Ballast Water Management Convention towards a new phase

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Montreal, April 2009

Views expressed in this presentation are those of the author and should not be construed as necessarily reflecting the views of IMO or its Secretariat.

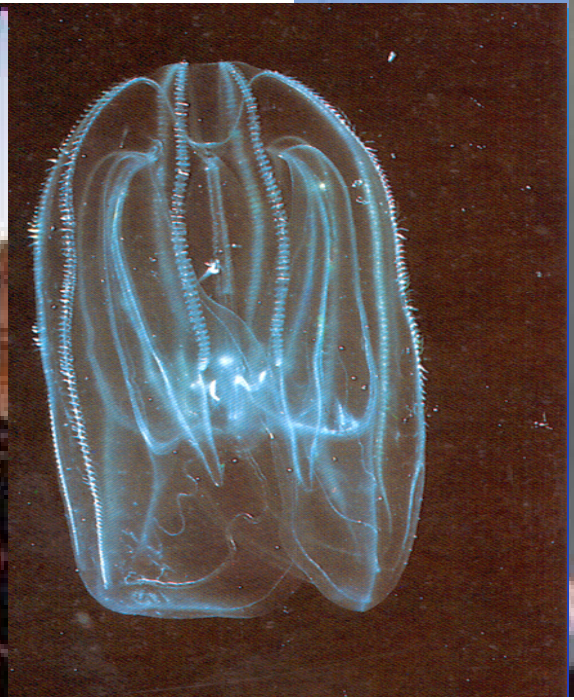
Presentation Overview

- Introduction to IMO
- Ballast water vector and its impacts
- IMO's response
- Implementation of the BWM Convention
- Emerging technologies
- GloBallast Partnerships


IMO
International Maritime Organization
CLEANER OCEANS
Safer Shipping .....
Cleaner Oceans...

IMO

- One of the most active and prolific agencies
- Need for standardization
- More than 40 Conventions and Protocols
- Over 800 codes and recommendations
- Regulatory strategy



Ten of the Most Unwanted

Marine plants, animals and microbes are being carried around the world attached to the hulls of ships and in ships' ballast water. When discharged into new environments, they may become invaders and seriously disrupt the native ecology and economy. Introduced pathogens may cause diseases and death in humans.

Cholera

Vibrio cholerae (various strains)

Native to: Various strains with broad ranges.

Introduced to: South America, Gulf of Mexico and other areas.

Impacts: Some cholera epidemics appear to be directly associated with ballast water. One example is an epidemic that began simultaneously at three separate ports in Peru in 1991, sweeping across South America, affecting more than a million people and killing more than ten thousand by 1994. This strain had previously been reported only in Bangladesh.

North American Comb Jelly

Mnemiopsis leidyi

Native to: Eastern Seaboard of the Americas

Introduced to: Black, Azov and Caspian Seas

Impacts: Reproduces rapidly (self fertilising hermaphrodite) under favourable conditions. Feeds excessively on zooplankton. Depletes zooplankton stocks; altering food web and ecosystem function. Contributed significantly to collapse of Black and Asov Sea fisheries in 1990s, with massive economic and social impact. Now threatens similar impact in Caspian Sea.

Cladoceran Water Flea

Cercopagis pengoi

Native to: Black and Caspian Seas

Introduced to: Baltic Sea

Impacts: Reproduces to form very large populations that dominate the zooplankton community and clog fishing nets and trawls, with associated economic impacts.

North Pacific Seastar

Asterias amurensis

Native to: Northern Pacific

Introduced to: Southern Australia

Impacts: Reproduces in large numbers, reaching 'plague' proportions rapidly in invaded environments. Feeds on shellfish, including commercially valuable scallop, oyster and clam species.

Mitten Crab

Eriocheir sinensis

Native to: Northern Asia

Introduced to: Western Europe, Baltic Sea and West Coast North America

Impacts: Undergoes mass migrations for reproductive purposes. Burrows into river banks and dykes causing erosion and siltation. Preys on native fish and invertebrate species, causing local extinctions during population outbreaks. Interferes with fishing activities.

Zebra Mussel

Dreissena polymorpha

Native to: Eastern Europe (Black Sea)

Introduced to: Western and northern Europe, including Ireland and Baltic Sea; eastern half of North America

Impacts: Fouls all available hard surfaces in mass numbers. Displaces native aquatic life. Alters habitat, ecosystem and food web. Causes severe fouling problems on infrastructure and vessels. Blocks water intake pipes, sluices and irrigation ditches. Economic costs to USA alone of around US$750 million to $1 billion between 1989 and 2000.

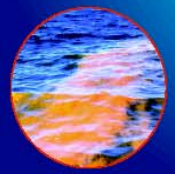
Toxic Algae (Red/Brown/Green Tides)

Various species

Native to: Various species with broad ranges.

Introduced to: Several species have been transferred to new areas in ships' ballast water.

Impacts: May form Harmful Algae Blooms. Depending on the species, can cause massive kills of marine life through oxygen depletion, release of toxins and/or mucus. Can foul beaches and impact on tourism and recreation. Some species may contaminate filter-feeding shellfish and cause fisheries to be closed. Consumption of contaminated shellfish by humans may cause severe illness and death.



Asian Kelp

Undaria pinnatifida

Native to: Northern Asia

Introduced to: Southern Australia, New Zealand, West Coast of USA, Europe and Argentina

Impacts: Grows and spreads rapidly, both vegetatively and through dispersal of spores. Displaces native algae and marine life. Alters habitat, ecosystem and food web. May affect commercial shellfish stocks through space competition and alteration of habitat.

Round Goby

Neogobius melanostomus

Native to: Black, Asov and Caspian Seas

Introduced to: Baltic Sea and North America

Impacts: Highly adaptable and invasive. Increases in numbers and spreads quickly. Competes for food and habitat with native fishes including commercially important species, and preys on their eggs and young. Spawns multiple times per season and survives in poor water quality.

European Green Crab

Carcinus maenus

Native to: European Atlantic Coast

Introduced to: Southern Australia, South Africa, USA and Japan

Impacts: Highly adaptable and invasive. Resistant to predation due to hard shell. Competes with and displaces native crabs and becomes a dominant species in invaded areas. Consumes and depletes wide range of prey species. Alters inter-tidal rocky shore ecosystem.

