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Technical regulation on the  
construction and equipment, etc. of  
passenger ships on domestic voyages

## CHAPTER XXIV

### Treatment and storage of sewage

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## CHAPTER XXIV

### Treatment and storage of sewage

#### *Introduction*

*The provisions of chapter XXIV (previously chapter XX) have been drawn up on the basis of annex IV to the International Convention for the Prevention of Pollution from Ships – the 1973 MARPOL Convention – as amended, as well as Annex IV, regulations 4 and 5 of the Helsinki Convention.*

*The administration of the rules has been distributed so that the Danish Environmental Protection Agency is responsible for the rules on discharge, and the Danish Maritime Authority is responsible for the rules on the technical installations on board the ships, including records and plans. This distribution of responsibility has been indicated in the table of contents with an “M” for the Danish Environmental Protection Agency and an “S” for the Danish Maritime Authority.*

*In addition to the technical regulations contained in the sets of regulations issued by the Danish Maritime Authority, orders have been issued by the Danish Ministry of the Environment, which must be observed as well.*

*In these provisions, the IMO is referred to as the Organisation, MARPOL 73/78 is referred to as the Convention, and the Danish Environmental Protection Agency and the Danish Maritime Authority, respectively, are referred to as the Administration.*

#### **Part 1 – Treatment and storage of sewage in large ships**

##### **Part 1       General**

##### **Regulation 1 Definitions**

For the purpose of this technical regulation:

- 1       “New ship” means a ship:
  - .1     for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, or which is at a similar stage of construction, on or after 27 September 2003; or
  - .2     the delivery of which is on or after 27 September 2006.
- 2       “Existing ship” means a ship which is not a new ship.
- 3       “Sewage” means:
  - .1     drainage and other wastes from any form of toilets, urinals, and WC scuppers,
  - .2     drainage from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises,
  - .3     drainage from spaces containing living animals, or

- .4 other waste waters when mixed with the drainages defined above.
- 4 “Holding tank” means a tank used for the collection and storage of sewage.
- 5 “Nearest land”. The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of these regulations, "from the nearest land" off the north-eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in:
- latitude 11°00' S, longitude 142°08' E
- to a point in latitude 10°35' S, longitude 141°55' E,
- thence to a point latitude 10°00' S, longitude 142° 00' E,
- thence to a point latitude 09°10' S, longitude 143° 52' E,
- thence to a point latitude 09°00' S, longitude 144° 30' E,
- thence to a point latitude 10°41' S, longitude 145° 00' E,
- thence to a point latitude 13°00' S, longitude 145° 00' E,
- thence to a point latitude 15°00' S, longitude 146° 00' E,
- thence to a point latitude 17°30' S, longitude 147° 00' E,
- thence to a point latitude 21°00' S, longitude 152° 55' E,
- thence to a point latitude 24°30' S, longitude 154° 00' E,
- thence to a point on the coast of Australia in latitude 24°42' S, longitude 153°15' E.
- 6 “International voyage” means a voyage from a country to which the present Convention (MARPOL) applies to a port outside such country, or conversely.
- 7 “Person” means member of the crew and passengers.
- 8 “Anniversary date” means the day and the month of each year which will correspond to the date of expiry of the International Sewage Pollution Prevention Certificate.

## Regulation 2 Application

- 1 The provisions of this chapter shall apply to the following ships engaged in *domestic*<sup>1</sup> and international voyages:
- .1 new ships of 400 gross tonnage and above; and
- .2 new ships of less than 400 gross tonnage which are certified to carry more than 15 persons; and
- .2a *Existing ships engaged in service in the Baltic Sea area and Danish territorial waters with a gross tonnage of or above 400,*
- .2b *Existing ships engaged in service in the Baltic Sea area and Danish territorial waters with a gross tonnage below 400, approved for carrying more than 15 persons,*
- .3 existing ships of 400 gross tonnage and above, not later than on 27 September 2008; and

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<sup>1</sup> Shall, however, not apply to ships engaged in domestic voyages in Greenland.

