ASEF-Korea
(12-13 Nov. 2008)

KOREAN REGISTER

Overview of Regulations and Standards on Marine Environment Protection

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Korean Register of Shipping

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1. Introduction

- **Regulations & Standards on Marine Environment Protection - IMO MEPC/IACS Rules/ISO TC8**
- **Issues at the 1st ASEF for Int. Maritime Tech. Initiative on 15/16 November 2007 in Tokyo :**

  - Goal Based Standards

  - Ship Recycling

  - Corrosion Prevention / PSPC

- **Additional issues at the 2nd ASEF in Changwon, Korea:**

  - Air Pollution & Ballast Water Management

- **"Safer Ships & Cleaner Ocean"**

2. PSPC & AFS

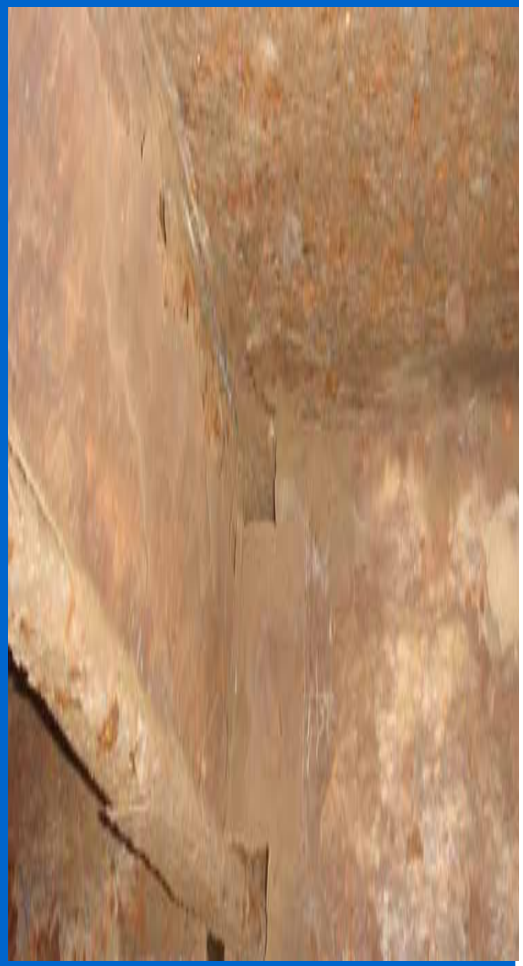
❑ PSPC

- **Corrosion prevention of s.w. ballast tank of oil tankers/bulk carriers**
  (SOLAS Ch.II-1, Reg.3-2 : 1/7/1998)
- **IMO invited IACS to form an industry group to develop the PSPC in 2002.**
- **TSCF (Tanker Structure Cooperative Forum) developed a guide for IMO Rec.A798.**
- **IMO adopted MSC.215(82) PSPC (8 Dec. 2006)**
  "Performance Standard for Protective Coatings (PSPC) for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-Side Skin Spaces of Bulk Carriers"
  (over 500 grt contracted after 1/7/08)

IACS Proc. Req't No.34 (rev. June 2008)

(Application of IMO PSPC, Res.MSC.215(82) under IACS CSR of Bulk Carriers & Oil Tankers)

- **IACS Procedures (8.12.06) for**
  - **Coating System Approval**
  - **Assessment of Coating Inspectors' Qualifications**
  - **Inspection Agreement (the PSPC 3.2)**
  - **Verification of Application of PSPC**
  - **Coating Technical File Review**
  - **Review of Quality Control of Automated Shop Primer plants**
  - **Review of Coating Technical Specifications**



