European Maritime Safety Agency

EMSA's Best Practice Guidance on the Inventory of Hazardous Materials

IHM development and maintenance in the context of the EU Ship Recycling Regulation.

Monitoring and enforcement in the context of the EU Ship Recycling Regulation.

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EMSA

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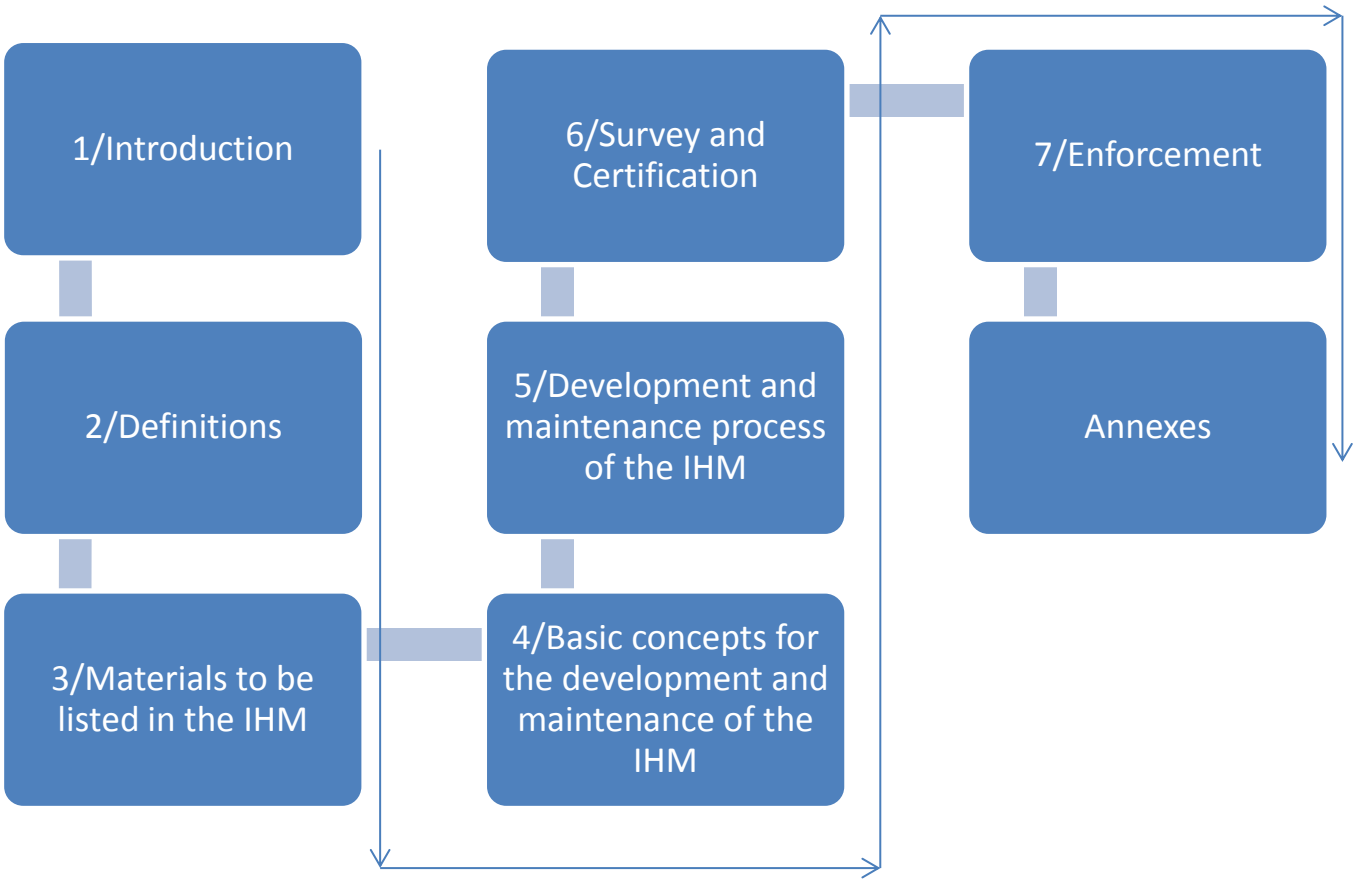
EMSA's BEST PRACTICE GUIDANCE ON THE DEVELOPMENT AND MAINTENANCE OF THE IHM:



List of Abbreviations

ACM	Asbestos Containing Material
AFS	Anti-fouling compounds and systems
EMSA	European Maritime Safety Agency
EU	European Union
GT	Gross Tonnage
HM	Hazardous Material
HBCDD	Brominated Flame Retardant
HKC	Hong Kong International Convention for the Safe and Sound Recycling of Ships
IC	Inventory Certificate
IHM	Inventory of Hazardous Materials
IMO	International Maritime Organization
LDT	Light Displacement Tonnes
MD	Material Declaration
ODS	Ozone-depleting substances
MARPOL	International Convention for the Prevention of Pollution from Ships
PCB	Polychlorinated biphenyls
PBB	Polybrominated Biphenyl
PBDE	Polybrominated Diphenyl Ethers
PCHM	Potentially Containing Hazardous Material
PFOS	Perfluorooctane sulfonic acid
POP	Persistent Organic Pollutant
PPE	Personal Protective Equipment
PSC	Port State Control
PSCO	Port State Control Officer
RCP	Random Checking Plan
RO	Recognised Organisation
RfRC	Ready for Recycling Certificate
SDoC	Supplier’s Declaration of Conformity
SoC	Statement of Compliance
SRF	Ship Recycling Facility
SRP	Ship Recycling Plan
SRR	Ship Recycling Regulation
VSCP	Visual/Sampling Check Plan

1. Introduction

This document provides best practice guidance and a harmonised approach to the development and maintenance of inventories of hazardous materials (hereinafter referred to as “the Inventory” or “the IHM”) in accordance with Article 5 and Article 12 of the Regulation (EU) 1257/2013 of the European Parliament and the Council on ship recycling (hereinafter referred to as “the Regulation” or as “the SRR”). This document has been prepared on the basis of current knowledge and experience from the Member States, the industry and EMSA and other stakeholders.

Furthermore, this document provides guidance for a harmonised and effective approach to the inspection of ships ascertaining their compliance, to identifying non-compliances and to applying control procedures for the enforcement of the Regulation as regards the development and maintenance of an IHM on board ships.

EMSA’s Best Practice Guidance is a non-binding document and nothing in this guidance document should be construed as generating mandatory requirements on any of the involved parties.

1.1 Background

Keeping an up-to-date Inventory on board a ship throughout its life-cycle is a key requirement laid down in both the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (hereinafter referred to as "the Convention" or "the HKC") and the Regulation. The Regulation’s requirements for the development of the Inventory are in fact almost entirely based on the respective requirements of the Convention. An IHM developed in accordance with the Regulation must be compiled taking into account the relevant IMO guidelines.

Nevertheless, EU legislation sets a few more requirements for the Inventory than the Convention does. Therefore, it is essential that the development and maintenance of the IHM in pursuance of the SRR is done a) in a harmonised and comprehensive manner in the light of the international knowledge and experience as reflected most notably in the relevant IMO guidelines, while b) taking into account the specificities of the EU legislative context, in particular of the Regulation itself.

This guidance will be kept under review in the light of the experience that will be gained with its application and with the aim to be a workable and useful document for all the relevant stakeholders, in view of the application of the SRR.

1.1.1 The Hong Kong Convention and the IMO guidelines

The HKC covers the design, construction, survey, certification, operation and recycling of ships to facilitate safe and environmentally sound recycling. In accordance with Regulation 5 of the Annex of the HKC, each ship shall have on board an IHM[1]. The IHM shall be verified either by the Administration or by any person or organisation authorised by it.

In the wake of the adoption of the HKC, the IMO has published a number of guidelines on ship recycling. As per the Regulation, the IMO guidelines, in their updated form, shall be taken into account when compiling the IHM[2], preparing a VSCP[3], conducting flag State surveys[4] or detailed inspections of the port State[5].

In this respect, this guidance document is complementary to the relevant IMO guidelines. It is to be regarded in the light of these guidelines with a view to provide a comprehensive framework for the practical implementation of the relevant provisions of the Regulation.

[1] ‘Existing’ ships shall comply as far as practicable not later than 5 years after the entry into force of the HKC, or before going for recycling if this is earlier.
[2] Resolution MEPC.269(68).
[3] See footnote (2).
[4] Resolution MEPC.222(64).
[5] Resolution MEPC.223(64).

1.1.2 The EU Ship Recycling Regulation

Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 'on ship recycling and amending Regulation (EC) 1013/2006 and Directive 2009/16/EC' was published in the Official Journal[6] of the EU on 10 December 2013. It entered into force on 30 December 2013. Its articles will apply at various stages, as detailed in article 32 of the Regulation[7].

The SRR is closely following the HKC's structure, concepts and definitions. However, the Regulation also sets out a number of additional requirements that go beyond those set in the HKC, including on inventories of hazardous materials. In this regard, EMSA's guidance is based on the EU specific requirements when these requirements go beyond those set in the HKC.

In accordance with Article 5 of the Regulation, all ships flying the flag of a Member State shall have on board an IHM. Furthermore, in accordance with Article 12 of the Regulation, all ships flying the flag of a third country shall also have on board an IHM when calling at a port or anchorage of a Member State. In this respect, the Regulation takes a 'flag neutral' approach although all ships flying the flag of a third country will be considered as if they were 'existing ships' and, in general, will be treated accordingly[8].

In relation to the IHM, there are two basic categories of ships (i.e. flying the flag of a Member State): '**new**' and '**existing**' ships and a provisional category of '**ships going for recycling**' which includes all ships going for recycling from the date of the publication of the European List and before the final application date of the SRR[9]. In general, a 'new' ship shall have on board an IHM which shall identify at least the HM referred to in Annex II of the Regulation while an 'existing' ship or a 'ship going for recycling'[10] before the final application date of the SRR, shall have on board an IHM which shall identify, at least, the HM listed in Annex I of the Regulation. Annex I of the Regulation lists five types of hazardous materials; Annex II lists the items of Annex I as well as an additional ten types of hazardous materials.

All ships flying the flag of a Member State shall be subject to a survey regime and they shall carry on board a ship-specific 'Inventory Certificate' issued by the administration or a RO authorised by it and supplemented by Part I of the IHM.

When calling at a port or anchorage of a Member State, all ships flying the flag of a third country shall carry on board a ship-specific 'statement of compliance' issued by the relevant authorities of the third country whose flag the ship is flying or an organisation authorised by them and supplemented by Part I of the IHM.

In both cases the IHM shall be properly *maintained* and *updated* throughout the operational life of the ship, reflecting new installations containing any HM referred to in ***Annex II*** of the Regulation and relevant changes in the structure and equipment of the ship. However, for the ships flying the flag of a third country, any possible exemptions and transitional arrangements applicable to those materials under international law will also be taken into account.

Member States shall apply port State control provisions for ships in accordance with the PSC Directive[11]. This control shall be limited to checking that either an inventory certificate or a ready for recycling certificate is kept on board ships flying the flag of a Member State of the Union. Ships flying the flag of a third country should always be in a position to submit a copy of the statement of compliance together with the Inventory. In addition, Member States shall apply port State control provisions for ships in accordance with Article 11 or Article 12 of the Regulation as appropriate, and they may carry out detailed inspections to enforce the relevant provisions of the Regulation[12][13].

[6] OJ L 330, 10-12-2013, p.1-20.
[7] See ***Annex A*** for the timeline of the application of the Regulation.
[8] See Table A for some possible differences between 'existing' (EU) and 'non-EU' ships.
[9] N.B.: And, because of the application dates of the Regulation (see Article 32), do not have yet on board an IHM as appropriate. For more details, see Annex A.
[10] The term is used in accordance with the second subparagraph of Article 5(2) of the Regulation and applies only for ships flying the flag of a Member State.
[11] Directive 2009/16/EC, OJ L 131, 28-5-2009, p.57.
[12] Resolution MEPC.223(64).
[13] See below under Chapter 7 'Enforcement'.

1.2 Objective

The aim of this document is to assist the Member States and all the relevant stakeholders involved in the IHM process, with a reference document that provides both technical information and procedural guidance.

In addition, EMSA's best practice guidance should provide the overarching principles for the development and maintenance of the IHM in order to ensure compliance with the EU requirements.

Finally, it should support the SRR with regard to all the aspects related to the IHM, building upon the existing IMO guidelines, identifying best practices and providing reference standards for the development and maintenance of the IHM and for the training and qualifications of the personnel which will be involved in the process.

The ultimate goal of this guidance document is to facilitate the development of a credible ship-specific IHM which will provide reliable information on the actual HM present on board, in order to protect health and safety and to prevent pollution at ship recycling facilities.

1.3 Scope of Application

The Regulation applies to ships on international voyages, of 500GT and above flying the flag of a Member State or the flag of a third country under the conditions of Article 12 of the Regulation.

The Regulation applies to all vessels of any type whatsoever operating or having operated in the marine environment including submersibles, floating craft, floating platforms, self-elevating platforms, FSUs and FPSOs, as well as ships stripped of equipment or being towed.

It does not apply to any warships, naval auxiliary or other ships owned or operated by a state and used, for the time being, only on government non-commercial service. 'New' and 'existing' ships, 'ships going for recycling' as well as 'ships flying the flag of a third country' shall have on board an IHM in accordance with the relevant provisions of Article 5 or Article 12 of the Regulation.

The scope of this guidance coincides with the scope of the Regulation. Therefore, the provisions of the guidance document should be utilised for the development and proper maintenance and update of the IHM throughout the operational life of ships for which the SRR applies. Furthermore, it is suggested that this guidance is utilised by the administrations of the Member States, the relevant authorities involved in port State control activities, the recognised organisations and the authorised organisations, for the application and enforcement of the relevant requirements of the Regulation in a consistent, harmonised and effective manner.

2. Definitions

The terms used in this guidance document have the same meaning as those defined in the Regulation and in the IMO guidelines with the following additional definitions which apply for the purposes of this guidance document only:

- '***IHM process***' is the whole process of development and maintenance of an IHM throughout the operational life-cycle of the ship. It involves all the steps of developing an IHM including issuing/checking of any relevant documentation (e.g. Material Declarations), sampling and analysis, verification and life-cycle management.