- .4 existing ships of less than 400 gross tonnage which are certified to carry more than 15 persons, not later than on 27 September 2008.
- 2 The Administration shall ensure that existing ships, according to subparagraphs 1.3 and 1.4 of this regulation, the keels of which are laid or which are of a similar stage of construction before 2 October 1983 shall be equipped, as far as practicable, to discharge sewage in accordance with the requirements of regulation 11.

### **Regulation 3 Exceptions**

- 1 Regulation 11 shall not apply to:
  - .1 the discharge of sewage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or
  - .2 the discharge of sewage resulting from damage to a ship or its equipment if all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the discharge.

### **2 Surveys and certificates**

#### **Regulation 4 Surveys**

- 1 Every ship which, in accordance with regulation 2, is required to comply with the provisions of this chapter shall be subject to the surveys specified below:
  - .1 An initial survey before the ship is put in service or before the Certificate required under regulation 5 is issued for the first time, which shall include a complete survey of its structure, equipment, systems, fittings, arrangements and material in so far as the ship is covered by this chapter. This survey shall be such as to ensure that the structure, equipment, systems, fittings, arrangements and materials fully comply with the applicable requirements of this chapter.
  - .2 A renewal survey at intervals specified by the Administration, but not exceeding five years, except where regulation 8.2, 8.5, 8.6 or 8.7 is applicable. The renewal survey shall be such as to ensure that the structure, equipment, systems, fittings, arrangements and materials fully comply with applicable requirements of this chapter.
  - .3 An additional survey, either general or partial, according to the circumstances, shall be made after a repair resulting from investigations prescribed in paragraph 4 of this regulation, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory and that the ship complies in all respects with the requirements of this chapter.
- 2 The Administration shall establish appropriate measures for ships which are not subject to the provisions of paragraph 1 of

this regulation in order to ensure that the applicable provisions of this chapter are complied with.

3 Surveys of ships as regards the enforcement of the provisions of this chapter shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it.

4 An Administration nominating surveyors or recognizing organizations to conduct surveys as set forth in paragraph 3 of this regulation shall, as a minimum, empower any nominated surveyor or recognized organization to:

- .1 require repairs to a ship; and
- .2 carry out surveys if requested by the appropriate authorities of a Port State.

The Administration shall notify the Organization of the specific responsibilities and conditions of the authority delegated to the nominated surveyors or recognized organizations, for circulation to Parties to the Convention for the information of their officers.

5 When a nominated surveyor or recognized organization determines that the condition of the ship or its equipment does not correspond substantially with the particulars of the Certificate or is such that the ship is not fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment, such surveyor or organization shall immediately ensure that corrective action is taken and shall in due course notify the Administration. If such corrective action is not taken, the Certificate should be withdrawn and the Administration shall be notified immediately and if the ship is in a port of another Party, the appropriate authorities of the Port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or recognized organization has notified the appropriate authorities of the Port State, the Government of the Port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation. When applicable, the Government of the Port State concerned shall take such steps as will ensure that the ship shall not sail until it can proceed to sea or leave the port for the purpose of proceeding to the nearest appropriate repair yard available without presenting an unreasonable threat of harm to the marine environment.

6 In every case, the Administration concerned shall fully guarantee the completeness and efficiency of the survey and shall undertake to ensure the necessary arrangements to satisfy this obligation.

7 The condition of the ship and its equipment shall be maintained to conform with the provisions of this chapter to ensure that the ship in all respects will remain fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment.

8 After any survey of the ship under paragraph 1 of this regulation has been completed, no change shall be made in the structure, equipment, systems, fittings, arrangements or materials covered by the survey, without the sanction of the Administration, except the direct replacement of such equipment and fittings.

- 9 Whenever an accident occurs to a ship or a defect is discovered which substantially affects the integrity of the ship or the efficiency or completeness of its equipment covered by this chapter, the master or owner of the ship shall report at the earliest opportunity to the Administration, the recognized organization or the nominated surveyor responsible for issuing the relevant Certificate, who shall cause investigations to be initiated to determine whether a survey as required by paragraph 1 of this regulation is necessary. If the ship is in a port of another Party, the master or owner shall also report immediately to the appropriate authorities of the Port State and the nominated surveyor or recognized organization shall ascertain that such report has been made.