*** AFS (Anti-Fouling System)

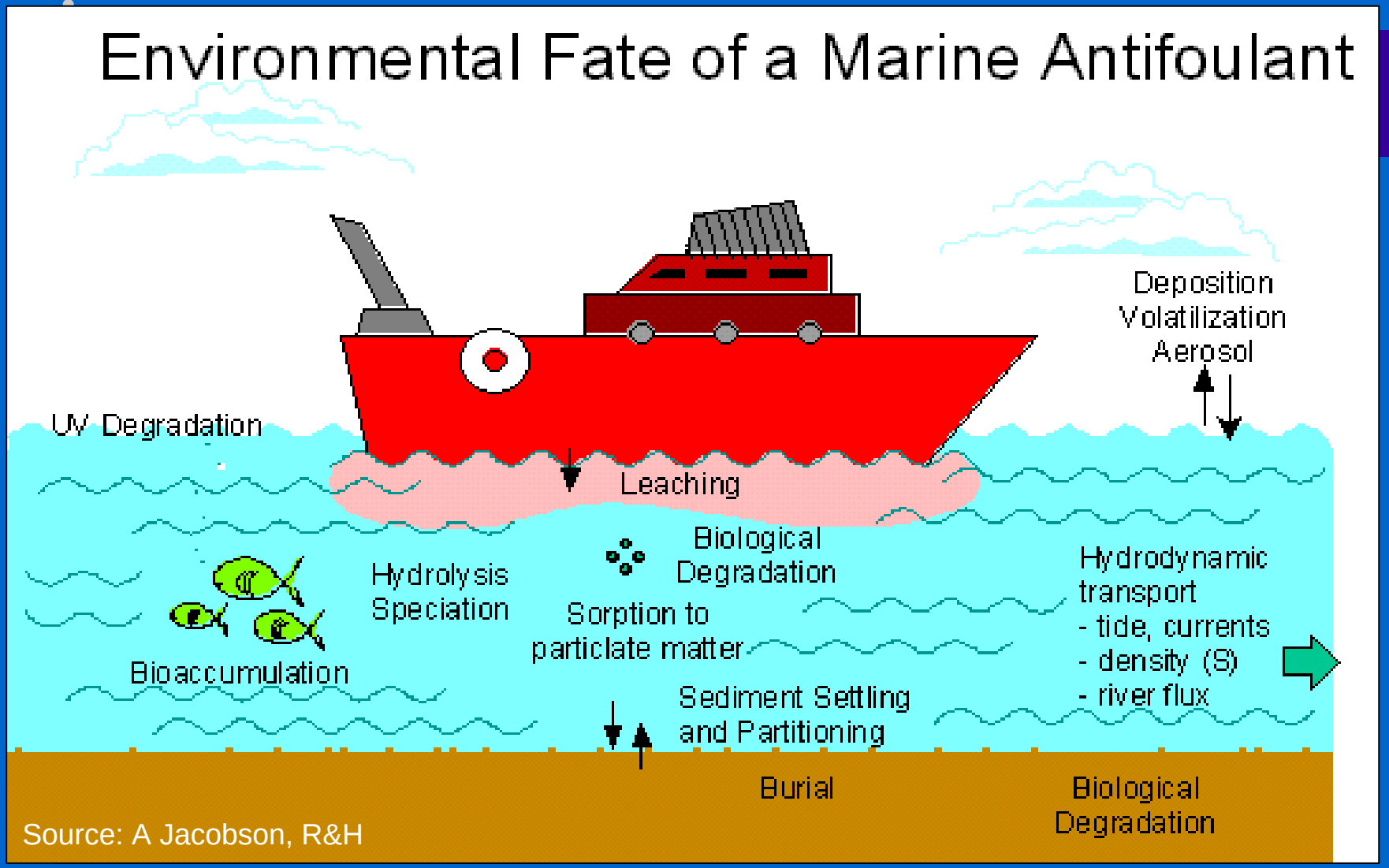
- **IMO AFS Convention (2003)**
  (Int. Convention on the Control of Harmful AFS on ships)
  Entered into force from **17 Sept. 2008!**
  Tin/organotin based compounds are banned.
- Otherwise, ship's hull be (sealer) **coated from 1.1.2008.** (Class rules)- EU ports not allowed to enter!
- **EU-BPD** (Biocidal Products Directive-98/8/EC):
  Strict control of market for Anti-Fouling Products
  Exposure assessment for Human Health & Environmental emission
- **FIFRA** : Risk/hazard assessment
  (Federal Insecticide, Fungicide & Rodenticide Act, U.S.A.)

