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PROMOTION OF IMPLEMENTATION AND ENFORCEMENT OF MARPOL AND RELATED INSTRUMENTS

Proposal to encourage voluntary actions to decrease nutrient emissions by passenger ships

Submitted by the World Wide Fund For Nature (WWF)

SUMMARY

Executive summary:	This document contains information on the eutrophication process of semi-closed and closed sea areas of the world. It also demonstrates that present IMO regulations do not protect the sensitivity of these areas against nutrient emissions from international shipping. It is proposed that, as a first step, voluntary actions should be taken by passenger ships and more stringent discharge regulations be developed for passenger ships sailing in eutrophicated semi-closed and closed sea areas, such as the Baltic Sea, in order to stop the discharge of sewage into the sea
Strategic direction:	7.1
High-level action:	7.1.2
Planned output:	7.1.2.1
Action to be taken:	Paragraph 15
Related documents:	None

Introduction

1 The present IMO regulations (MARPOL Annex IV) lack sufficient protection for semi-closed and closed sea and coastal areas against the threat of eutrophication as it allows the discharge of untreated sewage into the sea with certain conditions at the distance of more than 12 nautical miles from the shore. Even the discharge of treated sewage contributes to eutrophication since it is often rich in nutrients, as there are no requirements to remove nutrients, phosphorus and nitrogen, from the sewage prior to discharge into the sea. And treated sewage may be discharged anywhere. The aim of this document is to highlight the severe threat eutrophication poses to semi-closed and closed sea areas globally with the specific focus on the unique challenges of the Baltic Sea where eutrophication is the major environmental threat.

There is therefore an urgent need to develop and promote voluntary actions, and more stringent discharge regulations for passenger ships sailing in eutrophicated semi-closed and closed sea areas, in order to stop the discharge of sewage into the sea.

Background

2 Eutrophication is recognized as one of the major threats to coastal ecosystems, not only in the brackish ecosystems such as the Baltic and Black Seas, but also on a global scale (Nixon 1990, Smith *et al.* 1999, 2006, Cloern 2001, Worm *et al.* 2002, Valiela 2006).* Full list of references shown in annex 1 (Chesapeake Bay, Long Island Sound, the Atlantic coast of Denmark, many Japanese coastal areas (such as Mikawa Bay), the Chinese Yellow Sea, the Northern Gulf of Mexico and to some extent also the Great Barrier Reef in Australia are all examples of areas where eutrophication is causing severe problems to the marine environment and local economies. Eutrophication is characterized by an increase in supply or production of organic matter in the environment (Dixon 1995) which forces a large array of ecological and biogeochemical consequences (Cloern 2001). Eutrophication is caused by an overload of nutrients, e.g., phosphorus and nitrogen, into an ecosystem and it appears, as an example, as unusually strong and frequent blooms of algae. According to the species causing the problem, major occurrences are called red, green and brown tides, and, on aggregate, they are called harmful algal blooms. Sometimes they can even be toxic such as the poisonous blue-green algal or dinoflagellate blooms, which pose serious problems for fisheries and mariculture (Shumway 1992; Bricelj *et al*. 2001). Of the coastal industries, fishing has the least effect on eutrophication, yet it suffers from it probably the most.

3 In some areas eutrophication is also characterized by a rapid increase of macroscopic, filamentous algae that diminishes marine biodiversity by replacing other more sensitive species. Eutrophication also causes an increase in many microscopic algae that lower the transparency of the water and cause, for instance, fishing nets to be covered in slime (periphyton). In order to fight eutrophication, the input of nutrients into sea areas from many institutional and economic sectors, including international shipping, must be reduced. Currently, the discharge of untreated waste water from large passenger ships and cruise vessels is still legal in international waters. Additionally, as previously mentioned, the release of treated sewage with high nutrient content is also a problem which contributes to eutrophication as there are no requirements to remove nutrients, most importantly phosphorus and nitrogen, from the sewage prior to its discharge into the sea. This again poses a serious threat to marine ecosystems as treated sewage may be discharged anywhere.

The Baltic Sea

4 Eutrophication is the greatest threat to the Baltic Sea causing severe negative biological and economic consequences for the marine environment and coastal areas. The exceptional physical and chemical features of the Baltic Sea, together with the expanding human population (c.85 million) around the Baltic Sea, has led to coastal eutrophication which is associated with the increase of nutrient concentrations in the water-column. This, in turn, has lead to increased productivity and phytoplankton blooms and biomass of macroalgae (Lapointe 1997). Enhanced nutrient content and decreased water transparency especially favour extensive growth of the ephemeral filamentous and foliose green algal species, e.g., *Cladophora glomerata*, *Enteromorpha* sp. and *Ulva* sp. (Sfriso *et al.* 1992, Bäck *et al.* 1994, Kolbe *et al.* 1995, Schories 1995) as well as filamentous brown algae *Pilayella littoralis* (Vogt & Schramm 1991, Kiirikki & Lehvo 1997). These species are often called nuisance seaweeds (Valiela *et al.* 1997). Once phytoplankton blooms and macroalgae sink to the bottom of the sea, their breakdown causes the depletion of oxygen in the water closest to the sea floor. This leads to the further formation of "dead bottoms" in the Baltic Sea.

* A list of references is given in annex 1.

5 The habitat changes and negative impacts on biodiversity caused by eutrophication are the most severe in the shallow coastal areas of the Baltic Sea. The alteration of the sea bottom quality primarily affects vegetation, which in turn affects, e.g., fish through the quality of spawning areas and/or feeding grounds (Aneer 1987, Rajasilta *et al.* 1989, Pihl & Wennhage 2002, Wennhage & Pihl 2002).

