Ship Sanitation Inspection and Issuance of Ship Sanitation Certificate

Sewage

Learning Objectives

After completing this topic you will be better able to:

- Demonstrate knowledge of ship sanitation standards for sewage management on ships.
- Understand the rationale behind ship sanitation inspection standards and control measures for sewage.
- Be aware of what sewage management documentation should be available on board.

Definition

- **Sewage** (black water) is the drainage from:
  - Toilets, urinals and WC flushing system
  - Medical premises
  - Spaces containing living animals
  - Other wastewaters mixed with the above
- **Grey water** is used water including drainage from:
  - Galleys
  - Dishwashers
  - Showers
  - Laundries
  - Bath and washbasin drains

Sewage handling and treatment

Ships >400 tons gross tonnage
or
≥15 persons on board

Need to be equipped with at least one of the following sewage systems:

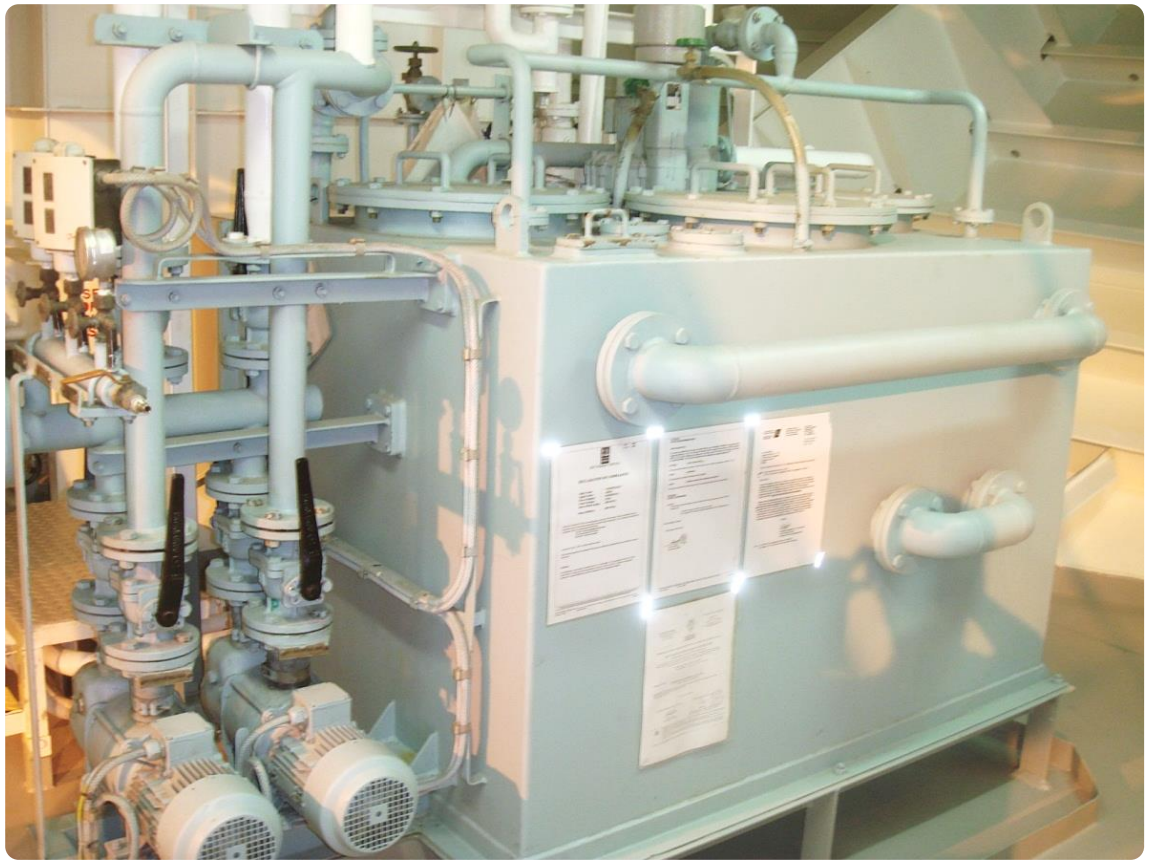
- Sewage **holding tank** with sufficient capacity and visual level indicator
- Sewage **comminuting and disinfecting system**, including storage tank
- An approved sewage **treatment plant**

