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MARINE CIRCULAR 112.2

To: **ALL SHIPOWNERS, MANAGERS, MASTERS, DEPUTY REGISTRARS AND RECOGNIZED ORGANIZATIONS**

Subject: **INFORMATION ABOUT CLEANSING AGENTS AND THEIR IMPACT UPON OIL POLLUTION PREVENTION EQUIPMENT FOR MACHINERY SPACE BILGES**

1. Reference

    1.1 IMO Resolution MEPC 60(33), Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships.
    1.2 IMO MEPC/Circ.289, Information on Cleaning Agents for Use in Machinery Spaces of Ships.

2. Purpose

    2.1 The purpose of this Marine Circular is to provide guidance to vessel owners, operators and managers regarding the proper operation of oil filtering equipment approved in order to meet the requirements of Resolution MEPC 60(33) to remove oil from oily water mixtures found in machinery space bilges when using certain types of cleansing agents.

3. Applicability

    3.1 This Marine Circular applies to Palau registered oil tankers of 150 GRT or more, and all other ships of 400 GRT and over which must comply with pollution prevention equipment requirements as found in Annex I of MARPOL 73/78.

4. Description of the Problem

    4.1 Port State Controls have reported that some vessels are discharging harmful oil water mixtures through the vessel's approved oil filtering equipment, the Port State Control has and will continue to take actions against these vessels.
    4.2 This problem was first identified and addressed by the IMO in Resolution MEPC/Circ.289. The MEPC working group discovered that the approved equipment was not performing effectively due to the improper use of cleansing agents, and/or the unfamiliarity of the crew with the proper operation of the oil filtering equipment.

5. Approved Detergents

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5.1 Many cleansing products cause oil water emulsions, however, oil filtering equipment will perform best when processing bilge water with a low level of oil content which has not been emulsified. The following is a description of detergents and their effect on the oil filtering equipment approved to process oily water mixtures from machinery space bilges:

a. Quick-Separating Detergents (QSDs) work by penetrating between the surface and the adhering grease and oil; any emulsion formed by the cleansing action is quickly broken. Except for hydrocarbon solvent based QSDs, which can have a negative impact on the performance of the 15 ppm bilge alarm, QSDs should generally be used for cleaning machinery spaces.
b. Emulsifying detergents break up the grease and oil into fine droplets forming a very stable emulsion which can block oil filtering equipment. Most hand wash lotions or gels belong to this type and special care should be taken when using these products.
c. When a QSD mixes with a small amount of emulsifying detergent, small water droplets form which are taken up by the oil. The resulting stable mixture will also block the oil filtering equipment.

6. Recommendations

6.1 MEPC/CIRC.289 was issued on 24 November 1994 and contains valuable information regarding the effect of certain cleansing and oil water mixtures on oil filtering equipment approved to process oily water from machinery space bilges. Proper use of the attached guidelines will help prevent the discharge of oily water mixtures which can harm the environment, and prevent the associated sailing delays, cleanup costs, fines and court costs when a harmful discharge is discovered by a Port State (see Attachment I).

6.2 Technical departments working for shipowners and operators should become familiar with the attached MEPC/Circ.289 and provide guidance to the ship's crew regarding the manual on the vessel which describes the operating requirements of the oil filtering equipment.

6.3 Responsible members of the engineering crew should become familiar with MEPC/Circ.289 and the manufacturer's manual for the oil filtering equipment. The responsible crew members should also be given the opportunity to practice using the equipment to become familiar with its functional requirements.

6.4 The engineering crew should also review procedures to reduce the amount of oil which ends up in the bilge.

6.5 To avoid problems caused by oil water emulsions, the crew should use cleaning agents recommended by the manufacturer of the oil filtering equipment.

6.6 When an emulsifying detergent is used, the facilities should have permanent drain connections to the dirty water tank and not be allowed to drain into the bilge.

