# 2012 Summary of Great Lakes Seaway Ballast Water Working Group

## February 2013

## TABLE OF CONTENTS

# Chapter 1 – Executive Summary

The 2012 Summary of Great Lakes Seaway Ballast Management report was compiled by the Great Lakes Seaway Ballast Water Working Group (BWWG), comprised of representatives from the United States Coast Guard (USCG), the U.S. Saint Lawrence Seaway Development Corporation (SLSDC), Transport Canada - Marine Safety and Security (TC), and the Canadian St. Lawrence Seaway Management Corporation (SLSMC The group's mandate is to develop, enhance, and coordinate binational compliance and enforcement efforts to reduce the introduction of aquatic invasive species via ballast water and residuals. The BWWG is actively engaged in providing an energetic response to calls for tougher ballast water regulation of ocean-going vessels transiting the Seaway.

***In 2012, 100% of vessels bound for the Great Lakes Seaway from outside the Exclusive Economic Zone (EEZ) received ballast management exams on each Seaway transit. All 6974 ballast tanks, during 386 vessel transits, were assessed. Vessels that did not exchange their ballast water or flush their ballast tanks were required to either retain the ballast water and residuals on board, treat the ballast water in an environmentally sound and approved manner, or return to sea to conduct a ballast water exchange. Vessels that were unable to exchange their ballast water/residuals and that were required to retain them onboard, received a verification boarding during their outbound transit prior to exiting the Seaway. In addition, 100% of ballast water reporting forms were screened to assess ballast water history, compliance, voyage information and proposed discharge location. BWWG verification efforts indicated that there was no non-compliant ballast water discharged in the Great Lakes Seaway system. The BWWG anticipates continued high vessel compliance rates for the 2013 navigation season.***

Since 2006, ballast water management requirements in the Great Lakes and the St. Lawrence Seaway System have been the most stringent in the world. USCG, TC, and Seaway ballast regulations that include saltwater flushing, detailed documentation requirements, increased inspections, and civil penalties provide a comprehensive regulatory enforcement regime to protect the Great Lakes Seaway System. Independent research by the Fisheries and Oceans Canada (Science) indicates that the risk of a ballast water mediated introduction of aquatic invasive species into the Great Lakes has been mitigated to extremely low levels.

These ballast water requirements have been further enhanced by the promulgation of USCG regulations, which require vessels entering the Great Lakes through the St. Lawrence Seaway to employ ballast water practices that include the use of a ballast water management system (BWMS), exclusive use of water from a public water system, or retention of ballast water on board. Since these requirements will be phased in over several years, no vessels entering the Great Lakes Seaway from outside the EEZ were equipped with a BWMS in 2012.

# Chapter 2 – Joint Ballast Management

## Ballast Management on the Great Lakes Seaway System

Regulations protecting the Great Lakes Seaway system include Ballast Water Control and Management Regulations under the Canada Shipping Act (2001), USCG ballast water regulations pertaining to vessels equipped with ballast tanks, Best Management Practices for No Ballast On Board (NOBOB) vessels entering the U.S., and the St. Lawrence Seaway's NOBOB requirements. These regulations apply to all vessels entering waters under Canadian and U.S. jurisdiction from outside the Canadian EEZ and apply to vessels on both oceanic and coastal voyages.

Although new USCG requirements for ballast water management systems were issued in 2012, no vessels equipped with a BWMS entered the Great Lakes Seaway. As a result, all vessels complied with existing ballast management requirements. Loaded vessels with residual sediments are required to flush their tanks with water of a salinity equivalent to ballast exchange. Federal regulations call for vessels to conduct mid-ocean ballast water exchange during ballast-laden voyages in an area 200 nautical miles (nm) from any shore. Vessels with residual sediments and unpumpable ballast on board which are unable to conduct mid-ocean ballast exchange due to stability concerns, are required to conduct saltwater flushing of their empty ballast water tanks in an area 200 nm from any shore whenever possible. Salt water flushing is defined as the addition of mid-ocean water to empty ballast water tanks; the mixing of the flush water with the residual water and sediment through the motion of the vessel; and the discharge of the mixed water, such that the resultant residual water is 30 parts per thousand (ppt) or greater.

The goal of the program is to inspect each vessel entering the system from outside the EEZ on every transit. All four agencies have committed resources to accomplish the program goals.

