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RECYCLING OF SHIPS

Revised draft Guidelines for the development of the Inventory of Hazardous Materials

Submitted by Japan and Germany

SUMMARY

Executive summary:	This document proposes a revised draft text of the Guidelines for the development of the Inventory of Hazardous Materials which is required in the draft International Convention for the Safe and Environmentally Sound Recycling of Ships
Strategic direction:	7.1
High-level action:	7.1.2
Planned output:	7.1.2.2
Action to be taken:	Paragraph 11
Related documents:	MEPC 56/3/2, MEPC 57/3/6

Introduction

1 Japan and Germany submitted a draft text of the Guidelines for the development of the Inventory of Hazardous Materials (hereinafter referred to as "the draft Guidelines") which is required in the draft International Convention for the Safe and Environmentally Sound Recycling of Ships (hereinafter referred to as "the draft Convention"). Due to time constraints the draft Guidelines have not been considered by the Committee to precede consideration of the Convention.

2 In order to confirm the applicability of the draft Guidelines for the development of the Inventory of Hazardous Materials (MEPC 56/3/2) Japan has conducted a trial development for Inventories of new ships and of existing ships in accordance with the draft Guidelines with considerable cooperation from shipbuilders and suppliers. The results of the trial were analysed and are reflected in the draft Guidelines.

Trial to develop Part I of the Inventory for new ships

3 Japan has conducted a trial to develop Part I of the Inventory with three new ships. The outline of the trial is shown in Table 1.

Table 1 Outline of the trial (new ships)

Term of the trial	October, 2007 - February, 2008	
Model Ship	N1: Crude Oil Carrier	160,000 GT
	N2: Roll On/Off Type Vehicle Carrier	62,000 GT
	N3: Ore Carrier	152,000 GT

4 Shipbuilders of the three model ships tried to collect Material Declarations (MDs) from all their suppliers. The results are shown in Table 2. As the data shows, the three ships collected 75% to 91% of their MDs submitted by the suppliers. This achievement ratio is unexpectedly high, taking into account the fact that the suppliers have been submitting their MDs on a voluntary basis as their purchase contracts had not included such obligation. The Inventories of the three ships are developed based on the collected MDs.

Table 2 Results of the collection of MDs

Model Ship	No. of suppliers	No. of purchases	No. of collected MDs
N1	352	1616	1316 (81%)
N2	164	5146	3870 (75%)
N3	316	1342	1219 (91%)

5 According to the results, it has been proven that the guidance and the format contained in the draft Inventory Guidelines are appropriate and practical. It should be noted that the suppliers should be able to submit their material declarations once the draft IMO Convention on ship recycling enters into force and the survey system for the Inventory becomes mandatory; it will then become standard procedure that the request for material declarations is made together with the purchase arrangement of equipment/machinery.

6 However, following the trial, comments/demands were made by the shipbuilders and suppliers who participated. These comments should be taken into account for the revision of the Guidelines:

.1 there were a lot of pieces of equipment/machinery which contained only small quantities of hazardous material (e.g., “0.0X mg”). Thus it is debatable as to what extent these pieces of equipment/machinery would have an adverse effect on human health and safety in recycling operations. Equipment/machinery which falls into this category needs special consideration;

.2 although the material declarations regarding steel plates and pipes for the hull structure were collected throughout this trial, there have been no declarations which indicated the existence of hazardous materials. Therefore, it may be possible to exempt the listing of hazardous materials in steel plates and pipes for hull structures and therefore to exempt the material declarations regarding them; and

.3 a typical example of the development process for the Inventory Part I on new ships should be developed to give clearer guidance in order to better facilitate the understanding of the process for developing Part I of the Inventory.

Trial to develop Part I of the Inventory for existing ships

7 Japan has also conducted a trial to develop Part I of the Inventory for six existing ships in accordance with the draft Guidelines for the development of the Inventory of Hazardous Materials (MEPC 56/3/2). The model ships for the trial are shown in Table 3.

Table 3 Model ships for the trial (existing ships)

Type of Ship	GT	Year of Delivery
A: LPG Carrier	42,000	1983
B: LNG Carrier	110,000	1996
C: PCC	47,000	1983
D: Chip Carrier	28,000	1989
E: Oil Carrier	55,000	1991
F: Government-owned ship	960	1980

8 As a result of the trial, the format of the checklist provided in the Inventory Guidelines (MEPC 56/3/2) should be revised in order to make it easy for the Administration or RO, when they conduct the survey and issue an International Certificate on Inventory of Hazardous Materials, to verify the Inventory and to trace how each material has been checked and identified by the experts. The checklist is not the Inventory itself, but a useful tool to obtain the final product, i.e. the Inventory.

9 Additionally, it turned out that the estimation methods used for approximating the quantity of asbestos and organotin compounds described in section 7 of Appendix 4 of the Guidelines (MEPC 56/3/2) are too rough, so a further revised method is needed. These methods should no longer be employed.

Amendment of the Draft Guidelines

10 Considering the results of the trial application of the draft Convention which has been amended by the MEPC and the ISRWG, the following amendments have been carried out:

.1 the units for approximating the quantity of hazardous materials are unified into "kg" and "m^3" in the Inventory in order to identify highly hazardous items at a glance. The figures of the approximate quantities are described with two decimal places and are rounded to two significant figures. Amounts less than "10 g" are to be described as "0.01 kg" to prevent the loss of information when a hazardous material is present above the related threshold level even though the amount is very small;

.2 considering the results of the trial to develop the Inventory of new ships, "Typical Example of Development Process for Inventory Part I of Hazardous Material on New Ship" has been added as a new appendix to the Guidelines;

.3 considering the results of the trial to develop the Inventory of existing ships, Appendix 4 of the Guidelines (Typical Example of Development Process for Inventory Part I of Hazardous Material on Existing Ship) has been amended; and

.4 necessary amendments, consequential to amendments of the draft Convention made by the MEPC and the ISRWG, and other editorial corrections were carried out.

Action requested of the Committee

11 The Committee is invited to consider this document and to take action as appropriate.

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ANNEX

GUIDELINES FOR THE DEVELOPMENT OF THE INVENTORY OF HAZARDOUS MATERIALS

1. Introduction

1.1 Objectives of the Guidelines

These Guidelines provide recommendations for the development of the Inventory of Hazardous Materials (hereinafter referred to as "the Inventory") to assist compliance with regulation 5 (Inventory of Hazardous Materials) of the International Convention for the Safe and Environmentally Sound Recycling of Ships.

1.2 Application of the Guidelines

These Guidelines have been developed to give essential requirements to all the players concerned with development of the Inventory (e.g. shipbuilders, equipment suppliers, repairers, owners of ships and ship management companies) for practical and reasonable development of the Inventory.

1.3 Objectives of the Inventory

Objectives of the Inventory are providing ship-specific information on the actual hazardous materials on board the ship in order to protect safety and health of workers and prevent environmental pollution at the ship recycling facilities.

2. Definitions

The terms used in these Guidelines have the same meaning as those defined in the Convention, except for the following definitions.

The following definitions apply to the Guidelines.

"Intentionally added" means the deliberate use in the formulation of a product or subpart where its continued presence is desired in the final product or subpart to provide a specific characteristic, appearance, or quality.

"Homogeneous material" means a material that cannot be mechanically disjointed into different materials.

"Supply chain" means the progression of businesses involved in the supply and purchase of materials and goods from raw materials to final product.

"Supplier" means the company which provides products, including manufacturers, traders and agencies.

3. Requirements for the Inventory

3.1 Scope of the Inventory

The Inventory consists of:

Part I: Materials contained in structure and equipment of the ship;
Part II: Operationally generated wastes; and
Part III: Stores.

3.2 Materials to be listed in the Inventory

The items set out in Appendix 1 of the Guidelines "Items to be Listed in the Inventory of Hazardous Materials", which is to serve as a guidance document providing information on the hazardous materials that could be found on board, should be listed in the Inventory. Each item of Appendix 1 of the Guidelines is classified into "Table A", "Table B", "Table C" and "Table D" based on its properties;

.1 Table A is comprised of the materials listed in Appendix 1 of the Convention;

.2 Table B is comprised of the materials listed in Appendix 2 of the Convention;

.3 Table C (Potentially Hazardous Goods) is comprised of the goods which are potentially hazardous to the environment and human health of workers at ship recycling facilities; and

.4 Table D (Regular Consumable Goods) is comprised of the goods which are not specific to a ship and are unlikely to be dismantled or treated at a ship recycling facility.

3.3 Materials excluded to be listed in the Inventory

Materials listed in Table B, if present in common concentrations, are not mandatorily to be listed in the Inventory of Hazardous Materials Part I for solid metals or metal alloys (e.g., steel, aluminium, and other metal alloys, etc.) when used for general constructions like hull, superstructure, pipes, or housings for equipment and machinery.

3.4 Standard Format of the Inventory of Hazardous Materials

The Inventory should be developed using the standard format set out in Appendix 2 of the Guidelines "Standard Format of the Inventory of Hazardous Materials". The format includes examples of how to fill it in, which would serve indicative purpose only.

4. Requirements for development of the Inventory

4.1 Development of Part I of the Inventory of new ships

4.1.1 Part I of the Inventory of new ships should be developed at design and construction stage. [However, if necessary "Material Declaration (MD)" provided in section 6 of the Guidelines cannot be obtained, lack of the MD should be listed in the Inventory and the Inventory may be

accepted either by the Administration or by any person or organization authorized by it. In this case, the Inventory should be revised and updated by the necessary MD or other information provided by supplier/builder until next survey.]

4.1.2 Check on the materials listed in Table A

During development of Part I of the Inventory, the materials listed in Table A of Appendix 1 of the Guidelines should be checked and confirmed that in accordance with the Convention they are not contained in machinery, equipment, materials and applied coatings on board a ship. If they are used in compliance with the Convention, they should be listed in Part I of the Inventory based on the same requirements as provided in paragraph 4.1.3 of the Guidelines.

4.1.3 Check on the materials listed in Table B

If the materials listed in Table B of Appendix 1 of the Guidelines are intentionally added above the threshold levels provided in Table B in machinery, equipment, materials and applied coatings to be on board a ship, their quantity, location and the contents of the materials into them should be listed in the Inventory, during development of Part I of the Inventory, unless they have to be listed in table C and D. The threshold level is defined as a maximum concentration value by weight in homogeneous materials.

4.1.4 Process to check on the materials

The check on the materials provided in paragraph 4.1.2 and 4.1.3 of the Guidelines should be based on "Material Declaration" provided in section 6 of the Guidelines by upstream suppliers in shipbuilding supply chain (e.g.: equipment suppliers, parts suppliers, material suppliers).

4.2 Development of Part I of the Inventory of existing ships

In order to achieve comparable results for existing ships regarding Part I of the Inventory and in order to set up minimum requirements, the following procedures should be followed to the satisfaction either of the Administration or of any person or organization authorized by it.

Referring to the attached flow diagram (Appendix 4 of the Guidelines) and typical example for development process of Part I of the Inventory for existing ships (Appendix 5 of the Guidelines), the procedure is based on the following steps:

.1 Collection of necessary information;

.2 Analysis and Definition of scope of investigations;

.3 Preparation of Visual/Sampling Check Plan;

.4 Approval of Visual/Sampling Check Plan by the Administration or by any person or organization authorized by it;

.5 Onboard Visual Check and Sampling Check; and

.6 Preparation of Part I of the Inventory and related Documentation.