**Regulation 5 Issue or endorsement of Certificate**

- 1 An International Sewage Pollution Prevention Certificate shall be issued, after an initial or renewal survey in accordance with the provisions of regulation 4, to any ship which is engaged in *domestic voyages and in voyages to ports or offshore terminals* under the jurisdiction of other Parties to the Convention. In the case of existing ships this requirement shall apply as of 27 September 2008.
- 2 Such Certificate shall be issued or endorsed either by the Administration or by any persons or organization<sup>2)</sup> duly authorized by it. In every case, the Administration assumes full responsibility for the Certificate.

**Regulation 6 Issue or endorsement of a Certificate by another Government**

- 1 The Government of a Party to the Convention may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this chapter are complied with, shall issue or authorize the issue of an International Sewage Pollution Prevention Certificate to the ship, and where appropriate, endorse or authorize the endorsement of that Certificate on the ship in accordance with this chapter.
- 2 A copy of the Certificate and a copy of the survey report shall be transmitted as soon as possible to the Administration requesting the survey.
- 3 A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as the Certificate issued under regulation 5.
- 4 No International Sewage Pollution Prevention Certificate shall be issued to a ship which is entitled to fly the flag of a State which is not a Party.

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<sup>2)</sup> Refer to the Guidelines for the authorization of organizations acting on behalf of the Administration, adopted by the Organization by resolution A.739 (18), and the Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration, adopted by the Organization by resolution A.789(19).

**Regulation 7 Form of Certificate**

The International Sewage Pollution Prevention Certificate shall be drawn up in the form corresponding to the model given in appendix 1C to this technical regulation and shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.

**Regulation 8 Duration and validity of Certificate**

- 1 An International Sewage Pollution Prevention Certificate shall be issued for a period specified by the Administration which shall not exceed five years.
- 2.1 Notwithstanding the requirements of paragraph 1 of this regulation, when the renewal survey is completed within three months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing Certificate.
- 2.2 When the renewal survey is completed after the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing Certificate.
- 2.3 When the renewal survey is completed more than three months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.
- 3 If a Certificate is issued for a period of less than five years, the Administration may extend the validity of the Certificate beyond the expiry date to the maximum period specified in paragraph 1 of this regulation.
- 4 If a renewal survey has been completed and a new Certificate cannot be issued or placed on board the ship before the expiry date of the existing Certificate, the person or organization authorized by the Administration may endorse the existing Certificate and such a Certificate shall be accepted as valid for a further period which shall not exceed five months from the expiry date.
- 5 If a ship at the time when a Certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the Certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed and then only in cases where it appears proper and reasonable to do so. No Certificate shall be extended for a period longer than three months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new Certificate. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding five years from the date of expiry of the existing Certificate before the extension was granted.

- 6 A Certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding five years from the date of expiry of the existing Certificate before the extension was granted.
- 7 In special circumstances, as determined by the Administration, a new Certificate need not be dated from the date of expiry of the existing Certificate as required by paragraph 2.2, 5 or 6 of this regulation. In these special circumstances, the new Certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.
- 8 A Certificate issued under regulation 5 or 6 shall cease to be valid in any of the following cases:
  - .1 if the relevant surveys are not completed within the periods specified under regulation 4.1;
  - .2 upon transfer of the ship to the flag of another State. A new Certificate shall only be issued when the Government issuing the new Certificate is fully satisfied that the ship is in compliance with the requirements of regulations 4.7 and 4.8. In the case of a transfer between Parties, if requested within 3 months after the transfer has taken place, the Government of the Party whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the Certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

### **Part 3 Equipment and control of discharge**

#### **Regulation 9 Sewage systems**

- 1 Every ship which, in accordance with regulation 2 is required to comply with the provisions of this chapter shall be equipped with one of the following sewage systems:
  - .1 a sewage treatment plant which shall be of a type approved by the Administration, taking into account the standards and test methods developed by the Organization,<sup>3)</sup> or
  - .2 a sewage comminuting and disinfecting system approved by the Administration. Such system shall be fitted with facilities to the satisfaction of the Administration, for the temporary storage of sewage when the ship is less than 3 nautical miles from the nearest land, or
  - .3 a holding tank of the capacity to the satisfaction of the Administration for the retention of all sewage, having regard to the operation of the ship, the number of persons

