

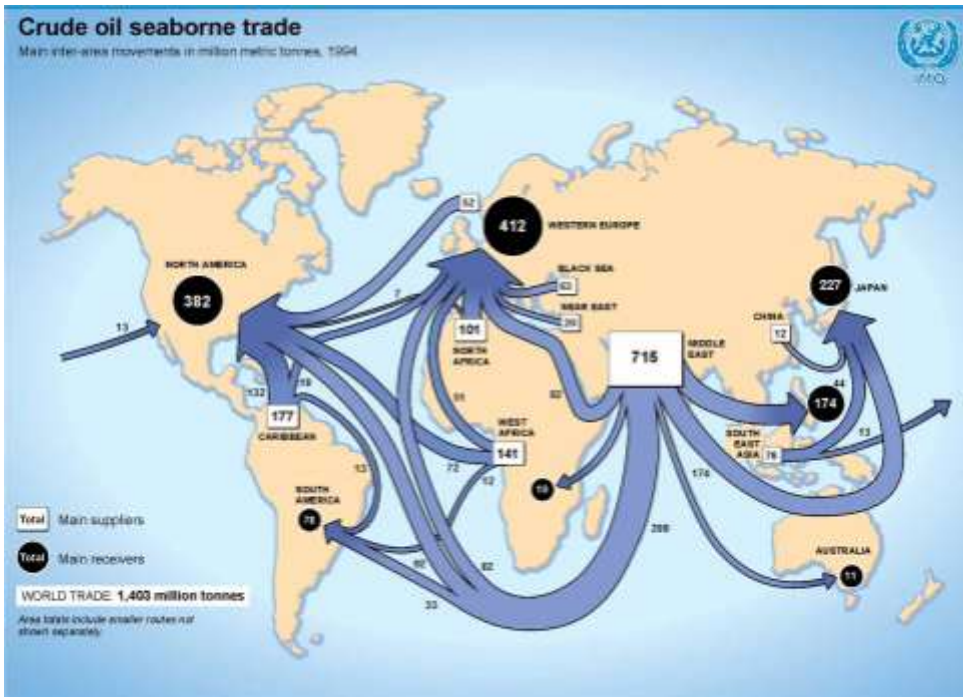
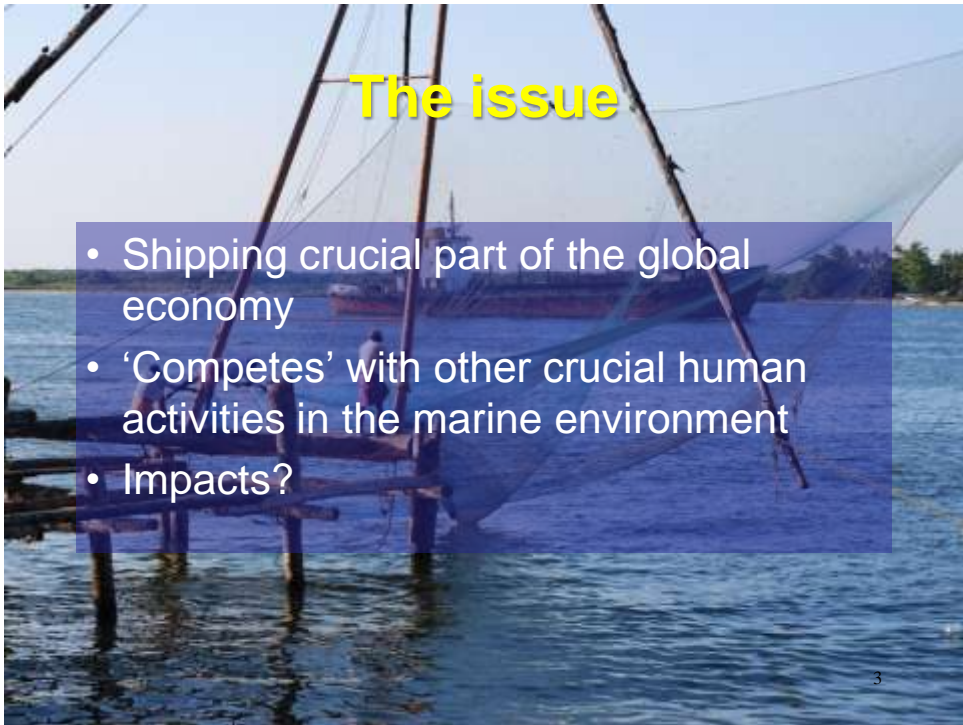
• Introduction to the BWM Convention and BWM options