Retroactive determination of the usage of hazardous materials present on board existing ships according to the Guidelines should be conducted as set out for new ships, including procedures described in paragraphs 6 and 7 of the Guidelines. Alternatively the procedures described in subsection 4.2 should be applied for existing ships, but these procedures should not be used for any new installation due to conversion or repair of existing ships after initial preparation of the Inventory.

4.2.1 Collection of necessary information (Step 1)

Documentation should be prepared for materials used on board containing, or assumed to contain, materials listed in Appendix 1 of these Guidelines. This includes, but is not limited to collection of available certificates, manuals, ship's plans, drawings, technical specifications, information from other Inventories and/or sister or similar ships, machinery, equipment, materials and coatings, and results of previous visual/sampling check and other analysis.

4.2.2 Analysis and Definition of scope of investigations (Step 2)

On the basis of collected information, as described under 4.2.1, the scope of necessary investigations should be analyzed and decided. Typical example of development process of Inventory of hazardous materials can be found in Appendix 5. Investigation should cover all materials listed in Table A of Appendix 1 of the Guidelines; the materials listed in Table B are exempted from being listed obligatorily.

4.2.3 Preparation of Visual/Sampling Check Plan (Step 3)

To specify the materials listed in Appendix 1 of the Guidelines a visual/sampling check plan should be prepared by any expert or expert party recognized either by the Administration or by any person or organization authorized by it, except any person or organization authorized by the Administration for the approval of the visual/sampling check plan and surveys under the Convention, taking into account the collected information and conclusions of the expert or expert party. The Visual/Sampling Check Plan is composed of the following three lists.

- List of equipment, system and/or area for Visual Check;

- List of equipment, system and/or area for Sampling Check; and

- List of equipment, system and/or area classed as "Potentially containing hazardous material".

Any equipment, system and/or area specified regarding presence of the materials listed in Appendix 1 of the Guidelines by document analysis should be listed in the List of equipment, system and/or area for Visual Check.

Any equipment, system and/or area which can not be specified regarding presence of the materials listed in Appendix 1 of the Guidelines by document analysis should be listed in the List of equipment, system and/or area for Sampling Check. Sampling Check means to take samples and identification of Hazardous Material contained in the equipment, systems, and /or areas, by chemical analysis.

However, the equipment, system and/or area which can not be specified regarding presence of the materials listed in Appendix 1 of the Guidelines by document analysis can be listed in the

List of equipment, system and/or area classed as "Potentially containing hazardous material" without the sampling check. Prerequisite for this classification is a comprehensible justification of the conclusion or when little or no effect on disassembly as a unit and later ship recycling and disposal operations can be assumed.

Visual Check points should be all points where:

- presence of materials to be considered for Inventory Part I as listed in Appendix 1 is likely;

- documentation is not specific; or

- materials of uncertain composition were used.

4.2.4 Approval of Visual/Sampling Check Plan either by the Administration or by any person or organization authorized by it (Step 4)

The plan should be approved either by the Administration or by any person or organization authorized by it officially prior to conducting of any onboard visual checks or taking of the samples considered necessary. The prepared Visual/Sampling Check Plan and results of documentation analysis should be made available either for the Administration or by any person or organization authorized by it. After their approval the related work can be conducted.

4.2.5 Onboard Visual/Sampling Check (Step 5)

The ship should be checked by any expert or expert party recognized either by the Administration or by any person or organization authorized by it, except any person or organization authorized by the Administration for the approval of the visual/sampling check plan and surveys under the Convention.

Any uncertainty regarding the presence of hazardous materials should be clarified by visual/sampling check. Check points are to be documented in the ship plan or photographs taken.

If hazardous materials can not be detected by document analysis and visual check then, in order to confirm or withdraw a suspicion, a sample should be taken and sample points should be clearly marked on the ship plan and sample results referenced. In order to reduce analysis work, materials likely to be of the same kind can be grouped and composite samples taken.

When equipment, system and/or area of the ship are not accessible for visual check or sampling check, this equipment, system and/or area is classified "Potentially containing hazardous material". Equipment, system and/or area classed as "Potentially containing hazardous material" can be investigated or made sampling check at request of the shipowner during a later survey.

4.2.6 Preparation of Part I of Inventory and related Documentation (Step 6)

The Inventory of Hazardous Materials should list equipment, system and/or area classed as "containing hazardous material" or "potentially containing hazardous material". These two categories should be distinct by marking in the remarks column of the Inventory of Hazardous Materials.

Any equipment, system and/or area classed as "containing hazardous material" or "Potentially Containing hazardous material" should be disposed or treated according to the requirements of the Convention. All corresponding findings and considerations arising from the above procedures shall be described and evaluated for providing information for further recycling work.

A party to this Convention should endeavour, as far as possible, to collect, assemble and make available the information concerning prohibited and/or restricted hazardous materials contained in machinery, equipment, materials and applied coatings on board existing ships. During the development of Part I of the Inventory, this information should be considered.

4.2.7 Illustration of the location of Hazardous Materials on board a ship

Preparation of the Location map of the materials listed in Table A is recommended in order to help recycling companies to understand the Inventory visually.

4.3 Maintenance and update of Part I of the Inventory during operation

4.3.1 Part I of the Inventory should be appropriately maintained and updated, especially checking at trade, repair and conversion of a ship.

4.3.2 Update of Part I of the Inventory in case of new installation

If machinery or equipment is replaced by new components, added and/or removed or coating of hull is renewed in case of new installation, Part I of the inventory should be updated based on the same requirements for new ships as provided in paragraphs 4.1.2 to 4.1.4. No updating is required when identical parts or coatings are installed or applied.

4.3.3 Succession of the Part I of the Inventory

Part I of the Inventory should belong to a ship and succession of the information and conformity of it should be confirmed, even if the flag, owner or operator of the ship changed.

4.4 Development of Part II of the Inventory

4.4.1 Part II of the Inventory, if recycling of a ship is decided, should be developed before final survey.

4.4.2 The wastes to be listed in the Inventory

If the wastes listed in Part II of the Inventory provided in "Table C (Potentially hazardous Goods)" of Appendix 1 of the Guidelines are supposed to be delivered with the ship to a ship recycling facility, the amount of the wastes should be estimated and their approximate quantity and location should be listed in Part II of the Inventory.

4.5 Development of Part III of the Inventory

4.5.1 Part III of the Inventory, if recycling of a ship is decided, should be developed before final survey.

4.5.2 The stores to be listed in the Inventory

If the stores to be listed in Part III of the Inventory provided in Table C (Potentially Hazardous Goods) of Appendix 1 of the Guidelines are supposed to be delivered with the ship to a ship recycling facility, the unit (e.g.: capacity of cans and cylinders), quantity and location of the stores should be listed in Part III of the Inventory. If the materials listed in Table A and Table B are contained in the goods listed in Table C, name and approximate contents of the materials should be remarked as far as possible.

4.5.3 Liquids and Gases sealed in ship's machinery and equipment to be listed in the Inventory

If the liquids and gases listed in "Table C (Potentially Hazardous Goods)" of Appendix 1 of the Guidelines are contained in machinery and equipment on board a ship, their approximate quantity and location should be listed in Part III of the Inventory. However, small amounts of Lubricating oil, Anti-seize Compounds and Grease which is applied to or injected into machinery and equipment to keep normal performance is out of scope of the provision, unless they are [concentrated above 1kg] in a place. For later completion of the Inventory Part III during recycling preparation processes, the required quantity of them for normal operation including the related pipe system volumes should be prepared and documented at design and construction stage.

4.5.4 The regular consumable goods to be listed in the Inventory

Regular consumable goods, as provided in Table D (Regular Consumable Goods) of Appendix 1 of the Guidelines, should be listed in Part III of the Inventory when they are supposed to be delivered with the ship to a ship recycling facility. The general description including name of item (e.g.: TV-Set), manufacturer, quantity and location should be listed in Part III of the Inventory. In case of the regular consumable goods, the check on the materials provided in paragraphs 4.1.2 and 4.1.3 of the Guidelines should not be applied.

4.6 Description of the location of hazardous materials on board

Location of hazardous materials on board should be described and identified using the name of the location (e.g.: second floor of Engine-room, Bridge DK, APT, No.1 Cargo Tank) as named in the plan such as General Arrangement, Fire and Safety Plan, Machinery Arrangement, Joiner Plan and Tank Arrangement.

4.7 Description of the approximate quantity of hazardous materials

In order to identify highly hazardous items at a glance, unit of the approximate quantity of solid hazardous materials should be unified into "kg". If the hazardous materials are liquids or gases, the unit should be unified into either "m^3" or "kg". The figures of the approximate quantity should be described with two decimal places and be rounded to two significant figures, as shown in the following examples.

Estimated quantity of Hazardous Material	Information in the Inventory
172kg	170.00kg
4.78kg	4.80kg
0.124kg	0.12kg
0.013kg	0.01kg
less than 0.010kg	<0.01kg

In the examples, "<0.01kg" shows intentional presence or analyzed presence of hazardous materials below 0.010kg and it can be clearly distinguished from "not intentionally added".

5. Requirements to confirm the conformity of the Inventory

5.1 Design and construction stage

Conformity of Part I of the Inventory in design and construction stage should be confirmed by the collected "Supplier's declaration of conformity" described in section 7 and related "Material Declarations" collected from suppliers to shipbuilding industry.

5.2 Operation stage

Shipowners or ship management companies should implement the following measures in order to assure the conformity of Part I of the Inventory:

.1 to nominate a designated person who is responsible for maintenance and update of the Inventory (the designated person can be employed shoreside or on board);

[.2 the designated person, to implement paragraph 4.3.2, should set up and supervise a system assuring necessary updating of the Inventory in case of new installation;]

.3 to maintain the Inventory including date of changes or new deleted entries and the signature of the designated person; and

.4 to disclose related documents if it is required in survey or trading of a ship.

6. Material Declaration

6.1 General

Suppliers to shipbuilding industry should identify and declare whether or not their supplied products (e.g., machinery, equipment, materials and coatings) contain materials listed in Table A or Table B above the threshold level provided in Appendix 1 of the Guidelines. However, it does not apply to process chemicals, unless they constitute a part to the finished product.

6.2 Information required in the declaration

The following information is at least required in the material declaration.

[.1 Date of declaration

.2 Suppliers name

.3 Product name (common product name or the name used by the manufacturer)

.4 Product number (for identification by the manufacturer)

.5 Product total mass

.6 Declaration whether or not the materials listed in Table A and Table B of Appendix 1 of the Guidelines are present in the product above the threshold level provided in Appendix 1 of the Guidelines

.7 Mass of contained materials of Table A and Table B of Appendix 1 of the Guidelines (contained in the product)]

6.3 Example of material declaration format

Example form of material declaration is attached in Appendix 6.

7. Supplier's declaration of conformity

7.1 Purpose

The purpose of Supplier's Declaration of Conformity is to give assurance of conformity of the identified object (delivered/produced products and related Material Declarations) to specified requirements (provided in section 7.2 of the Guidelines) to which the declaration refers, and to make clear who is responsible for that conformity and declaration.

7.2 Requirements

The following requirements should be satisfied in supplier's declaration of conformity:[1]

.1 Establishment of the company policy:
The company policy on the management of chemical substances in products which the supplier manufactures or sells should be established and maintained, including:

.a Compliance with law:
Regulations and requirements for the management of chemical substances in products should be clearly described in the documents, and they should be managed, kept, and conveyed to related sections.

.b Acquisition of information on chemical substance content:
In procurement activities of the raw materials, the components and the products which consist of the products manufactured or sold, appropriate suppliers should be selected with the valuation basis for selection of suppliers, and the chemical substances information should be obtained.