- '***Individual IHM expert***' is a person who has the appropriate training, qualifications and knowledge to conduct HM surveys for the development and maintenance of an IHM. He or she should have experience on ship structure and on handling of HM and sufficient knowledge of how to compile an IHM and of all the relevant international and EU legislation[14].

- '***IHM expert company***' is an entity employing or contracting individual IHM experts to conduct any relevant work or task in relation to the IHM process for the purpose of compiling or updating Inventories of

[14] See Annex B as a reference.

Hazardous Materials. The IHM expert company should use a documented management system and should work on suitable standards, covering the relevant activities of the company.

- '***HM survey***' is an investigation to trace and identify the presence or absence of Hazardous Materials contained in the equipment, systems, and/or areas on board a ship and may include review of any relevant documents, visual inspections and sampling.
- '***Sampling check***' is the taking of samples to identify the presence or absence of HM contained in the equipment, systems, and/or areas on board a ship, by suitable and generally accepted methods such as laboratory analysis.
- '***Representative sampling***' is a method to sample materials of the same kind in a representative manner. Such materials should be checked to ensure that they are of the same kind.
- '***Blank Sample***' is a clean sample or sample of matrix processed so as to measure artifacts in the measurement (sampling and analysis) process.
- '***Blind Sample***' is a sample submitted to evaluate performance with concentration and identity unknown to the analyst.
- '***Bulk Sample***' is a sample taken from a larger quantity (lot) for analysis or recording purposes.
- '***Specific testing***' is a repeatable and reliable method of testing samples, which can demonstrate definitively whether a Hazardous Material exists or not and provide a known type of the Hazardous Material.
- '***Accredited laboratory***' is a laboratory accredited in accordance with ISO 17025 or an equivalent standard for the purpose of conducting specific tests for HMs included in the SRR and capable of providing a written report that can be relied upon by all parties.

3. Materials to be listed in the IHM

The Inventory consists of:

Part I: HM contained in ship structure or equipment and referred to in Annexes I and II of the SRR;

Part II: Operationally generated wastes; and

Part III: Stores.

In general, the IMO guidelines[15] provide sufficient information for the development of the IHM in relation to the HM included in Appendices 1 and 2 of the HKC as well as an indicative list of these HM with CAS numbers and respective specific test methods. Therefore, for information on the HM included in Appendices 1 and 2 of the HKC and in Annexes 1 and 2 of the SRR reference should be made to the IMO guidelines. In ***Annex C*** of this guidance document some specific information is provided on the two additional HM (PFOS[16] and HBCDD) included only in Annexes I and II of the SRR.

The Inventory should be developed on the basis of the standard format set out in appendix 2 of the IMO guidelines. However, in this format there should be a reference stating that the IHM has been developed to cover also the requirements of the SRR[17]. This would entail that the Inventory would keep the classification of Materials according to the IMO guidelines with the addition of two HM (PFOS and HBCDD) as appropriate.

[15] Resolution MEPC.269(68).
[16] Not applicable for ships flying the flag of a third country.
[17] E.g.: "the Inventory follows the requirements set out in the HKC and in the EU Ship Recycling Regulation (EU) 1257/2013".

3.1 Recording of HM in the IHM Part I

For ships flying a flag of a Member State HM shall be listed in the IHM Part I in accordance with the provisions of paragraphs (1) and (2) of Article 5 of the SRR.

For ships flying the flag of a third country HM shall be listed in the IHM Part I in accordance with the provisions of paragraphs (3) and (4) of Article 12 of the SRR.

Recording of HM in the IHM Part I should be done in accordance with the IMO guidelines. Loosely fitted equipment, batteries, spare parts, exemptions, and 'bulk listing' of similar materials should be treated in line with the IMO guidelines.

3.2 Threshold values of HM included in the IHM Part I

HM should be reported in the IHM when the material is present in the product above the applicable threshold value. However, when there is no specified threshold value for a HM[18] then it should be reported in the IHM when deliberately used in the formulation of a product where its continued presence is desired to provide a specific characteristic, appearance, property, attribute or quality regardless of quantity. Suppliers should report such substances when they have knowledge (or with reasonable inquiry should have knowledge) of their presence.

As a general principle, unless expressly provided otherwise in the relevant EU legislation, revised threshold values for the materials to be listed in the IHM Part I, should be used for IHM developed or updated after the adoption of the revised values and need not be applied to existing IHM and IHM under development. However, when materials are added to the IHM, such as during maintenance, the revised threshold values should be applied and recorded in the IHM.

Annex B provides information on the HM that should be listed in the IHM Part I, the relevant threshold values and the referenced EU legislation which may be of relevance to the respective HM.

4. Basic concepts for the development and maintenance of the IHM

The development and maintenance of the IHM is a key requirement of the Regulation. The Regulation requires '*ships*' to have it on board therefore, the obligation lies in principle with the shipowner. Furthermore, the '*installation*' (or use) of HM referred to in Annex I of the SRR is prohibited or restricted as specified in this Annex and, subsequently, this entails additional responsibilities to the shipbuilders and other stakeholders (e.g. to manufacturers and suppliers).

The development procedure of a new IHM may differ depending on whether the ship is a new or an existing one[19]. However, the overarching principles remain the same. The ship owner or the shipbuilder may draw upon assistance by an IHM expert. This is strongly recommended for safety and health protection reasons and in order to have a minimum assurance that the work is carried out by competent personnel, under a quality management system and in accordance with recommended guidance (i.e. the EMSA's guidance document and the relevant IMO guidelines).

The hereunder provisions provide a framework for a harmonised, qualitative and credible development and maintenance of the Inventory with a view to securing a level playing field for the responsible actors and enhancing the overall quality and credibility of the produced IHM under the SRR.

4.1 Overarching Principles

The development and maintenance of the IHM should be subject to the principles of *independence*, *quality* and *accountability*.

[18] i.e.: Ozone Depleting Substances or Radioactive substances.
[19] See below Chapter 5.1 and 5.2.

These overarching principles should apply throughout the whole IHM process by all the relevant stakeholders including ship-builders, manufacturers, shipowners, administrations, recognised organisations, authorised organisations, and any involved personnel, individual IHM experts or IHM expert companies. The flag State administrations and any relevant national authority are primarily responsible for securing the application of these principles.

More specifically:

4.1.1 Independence

The persons involved in the IHM process should be able to demonstrate personal integrity in the performance of their duties.

Impartiality and objectivity is needed in all work conducted by anyone involved in the IHM process in particular the IHM experts.

Independence from the entity responsible for the verification of the IHM on behalf of the flag State is indispensable. In this regard, conflicts of interest between the entity (individual, company or organisation) developing or updating the IHM and the entity verifying the IHM on behalf of the flag State should be prevented.

4.1.2 Quality

The persons involved in the IHM process should be able to demonstrate a high level of professional competence in the performance of their duties.

The work of any person or party involved in the IHM process should be of the highest possible quality and in compliance with the requirements of the Regulation and any applicable international legislation.

All the entities involved in the IHM process (i.e. IHM experts, shipbuilders, shipping companies) should apply a documented management system and quality controls to ensure the credibility of the IHM process for the development or maintenance of the Inventory.

4.1.3 Accountability

Any person or party involved in the IHM process should have a clear understanding of the duties and responsibilities he/she/it assumes in this process.

The responsibility for the IHM's compliance with the requirements of the Regulation lies primarily with the ship owner and/or the shipbuilder. They have the duty of exercising due diligence when they appoint or instruct any person or party to conduct HM surveys, to compile reports or to perform any kind of work within the context of the IHM process. Appointing an IHM expert to compile/update an IHM in accordance with this guidance document should, in principle, be considered as exercise of due diligence in order to meet the relevant requirements of the Regulation.

The persons or parties involved in the IHM process should keep records of the HM surveys performed. Written records should be kept to the extent possible. Every person involved in the IHM process may be held liable in case of fault or gross negligence in the execution of his/her duties. Every party involved in the IHM process may also be held liable in case of fault or gross negligence of any of its employees.

The persons involved in the IHM process should exercise due professional care in conducting and supervising the respective activities and in preparing related reports. They should use their professional judgment when exercising their duties during the IHM process.

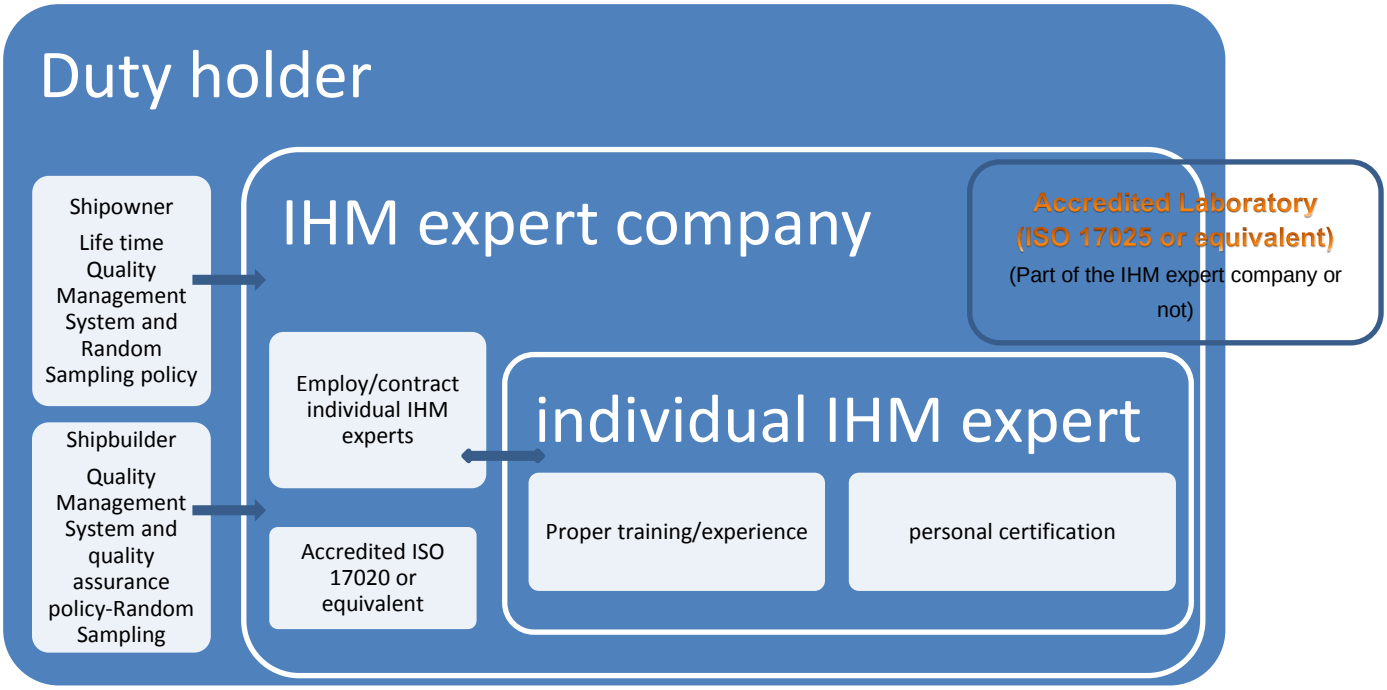
4.2 Accreditation and Certification

- ✓ The ***individual IHM expert*** should work within a general quality assurance framework provided by a management system in accordance with the overarching principles for the development and maintenance of the IHM. *Anyone using an individual IHM expert for compiling or updating an IHM is responsible to confirm that the IHM expert is competent to carry out the work required.*

- ✓ The ***IHM expert company*** should implement quality processes and procedures preferably in accordance with *ISO 17020* or any equivalent standard covering all the relevant activities of the company. Seeking accreditation against a standard from EU accreditation bodies or ILAC/MRA signatory bodies is the most effective way to demonstrate independence and necessary qualifications. *Anyone using an IHM expert company for compiling or updating an IHM is responsible to confirm that the IHM expert company is duly capable to implement quality processes and procedures.*

- ✓ The ***laboratory*** to carry out specific tests should be accredited in accordance with *ISO 17025* or an equivalent standard for the purpose of conducting specific tests for HMs included in the SRR. It should perform internal proficiency testing and evaluation of the personnel, it should implement quality control procedures and it should be capable of providing a written report that can be relied upon by all parties. Seeking accreditation against a standard from EU accreditation bodies or ILAC/MRA signatory bodies is the most effective way to demonstrate independence and necessary qualifications. *Anyone using a laboratory for the analysis of samples for HM included in the Annex II of the Regulation is responsible to confirm that the laboratory is suitably accredited*.

The **optimum** organisational framework for the IHM process is described in the following graph:



Graph 1 – Optimum organisational framework.

4.3 Training & Qualification

The persons involved in the IHM process should have appropriate training, qualifications, knowledge and experience to perform their respective duties.

An individual may obtain a 'personnel certification' for HM surveying from a Certification Body accredited in accordance with ISO 17024 or equivalent provided that the necessary training and experience are covered.

To become an IHM expert an individual should at least have training, on the following topics:

1. The SRR and the EU relevant legislation.
2. EMSA's best practice guidance on the development and maintenance of the IHM.

3. The basic principles of the HKC and the respective IMO guidelines particularly the 'guidelines for the development of the Inventory of Hazardous Materials[20]' in their up-to-date format.
4. Ship structure and equipment.
5. Properties of the HM mentioned in the Annex II of the SRR.
6. Requirements for the IHM preparation of New and Existing Ships.
7. Sampling Methodology.
8. How to prepare a risk assessment before conducting HM surveys/sampling on board ships
9. How to prepare a VSCP and a RCP.
10. HM survey on board a ship. Sampling on board ships, methods of sampling HM included in the Annex II of the SRR.
11. Health and Safety. Precautionary measures for safe sampling and use of personal protective equipment.
12. Reference standards for testing samples.
13. Calculation of the HM amounts based on the analysed results.
14. HM survey reports.
15. Preparation of an IHM in its standard format in accordance with the EMSA guidance and the IMO guidelines.

In addition, to become an IHM expert an individual should have experience on ship structure and on handling of HM and should be able to demonstrate supervised practical field experience.

The aforementioned training of individual IHM experts is without prejudice to any requirements set out in the EU legislation[21] or in any national legislation where he/she is based, for the employers to provide appropriate training for workers who are or likely to be, exposed to Hazardous Materials.