Further Information:

Global Ballast Water Management Programme
International Maritime Organization, London, UK
Fax +44 (0)20 7587 3261
Web http://globallast.imo.org

Photo credits: *Ship Discharging Ballast Water* – CRIMP, CSIRO Marine Research, Australia, *Zebra Mussel* – Sergei Olenin, *Cladoceran Water Flea* – Mirja Rosenberg, *Cholera* – Gloria Casale, *Comb Jelly* – Richard Harbison, *Asian Kelp & North Pacific Seastar* – CSIRO Australia, *European Green Crab* – T. Huppert, *Toxic Algae* – D.A. Hindman, *Mitten Crab* – Stephan Gollasch, *Round Goby* – David Jude

Concept, content and design: Steve Raaymakers and Liz Gould (design@lizgould.plus.com)

The species presented here are for illustrative purposes only. Their introduced ranges may be greater than depicted. There are numerous other examples of serious marine bio-invasions around the world.

Global Ballast Water Management Programme

GEF undp IMO

Impacts

Ecological

– new invasion every 9 weeks

Economical

– losses in 100s of billions USD per year globally

Human health

– Paralytic shell fish poisoning

– Cholera outbreaks

Impacts over time:
oil pollution v marine bio-invasions

- **Oil pollution is visible, has a strong media impact and usually triggers immediate political action. In time, the environment eventually recovers.**

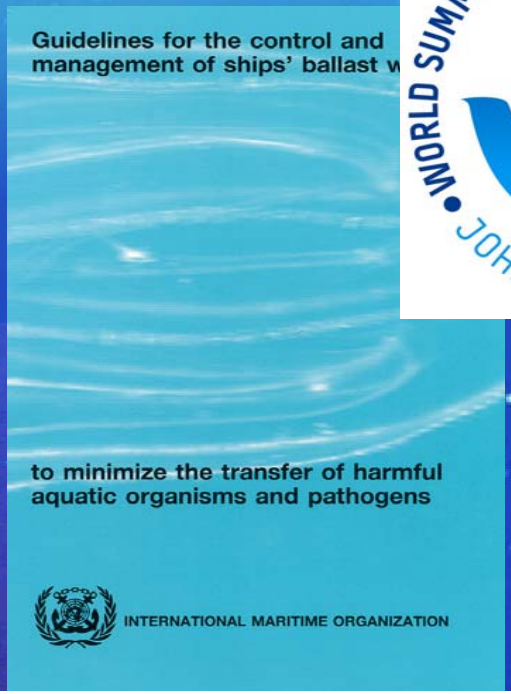
- **Bio-invasions may go unnoticed for some time, increase in severity over the time and in most cases the process is irreversible.**

IMO

IMO's response to the global call for action

- IMO-MEPC 1991
- UNCED 1992
- IMO-Res. A.774(18) in 1993
- IMO-Res. A.868(20) in 1997
- WSSD 2002
- IMO-BWM Convention 2004

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT
JOHANNESBURG 2002



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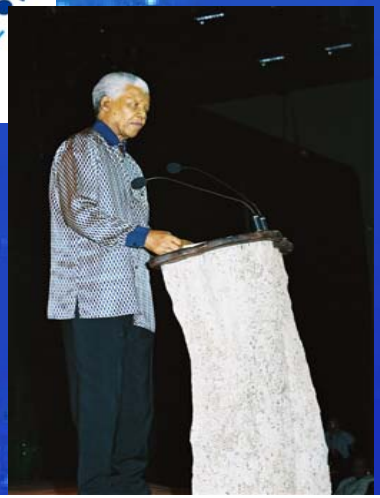


