



# Ship Recycling

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**22 February 2016**

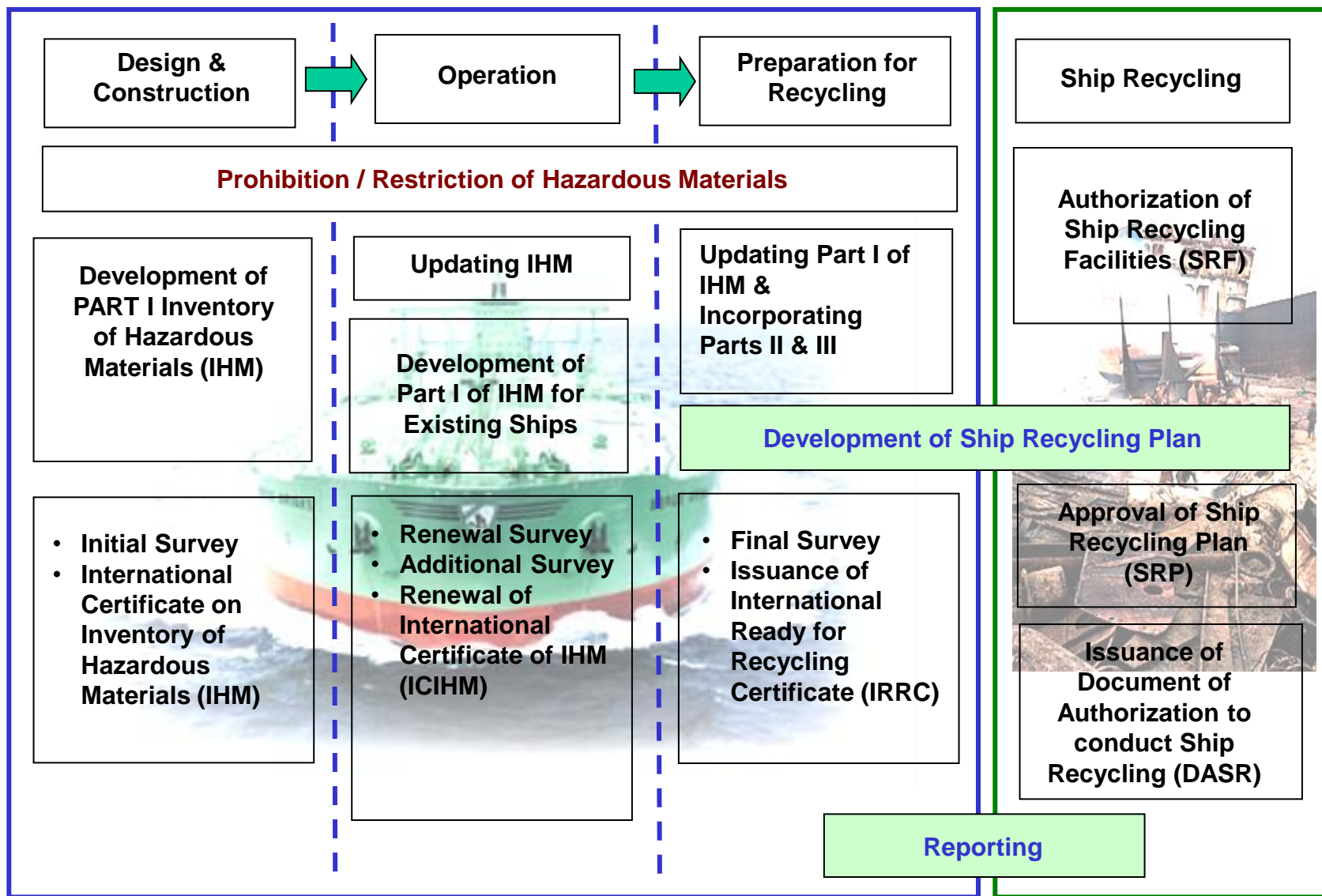
# Why think about recycling now?



