Chapter 10

MARPOL Regulations for Ships and Fishing Vessels

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1.0 Introduction

The international Maritime Organization adopted protocol called MARPOL treaty on 17th February 1978. This is a modified form of the original convention for the Prevention of Pollution by Ships of 1975. The International Maritime Consultative Organization (later it become IMO) established OILPOL in 1954 to prevent the devastating effects of oil seepage into the seas and its hazardous environmental impacts. The objective of OILPOL was to address the "spill effects on nekton and plankton, and the effects of petroleum hydrocarbons on benthic organisms, bottom sediments, enclosed and semi enclosed seas". Later it was observed that oil was not the only threat to the marine environments, hence a list of dangerous substances like polymers, toxic substances etc included. Some of the oil spill incidents like Torry Canyon (1976), Florida Oil barge spill (1969) etc. signalled a need for a new treaty to replace the OILPOL. OILPOL failed to address the practice of flying the flag of convenience and found it difficult to take actions against the culprits. MARPOL convention was formulated by IMO with the help of institutions like International Petroleum Industry Environmental Conservation Association (IPIECA), Oil Companies International Marine Forum and UNEP.

Waste oil, garbage and oily mixtures and emissions are generated during vessel operations. Pollution of the marine environment by ships of all types, including fishing vessels, is strictly

controlled by the MARPOL 73/78. Different annexes of MARPOL deals with Oil (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 Pollution (Annex VI) (IMO, 2010).

MARPOL convention calls for:

- Substantial retrofitting in ships to prevent pollution directly both from normal operational discharges and accidents.
- The ships must follow MARPOL regulations if they are entering MARPOL treaty signatory country ports even if the ship is from non MARPOL treaty country.
- Stringent pollution control measures imposed on ships like retro fitting

MARPOL regulation consists of two protocols and five annexures.

- Protocol 1: Provisions concerning reports, incidents involving harmful substances.
- Protocol 2: Arbitration.
- Annexure 1: Regulations for the prevention of pollution by oil
- Annexure 2:Regulation for the control of pollution by noxious liquid substances in bulk.
- Annexure 3: Regulation for the prevention of pollution by harmful substances carried by ships in packaged form or in freight containers, portable tanks etc.
- Annexure 4: Regulation for the prevention of sewage pollution from ships
- Annexure 5: Regulation for the prevention of pollution by garbage from ships.

2.0 Salient features of the Protocols and Annexures

The International Convention strictly controls pollution of the marine environment by ships of all types including fishing vessels for the Prevention of Pollution from Ships (MARPOL 73/78). Penalties for not complying with the law are up to $200,000 for individuals and $1 million for companies. The MARPOL regulation will apply in all the ships and fishing vessels entering / operating the MARPOL signatory countries and also would be applicable to those vessels operating in 200 nautical miles of EEZ.

In accordance with regulation 9 of Annex V of the MARPOL 73/78, a record is to be kept of each discharge of garbage at sea, to reception facilities or to other ships. The garbage includes all kinds of food, domestic and operational wastes excluding fresh fish and parts thereof, generated during normal operation of the vessel and are liable to be disposed continuously or periodically except those substances which are defined or listed in other annexes to MARPOL 73/78 (Table 1).

Table 1. MARPOL 73/78 Garbage disposal regulations

Garbage type**	Disposal outside special areas*
Plastics including synthetic ropes, synthetic fishing nets and plastic garbage bags and incinerator waste from plastic products, which may contain toxic or heavy metal residues.	Disposal prohibited
Dunnage, lining and packing materials, etc, which will float	> 25 nm offshore
Paper products, rags, glass, metal, bottles, crockery and similar refuse	> 12 nm
All other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse comminuted or ground	> 3 nm
Food wastes not comminuted or ground	> 12 nm
Food wastes comminuted or ground	> 3 nm

* Special areas (MARPOL Annex V) include the Mediterranean Sea, the Baltic Sea, The Black Sea, the Red Sea, the Gulf Area I, the north Sea, the Antarctic Area and Wider Caribbean Sea, where it is illegal to discharge any garbage except food waste which may only be discharged beyond 12 nm offshore.

** Mixed refuse types: When garbage is mixed with other discharges having different disposal requirements, the more stringent disposal requirements shall apply.

Every vessel of 12 m or more in length overall shall display placards which notify the crew and passengers of the disposal requirements. Fishing vessels of 400 gross tonnage and above need to carry a Garbage Management Plan providing procedures for collecting, storing, processing and disposing of garbage and maintain a Garbage Record Book giving details of discharge operations. The discharge of oily mixtures into the sea is prohibited. The only allowable discharge of an oily mixture is where a discharge rate of 15 ppm is achieved through oil filtering/separating equipment. All vessels over 400 tons are required to be fitted with this type of equipment.

CO2 emissions per kg of fish landed in India have been estimated to range from 0.3-1.02 kg in traditional motorised operations undertaking ring seining and mini-trawling, 0.17 to 0.99 kg in small-scale mechanised operations undertaking purse seining, gillnetting-cum-lining and bottom trawling, to 0.87-3.52 kg in large-scale mechanised operations undertaking aimed midwater trawling and bottom trawling. Other pollutants from vessel operations include nitrogen oxides (NOX) and sulphur oxides (SOX) from engine emissions and ozone depleting substances from refrigeration plants and fire fighting systems. A typical fishing vessel utilizes only about 40% of the inherent energy of the fuel used onboard for propulsion

and generation and energy and 60% is lost in waste heat

Oil Pollution: Discharge of oily mixtures into the sea is prohibited. The allowable discharge of an oily mixture is 15 ppm, which is achieved through oil filtering or separating equipment. All vessels over 400 tonnes are required to be fitted with oil filtering or separating equipment, which must conform the standards set by IMO. Vessels under 400 tonnes must comply with discharge restrictions but are exempted from any onboard equipments. The oily residues must be stored onboard for disposal at port waste reception facilities.