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<sup>3)</sup> Refer to “the International Specifications for Effluent Standards, Construction and Testing of Sewage Treatment Systems”, as adopted by the Organization by resolution MEPC.2(VI) on 3 December 1976. For existing ships, national specifications are acceptable. *Guidelines on the type-testing and approval of systems for treating and storing sewage are stipulated as Appendix A1.*

on board and other relevant factors.<sup>2</sup> The holding tank shall be constructed to the satisfaction of the Administration and shall have a means to indicate visually the amount of its contents.

**Regulation 10 Standard discharge connections**

- 1 To enable pipes of reception facilities to be connected with the ship's discharge pipeline, both lines shall be fitted with a standard discharge connection in accordance with the following table:

**Standard dimensions of flanges for discharge connections**

<b>Description</b>	<b>Dimension</b>
Outside diameter	210 mm
Inner diameter	According to pipe outside diameter
Bolt circle diameter	170 mm
Slots in flange	4 holes, 18 mm in diameter, equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 18 mm
Flange thickness	16 mm
Bolts and nuts: quantity and diameter	4, each of 16 mm in diameter and of suitable length
The flange is designed to accept pipes up to a maximum internal diameter of 100 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a suitable gasket, shall be suitable for a service pressure of 6 kg/cm <sup>2</sup> .	

For ships having a moulded depth of 5 m and less, the inner diameter of the discharge connection may be 38 mm.

- 2 For ships in dedicated trades, i.e. passenger ferries, alternatively the ship's discharge pipeline may be fitted with a discharge connection which can be accepted by the Administration, such as quick-connection couplings.

**Regulation 11 Discharge of sewage**

- 1 Subject to the provisions of regulation 3, the discharge of sewage into the sea is prohibited, except when:
  - .1 the ship is discharging comminuted and disinfected sewage using a system approved by the Administration in accordance with regulation 9.1.2 at a distance of more than 3 nautical miles from the nearest land, or sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land, provided that, in any case, the sewage that has been stored in holding tanks shall not be discharged instantaneously but at a moderate rate when the ship is en route and proceeding at not less than 4 knots; the rate of

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<sup>2</sup> Guidelines on capacity-calculations of sewage systems are given in appendix B.

discharge shall be approved by the Administration based upon standards developed by the Organization; or

- .2 the ship has in operation an approved sewage treatment plant which has been certified by the Administration to meet the operational requirements referred to in regulation 9.1.1, and
  - .1 the test results of the plant are laid down in the ship's International Sewage Pollution Prevention Certificate; and
  - .2 additionally, the effluent shall not produce visible floating solids nor cause discoloration of the surrounding water.
- 2 The provisions of paragraph 1 shall not apply to ships operating in the waters under the jurisdiction of a State and visiting ships from other States while they are in these waters and are discharging sewage in accordance with such less stringent requirements as may be imposed by such State.
- 3 When the sewage is mixed with wastes or waste water covered by other chapters of this technical regulation, the requirements of those chapters shall be complied with in addition to the requirements of this chapter.

**4 Reception facilities**

**Regulation 12 Reception facilities**

- 1 The Government of each Party to the Convention, which requires ships operating in waters under its jurisdiction and visiting ships while in its waters to comply with the requirements of regulation 11.1, undertakes to ensure the provision of facilities at ports and terminals for the reception of sewage, without causing delay to ships, adequate to meet the needs of the ships using them.
- 2 The Government of each Party shall notify the Organization, for transmission to the Contracting Governments concerned, of all cases where the facilities provided under this regulation are alleged to be inadequate.