## St. Lawrence Seaway NOBOB Requirement

The U.S. and Canadian St. Lawrence Seaway agencies enacted requirements effective at the start of the 2008 navigation season that require vessels to conduct saltwater flushing of ballast tanks that contain residual amounts of ballast water and/or sediment in an area 200 nm from any shore before entering waters of the Seaway. Vessels must also maintain the ability to measure salinity levels in each tank onboard so that final salinities of at least 30 ppt can be ensured.

## Transport Canada Requirements

Transport Canada (TC) Quebec region monitors all traffic entering the Gulf of St. Lawrence from outside the Canadian EEZ bound for regional ports as well as the St. Lawrence Seaway/Great Lakes Ports on a 12 month basis.

Challenges experienced by TC in achieving ballast water management compliance for the Seaway/Great Lakes included:

- changes in vessel crews
- exchange of information between vessel agents and/or owners
- reviewing over 3378 ballast water reports from 1924 vessels operating in the Gulf of St. Lawrence
- addressing routing deviations of coastal vessels in order to meet Great Lakes ballast water management regulations

The efforts of TC were instrumental in raising the compliance level of ballast tanks prior to their entry into the Great Lakes/Seaway, resulting in minimal delays to 3 vessels due to deviation for empty tank flushing. After flushing, all tanks were found to be in compliance.

All information collected by TC was forwarded to Fisheries and Oceans Canada (Science) for analysis and support of ongoing ballast water compliance projects.

## U.S. Coast Guard Discharge Standard

On March 23, 2012, the Coast Guard established a ballast water discharge standard for U.S. waters and a Coast Guard type-approval process for ballast water management systems (BWMS). This process established requirements for designing, testing, installing, and operating equipment on board vessels. The Final Rule included an implementation schedule based upon a vessel's construction date and ballast capacity. The earliest implementation date for a BWMS is December 1, 2013.

This ballast water discharge standard matches that adopted by the International Maritime Organization (IMO) in 2004 and further established by seven U.S. states. The numerical limits set by the discharge standard are supported by reports from the National Academy of Sciences and the U.S. Environmental Protection Agency Science Advisory Board in 2011 as the most stringent that vessels can practicably implement and that the Coast Guard can enforce at this time.

More information can be found in the *Federal Register*, volume 77, pages 17254 through 17320.

# Chapter 3 – Results of 2012 Ballast Management Exams

## Ballast Water Reporting Form

Vessels bound for the Great Lakes from outside the EEZ are required to submit a ballast water reporting form before entering Canadian waters and again 24 hours prior to entering the St. Lawrence Seaway. The vessel lists voyage information, ballast water usage/capacity, ballast water management method, ballast water sources, ballast water management practices, and proposed discharge location.

- ***100% of ballast water reporting forms were screened to assess ballast water history, compliance, and intentions.***

## Ballast Management Exams

The Joint Ballast Management Exam Program uses a comprehensive approach to vessel inspections. The inspection begins with a detailed review of ballast water reports, logs, records, and ballast water management plans. The crew is interviewed to assess their understanding of the requirements of the vessel's Ballast Water Management Plan as well as answer questions on actual practices. Finally, ballast tanks are sampled for salinity or the presence of mud that would suggest a satisfactory management practice was not employed.

