The application of MARPOL to cargo residues / hazardous substances

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MARPOL - General

The MARPOL 73/78 Convention was established, *inter alia,* to prevent the pollution of the marine environment by discharges into the sea of harmful substances or effluents containing such substances from ships.

The term “harmful substance” is defined (Article 2) as:

“*any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present Convention*”.

MARPOL - General

The six technical Annexes of MARPOL contain detailed regulations with respect to the handling and any discharge of the six main groups of harmful substances:

- Petroleum in any form (Annex I);
- Noxious Liquid Substances carried in bulk (Annex II);
- Harmful substances carried in packaged form (Annex III);
- Sewage (Annex IV);
- Garbage (Annex V); and
- Air Emissions (Annex VI)

MARPOL - General

MARPOL requires that residues that cannot be discharged into the sea in accordance with its requirements shall be delivered to port reception facilities.

MARPOL also requires that port States shall ensure the provision of adequate port reception facilities:

- **Annex I regulation 38 (was 12)**
- **Annex II regulation 18 (was 7)**

} **Within the context of liquid cargoes, Annex I & II apply**

- Annex IV regulation 12
- Annex V regulation 7
- Annex VI regulation 17

MARPOL – Annex I

The following six categories of residues generated in ships' engine rooms and cargo spaces are envisaged as needing port reception facilities under MARPOL Annex I:

1. oily bilge water
2. oily residues (sludge)
3. oily tank washings (slops)
4. dirty ballast water
5. scale and sludge from tanker cleaning
6. oily mixtures containing chemicals for cleaning

MARPOL – Annex I

Categories 1 and 2:

1 oily bilge water

2 oily residues (sludge)

These categories of residues arise from engine room operations on all ship types and not only on oil and product tankers and are therefore outside the scope of this presentation.

MARPOL – Annex I

Categories 3, 4 and 5:

3 oily tank washings (slops)

4 dirty ballast water

5 scale and sludge from tanker cleaning

These categories of residues arise from cargo spaces of oil and product tankers:

- oily tank washings (slops) are the most common;
- dirty ballast water is quite rare; and
- scale & sludge from tanker cleaning occur at drydockings

MARPOL – Annex I

Category 6:

6 oily mixtures containing chemicals for cleaning

This arises either from general cleaning of engine room machinery and spaces, or from washing cargo tanks with water mixed with cleaning additives.

Tank cleaning with cleaning additives is sometimes performed when switching from a dirty cargo to a cargo where a high degree of cleanliness is required.

Because the residue is a mixture involving additives it should not be discharged at sea.

MARPOL – Annex II

Noxious Liquid Substance (NLS) means any substance indicated as Category X, Y or Z in the Pollution Category column of chapter 17 or 18 of the International Bulk Chemical Code, or which is provisionally assessed under the provisions of regulation 6.3 of MARPOL Annex II.

(Annex II, regulation 1.10)

MARPOL – Annex II

Under Annex II, the following two categories of residues are envisaged as needing port reception facilities:

1 mandatory prewash of tanks containing NLS

2 dirty ballast

Of the above, prewash of tanks occurs quite frequently. Dirty ballast containing NLS is very rare as most NLS tankers have segregated ballast tanks or double hulls.

Therefore the main category of Annex II residues in need of shore reception facilities is from the prewashing of tanks, which is mostly water with very low NLS concentrations.

MARPOL – Annex II

Annex II categorizes NLS substances in terms of the degree of hazard posed to either marine resources or to human health.

The revised Annex II (1 January 2007) defines three NLS categories (X, Y, and Z, in decreasing order of pollution hazard) and a category for Other Substances.

According to this categorization, Annex II prohibits, limits, or permits the discharge into the marine environment of NLS substances depending on the degree of pollution hazard to either marine resources, human health, or amenities.

MARPOL – Annex II

All category X cargoes and also the high viscosity and the solidifying Category Y cargoes require prewash of tanks immediately following their unloading.

Note that Annex II requires that prewash residues should be discharged to a reception facility at the port where the relevant NLS cargo was unloaded, unless it is confirmed in writing that alternative arrangements have been made with a suitable reception facility at another port or terminal (regulation 13.4).

In this respect, the operational requirements of Annex II are very different to those of Annex I which does not regulate the place or time for discharging residues to a port reception facility.

MARPOL – On-going improvements

The Marine Environment Protection Committee of IMO incorporates (through the process of reviewing and amending MARPOL and its associated codes and guidelines) new requirements reflecting the benefits of the ongoing technological progress.

MARPOL – On-going improvements

For example, the revised Annex II (in force 1 January 2007) made the following improvements:

(i) cargo stripping provisions in line with the current status of technology;

(ii) simplification of the text so as to improve enforcement and implementation; and

(iii) categorization of cargoes based on the Globally Harmonized System and on the scientific knowledge of the day.

MARPOL – On-going improvements

In Annex I regulation 14 requires all ships to be fitted with oil filtering equipment approved by the Administration.

In 2003 resolution MEPC.107(49) adopted the Revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships.

These guidelines will apply to new installations from 1/1/2005 so that a 15 ppm bilge separator should be capable of handling any oily mixture from bilges and should be effective over a wide range of oil densities, or with emulsified mixtures (as it has been found that cleaning additives may cause the bilge water to emulsify).

Currently, these guidelines are again under review.

MARPOL – Mixing products

There are two distinct cases:

The first case involves the mixing of two different products. This may take place either during loading, or alternatively during the voyage.

When mixing takes place during loading, a cargo is loaded first and a second cargo is loaded on top.

If mixing takes place during the voyage then the two different cargoes were loaded in different tanks and are subsequently mixed during the voyage.

Currently, this case has been touched upon during the recent meeting of ESPH 13 and is due to be further discussed at BLG 12 in February 2008.

MARPOL – Mixing products

The second case involves loading of a single product and then during the voyage adding a substance to it (possibly of relatively small quantity).

This process leads to a chemical reaction which results in a completely new product. A key difference from the first case is that here the process generates a waste stream.

Regarding this case, there is an out-standing request by the Netherlands to Member States and NGO's made at MEPC 56 for information on the scale of relevant industrial production processes on board ships (see MEPC 56/22/2).

thank you for your attention