International Convention on Ballast Water Management

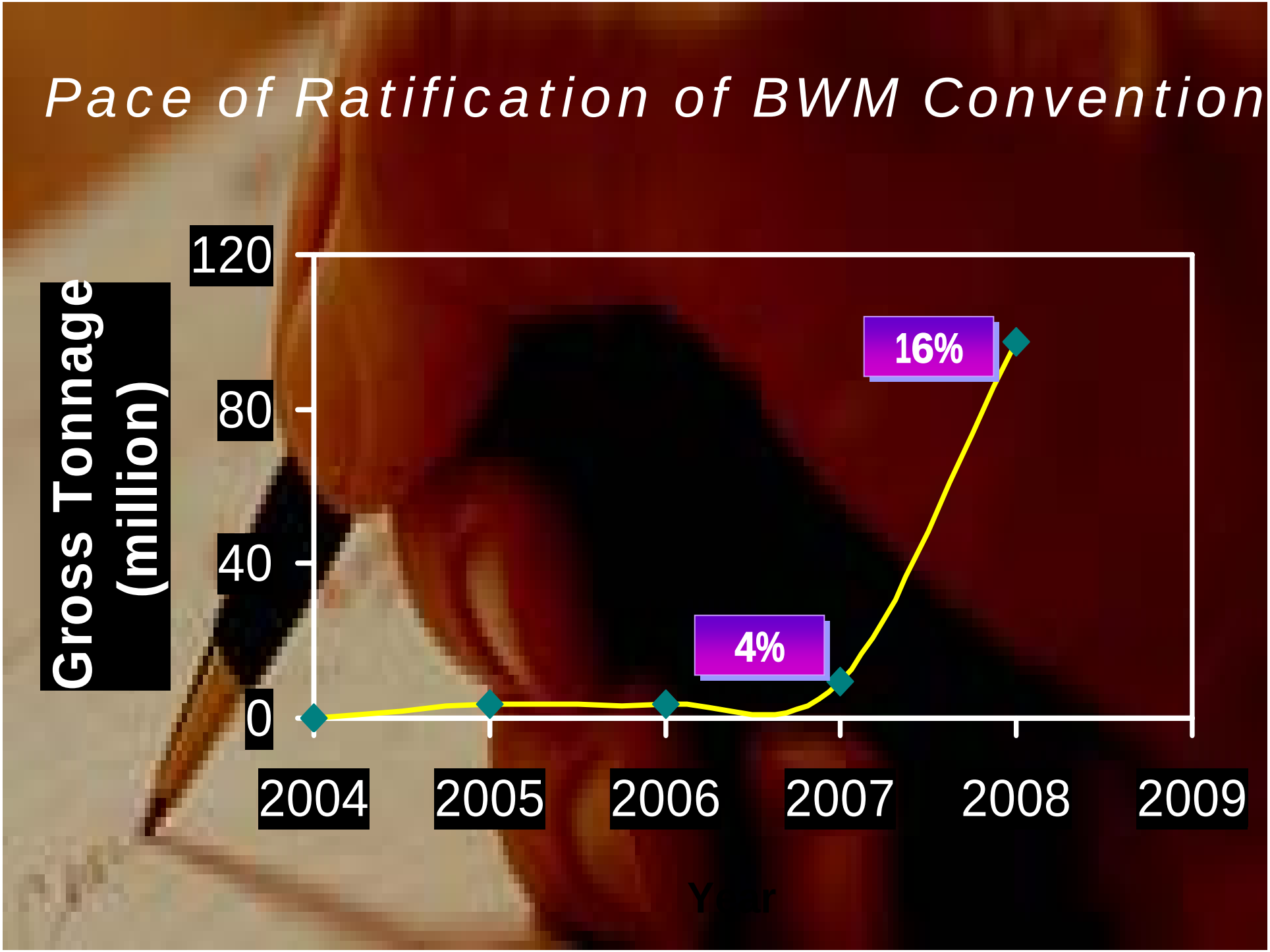
Current status of the Convention

Entry into Force : **30 States / 35 % of the world's merchant shipping gross Tonnage**

To date - ratified by 18 countries representing 16 % of the world Tonnage

Other countries have indicated their intention BWM Convention-current status.ppt

Pace of Ratification of BWM Convention

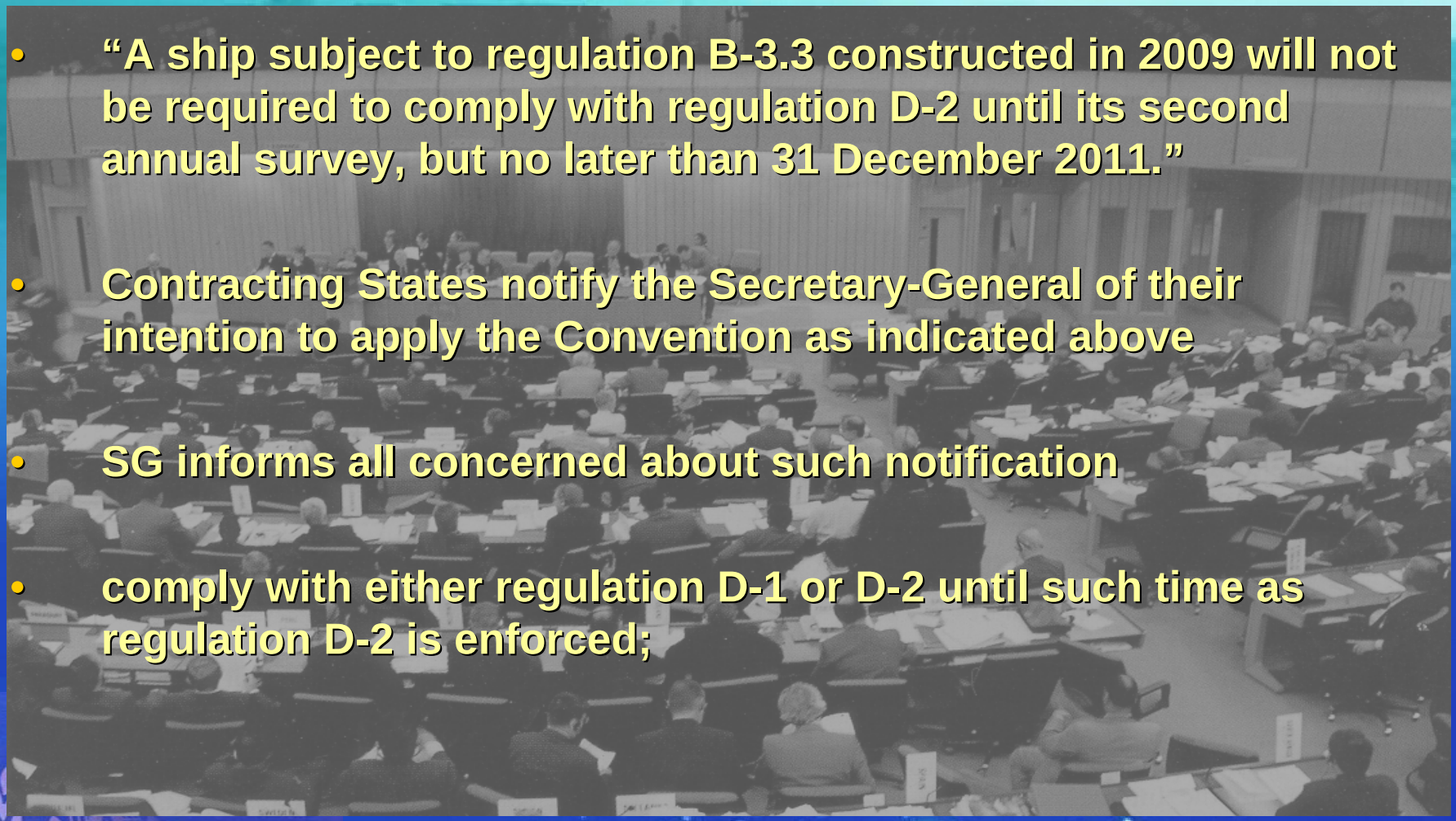


Current time frames

- shall comply not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date in the year of compliance with the standard applicable to the ship

		2010	2011	2012	2013	2014	2015	2016
		xchange 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				

