MARPOL Annex IV – Regulations for the Prevention of Pollution by Sewage from Ships

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Sewage, which is a water-carried waste, contains a significant proportion of potentially disease-causing microbes known as pathogens. If sewage is released into the sea, it can cause a threat to the environment and serious health hazards. It is therefore necessary that its discharge is regulated.

This article aims to provide information on why releasing untreated sewage into the sea is hazardous and guidance on the regulations that control pollution of the sea by sewage.

Hazards of releasing untreated sewage in the sea

Ships produce waste water in two categories:

- Grey waste water is generated by domestic activities such as using sinks and showers, or doing laundry and dishwashing.
- Black waste water contains drainage and other wastes from any form of toilets or urinals and from spaces containing living animals. It also includes medical discharges generated by a ship's hospital, dispensary, etc.

The amount of waste water reaching the sea is of particular concern as it affects the marine environment.

Black waste water in particular is naturally rich in both phosphorous and nitrogen, which encourages the excessive growth of plants and algae, creating toxic algae 'blooms'. These algae cause oxygen depletion when they decompose. The higher the discharged concentration, the more this reaction takes place and the lower the amount of oxygen available for fish and other aquatic animals and plants, killing larger marine life.

Waste water also introduces pathogenic bacteria and viruses, and if discharged into coastal waters, it poses a risk to public health for swimmers and those eating contaminated seafood.

Sewage regulations

The principal international instrument regulating discharges of waste water from vessels is Annex IV of MARPOL.

Ships of 400gt and above engaged in international voyages, or which are certified to carry more than 15 persons, are required to be fitted with either:

- an approved sewage treatment plant
- an approved sewage comminuting and disinfecting system
- a sewage holding tank to control the discharge of sewage into the sea.

The discharge of sewage or black water into the sea is prohibited, except in the following cases:

- Untreated sewage may only be discharged at a distance of more than 12nm from the nearest land, provided that sewage held in holding tanks is not discharged instantaneously, but at a moderate rate when the ship is en route and proceeding at a speed of not less than 4 knots. MEPC resolution 157(55) provides recommendations for the rate of discharge to be used.
- Comminuted and disinfected sewage may be discharged at a distance of more than 3nm from the nearest land, so long as an approved system is used.

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- Effluent from an IMO-approved sewage treatment plant may be discharged at any location providing the effluent does not produce visible floating solids or cause discolouration of the surrounding water. MEPC resolution 227(64) provides guidelines on the implementation of effluent standards and performance tests for sewage treatment plants.