- **The 14th Int. Congress on Marine Corrosion & Fouling** (27-31 July 2008, Kobe, Japan)

- **ISO TC8/SC2 Task Group** for AFS - WD: Marine environment protection - Risk assessment on AFS on ships
  - Part 1: Marine environment risk assessment method on active substances used for AFS on ships (under preparation)
  - Part 2: … using active substances on ships
  - Part 3 & 4: Human health risk assessment for … AFS

- **Other problem-**
  More fouling - more CO_2 emissions !
  Anti-Fouling paint - Hull roughness/resistance

Environmental Fate of a Marine Antifoulant



Source: A Jacobson, R&H

** ISO/ASTM standards : AFS

- **ASTM D 5108-90, Standard Test Method for Organiotin Release Rates of Antifouling Coating Systems in Sea Water**
- **ASTM D 6442-99, Standard Test Method for Copper Release Rates of Antifouling Coating Systems in Seawater**
- **ISO 15181-1:2007, Paints and varnishes - Determination of release rate of biocides from antifouling paints - Part 1: General method for extraction of biocides**

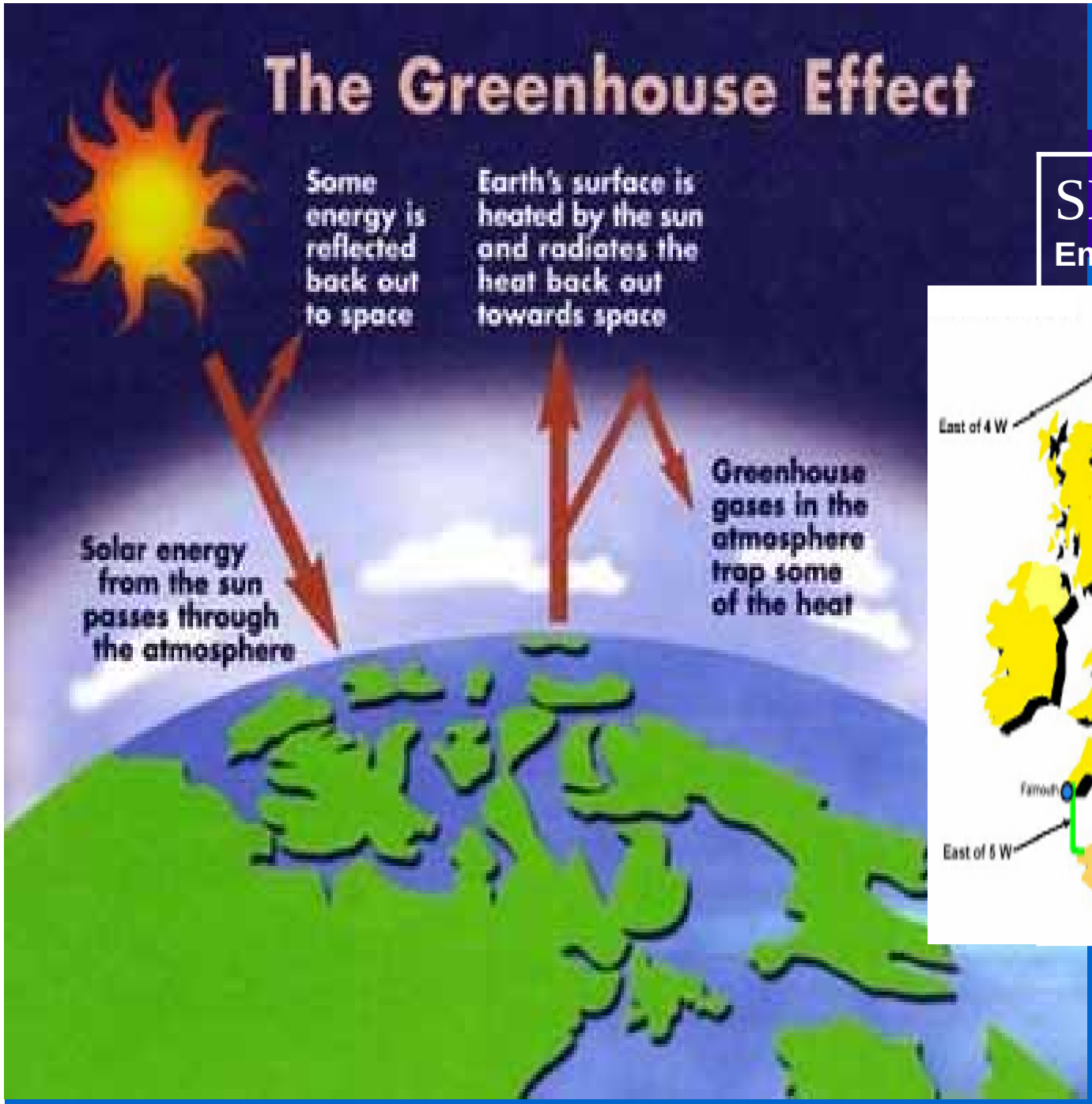
-2: - Part 2: Determination of copper-iron concentration in the extract and calculation of the release rate

