



Development of Regional Joint Master Program in Maritime Environmental Protection and Management - MEP&M -

THE PREVENTION OF MARINE POLLUTION FROM SHIPS: MARPOL CONVENTION

**WP3. Capacity Building through staff training and equipment purchase .
Dev 3.4.3 KNOW-HOW TRANSFER TO TEACHING STAFF RELATED TO THE
MEP&M**

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MARPOL

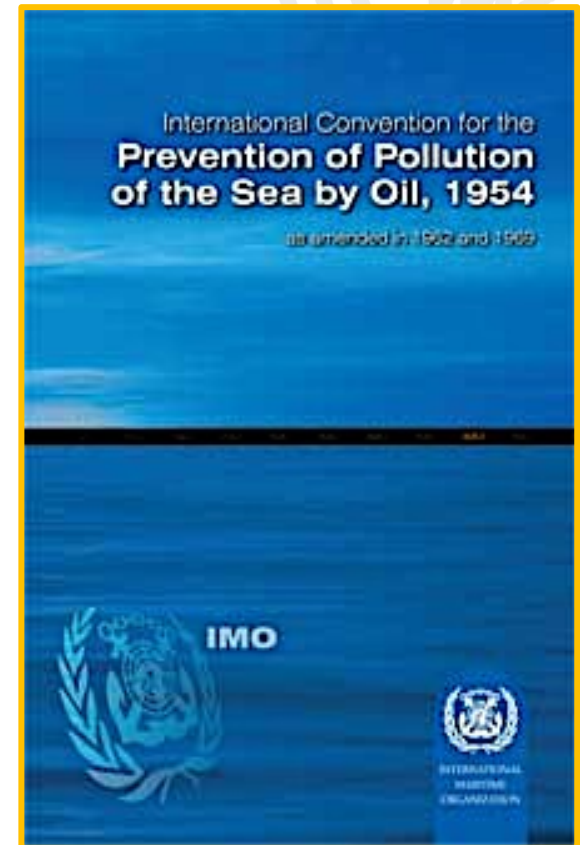
MARITIME POLLUTION



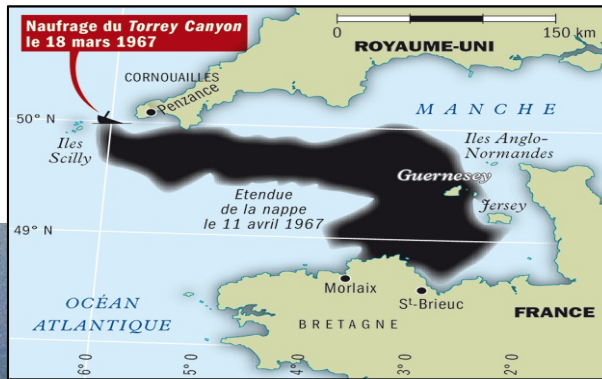


BACKGROUND

International Convention for the
Prevention of Pollution of the Sea by Oil.
(OILPO, 1954)



Torrey Canyon, 1962



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Ruth García-Llave



ESTRUCTURE

"International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978":

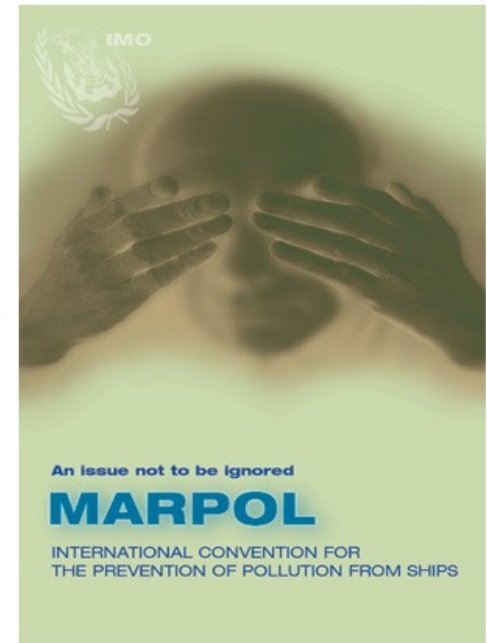
AGREEMENT + PROTOCOLS
Articles

+ 6 ANNEXES
Rules



Annexes

- I. Oil pollution;
- II. Pollution by noxious liquid substances transported in bulk;
- III. Contamination by harmful substances transported in packages, containers, portable tanks and tank trucks or tank wagons;
- IV. Pollution by foul water from ships; and
- V. Pollution from ships' rubbish.
- VI. Prevention of air pollution from ships