Sewage tank

- **Storage tanks should be equipped with:**
  - Level indicator
  - High level alarm
  - Cleaning access
  - Overflow system
  - A vent
- **Tank should be in an isolated position:**
  - No common wall with potable water tank
  - Cofferdam and coaming to protect from leakage and spillage

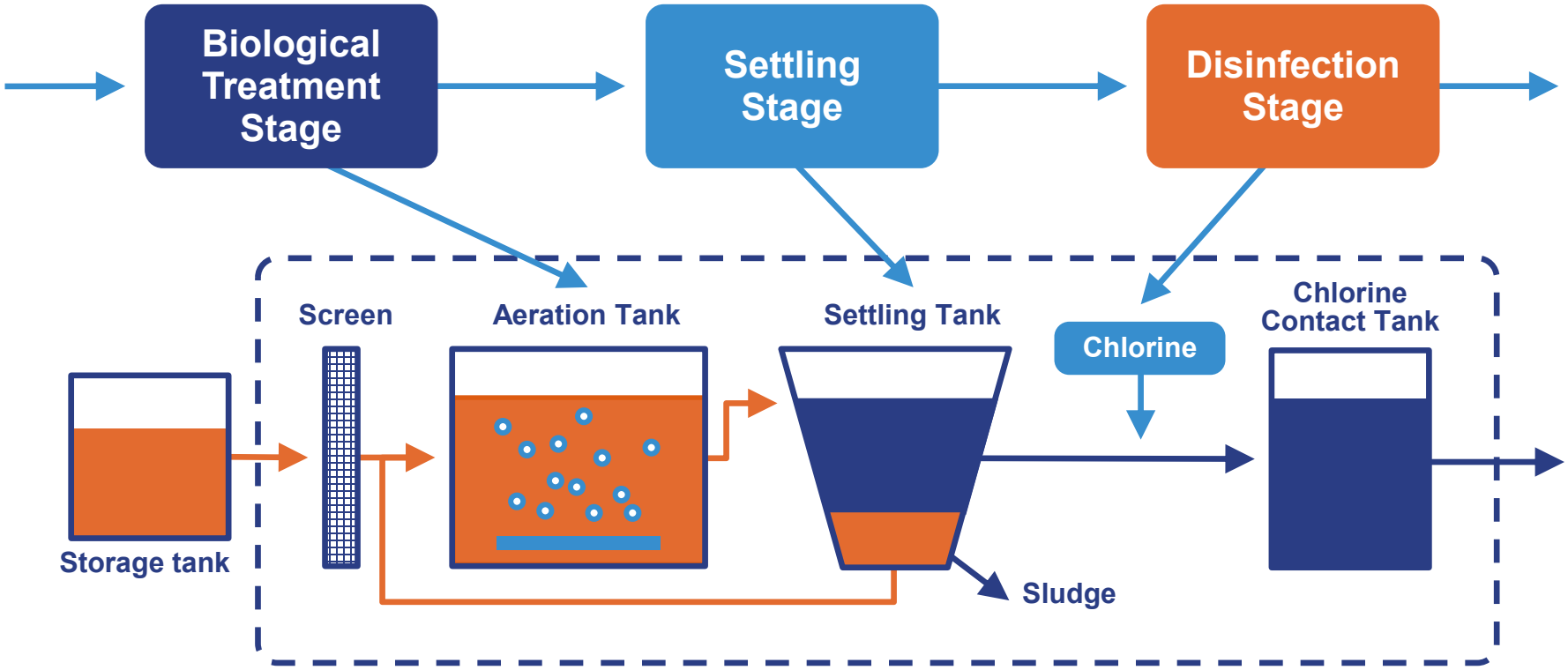
Sewage treatment plant

- **Diversity of treatment plants and treatment processes**
- **Biological treatment of sewage**
  - Aeration tanks
  - Biofilters
  - Membrane bioreactors (MBRs)
  - etc.