4.4 Supplier's Declaration of Conformity and Material Declarations.

Suppliers should identify and declare the presence of a HM included in the Annex II of the SRR if it exceeds the threshold value specified in Annex B of this guidance. However, this provision does not apply to chemicals which do not constitute a part of the finished product. Suppliers should provide their customers with *Supplier's Declarations of Conformity* and *Material Declarations* in any case even when no HM are contained above the applicable threshold values.

SDoC and MD should be prepared and signed in accordance with the IMO guidelines and they should be drawn in the format provided in the IMO guidelines. However, due regard should be given to include in the IMO/MD form a supplement with a reference to the presence (or absence) of the two additional HM (PFOS[22] and HBCDD) included only in Annexes I and II of the SRR. An example of the Supplement to the IMO form of Material Declaration is shown in ***Annex D*** of this guidance.

The supplier compiling the SDoC should establish a company policy and use a suitable quality management system for the management of the chemical substances in products which the supplier manufactures or sells.

4.5 Sampling and analysis

The overall objective of any sampling activity is to obtain a sample which can be used for the targeted purpose i.e. to identify the presence or absence of HM contained in the equipment, systems, and/or areas on board a ship by suitable and generally accepted methods such as laboratory analysis.

Sampling and analysis should comply with specific national legislation where it exists and with international standards. The whole process should be in accordance with the provisions of this guidance and the IMO guidelines.

Due diligence should be exercised when undertaking any work on sampling and analysis. The sampling activity involves certain risks to personnel involved or to other persons on board. Therefore, *sampling* should only be

[20] Resolution MEPC.269(68).
[21] i.e. Article 14 of the Directive 2009/148/EC 'on the protection of workers from the risks related to exposure to asbestos at work'.
[22] Not applicable for ships flying the flag of a third country.

undertaken by competent personnel i.e. IHM experts, with the proper use of suitable equipment. Furthermore, *analysis of the samples* should only be carried out by suitably accredited laboratories using qualified and trained personnel, suitable testing methods and the necessary equipment.

Sampling should be carried out in accordance with a pre-decided methodology and supported by an appropriate check plan.

4.5.1 Sampling methodology

Standard working procedures for sampling (sampling methodology) should be established and agreed upon before the start of the sampling campaign. The sampling methodology should include the following:

- ✓ Determine on a '***targeted'*** or '***random****'* sampling campaign or both. *Targeted sampling* should be applied where the presence of prohibited and restricted Hazardous Materials is assumed but cannot be recognized by analysis of the available documentation or visual checking. *Random sampling* may be applied where the presence of prohibited and restricted Hazardous Materials has been excluded by document analysis but either there are suspicions of existence of HM or there is a policy for performing random checks as a quality assurance procedure.

- ✓ ***Targeted sampling*** should take place during the preparation of the IHM of an existing ship in accordance with the relevant procedure of the IMO guidelines and should include any equipment, system and/or area which cannot be specified regarding the presence of HM[23] by document or visual analysis except those which shall be classed as '*Potentially Containing HM*' (PCHM).
  Random sampling may be used as a quality assurance process and may take place for new ships during the design and construction stage, on existing ships during the initial preparation of the IHM along with targeted sampling or on any ship after the initial preparation of the Inventory[24].

- ✓ Identity of the sampler/IHM expert.

- ✓ Preparation of a 'visual/sampling check plan' (VSCP) or of 'random checking plan' (RCP) as appropriate.

- ✓ The estimated number of samples to be taken, the types of samples to be chosen and a description of or reference to the sampling method. As a general rule, the samples should be representative of the materials being checked and in sufficient numbers. As guidance the rule of 10% may be established meaning that *roughly 10%* of the components of any system identified for a sampling check[25] should be sampled. However, taking of samples and the number of samples to be taken should always be determined according to the professional judgement of the entity carrying out the HM survey and proper/pragmatic ceilings in the number of samples should be established per each product or system. Materials of the same kind may be sampled in a representative manner.

- ✓ Selection of location (checkpoints), date of sample-taking and the overall duration of the sampling campaign. It should be noted that the sampling campaign may be adjusted and other sampling points may be identified during the survey according to the actual conditions on-board and in accordance with the professional judgement of the IHM expert.

- ✓ A risk assessment for the HM survey using all the information available before the sampling (MD, SDoC, certificates, plans, diagrams, manuals, other information etc). This assessment should determine the existing risks (e.g. chemical hazards, electrical hazards, working in closed spaces, at heights or on operable machinery, noise, disturbing sampling, necessary PPE, decontamination and disposal

[23] N.B.: Mostly HM referred to in Annex 1 of the SRR. For existing ships and 'ships going for recycling' the IHM should identify the HM included in the Annex 2 of the SRR as far as practicable.
[24] Either because there are suspicions of existence of non-recorded HM on board or in applying the 'precautionary principle'.
[25] Either according to a policy for performing random checking of materials on board ships or according to the results of a document or visual analysis specifying the presence of HM and providing for targeted sampling of any equipment, system or area which cannot be specified regarding the presence of HM except those which shall be classed as 'potentially containing HM'.

arrangements etc). The risk assessment should then identify the necessary precautions and safety procedures to be followed during the HM survey and sampling.

- ✓ Labelling which gives detailed information or a specific sample code that cannot be removed easily. The sampling position on board may also be labelled with the same identifier. Marked-up ship plans and photographic records should be kept showing the location and extent of the sample.

- ✓ Preservation of the integrity of samples during transport and storage (before analysis).

- ✓ Close cooperation between the sampler and the accredited laboratory and establishment of quality assurance and quality control (QA/QC) procedures (e.g. appropriate sampling containers, blank samples, blind Samples etc). It is essential to consult with the accredited laboratory before sampling to ensure that the measurement methods available can meet the defined sampling needs.

4.5.2 Visual/sampling check plan – Random checking plan

Before any visual/sampling check is conducted, a VSCP or a RCP should be prepared. The IMO guidelines provide an example for the development of a VSCP and a relevant check list which may be used[26]. Annex E.a of this guidance document provides an indicative example of a RCP/check list which may be used in case of random sampling. It should be noted that the sampling campaign may be adjusted further during the HM survey according to the actual conditions on-board and in accordance with the professional judgement of the IHM expert.

A. Random checking plan

If a decision is taken to conduct random sampling, the important element when preparing a RCP is that there should be no items categorized as 'unknown' in the column for the results of the document analysis. Therefore, the selection of any equipment, system and/or area for inclusion in the RCP and for sampling should be based on whether there are suspicions of non-credible documentation and/or on the experience of the IHM expert.

In this case, the selection should be done from the items identified by the document analysis as 'not contained'. A RCP may be used describing ***only*** the selected list of equipment, system and/or area for sampling check[27].

Compiling a RCP is not a prerequisite for conducting random sampling. However, it is recommended in order to support a more effective, rational and documented sampling campaign.

B. Visual and sampling check plan

The preparation of a VSCP for targeted sampling on an existing ship and on a ship flying the flag of a third country, when developing the IHM, is a legal requirement[28] and it should be done in accordance with the IMO guidelines. It should be based on three lists i.e. list of equipment, system and/or area for visual check, list of equipment, system and/or area for sampling check and the list of equipment, system and/or area classed as 'potentially containing hazardous material'. If random sampling is to be conducted along with targeted sampling the VSCP should reflect the items identified by the document analysis as 'not contained' (or PCHM) that may be checked by random sampling[29].

4.5.3 Laboratories

Laboratories should be accredited in accordance with ISO 17025 or an equivalent standard for the purpose of conducting specific tests for HMs included in the SRR. This includes applying procedures such as:

- ✓ Cleaned laboratory equipment, material, and chemicals to be used to avoid contamination.

[26] See Appendix 5 of the Resolution MEPC.269(68). See also Annex E.b of this guidance document for a practical indicative example of a VSCP.
[27] See Annex E.a for an example of a RCP/check list.
[28] See paragraph 4 of Article 5 and paragraph 3 of Article 12 of the SRR.
[29] See Annex E.b.

- ✓ Quality assurance and quality control procedures (e.g. a system ensuring that effectiveness of the measurements and procedures is continuously supervised through the analysis of procedural blank samples).
- ✓ Application of the analysis methods and, if applicable, combination of different specified methods according to HKC and this guidance document.
- ✓ Regular injection of solvent blanks and standard solutions.
- ✓ Tests to be carried out to evaluate the accuracy of the method, e.g. efficiency of the extraction methods, the recovery of the analytes, stability and loss of analytes in solution during storage, calibration using matrix matched standards or standard addition, and use of proper internal standards.
- ✓ Tests to be carried out to evaluate the precision (repeatability and reproducibility), the limits of detection (LODs) and quantification (LOQs), the robustness and the specificity of the whole method, from sampling to detection.
- ✓ Clearly defined criteria for identification and quantification need to be applied, and calibration curves to be used.
- ✓ Storage of analysed samples and data (including instrumental raw data) for a defined time of at least six months after analysis.
- ✓ Laboratory personnel should be trained on the analytical procedures and methodologies and also on quality assurance and quality control. Records of the training should be kept.
- ✓ Internal proficiency testing and evaluation of the personnel.
- ✓ The laboratory should be capable of providing a written report that can be relied upon by all parties. Essential prerequisites for obtaining high-quality results include specification of the analytical technique used, maintenance of the analytical equipment, validation of all methods used (including in-house methods) and proper training of laboratory staff.

4.5.4 Testing Methods

Samples may be tested by a variety of methods. Specific testing should be used in accordance with the IMO guidelines or any equivalent method which can demonstrate equivalent standards.

In ***Annex C*** of this guidance document some indicative specific test methods are provided on the two additional HM (PFOS and HBCDD) included only in Annexes I and II of the SRR.

4.5.5 Health & Safety

The sampling activity involves certain risks to personnel involved or to other persons on board. Therefore, all the work should be carried out according to the general safety procedures and those defined in the risk assessment. Entry of other people to any sampling area should be restricted or suitable warnings posted. Care should be taken to minimise disturbance to HM especially ACMs. Airborne emissions should normally be controlled by selection of appropriate tools for sampling, prewetting the material to be sampled with water and/or a suitable wetting agent.

All samples should be properly sealed, the sample area should be left clean and any sampling points should be sealed to prevent the release of HM (i.e. fibres). Various methods may be used to reseal the sampling point (e.g. tapes and fillers).

Sampling personnel should carry adequate PPE (e.g. glasses, coveralls, masks and gloves). Disposable coveralls, overshoes and gloves should be worn especially when there is a likelihood of asbestos contaminating the surveyor's clothing. The risk assessment should take into account the sampling conditions and determine if additional safety precautions and decontamination procedures will be needed.

5. Development and maintenance process of the IHM

The development procedure of the IHM Part I differs depending on whether the ship is a new or an existing one. The development procedure of the IHM Part II and Part III relates only to ships flying the flag of a Member State when going for recycling.

5.1 Development process of the IHM Part I for New Ships

Part I of the Inventory for new ships should be developed at the design and construction stage. Reference should be made to the relevant IMO guidelines which provide examples for the development process for Part I of the IHM for new ships[30]. The process should include three steps:

A. Collection of HM information

The shipbuilder is responsible for complying with the relevant international requirements on installing HM on board new-build ships. In this respect, the conformity of Part I of the Inventory at the design and construction stage should be ascertained by reference to the Supplier's Declaration of Conformity and the related Material Declarations collected from suppliers[31]. Therefore, the information provided by the suppliers should be adequate and to the satisfaction of the shipbuilder. MD and SDoC from suppliers should be requested and collected by the shipbuilder as it is described in the graph 2 diagram.

However, in practice, there were cases where random sampling checking proved that MDs were not accurate.

Therefore, the shipbuilder should establish a quality assurance policy for performing random checking of materials provided by the suppliers. This policy should take into account the type of the material, the location and the intended use on board the ship, the required life-time maintenance and the origin of the material. Additional information should also be taken into account e.g. historical data on products of a specific brand, information about HM on board sister ships already built etc.

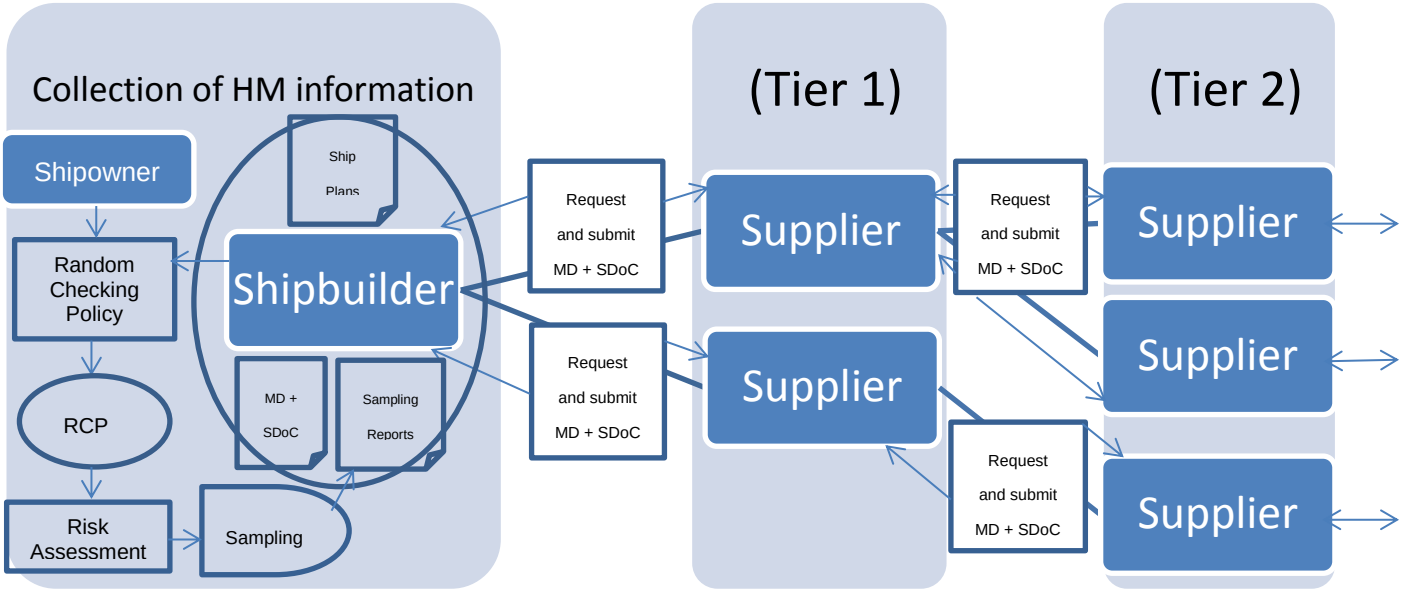
The checking of the materials may include visual checking and/or random samples which will be tested by indicative or field testing and/or random samples to be tested by specific testing. Random sampling may be carried out in accordance with a pre-decided sampling methodology as described in chapter 4.5.1 of this document.