Entry into force by a

Annex I and II 02-Oct-83

Annex III 01-Jul-92

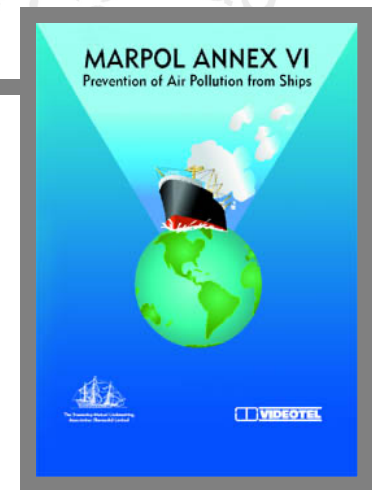
Annex IV 27-Sep-03

Annex V 31-Dec-88

Annex VI and Protocol 1997. 19-May-05



- The annexes entered into force **twelve months after the date on** which the stipulated conditions were fulfilled.





Art. 3

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Scope of application

This Convention **shall apply to: ships** entitled to fly the **flag of** a Party to the Convention; **and ships** not entitled to fly the flag of a Party **operating under the authority of a State Party.**

Nothing in this Article shall be construed as derogating from or extending the sovereign rights of the Parties under international law over the seabed and subsoil thereof adjacent to their coasts for the purpose of exploring and exploiting their natural resources.



Art. 3

Scope of application

This Convention **shall NOT apply** to **warships** and naval auxiliaries, or to ships owned or operated **by a State and used for the** time being only on government **non-commercial** service.

However, each Party shall be careful to take appropriate **measures** to ensure that, so far as is reasonable and practicable, such State-owned or operated vessels **operate in a manner consistent with** the intent and purpose of this Convention, without impairing the operations or operational capability of such vessels.



Certificates and Inspections

Art. 5

"Any **certificate** issued under the authority of a **Party** to the Convention in accordance with the provisions of the Rules shall be accepted by the other Parties and shall **be considered as valid** for all purposes under this Convention **as certificates issued by them.**

"While in ports or offshore terminals under the jurisdiction of a Party, to **inspection** by officials duly authorised by that Party. Such inspection shall be limited to **verifying that a valid certificate is on board**, unless there are **clear grounds** for believing that the condition of the ship or its equipment does not substantially correspond to the particulars of the certificate.



Art. 5

Certificates and Inspections

"When **a Party refuses** a foreign ship **entry into ports** under its jurisdiction, or otherwise takes action against such a ship on the grounds that it does not comply with the provisions of this Convention, that Party **shall** immediately **inform** the **consul** or diplomatic representative of the Party whose **flag** the ship is **flying of the** reasons.

"With respect to ships of **States not Parties** to the Convention, the Parties **shall, to the extent** necessary, **apply** the provisions of this Convention to ensure that **no more favourable treatment is given to such ships**".



Annex I

MARPOL 73/78

OPERATIONS

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Annex I MARPOL 73/78

The provisions of Annex I are based on the fact that **oil and water are separated over time** and the "clean" water can be discharged into the sea and the oil and/or **oily residues** are retained on board for delivery to reception facilities.

Tank cleaning with crude oil **COW (Crude Oil Washing)**

- Crude oils give rise to a large number of sediments (they can constitute up to 0.5% of the total cargo), consisting of clays, sludge, oxide films and sand which, together with paraffins, are deposited throughout the tank structure.
- Tank cleaning is normally done with crude oil, although equipment is available to clean tanks with seawater. The **double hull and double bottom** space serves as **segregated ballast** tanks. Slop tanks have the dual role of cargo tank and settling tank, to separate water from oil when tanks are washed with water.



Annex I MARPOL 73/78

Annex I provides that the **total quantity of crude oil** that an **oil tanker** may discharge in any one ballast voyage may never exceed **1/15,000 of the total** cargo carrying **capacity of the ship.** It shall never exceed **30 litres per mile** sailed by the ship and discharge in any case shall always take place at least **50 miles from land.**

An **Oil Record Book** is established to record discharges and note where waste reception occurs.



Annex I MARPOL 73/78

- **Hydrocarbon filtering equipment**

Two types of filtering equipment are distinguished according to the tonnage of the vessel. It is compulsory from a gross tonnage equal to or greater than 400*, from 10,000** the conditions of the equipment are more demanding and must comply with another type of provision.