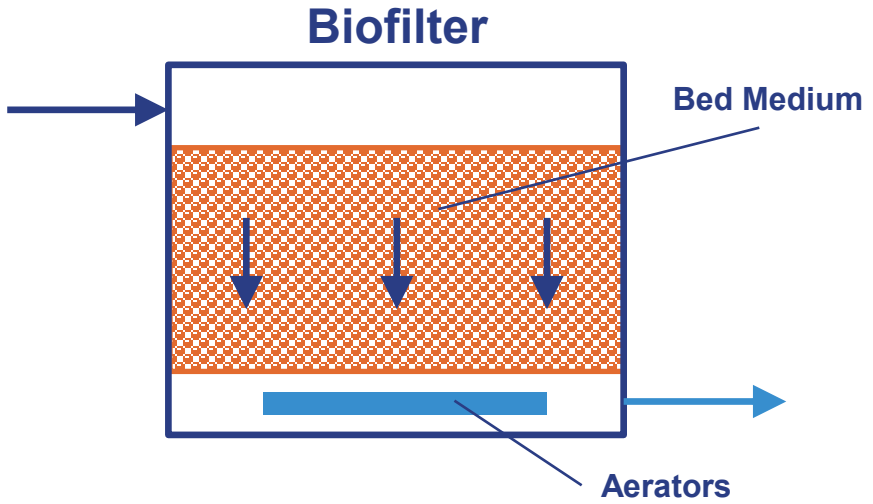
Sewage Treatment

Typical treatment stages



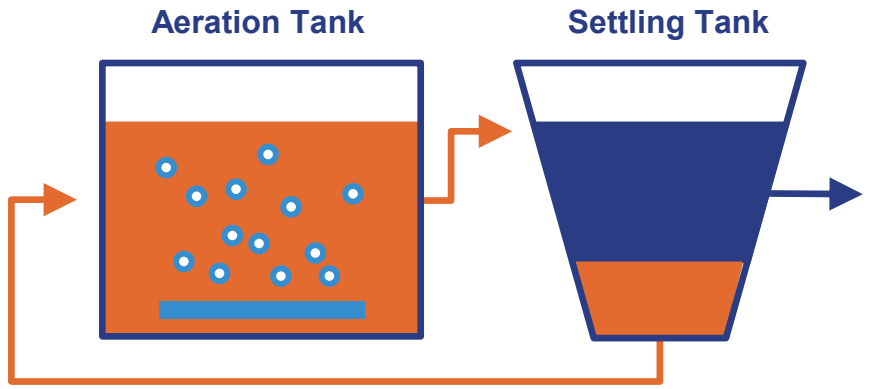
Biological compartment

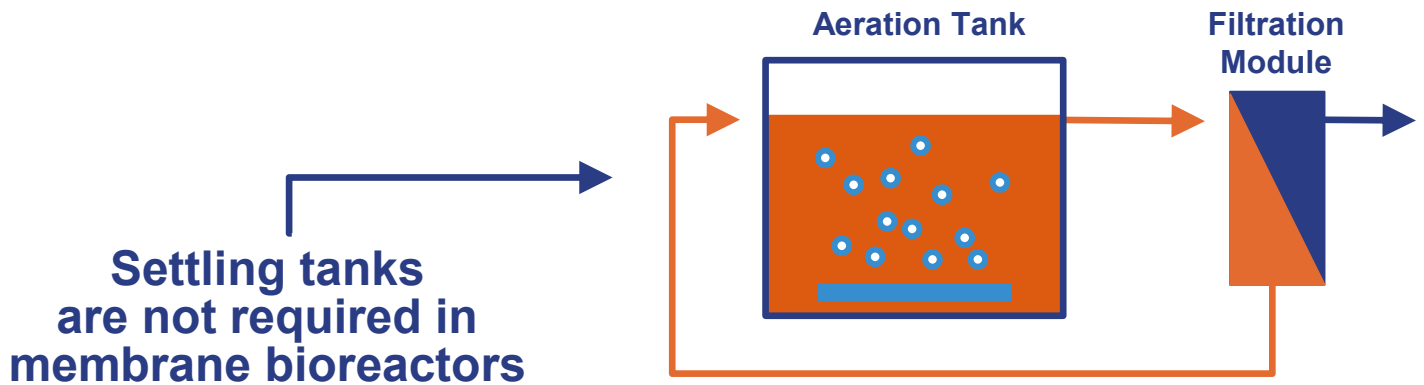
- **Sewage is biologically treated under aerobic conditions**
- **Aeration tank**
  - Air blowers force air through aerators
  - Air is diffused in the aeration tank
  - Aerobic conditions are maintained
- **Membrane bioreactor**
  - Same as aeration tank **but**
  - Separation of water from solids is achieved though membrane filters
- **Biofilter**
  - Sewage percolates through a fixed media bed
  - Biological process takes place on a thin layer around the grains of the medium