Resolution A.1005(25) Adopted on 29 November 2007

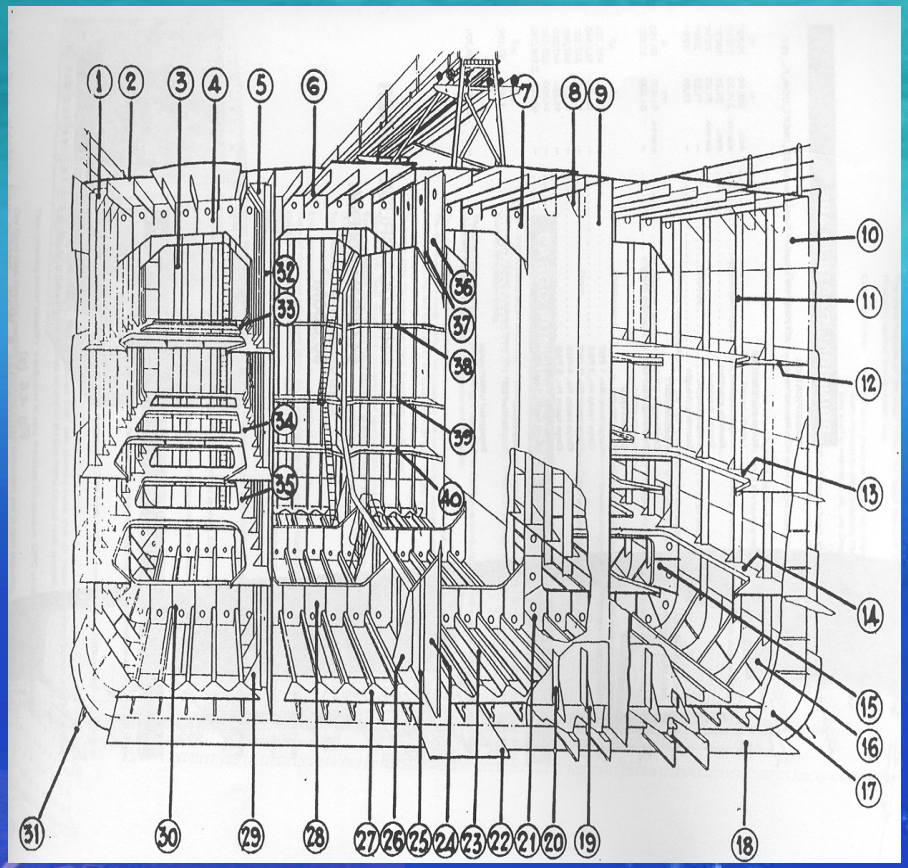


- "A ship subject to regulation B-3.3 constructed in 2009 will not be required to comply with regulation D-2 until its second annual survey, but no later than 31 December 2011."
- Contracting States notify the Secretary-General of their intention to apply the Convention as indicated above
- SG informs all concerned about such notification
- comply with either regulation D-1 or D-2 until such time as regulation D-2 is enforced;

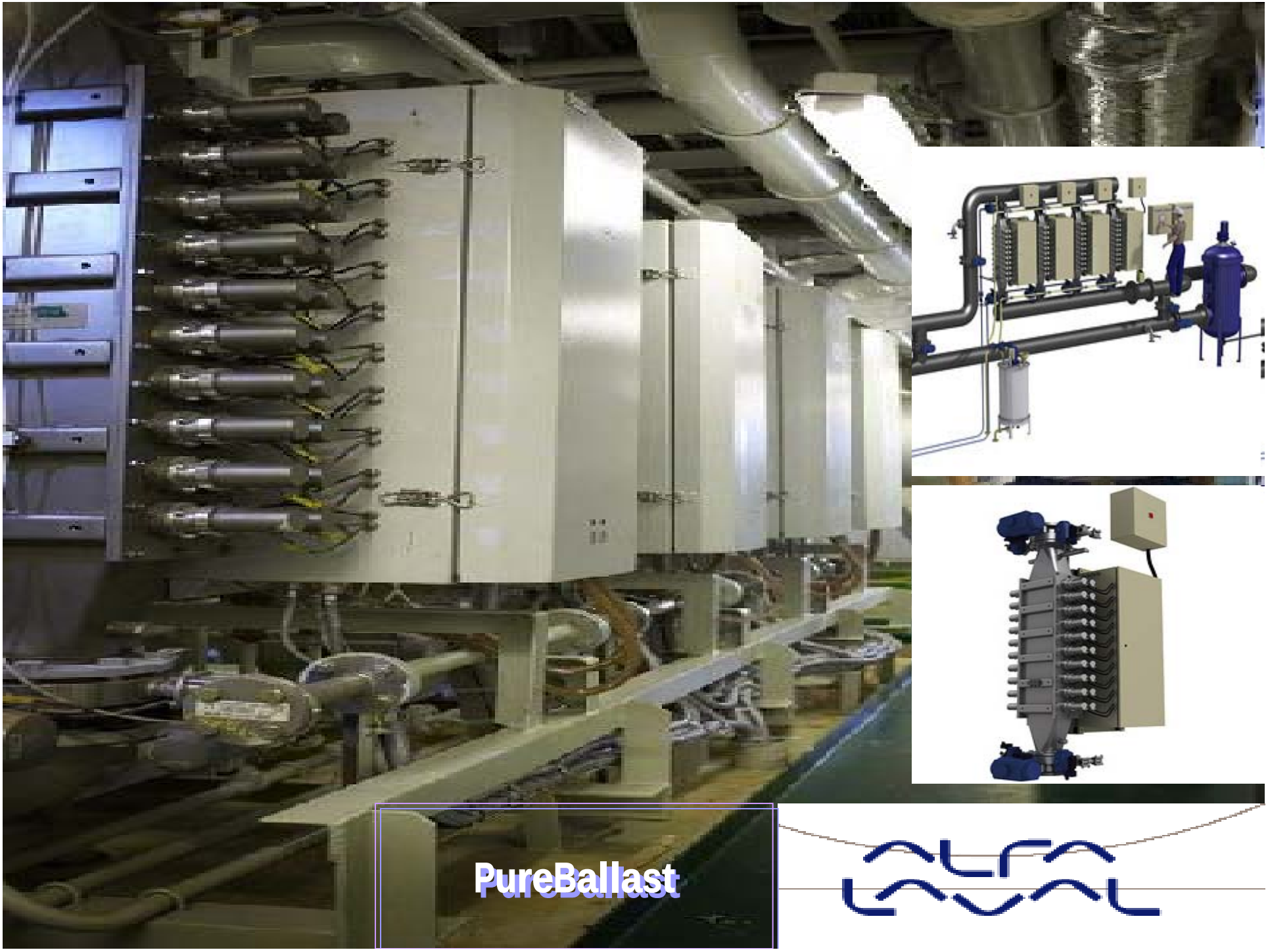
Obstacles, barriers, hurdles…

- Lack of awareness
- Lack of institutional and legal frameworks
- Need for technical guidance BWM G-Is.ppt
- Approval/certification process BWMS appr.ppt
- Availability of effective BWT technologies BWT tech.ppt