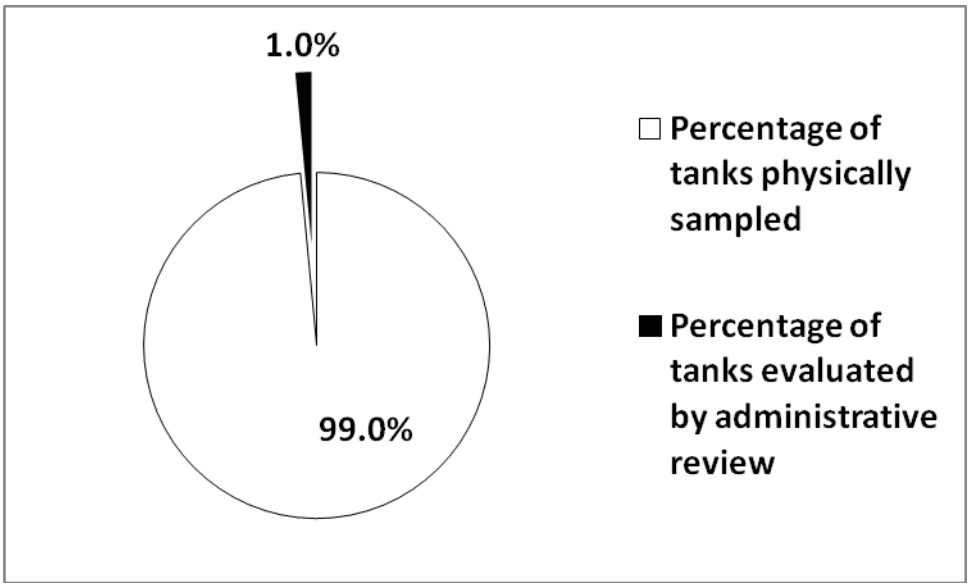
## Vessel Inspection Totals

In 2012, 100% of vessels bound for the Great Lakes Seaway from outside the EEZ received a ballast management exam (on each of the 386 transits) compared with 100% in 2011, *100% in 2010, 100% in 2009, 99% in 2008, and 74% in 2007*.

## Ballast Tank Sampling

Ballast water is typically found in wing tanks, double bottom tanks, peak tanks, and cargo holds. Access to these tanks is normally gained through vents, sounding tubes or hatches. Normal procedure calls for the inspector to utilize the sounding tube or vent for primary access. Manhole covers and hatches may be used if access cannot be gained via a primary means. Ballast water salinity is checked using a hand held salinity refractometer or with an electronic meter. The results of the sampling are captured on a sampling report form created by the BWWG.

- ***100% of ballast tanks were assessed via sampling or administrative review***
- ***Total tanks capable of carrying ballast water - 6974***
    - ***Total tanks physically sampled - 6901 (99.0%)***
    - ***Total tanks evaluated by administrative review - 73* (1.0%)***




*Administrative review means an evaluation of a tank where sampling could not be performed or the tank was not being utilized as a ballast tank at the time of the review. This review includes an examination of vessel documents and interviews with vessel officers.

# Chapter 4 – Enforcement and Regulatory Action

## Regulatory Actions

Regulatory action is limited to the jurisdiction of each agency. Information exchanged between agencies ensures appropriate action is taken to address discrepancies. The various tools commonly used for discrepancies include education, a Letter of Warning, a Letter of Retention, or a fine issued through a Notice of Violation.

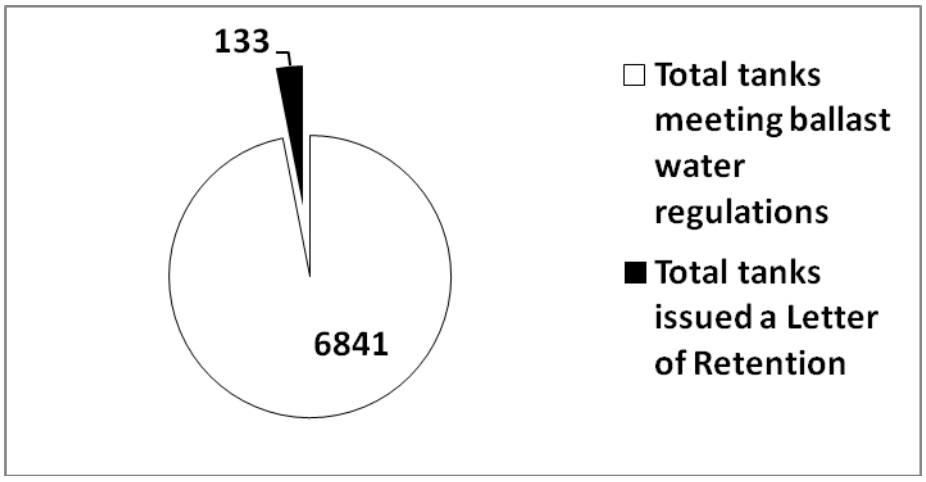
## Letters of Retention

Vessels that choose to retain their ballast water, in lieu of another management option, are issued a Letter of Retention (LOR). When the vessel departs the system, compliance is verified and the letter is rescinded. It is important to note that Letters of Retention were issued for some tanks that are not actually used for ballast water, but are listed in their Ballast Water Management Plan as potable or cooling water tanks.