6 The Baltic Sea is one of the busiest maritime traffic areas in the world. Cruise and ferry boats operating in the Baltic Sea carry annually ca. 40 million passenger trips. The waste water borne in all of the vessels currently trafficking the Baltic Sea is currently estimated to include 460 tons of nitrogen and 150 tons of phosphorus. Waste water from international cruise ships visiting the Baltic Sea accounts for 25% of all shipborne waste water in the Baltic Sea. A considerable amount of this waste water is still discharged directly into the Baltic Sea, primarily in international waters. In addition to excess nutrients, shipborne waste water also carries bacteria, viruses and other pathogens, leftover food, detergents, as well as heavy metals. The total amount of nutrient load from shipping is not as significant as the problem of nutrient loading from agriculture but is nonetheless still relevant since, during the summer season, nutrients from the discharges are readily available to feed the algae blooms.

7 The negative effects caused by the discharge of shipborne waste water into the Baltic Sea will increase in the future, as the total shipping activity in the Baltic Sea is estimated to increase.

8 The International Maritime Organization has recognized the sensitivity of the Baltic Sea by designating it as a Special Area under MARPOL Annexes I, V and VI. Furthermore, the whole Baltic Sea except for Russian territorial waters was designated as a Particular Sensitive Sea Area (PSSA) in 2005.

The Helsinki Commission and the Baltic Sea Action Plan

9 The Helsinki Commission (HELCOM) is the oldest regional sea convention (1974) in the world and has been used as a model for several other regional sea conventions. All nine Baltic riparian countries (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden), together with the European Commission, are contracting parties to HELCOM. At a ministerial meeting in November 2007 these countries adopted a new action plan to protect the Baltic Sea – the Baltic Sea Action Plan. One of the management objectives for the maritime segment of this plan is to minimize sewage pollution from ships since the waste water released from shipping vessels operating in the Baltic Sea adds significant amounts of nitrogen and phosphorus to the Baltic each year, which contributes to algae blooms and a reduction of water quality, e.g., turbidity.

10 WWF and partner organizations in the nine coastal countries bordering the Baltic Sea are working together, through the Baltic Ecoregion Programme, to address the biggest threats facing this region. Given the threat eutrophication poses to the health and biodiversity of the Baltic Sea this is a priority area for WWF and the reason why in the summers of 2007 and 2008 WWF called upon shipping companies to protect the marine environment by halting the practice of dumping their polluted waste water into the sea. In 2007, WWF made an appeal to ferry companies operating in the Baltic Sea to stop all releases of untreated waste water. WWF asked the shipping companies to demonstrate their commitment to address the threat of eutrophication and to help conserve and restore the unique biodiversity of the Baltic Sea. The results of this campaign received strong media attention and WWF was delighted to learn that several big companies in many Baltic countries signed the commitment. The results of the appeal can be seen on our international website:
http://www.panda.org/what_we_do/where_we_work/baltic/news/?139841/International-cruise-ships-are-feeding-the-algal-blooms-in-the-Baltic-Sea (see also annex 2).

11 Furthermore, WWF appealed to international cruising companies visiting the Baltic Sea in 2008. In addition to committing to cease discharging untreated waste water from these passenger ships, WWF asked companies support and cooperate in order to influence harbours and ports in the Baltic Sea to improve their waste water reception and treatment facilities.

12 Currently, discharging untreated waste water from cruise/ferry boats is still legal in international waters, but given the threat nutrient pollution poses to sensitive areas, WWF believes this should not be the case, especially in semi-closed and closed sea areas. Although international regulations do not ban such releases so far, WWF, together with responsible shipping companies, believes that, at the very least, immediate voluntary actions and best practice examples are needed in order to protect and restore the Baltic Sea.

13 For the reason that not all ports around the Baltic Sea have adequate facilities for receiving waste waters from ships (in some cases tank trucks must be used for transporting sewage from the ports) WWF is also ready to demand better facilities from the port officials if needed. Additionally, in WWF's view, improved technology for on board waste water treatment (to treat also nutrients) is urgently needed.

Further information on shipping discharges and/or eutrophication can be found on our website at: **http://www.panda.org/what_we_do/where_we_work/baltic/news/?139841/International-cruise-ships-are-feeding-the-algal-blooms-in-the-Baltic-Sea.**

Proposal

14 WWF proposes that a) all passenger vessels trafficking in semi-closed and closed sea areas which are threatened by eutrophication, should immediately voluntarily cease to discharge their waste water into the sea, and instead dispose their waste water only in harbour port facilities and b) to initiate discussions about the importance of strengthening the present IMO regulations to decrease nutrient emissions from passenger ships.

Action requested of the Committee

15 The Committee is invited to consider the information above and decide as appropriate.

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ANNEX 1

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ANNEX 2

The following ferry companies signed WWF petition by the end of the year 2007

In Finland:

Birka Line
Eckerö Line
Nordic Jetline Finland
Seawind Line
Tallink-Silja Line
Viking Line ABP

Bornholmstrafiken (Denmark)
Lindaliini (Estonia)
Molslinien (Denmark)
Rederi AB Gotland and Destination Gotland (Sweden)
Tallink (Estonia)

The following cruise ship companies signed WWF petition by the end of the year 2007

Hurtigruten (Germany)
Peter Deilmann Reederei (Germany)

The following cruise ship companies signed WWF petition by the end of June 2008

Aida company (Germany)