Settling tank

- Water is separated from solid matter in the settling tank
- The sludge is accumulated at the bottom of the settling tank
- Part of the sludge is directed back to the biological compartment to increase the biological content





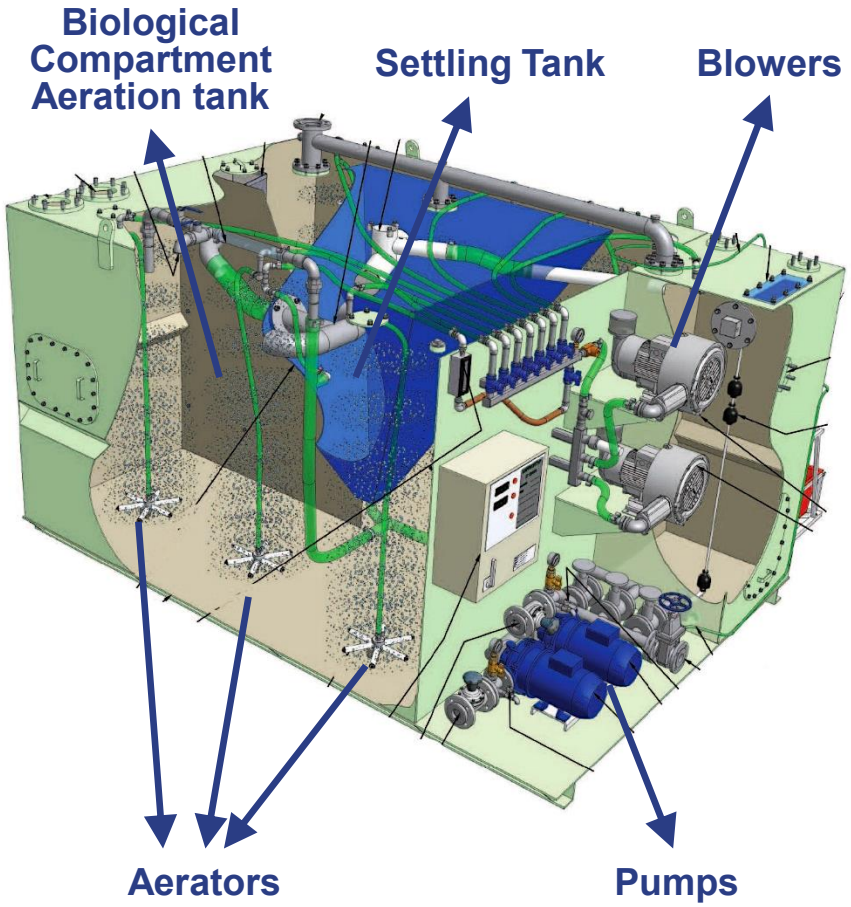