# Hong Kong Convention

- Entry into force requirements:
  - 15 states must ratify
  - Representing not less than 40% WGT
  - Combined max annual recycling volume for previous 10 years must not be less than 3% GT of combined MSGT of those same states
- As of 21 Jan. 2016, Ratified by 3 States - 1.86% of World GT
- Depends primarily on India, Bangladesh, China and Pakistan
- Ship Requirements:
  - Limit use and installation of listed HM
  - Inventory of Hazardous Materials (IHM)
- Resolution MEPC.269(68) on 2015 Guidelines for the development of the Inventory of Hazardous Materials

# HKC: Compliance Throughout All Phases

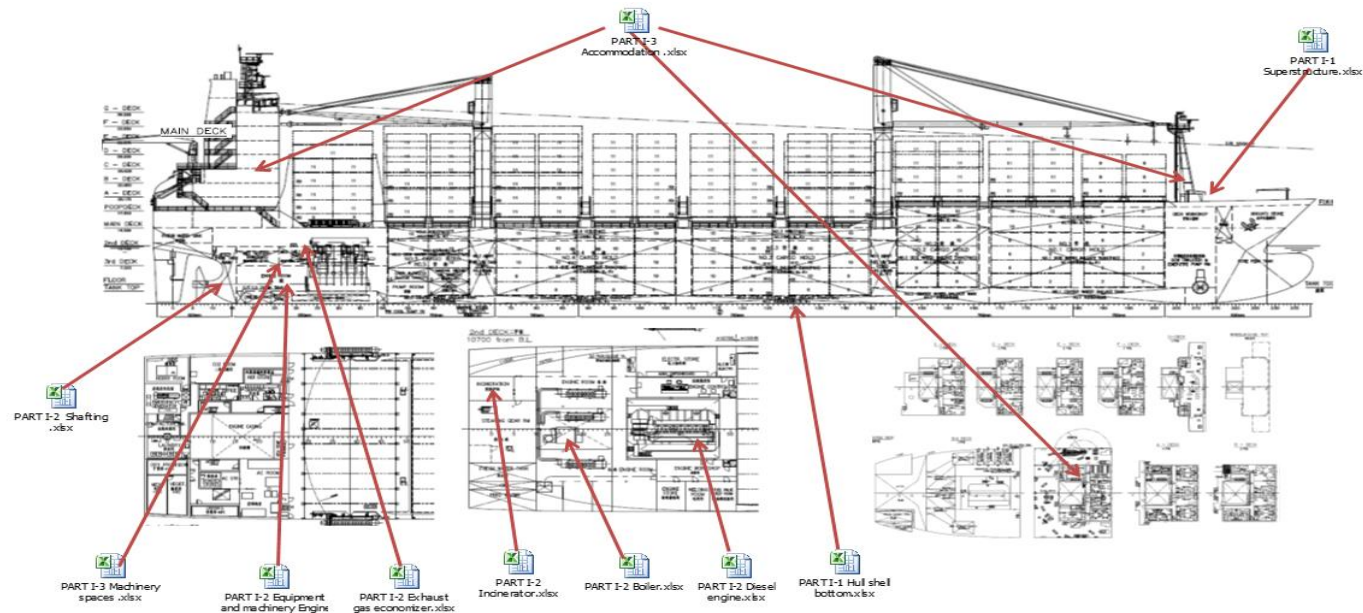




# Hong Kong Convention: IHM

## Inventory of Hazardous Materials

- Three Parts
  - Part I: HM inherent in the construction/equipment
  - Part II: Operationally generated wastes
  - Part II: Ship Stores



# Hong Kong Convention: IHM

- Tables A and B: Hazardous Materials listed in appendix 1 and 2 of the Convention
  - Tables A and B correspond to part I of the Inventory.
- Table C: Potentially hazardous items to the environment and human health at ship recycling facilities
  - Table C corresponds to parts II and III
- Table D: Regular consumable goods potentially containing hazardous materials not integral to a ship and are unlikely to be dismantled or treated at a ship recycling facility.
  - Table D corresponds to part III.