Engineering Challenges

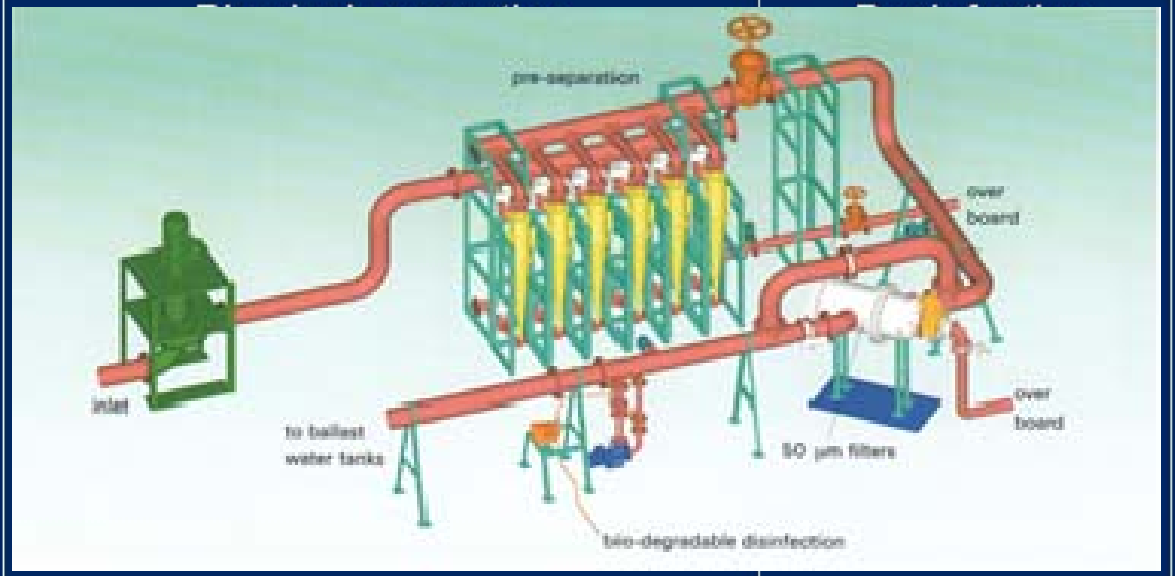


- Space and Safety Requirements are Severe.
- Flows can be 20,000 M^3/Hr.
- Cannot Generate Toxic Residuals.
- Increased electricity consumption
- AS storage and piping