Regulation 14: Oil filtering equipment

(*) Paragraph 6

(**) Paragraph 7

Oil record book

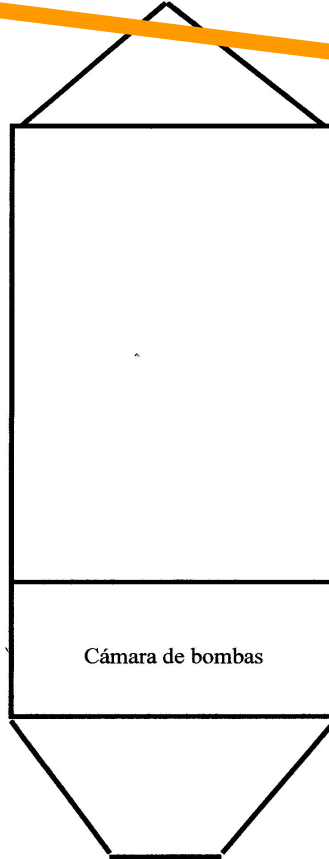
Regulation 36: Oil record book

- shipment of hydrocarbon cargoes;
- transfer of oil cargo during the voyage;
- unloading of oil cargoes;
- ballasting of cargo tanks and dedicated clean ballast tanks;
- cleaning of cargo tanks, including crude oil washing;
- ballast discharge, other than from segregated ballast tanks;
- discharge of water from the settling tanks;
- closure, as appropriate, of all valves or other similar devices after settling tank discharge operations;
- closure of the valves necessary to isolate the dedicated clean ballast tanks from the loading and depletion piping after the unloading operations of the settling tanks; and
- waste disposal.

Nombre del buque

Número o letras distintivos

VISTA EN PLANTA DE LOS TANQUES DE CARGA Y DE DECANTACIÓN
(se cumplimentará a bordo)



Identificación de los tanques	Capacidad
Profundidad de los tanques de decantación:	

(Indíquese la capacidad de cada tanque y la profundidad de los tanques de decantación).

Oil record book

Regulation 36: Oil record book



Annex I MARPOL 73/78

Special zones:

Any area of sea where, for technical reasons relating to its **oceanographic and ecological conditions** and the particular character of **maritime traffic**, it is necessary to adopt **special mandatory procedures** to prevent pollution of the sea by oil.

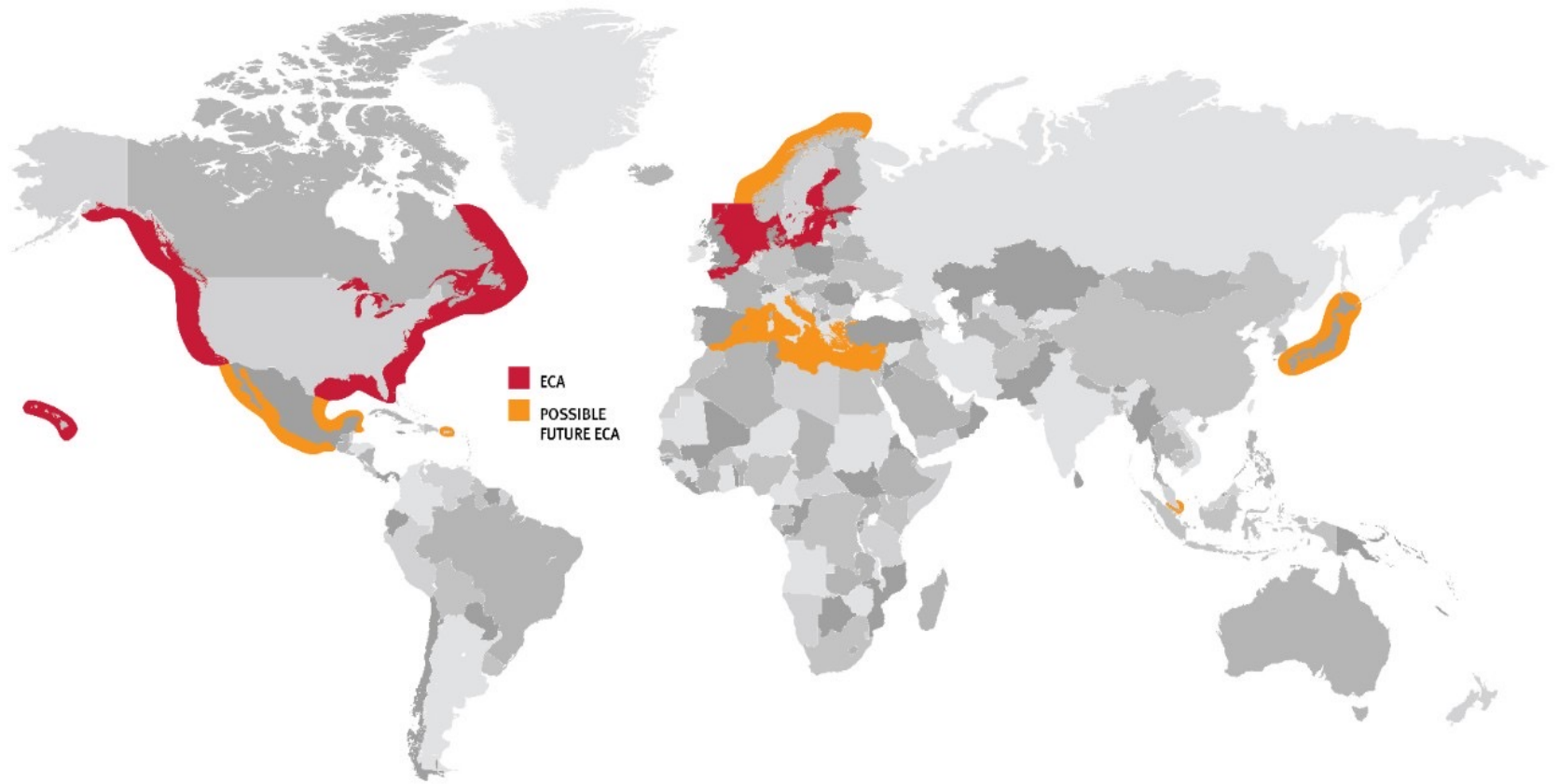
Special zones: Mediterranean Sea, Baltic Sea, Black Sea, Red Sea, Areas of the "Golfos", Gulf of Aden, Antarctica, European Waters NW, Oman Arabian Sea area, Waters of South Africa