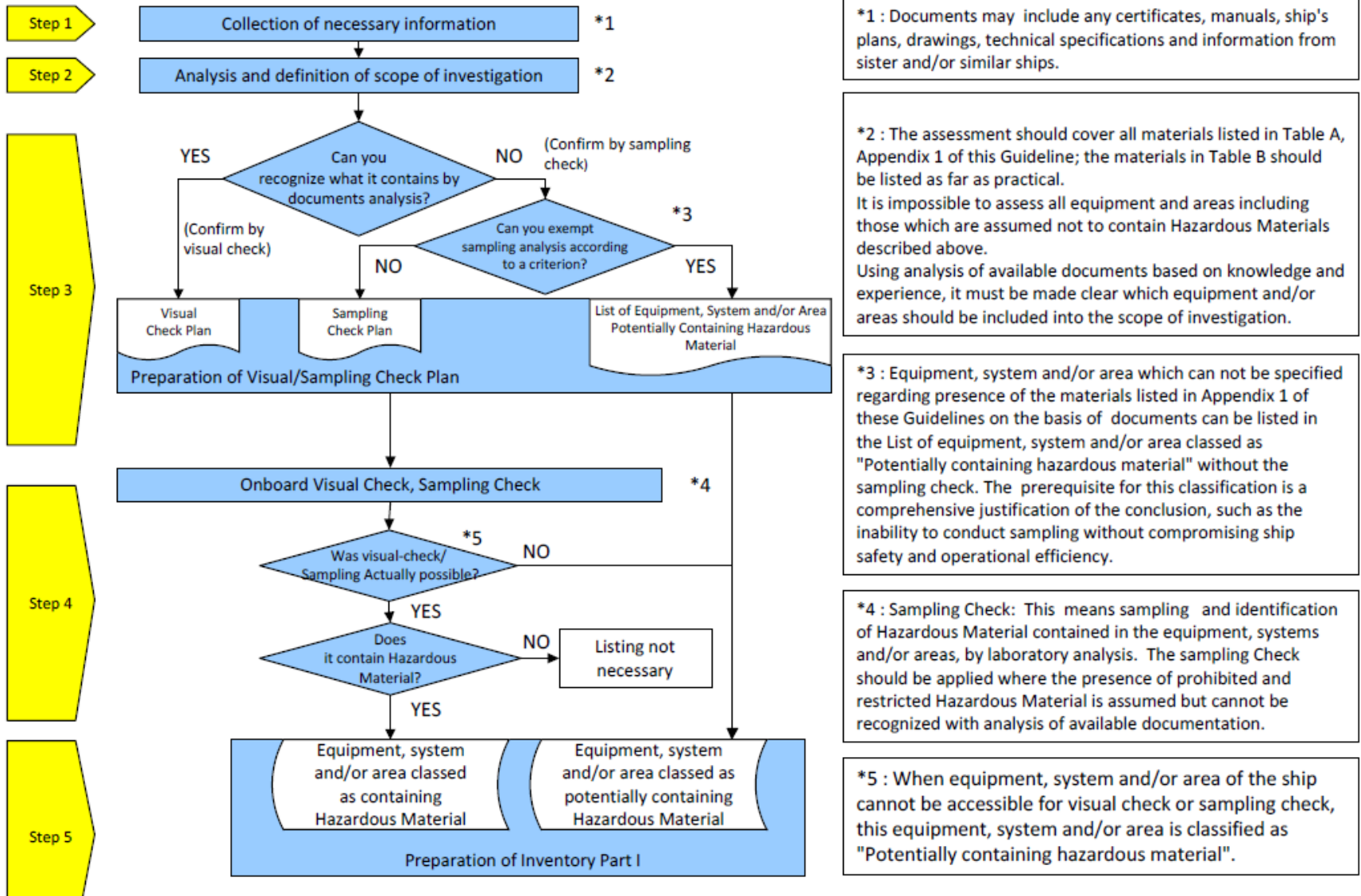
Table A – Materials listed in appendix 1 of the Annex to the Convention