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7. Contact

7.1 Any inquiries concerning the subject for this Marine Circular should be directed to the Palau Ship Registry Administrator at technical@palaureg.com

****This Marine Circular is supersedes the Marine Circular 112.1****

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ATTACHMENT 1

Information on Cleansing Agents for use in Machinery Spaces of Ships

1 OPERATIONAL PROCEDURES

1.1. Research and reports from Administrations have revealed that failure of oil filtering equipment to perform effectively is mainly caused by improper use of cleansing agents and unfamiliarity with proper operation of the oil filtering equipment, especially when cleansing agents, heavy fuel oil and lubricating oil form part of the oil water bilge mixture to be filtered.

1.2. Shipowners and ship operators should ensure that an operation manual is on board, and that the crew members are given an opportunity to study this manual and practice with the equipment to become fully conversant with it.

1.3. It is essential for the proper use of the equipment that crew members have a good understanding of both its working principles and its operation.

1.4. Administrations may require crew members responsible for the oil filtering equipment to demonstrate their ability and knowledge of its operation.

1.5. The oil filtering equipment will perform best while processing bilge water with a low level of oil content. Reducing the oil content of bilge water not only improves the effectiveness of oil filtering equipment but also improves economy and reduces fire hazards.

1.6. There are a number of ways to reduce the amount of oil which finds its way into the bilge including:

- leaking oil pipes, couplings, etc. should be repaired without delay;
- water from oil tanks should be drained into a waste oil tank;
- waste oil from cleaning or other activities should be drained into a waste oil tank;
- machinery which is likely to leak oil should be fitted with drip trays which can be drained to a waste oil tank; and
- cleaning of floor plates, engines, etc., with oil products should be minimized.

1.7 It is important that machinery spaces be kept clean. The use of cleansing agents is one of the primary means of achieving this, and it is realized that most cleansing agents eventually end up in the bilge.



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1.8 However, many of the cleaning products cause oily-water mixtures to emulsify. Unfortunately, these emulsions have an adverse effect on the performance of oil filtering equipment.

1.9 Emulsions should be broken or separated before the mixture is pumped into the filtering equipment. It should also be realized that after separation the emulsion may reform when the mixture is stirred, for instance by a centrifugal type pump that may be used to pump the bilge water to the oil filtering equipment.

1.10 To avoid problems caused by emulsions, use the cleansing agents which are recommended by the manufacturer of the oil filtering equipment or which pass the emulsion separation test described in section 3.

1.11 Different cleansing agents are used for different cleaning purposes. It is important to read the label or product data sheet prior to selecting a cleansing agent appropriate for the job. Where label information is inadequate to determine the effects on the cleansing agent of the oil filtering equipment, the emulsion separation test in section 3 should be conducted before allowing the cleansing agent to drain into the bilge.

1.12 Care should be taken to avoid draining different types of cleansing agents into the bilge at the same time. Otherwise, emulsions may be formed which may even be permanent.

2 PROPERTIES OF CLEANING PRODUCTS

2.1 Some cleansing agents already on the market claim not to effect oil filtering equipment. They either do not produce an emulsion, or they have the ability to break the emulsion a short time after it is formed; these products are called Quick-Separating Detergents (QSDs).

2.2 There are many different types of cleansing agents. The two principal types are QSDs and emulsifying detergents.

2.3 QSDs work by penetrating between the surface and the adhering grease and oil, and after using, any emulsion formed by the cleaning action is quickly broken down. QSDs should generally be used for cleaning machinery spaces.

2.4 Other kinds of cleansing agents are emulsifying detergents. The grease and oil is broken up into fine droplets which form an emulsion that can be quite stable. As most hand washing lotions or gels belong to this type, special care should be taken when using these products.

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2.5 When a QSD is mixed with only a small amount of emulsifying detergent, as for instance a hand cleaner, small water droplets will be formed and these are likely to be taken up by the oil. This may well result in a stable mixture looking like a mayonnaise, which will effectively block the oil filtering equipment.

2.6 Furthermore, caution should be taken when using hydrocarbon solvent-based QSDs since they may affect the performance of the 15ppm bilge alarm.

2.7 Most household types of cleansing agents are emulsifying detergents and should preferably not be used in machinery spaces: not even in the smallest quantities. However, if this is unavoidable, arrangements should be made to prevent the effluent from draining into the bilge; for example, hand wash basins in machinery spaces should have a permanent drain connection to a dirty water tank.