Fredrik Haag
Technical Adviser, GloBallast Partnerships
International Maritime Organization

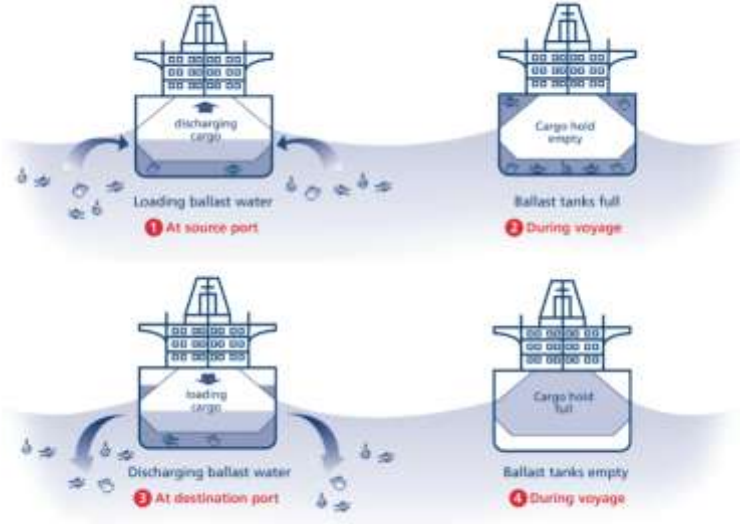


About the workshop

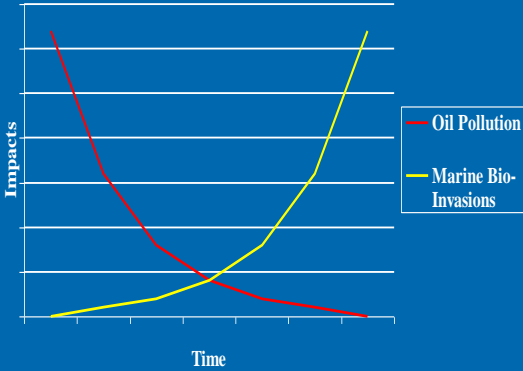
- Several BWM related courses have been held in the region
 - Introductory
 - Legal
 - PBBS
- First IMO-GloBallast training on the CME aspects of the BWM Convention
- Developed in partnership with IUCN and WMU, with support from the Total Foundation and the MPA of Singapore
- Pilot training – the first step towards a training course to be delivered in all regions
- Your feedback is therefore **crucial!**