Disinfection

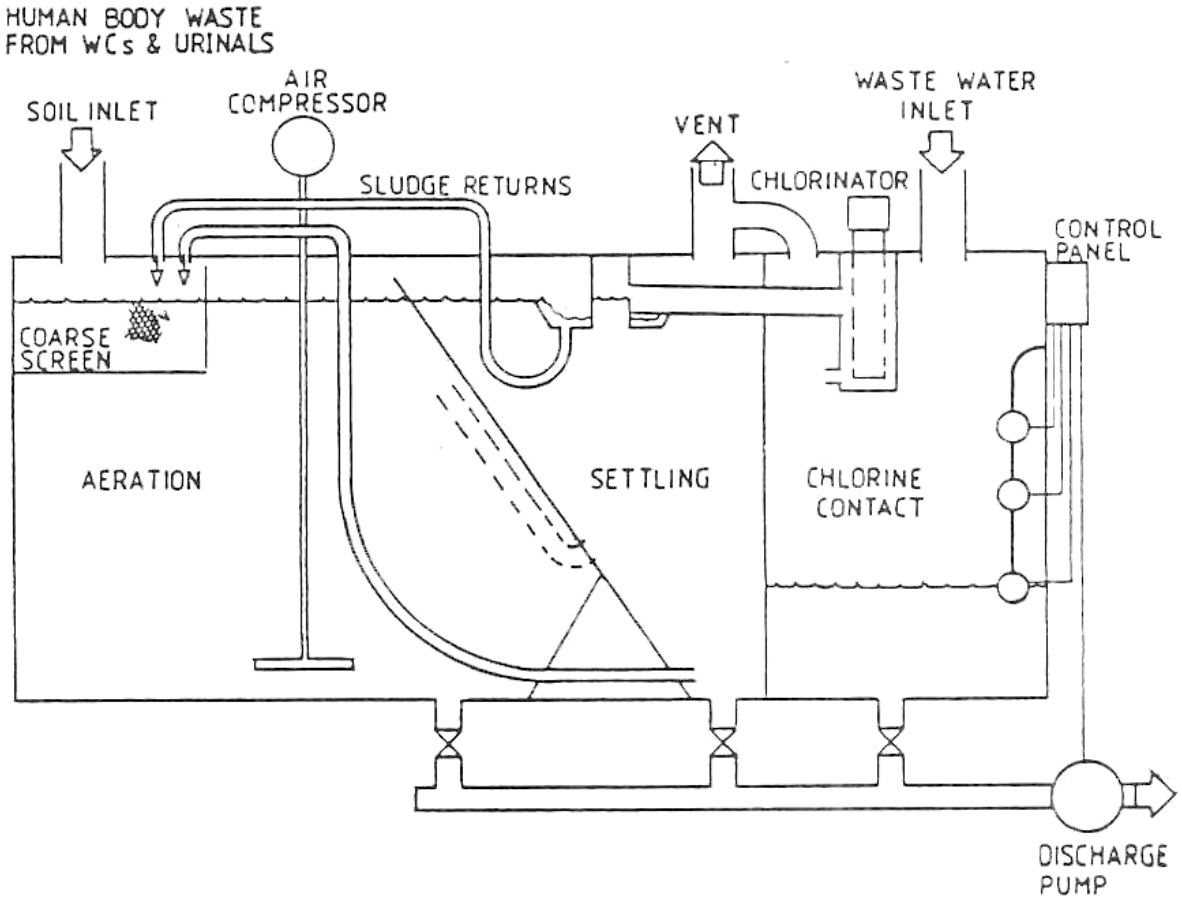
- **Chemical disinfection**
  - Chemicals are dosed to the treated sewage
  - Dosing pump
  - Contact tank
  - Typical disinfectant: Chlorine
- **UV radiation**
- **Membrane filtration (MBR)**