.2 Specification of the management system covering:

.a Clarification of the management and responsibility:
The products, processes and the chemical substances to be managed and the organizational systems should be clearly defined in the companies' management criteria including related roles and responsibilities.

1 ISO90001 and ISO14001 certification can substitute with the requirements.

.b Documentation and its management:
The management system of the chemical substances in products should be systematically documented and maintained.

.c Notification of the revised information on the chemical substance contents:
When the chemical substance contents are revised, the information should be distributed to related departments and external parties concerned immediately.

.d Internal audit of implementation:
The audit for checking the implementation regarding the execution of the management of chemical substances in products should be conducted at least 1 time a year and the audit record should be kept.

.e Review by management:
The situation regarding the execution of the management of chemical substances in products should be confirmed by corporate management and improvement should be executed based on the results.

7.3 Validity

The Supplier's Declaration of Conformity should be valid as long as the objective products are existent on board.

7.4 Contents and Format

The declaration of conformity should contain the following:

.1 unique identification of the declaration of conformity;

.2 the name and contact address of the issuer of the declaration of conformity;

.3 the identification of the object of the declaration of conformity (e.g., name, type, date of production or model number of a product, description of a process, management system, person or body, and/or other relevant supplementary information);

.4 the statement of conformity;

.5 a complete and clear list of standards or other specified requirements, as well as the selected options, if any;

.6 the date and place of issue of the declaration of conformity;

.7 the signature (or equivalent sign of validation), name and function of the authorized person(s) acting on behalf of the issuer;

.8 any limitation on the validity of the declaration of conformity.

An example form of the Supplier's Declaration of Conformity is shown in Appendix 7.

8. List of References

Appendix 1: Items to be listed in the Inventory of Hazardous Materials

Appendix 2: Standard Format of the Inventory of Hazardous Materials

Appendix 3: Typical example for development process of Part I of the Inventory for new ships

Appendix 4: Flow diagram for development of Part I of the Inventory for existing ships

Appendix 5: Typical example for development process of Part I of the Inventory for existing ships

Appendix 6: Example form of Material Declaration

Appendix 7: Example form of Supplier's Declaration of Conformity

[Appendix 8: Details of Table A and Table B of Appendix1 with CAS-numbers]

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APPENDIX 1

ITEMS TO BE LISTED IN THE INVENTORY OF HAZARDOUS MATERIALS

TABLE A[1)] Materials Listed in Appendix 1 of the Convention

Obligatory for New and Existing Ships

No.	Materials		Inventory			Threshold level [to be developed]
			Part 1	Part 2	Part 3	
A-1	Asbestos		x			no threshold level
A-2	Polychlorinated Biphenyls (PCBs)		x			50 mg/kg
A-3	Ozone Depleting Substances	CFCs	x			no threshold level
		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	Organotin compounds	Tributyl Tins	x			2500 mg/kg
		Triphenyl Tins	x			
		Tributyl Tin Oxide (TBTO)	x			

TABLE B[1)] Materials Listed in Appendix 2 of the Convention

Obligatory for New Ships and New Installations; voluntary for Existing Ships

No.	Materials	Inventory			Threshold level [to be developed]
		Part 1	Part 2	Part 3	
B-1	Cadmium and Cadmium Compounds	x			100 mg/kg
B-2	Hexavalent Chromium and Hexavalent Chromium Compounds	x			1,000 mg/kg
B-3	Lead and Lead Compounds	x			1,000 mg/kg
B-4	Mercury and Mercury Compounds	x			1,000 mg/kg
B-5	Polybrominated Biphenyl (PBBs)	x			1,000 mg/kg
B-6	Polybrominated Diphenyl Ethers (PBDEs)	x			1,000 mg/kg
B-7	Polychlorinated naphthalenes (more than 3 chlorine atoms)	x			no threshold level
B-8	Radioactive Substances	x			no threshold level
B-9	Certain Shortchain Chlorinated Paraffins (Alkanes, C10-C13, chloro	x			1%

1) Items in Table A and Table B are identical with those of Appendix1 and Appendix 2 of the Convention respectively. Items in these tables are obliged to be listed in the Inventory by regulation 7 of the Annex of the Convention.

TABLE C Potentially Hazardous Goods

No.	Properties		Goods	Inventory		
				Part 1	Part 2	Part 3
C-1	Liquid	Oiliness	Kerosene			x
C-2			White Spirit			x
C-3			Lubricating Oil			x
C-4			Hydraulic Oil			x
C-5			Anti-seize Compounds			x
C-6			Fuel Additive			x
C-7			Engine Coolant Additives			x
C-8			Antifreeze Fluids			x
C-9			Boiler and Feed Water Treatment and Test Re-agents			x
C-10			De-ioniser Regenerating Chemicals			x
C-11			Evaporator Dosing and Descaling Acids			x
C-12			Paint Stabilisers/Rust Stabilisers			x
C-13			Solvents/Thinners			x
C-14			Paints			x
C-15			Chemical Refrigerants			x
C-16			Battery Electrolyte			x
C-17			Alcohol, Methylated Spirits			x
C-18	Gas	Explosives/ Inflammables	Acetylene			x
C-19			Propane			x
C-20			Butane			x
C-21			Oxygen			x
C-22		Green House Gases	CO2			x
C-23			Perfluorocarbons(PFCs)			x
C-24			Methane			x
C-25			Hydrofluorocarbon(HFCs)			x
C-27			Nitrous Oxide(N2O)			x
C-28			Sulfur Hexafluoride(SF6)			x
C-29	Liquid	Oiliness	Bunkers: Fuel Oil			x
C-30			Grease			x
C-31			Waste Oil (Sludge)		x	
C-32			Bilge		x	
C-33			Oily Liquid Cargo Tank Residues		x	
C-34			Ballast Water		x	
C-35			Raw Sewage		x	
C-36			Treated Sewage		x	
C-37			Non-Oily Liquid Cargo Residues		x	
C-38	Gas	Explosibility/ Inflammability	Fuel Gas			x

C-39	Solid	Dry Cargo Residues		x	
C-40		Medical Waste/Infectious Waste		x	
C-41		Incinerator Ash[2)]		x	
C-42		Garbage[2)]		x	
C-43		Fuel Tank Residues		x	
C-45		Oily Solid Cargo Tank Residues		x	
C-45		Oily/Contaminated Rags		x	
C-46		Batteries (incl. Lead Acid Batteries)			x
C-47		Pesticides / Insecticide Sprays			x
C-48		Extinguishant			x
C-49		Chemical Cleaner (inc. Electrical Equipment Cleaner, Carbon Remover)			x
C-50		Detergent/Bleacher (could be a liquid)			x
C-51		Miscellaneous Medicines			x
C-52		Fire fighting closing, equipment			x
C-53		Dry Tank Residues		x	
C-54		Cargo Residues		x	
C-55		Spare Parts which contain materials listed in Table A or Table B			x

TABLE D Regular Consumable Goods

No.	Properties	Example	Inventory		
			Part 1	Part 2	Part 3
D-1	Household appliances	Refrigerators, Freezers, Microwaves, Toasters, Fryers, Coffee machines, Other appliances used for cooking including Cutlery, Pans, Chinaware, Cups and Glasses, Washing machines, Clothes dryers, Dish washing machines, Irons, Vacuum cleaners, hairdryers			x
D-2	IT and telecommunications equipment	Personal computers, Notebook computers, Typewriters, Printers, Copying equipment, Pocket and desk calculators, Facsimile, Telephones, Remote controls			x
D-3	Consumer equipment	Radio sets, Television sets, Video cameras, Video recorders, Musical instruments, Gambling Machines,			x
D-4	Lighting equipment	Fluorescent lamps, Filament bulbs, lamps			x
D-5	Electrical and electronic tools	Drills, Saws, Sewing machines			x
D-6	Leisure and sports equipment	Video games, Karaoke machine, Sports equipment			x
D-7	Non ship-specific furniture, Interior and similar equipment	Chairs, Sofas, Tables, Beds, Curtains, Carpets, Garbage bins, Bed-linen, Pillows, Towels, Mattresses, Storage racks, Decoration, Bathroom installations, Toys, not structurally relevant or integrated artwork			x

* * *

APPENDIX 2

STANDARD FORMAT OF THE INVENTORY OF HAZARDOUS MATERIALS

1.1 Paints and Coating Systems containing materials listed in Table A and Table B of Appendix 1of the Guidelines

No.	Application of Paint	Name of Paint	Location	Materials (Classification in Appendix 1)	Appx. Quantity		Remarks
1	Anti-drumming compound	Primer, x xCo., xxprimer #300	Hull part	Lead	35.00	kg	
2	Antifouling	xx Co., xx coat #100	Underwater parts	TBT	120.00	kg	

1.2 Equipment and Machinery containing materials listed in Table A and Table B of Appendix 1 of the Guidelines

No.	Name of Equipment and Machinery	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity		Remarks
1	Switch Board	Engine Control Room	Cadmium	Housing coating	0.02	kg	
			Mercury	Heat gauge	<0.01	kg	less than 0.01kg
2	Diesel Engine, xx Co., xx #150	Engine room	Cadmium	Bearing	0.02	kg	
3	Diesel Engine, xx Co., xx #200	Engine-room	Cadmium	Bearing	0.01	kg	Revised by XXX on Oct. XX, 2008
4	Diesel Generator (x 3)	Engine-room	Lead	Ingredient of Copper compounds	0.01	kg	

1.3 Structure and Hull containing materials listed in Table A and Table B of Appendix 1 of the Guidelines

No.	Name of Structural Element	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity		Remarks
1	Wall Panel	Accommodation	Asbestos	Insulation	2500.00	kg	
2	Wall Insulation	Engine Control Room	Lead	perforated plate	0.01	kg	cover of insulation material
			Asbestos	fire protection	25.00	kg	under lead containing plates
3							

Part2 OPERATIONALLY GENERATED WASTE

No.	Location[1)]	Name of Item (Classification in Appendix 1) and Detail (if any) of the Item	Appx. Quantity		Remarks
1	Garbage Locker	Garbage (Food Waste)	35.00	kg	
2	Bilge Tank	Bilge water	15.00	m^3	
3	No.1 Cargo Hold	Dry Cargo Residues (Iron ore)	110.00	kg	
4	No.2 Cargo Hold	Waste Oil (Sludge) (Crude)	120.00	kg	
5	No.1 Ballast Tank	Ballast Water	2500.00	m^3	
		Sediments	250.00	kg	

Part3 STORES

3.1 Stores

No.	Location[1)]	Name of Item (Classification in Appendix 1)	Unit Quantity		Figure		Appx. Quantity		Remarks[2)]
1	No.1 Fuel Oil Tank	Fuel Oil (Heavy Fuel Oil)	-		-		100.00	m^3	
2	CO_2 Room	CO_2	100.00	kg	50	bottles	5000.00	kg	
3	Workshop	Propane	20.00	kg	10	pcs	200.00	kg	
4	Medicine Locker	Miscellaneous Medicines	-		-		-		Details are shown in the attached list.
5	Paint Stores	Paint, xx Co., #600	20.00	kg	5	pcs	100.00	kg	Cadmium containing.