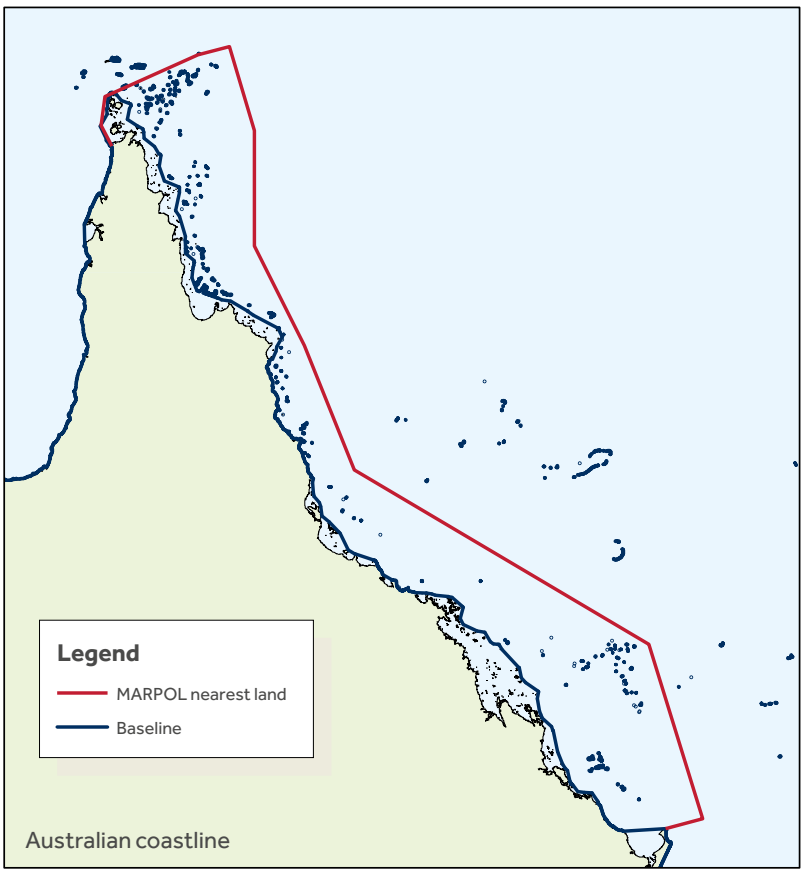
Nearest land

The term 'nearest land' means the baseline from which the territorial sea of the territory in question is established. In Australia, this extends up to the outer edge of the Great Barrier Reef, and no discharge of any type is permitted in the area of the Great Barrier Reef.

Special area

In July 2011, the IMO (through MEPC resolution 200(62)) designated the Baltic Sea as a 'special area' for sewage from passenger ships. The decision entered into force on 1 January 2013 and this is the only designated area as specified under MARPOL Annex IV. In the special area, the discharge of sewage from passenger ships is prohibited unless the ship has in operation an approved sewage treatment plant that meets the applicable additional effluent standards as specified under MEPC resolution 227(64).

As agreed during the 69th session of MEPC in April 2016, stricter discharge restrictions will apply from 1 June 2019 for new passenger ships (built on



or after 1 January 2016). For existing passenger ships, the date is set as 1 June 2021. Single voyages of passenger ships into and out of Russian territorial waters east of the 28°10′ longitude which do not call at any other ports in the Baltic Sea will get a further two-year grace period until 1 June 2023.

Alternatively, sewage from passenger ships may be discharged to reception facilities in ports. The status as a special area has now also become fully effective after all states bordering the Baltic Sea have reported to the IMO that sufficient reception facilities for sewage from passenger ships are available in their ports.

This requirement does not apply to cargo ships.

Local regulations

In addition to international standards established under MARPOL Annex IV, some jurisdictions also regulate sewage discharges. For example, in the United States, a variety of vessel discharges (including sewage and grey water) are regulated through the EPA's Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) program. Under this act, specific areas are designated as 'no-discharge zones' (NDZs). Sewage discharges are prohibited in these areas.

Sewage treatment plants on ships

International maritime laws require black waste water to be treated before discharge overboard. Treatment of waste water can be carried out separately for grey and black waste water, or both streams can be processed by a shared system.

In recent years, there has been an increased focus on the condition and operation of sewage treatment plants or sewage comminuting and disinfecting systems by the Port State Control officers. A number of ships have been detained because of improper operation and maintenance of sewage treatment systems.

The most common errors are the inadequate usage or non-functioning of sewage treatment plants, and unauthorised modifications of sewage treatment systems. As mentioned earlier, ships are only allowed to discharge sewage in ports if they use an IMO-approved sewage treatment plant. Comminuted and disinfected sewage using an approved system must be discharged at a distance of more than 3nm from the nearest land.

There have been cases where the authorities have levied fines on ships for discharging untreated sewage in port because the sewage treatment plant was bypassed or the overboard discharge valve had seized up or was kept in 'open to sea' position. Any malfunction of the equipment or non-compliance with the approved drawings may result in an invalid International Sewage Pollution Prevention Certificate and, as such, is a violation of MARPOL Annex IV.

It is therefore essential that ships' crews are aware of the MARPOL Annex IV requirements and familiar with the proper operation of the shipboard sewage treatment system. It is also important that regular maintenance of the system is carried out, and modifications (if any) should only be undertaken following approval from the class on behalf of the administration (the ship's flag state).

Members are reminded that, other than in cases of purely accidental discharge, P&I cover for fines related to MARPOL violations is only available on a discretionary basis. We recommend members to proactively report any equipment malfunction to the vessel's flag state and/or class, and all reasonable actions must be taken to prevent discharge of untreated sewage overboard.