-3: - Part 3: Calculation of the zinc ethylene-bis(dithiocarbamate) (zineb) release rate by determination of the concentration of ethlenethiourea in the extract

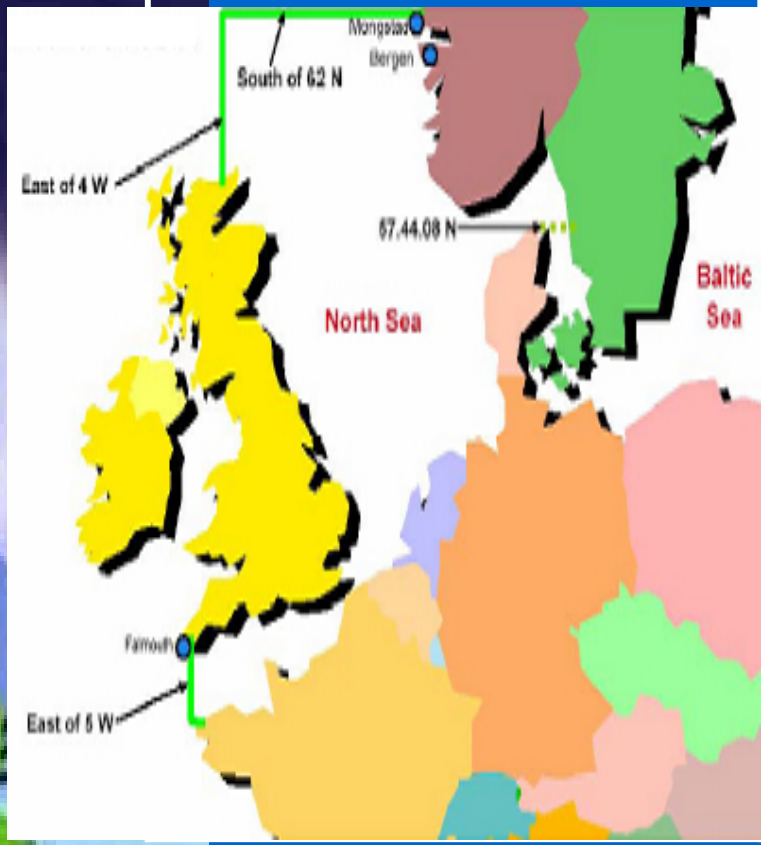
-5: - Part 5: Calculation of the tolylfluanid and dichlofluanid release rate by determination of the concentration of DMST and DMSA in the extract