PureBallast

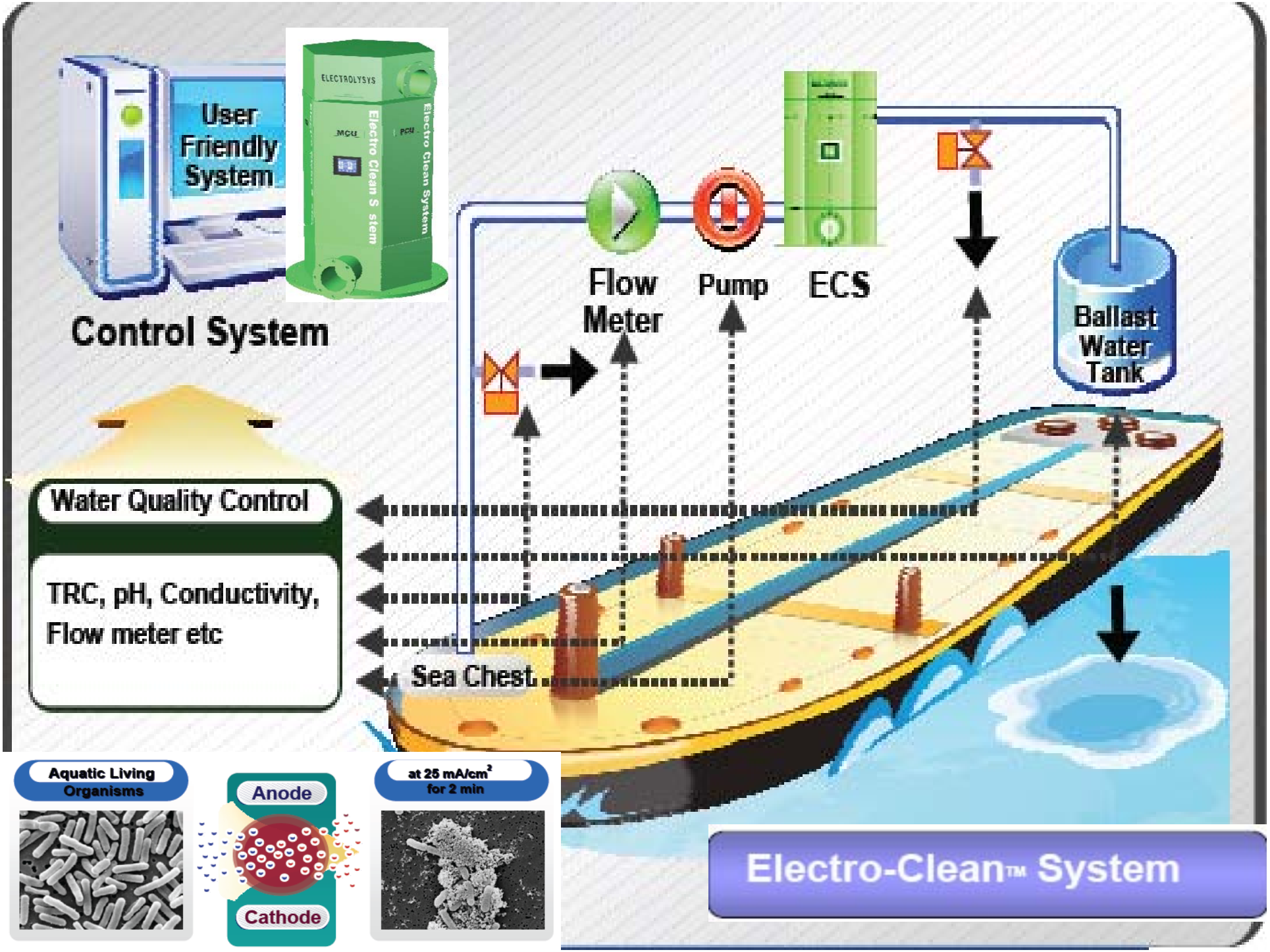
BALLAST WATER TREATMENT

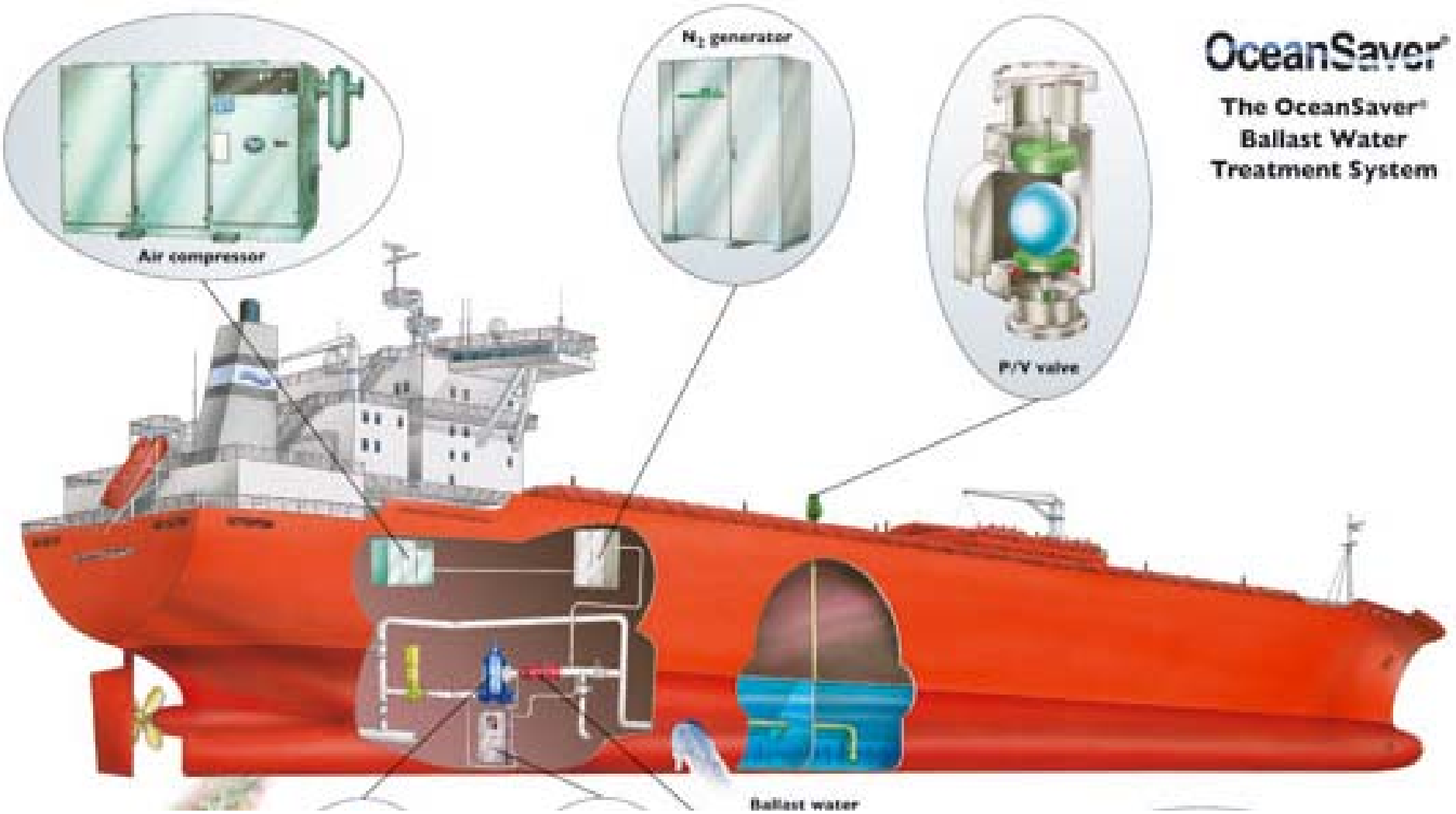
The SEDNA® System



Hydro Cyclones | Fine Filtration | PERACLEAN® Ocean

HAMANN AG
SOLUTIONS FOR A BETTER ENVIRONMENT


User Friendly System
ELECTROLYSYS
Electro Clean System
MCU
PCU
Control System
Flow Meter
Pump
ECS
Ballast Water Tank
Water Quality Control
TRC, pH, Conductivity, Flow meter etc
Sea Chest
Aquatic Living Organisms
Anode
Cathode
at 25 mA/cm² for 2 min
Electro-Clean™ System



Filtration + cavitation + supersaturation

& disinfection

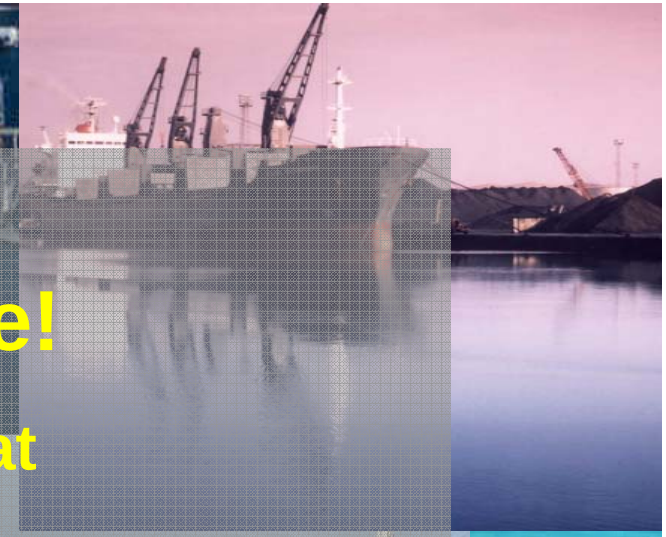
+ aeration of discharged water

The 'pipeline'

No	Proponent	Name of the system	Approval Proposed
1	Japan	Special Pipe Hybrid BWMS-	Final
2	Germany	RWO BWMS (CleanBallast)	Final
3	Republic of Korea	NK-O_3 BlueBallast System (Ozone)	Final
4	China	Blue Ocean Shield BWMS	Basic
5	Republic of Korea	HHI BWMS (EcoBallast)	Basic
6	Japan	Hitachi Ballast Water Purification System (ClearBallast)	Final
7	The Netherlands	Greenship Sedinox	Final
8	Germany	AquaTriComb™ BWTS	Basic
9	Republic of Korea	GloEn-Patrol™ BWMS	Final
10	Germany	Ecochlor®	Final
11	Germany	SiCURE™	Basic
12	South Africa	Resource Ballast Technologies System	Final

Technology is there!