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Annex I MARPOL 73/78





Annex I MARPOL 73/78

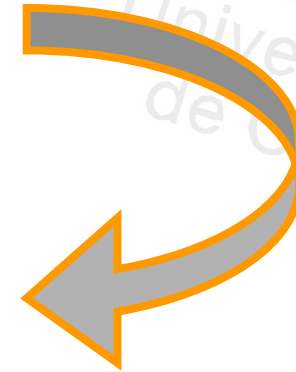
In addition to the Special Zones, there are so-called Areas of Particular Sensitivity.

"Particularly Sensitive Sea Areas (PSSA)".

List of adopted PSSAs

The following PSSAs have been designated:

- the Great Barrier Reef, Australia (designated a PSSA in 1990)
- the Sabana-Camagüey Archipelago in Cuba (1997)
- Malpelo Island, Colombia (2002)
- the sea around the Florida Keys, United States (2002)
- the Wadden Sea, Denmark, Germany, Netherlands (2002)
- Paracas National Reserve, Peru (2003)
- Western European Waters (2004)
- Extension of the existing Great Barrier Reef PSSA to include the Torres Strait (proposed by Australia and Papua New Guinea) (2005)
- **Canary Islands, Spain (2005)**
- the Galapagos Archipelago, Ecuador (2005)
- the Baltic Sea area, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden (2005)





Annex II

MARPOL 73/78



Annex II of MARPOL 73/78

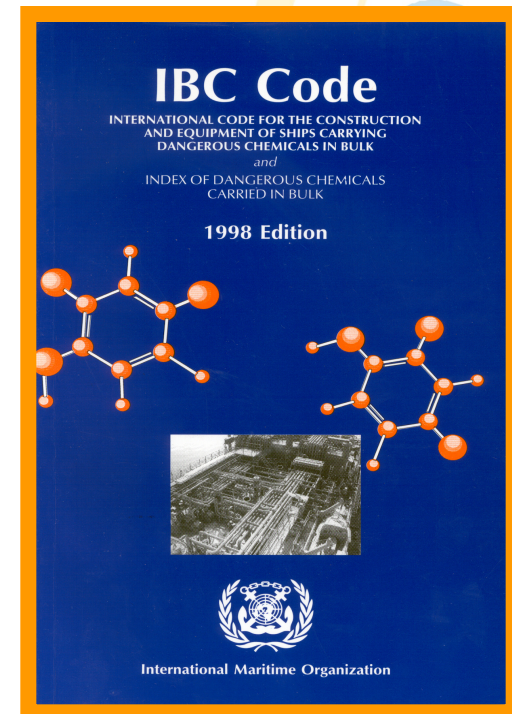
Annex II regulates
pollution prevention
rules for ships
carrying chemicals.