3.2 Liquids sealed in ship's machinery and equipment

No.	Type of Liquids (Classification in Appendix 1)	Name of machinery or equipment	Location	Appx. Quantity		Remarks
1	Hydraulic Oil	Deck crane hydraulic oil system	Upper Deck	15.00	m^3	
		Deck machinery hydraulic oil system	Upper Deck and Bosun store	200.00	m^3	
		Steering gear hydraulic oil system	Steering gear Room	0.55	m^3	
2	Lubricating Oil	Main engine system	Engine Room	0.45	m^3	
3	Boiler Water Treatment	Boiler	Engine Room	0.20	m^3	

3.3 Gases sealed in ship's machinery and equipment

No.	Type of Gases (Classification in Appendix 1)	Name of machinery or equipment	Location	Appx. Quantity		Remarks
1	HFC	AC System	AC Room	100.00	kg	
2	HFC	Refrigerated provision chamber machine	AC Room	50.00	kg	

3.4 Regular consumable goods

No.	Location[1)]	Name of Item	Manufacturer	Quantity	Remarks
1	Accommodation	Refrigerators	xx Co.	1	
2	Accommodation	Personal computers	xxx Co.	2	
3	Accommodation	Vacuum cleaners	xxxx CO.	1	
4	Accommodation	office chair	xxxxx CO.	1	

1) About Location of Part 2 and Part 3, each item should be entered in order based on its location from a lower level to an upper level and from a fore part to an aft part for respective subparts. The Location of Part I is recommended to be described similarly as much as practicably possible.
2) About Remarks of Part 3, if hazardous materials are integrated in products, the appx. amount of the contents should be shown as much as possible.

* * *

APPENDIX 3

TYPICAL EXAMPLE FOR DEVELOPMENT PROCESS OF PART I OF THE INVENTORY FOR NEW SHIPS

1 Objective of the Typical Example

This typical example has been developed to give guidance to facilitate understanding of developing process for Part I of the Inventory of Hazardous Materials for new ships.

2 Flow of the development of Part I of the Inventory

Part I of the Inventory should be developed based on the following 3 steps. However, order of these steps is flexible and can be changed depending on the schedule of shipbuilding:

.1 Collection of hazardous materials information (Step 1);
.2 Utilization of hazardous materials information (Step 2); and
.3 Preparation of the Inventory (by filling out of standard format) (Step 3).

3 Collection of hazardous materials information (Step 1)

3.1 Process of data collection of hazardous materials

Materials Declaration (MD) and Supplier's Declaration of Conformity (SDoC) should be requested and collected for each equipment, machinery, materials and coatings (hereinafter referred to as "products") from suppliers (Tier 1 suppliers) by the shipbuilding yard. Tier 1 suppliers can require from their suppliers (Tier 2 suppliers) necessary information if they cannot develop the MD based on the information available. Thus the collection of hazardous materials will be executed throughout a shipbuilding supply chain (Figure 1).

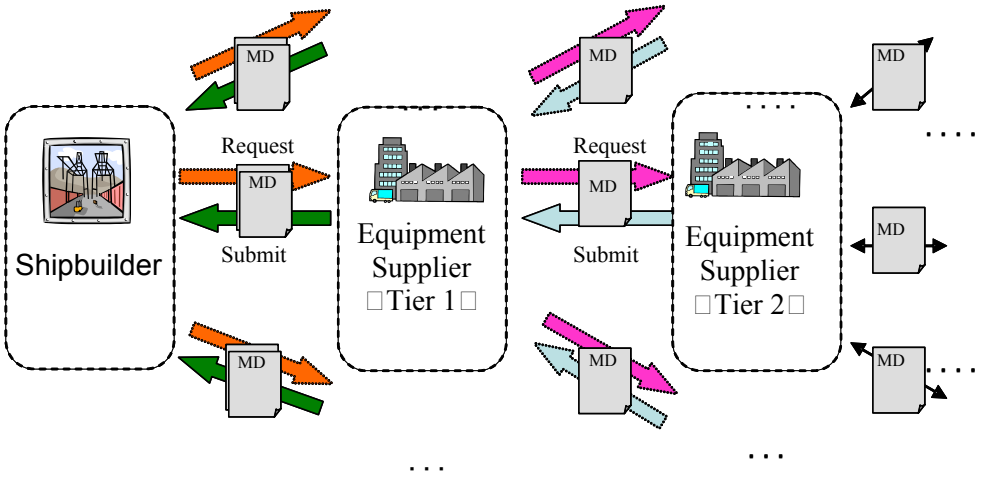


Figure 1 Process of MD (and SDoC) collection including involvement of supply chain

3.2 Declaration of Hazardous Materials

Suppliers should declare mass of hazardous materials listed in Table A and Table B in the MD if these materials are contained above the given threshold levels in each "homogeneous materials" of a product.

(1) Materials listed in Table A
If one or more materials listed in Table A are found to be present above the given threshold level according to the MD, the products shall not be installed on a ship. However, if the materials are used as an exemption by the Convention in a product (e.g., new installations containing hydrochlorofluorocarbons (HCFCs) until 1 January 2020), the product should be listed in the Inventory.

(2) Materials listed in Table B
If one or more materials listed in Table B are found to be present above the given threshold level according to the MD, the products should be listed in the Inventory.

3.3 Definition of "Homogeneous Materials"

"Homogeneous Materials" are defined as "a material that cannot be mechanically disjointed into different materials" in this Guidelines. Figure 5 shows an example of the homogeneous materials which compose a cable. In this case, sheath, intervention, insulator and conductor are all homogeneous materials respectively.

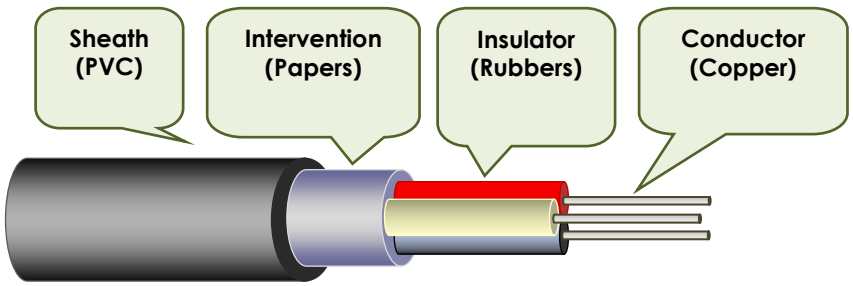


Figure 2 An example of Homogeneous Materials (Cables)

3.4 Description of parts of use

If the hazardous materials to be declared are contained in a product, information of "parts of use" should be described as well as the mass of contained hazardous materials in MD.

4 Utilization of hazardous materials information (Step 2)

The products which contain hazardous materials above the given threshold levels should be clearly identified by MD. Approximate quantity of the hazardous materials should be calculated if the mass data of hazardous materials are declared by the Unit in MD which cannot be directly utilized for the Inventory.

5 Preparation of Inventory (by filling out of standard format) (Step 3)

The received information relevant for the Inventory as contained in Table A and Table B of Appendix 1of the Guidelines has to be structured and utilized according to the coverage of the following Part I of the Inventory separation:

1.1 Paints and Coating Systems;
1.2 Equipment and Machinery; and
1.3 Structure and Hull.

5.1 Column "Name of Equipment and Machinery"

(1) Equipment and Machinery

Name of each equipment or machinery should be entered in this column. If more than one hazardous material is contained in one equipment or machine, the row of the equipment or machine should be divided and all the hazardous materials contained in it should be entered in the row. If more than one equipment or machine is situated in one location, both name and quantity of the equipment or machine should be entered in the column. However, mass-produced products such as bolts, nuts, and valves should be exempted. An example is shown in Table 1.

Table 1 Example showing that more than one equipment or machine is situated in one location

No.	Name of Equipment and Machinery	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity		Remarks
	Main Engine	Engine-room	Lead	Piston Pin Bush	0.75	kg	
			Mercury	Thermometer charge air temperature	0.01	kg	
	Diesel Generator (x 3)	Engine-room	Lead	Ingredient of Copper compounds	0.01	kg	

(2) Pipes and cables

The name of pipes and systems including electric cables, which are often situated in more than one compartment of a ship, should be described using the name of the system concerned. A relation to the compartments these systems are located in is not necessary when the system is clearly identified and properly named.

5.2 Column "Approximate Quantity"

Unit of the approximate quantity of solid hazardous materials should be unified into "kg". If the hazardous materials are liquids or gases, the unit should be unified into either "m^3" or "kg". The figures of the approximate quantity should be described with two decimal places and be rounded to two significant figures. If the hazardous material is less than "10 g", description of the quantity will be "<0.01 kg".

Table 2 An example of a switchboard

No.	Name of Equipment and Machinery	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity		Remarks
	Switchboard	Engine Control Room	Cadmium	Housing coating	0.02	kg	
			Mercury	Heat gauge	<0.01	kg	less than 0.01kg

5.3 Column "Location"

(1) An example of a location list

It is recommended to prepare a location list which covers all compartments of a ship based on ship's plans (e.g., General Arrangement Plan, Engine-room Arrangement Plan, Accommodation Plan and Tank Arrangement Plan) and the other. Description of the location should be based on

the unit such as decks and rooms which locations can be identified easily. Name of the location should be the same as used in the ship's plans prepared for the future shipowner so as to keep clear correspondence between the Inventory and the ship's plans. Examples of the name of the locations are shown in Table 3.

Table 3 Examples of the location names

(A)Primary Classification	(B)Secondary Classification	(C)Name of Location
All over the ship		
Hull Part	Fore Part	Bos'n Store
		…
	Cargo Part	No.1 Cargo Hold/Tank
		No.1 Garage Deck
		…
	Tank Part	Fore Peak Tank
		No.1 WBT
		No.1 FOT
		…
		Aft Peak Tank
	Aft Part	Steering Gear Room
		Emergency Fire Pump Space
		…
	Superstructure	Accommodation
		Compass Deck
		Nav. Bridge Deck
		…
		Wheel House
		Engine Control Room
		Cargo Control Room
		…
	Deck House	Deck House
		…
Machinery Part	Engine-room	Engine-room
		Main Floor
		2nd Floor
		…
		Generator Space/Room
		Purifier Space/Room
		Shaft Space/Room
		Engine Casing
		Funnel
		Engine Control Room
		…
	Pump-room	Pump-room
		…
Exterior Part	Superstructure	Superstructure
	Upper Deck	Upper Deck
	Hull Shell	Hull Shell
		Bottom
		Under Waterline
		…

(2) Description of location of pipes and electrical systems

Location of pipes and systems including electric systems and cables situated in more than one compartment of a ship should be described for each system concerned. If they are situated in a number of compartments there are two options, whichever seems more practicable:

a) listing of all components in the column,

b) the location of the system should be described using such expression as shown in "primary classification" and "secondary classification" of Table 3.

An example of description of a pipe system is shown in Table 4.