**Annex A Guidelines for type-testing and approval of sewage treatment systems**

*These guidelines have been drafted on the basis of the International Convention for the Prevention of Pollution from Ships, 1973, Annex IV (MARPOL 73/78, Annex IV) and the “Recommendation on International Effluent Standards and Guidelines for Performance Tests for Sewage Treatment Plants” (IMO resolution MEPC.2(VI)) and “Recommendation concerning the Application by the Baltic Sea States of Guidelines for Type Testing and Approval of Sewage Treatment Systems” (Helcom recommendation no. 1/5 adopted on 5 may 1980).*

**1 Application**

*The application of these guidelines to three different types of plants appears from the following table, where “yes” means that the system in question applies, and “no” means that the system in question does not apply.*

Paragraph	Sewage treatment plants	System for comminution and disinfection	Holding tanks
2	Yes	Yes, except 2.2.10	No
3	Yes, except 3.7 and 3.8	Yes, except 3.1	No
4	Yes	Yes	Yes
5	Yes, except 5.7	Yes	Yes, except 5.6
6	Yes, except 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10 and 6.11	Yes, except 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10 and 6.11	Yes
7	Yes	Yes, except 7.3.6	Yes, except 7.3.4, 7.3.5 and 7.3.6

**2 Application for type approval**

*The application and enclosures shall be sent to the Danish Maritime Authority in duplicate.*

**2.1** *The application shall comprise:*

- .1 Description of the plant’s process and function, including schematic drawings.*
- .2 Description of the materials, including those in contact with the waste water and any chemicals.*
- .3 Installation instructions.*
- .4 Operating instructions.*
- .5 Maintenance instructions.*
- .6 List of the most important components for the treatment.*
- .7 Possible documented operation experience from use of the plant in ships.*
- .8 Proposal for a test programme in accordance with the present guidelines.*
- .9 Name of the institution which is proposed for carrying out the test.*
- .10 Name of the laboratory which is proposed for carrying out the water analyses.*

- 2.2 *The instructions required in 2.1.3, 2.1.4 and 2.1.5 shall be the normal instructions delivered together with each plant and shall, among others, contain information of:*
- .1 Type of waste water (black, grey or recirculation/water saving system).*
  - .2 Type of flushing water (fresh or salt).*
  - .3 Capacity of the plant: normal, maximum and minimum (number of persons, flow volume/plant/hour).*
  - .4 Maximum duration for maximum capacity.*
  - .5 Designed organic loading.*
  - .6 Which chemicals and which concentrations are used.*
  - .7 Instructions and warnings in connection with the use of the chemicals.*
  - .8 Flow and electric diagrams.*
  - .9 Simple arrangement for inboard effluent control.*
  - .10 Instruction on the storage or treatment of excess sludge.*

**3 Test for type approval**

- 1 The test shall be carried out in accordance with the rules of IMO resolution MEPC.2(VI).*
- 2 The test programme shall be approved by the Danish Maritime Authority.*
- 3 The installation of the plant shall be carried out in accordance with the manufacturer's instructions (2.1.3, 2.1.4 and 2.1.5) and to the satisfaction of the Danish Maritime Authority.*
- 4 The testing and the analysis shall be carried out by an institute and a laboratory approved by the Danish Maritime Authority.*
- 5 All parts of the plant which will contain or in which there will be a flow-through of waste water shall be pressure-tested in accordance with the provisions of the Danish Maritime Authority.*
- 6 When there are good reasons to question the suitability of a plant on board a ship despite the fact that the plant has been successfully type-tested in accordance with 3.1, the Danish Maritime Authority shall ascertain the proper functioning by a supplementary survey after a sufficient period of time in service before final type approval is given.*
- 7 Systems to comminute and disinfect sewage or equivalent systems shall fulfil the following standards:*
  - .1 Faecal coliform bacteria in the effluent may not exceed 1000/100 cm<sup>3</sup> M.P.N.*
  - .2 When a sample of 1 litre has passed through a US Sieve No. 12 (with openings of 1.68 mm) the material retained on the screen shall be dried at 103°C in an oven until the weight is constant. Subsequently, the material retained may not exceed 10% of the total suspended solids, however not more than 50 mg.*
- 8 Systems to comminute and disinfect sewage shall be tested in accordance with the rules of IMO resolution MEPC.2(VI), annex B, however with the following modifications:*

- .1 The test shall, insofar as possible, be carried out with the system installed on board a ship.*
- .2 The duration of the test shall be at least two days.*
- .3 Ten effluent samples shall be taken.*
- .4 2.5 and 2.8 of the resolution shall not apply.*