The entity carrying out the HM survey and sampling should be an IHM expert as defined in this guidance document working under the conditions described in this guidance document.

The shipowner may also establish a policy for performing random checking of materials for new ships[32]. In this context, the same process as for carrying out random checking by the shipbuilder may be applied.

The collection of HM information during the development process of the IHM Part I for new ships may involve the entire shipbuilding supply chain as in the following graph:

[30] See Appendix 3 of the Resolution MEPC.269(68).
[31] As described in chapter 4.4 of this guidance document
[32] Before the delivery.



Graph 2 – collection of HM information.

B. Utilization of HM information

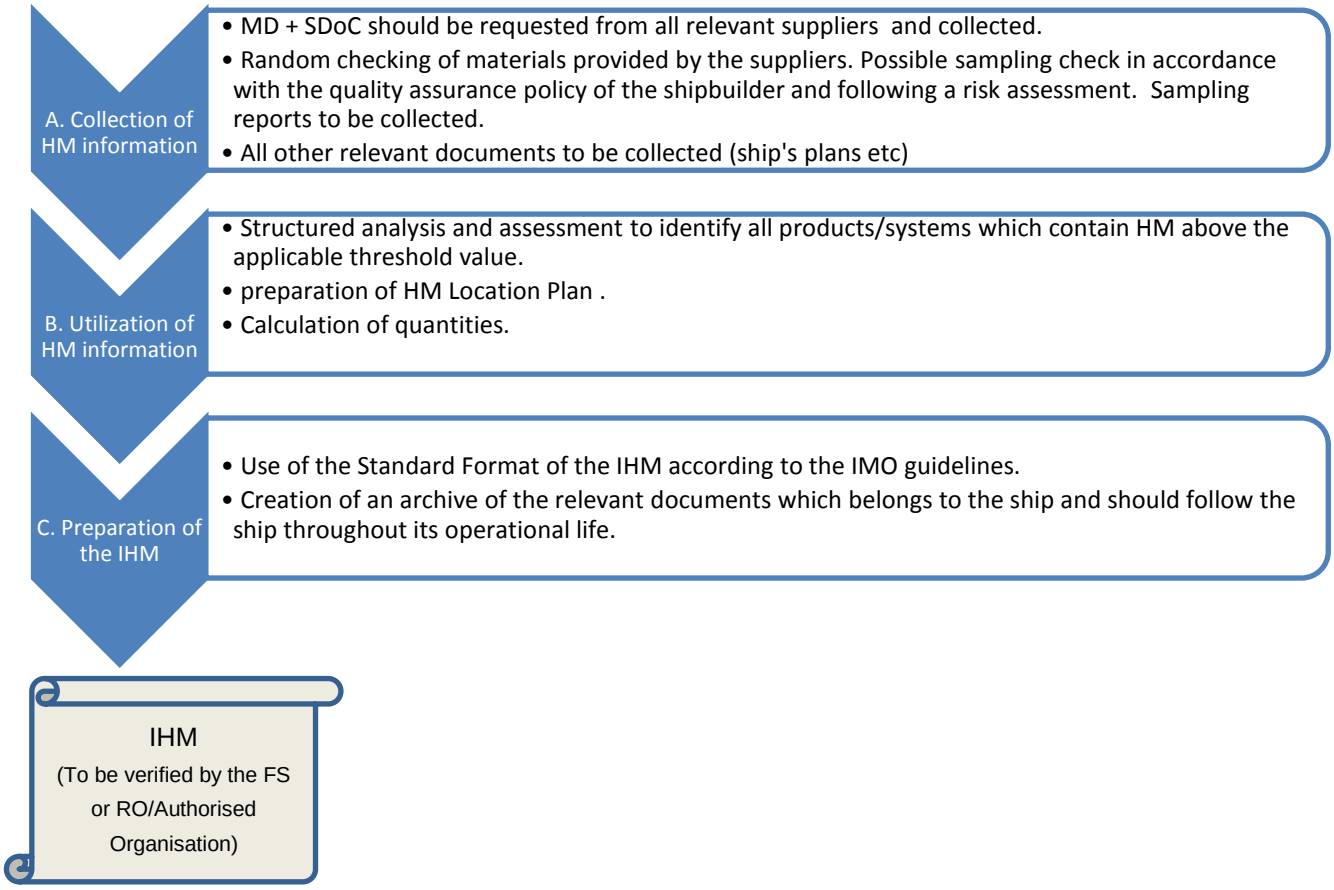
After the collection of all the HM information by the shipbuilder, there should be an assessment for identifying all products/systems which contain HM above the applicable threshold value[33]. Utilization of HM information should determine the location and calculate the quantities of the HM.

C. Preparation of the IHM

Finally, the IHM should be prepared by filling out the standard format set out in appendix 2 of the IMO guidelines[34]. The collected documents should be listed in an archive[35] which should follow the ship throughout its operational life.

The stages of the development process of the IHM Part I for new ships are described in the following graph:

[33] See for details chapter 3.2 of this guidance.
[34] See Chapter 3 of this guidance for the two additional HM (PFOS and HBCDD) and the reference to the SRR.
[35] It may be in electronic format.



Graph 3 – Development process of the IHM Part I for new ships.

5.2 Development process of the IHM Part I for Existing Ships

Part I of the Inventory for existing ships[36] should be developed by the shipowner. Reference should be made to the relevant IMO guidelines which provide examples for the development process for Part I of the IHM for existing ships[37]. The process should include five steps:

A. Collection of necessary information

It should be conducted in accordance with the IMO guidelines. The shipowner should make every possible effort to obtain all reasonably available documentation regarding the ship.

B. Assessment of collected information

The information collected should be assessed to cover all HM referred to in Annex I of the SRR[38]. HM included in the Annex II of the SRR should be assessed as far as practicable.

C. Preparation of visual/sampling check plan

A 'visual/sampling check plan' (VSCP) should be prepared in accordance with the IMO guidelines and the provisions of this guidance. Following the preparation of the VSCP a risk assessment should take place to determine the existing risks and to identify the necessary precautions and safety procedures to be followed during the HM survey and sampling[39].

[36] It covers also 'ships going for recycling' according to the second subparagraph of paragraph 2 of Article 5 of the SRR and ships flying the flag of a third country.
[37] See Appendices 4 and 5 of the Resolution MEPC.269(68). Due consideration should also be given to the relevant provisions of this guidance document.
[38] N.B.: PFOS is not applicable for ships flying the flag of a third country.
[39] See chapter 4.5.1 above.

D. On board visual/sampling check

Targeted sampling should be carried out in accordance with the IMO guidelines and with reference to a pre-decided sampling methodology as described in chapter 4.5.1 of this document.

Random sampling may also be carried out with reference to a pre-decided sampling methodology as described in chapter 4.5.1 of this document.

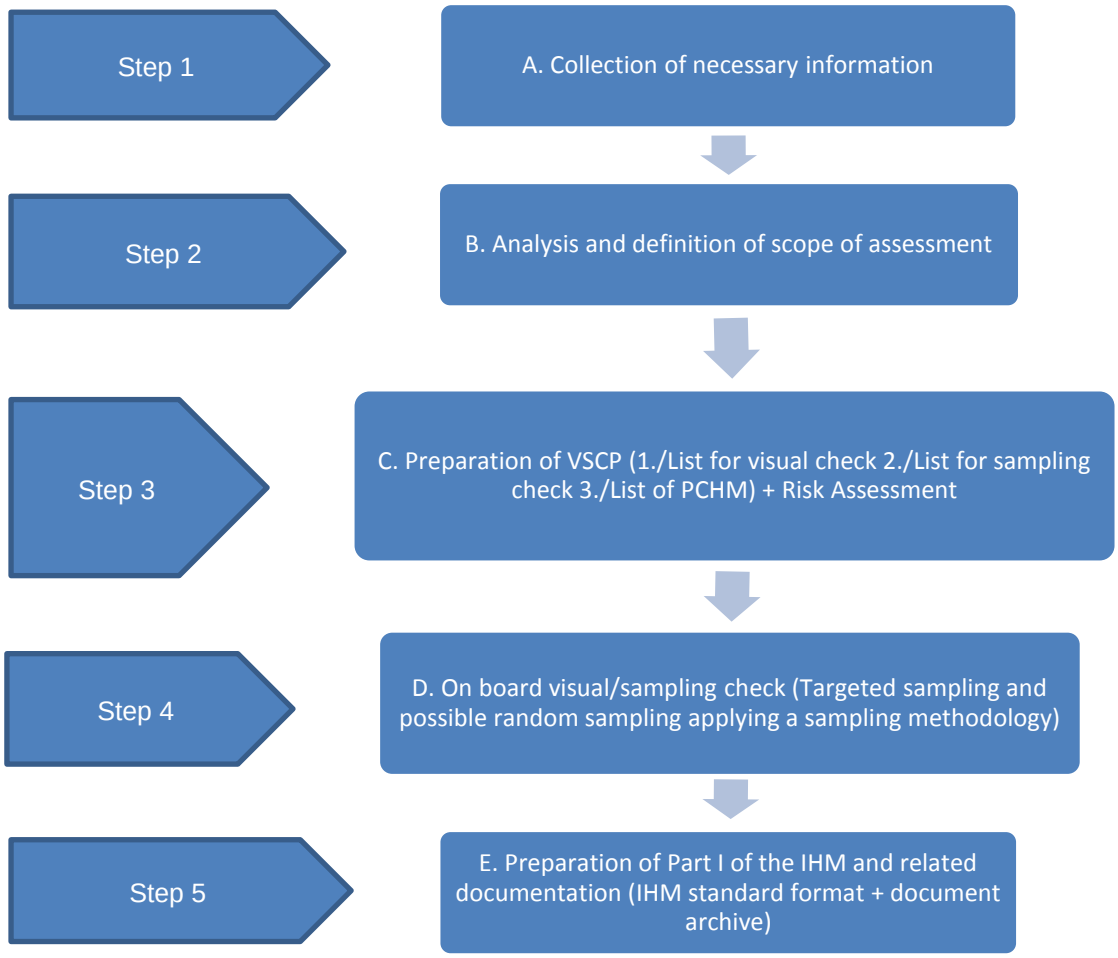
The entity carrying out the HM survey and sampling should be an IHM expert as defined in this guidance document working under the conditions described in this guidance document.

The shipowner may also establish a policy for performing random sampling of materials on board existing ships after the initial preparation of the Inventory (e.g. when purchasing a ship or after a repair or conversion of the ship). In this context, the same process as for carrying out random sampling on a new ship may be applied as far as practicable[40].

E. Preparation of Part I of the Inventory and related documentation

Finally, the IHM should be prepared by filling out the standard format set out in Appendix 2 of the IMO guidelines[41]. A diagram showing the location of the identified HMs should also be prepared. The collected documents should be listed in an archive which should follow the ship throughout its operational life[42].

The flow diagram for developing Part I of the IHM for existing ships is described in Appendix 4 of the IMO guidelines and should be consulted during the hereunder process for developing the IHM according to the EU SRR:



[40] See chapter 5.1A above.
[41] See Chapter 3 of this guidance for the two additional HM (PFOS and HBCDD) and the reference to the SRR.
[42] It may be in electronic format.

Graph 4 – Development process of the IHM Part I for existing ships.

5.3 Development process of the IHM Part II

Once the decision to recycle a ship flying the flag of a Member State has been taken, Part II of the Inventory should be developed before the final survey, taking into account that a ship destined to be recycled shall conduct operations in the period prior to entering the Ship Recycling Facility in such a way as to minimise the amount of cargo residues, remaining fuel oil and ship generated waste remaining on board[43]. Due regard should be given to the provisions of the EU PRF Directive[44].

The IMO guidelines[45] provide a catalogue of potentially HM in table C of appendix 1 listing the materials either in Part II or in Part III of the Inventory.

The development of IHM Part II should be done in accordance with the IMO guidelines.

5.4 Development process of the IHM Part III

Once the decision to recycle a ship flying the flag of a Member State has been taken, Part III of the IHM should be developed before the final survey, taking into account the fact that a ship destined to be recycled shall minimise the wastes remaining on board.

The IMO guidelines provide a catalogue of potentially HM in table C of appendix 1 listing the materials either in Part II or in Part III of the Inventory.

The development of IHM Part III should be done in accordance with the IMO guidelines.

5.5 Life-cycle management

According to paragraph 6 of Article 5 of the SRR, Part I of the IHM of ships flying the flag of a Member State shall be properly maintained and updated throughout the operational life of the ship, reflecting new installations containing any HM referred to in Annex II of the Regulation and relevant changes in the structure and equipment of the ship.

According to paragraph 4 of Article 12 of the SRR, the IHM of ships flying the flag of a third country shall be properly maintained and updated throughout the operational life of the ship, reflecting new installations containing any hazardous materials referred to in Annex II of the Regulation and relevant changes in the structure and equipment of the ship, *taking into account the exemptions and transitional arrangements applicable to those materials under international law*.

Therefore, shipowners should establish the necessary procedures on board the ship and within their company to manage their long-term environmental responsibilities.

5.5.1 Procedure for the maintenance of Part I of the IHM

The shipowner is responsible for the maintenance of Part I of the IHM during the lifetime of the ship. Part I of the IHM should belong to the ship and the continuity and conformity of the information it contains should be confirmed, especially if the flag, owner or operator of the ship changes.

In accordance with the IMO guidelines[46], shipowners should implement a series of measures to ensure the conformity of Part I of the Inventory. In this context, designating a person as responsible for maintaining and updating the Inventory is a crucial responsibility for the shipowner.

The main responsibility of the designated person is the maintenance and updating of the IHM in accordance with the IMO guidelines and this guidance. The duties of the designated person should be incorporated in the

[43] See paragraph 2(b) of Article 6 of the SRR.
[44] Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues. OJ L 332, 28.12.2000, p. 81.
[45] Resolution MEPC.269(68).
[46] See Resolution MEPC.269(68), section 5.2.

shipowner's quality management system and should be clearly described in writing taking into account that keeping an updated IHM may be a simplified process but it might also become quite demanding e.g. if a major conversion or extensive repair works are undertaken[47].