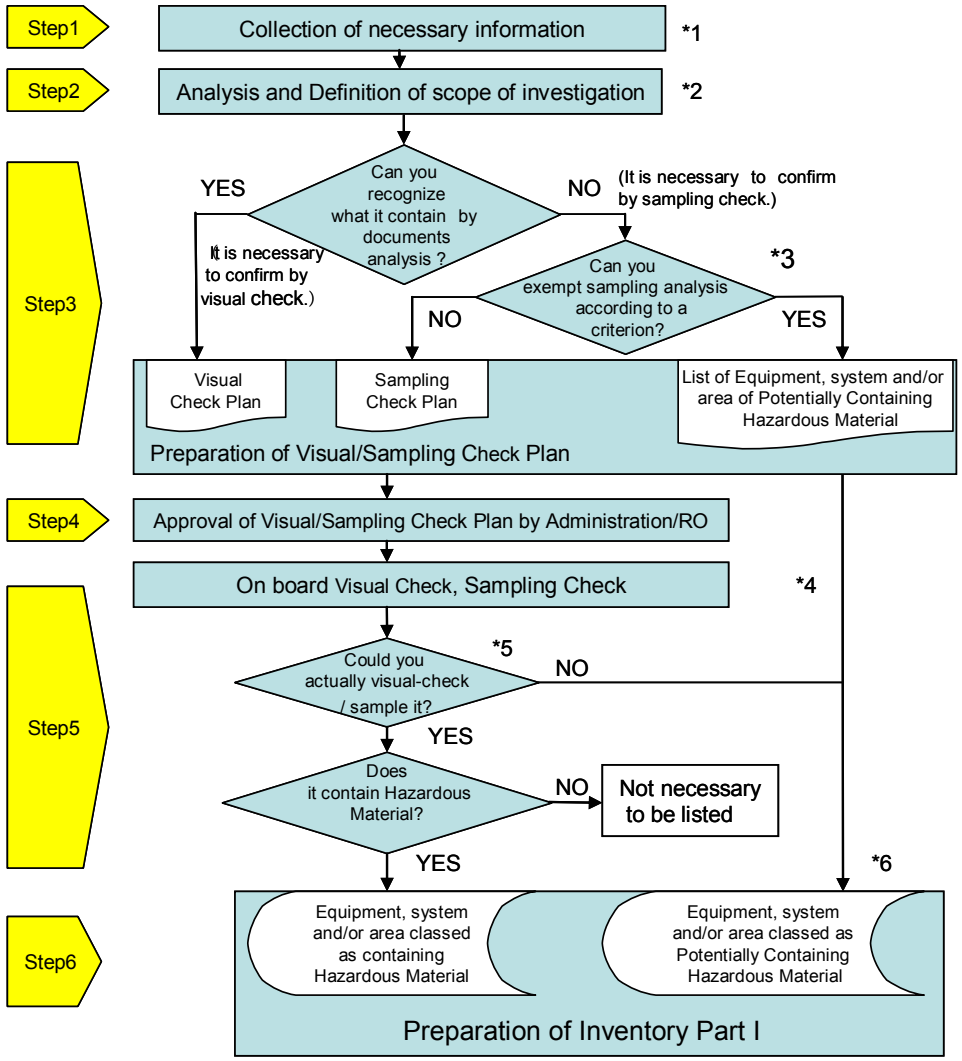
Table 4 An example of description of a pipe system

No.	Name of Equipment and Machinery	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity	Remarks
	Water Ballast Pipe	Engine-room, Hold parts				

* * *

APPENDIX 4

FLOW DIAGRAM FOR DEVELOPMENT OF PART I OF THE INVENTORY FOR EXISTING SHIPS



*1 : Documents include any certificates, manuals, ship's plans, drawings, technical specifications and information from sister and/or similar ships.

*2 : Investigation should cover all materials listed in Table A of Appendix 1 of the Guideline; the materials listed in Table B are exempted from being listed obligatorily.
It is impossible to investigate all equipment and area including those which are assumed not to contain Hazardous Materials described above.
Through analysis of available documents based on knowledge and experience, it is necessary to make clear which equipments and/or area should be put into scope of investigation.
[e.g. Asbestos is only included in a non-combustible material of A,B and C class division, coating, lagging, brake shoe lining, gasket and packing except special case.]

*3 : Equipment, system and/or area which can not be specified regarding presence of the materials listed in Appendix 1 of the Guideline by documents can be listed in the List of equipment, system and/or area classed as "Potentially Containing Hazardous Material" without the sampling check. Prerequisite for this classification is a comprehensible justification of the conclusion or when little or no effect on disassembly as a unit and later ship recycling and disposal operations can be assumed.

*4 : Sampling Check. Sampling Check means to take samples and identification of Hazardous Material contained in the equipment, systems, and /or areas, by chemical analysis. Sampling check should be applied where presence of Prohibited and Restricted Hazardous Material is assumed but cannot be recognized with analysis of available documentation.

*5 : When equipment, system and/or area of the shipl can not be accessible for visual check or sampling check, this equipment, system and/or area is classified to "Potentially Containing Hazardous Material".

*6 : Any equipment, system and/or area classed as "Containing Potentially Hazardous Material" should be disposed or treated according to the requirement of the Convention and the Guidelines.

APPENDIX 5

TYPICAL EXAMPLE FOR DEVELOPMENT PROCESS OF PART I OF THE INVENTORY FOR EXISTING SHIPS

1. Introduction

In order to develop Part I of the Inventory of Hazardous Material for existing ships, not only documents of the individual ship but also knowledge and experience of specialist personnel (experts) is necessary. An example of the development process for Part I of Inventory of Hazardous Material for existing ships is useful to understand the basic steps as laid out in the Guidelines and ensure a unified application globally. However, attention should be paid to variations for different types of ship.

Compilation of Part I of Inventory of Hazardous Material for existing ships is divided into the following 6 main steps which are described in paragraph 4.2 and Appendix 4 of the Guidelines.

Step1: Collection of information;
Step2: Analysis and Definition of scope of investigations;
Step3: Preparation of Visual/Sampling Check Plan;
Step4: Approval of Visual/Sampling Check Plan by the Administration or by any person or organization authorized by it;
Step5: Onboard Visual/ Sampling Check; and
Step6: Preparation of Inventory Part I and related Documentation.

Example ship is a typical bulk carrier.

Name of Ship	XXXXXXXXXXXXXXX
Distinctive number or letters	XXXXXXX
Port of Registry	Port of World
Gross tonnage	28,000
IMO number	XXXXXXX
Name and address of shipowner	XXXXXXXXXXXXXXX
Date of Delivery	dd. mm.1985

2. Step1: Collection of necessary Information

2.1 Sighting of available documents

First of all, it is useful to collect detailed documents of the ship in question. The shipowner should try to confirm documents retained themselves as well as to obtain documents that shipyard, manufacturers or classification society have. Following documents should be used when available.

Ship's Specification
General Arrangement
Machinery Arrangement
Spare Parts and Tools List
Piping Arrangement
Accommodation Plan
Fire Control Plan
Fire Protection Plan
Insulation Plan (Hull and Machinery)
Coating Scheme and History of Coating Applications Related certificates
Related manuals and drawings

Information from other Inventories and/or sister or similar ships, machinery, equipment, materials and coatings
Results of previous visual/sampling check and other analysis

When the ship has undergone conversions or major repair work, it is necessary to identify, as far as possible, those changes from initial design and specification to the current state of ship.

2.2 Indicative List

It is impossible to check all equipment, systems, and/or areas on board whether they contain Hazardous Materials or not. The number of all parts on board may be in excess of several thousands. In order to take a practical approach, an "Indicative List" should be prepared that shows which equipment, system, and/or area on board is assumed to contain Hazardous Materials. Field interview towards shipyards and suppliers is necessary to prepare such "Indicative Lists". Typical example of such "Indicative Lists" is shown as follows.

2.2.1 Materials to be checked and documented

Different Hazardous Materials are to be listed in the Inventory part I for existing ships. Appendix 1 of the Guidelines contains all materials of concern. Table A shows those which are mandatory to be listed and Table B shows those which should be listed as far as practicable.

2.2.2 Materials listed in Table A

Table A lists the following 4 materials.

Asbestos
Polychlorinated Biphenyl (PCBs)
Ozone Depleting Substances
Organotin compounds

2.2.2.1 Asbestos

Field interview was done to over 200 Japanese Shipyards and Suppliers regarding use of asbestos in production. "Indicative Lists" for asbestos developed by the above research is shown below.

Structure and/or equipment	Component
Propeller shafting	Packing with low presser hydraulic piping flange
	Packing with casing
	Clutch
	Brake lining
	Synthetic sterntubes
Diesel Engine	Packing with piping flange
	Lagging material for fuel pipe
	Lagging material for exhaust pipe
	Lagging material turbo charger
Turbine Engine	Lagging material for casing
	Packing with flange of piping and valve for steam line, exhaust line and drain line
	Lagging material for piping and valve of steam line, exhaust line and drain line

Structure and/or equipment	Component
Boiler	Insulation in combustion chamber
	Packing for casing door
	Lagging material for exhaust pipe
	Packing with manhole
	Packing with hand hole
	Gas shield packing for soot blower and other hole
	Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line
	Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Exhaust gas economizer	Packing for casing door
	Packing with manhole
	Packing with hand hole
	Gas shield packing for soot blower
	Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line
	Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Incinerator	Packing for casing door
	Packing with manhole
	Packing with hand hole
	Lagging material for exhaust pipe
Auxiliary machinery (Pump, Compressor, Oil purifier, Crane)	Packing for casing door and valve
	Gland packing
	Brake lining
Heat exchanger	Packing with casing
	Gland packing for valve
	Lagging material and insulation
Valve	Gland packing with valve, Sheet packing with piping flange
	Gasket with flange of high presser and/or high temperature
Pipe, Duct	Lagging material and insulation
Tank (Fuel Tank, Hot water, tank, Condenser), Other equipments (Fuel strainer, Lubricant oil strainer)	Lagging material and insulation
Electric equipment	Insulation material
Air-borne asbestos	Wall, Ceiling
Ceiling, floor and wall in accommodation area	Ceiling, Floor, Wall
Fire door	Packing, Construction and insulation of the fire door
Inert gas system	Packing for Casing and etc.
Air conditioning system	Sheet packing, lagging material for piping and flexible joint
Miscellaneous	Ropes

2.2.2.2 Polychlorinated Biphenyl (PCBs)

Worldwide restriction of PCBs has begun by the Stockholm Convention which has come into effect on 17 May 2004. In Japan, domestic control has started since 1973, which prohibits all activities for production, use and import of PCBs. Japanese suppliers can provide accurate information concerning their products. The "indicative List" of PCBs has been developed as shown below.

Equipment	Component of equipment	Period for use of PCBs in Japan
Transformer	Insulating oil	Until 1973
Condenser	Insulating oil	Until 1973
Fuel heater	Heating medium	Until 1973
Electric cable	Covering, insulating tape	Until 1973
Lubricating oil		Until 1973
Heat oil	Thermometers, sensors, indicators	Until 1973

2.2.2.3 Ozone Depleting Substances

The "Indicative List" for Ozone Depleting Substances is shown as follows. Ozone Depleting Substances have been controlled according to the Montreal Protocol and MARPOL Convention. Although almost all substances are not to be used since 1996, HCFC can still be used until 2020.

Materials	Component of equipment	Period for use of ODS in Japan
CFCs (R11, R12)	Refrigerant for refrigerators	Until 1996
CFCs	Urethane formed material	Until 1996
	Blowing agent for insulation of LNG carriers	Until 1996
Halons	Extinguishing agent	Until 1994
Other fully halogenated CFCs	The possibility of usage in ship is low.	Until 1996
Carbon tetrachloride	The possibility of usage in ship is low.	Until 1996
1,1,1-Trichloroethane (Methyl chloroform)	The possibility of usage in ship is low.	Until 1996
HCFC (R22, R141b)	Refrigerant for refrigerate machine	It is possible to use it until 2020.
HBFC	The possibility of usage in ship is low.	Until 1996
Methyl bromide	The possibility of usage in ship is low.	Until 2005

2.2.2.4 Organotin compounds

Organotin compounds include Tributyl Tins (TBT), Triphenyl Tins (TPT) and Tributyl Tin Oxide (TBTO). Organotin compounds have been used as anti-fouling paint on bottom of ship. Also Organotin compounds have been used as anti-fouling media for fishing net. "International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention)" requires that all ships shall not apply or re-apply organotin compounds after 1 January 2003, and also that all ships either shall not bear such compounds on their hulls, or shall bear a coating that forms a barrier to such compounds leaching to sea after 1 January 2008. In addition, the AFS Convention enters/ed into force on 17 September 2008.