Cargo residues: Cargo residues are mainly from non-containerized cargo, which may either be solid or liquid must be discharged into the reception facilities of the ports. This applies those substances that are toxic and non-toxic. With regard to chemical tankers, it must be double hulled vessels that are not only collision resistant but also help reduce the volumes of residues by having smooth tank walls (in contrast to single hulled vessel).

Gas Emissions: Gas tankers must follow the regulations on discharge of gases. viz. Code For Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (1983) issued by IMO.

Garbage:

- Plastics are prohibited from disposal into sea.
- No other garbage may be discharged within 12 nautical miles from the nearest land.

The law states that fishing vessel must make every effort to retrieve all lost or damaged fishing gears. If any gear is untraceable, it may be reported to the nearest port facility with approximate position and reasons for the loss.

Waste formed in fish processing vessels is not yet subject to MARPOL standards. Rather than introducing all the waste into sea, it is possible to use onboard fish meal systems; if these are used only minima quantities of waste need be discharged into the sea.

Sewage: The sewage means:

- The drainage and other wastes from any form of toilets and urinals
- Drainage from medical premises (dispensary, sick bay etc.) via, wash basins, wash tubs and scuppers located in such premises
- Drainage from spaces containing living animals
- Other wastewaters when mixed with drainage defined above.
- The disposal of dunnage and packing materials which will float are to becarried out beyond 25 nautical miles from the land. Food wastes and all other garbage beyond 12 nautical miles. When the garbage is mixed with other discharges having different disposal or discharge requirement the more stringent requirement shall apply.

- Disposal of garbage is prohibited from the fixed or floating platforms engaged in the exploration, exploitation etc. Here the disposal is permitted after passing through a comminuter or grinder and discharge must be away from 500m from platform.

3.0 Violation of MARPOL

Any violation of the requirements of MARPOL shall be prohibited and sanctions shall be established on such ships under the law of the administration of the ship concerned. A ship must require holding of a certificate in accordance with the provisions of MARPOL. The party state has the right to verify the validity of the certificate only onboard. If there is any clear evidence of violation ship should not be allowed to sail and the consul or diplomatic representatives of the country of the ship should be immediately informed.

All possible steps must be taken to avoid a ship being unduly detained or delayed. When a ship is unduly delayed the convention agrees for compensation

If any incidence has happened with harmful substances it must be reported to all parties concerned at the earliest. An agency or officer should be appointed to enquire about the incident, and it should be notified.

4.0 Methods of reporting an accident

- Reports must be through radio or fastest channels of communication.
- Following contents must be there in the report
- The identity of the ships
- Time and date of occurrence of the incident
- Geographic position
- Wind and sea condition prevailing at the time of incident
- Relevant details in respect of the condition of the ship.
- Details of the incident.
- Clear indication or description of the harmful substances involved with technical terms and trade names etc.
- Quantity, method of packaging, identification marks etc.
- Name of the consignee and consignor
- Details of the substances e.g. oil, noxious liquid, solid etc.

5.0 Survey and certification

For every ship before putting into service, survey has to be conducted and certification obtained to cover the following:

- Sewage treatment plants: must meet the operational requirements and conform with the IMO standards
- Sewage disinfectant system
- Holding tank: the capacity should match the sewage with respect to the number of persons onboard and other relevant factors
- The sewage discharging facility: the pipeline leading to the exterior must be convenient for the discharge of sewage to reception facility.
- Every five years the facility may be checked and the certificates issued
- The survey of the above factors must be carried out by the organization or the entrusted agency. After the survey there should not be any change in the equipments, fitting, arrangements etc.

Issue of the certificates:

- An international sewage pollution certificate (1973) shall be issued after survey in accordance with the provisions of Annexure 4.
- No ISPPC (1973) shall be issued to a ship which is entitled to fly the flag of a state which is not a signatory
- Certificate must contain texts in English and French along with the official language of the issuing country.
- It will be issued for five years
- If the certificate expires when the ship is in voyage the certificate may be extended by the administration till the ship enable to reach the country where the certificate is issued.
- Exemption: the discharge of sewage formed necessary for the purpose of securing the safety of ship and those onboard or saving life at sea.
- The government of each party to the convention undertakes to ensure the provisions of facilities at ports and terminals for the reception of the sewage without causing undue delay to ships.
- The discharge of disinfected sewage must be done at a distance more than 4 nautical miles from the nearest land and sewage that is not disinfected at a distance of 12

nautical miles from the nearest land. The discharge should not be carried out instantaneously but at a moderate rate: when the ship is enroute and proceeding at a speed not less than 4 knots.

- If the ship has approved sewage treatment plant, the periodical test reports must be recorded and the effluent shall not produce visible floating solids, discolouration, etc.

The most effective ways of preventing Marine Pollution from normal maritime operations are to ensure awareness, understanding and observance of MARPOL regulations among ships crew, to provide adequate facilities for discharging oily and other residues, and to carry out effective supervision and monitoring and adherence to the regulations.

6.0 Further reading

Boopendranath (2012) Waste minimisation in fishing operations, Fishery Technology, 49: 109-119

IMO (2010) International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 1973/78). International Maritime, Organisation, http://www.imo.org/Conventions (Accessed 10 May 2010)