Annex II of MARPOL 73/78

- Reassessment of products
- Development of a new system for assigning pollution categories
- New criteria for the classification of products in these new categories and revised emptying requirements and discharge criteria.
- Amendments to the IBC Code, in particular with regard to the criteria for determining ship types from an environmental point of view.





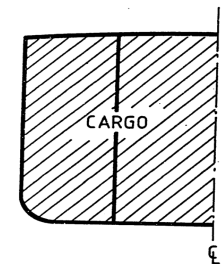
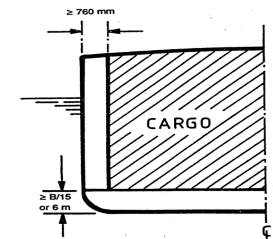
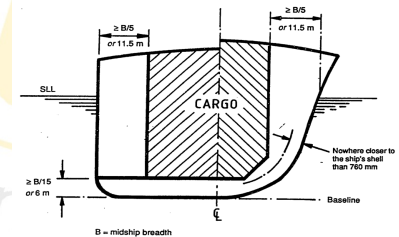
Annex II of MARPOL 73/78

Annex II covers **three types of chemical tankers**:

Type 1: for products posing **very serious risks** to the environment and safety, requiring the most stringent preventive measures to prevent leakages in shipments containing such products.

Type 2: for products posing **significantly serious risks** to the environment and safety requiring significant precautionary measures to prevent leakages in shipments of such products.

Type 3: for products posing sufficiently **serious risks** to the environment and safety requiring moderate containment measures to enhance the ship's ability to maintain buoyancy after damage.





Annex II of MARPOL 73/78

In the new Annex II, substances that may harm the marine environment are divided into three categories, X, Y or Z. Those in category X pose the greatest threat to the marine environment, while those in category Z pose the least threat.





Annex II of MARPOL 73/78

Special areas:

The new regulation of the amended form of MARPOL Annex II came into force on 1 January 2007 and implies new limits that reduce the amount of waste that now enters the marine environment, eliminating the need for Special Areas (the only remaining exception is **ANTARCTICA**).





Annex II of MARPOL 73/78

Annex II prohibits the **discharge into the sea** of any effluent containing substances in the above-mentioned categories, except when the discharge is subject to conditions which are specified in detail for each category.

These conditions include parameters such as the following:

- a) the maximum quantity of substances per tank that may be discharged into the sea;*
- b) the speed of the ship while discharging;*
- c) the minimum distance from the nearest land while discharging;*
- d) the minimum depth of the sea while discharging; and*
- e) the need to discharge below the waterline.*



Annex III

MARPOL 73/78



Annex III of MARPOL 73/78

Rules for the prevention of pollution by **harmful substances** carried by sea in packaged goods

harmful substances **are** those considered as **pollutants of the sea** in the IMDG

in packages: the forms of containment specified in IMDG for harmful substances.



Annex III of MARPOL 73/78

- Packages containing a harmful substance shall be durably marked with the correct **technical name** of the substance (non-commercial) and shall also be durably marked or labelled to indicate that the substance is a **marine pollutant (MARINE POLLUTANT)**.
- The marking method remains identifiable after a period of at least **three months at sea**.
- Packages containing small quantities of harmful substances may be exempted.





Annex IV

MARPOL 73/78



Annex IV of MARPOL 73/78

The Annex requires ships to have on-board sewage treatment equipment.

Entry into force.

Annex IV entered into force 27 September, but **2003** in 2004 a new wording of this Annex was approved, which entered into force in 2005. However, in Spain it was mandatory since 1992.

Scope of application.

Annex IV applies to all new ships on international voyages over 400 GT or carrying more than 15 persons on board. Existing ships (2004) must prepare for these new regulations by 2010.



Annex IV of MARPOL 73/78

What is meant by dirty water?

- Drainage and other waste from all types of toilets, urinals and toilet bowls;
- Drainage from toilets, sinks and outlets, located in medical service chambers (dispensary, hospital, etc.);
- Drainage from spaces in which live animals are transported;
- Other waste water when mixed with the waste water defined above.

(Rule 1)



Annex IV of MARPOL 73/78

Types of foul water

- Grey water. This is water from showers, sinks, baths, hospital and water that has previously passed through the grease separator, i.e. water from the laundry and kitchen.
- Sewage. Sewage from toilets and areas used for the transport of live animals.