2.2.3 Material listed in Table B

The materials listed in Table B are exempted from being listed in Part I of the Inventory for existing ships obligatorily. However, if they can be identified in a practicable way, they should be listed in the Inventory, as much information as possible will be supportive for the future ship recycling processes. The Indicative List of Materials listed in Table B is shown below.

Materials	Component of equipment
Cadmium and Cadmium Compounds	Nickel-cadmium battery, plating film, bearing
Hexavalent Chromium Compounds	Plating film
Mercury and Mercury Compounds	Fluorescent light, mercury lamp, mercury cell, liquid-level switch, gyro compass, thermometer, measuring tool, manganese cell
Lead and Lead Compounds	Lead-acid storage battery, corrosion-resistant primer, solder (All electric appliances almost contain solder)
Polybrominated Biphenyl (PBBs)	Non-flammable plastics
Polybrominated Diphenyl Ethers (PBDE)	Non-flammable plastics
Polychlorinated naphthalenes	Paint, lubricating oil
Radioactive Substances	Fluorescent paint, ionic type smoke detector, level gauge
Certain Shortchain Chlorinated Paraffins	Non-flammable plastics

3. Step 2: Analysis and Definition of scope of investigations

The following checklist is useful to handle the Check work for the Inventory. Based on collected information including the "Indicative List" mentioned in Step 1, all equipment, system, and/or area onboard assumed to contain Hazardous Materials listed in Tables A and B should be listed up in the checklist. So, each equipment, system, and/or area onboard listed should be analyzed and judged as to whether they contain Hazardous Materials or not.

Existence and volume of Hazardous Materials can be judged and calculated from Spare parts and Tools list and Maker's drawings. Existence of asbestos contained in floors, ceilings and walls can be identified by Fire Protection Plan, and existence of TBT in coatings might be identifiable by Coating Scheme and History of Paint.

Example of weight calculation

No.	Hazardous Materials	Location/Equipment/ Component	Reference	Calculation
1.1-2	TBT	Flat Bottom/Paint	History of Coatings	
1.2-1	Asbestos	Main Engine/ Exh. Pipe packing	Spare parts and tools list	250g X 14 sheet = 3.50 kg
1.2-3	HCFC	Ref. provision plant	Maker's drawings	20kg X 1 cylinder = 20 kg
1.2-4	Lead	Batteries	Maker's drawings	6 kg X 16 unit = 96 kg
1.3-1	Asbestos	Engine-room ceiling	Accommodation plan	

When a component or coating is judged to contain Hazardous Materials, the column for "Result of Document Analysis" in the checklist should be filled with "Y" which means "Contained". In a similar manner, when an item is judged not to contain Hazardous Materials, the column should be filled with "N" which means "Not contained". When it cannot be judged whether it contains Hazardous Materials or not, its column should be filled as "Unknown".

Checklist (Step 2)

ANALYSIS AND DEFINITION OF SCOPE OF INVESTIGATIONS for "Sample ship"

No.	Tbl A/B	Hazardous Materials *1	Location	Name of Equipment	Component	Quantity			Manufacturer/Brand name	Result of DOC *2	Procedure of Check *3	Result of Check *4	Reference/DWG No.
						Unit (kg)	No.	Total (kg)					
[Inventory Part1-1.1]													
1	A	TBT	Top side	Painting & Coating	— •—			NIL	○○ Paints Co./marine P1000	N			・On Aug., 200X, Sealer Coat applied to allover submerged area before tin free coating.
2	A	TBT	Flat Bottom				3000m^2		Unknown AF	Unknown			
[Inventory Part1-1.2]													
1	A	Asbestos	Lower deck	Main engine	Exh.Pipe packing	0.25	14	3.50	○○Diesel Co.	Y			M-100
2	A	Asbestos	3rd deck	Aux.boiler	Packing		12		Unknown packing	Unknown			M-300
3	A	HCFC	2nd deck	Ref. provision plant	Refrigerant(R22)	20.00	1	20.00	○○Reito Co.	Y			Mkr's dwg
4	B	Lead	Nav. Br.deck	Batteries		6.00	16	96.00	○○Denchi Co.	Y			Mkr's dwg
[Inventory Part1-1.3]													
1	A	Asbestos	Upp.deck	Back deck ceilings	Engine room ceiling		20m^2		Unknown ceiling	Unknown			O-25

Notes
*1 Hazadous Materials :Material classification
*2 Result of Documents Analysis :Y=Contained, N=Not contained, Unknown.
*3 Procedure of Check :V=Visual check, S=Sampling check, PCHM=Potentially Containing of Hazardous Materials. Numerical values are estimated weight in case of PCHM.
*4 Result of Check :Y=Contained, N=Not contained, PCHM.

4. Step 3: Preparation of Visual/Sampling Plan

Each item classified as "Contained" or "Not contained" Hazardous material in Step 2 should be required a Visual Check on board, and its column for "Check procedure" should be filled with "V" which means "Visual Check".

For each item categorized as "unknown", a decision should be made as to whether to apply a "Sampling Check". However, any item categorized as "unknown" can be classed as "Potentially containing hazardous material" in case comprehensive justification is given or when little or no effect on disassembly as a unit and later ship recycling and disposal operations can be assumed. For example, in order to carry out a sampling check for "Packing with Aux. boiler" in the following checklist the shipowner needs to disassemble the Aux. boiler in a repair yard. The costs for this check are significantly higher than later disposal costs at a recycling facility. This case should be allowed to justify the classification as "Potentially containing hazardous material".

Of course, items classified as "Potentially containing hazardous material" should be handled or disposed of like items containing Hazardous Material prior to or at recycling stage.

Checklist (Step 3)

ANALYSIS AND DEFINITION OF SCOPE OF INVESTIGATIONS for "Sample ship"

No.	Tbl A/B	Hazardous Materials *1	Location	Name of Equipment	Component	Quantity Unit (kg)	Quantity No.	Quantity Total (kg)	Manufacturer/Brand name	Result of DOC *2	Procedure of Check *3	Result of Check *4	Reference/DWG No.
[Inventory Part1-1.1]													
1	A	TBT	Top side	Painting & Coating	— • —			NIL	○○ Paints Co./marine P1000	N	V		・On Aug., 200X, Sealer Coat applied to all over submerged area before tin free coating.
2	A	TBT	Flat Bottom				3000m^2		Unknown AF	Unknown	S		
[Inventory Part1-1.2]													
1	A	Asbestos	Lower deck	Main engine	Exh.Pipe packing	0.25	14	3.50	○○Diesel Co.	Y	V		M-100
2	A	Asbestos	3rd deck	Aux.boiler	Lagging		12		Unknown lagging	Unknown	V /PCHM		M-300
3	A	HCFC	2nd deck	Ref. provision plant	Refrigerant(R22)	20.00	1	20.00	○○Reito Co.	Y	V		Mkr's dwg
4	B	Lead	Nav. Br.deck	Batteries		6.00	16	96.00	○○Denchi Co.	Y	V		E-300
[Inventory Part1-1.3]													
1	A	Asbestos	Upp.deck	Back deck ceilings	Engine room ceiling		20m^2		Unknown ceiling	Unknown	S		0-25

Notes

*1 Hazadous Materials :Material classification
*2 Result of Documents Analysis :Y=Contained, N=Not contained, Unknown.
*3 Procedure of Check :V=Visual check, S=Sampling check, PCHM=Potentialy Containing of Hazardous Materials. Numerical values are estimated weight in case of PCHM.
*4 Result of Check :Y=Contained, N=Not contained, PCHM.

Before any Visual/Sampling Check on board is conducted, "Visual/Sampling Check Plan" should be prepared. An example of "Visual/Sampling Check Plan" is shown below.

To avoid any incidents during check work, a schedule should be established to eliminate interference between such check work and other works on board or the particular area on board. Especially sampling work of asbestos might cause the release of asbestos fibres to the atmosphere. Therefore, protective measures and anti-scattering measures for asbestos should be applied before any sampling takes place.

All lists for Visual/Sampling Check should be collated in sequential order along to check route on board.

Example of Visual/ Sampling Check Plan

Name of ship	XXXXXXXXXX
IMO number	XXXXXXXXXX
Gross tonnage	28,000 ton
L, B, D	
Date of delivery	dd.mm.1987
Shipowner	XXXXXXXXXX
Contact point (TEL, FAX, Address)	XXXXXXXXX TEL: XXXXXXXX FAX: XXXXXXXX
Check schedule	1 to 3. MM. 2008
Site of Check	XX shipyard, No. DOCK
In charge of Check	XXXXXXX
Check engineer	XXXXXX, YYYYYYYYY, ZZZZZZZ
Sampling engineer	OOOOOO, PPPPPPPP
Sampling method and anti-scattering measure for Asbestos	Workers in sampling asbestos should be protected by dust-proof glasses, mask, clothes and gloves. Passengers, crew members and other persons should be protected from asbestos exposure during sampling works. Before taking a sample, sampling point should be fully moisturized to avoid scattering asbestos, or an alternative preventive measure applied (e.g., air filtering equipment). And sharp-edged tools should be used for taking a sample. Taken sample should be enclosed in an air-tight case. Solidification treatment should be taken for extraction point after sampling.
Sampling of fragments of paint on flat bottom	Sampling of paints suspected to contain TBT should be collected and analysed with paint fragments from Load Line, directly under Bilge keel and Flat bottom near by midship.
Chemical analyst	QQQQQQ
Chemical analysis method	X-ray diffraction analysis (Asbestos) Fluorescent X-Ray analysis, ICP luminous analysis (TBT)
Location of Visual/Sampling check	Refer to lists for Visual/Sampling check

5. Step 4: Approval of Visual/Sampling Check Plan by the Administration or by any person or organization authorized by it

The "Visual/Sampling Check Plan" developed under Step 3 should be submitted to the Administration or to any person or organization authorized by it before starting Visual/Sampling Check. If a modification to the Plan was requested by the Administration or to any person or organization authorized by it, the Plan should be modified according to the request. The Administration or any person or organization authorized by it should approve the Plan without unreasonable delay.

6. Step 5: Onboard Visual/Sampling Check

Visual/Sampling Check should be conducted according to the Plan approved. Check points should be marked in the ship's plan or recorded with photographs. After Visual/Sampling Check, these results should be recorded in the checklist. Equipment, system and/or area of the ship that cannot be accessed for Check should be classified as "Potentially containing hazardous material". In this case, "Result of Check" column should be filled with "PCHM".

7. Step 6: Preparation of Inventory Part I and related Documentation

7.1 Development of Part I of Inventory

The results of check and the calculated quantity of Hazardous Materials should be recorded on the checklist. Part I of Inventory should be developed to refer to the checklist.

7.2 Development of Location map of Hazardous Materials

Referring Part I of Inventory, development of the Location map of Hazardous Materials is recommended in order to help recycling company to understand Inventory visually.