Ballast water - necessary for safe shipping



Impacts over time: oil pollution vs marine bio-invasions



Global Response to BW Issue

At IMO

IMO-MEPC 1991

IMO-Res. A.774(18) in 1993

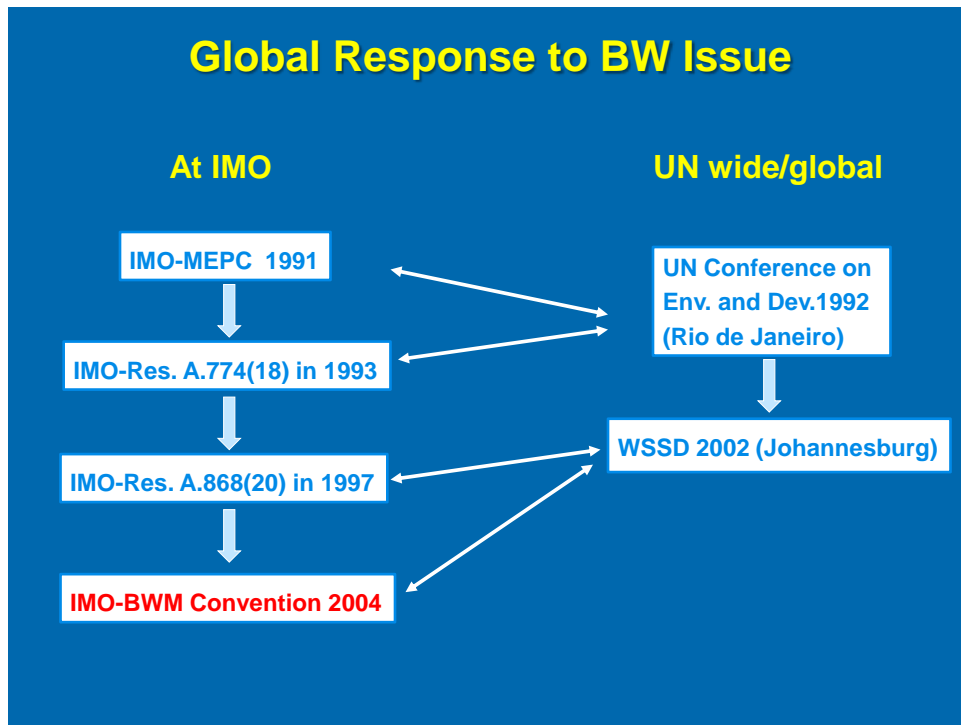
IMO-Res. A.868(20) in 1997

IMO-BWM Convention 2004

UN wide/global

UN Conference on
Env. and Dev.1992
(Rio de Janeiro)

WSSD 2002 (Johannesburg)

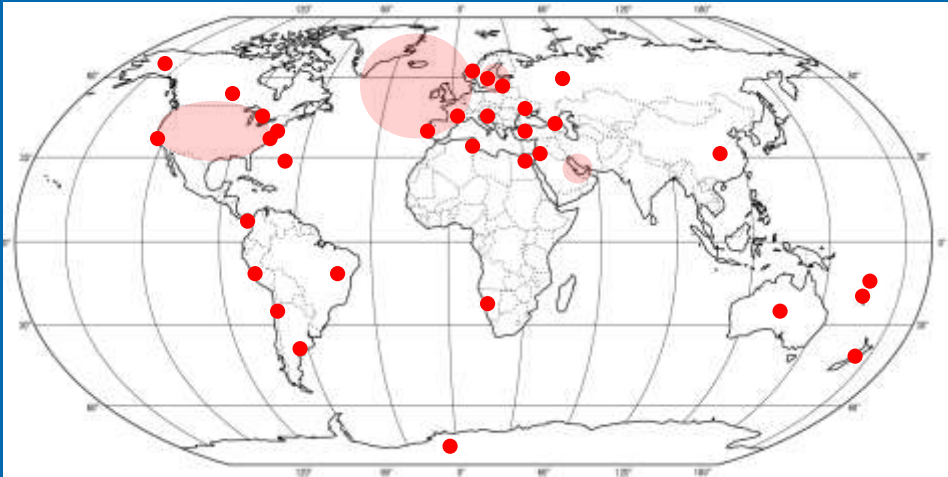


The International Convention on Ballast Water Management

- Adopted on 13th of Feb. 2004
-
- 27 countries are Parties as of March 2011
- Ratification process through parliament in a number of other countries
- Entry into Force – Needs 30 Countries / 35 % World GT



Plethora of national and regional BWM regulations



Structure of the IMO BWM Convention

- Preamble
- 22 Articles
- Annex (regulations)
- Guidelines

Contracting Parties as of March 2011

- Albania
- Antigua and Barbuda
- Barbados
- Brazil
- Canada
- Cook Islands
- Croatia
- Egypt
- France
- Kenya
- Kiribati
- Liberia
- Maldives
- Malaysia
- Marshal Islands
- Mexico
- Netherlands
- Nigeria
- Norway
- Republic of Korea
- Saint Kitts and Nevis
- Sierra Leone
- South Africa
- Spain
- Sweden
- Syrian Arab Republic
- Tuvalu

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Objective of the Convention: Preamble

• **WHAT:** “to prevent, reduce and ultimately eliminate the risks to the environment, human health, property and resources caused by the transfer of aquatic organisms and pathogens” by ships

• **HOW:** “through the control and management of ships’ ballast water and sediments”

The discharge of ballast water into the sea shall be managed according to the provisions of the BWM Convention