Pumps and blowers

- **Discharge pump**
- **Air blower**

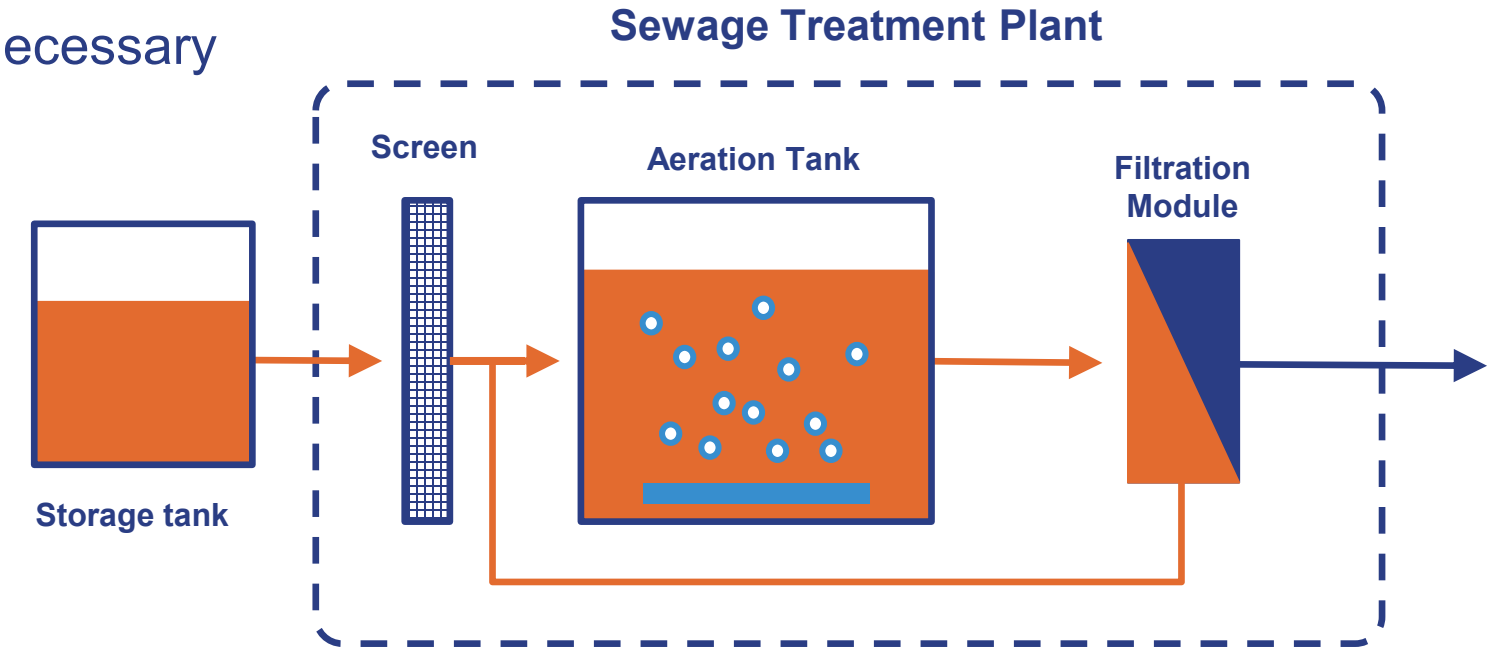
Example of treatment plant 1





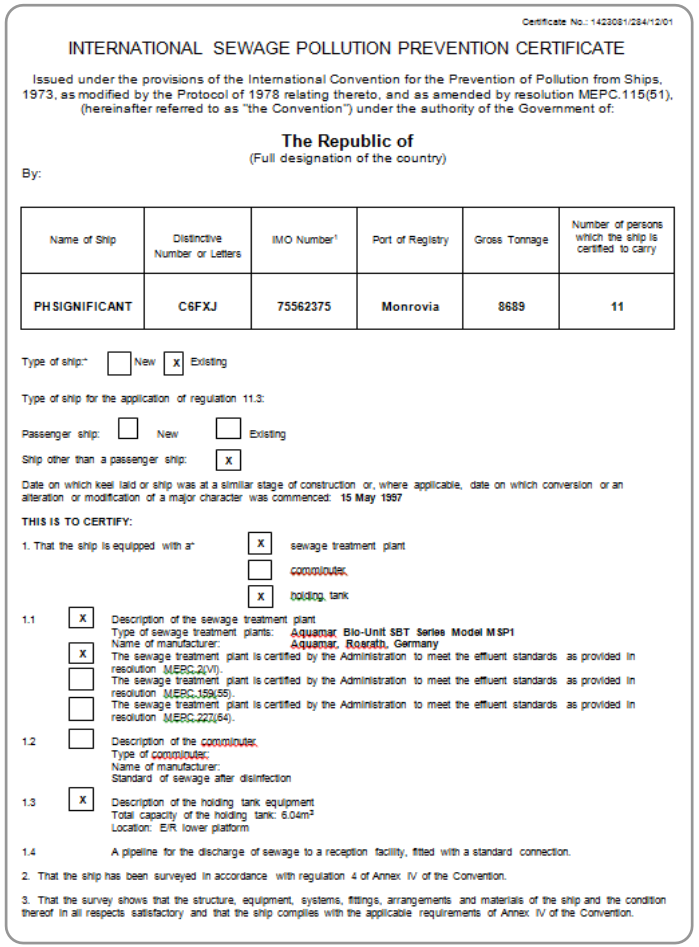
Example of treatment plant 2

- **Membrane bioreactor (MBR)**
  - Separation of water from solids is achieved by filtration
  - No settling tank required
  - Disinfection may not be not necessary



Sewage system certificate

- **IMO International Sewage Pollution Prevention (ISPP) certificate**
  - **Certifies the sewage systems on board according to MARPOL**
  - Valid for 5 years



Certificate No.: 1423081/284/12/01

INTERNATIONAL SEWAGE POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, and as amended by resolution MEPC.115(51), (hereinafter referred to as "the Convention") under the authority of the Government of:

The Republic of
(Full designation of the country)