Checklist (Step 5 and Step 6)

ANALYSIS AND DEFINITION OF SCOPE OF INVESTIGATIONS for "Sample ship"

No.	Tbl A/B	Hazardous Materials *1	Location	Name of Equipment	Component	Quantity			Manufacturer/Brand name	Result of DOC *2	Procedure of Check *3	Result of Check *4	Reference/DWG No.
						Unit (kg)	No.	Total (kg)					
[Inventory Part1-1.1]													
1	A	TBT	Top side	Painting & Coating	— • —			NIL	○○ Paints Co./marine P1000	N	V	N	•On Aug., 200X, Sealer Coat applied to all over submerged area before tin free coating.
2	A	TBT	Flat Bottom			0.02	3000m^2	60.00	Unknown AF	Unknown	S	Y	
[Inventory Part1-1.2]													
1	A	Asbestos	Lower deck	Main engine	Exh.Pipe packing	0.25	14	3.50	○○Diesel Co.	Y	V	Y	M-100
2	A	Asbestos	3rd deck	Aux.boiler	Packing	0.03	12	0.36	Unknown lagging	Unknown	V /PCHM	PCHM	M-300
3	A	HCFC	2nd deck	Ref. provision plant	Refrigerant(R22)	20.00	1	20.00	○○Reito Co.	Y	V	Y	Mkr's dwg
4	B	Lead	Nav. Br.deck	Batteries		6.00	16	96.00	○○Denchi Co.	Y	V	Y	E-300
[Inventory Part1-1.3]													
1	A	Asbestos	Upp.deck	Back deck ceilings	Engine room ceiling	0.19	20m^2	3.80	Unknown ceiling	Unknown	S	Y	0-25

Notes

*1 Hazadous Materials :Material classification
*2 Result of Documents Analysis :Y=Contained, N=Not contained, Unknown.
*3 Procedure of Check :V=Visual check, S=Sampling check, PCHM=Potentialy Containing of Hazardous Materials. Numerical values are estimated weight in case of PCHM.
*4 Result of Check :Y=Contained, N=Not contained, PCHM.

Example of the Inventory for Existing Ships

Inventory of Hazardous Materials : "Sample Ship"

Part1 HAZARDOUS MATERIALS CONTAINED IN THE SHIP'S STRUCTURE AND EQUIPMENT

1.1 Paints and Coating Systems containing materials listed in Table A and Table B of Appendix 1of the Guidelines

No.	Application of Paint	Name of Paint	Location	Materials (Classification in Appendix 1)	Appx. Quantity		Remarks
1	AF Paint	Unknown Paints	Flat Bottom	TBT	60.00	kg	Confirmed by sampling
2							
3							

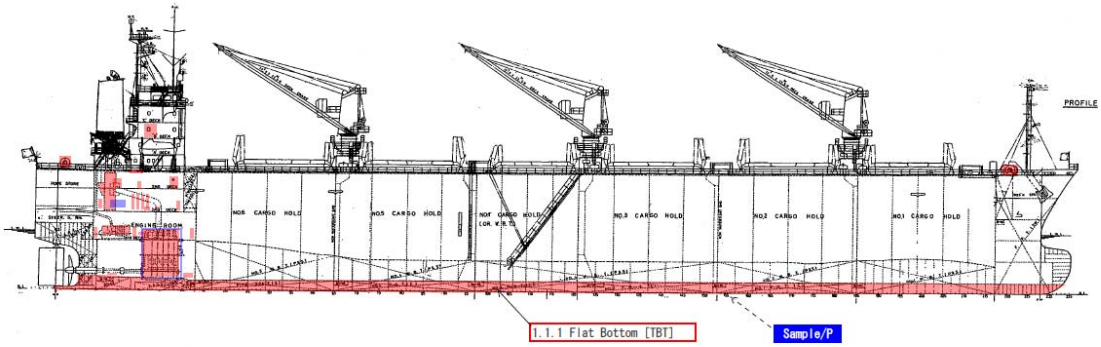
1.2 Equipment and Machinery containing materials listed in Table A and Table B of Appendix 1 of the Guidelines

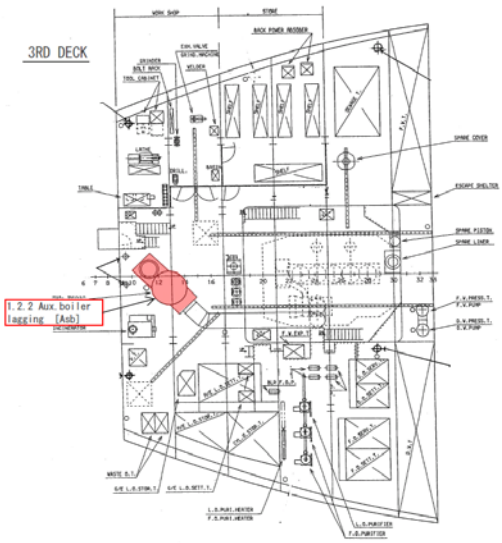
No.	Name of Equipment and Machinery	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity		Remarks
1	Main engine	Lower floor	Asbestos	Exh. Pipe packing	3.50	kg	
2	Aux. boiler	3rd deck	Asbestos	Unknown packing	0.36	kg	PCHM (Potentially Containing of Hazardous Materials)
3	Ref. provision plant	2nd deck	HCFC	Refrigerant(R22)	20.00	kg	
4	Batteries	Nav. Brid. Deck	Lead		96.00	kg	

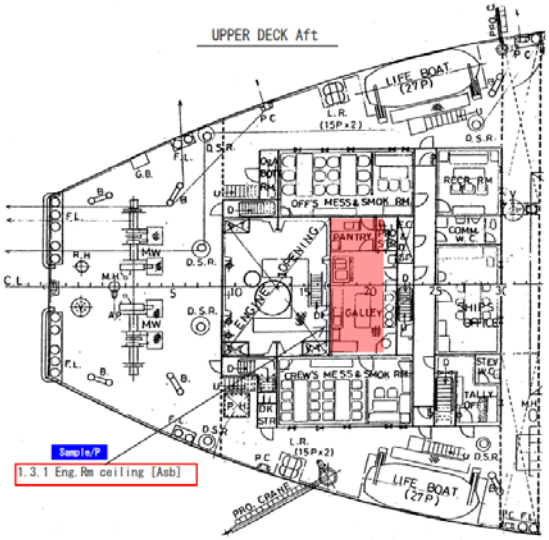
1.3 Structure and Hull containing materials listed in Table A and Table B of Appendix 1 of the Guidelines

No.	Name of Structural Element	Location	Materials (Classification in Appendix 1)	Parts of Use	Appx. Quantity		Remarks
1	Back deck ceiling	Upp.Deck	Asbestos	Engine room ceiling (A class)	3.80	kg	Confirmed by sampling
2							
3							

Example of Location map of Hazardous Materials







* * *

APPENDIX 6

EXAMPLE FORM OF MATERIAL DECLARATION

<Date of declaration>

Date	

<Supplier Information>

Company Name	
Division Name	
Address	
Contact Person	
Telephone No.	
Fax No.	
E-mail Address	

<Product Information>

Product Name	**Product Number**	**Product Total Mass**		Product Information
		Mass	Unit	

<Material Information>

Table	**Material Name**		Threshold Level	**Intentionally added above threshold level**	**If yes, Material Mass**		If yes, Detailed Material Information
				Yes/No	Mass	Unit	
Table A (Materials Listed in Appendix 1 of the Convention)	Asbestos	Asbestos	no threshold level				
	Polychloinated Biphenyls (PCBs)	Polychloinated Biphenyls (PCBs)	50 mg/kg				
	Ozone Depleting Substance	CFCs	no threshold level				
		Halons					
		Other fully halogenated CFCs					
		Carbon Tetrachloride					
		1,1,1-Trichloroethane (Methyl chloroform)					
		Hydrochlorofluorocarbons					
		Hydrobromofluorocarbons					
		Methyl bromide					
		Bromochloromethane					
	Organotin compounds	Tributyl Tins	2,500 mg/kg				
		Triphenyl Tins					
		Tributyl Tin Oxide (TBTO)					

Table	**Material Name**	Threshold Level	**Intentionally added above threshold level**	**If yes, Substance Mass**		If yes, Detailed Substance Information
			Yes/No	Mass	Unit	
Table B (Materials Listed in Appendix 2 of the Convention)	Cadmium and Cadmium Compounds	100 mg/kg				
	Hexavalent Chromium and Hexavalent Chromium Compounds	1,000 mg/kg				
	Lead and Lead Compounds	1,000 mg/kg				
	Mercury and Mercury Compounds	1,000 mg/kg				
	Polybrominated Biphenyl (PBBs)	1,000 mg/kg				
	Polybrominated Dephenyl ethers (PBDEs)	1,000 mg/kg				
	Polychloronaphthalanes (Cl=>3)	no threshold level				
	Radioactive Substances	no threshold level				
	Certain Shortchain Chlorinated Paraffins	1%				

* * *

APPENDIX 7

EXAMPLE FORM OF SUPPLIER'S DECLARATION OF CONFORMITY

Supplier's declaration of conformity for Material Declaration Management

1) No. _____

2) Issuer's name: _____

Issuer's address: _____

3) Object of the declaration: _____

_____

_____

4) The object of the declaration described above is in conformity with the requirement of the following documents :

	Document No.:	Title:	Edition/Date of issue
5)	_____	Guidelines for the development of the Inventory of Hazardous Materials	_____

6) Additional Information : _____

_____

Signed for and on behalf of:

_____

_____

(Place and date of issue)

7) _____ _____

(Name, function) (Signature)

* * *

[APPENDIX 8]

[DETAILS OF TABLE A AND TABLE B OF APPENDIX 1 WITH CAS NUMBERS]

*This list is developed referring to Joint Industry Guide No.101.

*This list is not comprehensive; it represents examples of chemicals with known CAS numbers.

Table	Material Category	Substances	CAS Numbers
Table A (Materials listed in Appendix 1 of the Convention)	Asbestos	Asbestos	1332-21-4
		Actinolite	77536-66-4
		Amosite (Grunerite)	12172-73-5
		Anthophyllite	77536-67-5
		Chrysotile	12001-29-5
		Crocidolite	12001-28-4
		Tremolite	77536-68-6
	Polychlorinated Biphenyls (PCBs)	Polychlorinated Biphenyls	1336-36-3
		Aroclor	12767-79-2
		Chlorodiphenyl (Aroclor 1260)	11096-82-5
		Kanechlor 500	27323-18-8
		Aroclor 1254	11097-69-1
	Ozone Depleting Substances/Isomers (They may contain isomers that are not listed here.)	Trichlorofluoromethane (CFC11)	75-69-4
		Dichlorodifluoromethane (CFC12)	75-71-8
		Chlorotrifluoromethane (CFC 13)	75-72-9
		Pentachlorofluoroethane (CFC 111)	354-56-3
		Tetrachlorodifluoroethane (CFC 112)	76-12-0
		Trichlorotrifluoroethane (CFC 113)	354-58-5
		1,1,2 Trichloro-1,2,2 trifluoroethane	76-13-1
		Dichlorotetrafluoroethane (CFC 114)	76-14-2
		Monochloropentafluoroethane (CFC 115)	76-15-3
		Heptachlorofluoropropane (CFC 211)	422-78-6
			135401-87-5
		Hexachlorodifluoropropane (CFC 212)	3182-26-1
		Pentachlorotrifluoropropane (CFC 213)	2354-06-5
			134237-31-3
		Tetrachlorotetrafluoropropane (CFC 214) 1,1,1,3-Tetrachlorotetrafluoropropane	29255-31-0 2268-46-4
		Trichloropentafluoropropane (CFC 215) 1,1,1-Trichloropentafluoropropane 1,2,3-Trichloropentafluoropropane	1599-41-3 4259-43-2 76-17-5
		Dichlorohexafluoropropane (CFC 216)	661-97-2
		Monochloroheptafluoropropane (CFC 217)	422-86-6
		Bromochlorodifluoromethane (Halon 1211)	353-59-3
		Bromotrifluoromethane (Halon 1301)	75-63-8
		Dibromotetrafluoroethane (Halon 2402)	124-73-2
		Carbon Tetrachloride (Tetrachloromethane)	56-23-5
		1,1,1, - Trichloroethane (methyl chloroform) and its isomers except 1,1,2-trichloroethane	71-55-6
		Bromomethane (Methyl Bromide)	74-83-9
		Bromodifluoromethane and isomers (HBFC's)	1511-62-2
		Dichlorofluoromethane (HCFC 21)	75-43-4
		Chlorodifluoromethane (HCFC 22)	75-45-6
		Chlorofluoromethane (HCFC 31)	593-70-4
		Tetrachlorofluoroethane (HCFC 121) 1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121a) 1,1,2,2-tetracloro-1-fluoroethane	134237-32-4 354-11-0 354-14-3
		Trichlorodifluoroethane (HCFC 122) 1,2,2-trichloro-1,1-difluoroethane	41834-16-6 354-21-2