Articles - Highlights

- Article 1 – Definitions
- Article 2 – General Obligations
- Article 3 - Application
- Article 4 – Obligations for Parties
- Article 5 - Sediment Reception Facilities
- Article 6 - Scientific and Technical Research
- Article 7 - Survey and Certification
- Article 8 - Violations
- Article 9 - Inspection of Ships
- Article 10 – Detection of violations and control of ships
- Article 11- Notification of control actions
- Article 12 – Undue delay
- Article 13 – Technical Assistance
- Article 14 – Communication of information

Regulations - Highlights

- Section A - General Provisions
- Section B - Management and Control Requirements for Ships
- Section C - Special Requirements in Certain Areas
- Section D - Standards for Ballast Water Management
- Section E - Survey and Certification Requirements for Ballast Water Management

Appendices

Form of International BWM Certificate

Form of ballast water record book

IMO Technical Guidelines

1. Guidelines for sediments reception facilities (G1)
2. Guidelines for Ballast Water Sampling (G2)
3. Guidelines for ballast water management equivalent compliance(G3)
4. Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4)
5. Guidelines for ballast water reception facilities (G5)
6. Guidelines for Ballast Water Exchange (G6)
7. Guidelines for Risk Assessment under Regulation A-4 (G 7)
8. Guidelines for approval of Ballast Water Management Systems (G8)
9. Procedure for Approval of BWM systems that make use of Active Substances (G9)
10. Guidelines for approval and oversight of prototype ballast water treatment technology programmes (G10)
11. Guidelines for Ballast Water Exchange Design and Construction Standards (G11)
12. Guidelines for sediment control on ships (G12)
13. Guidelines for additional measures including emergency situations (G13)
14. Guidelines on designation of areas for ballast water exchange (G14)

[Survey Guidelines for the purpose of BWM Convention](#)

[Guidelines on PSC under the BWM Convention](#)

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General obligations: Article 2

Article 2.1

Parties undertake to give full effect to the provisions of this Convention to prevent, minimize and ultimately eliminate the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' ballast water and sediments.

Article 1: Definitions

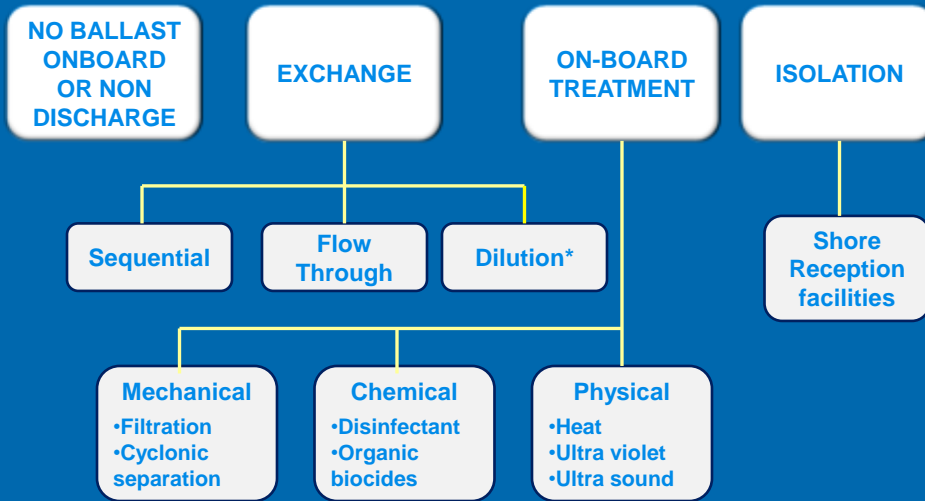
- “Ballast Water” means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of a ship
- “Sediments” means matter settled out of ballast water within a ship



Application - Article 3

- Ships **of a Party** or operating under the authority of a Party;
- All ships that **carry ballast waters**; with the exception of ships carrying permanent ballast water in sealed tanks, not subject to discharge;
- Ships engaged in **international travel**, unless otherwise determined;
- **Excluded in principle**: warships, naval auxiliary or other ships owned or operated by a state and used on government non commercial service.