It should be noted that the IHM should be updated according to the requirements for new ships as stipulated in the relevant provisions of the IMO guidelines and in chapter 5.1 of this guidance. The respective changes to the IHM should be made accordingly and all the relevant documentation (e.g. MD and SDoC in case of machinery or equipment is added or sampling reports in case of random sampling) should be collected and maintained in the ship's archive[48].

5.5.2 Lifetime quality management

Ships are high value assets of high mobility being capable of being transferred from one owner to another or from one registry to another very easily and quickly. It is standard international practice and a provision of IMO international instruments that the relevant certificates cease to be valid upon transfer of the ship to the flag of another State.

However, the IHM must be properly maintained and updated throughout the operational life of the ship and it will supplement any 'Inventory Certificate' or 'Statement of Compliance' issued by any Member State or third country (or by a RO or an authorised organisation respectively).

Therefore, it is particularly important that the continuity of the IHM is maintained if the flag, owner or operator of the ship changes. It is equally important that the quality of the IHM is secured and maintained throughout the operational life of the ship in order to remain a credible document when the decision to recycle a ship is taken.

In this respect, a lifetime quality management system should be established by the shipowners and should include specific provisions to safeguard the quality and continuity of the IHM when building, buying or selling a ship or changing ship's registry or ship's IHM designated person.

Moreover, the quality management system should identify the procedures to safeguard the proper updating of the IHM during scheduled or unscheduled works involving changes, replacements or repairs to the structure, equipment, systems, fittings, arrangements and material, which has an impact on the Inventory.

Proper maintenance of an archive of all the associated documentation should also be included in the lifetime quality management system of the shipowner and it should ensure that new installations of equipment, repairs and refittings are accompanied by a MD and the SDoC, as provided by the suppliers of parts and equipment delivered.

As part of the lifetime quality management system, there may be a random sampling policy for new or existing ships and there should be assurances that the IHM development and maintenance shall be undertaken by competent entities (i.e. IHM experts) in accordance with recommended guidance (i.e. the EMSA's best practice guidance document and the relevant IMO guidelines).

A software tool may be used to support the IHM development and maintenance process and the management of all the relevant documents, information and data.

6. Survey and Certification

All ships flying the flag of a Member State shall be subject to a survey regime in accordance with Article 8 of the Regulation[49]. They shall carry on board a ship-specific '*Inventory Certificate*' issued by the administration or a RO[50] authorised by it and supplemented by Part I of the IHM. Surveys shall be carried out by officers of the administration, or of the RO, taking into account the relevant IMO guidelines[51].

[47] Particularly in such cases the designated person (regardless if he/she is a crew member, employee of the shipping company or external contractor) may well be an individual IHM expert as defined in this guidance document.
[48] See chapter 5.1C and 5.2E above.
[49] See **Annex A** for the timeline of the application of the Regulation for EU ships.
[50] RO means an organisation recognised in accordance with Regulation (EC) No 391/2009 of the European Parliament and of the Council.
[51] Resolution MEPC.222(64) "2012 Guidelines for the survey and certification of ships under the HKC"

These ships shall be subject to the following surveys:

(a) an initial survey;

(b) a renewal survey;

(c) an additional survey;

(d) a final survey.

Initial and *renewal* surveys must verify that the IHM Part I complies with the requirements of the Regulation. *Additional* surveys must ensure that any change, replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material, which has an impact on the IHM, has been made in a manner that ensures that the ship continues to comply with the requirements of the Regulation, and that Part I of the IHM is amended as necessary. *Final* surveys must verify that the IHM (Parts I, II and III) and the ship recycling plan comply with the requirements of the Regulation and that the ship recycling facility where the ship is to be recycled is included in the European List.

The administrations or the ROs should monitor the whole IHM process as close as possible and should ensure the proper implementation of the overarching principles of independence, quality and accountability.

All ships flying the flag of a third country, when calling at a port or anchorage of a Member State, shall carry on board a ship-specific '*statement of compliance*' issued by the relevant authorities of the third country whose flag the ship is flying or an organisation authorised by them and supplemented by Part I of the IHM[52].

The SoC shall be issued after verification of the IHM by the relevant authorities of the third country whose flag the ship is flying or an organisation authorised by them, in accordance with the national requirements.

For all ships flying either a flag of a Member State or a flag of a third country, particular attention should be given when verifying the IHM *during an initial inspection or before the issuance of the SoC respectively*, to the address the requirements of the SRR.

The following table summarizes the *minimum*[53] initial control *and respective inclusion in the IHM* of the two additional HM on board ships either flying the flag of a Member State or a flag of a third country:

HM	EU SRR			IMO HKC
	Control measures			Control measures
	EU ships		Non-EU ships	
	New ships*	Existing ships*		
PFOS	✓	✓	-	-
HBCDD	✓	-	-**	-

* After the initial preparation of the IHM, it shall be properly maintained and updated reflecting new installations containing HM referred to in **Annex II** of the SRR (meaning that thereafter all the HM included in Annex I and Annex II of the SRR should be included in the IHM).

[52] See **Annex A** for the timeline of the application of the Regulation for non-EU ships.
[53] N.B.: For existing and non-EU ships **HM included only in Annex II** of the SRR should be identified in the IHM **as far as practicable**.

** After the initial preparation of the IHM, it shall be properly maintained and updated reflecting new installations containing HM referred to in **Annex II** of the SRR taking into account the exemptions and transitional arrangements applicable to those materials under international law.

Table A – EU SRR additional requirements for IHM initial verification.

7. Enforcement

The Regulation provides for the control of ships flying the flag of a Member State and ships flying the flag of a third country when calling at a port or anchorage of a Member State.

Reference can be made to ***Annex A*** for the timeline of the application of the Regulation as regards the application of port State control provisions[54]. It should be noted that for existing ships, an IHM should be on board after 31/12/2020[55]. For ships flying the flag of a third country, an IHM should also be on board after 31/12/2020[56]. Therefore, for existing ships and for ships flying the flag of a third country, an IC or a SoC respectively may not be controlled before 31/12/2020.

7.1 Port State Control in accordance with Directive 2009/16/EC

The Annex IV of Directive 2009/16/EC has been amended to include in the list of certificates and documents to be checked during a port State control inspection a 'certificate on the inventory of hazardous materials' or a 'statement of compliance' as applicable pursuant to the SRR. Therefore, any *port State control inspection in accordance with the Directive 2009/16/EC* either on board a ship flying the flag of a Member State or on a ship flying the flag of a third country shall include a verification of the IC or SoC respectively.

Any such inspection **should be limited to checking that either an IC[57] or a SoC is kept on board**, which, *if valid*, shall be considered sufficient for the inspection to be approved.

In applying port State control provisions, if no certificate[58] or if an invalid certificate is found on board, or any other clear ground revealed, then a PSCO should either undertake a detailed inspection in accordance with the SRR[59] or he/she should ask the relevant authority of the Member State to carry out a detailed inspection in accordance with the SRR, as appropriate.

An '*invalid certificate'* is a document issued not in accordance with the provisions of the SRR (e.g. issued from a non-competent organisation, no IHM provided, IHM has not been verified as appropriate, IHM does not include all HM as referred to in the SRR etc).

7.2 Port State Control in accordance with the SRR

Port State control in accordance with the Directive 2009/16/EC should not be confused with the application of *port State control, in accordance with the provisions of the SRR*[60], i.e. the capability of a Member State to ask for respective documentation and, if appropriate, **perform detailed inspections** on board a foreign flagged ship to verify compliance with the SRR as applicable.

In this regard, a Member State as a port State may apply control provisions for foreign flagged ships when calling at a port or anchorage of that Member State. The control provisions should either be limited to checking the relevant documents on board or may be expanded to performing detailed inspections foreseen by the SRR. The detailed inspections are triggered either by 'missing certificate' or 'invalid certificate' or by 'clear grounds' taking into account the relevant IMO guidelines[61].

[54] Either in accordance with the Directive 2009/16/EC or in accordance with the SRR (Regulation (EU) 1257/2013). See chapter 7.1 and 7.2 respectively.
[55] See Article 5.2 and Article 32.2(b) of the SRR.
[56] See Article 12.1 and Article 32.2(b) of the SRR.
[57] Or a 'ready for recycling certificate', as applicable, for EU ships.
[58] i.e. IC, SoC or RfRC as appropriate. RfRC is included in accordance with Article 11.1 of the SRR.
[59] Provided he/she is authorised to do so. **This procedure should not fall within the scope of the port State control Directive**.
[60] Although may be exercised by the same personnel.
[61] Resolution MEPC.223(64) "2012 Guidelines for the inspection of ships under the HKC"

An *invalid certificate* is a document issued not in accordance with the provisions of the SRR (e.g. issued from a non-competent organisation, no IHM provided, IHM has not been verified as appropriate, IHM does not include all HM as referred to in the SRR etc).

The SRR and the IMO guidelines provide a non-exhaustive list of '*clear grounds*' to trigger a detailed inspection.

When checking the relevant document on board, particular attention should be given to the proper development and maintenance of the IHM.

Annex B of this guidance provides the list of the HM to be identified in an IHM developed in accordance with the SRR. If the threshold value used for reporting a specific HM exceeds the respective applicable threshold value, that does not necessarily mean that this HM is contained in the ship's systems and equipment (where in the respective column there is a 'not contained' entry). However, it may trigger a detailed inspection to verify that the IHM fully complies with the EU legislative requirements. In this case, the control officer may ask for additional assurances of the proper completion of the IHM (e.g. MD and SDoC or sampling reports specifying the presence or not of the HM).

If a ship cannot provide evidence of compliance to the satisfaction of the control officer, control measures may be taken in accordance with each Member State's national control and inspection system (i.e. consult the flag State, ask for proper correction of the IHM e.g. change the relevant entries to specify either 'contained' or 'Potentially Containing Hazardous Materials' etc).

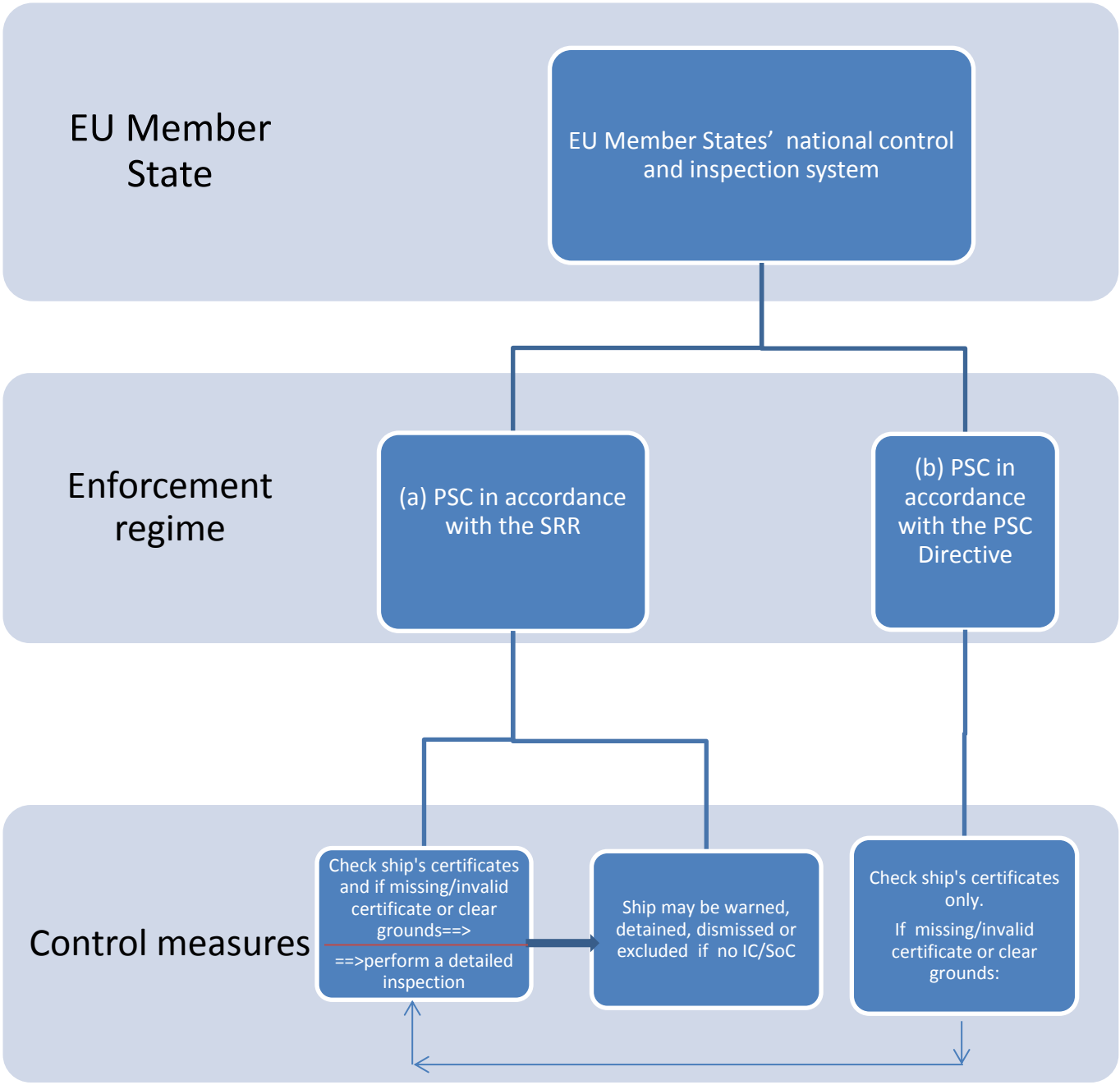
A ship may be *warned*, *detained*, *dismissed* or *excluded* from the ports or offshore terminals under the jurisdiction of a Member State in the event that it fails to submit to the relevant authorities of that Member State a copy of the relevant certificate[62] as appropriate and on request of those authorities.

A Member State taking such action shall immediately inform the administration of another Member State or the relevant authorities of the third country concerned. Failure to update the IHM should not constitute a detainable deficiency, but any inconsistencies in the IHM should be reported to the administration[63] or the relevant authority concerned.