Table	Material Category	Substances	CAS Numbers
		Dichlorotrifluoroethane(HCFC 123)	34077-87-7
		Dichloro-1,1,2-trifluoroethane	90454-18-5
		2,2-dichloro-1,1,1-trifluroethane	306-83-2
		1,2-dichloro-1,1,2-trifluroethane (HCFC-123a)	354-23-4
		1,1-dichloro-1,2,2-trifluroethane (HCFC-123b)	812-04-4
		2,2-dichloro-1,1,2-trifluroethane (HCFC-123b)	812-04-4
		Chlorotetrafluoroethane (HCFC 124)	63938-10-3
		2-chloro-1,1,1,2-tetrafluoroethane	2837-89-0
		1-chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)	354-25-6
		Trichlorofluoroethane (HCFC 131)	27154-33-2; (134237-34-6)
		1-Fluoro-1,2,2-trichloroethane	359-28-4
		1,1,1-trichloro-2-fluoroethane (HCFC131b)	811-95-0
		Dichlorodifluoroethane (HCFC 132)	25915-78-0
		1,2-dichloro-1,1-difluoroethane (HCFC 132b)	1649-08-7
		1,1-dichloro-1,2-difluoroethane (HFCF 132c)	1842-05-3
		1,1-dichloro-2,2-difluoroethane	471-43-2
		1,2-dichloro-1,2-difluoroethane	431-06-1
		Chlorotrifluoroethane (HCFC 133)	1330-45-6
		1-chloro-1,2,2-trifluoroethane	1330-45-6
		2-chloro-1,1,1-trifluoroethane (HCFC-133a)	75-88-7
		Dichlorofluoroethane(HCFC 141)	1717-00-6; (25167-88-8)
		1,1-dichloro-1-fluoroethane (HCFC-141b)	1717-00-6
		1,2-dichloro-1-fluoroethane	430-57-9
		Chlorodifluoroethane (HCFC 142)	25497-29-4
		1-chloro-1,1-difluoroethane (HCFC142b)	75-68-3
		1-chloro-1,2-difluoroethane (HCFC142a)	25497-29-4
		Hexachlorofluoropropane (HCFC 221)	134237-35-7
		Pentachlorodifluoropropane (HCFC 222)	134237-36-8
		Tetrachlorotrifluropropane (HCFC 223)	134237-37-9
		Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
		Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225)	127564-92-5; (2713-09-9)
		2,2-Dichloro-1,1,1,3,3-pentafluoropropane(HCFC 225aa)	128903-21-9
		2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba)	422-48-0
		1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb)	422-44-6
		3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca)	422-56-0
		1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb)	507-55-1
		1,1-Dichloro-1,2,2,3,3-pentafluoropropane(HCFC 225cc)	13474-88-9
		1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da)	431-86-7
		1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225ea)	136013-79-1
		1,1-Dichloro-1,2,3,3,3-pentafluoropropane(HCFC 225eb)	111512-56-2
		Chlorohexafluoropropane (HCFC 226)	134308-72-8
		Pentachlorofluoropropane (HCFC 231)	134190-48-0
		Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
		Trichlorotrifluoropropane (HCFC 233)	134237-40-4
		1,1,1-Trichloro-3,3,3-trifluoropropane	7125-83-9
		Dichlorotetrafluoropropane (HCFC 234)	127564-83-4
		Chloropentafluoropropane (HCFC 235)	134237-41-5
		1-Chloro-1,1,3,3,3-pentafluoropropane	460-92-4
		Tetrachlorofluoropropane (HCFC 241)	134190-49-1
		Trichlorodifluoropropane (HCFC 242)	134237-42-6
		Dichlorotrifluoropropane (HCFC 243)	134237-43-7
		1,1-dichloro-1,2,2-trifluoropropane	7125-99-7
		2,3-dichloro-1,1,1-trifluoropropane	338-75-0
		3,3-Dichloro-1,1,1-trifluoropropane	460-69-5

Table	Material Category	Substances	CAS Numbers
		Chlorotetrafluoropropane (HCFC 244)	134190-50-4
		3-chloro-1,1,2,2-tetrafluoropropane	679-85-6
		Trichlorofluoropropane (HCFC 251)	134190-51-5
		1,1,3-trichloro-1-fluoropropane	818-99-5
		Dichlorodifluoropropane (HCFC 252)	134190-52-6
		Chlorotrifluoropropane (HCFC 253)	134237-44-8
		3-chloro-1,1,1-trifluoropropane (HCFC 253fb)	460-35-5
		Dichlorofluoropropane (HCFC 261)	134237-45-9
		1,1-dichloro-1-fluoropropane	7799-56-6
		Chlorodifluoropropane (HCFC 262)	134190-53-7
		2-chloro-1,3-difluoropropane	102738-79-4
		Chlorofluoropropane (HCFC 271)	134190-54-8
		2-chloro-2-fluoropropane	420-44-0
	Organotin compounds(Tributyl Tin, Triphenyl Tin, Tributyl Tin Oxide)	Bis(tri-n-butyltin) oxide	56-35-9
		Triphenyltin N,N'-dimethyldithiocarbamate	1803-12-9
		Triphenyltin fluoride	379-52-2
		Triphenyltin acetate	900-95-8
		Triphenyltin chloride	639-58-7
		Triphenyltin hydroxide	76-87-9
		Triphenyltin fatty acid salts (C=9-11)	47672-31-1
		Triphenyltin chloroacetate	7094-94-2
		Tributyltin methacrylate	2155-70-6
		Bis(tributyltin) fumarate	6454-35-9
		Tributyltin fluoride	1983-10-4
		Bis(tributyltin) 2,3-dibromosuccinate	31732-71-5
		Tributyltin acetate	56-36-0
		Tributyltin laurate	3090-36-6
		Bis(tributyltin) phthalate	4782-29-0
		Copolymer of alkyl acrylate, methyl methacrylate and tributyltin methacrylate(alkyl; C=8)	-
		Tributyltin sulfamate	6517-25-5
		Bis(tributyltin) maleate	14275-57-1
		Tributyltin chloride	1461-22-9
		Mixture of tributyltin cyclopentanecarboxylate and its analogs (Tributyltin naphthenate)	-
		Mixture of tributyltin 1,2,3,4,4a, 4b, 5,6,10,10adecahydro-7-isopropyl-1, 4a-dimethyl-1-phenanthlenecarboxylate and its analogs (Tributyltin rosin salt)	-
		Other Tributyl Tins & Triphenyl Tins	-
Table B (Materials listed in Appendix 2 of the Convention)	Cadmium/Cadmium Compounds	Cadmium	7440-43-9
		Cadmium oxide	1306-19-0
		Cadmium sulfide	1306-23-6
		Cadmium chloride	10108-64-2
		Cadmium sulfate	10124-36-4
		Other cadmium compounds	-
	Chromium VI Compounds	Chromium (VI) oxide	1333-82-0
		Barium chromate	10294-40-3
		Calcium chromate	13765-19-0
		Chromium trioxide	1333-82-0
		Lead (II) chromate	7758-97-6
		Sodium chromate	7775-11-3
		Sodium dichromate	10588-01-9
		Strontium chromate	7789-06-2
		Potassium dichromate	7778-50-9

Table	Material Category	Substances	CAS Numbers
		Potassium chromate	7789-00-6
		Zinc chromate	13530-65-9
		Other hexavalent chromium compounds	-
	Lead/Lead Compounds	Lead	7439-92-1
		Lead (II) sulfate	7446-14-2
		Lead (II) carbonate	598-63-0
		Lead hydrocarbonate	1319-46-6
		Lead acetate	301-04-2
		Lead (II) acetate, trihydrate	6080-56-4
		Lead phosphate	7446-27-7
		Lead selenide	12069-00-0
		Lead (IV) oxide	1309-60-0
		Lead (II,IV) oxide	1314-41-6
		Lead (II) sulfide	1314-87-0
		Lead (II) oxide	1317-36-8
		Lead (II) carbonate basic	1319-46-6
		Lead hydroxidcarbonate	1344-36-1
		Lead (II) phosphate	7446-27-7
		Lead (II) chromate	7758-97-6
		Lead (II) titanate	12060-00-3
		Lead sulfate, sulphuric acid, lead salt	15739-80-7
		Lead sulphate, tribasic	12202-17-4
		Lead stearate	1072-35-1
		Other lead compounds	-
	Mercury /Mercury Compounds	Mercury	7439-97-6
		Mercuric chloride	33631-63-9
		Mercury (II) chloride	7487-94-7
		Mercuric sulfate	7783-35-9
		Mercuric nitrate	10045-94-0
		Mercuric (II) oxide	21908-53-2
		Mercuric sulfide	1344-48-5
		Other mercury compounds	-
	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs)	Bromobiphenyl and its ethers	2052-07-5 (2-Bromobiphenyl)
			2113-57-7 (3-Bromobiphenyl
			92-66-0 (4-Bromobiphenyl)
			101-55-3 (ether)
		Decabromobiphenyl and its ethers	13654-09-6
			1163-19-5 (ether)
		Dibromobiphenyl and its ethers	92-86-4
			2050-47-7 (ether)
		Heptabromobiphenylether	68928-80-3
		Hexabromobiphenyl and its ethers	59080-40-9
			36355-01-8 (hexabromo-1,1'-biphenyl)
			67774-32-7 (Firemaster FF-1)
			36483-60-0 (ether)
		Nonabromobiphenylether	63936-56-1
		Octabromobiphenyl and its ethers	61288-13-9
			32536-52-0 (ether)
		Pentabromobidphenyl ether (note: Commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides.	32534-81-9 (CAS number used for commercial grades of PeBDPO)
		Polybrominated Biphenyls	59536-65-1
		Tetrabromobiphenyl and its ethers	40088-45-7
			40088-47-9 (ether)

Table	Material Category	Substances	CAS Numbers
		Tribromobiphenyl ether	49690-94-0
	Polychlorinated Naphthalenes	Polychlorinated Naphthalenes	70776-03-3
		Other polychlorinated Naphthalenes	-
	Radioactive Substances	Uranium	-
		Plutonium	-
		Radon	-
		Americium	-
		Thorium	-
		Cesium	7440-46-2
		Strontium	7440-24-6
		Other radioactive substances	-
	Certain Shortchain Chlorinated Paraffins (with carbon length of 10-13 atoms)	Chlorinated paraffins (C10-13)	85535-84-8
		Other Short Chain Chlorinated Paraffins	-