- ***BWWG agencies issued a Letter of Retention for 36 vessel transits involving 133 tanks.***
- ***As a result of pre-arrival screenings, 11 vessels altered course to enable satisfactory exchange***

*Note that in many areas of the Great Lakes Basin, vessels are now restricted to no discharge of sewage and vessel operators are forced to temporarily use ballast tanks as holding tanks; these tanks are then non-compliant with Ballast and Pollution Regulations. Therefore, TC and USCG, as enforcement agencies, issue Letters of Retention with follow-ups. No LORs were issued for this purpose in 2012.*

***Total tanks capable of carrying ballast water – 6974***
***Total tanks meeting ballast water regulations - 6841***
***Total tanks issued a Letter of Retention - 133***



## Letters of Warning

A Letter of Warning is issued when a vessel is found with discrepancies in its ballast water management plan, records or reports. It is used for minor first time offenses with a warning of possible assessment of a fine if not corrected.

- ***Transport Canada issued 8 Letters of Warning***

## Monetary Penalties

Two vessels received monetary penalties of $6000 each from Transport Canada - Marine Safety and Security for making a false declaration. Ballast tank test results were inconsistent with information found on Ballast Water Reporting Forms.

## Verification Boardings

Verification boardings are conducted on every outbound vessel issued a Letter of Retention. In 2012, each of these vessels received a verification boarding and no vessels were found to be in violation.

## Notice of Violation

A Notice of Violation imposes a fine on a vessel for failure to comply with regulations. Transport Canada - Marine Safety and Security issued 2 Letters of Violation for improper ballast water exchange practices in regards to location.

# Chapter 5 – Conclusion

For any regulatory regime to be effective, the Great Lakes and the St. Lawrence Seaway must be treated as a single system. The only way to ensure consistent ballast discharge regulations across the Great Lakes Seaway System is to have strong federally mandated standards managed by unified federal agency coordination between Canada and the U.S. in partnership and consultation with the States and Provinces. These partnerships will help minimize the creation of a patchwork of inconsistent regulations, which would have a negative impact on vessel compliance and operation. Even worse, inconsistent regulations would effectively deter vessels from transiting or completing loading/unloading operations in some state waters. The current high effectiveness of ballast water exchange, the BWWG's aggressive enforcement of current regulations, the high industry compliance rate, and the new federal ballast water discharge standard should be seen as minimizing the urgency for state involvement in ballast water regulation.

Since 2010, marine agencies have found that newly built vessels are sometimes fitted with remote level reading devices for their ballast tanks, and are not fitted with sampling points. This causes delays specifically when access to openings, such as manhole covers, are covered with cargo and sampling via vent pipes is not practical. In these situations, vessels were issued a letter of retention.

The St. Lawrence Seaway is uniquely situated to prevent the further introduction of invasive species. With a central inspection point, situated outside of the Lakes, the ballast water tanks of all inbound vessels are inspected by both Canada and the United States. Joint vessel inspections by Transport Canada, the U.S. Coast Guard, and the U.S. and Canadian Seaway Corporations have been regularly conducted in Montreal. This inspection process, in place since 1997, has been successful in enhancing the operational and environmental security of the Great Lakes St. Lawrence Seaway System. Improvements are continually being made to the inspection programs to incorporate updated procedures and technology. All four agencies work cooperatively in a bi-national manner to address issues as they arise. The Seaway regulation harmonizes the ballast water requirements for vessels transiting the U.S. waters of the Seaway with those currently required by Transport Canada for transit in waters under Canadian jurisdiction of the Seaway. The BWWG coordinates and manages implementation of three sets of Ballast Water Regulations, providing effective control against the introduction of aquatic invasive species. The BWWG will continue its work to deter the introduction of aquatic invasive species in the Great Lakes using regulatory, technological, and management-based protocols. The agencies take the threat of aquatic invasive species very seriously and are dedicated to finding new answers to combat the problem.

# Chapter 6 – Contributions

### Members of the Ballast Water Working Group

U.S. Coast Guard, Ninth District would like to thank the following members of the Great Lakes Ballast Water Working Group and all the inspectors who contributed to the 2012 Joint Ballast Management Exam Program and to this final report.

