ship owners must meet Transport Canada’s requirements, which include the use of double hull tankers (a type of hull where the vessel’s bottom and sides have two complete layers of watertight hull surfaces).

Ship owners must also comply with their clients’ rules and those of the International Tankers Owners Pollution Federation, including a:

- Tanker inspection program every 6 months, covering 750 validation criteria
- Verification process (vetting) before travelling
- Program of the ship's structural review

**Tanker Spill Prevention Features**

- Two local pilots for tankers in specific situations
- Redundant steering and propulsion system
- Tanks must have segregated storage tanks
- Port State Control ship inspection program: foreign vessels entering Canadian waters are boarded & inspected to ensure compliance with various major international maritime conventions
- Double hulls: Since 2010, all tankers over 5,000 DWT calling at Canadian ports must be double-hulled; single hulled ships to be phased out in Canada by 2015
- Two escort tugs for tankers in specific situations

**Source:** Moving Energy Safely, Standing Senate Committee on Energy, the Environment and Natural Resources, Senate

www.st-laurent.org/bim
LIABILITY AND COMPENSATION FOR OIL SPILLS

Canada’s oil pollution liability and compensation program is based on the “polluter pays” principle and is set out in the Marine Liability Act. This Act implements several international conventions which require ship owners to hold insurance in an amount that is linked to the vessel’s tonnage.

Moreover, Canada goes even further, having created its own Ship-Source Oil Pollution Fund (SOPF), a national fund that acts as a fourth level of funding. Canada is currently working on legislative changes in order to implement unlimited compensation in case of oil spill. This makes the total approximately $1.36 billion for the oil pollution liability and compensation program in Canada.

WORLD-CLASS TANKER SAFETY SYSTEM

Although Canadian legislation governing oil transport by ship is internationally renowned as being one of the world’s most complete and safest, on March 18, 2013, the federal government announced its intention to create a “World-Class Tanker Safety System.” This initiative includes legislative changes and the following measures:

- 100% of foreign tankers will be inspected
- new and modified navigation aids including buoys, lights and other devices to warn of obstructions and to mark the location of preferred shipping routes
- establishment of a Canadian Coast Guard Incident Command System
- review of existing pilotage and tug escort requirements
- unlimited compensation in case of a spill
- scientific research on non-conventional petroleum products, such as diluted bitumen, to enhance understanding of these substances and how they behave when released in a marine environment
- Expansion of the National Aerial Surveillance Program
- increase in the number of ports designated for traffic control measures, starting with Kitimat, BC.
PREVENTION: THE BEST WAY TO AVOID INCIDENTS AND ACCIDENTS

The crews on Canadian vessels are trained in keeping with stringent, efficient standards.

ALL SEAFARERS MUST:

- Hold certificates or licences, have general seamanship training and undergo regular medical exams
- Take Marine Emergency Duty training (60-hour course)
- Take a first aid course.

Transport Canada sets a minimum crewing level for each vessel according to scheduled operations and distances. For oil transport:

- Transport Canada requires officers to have specific qualifications on their certificate of competency (petroleum product transportation)
- Oil companies apply additional combined experience criteria for senior officers

EXAMPLES OF INDUSTRY’S BEST PRACTICES:

Marine industry stakeholders implement emergency response plans on land, at sea and in port facilities. Regular simulation exercises are carried out to validate their efficiency and ensure ongoing improvement.

Examples:

- A tested emergency plan and a contingency plan must be available on each vessel
- A drill program covering all emergency situations is implemented on board each vessel
- Monthly onboard health, safety and environment inspections

EMERGENCY MEASURES TRAINING CENTRE (CFMU)

The Institut maritime du Québec’s Centre de formation aux mesures d’urgence (CFMU-Emergency measures training centre) is the only organization specialized in marine emergency training. It offers seafarers regulatory training in sea rescue, sea survival and firefighting on board ship. The CFMU has various laboratories and modules equipped for practical exercises.
ECRC, or Eastern Canada Response Corporation, is a response organization certified by Transport Canada. ECRC’s specialized technicians are mandated to intervene quickly in case of an oil spill in order to minimize environmental impacts. They act quickly to contain and clean the site.

Ships and oil handling facilities must make contractual arrangements with a response organization (ro) certified by transport canada.

Every 3 YEARS, response organizations must renew their certification with Transport Canada, thus confirming their ability to respond in accordance with the regulatory requirements.

In case of an oil spill, key players have a well-defined role:

<table>
<thead>
<tr>
<th>Transport Canada</th>
<th>Canadian Coast Guard</th>
<th>Environment Canada and Fisheries and Oceans Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Regulates, monitors and oversees the marine industry’s responsibilities</td>
<td>• Ensures an appropriate ship-source response</td>
<td>• Provide timely, accessible science-based advice on environmental sensitivities, weather forecasts, oil fate and behavior, response actions and environmental clean-up</td>
</tr>
<tr>
<td>• Certifies and inspects Canada’s Response Organizations</td>
<td>• Has authority to play the role of On-scene Commander if the polluter is unknown, unwilling or unable to respond</td>
<td></td>
</tr>
<tr>
<td>• Inspects oil handling facilities and reviews Oil Pollution Emergency Plans and vessels’ Shipboard Oil Pollution Emergency Plans</td>
<td>• Maintains the National Contingency Plan, regional and local response plans</td>
<td></td>
</tr>
<tr>
<td>• Oversees exercises and training of spill response personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Inspects vessels in order to verify their compliance with applicable national and international requirements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SHIP OWNERS AND OTHER POLLUTERS:

• Make contractual arrangements with Response Organizations
• Develop Shipboard Oil Pollution Emergency Plans
• Provide crew training
• Report pollution incidents

PROVINCIAL AND TERRITORIAL GOVERNMENTS

Play an important role in supporting preparedness and response, for example, through integration with emergency management plans and associated spheres such as waste and wildlife management, and public communications.
**Eastern Canada Response Corporation**

**Response Organisation.**
Certified pursuant to the Canada Shipping Act.

**Mission**
To maintain a state of marine oil spill response preparedness that is consistent with the legislation and capable of providing a real response at an affordable cost to our members.

**Response Centres**
- Sarnia, Ontario
- Montreal, Quebec
- Quebec City, Quebec
- Sept-Iles, Quebec
- Halifax, Nova Scotia
- St-John’s, Newfoundland

**Preparedness**

**Management**
- Full-time employees: 47
- Advisors: 130

**Responders**
- Trained responders: 500+

**Equipment**
- Booms: 55,000 m (180,000 ft)
- Skimmers: 150 (different types)
- Boats: 110 (different types)
- On-water storage: 114 units
- Shoreline treatment: miscellaneous equipment

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**Spill Responses Services**

OVER 300 SPILL RESPONSES SINCE 1995

Services provided under contract:
- Manage ECRC responses activities, using our Spill Management System (ICS)
- Develop response plans (Next Operating Period, 7 Day Plan) based on client priorities
- Provide equipment, personnel and operational management for the containment, recovery and clean-up of oil spilled on water

Other services:
- Support wildlife capture and rehabilitation activities
- Support management and disposal of recovered material

ECRC is a member of the Global Response Network.