3. Emissions & GHG

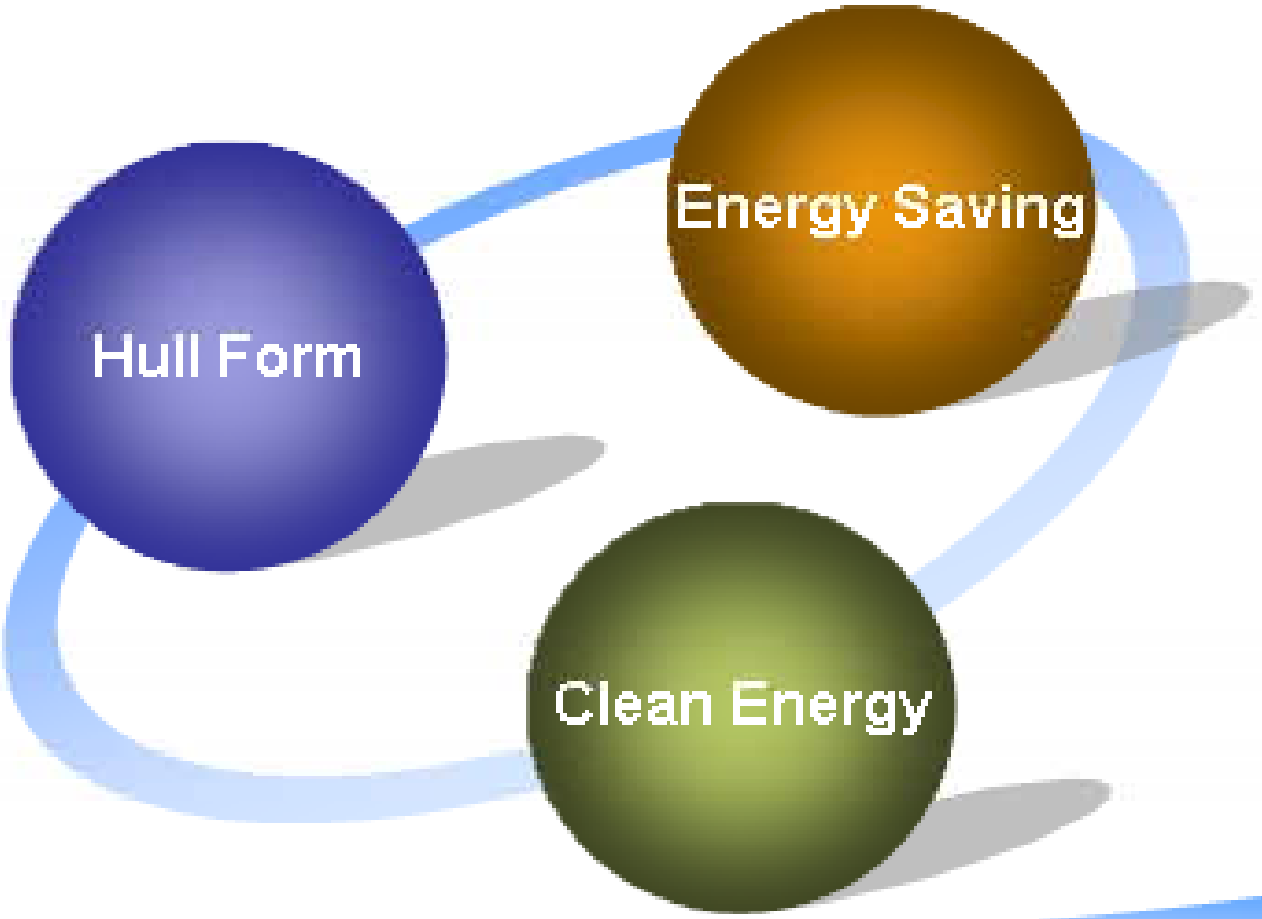
- **NOx & SOx (changes to MARPOL Annex VI)**
  - **IAPP (Int. Air Pollution Prevention) : 5. 2005**
  - **Global Sulphur cap (SOx) be reduced until 2012: from 4.5%(current) to 3.5%, then progressively to 0.5% (1.1.2010)**
  - **SECAs (Sulphur Emission Control Areas) be reduced to 1.0% (current 1.5%) from 1.7.2010.**
  - **Progressive Reductions in Nitrogen Oxide (NOx) emissions from marine engines of so-called "Tier I" : current, "Tier II" : after 2011, "Tier III" : installed on ships after 1.1.2016**
  - **Revised NOx Technical Code 2008 : effective from 1.7.2010**



SECA (Sulphur Emission Control Areas)



Ultimate Goal of Energy Efficiency Design Index



- **GHG (Greenhouse gases/CO_2 emissions)**
  - **UN Framework Convention on Climate Change (UNFCC) / Kyoto Protocol**
  - **Energy Efficiency Design Index for new ships**
    Energy Efficiency Operational Index for existing ships
- **Low carbon - Green energy !**
  President of Korea, Lee Myung-bak said in 2007:
  "Korea would be early Mover!"
- **Shipping is more CO_2 efficient**
  (gm per ton-km cargo)
  carried than any other means of transport:
  eg. Air freight-540, Truck-50, Cargo Ships-15/21
  (source: Swedish Network for Transport & the Environment)
- **Wind power generation by dragging a ship**
- **Environmental friendly electronically-controlled engine**
- **Use of Silicon paint for fuel consumption**
  (A shipping company reported recently- saved 600,000/200,000tonnes of CO_2 emission/fuel consumption/ year)

4. Ship recycling

- **UNEP/Basel Convention on the Control of Transboundary Movements（12.2002）:**

  Technical guidelines for the environmentally sound management of the full and partial dismantling of ships

  (http://www.basel.int/ships/techguid.html)

- **ILO（3. 2004）： Guidelines on safety and health in shipbreaking - for Asian countries and Turkey**

  (www.ilo.org/public/english/protection/safework/sectors/shipbrk/index.htm)

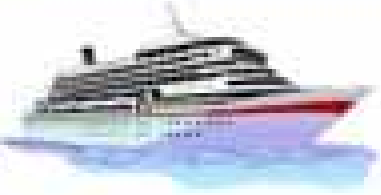
- **IMO (12. 2003)："Green Passport"**

  Guidelines on Ship Recycling - A.962(23) will be adopted as a new IMO Instrument at Diplomatic Conference (HongKong/ 4.2009)