Access to a specific port or anchorage may be permitted by the relevant authority of a Member State in the event of *force majeure* or *overriding safety considerations*, or to *reduce or minimise the risk of pollution* or to *have deficiencies rectified*, provided that adequate measures to the satisfaction of the relevant authority of that Member State have been implemented by the owner, the operator or the master of the ship to ensure safe entry.

The following flow diagram describes the enforcement regime established by the SRR as regards the development and maintenance of the IHM on board ships:

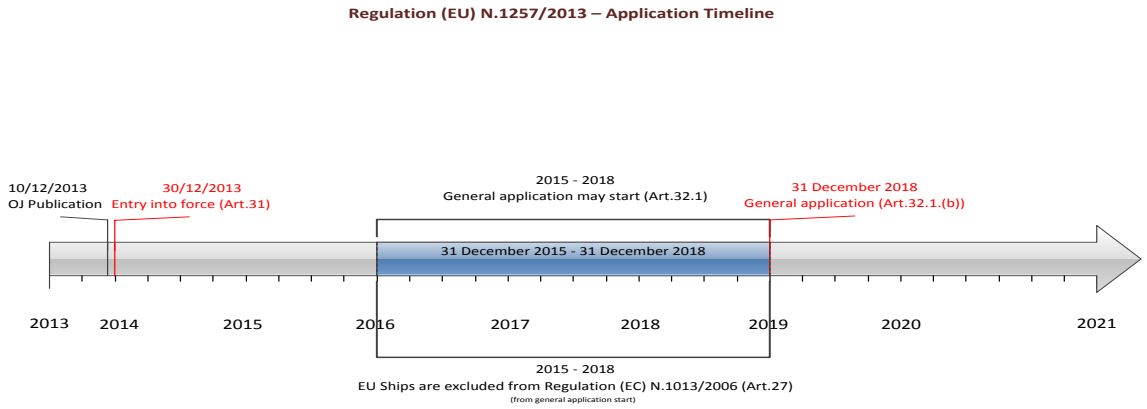
[62] i.e. IC, RfRC or SoC.
[63] In this case, the inconsistencies should be rectified at the time of the next survey.



Graph 5 – Enforcement mechanism

Annex A

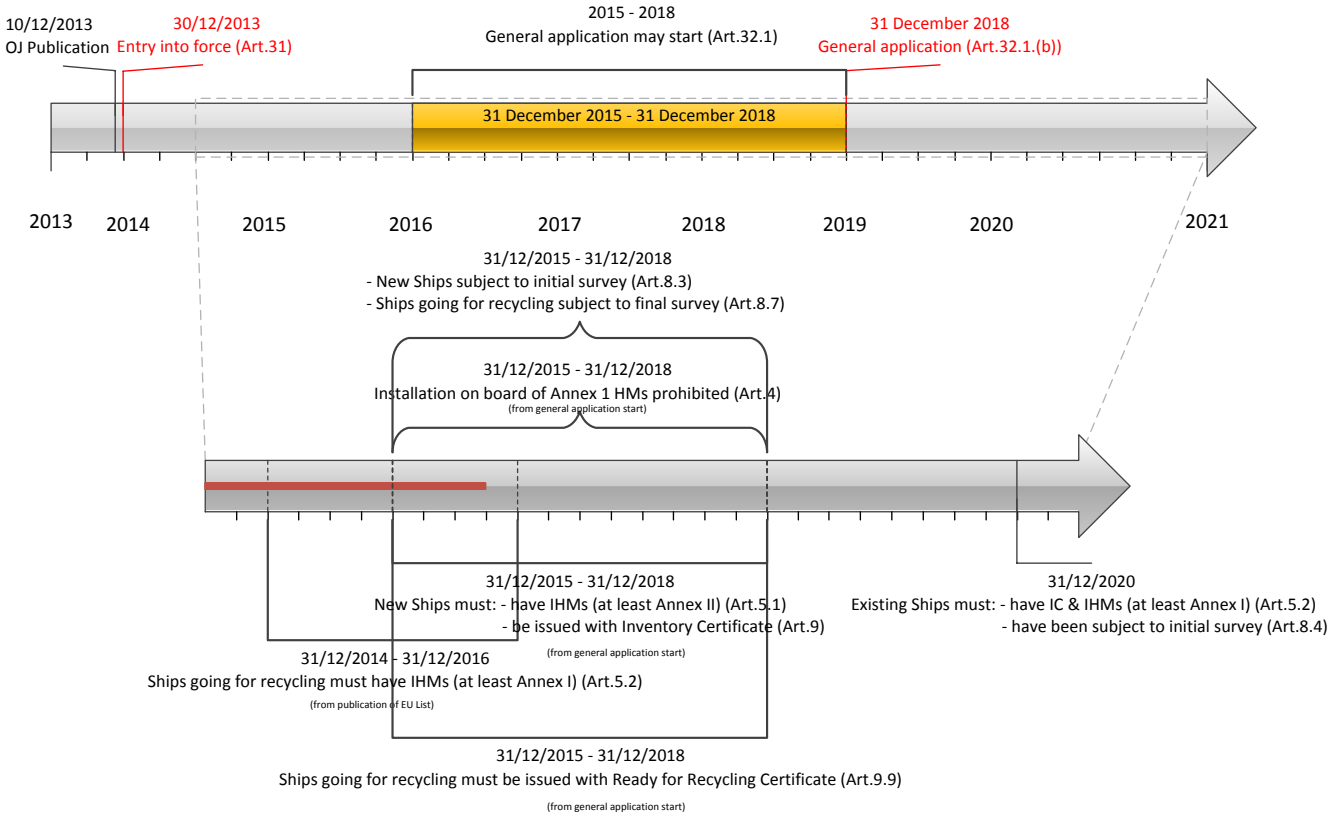
TIMELINE OF THE APPLICATION OF THE REGULATION



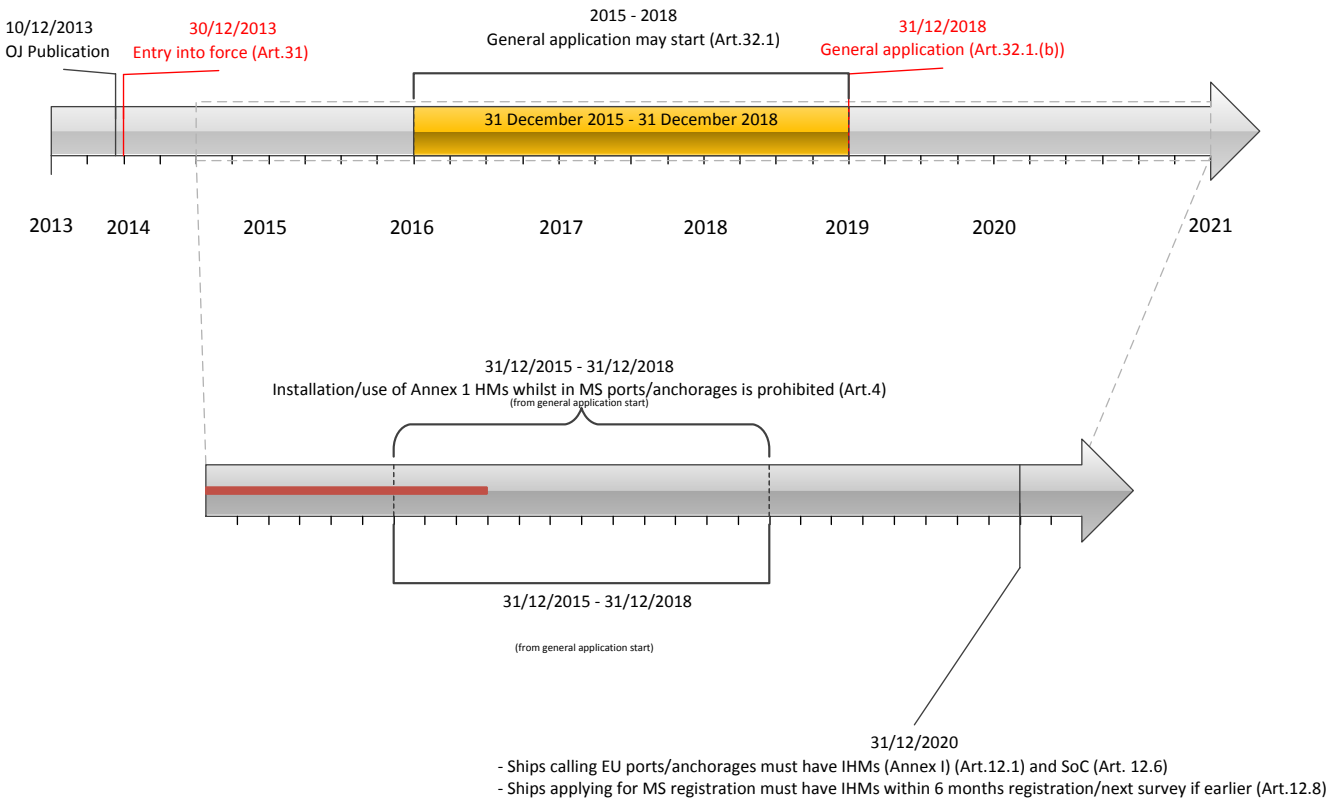
General application starts the earlier date of (not before 31/12/2015) (Art.32.1):

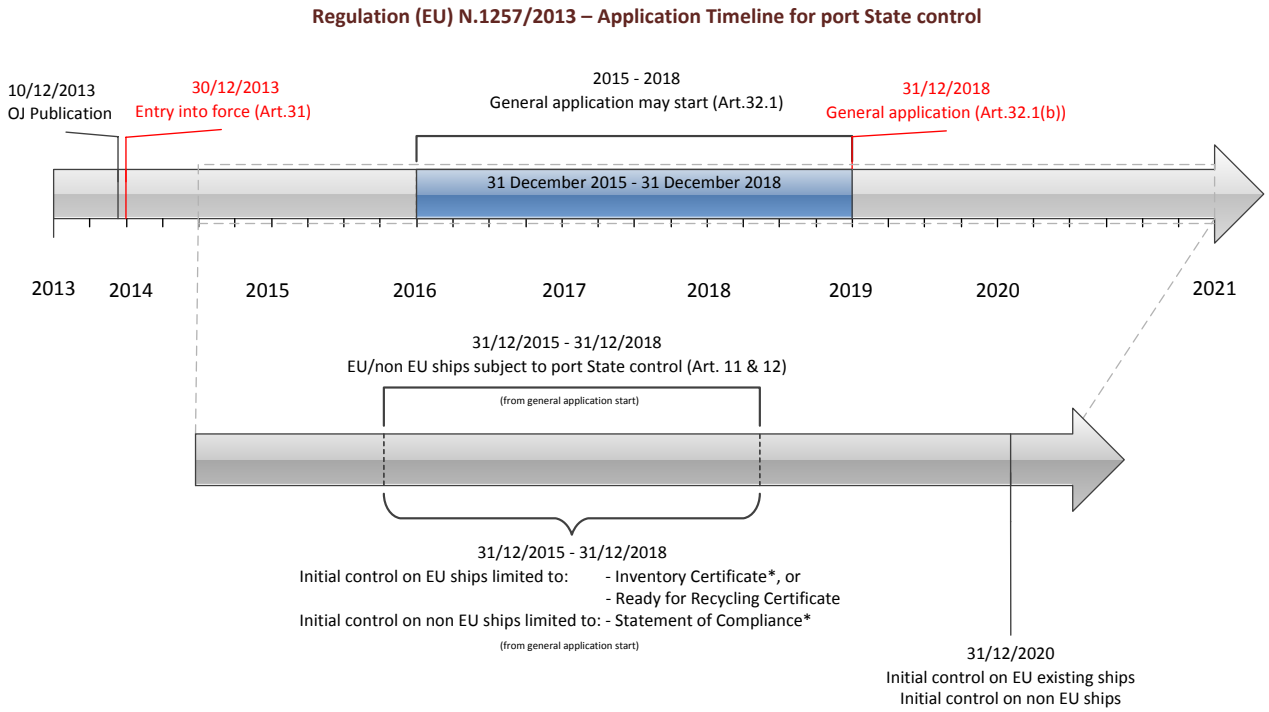
- 6 months after the combined output of the EU List SRFs is 2,5 million LDTs, or
- 31/12/2018

Regulation (EU) N.1257/2013 – Application Timeline for EU flagged Ships



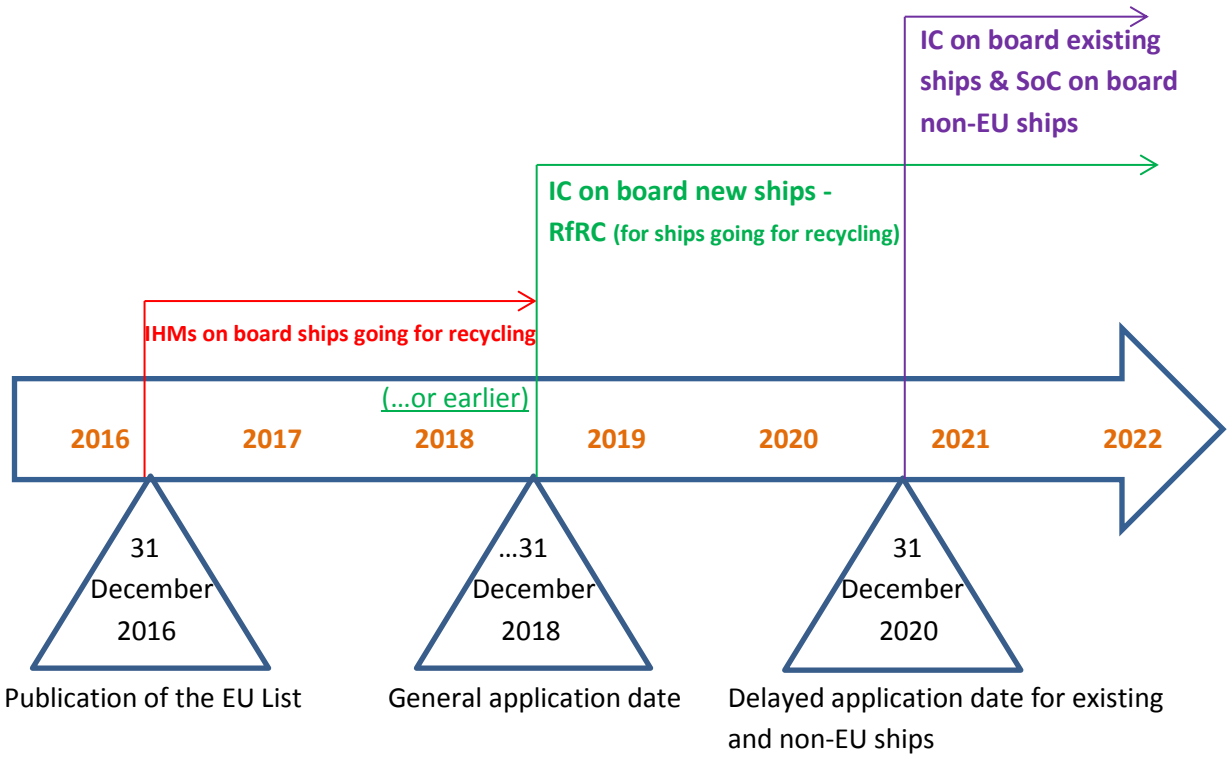
Regulation (EU) N.1257/2013 – Application Timeline for non-EU flagged Ships





*N.B.: For existing EU ships an IHM should be issued after 31/12/2020 (Art.5.2 & Art.32.2(b)). For non-EU ships an IHM should also be issued after 31/12/2020 (Art.12.1 & Art.32.2(b)). Therefore, for all these ships an IC or a SoC respectively may not be controlled before 31/12/2020.