Annex IV of MARPOL 73/78

• Types of wastewater TREATMENT EQUIPMENT:

- Waste water treatment plant approved by the Administration.
- A system for breaking up and disinfecting foul water approved by the Administration. Such a system shall be fitted with means of temporarily storing foul water when the ship is within **three nautical miles** of the nearest land, or
- Holding tank having sufficient capacity to hold all foul water, having regard to the service provided by the ship, the number of persons on board and other relevant factors.

The holding tank shall be provided with means of visually indicating the quantity of the contents.



Annex IV of MARPOL 73/78

- **Discharges to sea or land.**

- **3'** from land if the sewage has been previously broken up and disinfected by an approved system.
- At a distance greater than **12'** if they have not been previously shredded and disinfected.

They shall not be discharged instantaneously, but at a moderate rate, the ship being en route and travelling at a speed of not less than 4 knots. in addition, the effluent shall not produce visible floating solids in, or cause discolouration of, the surrounding waters.

Vessels must in any case record discharges in a **Sewage/Garbage Record Book**.



Annex V

MARPOL 73/78





Annex V of MARPOL 73/78

- **Purpose of Annex V.**

- Annex V entered into force in 1988 and deals with the different types of waste (**rubbish**) and the distance at which it may be dumped at sea, which are reduced in the case of special areas.
- **Plastics** are totally forbidden to be dumped at sea as they can cause damage and are not biodegradable for hundreds of years.





Annex V of MARPOL 73/78

Time it takes for an object to be absorbed and dissolved by seawater	
A paper bus ticket	2-4 weeks
Cotton clothing	1-5 months
Corporal	3-14 months
A woollen garment	1 year
Painted wood	13 years
Can	100 years
Aluminium can	200-500 years
Plastic bottle	450 years

Source: Hellenic Marine Environment Protection Association (HELMEPA)



Annex V of MARPOL 73/78

Special areas:

Mediterranean , Baltic Sea, Black Sea, Red Sea; Golf's Area
North Sea; Antarctica (φ S60°); Caribbean (certain areas)



Annex V of MARPOL 73/78

On-board classification of rubbish into categories




- Plastic materials (to be cleaned when stored in open containers; otherwise they should be stored in closed containers for a limited period of time).
- Food waste (to be stored in sealed containers for a limited period of time).
- Other household waste (glass, cardboard, etc.).
- Waste resulting from on-board maintenance (rags containing hydrocarbons, paint residues, fluorescent tubes, metal residues, etc.).
- Nursing waste (gauze, syringes, catheters, expired medicines, etc.), to be stored in sealed containers.)

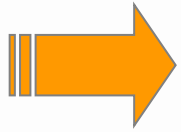


Annex V of MARPOL 73/78

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TYPE OF WASTE	OUTSIDE SPECIAL AREAS	WITHIN SPECIAL ZONES
Plastics, including synthetic ropes, fishing nets and rubbish bags		
Floating dunnage and packaging	>25'	
Paper, rags, glass, metal, bottles, crockery and similar waste	>12'	
Shredded or sinking paper, rags, glass, etc.	>3'	
Unshredded food waste	>12'	>12'
Shredded food waste	>3'	>12'
Mixed waste	>25'	>25'



Guidelines for the Development of

GARBAGE MANAGEMENT PLANS

For compliance with Regulation 9(2), Annex V of MARPOL 73/78

Annex V of MARPOL 73/78 "Garbage Management Plan"

CONTENTS

- 1 INTRODUCTION
- 2 REGULATORY REQUIREMENTS
- 3 PREVENTION OF POLLUTION FROM GARBAGE
- 4 MATTERS TO BE ADDRESSED IN THE GARBAGE MANAGEMENT PLAN
 - .1 Designated person in charge of carrying out the plan
 - .2 Procedures for collecting garbage
 - .3 Procedures for processing garbage
 - .4 Procedures for storing garbage
 - .5 Procedures for disposing of garbage

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ANNEX

RESOLUTION MEPC.70(38) adopted on 10 July 1996 FOR THE DEVELOPMENT OF GARBAGE MANAGEMENT PLANS BY THE MARINE POLLUTION PROTECTION COMMITTEE,

Resolution MEPC.70(38) of the Convention on the International Maritime Organization concerning the development of garbage management plans for ships of 400 gross tonnage and over, as required by Article 16(2) of the Convention, and every ship certified to carry 15 persons or more, to carry a garbage management plan.

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Prof. Dr.

**¡GRACIAS!
Faleminderit**

**Thank you
Hvala**

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