**4 Construction requirements**

- 4.1 The plant shall be constructed to resist the mechanical and environmental influences to which it will be exposed during the operation on board the ship.*
- 4.2 The plant shall operate effectively at an angle of 15° in relation to any plane.*
- 4.3 The plant shall be equipped for automatic operation and alarm for erroneous operation.*
- 4.4 The plant shall be equipped with openings of suitable size for emptying, cleaning, inspection and maintenance.*
- 4.5 The plant shall be equipped with air pipes to the open air from all parts where malodorous or explosive gases may be released.*
- 4.6 It shall be easy to take samples for analyses.*
- 4.7 The electrical equipment shall be in accordance with the requirements of the Danish Maritime Authority.*
- 4.8 The plant shall be provided with a durable plate giving information about the manufacturer's name, model of the plant, serial number of the plant, capacity, date of manufacture and the name of the approving administration.*

**5 Installation description**

- 5.1 An installation plan for every installation shall be forwarded to the Danish Maritime Authority for their information and shall comprise the following:*
  - .1 Kind of waste water system.*
  - .2 Kind of flushing water (fresh or salt).*
  - .3 Capacity (normal, maximum, minimum and maximum duration for maximum loading).*
  - .4 Number of persons to be served by the installation.*
  - .5 Drawings of the installation, including schematic drawings of the piping system with all details necessary for checking the plant.*
  - .6 Manufacture and type of plant.*
  - .7 Volume of holding tank.*

**6 Installation requirements**

- 6.1 *The installation shall be carried out in such a way that it is suitable for its purpose and resistant to the influences to which it will be exposed during the operation on board the ship. (To be carried out in accordance with national standards).*
- 6.2 *Vent pipes shall be provided with flame arresting netting to prevent any ignition of flammable gases spreading to the plant.*
- 6.3 *There shall be suitable space at the components on the plant that require service.*
- 6.4 *The holding tank shall be able to resist the influences to which it will be exposed.*
- 6.5 *The holding tank and the connected components shall be able to operate correctly at a list of 15° and a trim of 7°.*
- 6.6 *The holding tank shall be equipped with alarm devices giving alarm in case of 3-4 full tank.*
- 6.7 *The holding tank shall be manufactured such that it is corrosion-resistant to the waste water.*
- 6.8 *The holding tank shall be provided with openings for emptying, cleaning, inspection and maintenance.*
- 6.9 *The holding tank shall be equipped with remedies for flushing and emptying.*
- 6.10 *The holding tank shall be equipped with a vent pipe to the open air.*
- 6.11 *The holding tank shall be constructed for the maximum occurring pressure.*
- 6.12 *A pipeline and a pump for discharge of sewage to a reception facility ashore shall be provided. The pipeline shall be fitted with a connection flange with dimensions as stipulated in the technical regulation on the treatment and storage of sewage. Another connection device may be used in ships engaged on regular voyages and on domestic voyages.*

**7 Survey**

- 7.1 *Every plant shall be pressure-tested before it is put into operation, which pressure test shall be carried out in the presence of a representative from the Danish Maritime Authority or a person authorized by the same. All parts of the plant in which there will be a flow-through of waste water shall be pressure-tested.*
- 7.2 *The plant shall be surveyed before being put into operation and thereafter every five years by a representative from the Danish Maritime Authority or a person authorized by the same.*
- 7.3 *The survey shall comprise the following:*
  - .1 *Ascertainment of the installation being in accordance with the installation plan and the manufacturer's instructions.*
  - .2 *Control of any cathode protection.*
  - .3 *Control of the alarms.*

- .4 Ascertainment of the correct function of the most important components of the plant according to the manufacturer's instruction (2.1.6).*
- .5 Ascertainment of the correct concentration of the disinfectant in the effluent.*
- .6 Ascertainment of possible concentration of any other chemicals in the effluent.*