MILESTONES FOR THE APPLICATION OF THE SRR IN RELATION TO THE IHM



Annex B

Materials to be listed in the IHM Part I

The following threshold values of reporting HM in the IHM should apply taking into account the IMO guidelines and the referenced EU legislation:

Hazardous Material	Threshold value	Referenced EU Legislation*
Asbestos[64]	0.1%	SRR/Annex I, Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals" (REACH), Council Directive 76/769/EEC "on the approximation of the laws, regulations and administrative provisions of the MS relating to restrictions on the marketing and use of certain dangerous substances and preparations[65]", Directive 2009/148/EC "on the protection of workers from the risks related to exposure to asbestos at work[66]".
Ozone Depleting Substances[67] (ODS)	No threshold value	SRR/Annex I. Regulation No 1005/2009 on substances that deplete the ozone layer[68].
Polychlorinated biphenyls (PCB)	50 mg/kg	SRR/Annex I, Regulation (EC) 850/2004 "on persistent organic pollutants[69]".
Perfluorooctane sulfonic acid[70] (PFOS) and its derivatives (CAS No: 1763-23-1) $C_8F_{17}SO_2X$ (X = OH, Metal salt (O-M +), halide, amide, and other derivatives including polymers)	Concentrations of PFOS ***above*** 10 mg/kg (0.001% by weight) when it occurs in substances or in preparations or Concentrations of PFOS in semi-finished products or articles, or parts thereof ***equal to or above*** than	SRR/Annex I, Regulation (EC) 850/2004 "on persistent organic pollutants", Directive 2006/122/EC "relating to restrictions on the marketing and use of certain dangerous substances and preparations (perfluorooctane sulfonates)[71]".

* N.B.: The referenced legislation is an indicative list of EU legal instruments not necessarily applicable on ships.
[64] N.B.: The IMO guidelines (Resolution MEPC.269(68)) provide the following in a footnote : "In accordance with regulation 4 of the Convention, for all ships, new installation of materials which contain asbestos shall be prohibited. According to the UN recommendation "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)" adopted by the United Nations Economic and Social Council's Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (UNSCEGHS), the UN's Sub-Committee of Experts, in 2002 (published in 2003), carcinogenic mixtures classified as Category 1A (including asbestos mixtures) under the GHS are required to be labelled as carcinogenic if the ratio is more than 0.1%. However, if 1% is applied, this threshold value should be recorded in the Inventory and, if available, the Material Declaration and can be applied not later than five years after the entry into force of the Convention. The threshold value of 0.1% need not be retroactively applied to those Inventories and Material Declarations"
[65] OJ L 262, 27-9-1976, p. 201.
[66] OJ L 330, 16-12-2009, p.28.
[67] According to the HKC new installations containing hydrochlorofluorocarbons (HCFCs) are permitted until 1 January 2020. However, this provision has not been incorporated in the SRR.
[68] OJ L 286, 31-10-2009, p.1.
[69] OJ L 158, 30-4-2004, p. 7.
[70] **Not applicable for ships flying the flag of a third country**.
[71] OJ L 372, 27-12-2006, p.32.

Examples of PFOS derivatives: Potassium perfluorooctane sulfonate (CAS no. 2795-39-3); lithium perfluorooctane sulfonate (CAS no. 29457-72-5); Ammonium perfluorooctanesulfonate (CAS no. 29081-56-9); diethanolammonium perfluorooctane sulfonate (CAS no. 70225-14-8); tetraethylammonium perfluorooctane sulfonate (CAS no. 56773-42-3); didecyldimethylammonium perfluorooctane sulfonate (CAS no. 251099-16-8).	0.1% by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or For textiles or other coated materials, if the amount of PFOS is ***equal to or above*** than 1 µg/m² of the coated material.	
Anti-fouling compounds and systems	2,500 mg total tin/kg	SRR/Annex I, Regulation (EC) 782/2003 "on the prohibition of Organotin Compounds on ships[72]", Council Directive 76/769/EEC "on the approximation of the laws, regulations and administrative provisions of the MS relating to restrictions on the marketing and use of certain dangerous substances and preparations[73]".
Cadmium and Cadmium Compounds	100 mg/kg	SRR/Annex II, RoHS Directive 2011/65/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment[74]", Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)".
Hexavalent Chromium and Hexavalent Chromium Compounds	1,000 mg/kg	SRR/Annex II, RoHS Directive 2011/65/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment, Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)".
Lead and Lead Compounds	1,000 mg/kg	SRR/Annex II, RoHS Directive 2011/65/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment, Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)".
Mercury and Mercury Compounds	1,000 mg/kg	SRR/Annex II, RoHS Directive 2011/65/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment, Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of

[72] OJ L 115, 9-5-2003, p.1.
[73] OJ L 262, 27-9-1976, p. 201.
[74] OJ L 174, 1-7-2011, p.88.

		Chemicals (REACH)".
Polybrominated Biphenyl (PBBs)	50 mg/kg	SRR/Annex II, Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)",
Polybrominated Diphenyl Ethers (PBDEs)	1,000 mg/kg	SRR/Annex II, RoHS Directive 2011/65/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment".
Polychlorinated Naphthalenes (more than 3 chlorine atoms)	50 mg/kg	SRR/Annex II, Regulation (EC) 850/2004 "on persistent organic pollutants".
Radioactive Substances	No threshold value	SRR/Annex II, Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation[75].
Certain Shortchain Chlorinated Paraffins (Alkanes, C10-C13, chloro)	1%	SRR/Annex II, Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)", Regulation 519/2012, Regulation (EC) 850/2004 "on persistent organic pollutants".
Brominated Flame Retardant (HBCDD) EC No: 221-695-9, 247-148-4, CAS No: 3194-55-6 25637-99-4, alpha-hexabromocyclododecane CAS No: 134237-50-6, beta-hexabromocyclododecane CAS No: 134237-51-7, gamma-hexabromocyclododecane CAS No: 134237-52-8.	100 mg/Kg (0.01%)**	SRR/Annex II, Regulation (EC) 850/2004 "on persistent organic pollutants"[76], Regulation (EC) 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)", Directive 2011/65/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment".

[75] OJ L 159, 29-6-1996, p.1.
** See below Annex C.b.3.
[76] OJ L 55, 02-03-2016, p.7.

Annex C

PFOS and HBCDD

a. Perfluorooctane sulfonic acid (PFOS)

PFOS has been used in a variety of industrial applications and consumer products since the 1950s, mainly due to its capability to create special surface properties. Applications range from textile and paper treatment and a variety of other areas within the coating industries, to chromium plating, hydraulic fluids (for aviation) and firefighting foam.

C.a.1 PFOS properties

PFOS can be formed by degradation from a large group of related substances, referred to as PFOS related substances, and is a member of a larger family of perflouroalkyl sulfonate (PFAS). In May 2009 PFOS was added to the Annex B of the Stockholm Convention and classified as a Persistent Organic Pollutant (POP).

PFOS is chronically toxic, injurious to reproduction, carcinogenic, toxic to aquatic organisms and widely distributed in the global environment. In the marine industry, it can be found in fire-fighting foams on vessels carrying inflammable fluids and those with helicopter decks, rubber and plastic materials (i.e.: cable sheaths, PVC flooring, gaskets and seals) and coatings (i.e.: paint).

C.a.2 Application on ships

The main application on board ships is considered to be firefighting foams of the type AFFF (Aqueous Film Forming Foams). PFOS-containing AFFF could be applied on board a range of ship types, but the larger volumes are usually installed on vessels carrying inflammable fluids, and on vessels with helicopter deck. Volumes normally range from some 100 litres to 10,000 litres, depending on the type and size of the vessel. The foam is typically stored in one tank serving a main system, potentially with additional smaller and separate devices (for example 20 litres), usually in the machinery room(s). Concentration of PFOS normally lay within 0.017-0.037 kg/litre foam.

A list of possible PFOS uses and those of related chemicals is given in Annex 1-A of the Draft Guidance on Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles (Secretariat of the Stockholm Convention 2013).

An indicative list of materials and components that may contain PFOS is the following:

- AFFF (Aqueous film-forming foams): used for aviation, marine and shallow spill fires developed in the 1960s.
- FFFP (Film-forming Fluor-protein foams): used for aviation and shallow spill fires.
- AR-AFFF (Alcohol-resistant aqueous film-forming foams): multi-purpose foams.
- AR-FFFP (Alcohol-resistant film-forming flour-protein foams): multipurpose foams developed in the 1970s.
- Hydraulic fluids.
- Cable sheath.
- Coatings.
- Adhesives.

C.a.3 PFOS control

In accordance with Article 3 of the Regulation (EC) 850/2004 “on persistent organic pollutants ” the production, placing on the market and use of substances listed in Annex I of this Regulation, whether on their own, in preparations or as constituents of articles, shall be prohibited.

However, Article 3 shall not apply in the case of a substance occurring as an unintentional trace contaminant in substances, preparations or articles . In this case, in accordance with Annex I of the Regulation (EC) 850/2004, this exemption shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001% by weight) when it occurs in substances or in preparations. Furthermore, the exemption shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1% by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1 µg/m² of the coated material.

Use of articles already in use in the Union before 25 August 2010 containing PFOS as a constituent of such articles shall be allowed.

C.a.4 Sampling and analysis of PFOS

Once standards are adopted by the European Committee for Standardisation (CEN) they should be used as the analytical test methods for demonstrating the conformity of substances, preparations and articles to the requirements set out in the Regulation (EC) 850/2004. Any other analytical method for which the user can prove equivalent performance could be used as an alternative to the CEN standards.

Reference should be made to the Draft Guidance on Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles[77].

- ✓ Sampling

A sampling protocol should be used and should contain the type of sample, the location of sampling and any relevant information on the sample.

The sample should be wrapped in aluminium foil and transferred into a vessel or container (e.g.: glass or another inert material) with a cap or screw top. The vessel should be labelled (readable, persistent against solvents and water, with unique information e.g.: code related to sampling protocol, if the sample represents any hazard this should be noted and the sample labelled respectively). The collected samples should be stored adequately (e.g. appropriate temperature; possibly exclusion of light).

Specific care should be given to cross contamination of the samples during the sampling process or in the laboratory.

- ✓ Analysis

Analytical standard methods for quantification of PFOS are under development, and very few technical standards have been defined. Due to their relative low volatility, good solubility in water and lack of chromospheres the analysis of perfluorinated alkyl substances is a challenging task. When using the different available analytical methods for PFOS and its related substances caution should be given to follow the measures needed to assure that they provide reliable results.

Several methods may be utilized for example EPA 3550C:2007, EPA 3540C:1996, EPA 8321B:2007, ISO 25101-2009 often combined with laboratory in-house procedures.

The NPR-CEN/TS 15968 is a ‘standard’ for the determination of the extractable content of PFOS in solid items (e.g. textiles, leather, paper) and in chemical products (AFFF, cleaning agents, etc.) within the scope of supporting the Regulation (EC) 850/2004 on persistent organic pollutants (POP). A method has been developed here for “Determination of extractable perfluorooctanesulphonate (PFOS) in coated and impregnated solid articles, liquids and firefighting foams - Method for sampling, extraction and analysis by LCqMS or LC-tandem/MS”.

The method is currently a technical specification (TS) meaning it is not fully validated. In addition, it only addresses the extractable PFOS and a few PFOS precursor. The method does not address the chemically bound PFOS related substances and also does not describe a holistic analysis of PFOS related substances. It is applicable to concentrations of PFOS in the extract solution in the range between 0.5 µg/L and 50 µg/L.

An analytical detection method for PFOS is currently Liquid Chromatography Mass-Spectrometer[78] (LC-MS or LC-MS/MS) for the anionic compounds (including PFOS), whereas both LC-MS(MS) and Gas Chromatography Mass Spectrometry (GC-MS) can be used for the determination of the neutral per- and poly-fluorinated alkylated substances including several precursors of PFOS.

[77] “Draft guidance on Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles Relevant to the substances listed in Annexes A, B and C to the Stockholm Convention on Persistent Organic Pollutants in 2009 and 2011” (Secretariat of the Stockholm Convention 2013).
[78] Reportedly, detection of organic compounds can be at ultra-low levels up to 1 ppm.

b. Brominated Flame Retardant (HBCDD)

HBCDD is used as flame retardant additive, providing fire protection during the service life of vehicles, buildings or articles, as well as protection while stored. The main uses of HBCD globally are in expanded (EPS) and extruded (XPS) polystyrene foam insulation while the use in textile applications and electric and electronic appliances is smaller.

C.b.1 HBCDD properties

HBCDD is very toxic to aquatic organisms, persistent and may cause long-term adverse effects in the aquatic environment. HBCDD is a persistent, bioaccumulative and toxic (PBT) substance and has potential for long-range transport.

Extended Polystyrene (EPS) and Extruded Polystyrene (XPS) were the major uses of HBCD in the world market. Only *flame retarded* EPS contains HBCD. The use of HBCD in XPS and EPS depends on the application and on the region. E.g[79].: in Western Europe approximately 70 % of the EPS is flame retarded while in East Europe about 99%.