- Introduction of IAS – undeniable threat
- Invasions happening right now – silent, invisible
- Number of invasions on the rise –reverse the trend
- Sustain the momentum precipitated by the R&D community and technology developers (complex problem, integrated solutions, collaborative approach
- The world needs certainty that a regulatory system is in place and there are tangible benefits



What is needed?

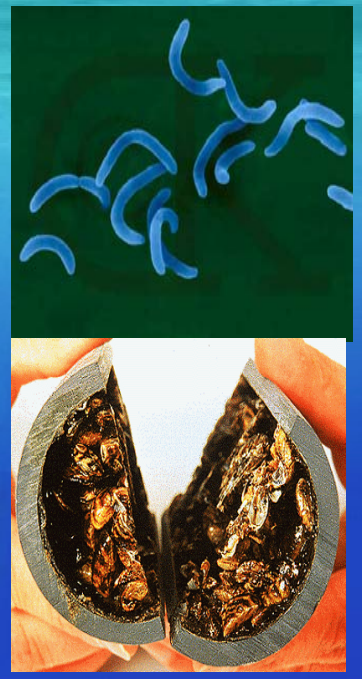
Global engagement!

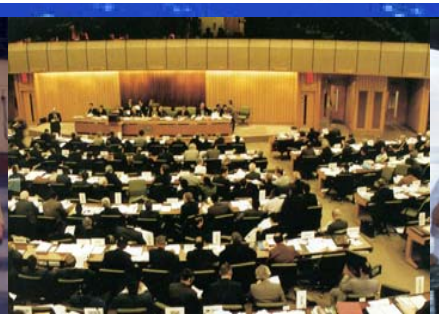
- Invasive species do not recognize political boundaries
- Unless all the s/h act responsibly
- Determination of IMO Members
- Art. 13 – the need to act together
- Engage developing countries – among the largest importers
- Technical and institutional capacity - severe constraint
- IMO – ITCP building capacity
- GloBallast concept

The GloBallast Concept

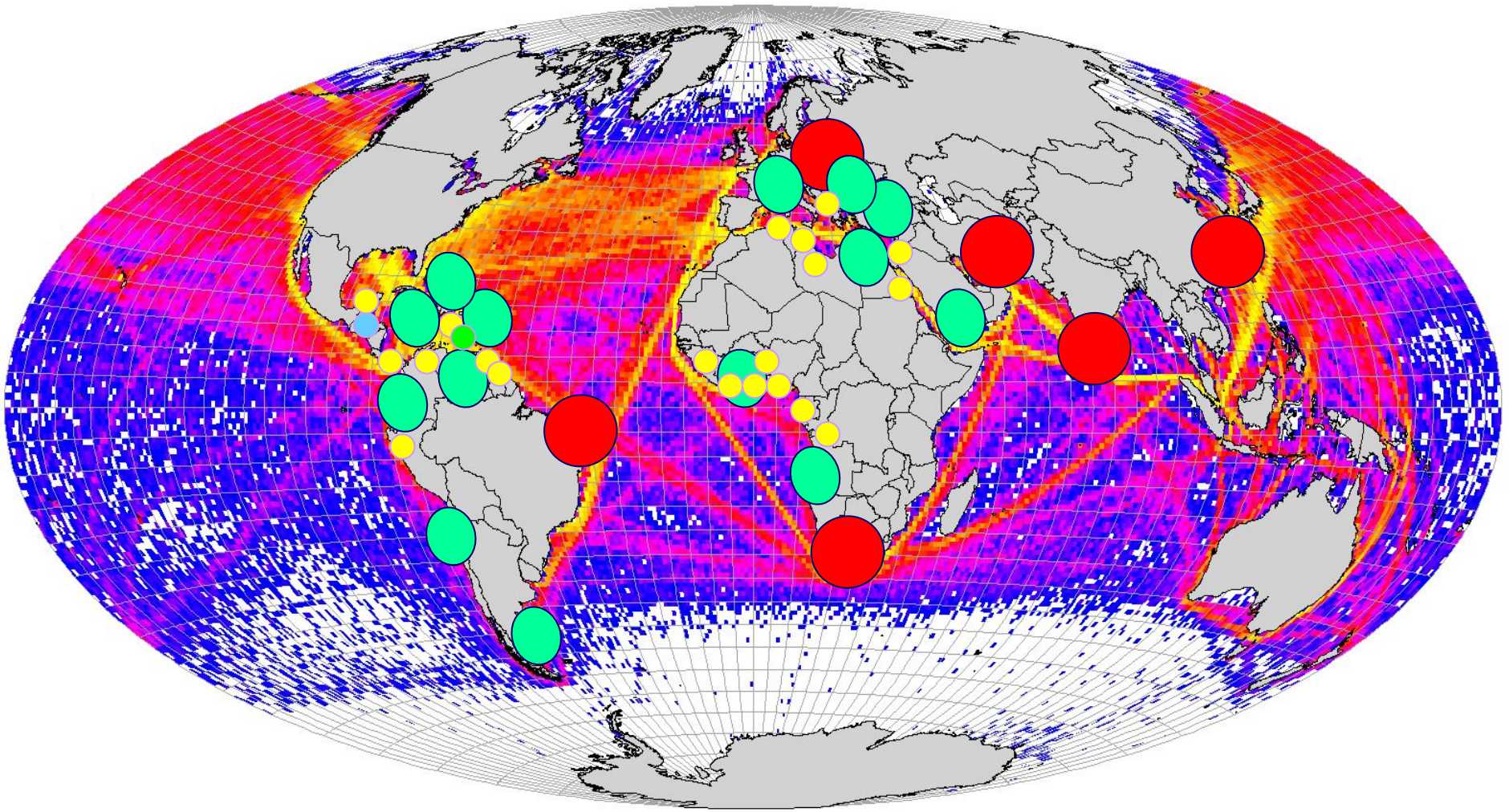
Technical cooperation / institutional strengthening / capacity building