Draft convention on Ship Recycling

- **Articles**
- **Regulations**
  - Ch. 1 – General Provisions
  - Ch. 2 – Requirements for ships
    - Part A : Design, construction, operation & maintenance of ships
    - Part B : Preparation for ship recycling
    - Part C : Surveys and certification
  - Ch. 3 – Requirements for ship recycling facilities
  - Ch. 4 – Reporting requirements
- **Appendix** 1, 2 : prohibited hazardous materials
- **Appendix** 3 ~ 6 : Forms

www.shipbreakingplatform.org



New ship

Existing Ship

Inventory Part I

Visual/Sampling Plan

Inventory Part I

Verify

Verify

Initial Survey

Int. Cert. on Inventory of Hazardous Materials [ICIHM]

When a ship recycled within 5 years after the convention effective

Verification of Maintaining/

Updating Inventory Part I

Periodical Survey / Additional Survey

Carrying ICIHM

Inventory Part I + Part II & III

Ship Recycling Plan

Prior to Recycling of Ships - Final Survey

Verification

The ship with IRRC should go straight to the recycling yard asap.

Int. Ready for Recycling Cert.[IRRC]

Recycling Facility

❑ ISO/PAS 30000 - Ship Recycling Facility Management System Requirements

(ISO 9000+14001+28000 QMS+Environm't+Security)

- ISO/AWI 30001 Best practice for ship recycling facilities – Assessment & plans **(Leader: Turkey/TSE - Mr. E. Erginer)**
- ISO/AWI 30002 Guidelines for selection of ship recyclers (& pro forma contract) **(Leader: BIMCO - Mr. B. Mortensen)**
- **ISO/PAS 30003 Requirements for bodies providing audit & certification of ship recycling management systems**
  (Leader: GL - Mr. H. Gramann)
- (AWI 30004) Guidelines for implementing ISO 30000
  (Leader: LR/BSI - Mr. R. Townsend)
- (AWI 30005) Inform. control for hazardous materials in the manufacturing chain of shipbuilding & ship operations
  (Leader: GL - Mr. H. Gramann)
- (WD 30006) Guidelines on surveying of ships for hazardous materials & min. amount or content of hazardous materials to be reported **(Japan?)**
- (WD 30007) Methods to remove asbestos in ships **(Japan?)**