**Saint Lawrence Seaway Development Corporation**
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For further information on the Great Lakes Ballast Management Program, please visit the following:

The Seaway website: http://www.greatlakes-seaway.com/en/environment/ballast-water/index.html

The NBIC website: http://invasions.si.edu/nbic/index.html

The USCG website: http://www.uscg.mil/hq/cg5/cg522/cg5224/bwm.asp

The Transport Canada' website: http://www.tc.gc.ca/eng/menu.htm

# Appendix

**A Historical Review:**

***1989:***

In response to calls from the International Joint Commission and the Great Lakes Fishery Commission over the discovery of the Ruffe in Lake Superior, Canada established guidelines requesting all vessels entering the freshwaters of the St Lawrence River and the Great Lakes to exchange their ballast. The use of ballast water exchange was based on the effectiveness of Canadian studies undertaken by Environment Canada to protect the aquaculture facilities in the Magdalen Islands.

***Early 1990's to 1997:***

The U.S. Coast Guard established regulations based on the Canadian Guideline in 1993 under the authority of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA). Ballast Water on Board (BOB) vessels, are vessels that declare they have ballast tanks that contain ballast water. The U.S. Coast Guard started testing BOB vessels on a voluntary basis in 1991 and on a mandatory basis in 1993. The inspection process included boarding vessels between the two U.S. locks in Massena (Eisenhower and Snell) and testing the salinity of the ballast water to ensure salinity was at least 30 ppt. Ballast with a salinity of at least 30 ppt is considered evidence that the tanks have been adequately exchanged with seawater, providing a reasonably harsh environment for any remaining freshwater organisms.

***1997 to Present:***

The U.S. Coast Guard, Transport Canada and the Seaway Corporations developed a joint inspection program called the "Enhanced Seaway Inspection" (ESI) for foreign flag vessels, which covered applicable safety and environmental equipment onboard vessels and is conducted prior to the vessel's initial transit of the Seaway Great Lakes System.

During the vessel's ESI, a ballast tank inspection is conducted by one or more of the BWWG member agencies to ensure compliance with U.S., Canadian, and Seaway ballast regulations. The vessel's ballast tanks are sampled to verify compliance with all BWWG members' regulations.

***2002 St. Lawrence Seaway Requirement:***

The U.S. and Canadian Seaways instituted a requirement that all foreign flag vessels entering the Seaway Great Lakes System comply with the Best Management Practices of the Shipping Federation of Canada. In addition, vessels that do not operate beyond the EEZ but do operate within the Great Lakes and Seaway (i.e., Lakers) must agree to comply with the Voluntary Management Practices to Reduce the Transfer of Aquatic Nuisance Species within the Great Lakes by U.S. and Canadian Domestic Shipping, dated January 26, 2001. These voluntary management practices require vessels to agree to regular inspections of ballast tanks and regular removal of sediment.

### *2004 U.S. Coast Guard National Mandatory Ballast Management Requirements:*

This final rule changed the national voluntary BWM program to a mandatory one, requiring all vessels equipped with ballast water tanks and bound for ports or places of the United States to conduct a mid-ocean BWE, retain their ballast water onboard, or use an alternative environmentally sound BWM method approved by the Coast Guard. Penalties were established for failure to comply with the reporting requirements located in 33 CFR part 151 and the applicability of the reporting and recordkeeping requirements were broadened to include a majority of vessels bound for ports or places of the United States.

### *2005 U.S. Coast Guard NOBOB Best Management Practices:*

As a result of the National Oceanic and Atmospheric Administration (NOAA) and Great Lakes Environmental Research Laboratory (NOAA/GLERL) study published in April 2005 and the risks identified therein, the U.S. Coast Guard and Transport Canada Marine Safety inspectors began examining NOBOB vessels in conjunction with the ESI in May of 2005. In August 2005, the U.S. Coast Guard issued its "NOBOB Best Management Practices". This policy recommends vessels conduct mid-ocean ballast water exchange whenever possible and if not possible, conduct mid-ocean salt water flushing. The goal of these practices is to raise the salinity level of residual, unpumpable ballast above 30 ppt. The increase in salinity reduces the likelihood of introducing aquatic nuisance species to the Great Lakes when the tanks are ballasted with Great Lakes fresh water at one port and deballasted in another Great Lakes port.

### *2006 Canadian Regulations:*

Canada promulgated the Ballast Water Control and Management Regulations under the Canada Shipping Act in June of 2006. The regulations enact the IMO D1 requirements for ballast water exchange for any vessel entering waters under Canadian jurisdiction from outside Canada's EEZ and include both trans oceanic and coastal voyages (BOB and NOBOB).