**8 Explanatory notes**

- 8.1 The expression "survey" appearing in 3.6 does not in general include sampling for analyses.*
- 8.2 When chlorine is used as a disinfectant, the residual in the effluent treated shall be as low as possible and may under no circumstances exceed 0.5 mg/litre.*
- 8.3 The angle of 15° specified for certain tests in 4.2 and 6.5 is in accordance with the IMO rules on sewage, but it deserves, however, to be mentioned that the IMO rules on oil-water separating equipment is 22.5°.*
- 8.4 Permanent ventilation of holding tanks should be considered in connection with future amendments of the rules, but it should, however, be stressed that holding tanks with associated pipelines shall be thoroughly ventilated and the atmosphere shall be checked before persons enter the tank.*

**Annex B Guidelines for capacity calculation of sewage systems**

*These guidelines shall be used for calculating the size of systems for the treatment and storage of sewage so that they comply with the provisions of the Danish Maritime Authority's technical regulation no. 1 of 15 February 1990. They are based upon "Guidelines for Capacity Calculation of Sewage Systems on Board Passenger Ships" (Helcom recommendation no. 11/10 as adopted on 14 February 1999).*

*The guidelines contain rules on both black and grey sewage. Black sewage has been defined in part 1 of the above-mentioned technical regulation. Grey sewage is the term for effluents from galleys, laundries, bathrooms, etc. Only black sewage is required to be treated in accordance with the regulations, but since the sanitary systems on board many ships have been designed so that the black and the grey sewage is led to the same system or tank, the table below also gives calculation values for such systems.*

*The most common systems used on board ships are the conventional system and the vacuum system, but on board a few ships recirculation systems/water saving systems are, however, used.*

*The figures in the table below give the litre per person per day for the three systems.*

<i>Systems</i>	<i>Black water</i>	<i>Black/grey water</i>
<i>Conventional system</i>	<i>70</i>	<i>230</i>
<i>Vacuum system</i>	<i>25</i>	<i>185</i>
<i>Recirculation/water saving system</i>	<i>2</i>	<i>-</i>

*The figures mentioned above may be deviated in connection with any other toilet systems.*

*Ships provided with systems for comminution and disinfection of sewage shall also be equipped with a suitable holding tank.*

*Holding tanks shall in general be sufficiently large to contain sewage for one day's operation.*

*Vessels engaged on voyages only during the day, such as sport fishing vessels, may be equipped with a tank capacity for 12 hours considering the circumstances.*

*Passenger ships engaged on regular voyages between two ports shall at least have a holding tank capacity sufficient for a return voyage.*

**Part 2 – Storage of sewage on small vessels**

**Regulation 1 Application**

*These provisions shall apply to all kinds of vessels of less than 400 tons gross tonnage, or certified to carry fewer than 15 persons and equipped with a toilet and navigating the Baltic and the Danish sea territory.*

**Regulation 2 Definitions**

- 1 "New vessel" means a vessel the keel of which is laid or which is produced on or after 1 January 2000.*
- 2 "Existing vessel" means a vessel that is not a new vessel.*

- 3 *"Sewage" means drainage and other wastes from toilets and urinals.*
- 4 *"Fixed toilet system" means a toilet system consisting of a lavatory bowl, holding tank with associated valves and pipes and/or hose connections as well as a shore connection.*
- 5 *"Portable toilet" means a toilet system consisting of a lavatory bowl with associated portable holding tank without any sea connection, where it is possible to empty the tank manually by tipping it.*
- 6 *"Shore connection" means a standard coupling through which it is possible to empty the holding tank via an external pump arrangement.*
- 7 *"Sea toilet" means a toilet system not fitted with a holding tank and with direct connection to the sea.*

**Regulation 3 Requirements for new vessels**

*Fixed and portable toilet systems shall comply with the technical requirements contained in the most recent version of the standard ISO 8099 at the time of construction.*

**Regulation 4 Requirements for existing vessels**

- 1 *Existing vessels shall comply with the provisions of regulation 3 from 1 January 2005, however*
  - .1 *existing portable toilet systems may be retained,*
  - .2 *existing, fixed toilet systems shall be retained if the system is fitted with a shore connection in accordance with the standard ISO 8099.*
  - .3 *existing sea toilets shall be retained if the toilet is fitted with a holding tank as well as a shore connection in accordance with the standard ISO 8099.*

**Regulation 5 Use of products for disinfection and other purposes**

*In all toilet systems, only products that are not harmful to the marine environment may be used for disinfection and other purposes.*