

SUB-COMMITTEE ON DANGEROUS
GOODS, SOLID CARGOES AND
CONTAINERS
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Agenda item 6

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**DEVELOPMENT OF AMENDMENTS TO THE IMSBC CODE AND SUPPLEMENTS,
INCLUDING EVALUATION OF PROPERTIES OF SOLID BULK CARGOES**

Cargoes classified as harmful to the marine environment

Submitted by Norway

SUMMARY

- Executive summary:* This document contains information on cargoes that are candidates for being harmful to the marine environment (HME), and presents some ideas on how the Sub-Committee can proceed in their work in identifying and compiling a list of such cargoes
- Strategic direction:* 5.2
- High-level action:* 5.2.3
- Planned output:* 5.2.3.3
- Action to be taken:* Paragraph 23
- Related documents:* DSC 17/17; MEPC 65/22; E&T 17/INF.4; DSC 17/INF.4; DSC 18/6/1 and DSC 18/INF.5

Background

1 At MEPC 64, the Committee instructed this Sub-Committee to consider how the long-term implementation of the provisions of MARPOL Annex V concerning cargo residues could be facilitated by amendments to the IMSBC Code.

2 DSC 17 agreed, in general, to have a new section in the future IMSBC Code relating to the revised MARPOL Annex V and that the next set of amendments (03-15) to the IMSBC Code would enter into force on 1 January 2017. This agreement was noted by MEPC 65 and our understanding is that the new environmental section should therefore be included in the 03-15 amendment to the Code that would enter into force on 1 January 2017.

3 MEPC 65 also instructed the Sub-Committee to compile a list of solid bulk cargoes classified as harmful to the marine environment (HME). In the view of Norway, such a list would be very useful since it will make it easier to comply and to enforce these regulations and it will also provide practical information to the different ports that might have to provide reception facilities for HME cargo residues.

4 The purpose of this document is to initiate discussions on the classification of cargoes harmful to marine environment and provide some ideas on how the Sub-Committee can progress on this matter. In the annex to this document we have identified cargoes that are potential HME candidates, and in document DSC 18/INF.5, cargoes that are not expected to be classified as HME are identified. We hope this information can provide stakeholders with an idea of the extent of these new discharge regulations and the challenges encountered so far by scientists in gathering and reviewing data. The cargoes not mentioned in either of these documents are the cargoes that were not listed in amendment 01-11 to the IMSBC Code, those that have such an ambiguous composition that classification is difficult or which have no data available in order to review the cargoes.

5 We must emphasize that the potential HME candidates listed in this document is not meant as a list of HME cargoes in which cargo residues can not be discharged. We acknowledge that there is still a lot more work to be done and discussions needed before the HME cargoes can be finally identified. However, we believe that the initial discussions could focus on these cargoes as it will make our work more focused. Also, we believe these cargoes will represent the challenges the Sub-Committee is expected to encounter during the classification and interpretation of the data (solubility, bioavailability, variable and ambiguous composition, missing data, etc.), so they may be used as examples in future discussions.

Data collection

6 Since late 2011, German scientists with financial support from Germany and Norway have worked systematically to compile all information on the environmental and health hazards of the cargoes listed in amendment 01-11 to the IMSBC Code. This has previously been reported in documents E&T 17/INF.4 and DSC 17/INF.4. As a financial partner to the project, a preliminary status report has been made available to us identifying potential candidates that are HME and candidates that are not expected to be classified as HME.

7 The project has now completed the "first tier" of the evaluation of solid bulk cargoes, where data have been gathered from relevant public (Ecotox Database, Toxnet, ECHA,ESIS, GESAMP, eChem Portal (OECD), etc.) and non-public sources (confidential data available at the Federal Institute for Risk Assessment).

8 In order to enlarge the database and to get well-balanced evaluations, manufacturers, shippers and other industry representatives have been invited to send in a composition of their cargo with relevant test data to the project coordinator. Unfortunately, no information has been submitted.