5. Ballast Water Management

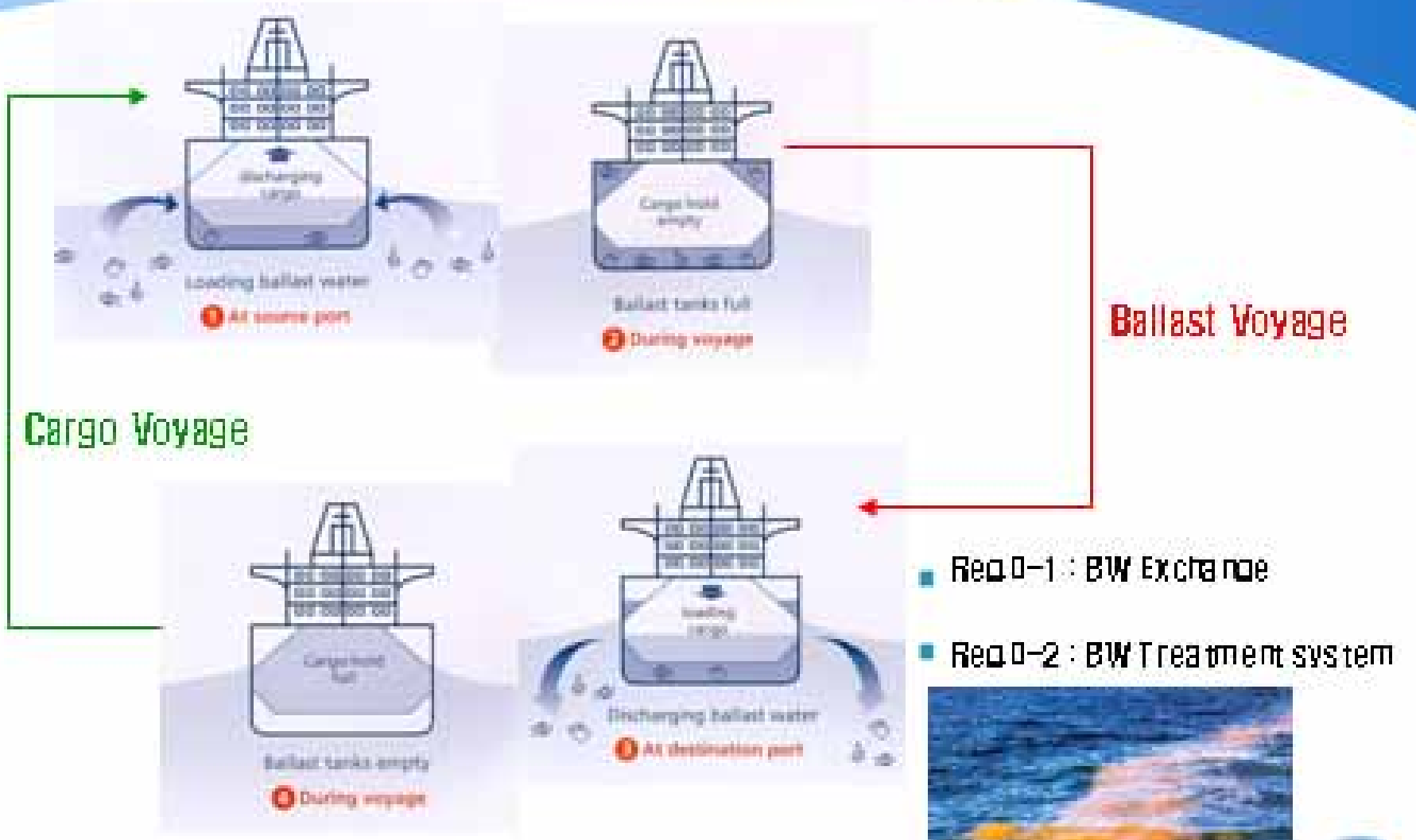
- **BWM/CONF/36 (16.2.2004)**
  "Int. Convention for the Control & Management of Ships' Ballast Water & Sediments"

- **MEPC 53-58 :14 Set of Guidelines**

- **G1. For sediment reception facilities**
- **G2. For ballast water sampling** (MEPC58)
- **G3. For BWM equivalent compliance**
- **G4. For BWM & development of BWM plans**
- **G5. For ballast water reception facilities**
- **G6. For ballast water exchange**

- G7. For risk assessment under reg. A-4 of the BWM convention
- G8. For approval of BWM systems
- G9. Procedure for approval of BWM systems that make use of active substances
- G10. For approval and oversight of prototype ballast water treatment technology programmes
- G11. For ballast water exchange design & construction standards
- G12. On design & construction to facilitate sediment control on ships
- G13. For additional measures regarding BWM I ncluding emergency situations
- G14. On designation of areas for ballast water exchange

Ballast Water Management Convention



- Reg.D-1 : BW Exchange
- Reg.D-2 : BW Treatment system

Ballast Water Treatment

6. OPRC - HNS

- **OPRC Convention** **(Oil Pollution Preparedness, Response & Co-operation)**
- **OPRC-HNS**
  (Hazardous & Noxious Substances)
- **MEPC58** **approved:**
  - Manual on assessment of oil spill risks & preparedness
  - IMO/UNEP Manual on the assessment & restoration of environmental damage following marine oil spills

Picture: **Oil pollution** (spilled 12,547 kl)
in western coast of Korea
(MV. Hebei Spirit - 7.12.2007)

ISO TC8/SC2 (Marine environment protection)

(Chair: Mr. K. Yoshida, NMRI / Sec.: Dr. C. Juneman, DOT, U.S.A.)

- 14th Meeting on April 7-10, 2008
  Maritime & Coastguard Agency, Southampton, UK

- ISO 16165 Revision to
  "Terminology relating to oil spill response"
- ISO 16446 Revision to
  "Adaptor for joining dissimilar boom connectors"
- CD/DIS 21070 "Management & handling of shipboard garbage"
- FDIS 21072-3 "Performance testing of oil skimmers – Part3 : High viscosity oil conditions"
- ISO TC8/SC2/TG for AFS:
  Development of WD for AFS risk assessment

Q & A
Thanks!

“Safety Net” !

to keep Ocean Cleaner

for Environmental-Friendly Ship
Design/Construction/Operation