Generic Options for Ballast Water Management



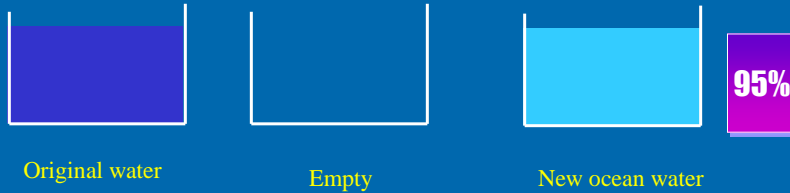
BWM Convention: Management Options

1. Ballast Water Exchange to meet “D1” Standards
2. Ballast Water Treatment to meet “D2” Standards
3. Alternate Options to provide equivalent environmental protection as Options 1/2

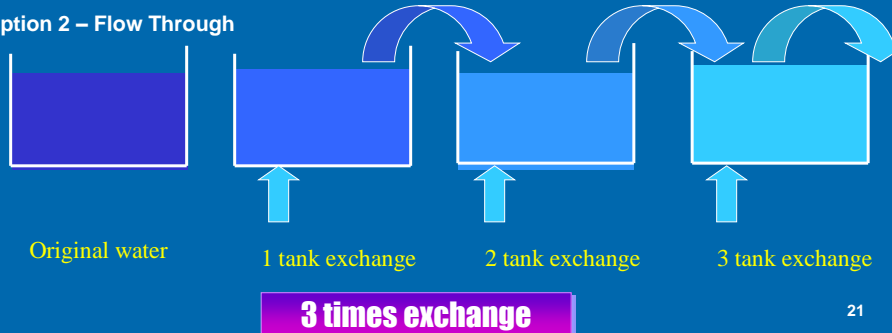


Open ocean exchange to meet the D-1 Standard

Option 1 – Empty-Refill



Option 2 – Flow Through



BWMC Highlights, Section B

Regulation B-4 Ballast Water Exchange

- BWE should be undertaken:
 - 200 nm and 200 m depth, or if not possible
 - 50 nm and 200 m depth, or if not possible
 - in areas designated by the Port State, however
 - neither deviation nor delay of the ship
 - BWE should only be undertaken when safety of the ship is guaranteed



Safety during ballast water exchange

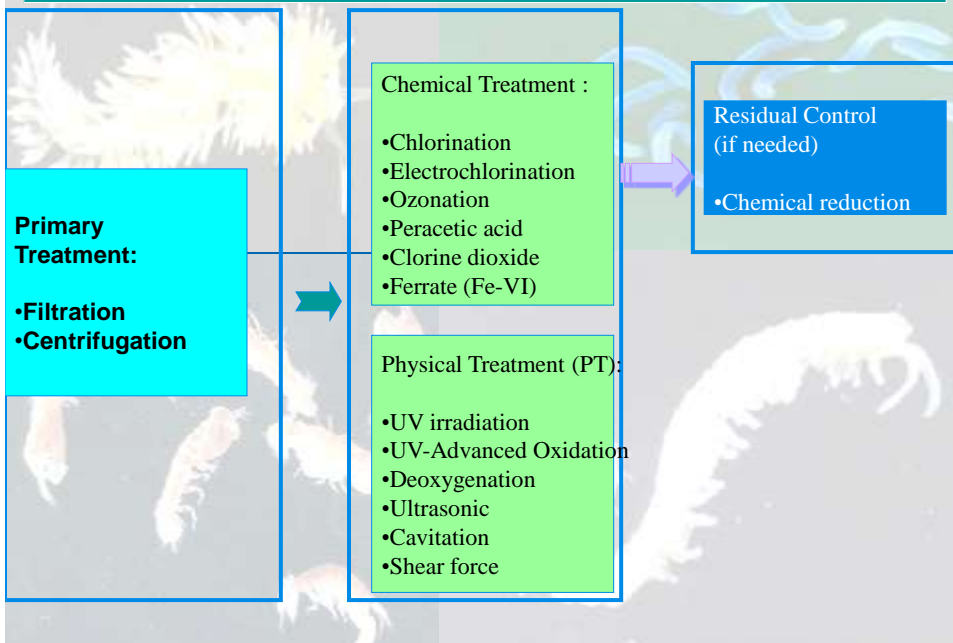


**Ballast Water Treatment
to meet the D-2 standard**

D2 Standards

Type/ Size of Organism	Maximum number	volume
Planktons (number)		
Size = ≥ 50 microns	10	1 tonne
Size = 10 to 50 microns	10	1 mL
Microbes (colony forming units, cfu)		
V. Cholerae	1	100 mL
E. Coli	250	100 mL
E. Cocci	100	100 mL