9 As there is a limited number of classifications published on solid dry bulk materials (and for some cargoes there are no public data available to allow classification), a precautionary approach was taken during the preliminary classification based on the most severe information available to the public. The list presented in the annex shows all those cargoes from amendment 01-11 to the Code that are potential HME candidates based on the data available and examined so far.

10 During this work, potential HME cargoes were identified along with cargoes that are regarded as Non-HME. The following observations were made:

- .1 there are several cargoes identified with ambiguous composition;
- .2 for some cargoes, there are data gaps for evaluating specific hazards; and
- .3 for some cargoes, there are conflicting data on hazardous properties for identical cargoes.

11 It is expected that the results of the work in Germany will be published in a peer-reviewed scientific paper where more technical and scientific details will be made available.

Bioaccumulation and bioavailability of metals

12 A considerable portion of the solid dry bulk cargoes consists of inorganic compounds and metals, most of which are inert materials with no evident eco-toxicological hazard potential.

13 The greatest challenge with applying these classification criteria is the interpretation of test data on bioaccumulation and bioavailability (e.g. solubility) of metals to marine organisms. According to the classification criteria given in resolution MEPC.219(63), for specific products (e.g. metals and inorganic metal compounds) guidance available in the UN GHS fourth revised edition (2011), annexes 9 and 10 are essential for proper interpretation of the criteria and classification and should be followed. As we understand it, this is also an ongoing discussion at UN GHS level and more specific guidance on how to deal with such substances will be provided under the GHS.

Variable composition of the same cargoes

14 As an argument against compiling a list of HME cargoes, it has previously been pointed out that differences in the composition of mining cargoes due to different sources of origin, may lead to different results in terms of the classification of HME. Based on the available data studied so far, the scientists do not anticipate many cases where differences in origin would severely influence the HME classification.

15 However, should it be identified that there are cargoes of different toxicity carried under the same schedule as having a different composition or concentration of the HME components so that it could be regarded as both HME and Non-HME, we believe this could be handled by identifying the Non-HME cargoes in a schedule were this to be verified. We anticipate this to be relevant for the schedule Mineral Concentrate, where there are 24 BCSN included in the same schedule.

16 An alternative or additional way of allowing flexibility could be to identify the maximum content of the HME component(s) for it to be regarded as Non-HME. Such an alternative approach could also be used for cargoes shipped under the same BCSN, if proven necessary. However, the practicalities in applying such an approach would need further discussion in a specialized working group based on concrete examples that could be used in the scientific and regulative discussions.

A possible way forward

17 There are some scientific challenges in HME classification of metals in complex mineral structures that could lead to different interpretations of the available data and make such classification work challenging in the working group on amendments to the IMSBC Code.

18 For the carriage in bulk of noxious liquid substances under MARPOL Annex II, products that are evaluated by the IMO/ESPH WG must have a GESAMP Hazard Profile, where the products' environmental and human health related hazards are described. This profile together with the physical properties (flashpoint, auto-ignition temperature, viscosity, etc.) are used to assign carriage requirements according to the criteria described in chapter 21 of the IBC Code.

19 We believe a similar harmonized IMO classification should be considered for the HME classification of solid bulk cargoes, specifically for the classification of metals in complex mineral structures. The experience with the implementation of MARPOL Annex II during more than 30 years has shown that this could easily be achieved through involvement of the GESAMP Working Group on the evaluation of the hazards of harmful substances carried by ships.

Guidance to the list of potential HME candidates

20 In order to provide data in a short and consistent way, we have chosen to present the data on the potential HME candidates in line with ratings and letters in accordance with GESAMP Reports and Studies No.64 as used under MARPOL Annex II and the IBC Code. Below is a short description of the GESAMP rating:

- NI: No Information (due to "No data available")
- Bioaccumulation: Increasing rating means a higher potential to bioaccumulate (5 is the highest rating)
- Biodegradation:
 - Inorg: Inorganic substance
 - NR: Not readily biodegradable
 - R: Readily biodegradable
- Acute aquatic toxicity:
 - Rating 0: Non-toxic ($LC/EC/IC_{50} > 1000 \text{ mg/l}$)
 - Rating 5: Very highly toxic ($LC/EC/IC_{50} > 0.01 - \leq 0.1$)
- Chronic aquatic toxicity:
 - Rating 0: Negligible ($NOEC > 1 \text{ mg/l}$)
 - Rating 3: High ($NOEC > 0.001 - \leq 0.01$)
- Long-term health effects:
 - C: Carcinogenicity
 - M: Mutagenicity
 - R: Reproductive toxicity
 - T: Specific Target Organ Toxicity Repeated Exposure
- Fp: Persistent floaters (In this example they fall under criteria 7 in resolution MEPC.219(63): *Solid bulk cargoes containing or consisting of synthetic polymers, rubber, plastics or plastic feedstock pellets (this includes materials that are shredded, milled, chopped or macerated or similar materials)*)
- D: Dissolvers
- S: Sinkers

21 There are also two other "symbols" used in the table that need further explanations:

- AC: Evaluation not possible due to the Ambiguous Composition
- (): Hazard estimation (due to the lack of data that can be applied directly).

Proposal

22 The Sub-Committee is invited to consider the following proposals and ideas for a way forward in reviewing and identifying cargoes that are HME:

- .1 invite Member States and industry to submit data on the composition and eco-toxicological properties of the cargoes listed in the IMSBC Code;
- .2 invite for comments on the cargoes that are considered to be Non-HME listed in DSC 18/INF.5;
- .3 when considering proposals for new individual schedules to be included in the IMSBC Code, the environmental properties of the cargo should be considered;
- .4 consider ways to introduce flexibility for the HME classification of solid bulk cargoes of very variable composition listed under the same schedule or the same BCSN; and
- .5 consider the involvement of the scientific experience of the GESAMP Working Group to get harmonized classification of complex cargoes.

Action requested of the Sub-Committee

23 The Sub-Committee is invited to consider the information and proposals contained in this document and take action as appropriate.

ANNEX*

POTENTIAL HME CANDIDATES

Potential HME Candidates	Relevant HME criteria according to GESAMP Hazard Profile					
	A1 Bio-accumulation	A2 Bio-degradation	B1 AcuteToxicity	B2 ChronicToxicity	D3 Long-term health effects	E2 Physical effects on wildlife & benthic habitats
BARIUM NITRATE UN 1446	0	Inorg	4	NI	NI	D
CHOPPED RUBBER AND PLASTIC INSULATION	NI	NI	NI	NI		Fp
CHROME PELLETS	-	Inorg	(5)	(2)	AC	S
CHROMITE ORE	(0)	Inorg	(5)	(2)	C M	S
COARSE CHOPPED TYRES	NI	NI	NI	NI	NI	Fp
COPPER GRANULES	2-5	Inorg	(5)	(2)	T	S
COPPER MATTE	2-5	Inorg	(5)	(2)	T	S
FERRONICKEL	(2-5)	Inorg	(3)	(1)	(C) (T)	(S)
FERROPHOSPHORUS	(1-5)	Inorg	(3)	(3)	(C) (T)	(S)
GRANULATE TYRE RUBBER	NI	NR	NI	NI		Fp
LEAD NITRATE UN 1469	(3-5)	Inorg	4	0	C M R T	D
LEAD ORE	3-5	Inorg	5	2	(C) (M) (R) (T)	S
MANGANESE ORE	3-5	Inorg	(3)	(1)	(T)	S
METAL SULPHIDE CONCENTRATES	(2-5) *	Inorg	(5) *	(2) *	AC: (C) (M) (R) (T) **	(S)
MINERAL CONCENTRATES	(2-5) *	Inorg	(5) *	(2) *	AC: (C) (M) (R) (T) **	(S)
PITCH PRILL	(1-5)	NR	(4)	NI	C	D / S
SILICOMANGANESE (lowcarbon)	(3-5)	Inorg	(3)	(1)	(T)	S
STAINLESS STEEL GRINDING DUST	(0)	Inorg	(3)	(2)	(C) (M) (T)	S
ZINC ASHES UN 1435	3-5	Inorg	4	1	AC	S

* English only.