By:

Name of Ship	Distinctive Number or Letters	IMO Number[1]	Port of Registry	Gross Tonnage	Number of persons which the ship is certified to carry
PHSIGNIFICANT	C6FXJ	75562375	Monrovia	8689	11

Type of ship:* [ ] New [X] Existing

Type of ship for the application of regulation 11.3:

Passenger ship: [ ] New [ ] Existing

Ship other than a passenger ship: [X]

Date on which keel laid or ship was at a similar stage of construction or, where applicable, date on which conversion or an alteration or modification of a major character was commenced: **15 May 1957**

THIS IS TO CERTIFY:

1. That the ship is equipped with a* [X] sewage treatment plant [ ] comminuter [X] holding tank

1.1 [X] Description of the sewage treatment plant
Type of sewage treatment plants: **Aquamar Bio-Unit SBT Series Model MSP1**
Name of manufacturer: **Aquamar, Roerath, Germany**
[X] The sewage treatment plant is certified by the Administration to meet the effluent standards as provided in resolution MEPC.2(VI).
[ ] The sewage treatment plant is certified by the Administration to meet the effluent standards as provided in resolution MEPC.159(55).
[ ] The sewage treatment plant is certified by the Administration to meet the effluent standards as provided in resolution MEPC.227(64).

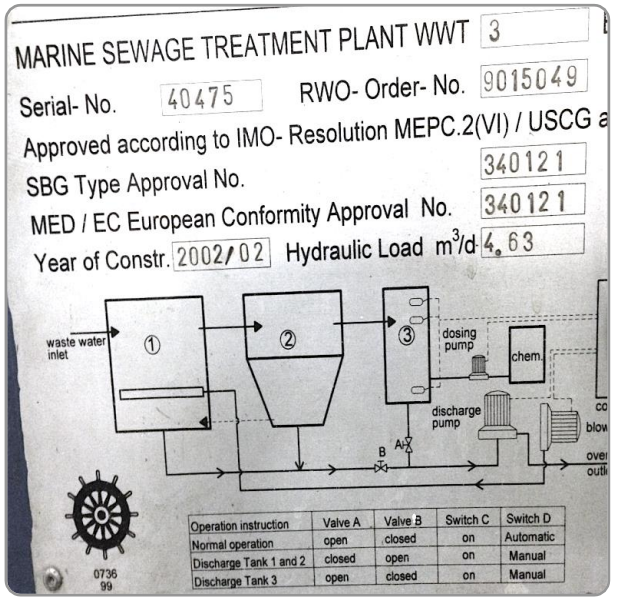
1.2 [ ] Description of the comminuter
Type of comminuter:
Name of manufacturer:
Standard of sewage after disinfection

1.3 [X] Description of the holding tank equipment
Total capacity of the holding tank: 6.04m³
Location: E/R lower platform

1.4 A pipeline for the discharge of sewage to a reception facility, fitted with a standard connection.

2. That the ship has been surveyed in accordance with regulation 4 of Annex IV of the Convention.

3. That the survey shows that the structure, equipment, systems, fittings, arrangements and materials of the ship and the condition thereof in all respects satisfactory and that the ship complies with the applicable requirements of Annex IV of the Convention.



Sewage discharge

- **Discharge to sea**
  - **No treatment:** >12 nautical miles from nearest land
  - **Comminuting and disinfection plant:** >3 nautical miles from nearest land
  - **Approved sewage treatment plant:** everywhere
- **Discharge to port facilities**
- **Excess sludge**
  - Stored in appropriate tanks
  - Discharged to port-reception facilities
  - Discharged to open sea

Inspection tips

- **ISPP Certificate:**
  - Not more than 5 years old
  - Type of system on the vessel
  - Capacity of holding tank
  - No of crew ship is certified to carry
- **Piping:**
  - Colour coding of piping (black-blue-black) every 5M
  - Potential cross connections on the lines

Inspection tips cont…

- **Sewage Holding Tank**
  - Tank identification and capacity clearly labelled
  - High level alert indicator
- **Treatment Plant**
  - If comminuting tank, disinfectant needs to be located
  - Located Sampling points
  - Determine how the clean and disinfect the treatment plant (potential cross connections)
  - Identify valves to isolate tank, treatment plant and discharge to sea

THANK YOU

World Health Organization