Generic Treatment Process Options (examples)



Approval of BWM Systems

- Guidelines for approval of Ballast Water Management Systems (G8)
- Procedure for Approval of BWM systems that make use of Active Substances (G9)



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Costs

- Depends on the size of the system
- Cost range 100k – 1,000k or above
- Operating cost ranges from US\$0.01- 0.2/tonne of ballast water

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Availability of BW Treatment Systems

Out of approximately 50 systems under development:

- 27 have been given Basic Approval
- 18 have been given Final Approval
- 12 systems have been given Type Approval

Current time frames

Year of construction	Year \ Capacity	2008	2009	2010	2011	2012	2013	2014	2015	2016		
		Before 2009	1500-5000	exchange or treat					treat			
Before 2009	<1500 or >5000	exchange or treat							treat			
In or after 2009	<5000		Uncertainty ?!! Resolution A.1005(25)			treat						
2009 but before 2012	5000 or more		exchange or treat						treat			
In or after 2012	5000 or more					treat						

Sources of information

- IMO Website
- *Ballast Water Treatment Technology: Current status*. Lloyd's Register (available from their website)
- *Review of two decades of progress in the development of management options for reducing or eradicating phytoplankton, zooplankton and bacteria in ships' ballast water*, Aquatic Invasions (2009), Vol.4, issue 3, p 521-565

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Regulation B-3, Paragraph 7

“Other methods of Ballast Water Management may also be accepted as alternatives to the requirements described in paragraphs 1 to 5, provided that such methods ensure at least the same level of protection to the environment, human health, property or resources, and are approved in principle by the Committee.”

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Potential alternative methods

- **No Ballast / Zero Discharge Methods**
 - Zero Ballast Water Concepts
 - Storm Ballast Only Concept
 - Internal Ballast Concept
 - Potable Ballast Concepts
- **Continuous Flow Methods**
 - Buoyancy Control Concepts
 - Enhanced Ballast Tank Exchange Concepts



Some Articles and Regulations - Highlights

Article 5 - Sediment Reception Facilities

- Where cleaning and repair of BW tanks occurs
- Safe disposal of sediments (should not damage the environment)



➤ Article 6 - Scientific and Technical Research

- Parties shall promote, facilitate and monitor research on BW Management (BWM)



➤ Article 7 - Survey and Certification

- Each party shall survey and certify its ships



Article 8 - Violations

- The violations to the requirements of the Convention shall be **prohibited** and **sanctions** established under the law;
- The sanctions provided by the law shall be adequate in **severity** to discourage violations.
- Alleged violations should be **investigated**
- If violation is proven, the State shall **prosecute**



Article 9 - Inspections of Ships

- Includes inspection of BW record book, validity of Certificate and BW sampling -> **no undue delay**
- ships without valid certificate -> detailed inspection and no BW discharge until proven harmless

Article 13 - Technical Assistance, Co-operation and Regional Co-operation

- Train personnel, availability of technology, equipment and facilities, joint research, implementation of BWMC

Article 14 - Communication of Information

- Each Party shall report to IMO on BWM requirements and on availability of reception facilities



Flag State obligations

- ensure compliance by vessels flying their flag, and that operational requirements are met
- enact domestic laws to implement the Convention



Flag State obligations, continued



- on each vessel, an officer is designated with BWM responsibility
- crew members are adequately trained
- establish appropriate procedures for the issuing of the International Ballast Water Management Certificate.



Port State Obligations

- enact domestic laws
- establish a CME system, including inspection of vessels
- Ensure adequate facilities for sediment reception
- notify IMO and other Parties of national requirements



Port State Obligations

- notify IMO and other Parties of national requirements and procedures for BWM and any requirements for ships unable to comply with the Convention.

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IMO-GloBallast and Republic of Turkey

Global R&D Forum and Exhibition on Ballast Water Management

Compliance Monitoring and Enforcement – the Next R&D Challenge and Opportunity
26 – 28 October 2011

Pre-Conference Shipbuilders' Forum
25 October 2011

Fredrik Haag
Technical Adviser, GloBallast
Partnerships
International Maritime Organization
fhaag@imo.org

<http://globallast.imo.org>