No.	Materials	Inventory			Threshold value
		Part I	Part II	Part III	
A-1	Asbestos	x			0.1% <sup>4</sup>
A-2	Polychlorinated biphenyls (PCBs)	x			50 mg/kg <sup>5</sup>
A-3	Ozone depleting substances	CFCs	x		no threshold value <sup>6</sup>
		Halons	x		
		Other fully halogenated CFCs	x		
		Carbon tetrachloride	x		
		1,1,1-Trichloroethane (Methyl chloroform)	x		
		Hydrochlorofluorocarbons	x		
		Hydrobromofluorocarbons	x		
		Methyl bromide	x		
	Bromochloromethane	x			
A-4	Anti-fouling systems containing organotin compounds as a biocide	x			2,500 mg total tin/kg <sup>7</sup>

Table B – Materials listed in appendix 2 of the Annex to the Convention

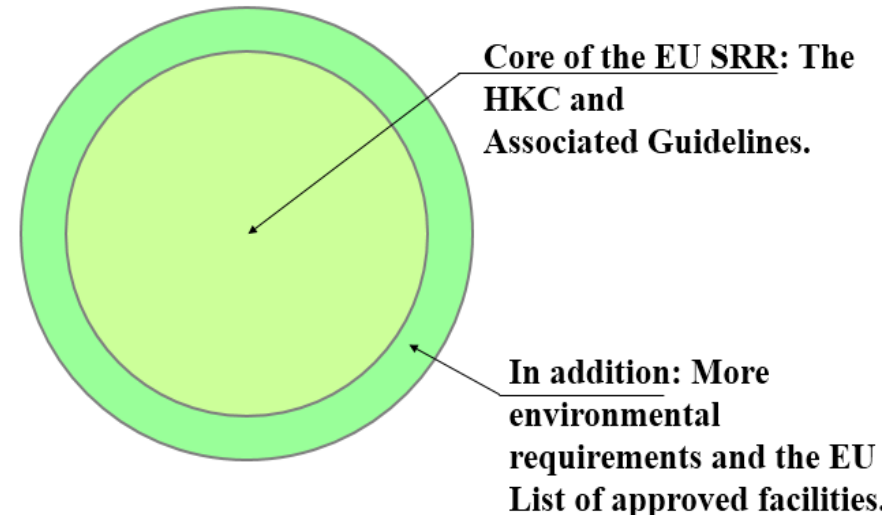
No.	Materials	Inventory			Threshold value
		Part I	Part II	Part III	
B-1	Cadmium and cadmium compounds	x			100 mg/kg <sup>8</sup>
B-2	Hexavalent chromium and hexavalent chromium compounds	x			1,000 mg/kg <sup>8</sup>
B-3	Lead and lead compounds	x			1,000 mg/kg <sup>8</sup>
B-4	Mercury and mercury compounds	x			1,000 mg/kg <sup>8</sup>
B-5	Polybrominated biphenyl (PBBs)	x			50 mg/kg <sup>9</sup>
B-6	Polybrominated diphenyl ethers (PBDEs)	x			1,000 mg/kg <sup>8</sup>
B-7	Polychlorinated naphthalenes (more than 3 chlorine atoms)	x			50mg/kg <sup>10</sup>
B-8	Radioactive substances	x			no threshold value <sup>11</sup>
B-9	Certain shortchain chlorinated paraffins (Alkanes, C10-C13, chloro)	x			1% <sup>12</sup>

# Development of IHM Part I for Existing Ships: Flow Diagram



# EU Ship Recycling Regulation (SRR)

- Regulation (EU) No 1257/2013 (30/12/2013). A verified Inventory of Hazardous Materials (IHM) with a Statement of Compliance:
  - EU flagged new ships: 31 Dec. 2015 to 31 Dec. 2018
  - EU flagged existing ships: Not later than 31 Dec. 2020 or if ship is to be recycled from the date when the EU list of approved recycling facilities is published (not expected before 31 Dec. 2016).
  - Non-EU flagged ships: Before 31 Dec. 2020
- Applies the ship recycling requirements of the HKC to EU flagged ships
- Certain specific requirements to non-EU flagged ships
- A system of control and enforcement over a ship's life cycle from design, through construction, operation and up to the recycling stage "Cradle-to-Grave" approach