2.8 Emulsifying detergents should not be allowed to drain into the bilge or machinery spaces.

3. EMULSION SEPARATION TEST

3.1 A simple method to check if the separation time of an emulsion is acceptable can be carried out as follows:

- fill two bottles of approximately 0.5 liters in size about 60% full of clean fresh water,
- add approximately 10% of oil, preferably fuel oil to both bottles,
- to one bottle only add 2%, or an amount specified by the cleansing agent manufacturer, of the cleansing agent to be tested,
- shake both bottles well by hand for approximately one minute,
- let both bottles stand,
- the bottle without cleansing agent should show clear water underneath the oil within a relatively short time,
- the other bottle will need more time for separation; the time needed for this bottle is the so-called separation time which should be less than one hour. At the end of the separation time, the mixture of this bottle should have water with light turbidity at least over half of the height of the bottle.

3.2 The purpose of the bottle with only water and oil is to see if the oil will separate from the water; if this should not be the case, the test is invalid because the effect of the cleansing agent cannot be determined.

4 SAFETY ASPECTS



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4.1 When applying cleansing agents it should always be kept in mind that they might contain certain chemicals which are hazardous to human health and may cause acute or chronic intoxication. In addition, some cleansing agents are flammable liquids although in general the flash point is rather high. Therefore, it is important to follow the manufacturers' instructions for its storage, application and precautions to be taken.

4.2 Some Administrations have issued special safety regulations or guidelines with respect to the composition and use of cleansing agents. These requirements may deal with the storage of cleansing agents, marking of receptacles, provision of data sheets, operating instructions and special personal protection equipment and should be carefully observed.

4.3 For safety reasons cleansing agents used on board should:

- have a flash point above 61oC; and
- not contain Benzene, Tetrachloromethane, Tetrachloroethane, Penta chloroethane or chemicals with a comparable toxicity.
-

4.4 When applying cleansing agents, contact with skin and respiration of vapors should be minimized. If possible, work should be done at well-ventilated places. Never leave receptacles open at the workplace. Extensive cleaning may require the use of filter-type respiratory protection.

4.5 Before starting work, eyes should always be protected by chloroprene goggles. In addition, barrier creams against skin defatting effects should be used and gloves and protective clothing should be worn.

4.6 It is recommended not to use high pressure spray equipment to apply cleansing agents.



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ATTACHMENT 2

MERC/Circ.289

ANNEX

Information of Cleansing Agents for use in **Machinery Spaces** of **Ships**

I OPERATIONAL PROCEDURES

Research and reports from Administrations have revealed that failure of oil filtering equipment to perform effectively is mainly caused by improper use of cleansing agents and unfamiliarity with proper operation of the oil filtering equipment, especially when cleansing agents, heavy fuel oil and lubricating oil form part of the oily water bilge mixture to be filtered.

1.2 Shipowners and ship operators should ensure that an operation manual is on board, and that the crew members are given an opportunity to study this manual and practice with the equipment to become fully conversant with it.

1.3 It is essential for the proper use of the equipment that crew members have a good understanding of both its working principles and its operation.
Administrations may require crew members responsible for the oil filtering equipment to demonstrate their ability and knowledge of its operation.

1.5 The oil filtering equipment will perform best while processing bilge water with a low level of oil content. Reducing the oil content of bilge water not only improves the effectiveness of oil filtering equipment but also improves economy and reduces fire hazards.

1.6 There are a number of ways to reduce the amount of oil which finds its way into the bilge: leaking oil pipes, couplings, etc. should be repaired without delay;
water from oil tanks should be drained into a waste oil tank; waste oil from cleaning or other activities should be drained into a waste oil tank; machinery which is likely to leak oil should be fitted with drip trays which can be drained to a waste oil tank; and cleaning of floor plates, engines, etc., with oil products should be minimized.

It is important that machinery spaces be kept clean. The use of cleansing agents is one of the primary means of achieving this, and it is realized that most cleansing agents eventually end up in the bilge.

However, many of the cleaning products cause oily-water mixtures to emulsify. Unfortunately, these emulsions have an adverse effect on the performance of oil filtering equipment.



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