C.b.2 Application on ships

In the maritime industry, HBCDD can be found in expanded polystyrene (EPS) used for cryogenic insulation, such as for liquefied gas tanks (LGT), refrigerated areas, thermal insulation boards (i.e.: foam materials), rubber and plastic materials (i.e.: cable sheaths, PVC flooring, gaskets, seals) and coatings (i.e.: paint).

The main application of HBCDD on board ships is considered to be expanded polystyrene (EPS) used for cryogenic insulation, such as for liquefied gas tanks (LGT), but also for refrigerator areas and similar. On larger LGT carriers, volumes of EPS insulation could potentially range up to several thousand cubic metres, depending on type and size of the vessel.

An indicative list of materials and components that may contain HBCDD is the following:

- Switch plug cover.
- Electrical extension cover.
- Polymer material of switch board.
- Fire sensor/alarm cover.
- Light cover, cable sheath.
- Polymer made fire resistance insulation.
- Coatings.
- Flooring material.

C.b.3 HBCDD control

In accordance with Article 56 and Annex XIV of the Regulation[80] (EC) 1907/2006 HBCDD had a sunset date[81] on 21/08/2015. In addition, in May 2013, the Conference of the Parties amended the Stockholm Convention on persistent organic pollutants (POPs) to add HBCDD to Annex A of the convention.

An overview on derivation of International occupational exposure limits (OELs) is provided by the European Agency for Health and Safety at work (EU-OSHA website). No OEL has been derived by the European Scientific Committee on Occupational Exposure Limits (SCOEL). No OELs and threshold limit values (TLVs) of HBCDD are given at the International Chemical Safety Card -ICSC database, which was prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission.

[79] See the draft (2015) guidance for the inventory, identification and substitution of Hexabromocyclododecane (HBCD) (Secretariat of the Stockholm Convention 2013).
[80] Regulation (EC) 1907/2006 “concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC” as amended. (OJ L 396, 30.12.2006, p. 1).
[81] As referred to in Article 58(1)(c)(i) of the REACH Regulation. In accordance with Article 58(1)(c)(i) placing on the market and the use of the substance shall be prohibited unless an authorisation is granted.

In accordance with the POP Regulation[82], Article 4(1)(b) of this Regulation (exemptions from control measures) shall apply to concentrations of hexabromocyclododecane equal to or below 100 mg/kg (0,01 % by weight) when it occurs in substances, preparations, articles or as constituents of the flame-retarded parts of articles, subject to review by the Commission by 22 March 2019.

C.b.4 Sampling and analysis of HBCDD

HBCDD has been the only flame retardant used in EPS and XPS until recently. Therefore, all EPS and XPS tested bromine positive which have been produced before 2014 contain most likely HBCDD.

- ✓ Sampling

A sampling protocol should be used and should contain the type of sample, the location of sampling and any relevant information on the sample.

The screening of bromine can be a simple, rapid and cost-effective method for pre-selection steps of samples to determine which samples to select for a more complex and expensive confirmation analysis.

Since HBCDD has been the only flame retardant used in EPS and XPS until recently, all EPS and XPS tested bromine positive which have been produced before 2014 contain most likely HBCDD. Therefore, bromine screening can be used for a screening of HBCDD in EPS and XPS. In textiles also PBDE and other brominated flame retardants are used in addition to HBCDD. Therefore, for textiles bromine positive samples need a further confirmation analysis to determine the used flame retardant. Since also PBDE are listed as POPs a bromine positive textile sample might indicate the presence of POPs.

A range of technologies can be used for screening bromine in materials like plastics, polystyrene (PS) or polyurethane (PUR) foams, textile or rubber. Technologies used include X-ray fluorescence (XRF), Sliding Spark Spectroscopy, X-ray transmission (XRT) or Laser-Induced Breakdown Spectrometry (LIBS).

Reference should be made to the draft (2015) guidance for the inventory, identification and substitution of Hexabromocyclododecane (HBCD) (Secretariat of the Stockholm Convention 2013). More details on screening of POPs in articles can be found in the Draft Guidance on Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles (Secretariat of the Stockholm Convention 2013).

- ✓ Analysis

Analysis refers to the extraction, purification, separation, identification, quantification and reporting of POP-PBDEs and/or HBCDD concentrations. In order to obtain meaningful and acceptable results, the analytical laboratory should have the necessary infrastructure (housing) and proven experience.

Extraction and clean-up is performed to isolate the HBCDD from the co-extracted interfering compounds. Extraction methods of HBCDD from polymers (such as EPS or XPS) have been developed and provide an appropriate base for the monitoring of HBCDD in articles and products.

Several methods may be utilized for example EPA8321B-2007, EPA3550C:2007, EPA 8270D:2007.

Current analytical methods allow the chromatographic separation and determination of all HBCDD stereoisomers (α- to ε-HBCD). These methods are based on reversed phase liquid chromatography (LC). LC based separation methods of chiral compounds allow analysis of HBCDD enantiomers. HBCDD can also be determined by gas chromatography (GC), but the separation of stereoisomers is not possible by this approach. Also HBCDD can degrade on the GC column if too high temperatures are applied in the analysis (e.g. injector block) or if long GC columns are used.

Reference should be made to the draft (2015) guidance for the inventory, identification and substitution of Hexabromocyclododecane (HBCD) (Secretariat of the Stockholm Convention 2013). More details on the analysis of POPs in articles can be found in the Draft Guidance on Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles (Secretariat of the Stockholm Convention 2013).

[82] See Commission Regulation (EU) 2016/293 on amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annex I, OJ L 55, 02-03-2016, p.7.

Annex D

Supplement to the IMO form of Material Declaration

<**SUPPLEMENT attached to MD-ID-No**:>

MD-ID-No.	
Date	

<Materials information>

This materials information shows the amount of hazardous materials contained in

	Unit
1	

(unit: piece, kg, m, m2, m3, etc.) of the product.

Annex of EU SRR	Material name	Threshold value	Present above threshold value	If yes, material mass		If yes, information on where it is used
			Yes / No	Mass	Unit	
Annex I (materials listed in annex I of the EU SRR)	Perfluorooctane sulfonic acid (PFOS) and its derivatives	10 mg/kg (0.001% by weight*)				
Annex II (materials listed in annex II of the EU SRR)	Brominated Flame Retardant (HBCDD)	100 mg/Kg (0.01% by weight)				

*Concentrations of PFOS above 10 mg/kg (**0.001% by weight**) when it occurs in substances or in preparations or concentrations of PFOS in semi-finished products or articles, or parts thereof equal to or above than **0.1% by weight** calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or for textiles or other coated materials, if the amount of PFOS is equal to or above than **1 µg/m²** of the coated material.

Annex E:

Examples of RCP - VSCP

a. Random Checking Plan (only random sampling, indicative & optional)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10		Column 11
Location: Zone, Compartment, System	Equipment	Object to check (Component, Material), Parts of use	Hazardous Material	Document Analysis Result (IHM+Documentation)	Check procedure	Sample No.	Pic. No.	Check Result	Quantity		Remarks
									Approx. Quantity of the Component/Material/Parts of use containing the HM	Approx. Quantity of the Hazardous Material (calculated)	
Bridge	Ceiling	Ceiling Panel	Asbestos	Not contained	Sampling check	P44-01	1	Contained	3000 kg	50 Kg	--
Accommodation area		Paint	Lead	Not contained	Sampling check	P44-02	2	Contained	30 Kg	0.2 Kg	--
Accommodation area	Fire doors in accommodation area	Sealing	Asbestos	Not contained	Sampling check	P44-03	3	Not contained	--	--	--
Engine room	Exhaust gas system	Lagging for exhaust gas pipe	Asbestos	Not contained	Sampling check	P44-04	4	Contained	5000 Kg	200 Kg	IHM to be amended accordingly
Engine room	Auxiliary boiler	Insulation	Asbestos	Not contained	Sampling check	P44-05	5	Not contained	--	--	--
Engine room	Refrigeration plant	Refrigerant	CFCs	Not contained	Visual check	--	6	Not contained	--	--	--
Poop deck	Mooring winch	Brake lining	Asbestos	Not contained	Sampling check	P44-06	7	Contained	10 kg	0.1 Kg	IHM to be amended accordingly

Stern tube	Propeller shafting	Packing with hydraulic piping	Asbestos	PCHM	Sampling check	P44-07	8	Contained	200 kg		Checked during dry dock-repair works. IHM to be amended accordingly

b. VSCP (Developing an IHM for existing ship - targeted sampling only or combined with random sampling)

Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**	**Column 6**	**Column 7**	**Colu mn 8**	**Column 9**	**Column 10**		**Column 11**
Location: Zone, Compartment, System	Equipment	Object to check (Component, Material), Parts of use	Hazardous Material	Document Analysis Result	Check procedure	Sample No.	Pic. No.	Check Result	Quantity		Remarks
									Approx. Quantity of the Component/Material/Parts of use containing the HM	Approx. Quantity of the Hazardous Material (calculated)	
Bridge	Ceiling	Ceiling Panel	Asbestos	Contained	Visual check	--	1	Contained	3000 kg	50 Kg	--
Accommodation area		Paint	Lead	Contained	Visual check	P44-01	2	Contained	110 kg	1 Kg	--
Accommodation area	Fire doors in accommodation area (15 pieces)	Sealing (1kg)	Asbestos	Unknown	Sampling check	P44-02	3	Contained	15 x 1 = 15 kg	3 Kg	--
Engine room	Exhaust gas system	Lagging for exhaust gas pipe	Asbestos	unknown	Sampling check	P44-03	4	Contained	5000 Kg	200 Kg	--
Engine room	Main engine	Piston pin bush (10 pieces)	Lead	Unknown	Assumption	--	5	PCHM	1 x 10 = 10 kg	10 Kg	No access, relevant for ship operation
		Thermometers charge air temperature	Mercury	Contained	Visual check	--	6	Contained	0.04 kg	0.04 Kg	--

Engine room	Diesel generator (x3)	Thermometers	Mercury	Contained	Visual check	--	7	Contained	0.03 kg	0.03 Kg	--
Engine room	Auxiliary boiler	Insulation	Asbestos	Not contained	Sampling check	P44-04	8	Contained	500 kg	100 Kg	Assumption Asbestos containing (experience). Random sampling
		Thermometers	Mercury	Contained	Visual check	--	9	Contained	0.01 kg	0.001 Kg	--
Engine room	Refrigeration plant	Refrigerant	CFCs	Not contained	Visual check	--	10	Not contained	--	--	--
Throughout the ship	FC valve (*100)	Insulation and gaskets (2 Kg each)	Asbestos	Unknown	Sampling check	P44-05	11	Contained	100 x 2 = 200 kg	30 Kg	--
Stern tube	Propeller shafting	Packing with hydraulic piping	Asbestos	Unknown	Assumption	--	12	PCHM	--	--	No access relevant for ship operation
Poop deck	Mooring winch (x 6)	Brake lining (3 Kg each)	Asbestos	Not contained	Sampling check	P44-06	13	Contained	6 x 3 = 18 kg	5.4 Kg	Assumption Asbestos containing (experience). Random sampling

Annex F

References:

1. Regulation (EC) 1907/2006 “Registration, Evaluation, Authorisation and Restriction of Chemicals” (REACH)
2. RoHS Directive 2011/65/EU “on the restriction of the use of certain hazardous substances in electrical and electronic equipment”
3. Regulation (EC) 850/2004 “on persistent organic pollutants”
4. Directive 2006/122/EC “relating to restrictions on the marketing and use of certain dangerous substances and preparations (perfluorooctane sulfonates)”
5. Directive 2009/148/EC “on the protection of workers from the risks related to exposure to asbestos at work”
6. Regulation (EC) 782/2003 “on the prohibition of Organotin Compounds on ships”
7. Council Directive 76/769/EEC “on the approximation of the laws, regulations and administrative provisions of the MS relating to restrictions on the marketing and use of certain dangerous substances and preparations”
8. Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation
9. Practical Guidelines for the information and training of workers involved with Asbestos removal or maintenance work (European Commission, October 2011)
10. Joint Industry Guide (JIG) JIG-101 Ed 4.1 (Revision of JIG-101 Ed. 4.0, March 2011) May 21, 2012 (Material Composition Declaration for Electrotechnical Products)
11. MEPC 57/3/19 8 February 2008 “proposal to include three Hazardous Materials in the draft Convention submitted by Norway”.
12. MSC.1/Circ.1426 “Unified Interpretation of SOLAS Regulation II-1/3-5 (June 2012)”
13. MSC.1/Circ.1374 “Information on Prohibiting the Use of Asbestos On board Ships (December 2010)”
14. MSC.1/Circ.1379 “Unified Interpretation of SOLAS Regulation II-1/3-5 (December 2010)”
15. MSC/Circ.1045 “Guidelines for maintenance and monitoring of on-board materials containing asbestos” (May 2002)
16. Resolution MEPC.196(62) “2011 Guidelines for the development of the ship recycling plan”
17. Resolution MEPC.222(64) “2012 Guidelines for the survey and certification of ships under the HKC”
18. Resolution MEPC.210(63) “2012 Guidelines for safe and environmentally sound ship recycling”
19. Resolution MEPC.211(63) “2012 Guidelines for the authorisation of ship recycling facilities”
20. Resolution MEPC.222(64) “2012 Guidelines for the survey and certification of ships under the HKC”
21. Resolution MEPC.223(64) “2012 Guidelines for the inspection of ships under the HKC”
22. SC-4/17 “Listing of perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride”
23. UNEP/POPS/COP.7/INF/21 “Revised draft guidance on best available techniques and best environmental practices for the use of perfluorooctane sulfonic acid and related chemicals listed under the Stockholm Convention”
24. UNEP/POPS/COP.7/INF/26 “Revised draft guidance for the inventory of perfluorooctane sulfonic acid and related chemicals listed under the Stockholm Convention”
25. “Guidance on best available techniques and best environmental practices for the use of perfluorooctane sulfonic acid (PFOS) and related chemicals listed under the Stockholm Convention on Persistent Organic Pollutants” Draft July 2012
26. “Draft guidance on Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles Relevant to the substances listed in Annexes A, B and C to the Stockholm Convention on Persistent Organic Pollutants in 2009 and 2011” Draft February 2013
27. “Guidance for the inventory, identification and substitution of Hexabromocyclododecane (HBCD)” Draft April 2015

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