Pilot Phase: 1 March 2000 – 31 Dec 2004





AMVER



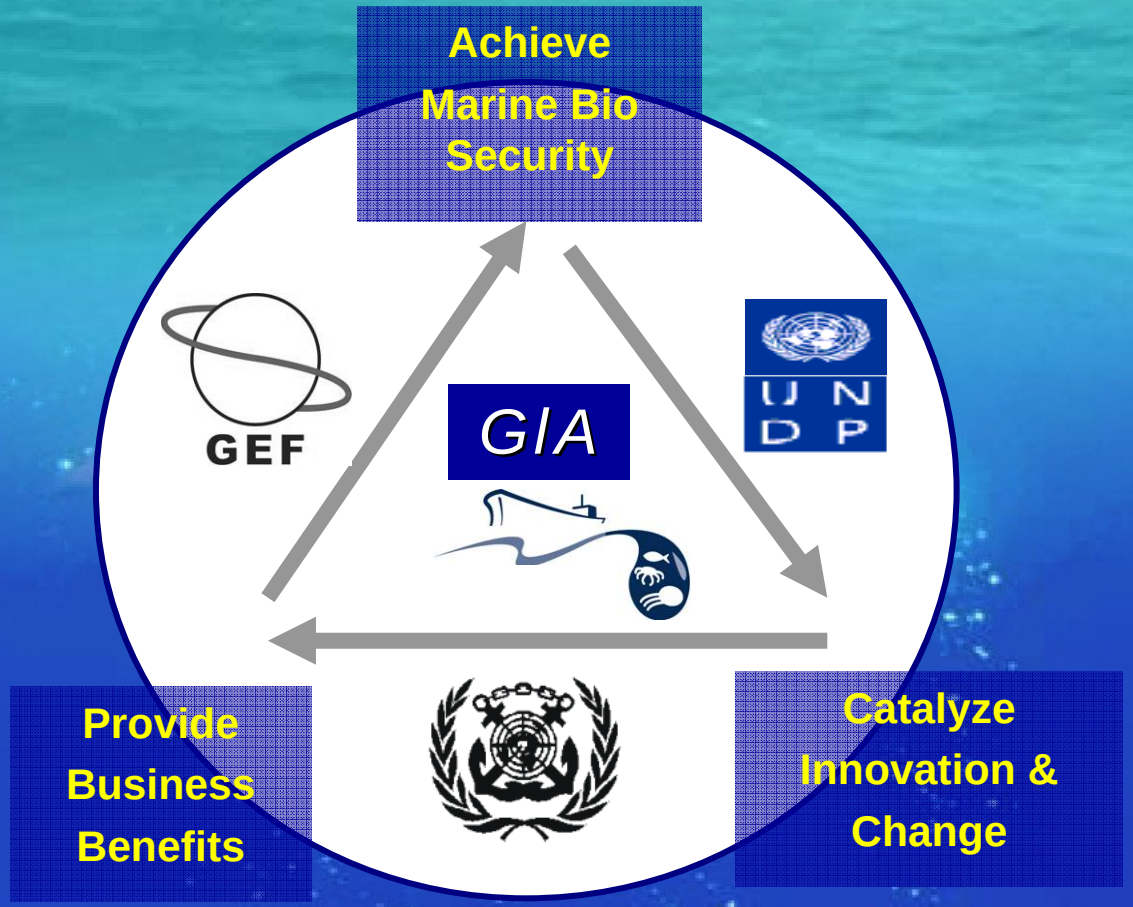
GBP Lead Partners

GBP Partners.

GB Pilots.

Piloting to Partnering – Forging New Frontiers

GloBallast – First to Establish the Global Industry Alliance (GIA)

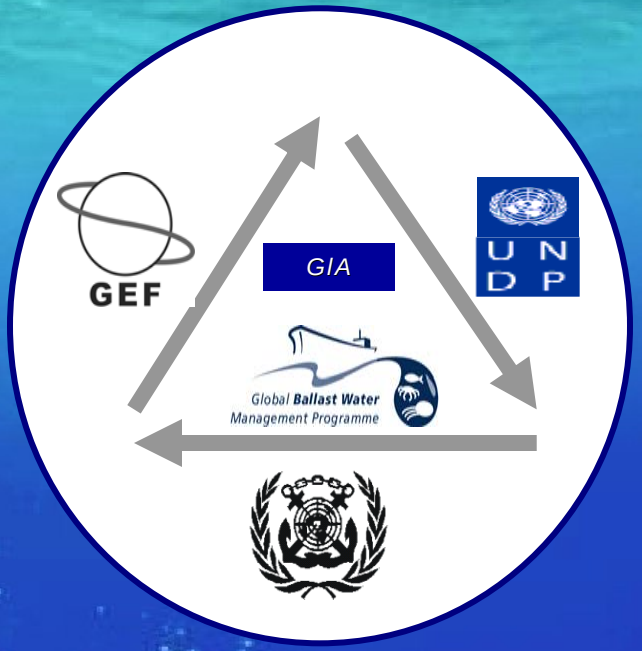


IMO

GIA – Status

- Four Partners (Vela, BP, Daewoo and APL)
- US$50K per year ($200K already in the Fund)
- Three Activities for 2009

1. Global Forum on Test Facilities
2. R&D Forum on Alternate Systems
3. Scientific Study on Equivalency



Conclusion: Act together and act NOW!

Ratification of the BWMC – early EIF

SG's plea since 2004

This instrument is beneficial for all concerned:

Enhanced protection of the marine environment

Conservation of biodiversity

Standardized approach for industry

- **Widely recognized level playing field for all – certainties**

Not perfect – amendments only after EIF

Thank you !

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