# Scope of Application

- Regulation requirements, except Article 12, applicable to vessels (including floating platforms) flagged with the EU Member States
- Article 12 applicable to non-EU flagged ships calling at a port or anchorage of a Member State
- NOT applicable to ships of less than 500 GT, any warships, naval auxiliary ships, government owned non-commercial ships
- NOT applicable to ships that only operate in waters of their EU flag State throughout their life



# Control of Hazardous Materials

- Control of hazardous materials the use of which has been prohibited or restricted
- Prohibits and/or restricts the installation and use of the hazardous materials listed in Annex I on ships
- Five groups of prohibited/restricted hazardous materials as following:
  - Asbestos
  - Ozone-depleting substances (ODS)
  - Polychlorinated biphenyls (PCBs)
  - Perfluorooctane sulfonic acid (PFOS) and its derivatives
  - Anti-fouling compounds and systems

# Control of Hazardous Materials

- Two newly added sub-items for ODS – HCFC-22 and Chlorodifluoromethane
- PFOS is one extra hazardous material than the list set out in Appendix 1 to the HKC
- PFOS is not applicable for non-EU flagged ships
- Application of PFOS on ships
  - Main application of PFOS on board ships in firefighting foams of the type Aqueous Film Forming Foams (AFFF)
  - PFOS-containing AFFF are usually installed on vessels carrying inflammable fluids and on vessel with helicopter deck



# Hazardous Materials for Inventory

- List of items of hazardous materials for inventory in Annex II
- A list of heavy metals and chemical substances
  - All prohibited or restricted hazardous materials in Annex I
  - Cadmium and cadmium compounds
  - Hexavalent chromium and hexavalent chromium compounds
  - Lead and lead compounds
  - Mercury and mercury compounds
  - Polybrominated biphenyl (PBBs)
  - Polybrominated diphenyl ethers (PBDEs)
  - Polychlorinated naphthalenes (more than 3 chlorine atoms)
  - Radioactive substances
  - Certain shortchain chlorinated paraffins (Alkanes, C10-C13, chloro)
  - **Brominated Flame Retardant: Hexabromocyclododecane (HBCDD)**

# Hazardous Materials for Inventory

- Substances of items 2 to 10 are consistent with those in Appendix 2 to the HKC
- HBCCD is an extra chemical substance than the list set out in Appendix 2 to the HKC
- Hexabromocyclododecane (HBCDD) is one of the five main classes of brominated flame retardants (BFRs)
  - Main application of HBCDD on ships is as a flame retardant in expanded polystyrene (EPS) for cryogenic insulation for liquefied gas tanks and also in refrigerator areas on ships





# Threshold Levels

- No reference to the threshold levels or exemptions for the hazardous materials listed in Annexes I and II
- By the preambular paragraphs (12) and (20), IMO 2011 Guidelines, including the threshold levels and exemptions, can be applied to interpret the threshold requirements
- Guidance to be expected from the Commission on implementation



# Surveys

- Scopes: three mandatory and one voluntary surveys same as those set out in HKC
- Initial Survey
  - New Ships – be conducted before the ship is put in service or before the Inventory Certificate is issued
  - Existing Ships – before 31 December 2020
- Renewal Survey
  - At intervals specified by the administration, but not exceed 5 years
- Additional Survey
  - As requested by shipowner after a change, replacement or repair of the structure, equipment and systems which has an impact on the IHM
- Final Survey
  - Prior to the ship being taken out of service and before starting the recycling

# Shipowners: General Requirements

- Maintains and updates Part I of the ship-specific IHM throughout the operational life of the ship, reflecting new installations and relevant changes in the ship's structure and equipment
- Ensures having on board a plan describing the visual/sampling check by which the IHM is developed
- Recycles only at ship recycling facilities that are in the European List
- Provides the ship recycling facility with all ship-relevant information necessary for the development of a ship recycling plan when preparing to send a ship for recycling
- Ensures tankers arrive at SRF with cargo tanks and pump rooms ready for certification for safe-for-hot work

# App Store: ABS Bookshelf

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#### Description

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#### What's New in Version 2.0.2

– Bug fixes.



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