Additionally vessels coming from outside waters under Canadian jurisdiction, declaring no ballast on board, must ensure that the residual ballast water in tanks has been exposed to salinity conditions equivalent to ballast water exchange by complying with one of the following options:

- The residual ballast water came from ballast water that was properly exchanged at sea;
- The residual ballast water meets the international standard for treated ballast water;
- The vessel complies with sections 1, 2, 6 and 7 of the Code of Best Practices for Ballast Water Management of the Shipping Federation of Canada dated September 28, 2000, or;
- The vessel conducted a saltwater flushing at least 200 nm from shore.

Coastal Navigation information for either BOB or NOBOB: Ballast water that has been taken on board the vessel, outside of waters of Canadian jurisdiction, on Coastal or

Non-Transoceanic Navigation shall be exchanged to meet the prescriptions of Canadian BWCMR section 7-which means that a Mandatory Deviation if required to meet minimum depth of 500 meters – In winter months Section 6. (3) may apply under exceptional circumstances.

### *2006 Ballast Water Working Group (BWWG):*

The Great Lakes BWWG was formed in January 2006. The mission of the BWWG is to harmonize ballast water management efforts between the U.S. Coast Guard, Transport Canada-Marine Safety, St. Lawrence Seaway Development Corporation and the St. Lawrence Seaway Management Corporation. The BWWG coordinates enforcement and compliance efforts for reducing aquatic nuisance species invasions via ballast water and residuals in the Seaway and Great Lakes.

### *2008 St. Lawrence Seaway NOBOB Requirement:*

The U.S. and Canadian St. Lawrence Seaway agencies enacted new requirements effective at the start of the 2008 Navigation Season that requires vessels to conduct saltwater flushing of their ballast tanks that contain residual amounts of ballast water and/or sediment in an area 200 nm from any shore before entering waters of the Seaway. Vessels must also maintain the ability to measure salinity levels in each tank onboard so that final salinities of at least 30 ppt can be ensured.

All four agencies committed resources to accomplishing the additional work required to carry out the increased tank inspection program. The overall goal of the 2008 inspection program was to inspect each vessel entering the system from outside the EEZ on every transit and increase the number of both BOB and NOBOB tanks tested.

### *2009 Coast Guard Proposed Ballast Water Discharge Standard Rulemaking:*

The Coast Guard's 2009 Notice of Proposed Rulemaking proposed a two-phase standard for the allowable concentration of living organisms in vessels' ballast water discharged in U.S. waters.

### *2010 Canada Ratifies the Ballast Water Management Convention:*

At the 60$^{th}$ meeting of IMO's Marine Environmental Protection Committee in March 2010, Canada deposited its instrument of ratification for the International Convention for the Control and Management of Ships' Ballast Water and Sediments, becoming the 27$^{th}$ country to ratify the convention.

### *2012 Coast Guard's Final Rule on Standards for Living Organisms in Ships' Ballast Water Discharged in U.S. Waters*

On March 23, 2012, the Coast Guard established a ballast water discharge standard for U.S. waters and a Coast Guard type-approval process for ballast water management systems. This process established requirements for designing, testing, installing, and operating equipment on board vessels. The Final Rule included an implementation

schedule based upon a vessel's construction date and ballast capacity. The earliest implementation date for a BWMS is December 1, 2013.

The Final Rule also included a bridging strategy provision for approval of alternate management systems, which allows for foreign type-approved systems with IMO approval, to be installed prior to the vessel's compliance date for a period no longer than five years.

Effective June 21, 2012, a non-recreational vessel equipped with ballast tanks entering Snell Lock from outside the U.S. EEZ must use one of the following ballast water management practices:

- carry out BWE unless the vessel is required to employ a BWMS,
- retain ballast on board,
- install and operate an approved BWMS, or
- use only water from a U.S. public water system as ballast water.

The ballast water discharge standard matches that adopted by the International Maritime Organization (IMO) in 2004 and further established by seven U.S. states. The numerical limits set by the discharge standard are supported by reports from the National Academy of Sciences and the Environmental Protection Agency Science Advisory Board in 2011 as the most stringent that vessels can practicably implement and that the Coast Guard can enforce at this time.